

# Managing strategies in an uncertain world

Session #2 of a five-step program  
“From awareness to action”

May 28, 2024



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# A five-step program “From awareness to action” by McKinsey

## Session 1

### Solving the Net-Zero equation

Explore the **requirements for achieving Net-Zero** emissions and understand the **implications for companies**

## Session 2

### Managing strategies in an uncertain world

Learn how to develop **strategic options for a low-carbon future**, set **baselines**, and choose the right **strategic posture** for your company

## Session 3

### Developing high-quality climate action plans

Discover how to create high-quality **climate action roadmaps** and drive change in value-focused boardrooms through **levers for decarbonization**

## Session 4

### Motivating leadership teams and organizations

Uncover the **capabilities and motivation** organizations need to navigate technological advancements, policy shifts, and investor expectations

## Session 5

### Mapping the road ahead

Understand the importance of essential **efforts and collaboration** between public and private sectors in achieving global economic transformation

# McKinsey Sustainability

Our aspiration – To be the largest private sector catalyst for decarbonization, helping clients in all industries and sectors make meaningful progress by 2030 and reach Net Zero by 2050 in line with the Paris Agreement.

## McKinsey on Climate, Decarbonization and ESG



10+ years of experience in helping clients innovate for Sustainability

Investing in capabilities and knowledge

Leading voice on climate

Convening power and Ecosystem access

Setting targets to reduce our greenhouse-gas emissions

In 2023

**1,720+**

sustainability-related client engagements

**>200**

Data scientists, analysts, researchers and knowledge consultants

**>100**

publications in 2020 with ~1.5 mil views on McKinsey.com site

**>20**

leading industry associations we are partnering with

**2030**

- target year we set to reach Net Zero

# Today's agenda



**Importance of Net Zero in Kazakhstan**



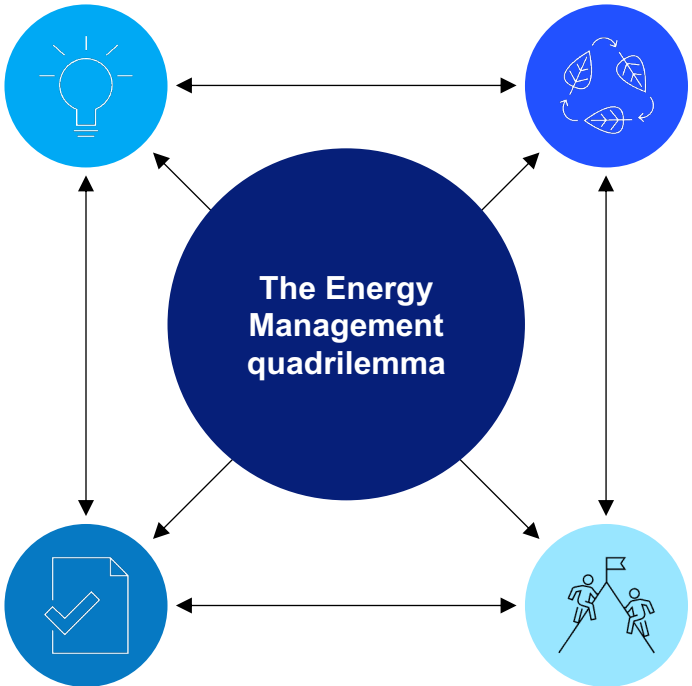
**Leading in Net Zero strategy building**



**Net Zero pathway development**

# Importance of Net Zero in Kazakhstan

# There is a need to address all four elements of the Energy Management Quadrilemma



**Energy security:** guarantee of uninterrupted energy supply while reducing volatility

- Building a sustainable and reliable energy system
- Unconstrained provision of energy to the population and the needs of the growing economy



**Carbon Neutrality:** reduction of greenhouse gas emissions in the energy sector

- Achieve Kazakhstan's Net Zero targets by 2060.
- Replacement of fossil fuels with renewable energy sources
- Electrification of all sectors taking into account fuel and energy risks



**Availability:** minimization of total energy system costs and, therefore, maintenance of affordable prices for end consumers

- Competitiveness of industries with account of social agenda
- Economic attractiveness for investors



**Competitiveness:** preservation and growth of the current level of competitiveness of key sectors of the economy

- Competitiveness of industries with account of carbon tax
- Economic attractiveness for investors (cost of capital)

# A1. Kazakhstan's energy demand is expected to increase by 1.5 times by 2060

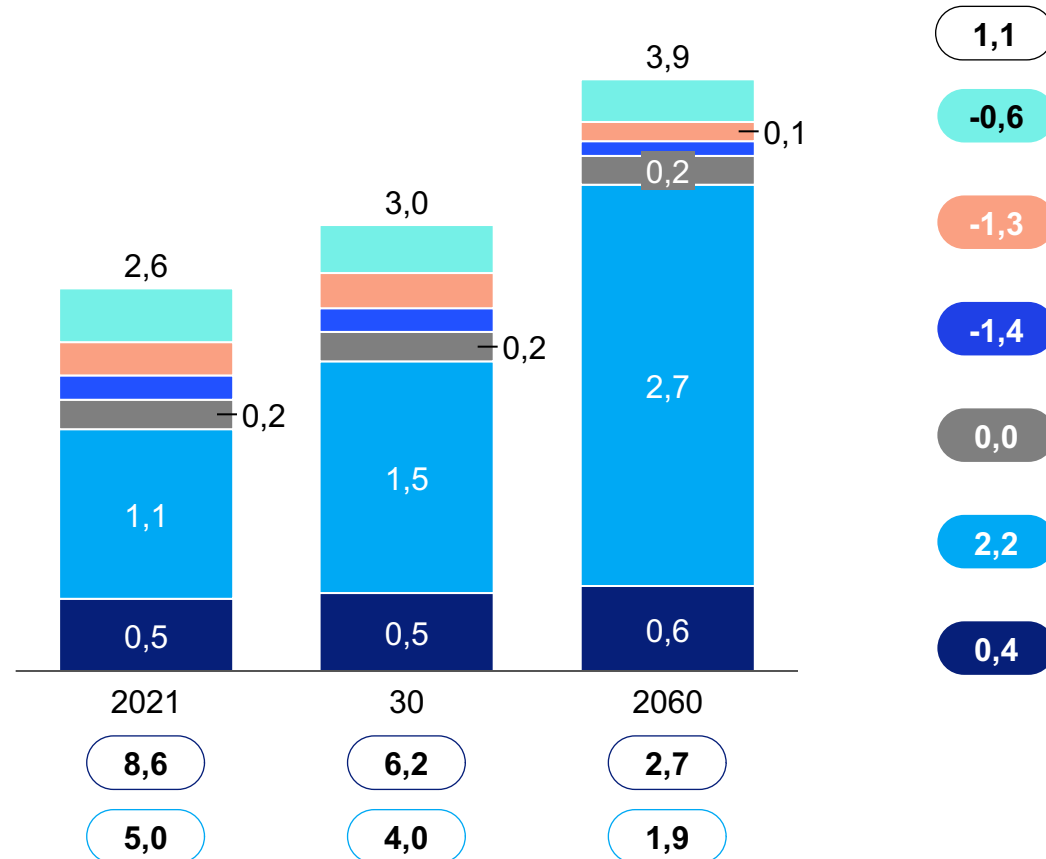
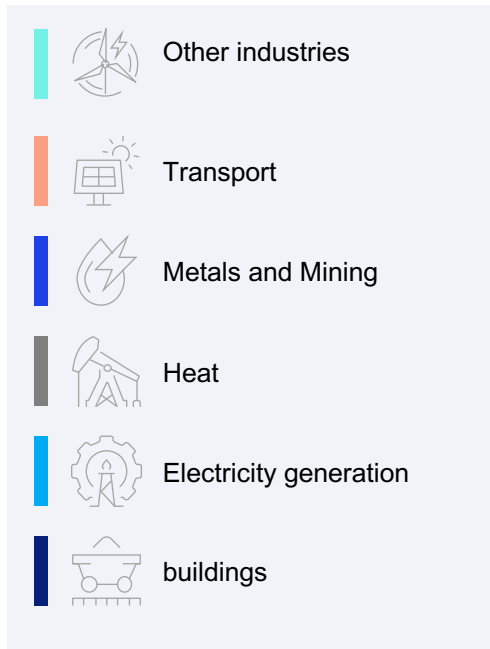
Current trajectory

XX Energy intensity world, MJ/\$ GDP    XX Energy intensity KZ, MJ/\$ GDP

Primary energy demand, (mln TJ)

CAGR, 2021-60, %

Key drivers



4,3%

Real growth of Kazakhstan's GDP

1,3%

Annual growth of population

2,6%

Annual growth of electrification

# B2. Under the current trajectory emissions will remain on the same level

Current trajectory

Energy sector Industry Agriculture Buildings Transport LULUCF Other

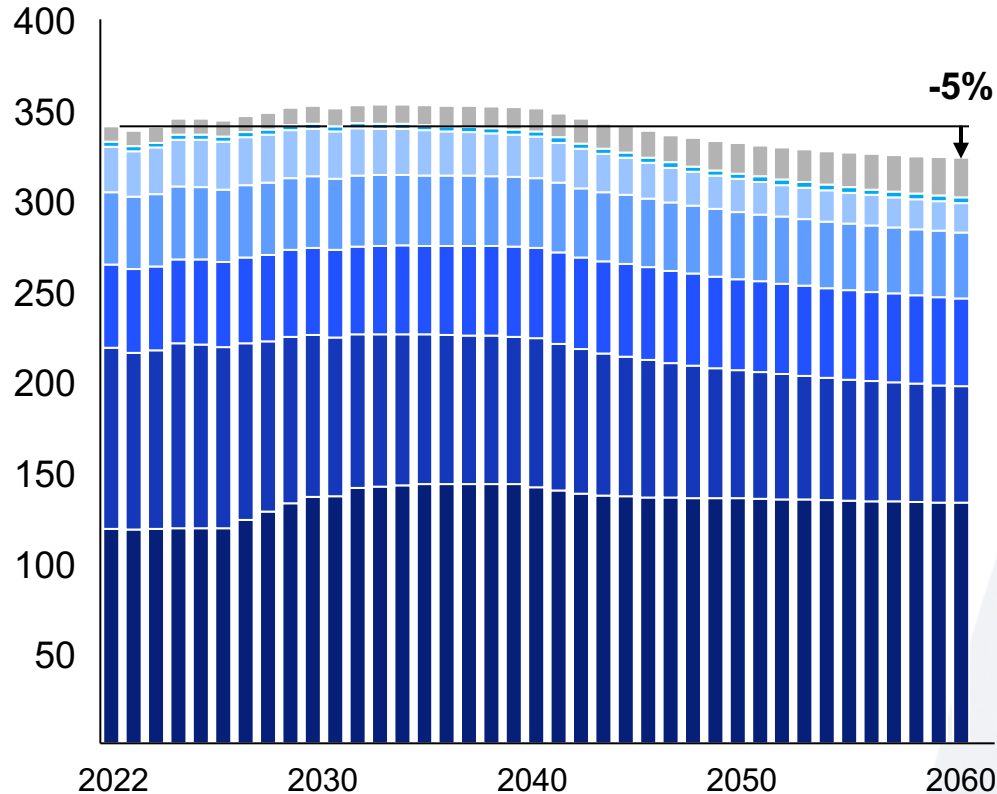
Today's ranking of Kazakhstan globally

**4<sup>th</sup>** Highest CO2 emissions to GDP ratio  
0.72 kg/\$ GDP

**5<sup>th</sup>** Highest CO2 emissions per capita  
18,0 t/person

**20<sup>th</sup>** Highest total CO2 emissions  
340,8 Mt CO2 eq

By 2060 in current trajectory, mln t CO2 equivalent



Kazakhstan is among the most GHG intensive economies per capita and to GDP ratio

Key abatement levers:

- Power mix correction by RES share increase
- Energy efficiency improvement
- Electrification

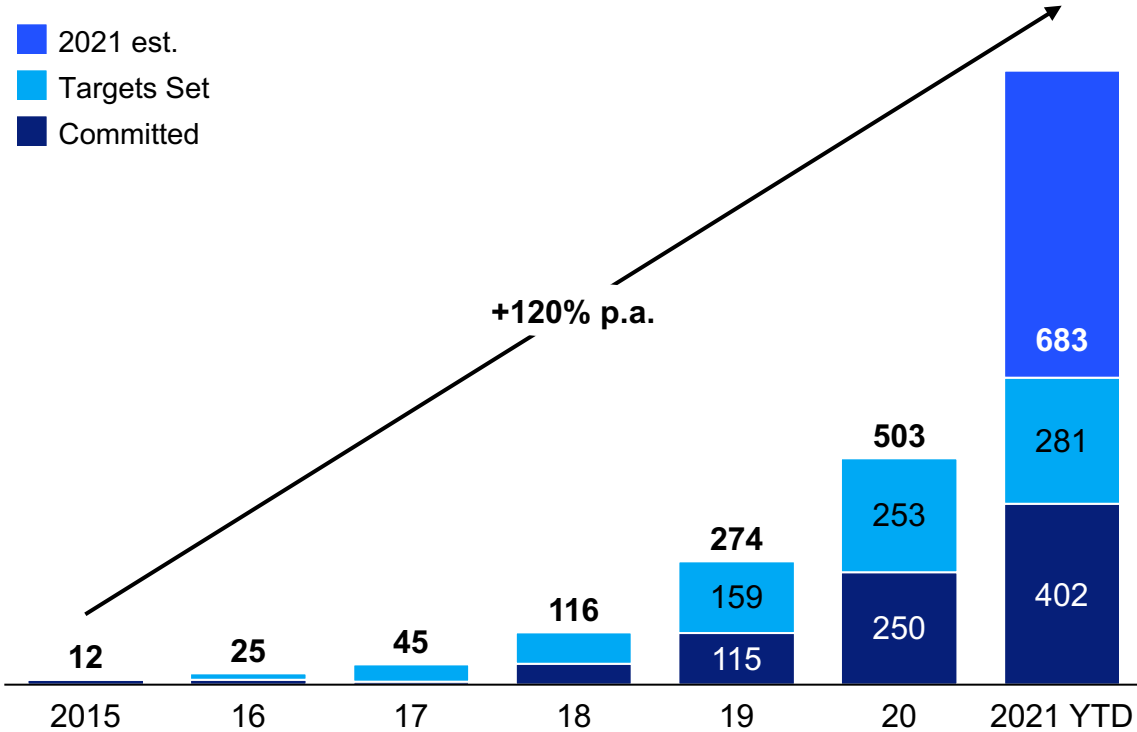


# Leading in Net Zero strategy building

# Across sectors, companies like you are making bold investments and commitments to sustainability

Non-exhaustive

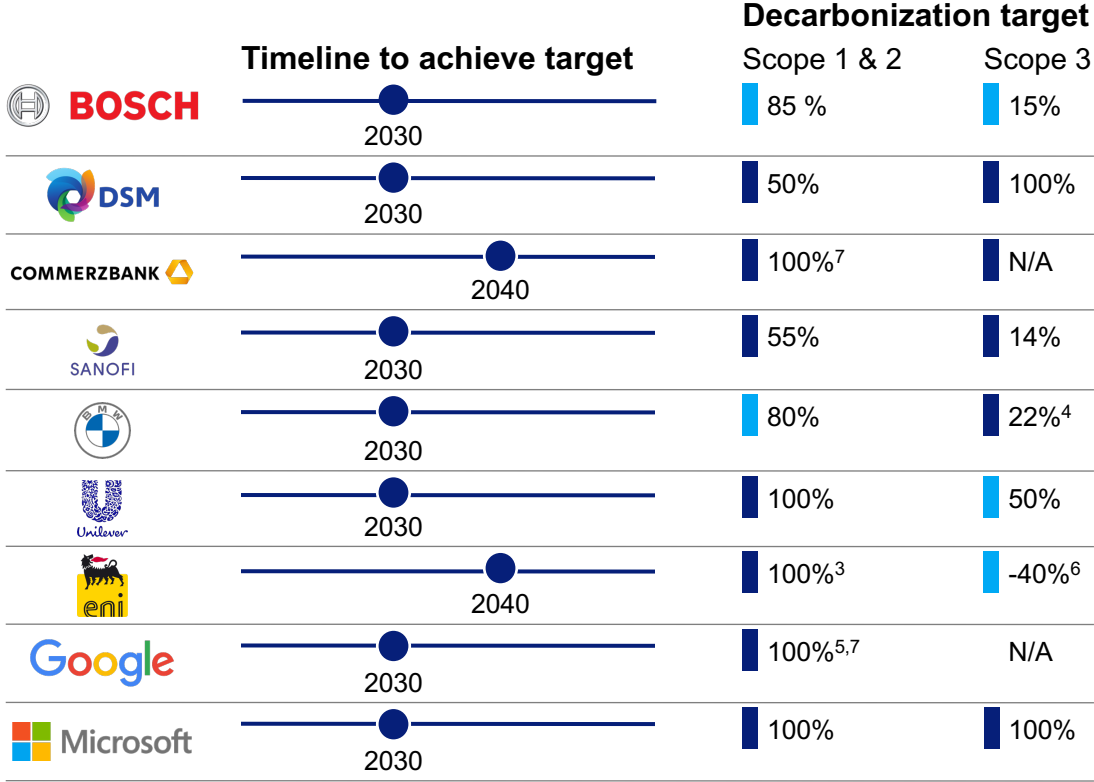
A growing number of companies are increasingly using Science Based Targets, count of companies with Science-Based Targets Set or Committed<sup>1</sup>



1. Companies "Committed" have expressed their intent to set SBTs but not finished the target setting process. Companies with "Targets Set" have developed their reduction targets, presented them to SBTI for official validation, announced the target to their stakeholders and reported company-wide emissions annually. More companies may have committed to or set decarbonization targets, but might not have submitted to SBTI. | 2. Relative to different base years | 3. Net Zero Carbon Footprint of Scope 1 and 2 | 4. Only emissions from purchased goods & services and upstream transportation per vehicle sold | 5. carbon neutral since 2007, want to achieve net zero of their own operations on a daily basis (24/7) by 2030 | 6. Net Carbon Intensity vs 2018 | 7. Not approved by SBTI


Absolute emissions | Emissions intensity<sup>2</sup>

Leading industrial companies are pushing each other to pursue more and more ambitious decarbonization targets




Note: SBTI = Science based targets initiative


# What we can learn from Net Zero leaders across industries...

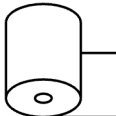


## Oil and Gas

**Bold moves to redefine the core of the business**  
**Shift portfolio to new markets**


 ... to become Net zero and shift from fossils to renewables and electric vehicles

 ... shifting portfolio from oil to biofuels (70% of EBIT from renewable products in 2018 vs. 50% from oil in 2015)



## Steel

**Partnerships & Ecosystems for circularity and to secure supply**  
**Opportunity to de-commoditize commodities**  
**Creation of competitive distance**

 ... created whole ecosystem with energy providers, machinery suppliers and customers to secure green energy and re-use scrap



## Chemicals

**Make sustainability core to strategy & growth**  
**Incorporate internal CO2 price into business and investment decisions**

 ... made sustainability core of their brand, strategy and purpose

 ... includes internal CO2 price of 100 EUR / t CO2e in all business decisions



## Automotive

**Work with suppliers to decarbonize the supply chain**

 ... includes supplier CO2 footprint into contract award process

 ... works across the whole supply chain to build a zero carbon truck

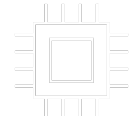


## Consumer goods

**Develop zero carbon products together with suppliers**  
**Create sustainability brand story**


 ... works with BASF to change input materials to create zero carbon products


 ... bold marketing riding on wave of health trends and environmental concern




## Tech

**Build digital solutions for sustainability and energy**


 ... issued \$6 bn in sustainability bonds to fund environmentally or socially responsible projects


 ... plans to use 100% renewable energy in 2030



## Financial services

**Reallocate funding to sustainable investments (reducing capital constraints for sustainable projects)**

 ... aims to mobilize financing for \$35 bn in clean tech and renewable power between 2020-2025

 ... aims to reduce GHG emissions from listed equity and corporate bonds portfolios by -25 percent by 2024

# ... and what this means for your strategy

■ Focus of next section

You can become a Net Zero leader by setting bold aspirations now and making ...



## 1 Portfolio moves

**Reorient your portfolio towards sustainability and consistent capital allocation** (e.g., focus sustainable parts on growth and manage non-sustainable parts on cashflow)

Courageously **divest or scale down non-sustainable parts** of your **portfolio** and **use proceeds to fund sustainability initiatives**



## 2 Decarbonization of operations and end-to-end value chain

**Redesign your processes** using core **decarbonization technologies** and work with suppliers and customers **to decarbonize your end-to-end value chain**

Include **sustainability and carbon prices** in internal investment decisions



## 3 Green growth

**Commercialize the green or “low carbon” products**, working actively with front running customers, building entire sustainability **ecosystems** and using **innovative financing models**

... supported by a convincing capital markets story

**Link values and value:** attractive capital markets story on your Net Zero strategy (demonstrating valuation upside, setting ambitious targets including science based targets, and roadmap how to achieve them)

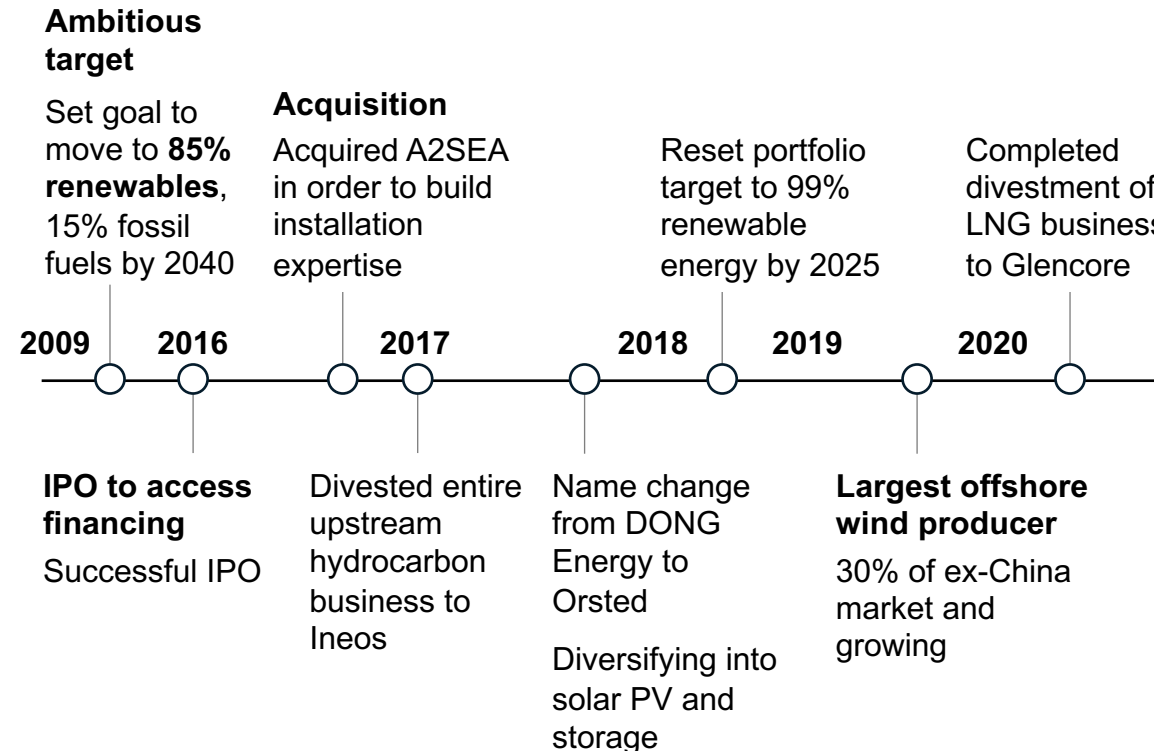
# 1. Portfolio moves - Orsted completely transformed from a fossil fuel portfolio to a renewable energy leader in just over a decade



## Company Context

Danish national power company with **85% of portfolio coal driven**

Started to see **opposition to European coal plants coupled with pressure to act on climate at 2009 COP 15**



## Key success factors

Set **bold target** to diversify portfolio

Through diversification, **focused on a single technology with the goal of becoming a global leader**

**First mover advantage** through divestment of hydrocarbon assets and achievement of cost reductions in offshore wind technology

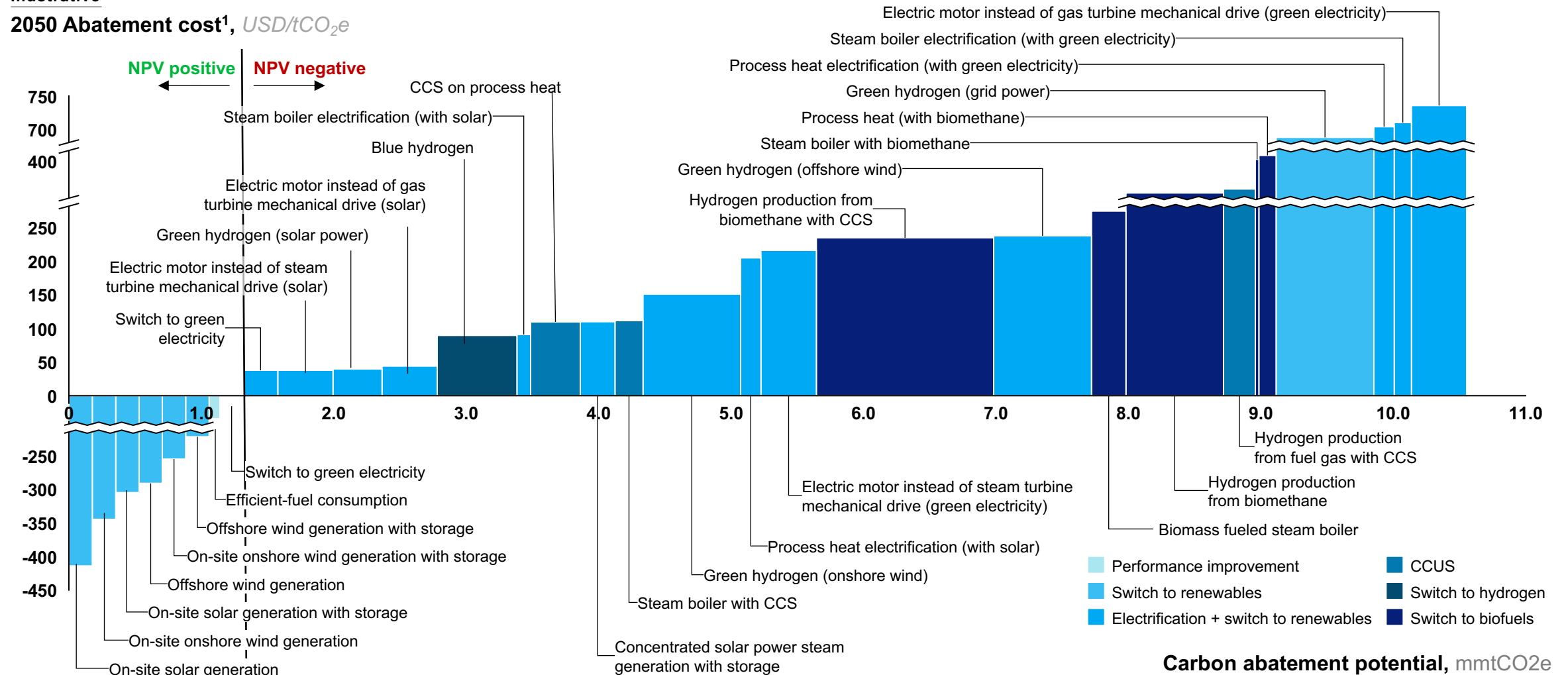
Overhauled supply chain and financing processes including developing **“farm down” investment approach to access cheap project financing**

# 2. Decarbonization of operations and end-to-end value chain can be at NPV zero cost

Full scope of decarb opportunities for US refinery

Illustrative

2050 Abatement cost<sup>1</sup>, USD/tCO<sub>2</sub>e

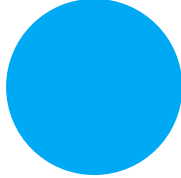
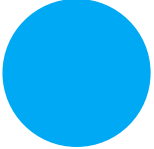
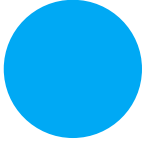









1. Abatement is calculated with cost in 2050

# 3. Green growth - there is untapped potential on green growth opportunities globally

Investable themes – addressable market size in 2025 globally (\$B)

Preliminary, not exhaustive

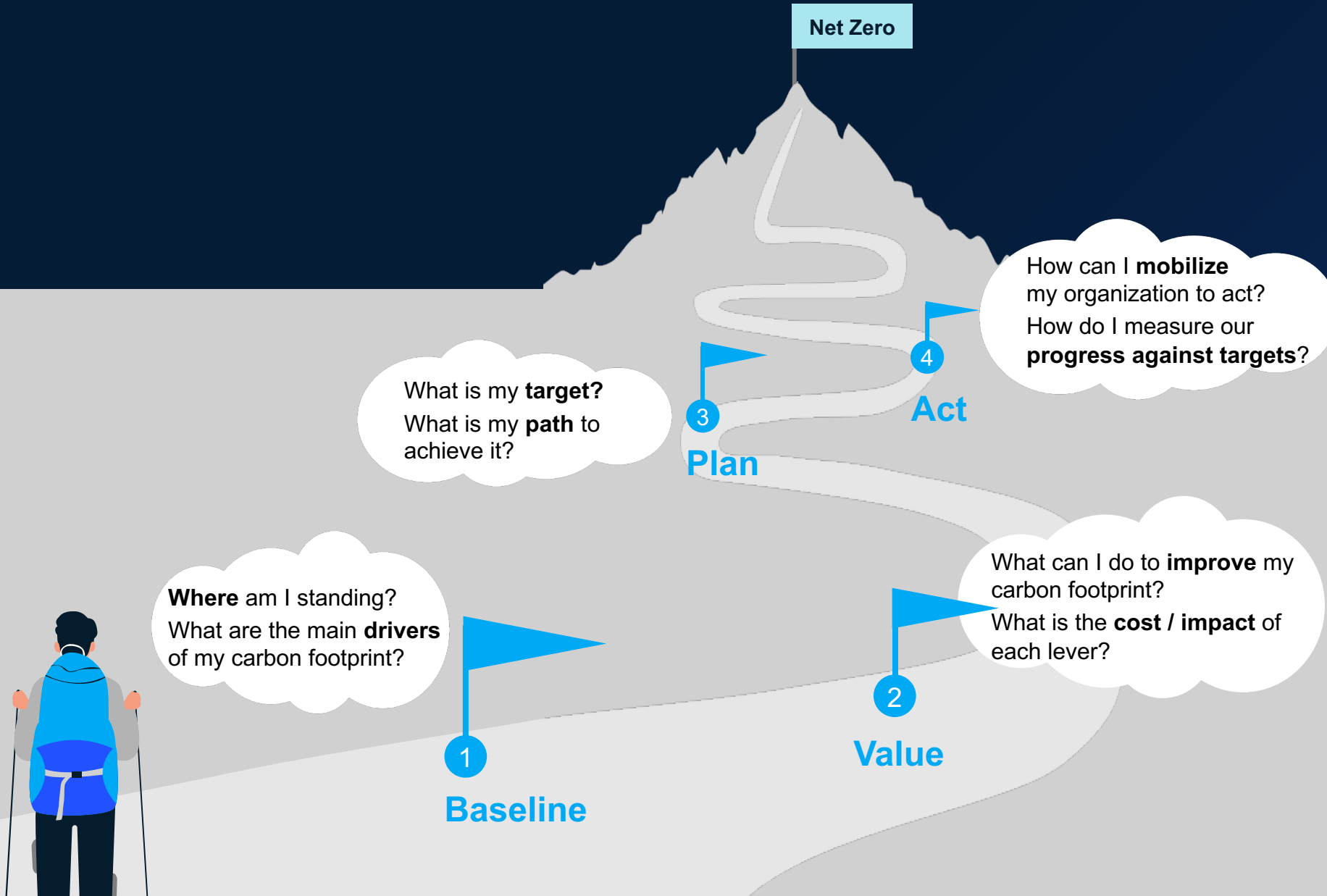
	\$900-\$1,000B	\$650-\$950B	\$500-\$900B	\$400-\$600B	\$400-\$500B	\$200-\$500B	\$90-100B	\$40-\$100B	\$10-\$45B	\$10-\$25B
<b>Sub-themes</b>	 <p><b>Decarbonization of power</b>            Renewable power generation            Microgrids and resiliency            Flexibility and energy storage            Grid and customer energy analytics            Advanced solar PV technology</p>	 <p><b>Low carbon mobility</b>            Electrification of vehicle power trains            Next-gen batteries            Charging infra and energy services            Fleet decarbonization  <i>Shipping and port decarbonization</i></p>	 <p><b>Circular products &amp; packaging</b>            Sorting and processing tech            Sustainable packaging  <i>Sustainable fashion</i>            Circular products and upcycling            Reverse logistics supply chain svcs</p>	 <p><b>Low carbon agriculture and food supply chain</b>            Low carbon proteins            Sustainable timber            Tech enhancements for crop yields            Crop preservation / waste reduction            Methane inhibitors</p>	 <p><b>High efficiency buildings</b>            Energy efficiency and building controls            Building electrification            Green building materials            On-site clean energy</p>	 <p><b>Hydrogen</b>            H<sub>2</sub> electrolyzers            H<sub>2</sub> blending materials            Hydrogen mobility            Project development</p>	 <p><b>Bioenergy</b>            Bio-refineries            Biofuel innovation            Waste to energy/value</p>	 <p><b>Industrial decarbonization</b>            Green cement and CO<sub>2</sub> negative aggregates            High efficiency iron &amp; steel production            Decarbonization of industrial process heat            Industrial energy efficiency</p>	 <p><b>CCUS</b>            Sorbents for carbon capture            CO<sub>2</sub> to fuel            Direct air capture            Novel point-source capture            CO<sub>2</sub> pipelines and transport            CO<sub>2</sub> capture infrastructure</p>	 <p><b>Carbon Markets, offsets, financing</b>            Offset project design, development, and supply            Marketplaces and exchanges            Carbon credit brokers and retailers</p>

Startups are way ahead of incumbents in exploiting the opportunities in green business.

# Net Zero pathway development



# Companies are making decarbonization commitments but are facing challenges to deliver on them



# Poll: Net Zero strategy

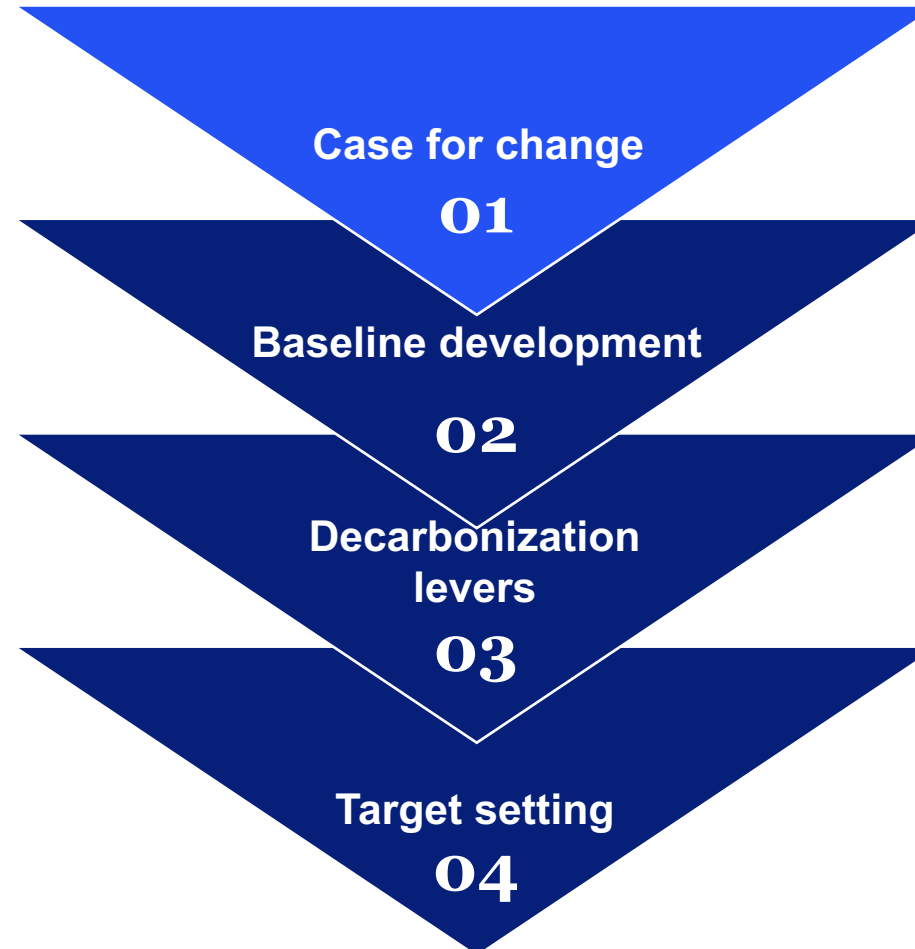
# Key components of decarbonization target-setting and pathway development

■ Detailed next

- 01** Decarbonization trends including regulatory, financial and consumer behaviour changes

*Discussed in previous section “Importance of Net Zero in Kazakhstan”*

- 03** Identify decarbonization levers and assess impact and costs, building Marginal Abatement Cost Curves (MACC) for prioritization for the mid term and the long term



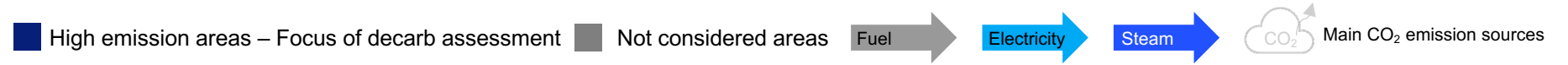
- 02** Set baseline boundaries, collect data, build GHG emissions baseline, and analyze the output

- 04** Set the target based on SBTi-aligned best practices and define potential decarbonization pathways based on industry trends, 1.5oC and 2oC alignment and abatement potential of NPV positive and negative levers

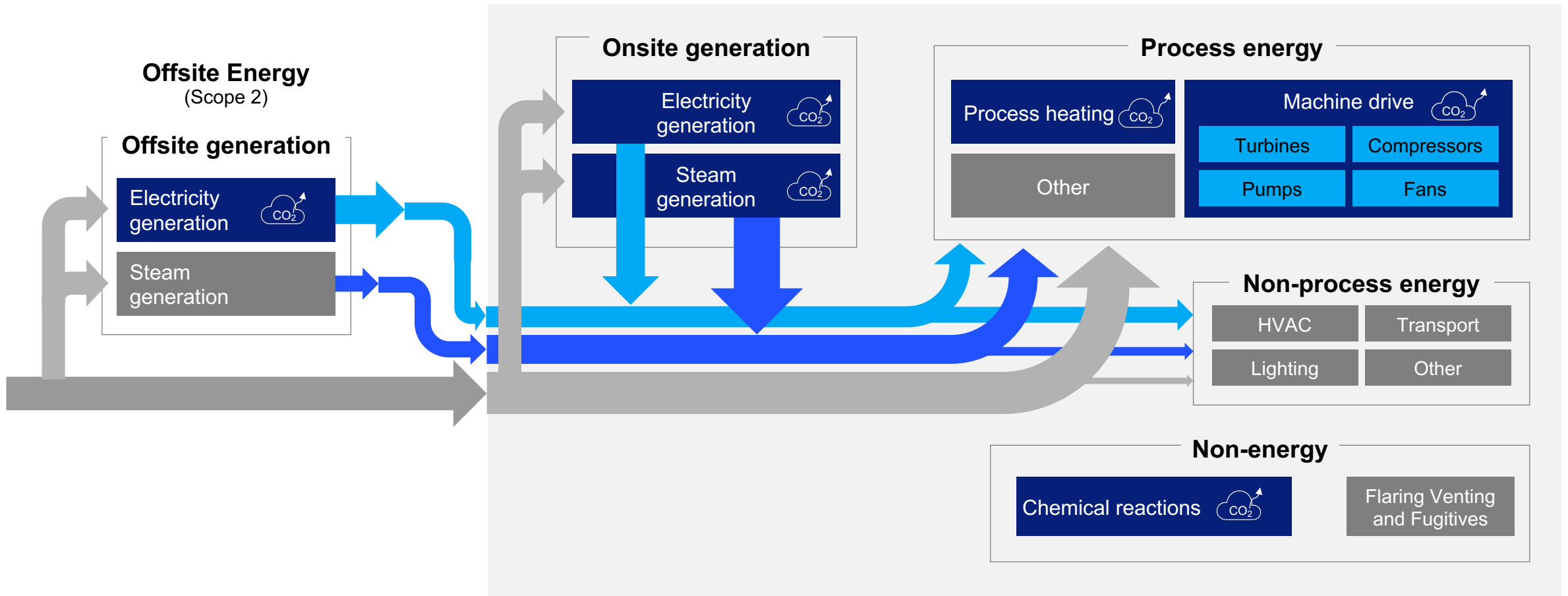
# 2. Baseline development: Emission baselining is done by considering sources of both Scope 1 and Scope 2 emissions

Example baselining for a plant

Illustrative








## Onsite Energy (Scope 1)



## 2. Most baseline reporting covers all greenhouse gases, as well as Scope 1 and 2 at the minimum

✓ Available    ✓ Partially available    ● Undisclosed

Company	Baseline reported?	Verified?	Scope reported <sup>1</sup>	GHG reported <sup>2</sup>
	✓	✓		✓ CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O, HFCs
	✓	✓	3 Category 1, 3, 9 & 11	✓ All GHG
	✓	✗		✓ CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O, HFCs, PCFs, SF <sub>6</sub>
	✓	✓	3 Category 11	✓ CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O
	✓	✗		✓ All GHG
<b>ExxonMobil</b>	✓	✓	3 Category 11	✓ CO <sub>2</sub> , CH <sub>4</sub> , undisclosed gases

Most baseline reporting covers all greenhouse gases, as well as Scope 1 and 2 at the minimum

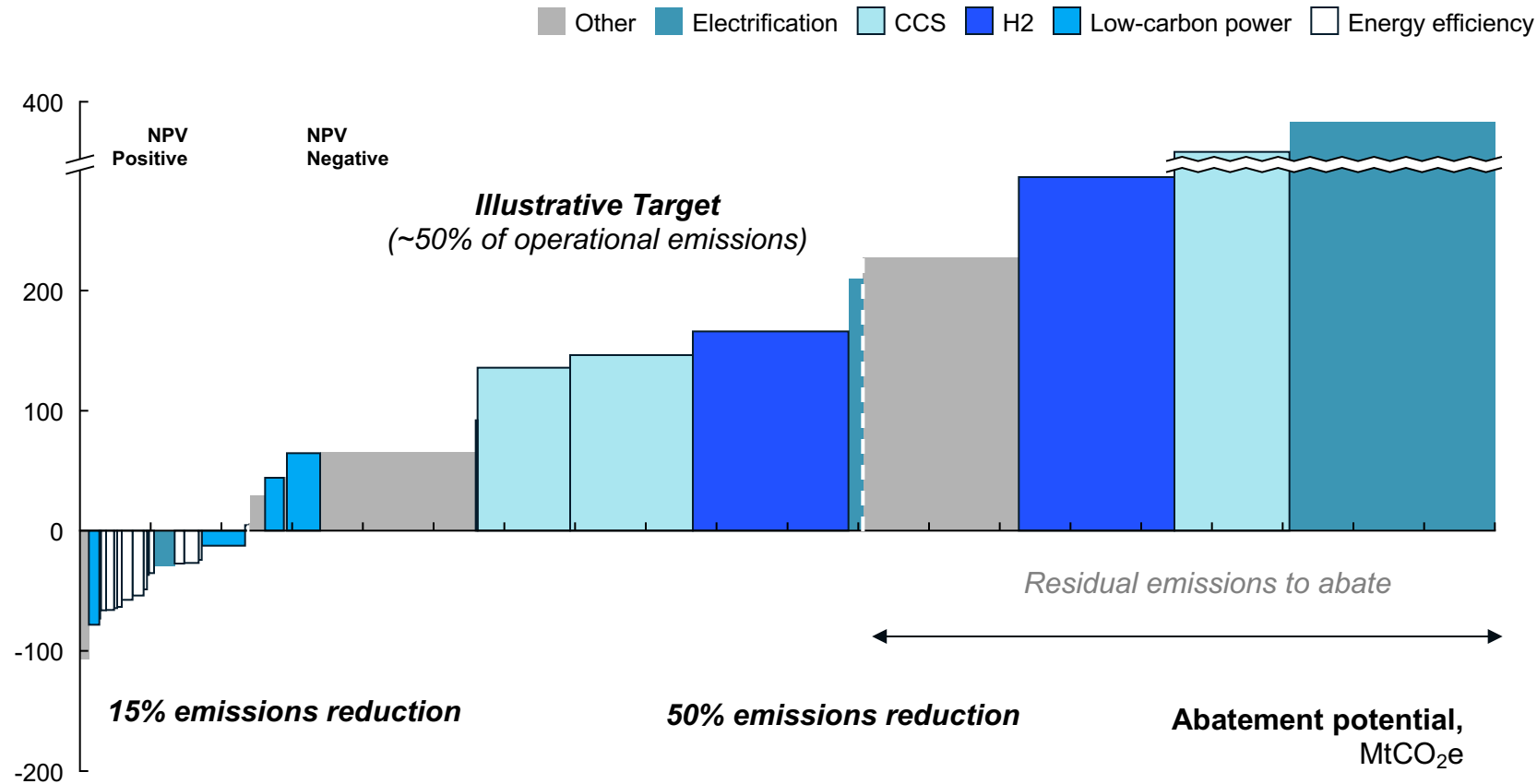
Scope 3 is typically not included in reporting or target setting, however several plan to include it in the future, particularly Category 11: Purchased Goods

1. Category 1: Purchased goods and services; Category 3: Fuel and energy-related activities; Category 9: Downstream transportation and distribution; Category 11: Use of sold products
2. The GHG Protocol lists 7 types of greenhouse gases: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PCFs), sulphur hexafluoride (SF<sub>6</sub>), and nitrogen trifluoride (NF<sub>3</sub>). CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O contribute ~98% of GHG emissions (USA EPA, 2017)

### 3. Decarbonization levers: Building a company or asset-specific MACC can help to identify required solutions and evaluate the cost of reaching Net Zero

Illustrative US petrochemical site with cracker

2030 Unconstrained Marginal Abatement Cost Curve, Scope 1+2, USD/tCO<sub>2</sub>e







Each bar on the cost curve represents a decarbonization lever

Levers are sorted by increasing abatement costs for the reduction of emissions by tCO<sub>2</sub>e

Abatement cost is calculated as the difference of average costs between new and replaced lever divided by the displaced emissions. It should include potential subsidies that would lower the cost of low carbon technologies

### 3. Each lever is assessed in terms of impact potential, technology readiness and execution complexity...

Illustrative

					
	Question	Positive validation	Initial positive validation	Negative validation	
<b>Impact potential vs. investment cost</b>	What will be <b>emissions improvement</b> potential?	High impact potential against investment	Medium to low potential impact against investment	<b>Limited potential</b>	
<b>Technology readiness</b>	Is the <b>technology</b> already available on the market?	Commercially <b>available</b>	Lab-tested or <b>pilot deployments</b>	<b>Early research</b> or concept	
<b>Execution Complexity</b>	<b>Physical constraints</b>	Is the <b>deployment possible</b> given the space constraints?	<b>No physical limitations</b>	<b>Constraints</b> limiting large-scale deployment	<b>Not feasible</b>
	<b>Supply chain constraints</b>	Does <b>supply chain</b> already exist?	<b>Full supply chain present</b>	<b>Limited/developing supply chain</b> , or potential to develop	<b>No supply chain</b> in place
	<b>Regulatory limitations</b>	Are there <b>any regulatory limitations for technology deployment</b> ?	<b>No limitations</b> expected	<b>Possible if required criteria are met</b> <i>Long term evolution of regulatory to be considered</i>	<b>Not possible</b> under current regulations

- Existing initiatives should be categorized **based on maturity level**
- **For early-stage initiatives, detailed assessment of levers** should be conducted
- Company **positioning on every lever** will be defined in structured manner to create holistic understanding of the solutions space
- **Focus areas will be prioritized and signposts established** for monitoring (what would need to change in order to revise prioritization)

# 4. Target setting: Three approaches to chart Net Zero pathways

■ SBTi preferred approach

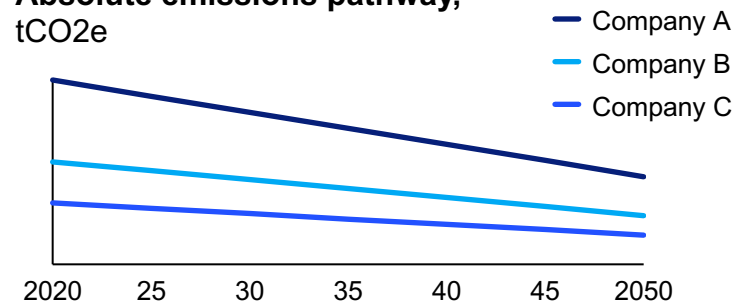
## Absolute reduction

An absolute reduction target describes a **reduction of the absolute amount of GHG emissions**, e.g.

“Reduce absolute GHG emissions 60% by 2025 from 2015 levels”

Absolute targets follow the absolute contraction principle, under which all companies need to reduce their own absolute emissions at the same rate to achieve a given climate scenario, irrespective of initial emissions performance

**Absolute emissions pathway,**  
tCO<sub>2</sub>e



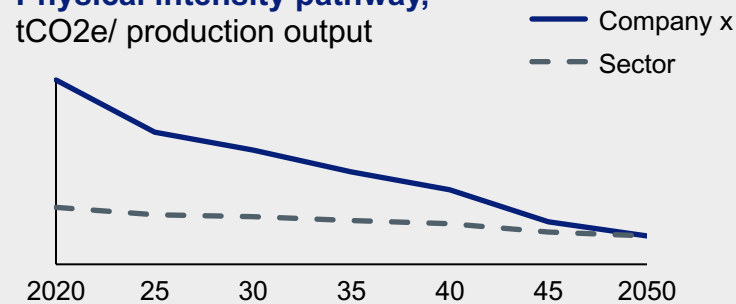
## Physical intensity improvement

A physical intensity target describes an **improvement of GHG emissions relative to a specific production output**, e.g.

- “Reduce GHG emissions 25% per kWh<sup>1</sup> by 2025 from 2015 levels”

One example is the Sectoral Decarbonization Approach or SDA, where individual companies targets are based on their respective sector’s intensity pathway<sup>3</sup> (see back-up slides for more details)

**Physical intensity pathway,**  
tCO<sub>2</sub>e/ production output



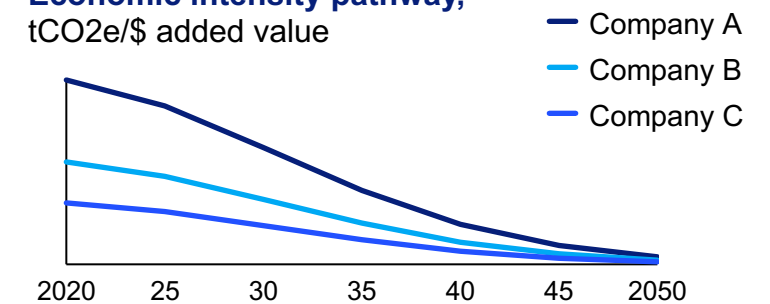
## Economic intensity improvement<sup>2</sup>

An economic intensity target describes an **improvement of GHG emissions relative to the financial performance** of a company, e.g.

“Reduce GHG emissions 40% per unit of value added by 2020 from 2015 levels”

One example is the Greenhouse Gas Emissions per Value Added method (GEVA) where all companies are required to reduce their emission intensity by 7% per year (compounded), irrespective of initial emissions performance

**Economic intensity pathway,**  
tCO<sub>2</sub>e/\$ added value



1. Or per capita, per sqm, etc.

2. Economic intensity target-setting methods are considered less robust than absolute and physical intensity methods and more suited to fast-growing companies

3. Sectors with SDA pathways available as of Nov. 2020: Power Generation, Iron & Steel, Aluminium, Cement, Pulp & Paper, Services/commercial buildings, Passenger & Freight Transport



# Next steps - Operationalize Net Zero strategy

## **1. Initiating execution & implementation toolkit**

- Develop **implementation infrastructure** to ensure rigorous execution (e.g., clear accountabilities over time, centralized data repository, rapid escalation)
- **Regular cadence** to track initiative implementation, including progress against KPIs and impact realization

**Focus of Session 3**

## **2. Capability building and change management**

- Embed **new competencies** to drive existing initiatives and/or generate new ideas
- Execute **internal communication** efforts, ESG townhall for employees, live dashboards, etc.

**Focus of Session 4**

## **3. Mapping the road ahead**

- Execute **external communication and collaboration** efforts, including e.g., Participation in ESG thinktanks and forums, publishing ESG/Sustainability reports, newsletters and executing joint projects

**Focus of Session 5**