

# How Companies Are Approaching The Transition To Net Zero?

*Defining the decarbonization challenge*

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Partner

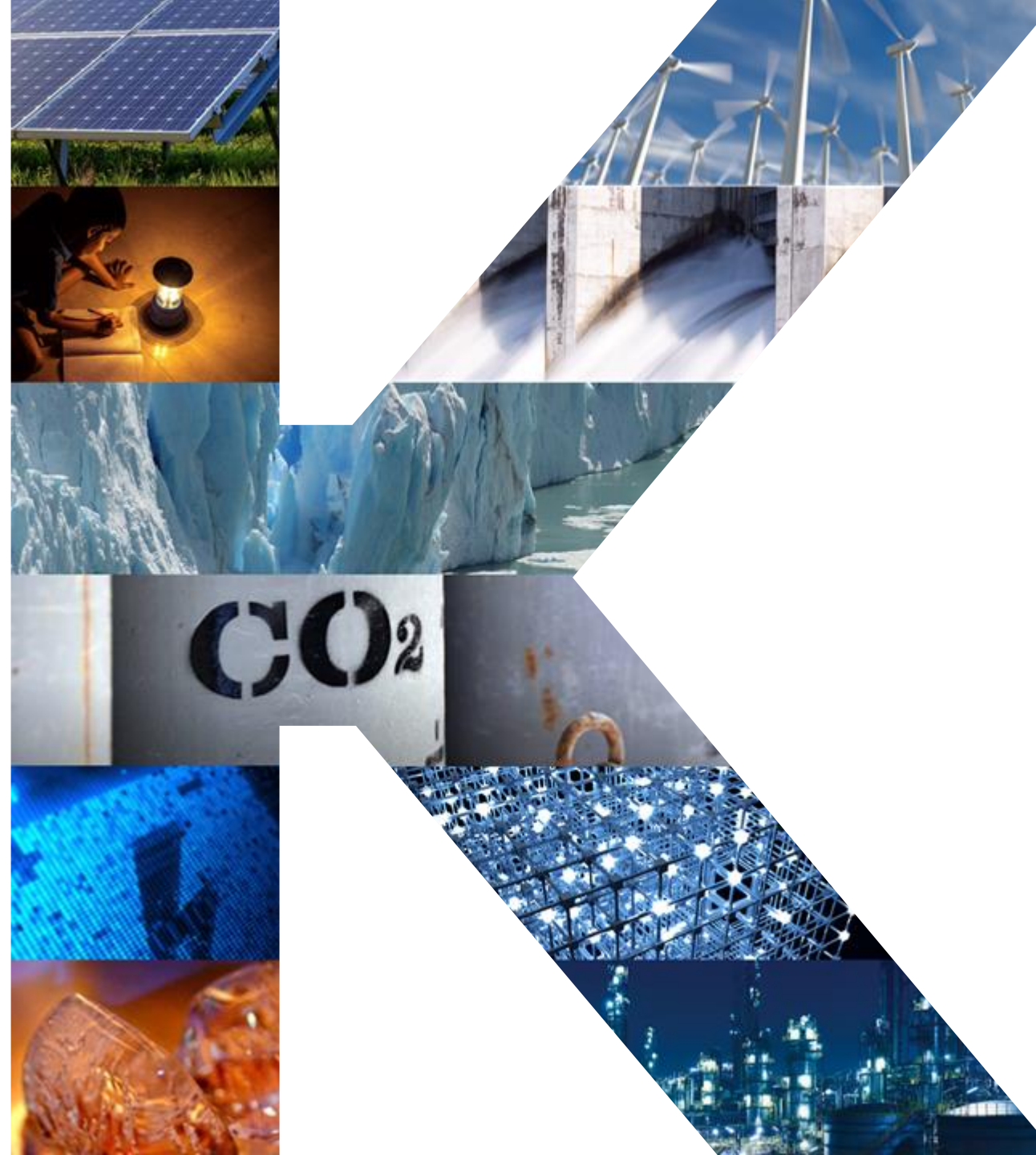
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# Agenda



Net Zero context and objectives



Strategic approach

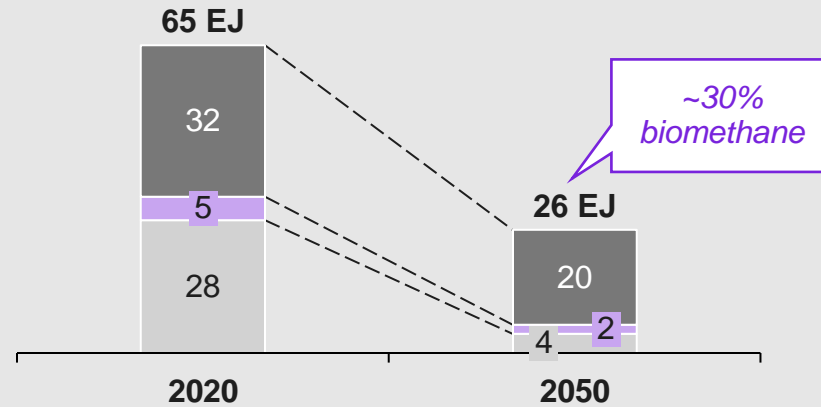


Energy companies' responses

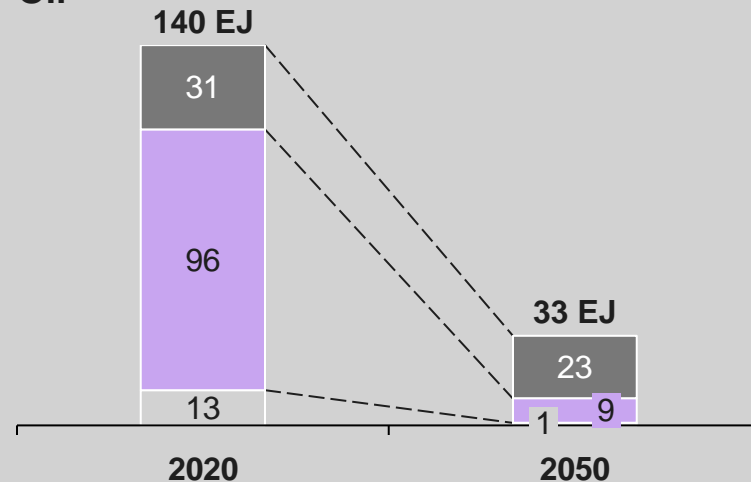
# IEA's Net-Zero scenarios put a spotlight on massive transformations of the energy sectors and end-use markets



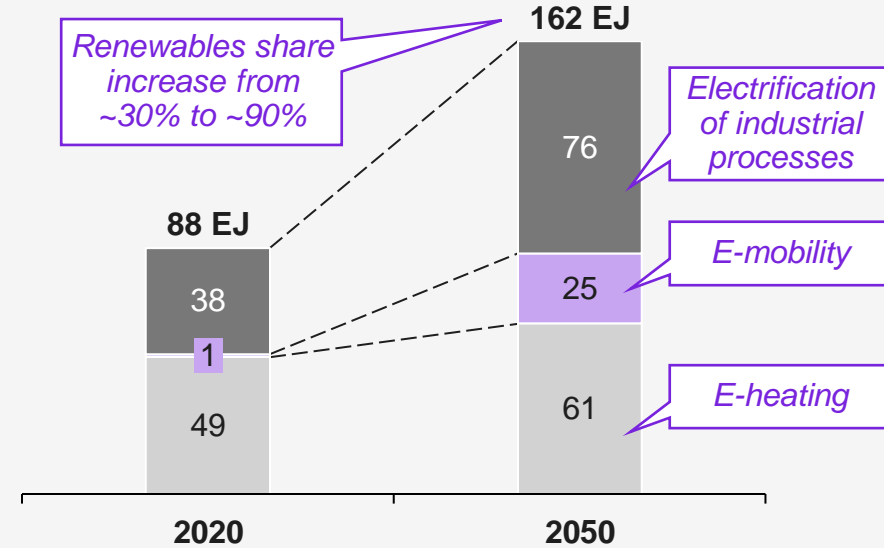
## Methane (natural gas and bio-methane)



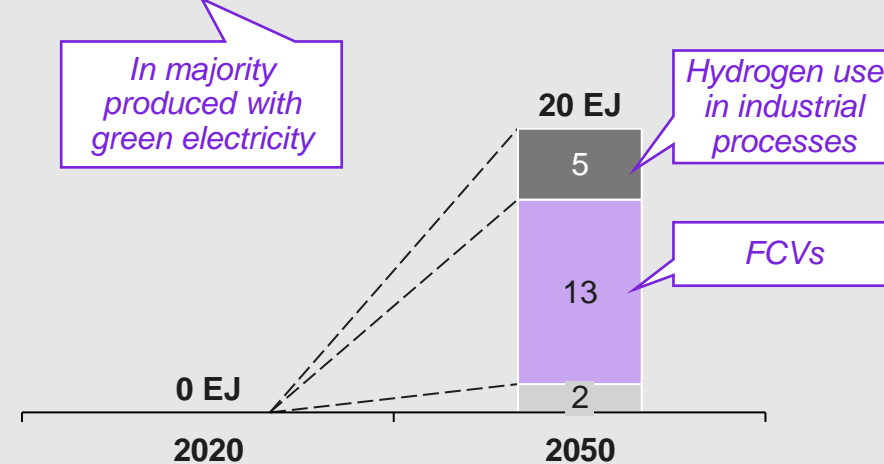
## Oil



## Electricity & Heat



## Hydrogen



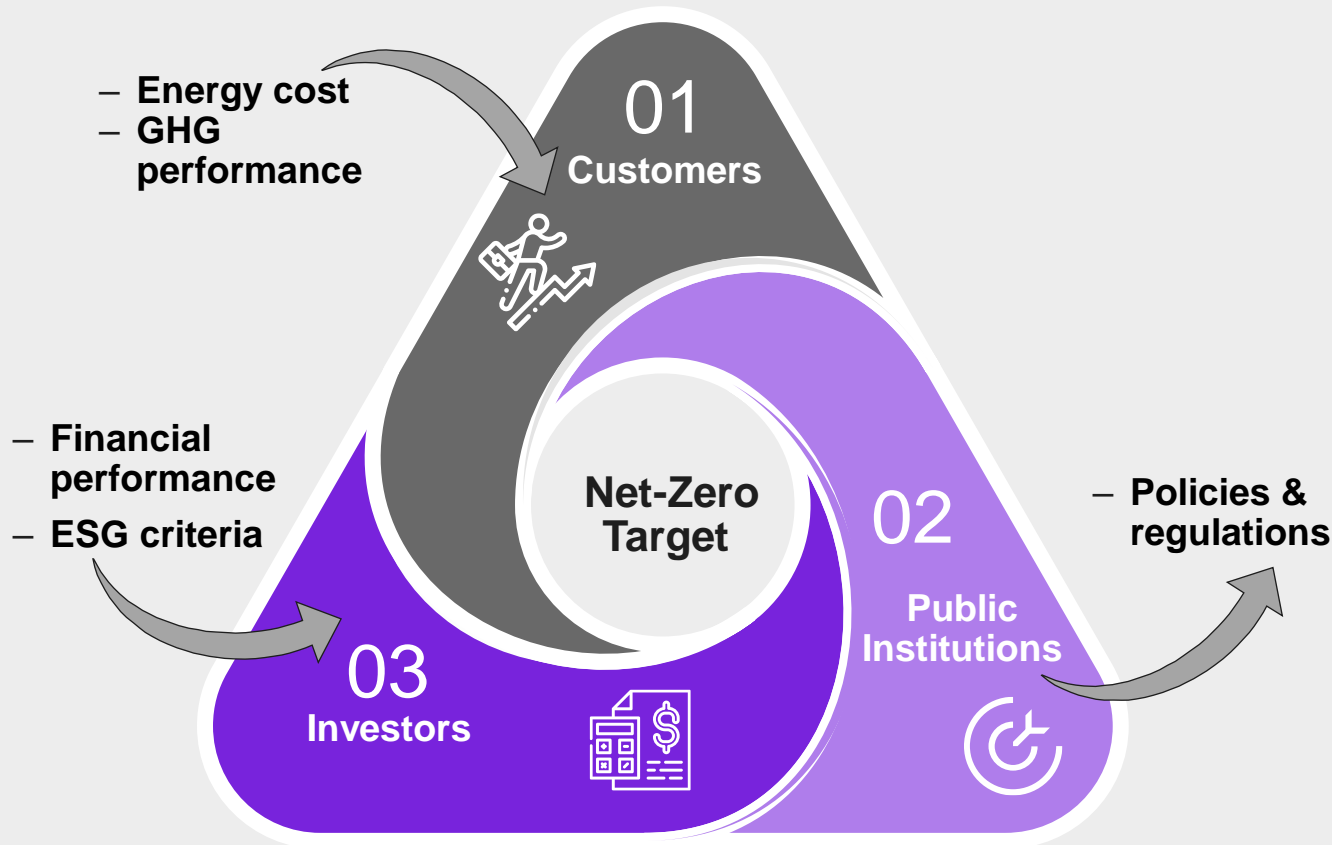
- IPCC:
- “**Net-Zero emissions** are achieved when *anthropogenic emissions of greenhouse gases* to the atmosphere are balanced by *anthropogenic removals* over a specific period. Where multiple greenhouse gases are involved, the quantification of Net Zero emissions depends on the climate metric chosen to compare emissions of different gasses (e.g. GWP, time horizon)
  - “**Carbon neutrality** refers to Net Zero CO<sub>2</sub> emissions”

Source: IEA Net-zero by 2050 Report; Kearney Analysis



# Net Zero strategies need to fulfill multiple objectives simultaneously...

## Address multiple stakeholders' expectations...



## ...while managing a deep transformation journey

Illustrative

### Strategy plan

- Net-zero targets definition
- Market trends
- Technology choices (e.g. REN, CCUS, offsetting, efficiency measures etc.)
- Risk mitigation (e.g. chicken & egg problem)
- Strategic alliances

### Transformation plan

- Portfolio management
- Re-organisation
- Competency development

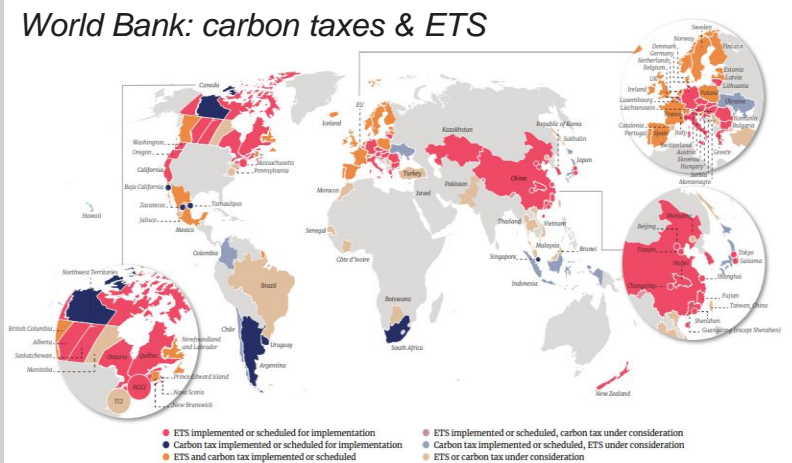
### Investment plan

- Capital investment / divestment
- Financial performance

# ...while considering multiple complexities

The energy industry is dealing with massive uncertainties. Players not only need bigger targets but also clearer pathways to get there with a viable plan

## Energy policies / regulations

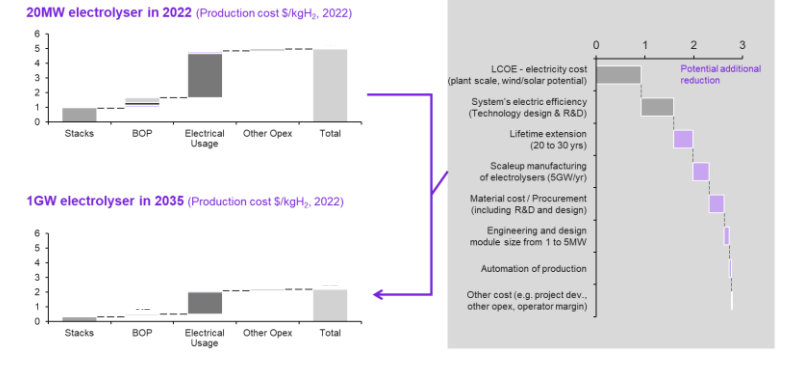


## Markets and consumers' trends

- Green finance initiatives
- Change of urbanization models
- Shift of mobility solutions / remote working
- Product demand shift
- Increasing awareness of circular economy / affinity for green
- ...

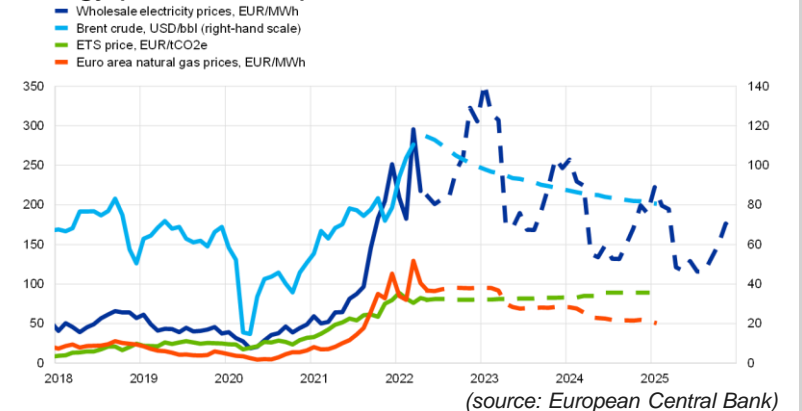
## Competitiveness of technology solutions

### LCOH evolution 2020-2030



## High volatility of energy market

### Energy price in Europe

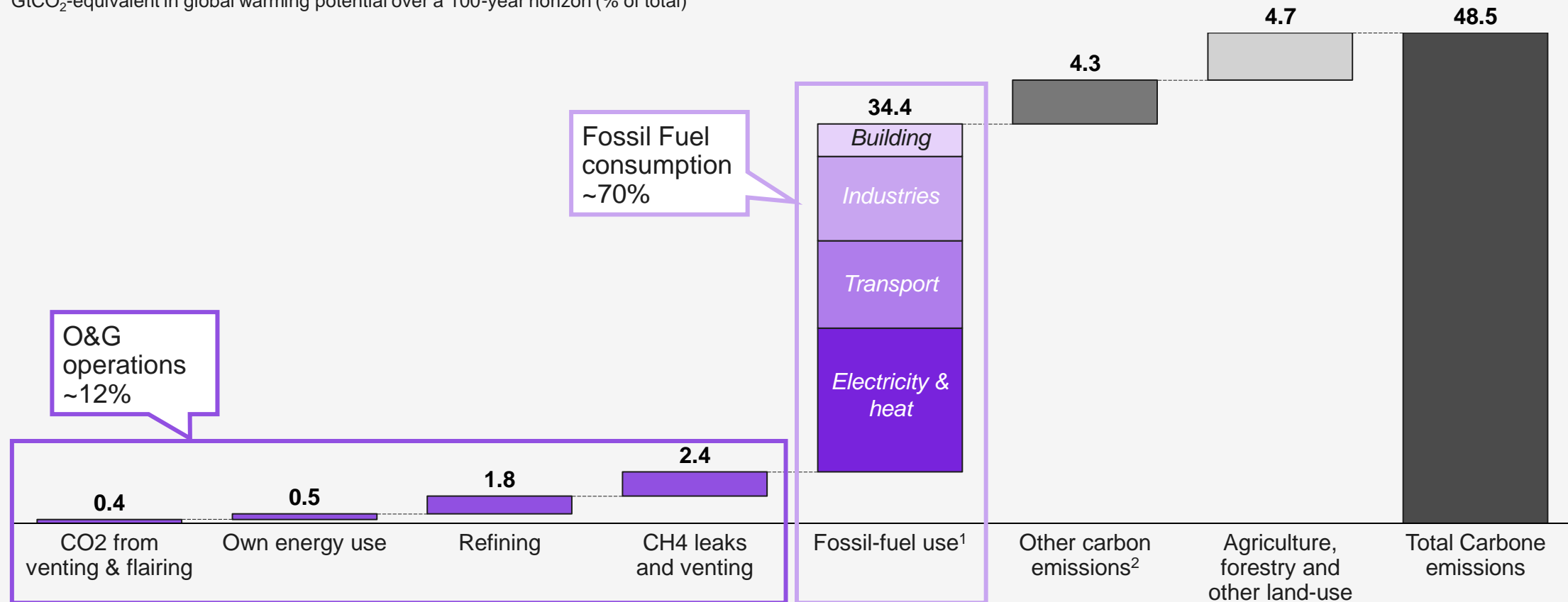




# O&G operations and fossil fuel consumption represent about 12% and 70% of Global Carbon Emissions, respectively

## Estimated Global Carbon Emissions (CO<sub>2</sub> and CH<sub>4</sub>) in 2022

GtCO<sub>2</sub>-equivalent in global warming potential over a 100-year horizon (% of total)



# Net Zero strategies need to address both the ambition and execution

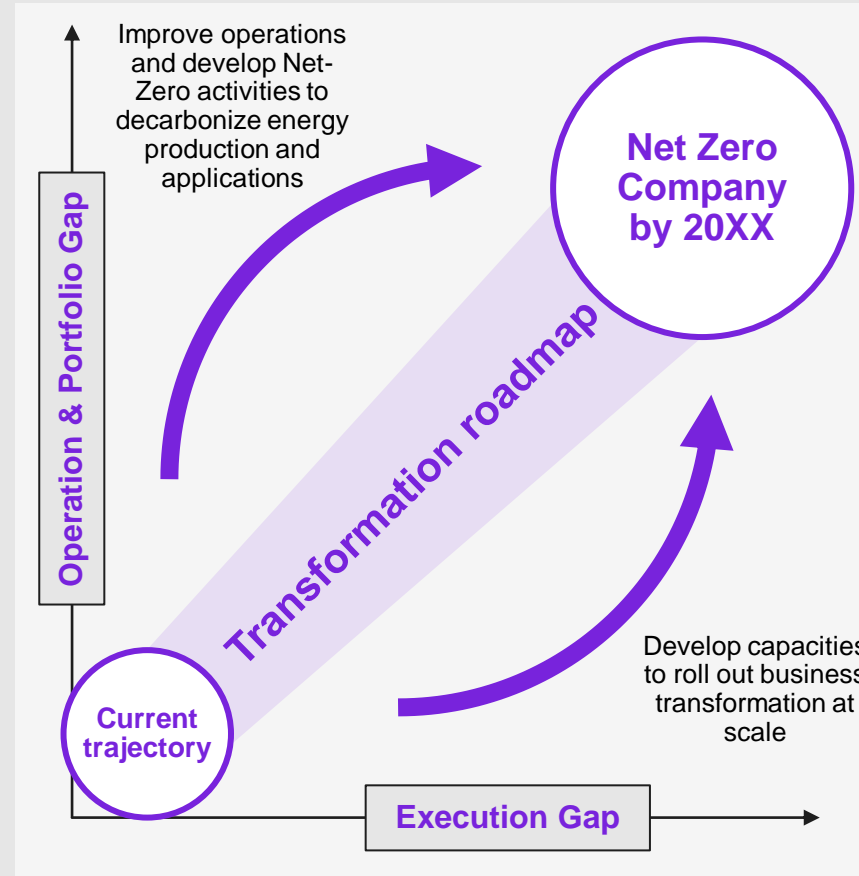
## Illustrative

### Notes:

- **Scope 1:** direct emissions from owned or controlled sources; **Scope 2:** indirect emissions from the generation of purchased electricity, steam, heating and cooling consumed; **Scope 3:** other indirect emissions occurring in downstream or upstream in value chain
- This graph has been made by averaging the distribution of CO2 emissions among the scopes 1-2-3 of the five biggest companies of each sector. However, there is no consensus on the definition of each scope. Some emissions can be counted twice by being in several sectors e.g : the electricity generated by plant (scope 3) used to produce cement (scope 2)
- \*Global CO2 emissions related to Oil and Natural Gas from IEA - CO2 emissions by energy source, World 1990-2018 (2020)

**Sources:** Kearney Energy Transition Institute ; Carbon Disclosure Project ; Companies websites and CSR report ; Our World in Data ; FAOSTAT - CO2 emissions from agriculture (2020); IEA ETP 2020

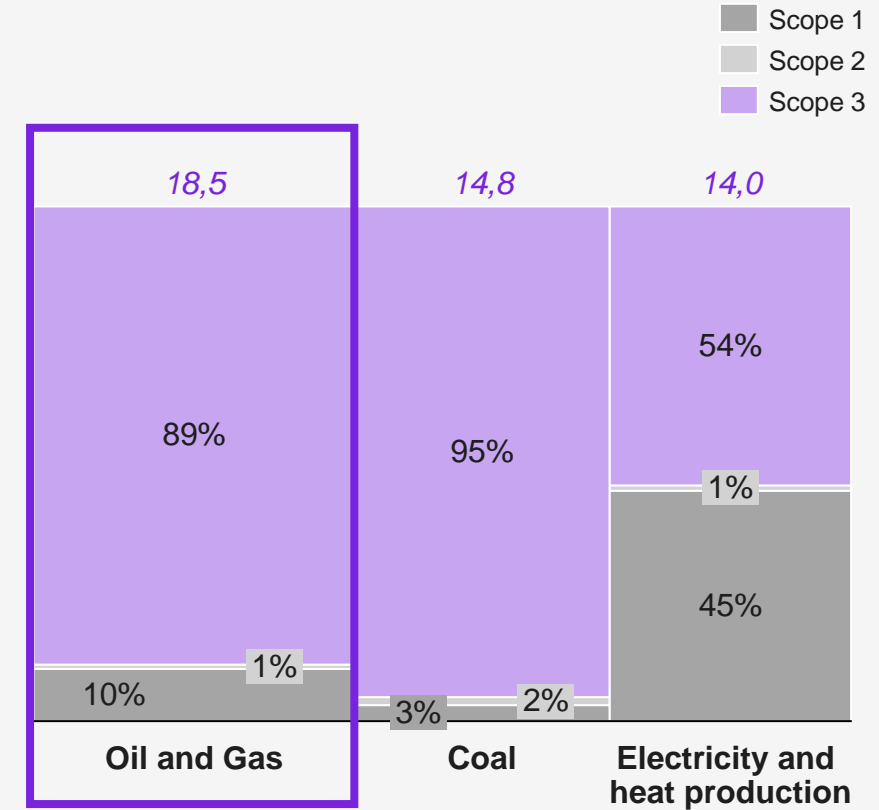
## Key challenges of Net-Zero roadmap



**Execution Gap:** financing capacity, knowledge and HR capabilities, agility of organization (projects & roadmap management, time-to-operation), access to technologies and markets

**Operation & Portfolio Gap:** stranded and new technology assets, own operations improvement, growth and profitability objectives

## Estimated scope 1, 2 & 3 in energy sectors (%GtCO<sub>2</sub>, GtCO<sub>2</sub>)



Scope 3 is the biggest Net-Zero challenge for energy companies



Net-Zero almost means the complete phase out of fossil fuels






















# Many decarbonization levers exist across the O&G upstream value chain

Non-Exhaustive

-  Direct impact
-  Indirect impact


Decarbonisation levers		Non-Exhaustive				Emissions impacted			
		Exploration	Appraisal & Development	Production	Storage & transport	Scope 1	Scope 2	Scope 3	
 <b>O&amp;G Portfolio Management</b> Reduce carbon footprint by selecting less carbon-intensive assets and suppliers	<b>Assets acquisition &amp; divestment</b> – <b>Invest / divest assets</b> based on their carbon emissions intensity (per barrel) considering emissions generated from its full O&G value chain – <b>Retrofit assets</b> to low-carbon solutions (e.g. CCUS, biorefineries)								
	<b>Supplier selection</b> – <b>Procure from vendors with lower carbon intensity</b> , with high ESG standards implemented – <b>Develop suppliers joint carbon emissions reduction initiatives</b>								
	<b>Product and Services Development</b> – Develop <b>new low-carbon fuels</b> – <b>Electrification</b>								
 <b>O&amp;G Operations Improvement</b> Reduce the carbon footprint by lowering energy consumption, switching to less carbon-intensive energies used and developing CCUS applications	<b>Energy Efficiency measures</b> – Reduce energy consumption by <b>optimizing operations &amp; organisation</b> – Reduce energy consumption by <b>improving efficiency of internal combustion engines</b> used – Reduce emissions from <b>flaring and venting, carbon leaks</b>								
	<b>Fuel switching &amp; Renewable energy sources</b> – <b>Move to less carbon intensive energy supply solutions</b> , switching from oil to gas to green power solutions for field operations and logistics								
	<b>CCUS applications</b> – <b>Repurpose existing fields and infrastructures to CCS</b> (open source and own usage) – Develop <b>EOR / CO2 solutions</b>								



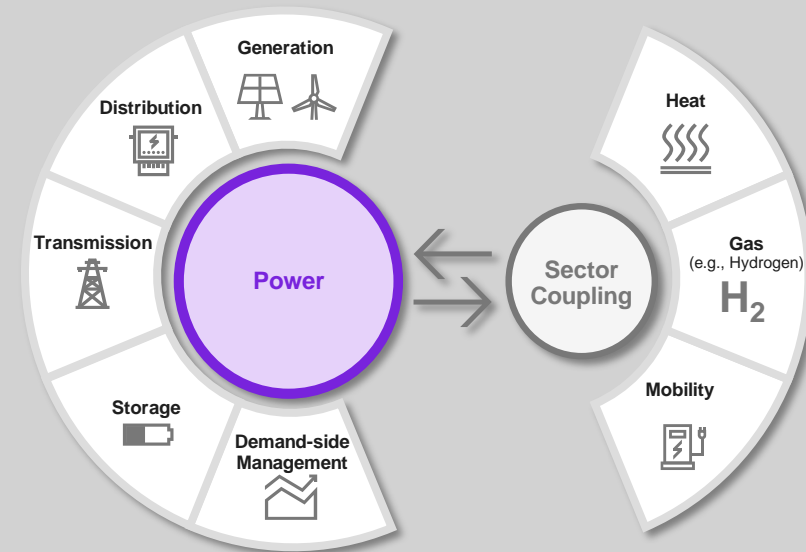


# Oil and Gas and Power companies are also developing new business models, converging towards similar end-markets

## New areas of focus of O&G and Power industries

New businesses solutions	Generation of Low-Carbon Power and Vectors	Transmission, Distribution and Trading	New Energy Services	New end-use applications and markets
 <p><b>New Energy Solutions</b></p> <p><i>Develop new energies and vectors and applications to decarbonize end-use</i></p>	<ul style="list-style-type: none"> <li>– <b>Technology development</b> (wind, solar, biofuels, hydro)</li> <li>– <b>REN farm &amp; Nuclear plant construction &amp; operation</b></li> <li>– <b>Power storage solutions</b> (chemical, mechanical, electrical)</li> <li>– <b>New energy vectors</b> <ul style="list-style-type: none"> <li>– H<sub>2</sub>-based: liquefied, Ammonia, LOHC</li> <li>– e-Fuels</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>– <b>Power Grids</b> (smart transmission and distribution grids, charging network)</li> <li>– <b>Gases networks development and conversion</b> (H<sub>2</sub>, CH<sub>4</sub>)</li> <li>– <b>Transport</b> (shipping, road transport) <b>of new energy vectors</b> (liquefied H<sub>2</sub>, ammonia, LOHC)</li> <li>– <b>Storage and reconversion of new energy vectors</b></li> </ul>	<ul style="list-style-type: none"> <li>– <b>Mobility as a service</b></li> <li>– <b>Energy services</b> <ul style="list-style-type: none"> <li>– Efficiency improvement</li> <li>– Supply management</li> <li>– Heat / cold networks</li> <li>– Etc.</li> </ul> </li> <li>– <b>Energy supply contracts</b> (e.g. PPAs low-carbon power solutions)</li> <li>– <b>GHG offset solutions</b></li> <li>– ...</li> </ul>	<ul style="list-style-type: none"> <li>– <b>Mobility:</b> aviation, shipping, road-transport, rail</li> <li>– <b>Heavy industries:</b> cement, steel, chemical</li> <li>– <b>Buildings</b></li> </ul>


## Convergence of energy industries







# Corporates typically follow a four-step approach to define their Net Zero strategy: from defining its corporate ambition through to its implementation roadmap


## Net-Zero Ambition

 Long-term profitability

 Sustainability excellence (ESG / sustainability ratings)

 Risk mitigation

 Market shares & value

 Access to financing

## Net-Zero strategy framework

### 1 Initial assessment

- 1.1 **Baseline** assessment
- 1.2 **Benchmark** best practices and industry trends
- 1.3 Answers to the critical questions

### 2 Net-Zero strategy

- 2.1 Define **framework** for emissions reduction
- 2.2 Identify emissions **reduction levers** and construct abatement curves
- 2.3 **Prioritize** identified levers

### 4 Implementation roadmap

- 4.1 Prepare high-level **implementation roadmap**
- 4.2 Define implementation **governance**

### Critical strategic areas

Market	Profitability
Attractiveness	Market Potential
	Regulatory Evolution
Strategic Fit	Shareholder expectations
	Ability to fund/invest
	Operational & cultural compatibility

### 3 Scenarios










- 3.1 Develop scenarios for Net-Zero by 2050 emissions and interim targets for 2030
- 3.2 Develop investment and financial models
- 3.3 Rank each scenario based on feasibility and Company specific constraints
- 3.4 Define power generation system cost and tariff required



Net-zero pathways to be designed with financial projections modelled




# Decarbonization targets vary by companies

## Energy players decarbonization commitments through 2050

Segment	Company	2025	2030 / 2040	2050
European Peers		Scope 1, 2 <b>-20%</b> Scope 3 <b>-10/-15%</b>	Scope 1, 2 <b>-50%</b> Scope 3 <b>-30/40%</b>	Scope 1, 2 <b>NZ</b> Scope 3 <b>-50% WW</b>
		Scope 1, 2, 3 <b>-13%</b>	Scope 1, 2 <b>-50%</b> (2030) All Scope <b>-45%</b> (2035)	Scope 1, 2, 3 <b>NZ</b>
		Scope 1, 2 <b>-26%</b>	Scope 1, 2 <b>-40%</b> (2030)	Scope 1, 2 <b>NZ</b> Scope 3 <b>-60% WW &amp; EU NZ</b>
		Scope 1, 2 <b>-25%</b>	Scope 1, 2 <b>-90%</b> (2030) All Scope <b>-40%</b> (2035)	Scope 1, 2, 3 <b>NZ</b>
American Peers			Carbon intensity reduction - <b>5%</b> (2028)	Scope 1, 2 <b>NZ aspiration</b>
		Scope 1, 2 upstream <b>-15/-20%</b>	All Scope <b>-20-30%</b> (2030)	Scope 1, 2 <b>NZ</b>
NOCs			Scope 1, 2 <b>-15%</b> (2030)	Scope 1, 2 <b>NZ</b>
		50% methane emissions reduction (2025)	Scope 1, 2 <b>-25%</b> (2030)	Scope 1, 2 <b>NZ</b>
			Scope 1, 2 <b>-15-25%</b> (2030)	

-  Full Net Zero commitment
-  Scope 1&2 Net Zero commitment

-  – Year of reference for % of GHG emissions reduction varies (2005, 2016 etc.)
- For operated field generally

NZ: Net Zero

Source: Companies' websites – as of 14<sup>th</sup> March 2023



# European majors are diversifying towards alternatives to fossil fuels while US Majors bet on decarbonization solutions for fossil fuels

- Significant presence
- Limited investments & partnerships
- R&D / pilot phase / Starting to invest
- NA / No conclusive presence

	Company	Net zero (Scope 1+2+3) by 2050? <sup>1</sup>	Renewables	Biofuels	Decarbonization (CCS & NETs)	Electricity Storage	Advanced Mobility	Green Hydrogen	Power markets
European Peers		✓	Significant presence	Significant presence	Limited investments & partnerships	R&D / pilot phase / Starting to invest	Significant presence	R&D / pilot phase / Starting to invest	Limited investments & partnerships
		✓	Significant presence	Significant presence	Significant presence	Significant presence	Significant presence	Limited investments & partnerships	Limited investments & partnerships
		✓	Significant presence	Significant presence	Limited investments & partnerships	Significant presence	Significant presence	R&D / pilot phase / Starting to invest	Significant presence
		✓	Significant presence	R&D / pilot phase / Starting to invest	Significant presence	Limited investments & partnerships	R&D / pilot phase / Starting to invest	R&D / pilot phase / Starting to invest	Limited investments & partnerships
American Peers		✗	R&D / pilot phase / Starting to invest	Limited investments & partnerships	Significant presence	R&D / pilot phase / Starting to invest	R&D / pilot phase / Starting to invest	NA / No conclusive presence	NA / No conclusive presence
		✗	NA / No conclusive presence	Limited investments & partnerships	Significant presence	NA / No conclusive presence	NA / No conclusive presence	NA / No conclusive presence	NA / No conclusive presence
NOCs		✗	R&D / pilot phase / Starting to invest	R&D / pilot phase / Starting to invest	Significant presence	NA / No conclusive presence	NA / No conclusive presence	R&D / pilot phase / Starting to invest	Limited investments & partnerships
		✗	R&D / pilot phase / Starting to invest	R&D / pilot phase / Starting to invest	Significant presence	NA / No conclusive presence	NA / No conclusive presence	R&D / pilot phase / Starting to invest	R&D / pilot phase / Starting to invest

<sup>1</sup>. Includes Scope 1+2+3 for either energy produced or sold  
Source: Company reports/press releases

# In a highly uncertain world, energy companies are taking a multi-faceted approach to transition to net-zero



## Key elements of strategy convergence

- 1 Develop a **top-down approach** (objectives defined by ExCom) with a comprehensive emissions reduction plan
- 2 Integrate **local specificities** (regulations & policies) and **corporate DNA** (company's size, geographical location, current strengths)
- 3 Diversify a **portfolio of investments** (agility)
- 4 Look for **strategic alliances** and competency development
- 5 Invent new **business models**

## Key elements of strategy divergence

- 1 **Ambition level** and **speed of implementation** towards 1.5°C target
- 2 **First mover** *versus* **follower strategy**
- 3 **Mix of decarbonisation solutions** (e.g. CCUS, biofuels, batteries, renewables, energy services, energy efficiency, carbon offset etc.)
- 4 **Monitoring and reporting standards** used to track net zero journey

# Thank you

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