

The Great Reallocation

EFFAS CEGSA Congress 2024

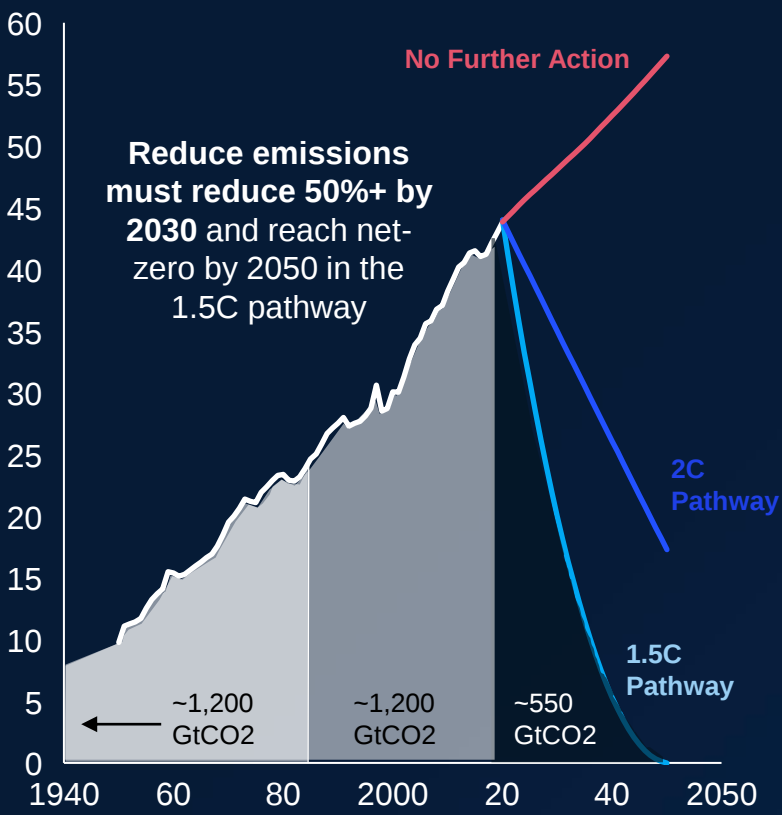
April 2024



We are at a decisive turning point – companies and countries need to invest to emit less, remove more and mitigate effects

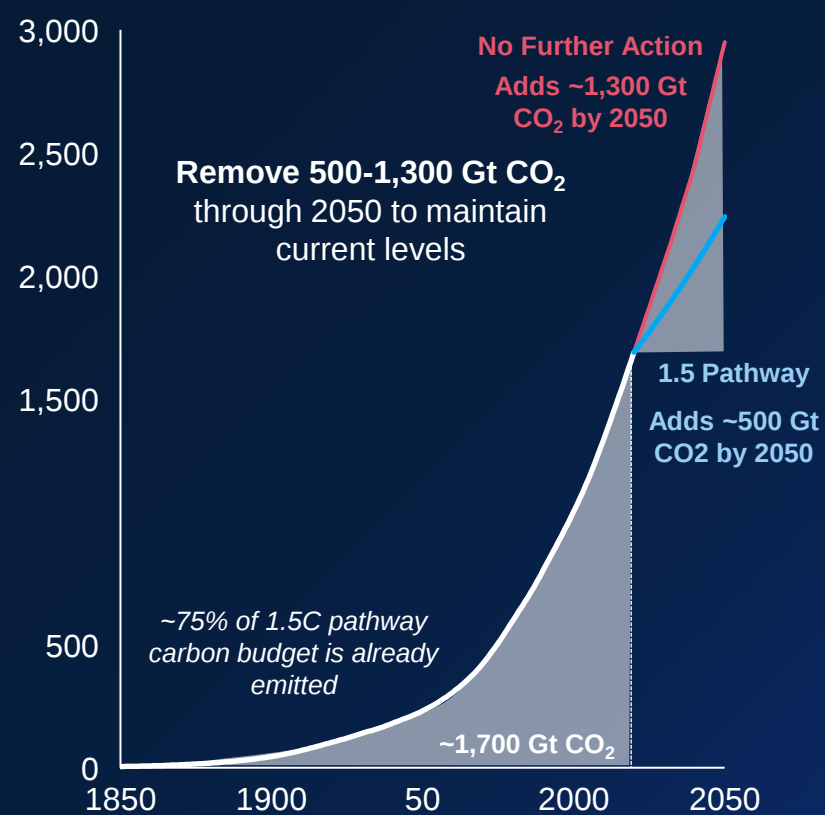
Reduce Emissions

Annual CO₂ emissions (Gt CO₂)



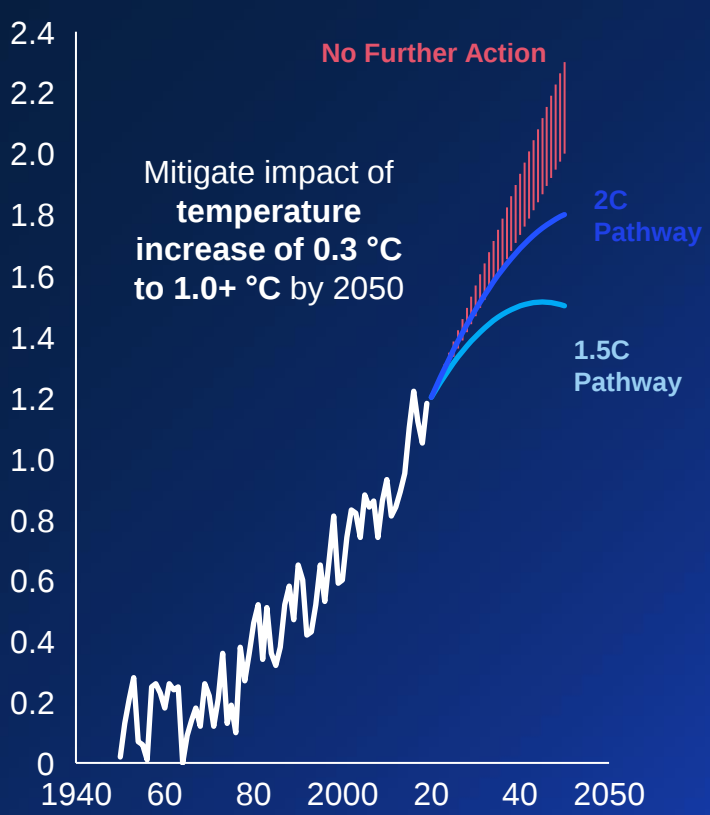
Remove Atmospheric Carbon

Cumulative CO₂ emissions¹, 1850-2025 (Gt CO₂)



Mitigate

Rise in average global temperature (°C)



1. Emission projection assuming no further action
2. The remaining carbon budget (limit on cumulative CO₂ emissions) from 2020 for a 66% chance of limiting global warming to 1.5°C is 550 Gt when measuring temperature as the average of land air and sea surface temperature and 400 Gt CO₂ if measuring only the land air temperature.

The great reallocation

The "**Great Reallocation**" is a seismic response to **escalating climate change concerns**, compelling companies to **set aggressive net-zero emission targets**. With nearly **90% of emissions now targeted for reduction**, this shift is driving the **most significant capital reallocation in history**

The underlying landscape

Big spender - Shifting from high- to low-emission assets sparks the largest capital reallocation

The Climate Offense – Savvy companies target \$12 trillion in annual revenues by 2030 across eleven value pools

Green tech - Accelerating innovation, scale-up and deployment of climate technologies is key for achieving Net-Zero

Carbon-neutral capital - Addressing climate change and achieving net-zero will require a tenfold increase in climate finance allocated to priority sectors

Mixed bag - Opportunities vary, with developing economies and fossil fuel-rich regions facing financial exposure in the net-zero transition

Pitfalls - Risks include supply shortages for green materials, potentially challenging sustainability commitments

Big Spender - The momentum towards Net- zero is undeniable – it could be the largest reallocation of capital in human history

*Annual spend on physical
assets, \$ Trillion¹*

70%

30%

\$9.2T (+~50% than today)

\$6.5T (over 3X more than today)

Climate technology investments²
(e.g., renewables, hydrogen, batteries & energy
storage)

\$2.7T (~30% less
than today)

High-emissions
asset investments

1. For energy and land-use systems under a NGFS (Network for Greening the Financial System) Net Zero 2050 scenario, average 2021-2050, \$ trillion

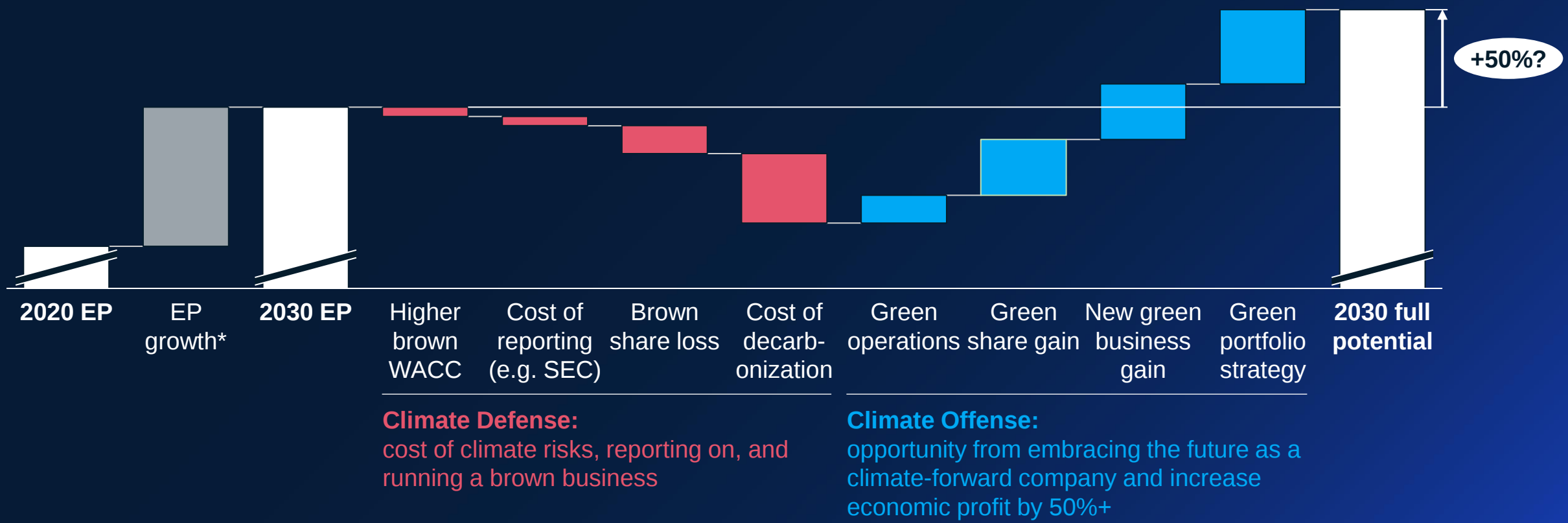
2. Includes new spending on low-emissions assets, current spending on low-emissions assets, and further reallocation of current spending towards low-emissions assets

Climate Offense – In the new climate economy, playing defense reduces EBITDA, going for the offense is an opportunity for growth

The same is true for nations and states – the winners will take the lead in the new climate economy

Sustainability value creation levers

Illustrative economic profit, modelled with top-down assumptions

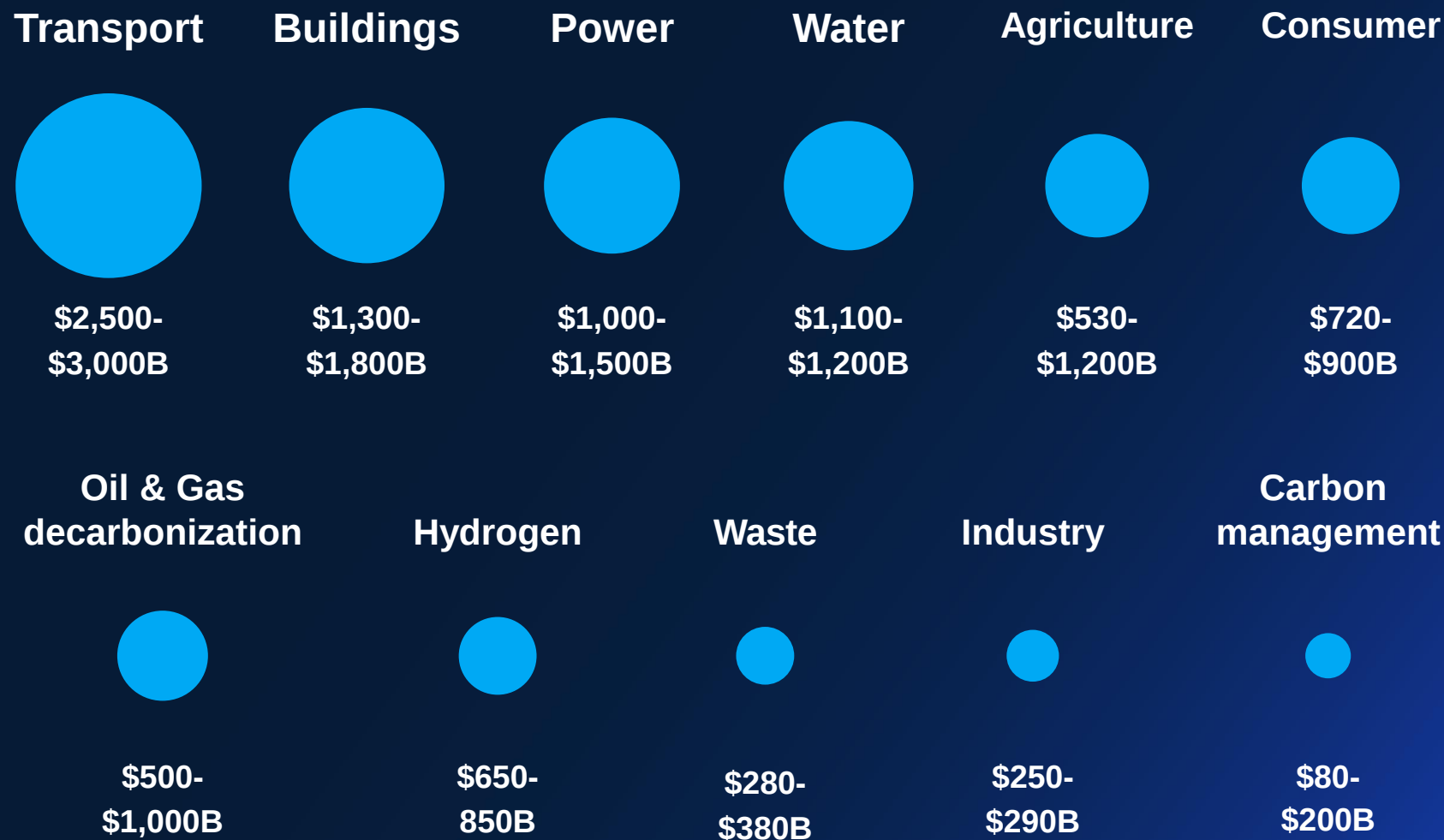


* Assuming 5% Economic Profit (EP) growth

Source: McKinsey analysis, EBA climate stress testing pilot, MSCI

Climate Offense – Eleven value pools could generate more than \$12 trillion in annual revenues by 2030

Investable themes –
addressable market size
in 2030(\$B)



1. Market size is defined as estimated capital expenditures related to infrastructure, equipment, products needed to meet forecasted market demand; in some cases this market size refers to addressable market spend for products and services (e.g., sustainable agricultural products, carbon use and storage)

Climate Offense – New sustainable, purposeful businesses can drive performance and valuation

Incumbent players



Shipping player
Leading e-ammonia developer



Banking
Green fund for small renewables

New players

northvolt®

IMPOSSIBLE™



BEYOND MEAT®



TESLA



EINRIDE



VOLTA
TRUCKS

Learnings from successful transitions

Assets: provide ventures with capital, real and intellectual assets; use low-cost position

Capabilities: existing talent, processes, regulatory affairs, corporate functions, etc.

Relationships: give new ventures access to existing customers, or provide captive offtake and supply from own operations

New players with **high disruption potential** are entering the market

Incumbents need – and are starting – to **build their own sustainability unicorns outside** of their **core organization**

Green tech – Delivering on climate technologies needed for net-zero

Reaching net-zero emissions will require an **immense effort to invent, refine and deploy climate technologies**

We see already **10 families of technologies as critical**, with many more emerging

As demand increases, **companies will have the chance to create significant value while helping to curtail emissions**

Ten climate technology families with examples



Renewables

Solar, wind, grid innovation



Batteries and energy storage

Electric-vehicle batteries, long-duration energy



Circular economy

Battery recycling, heat recovery, plastics recycling



Building technologies

Geothermal heating, heat pumps, electric equipment



Industrial-process innovation

Electrification of heat sources, green steelmaking



Hydrogen

Electrolyzers, fuel cells, methane pyrolysis



Sustainable fuels

Advanced biofuels, e-fuels



Nature-based solutions

Monitoring and verification for forests, mangoves



Carbon removal, capture and storage

Point-source carbon capture, direct air capture

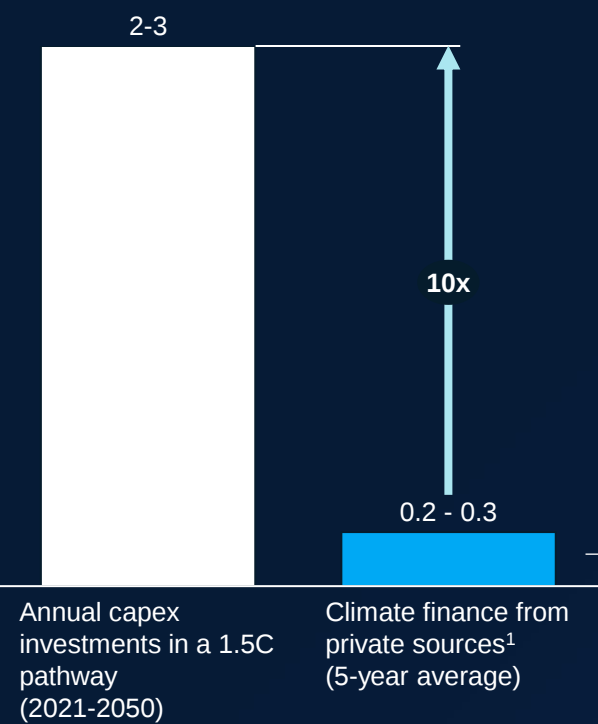


Agriculture and food

Precision agriculture, alternative proteins

Carbon-neutral capital – Climate finance needs to grow ten times over and flow into the right sectors

Climate finance gap¹
trillion \$ per year (2015-2020 average)



Allocation of climate finance
by sector, %

		CO ₂ emissions ² , Gt CO ₂ /year
Energy	77%	13
Industry	15%	12-252
Transportation	6%	7
Agriculture	1%	1-152
Buildings	1%	3
Forestry	<1%	5
Total climate finance	\$0.2-0.3 trillion per year	

There is not enough climate finance – allocation levels are ~10x less than needed for a 1.5C pathway

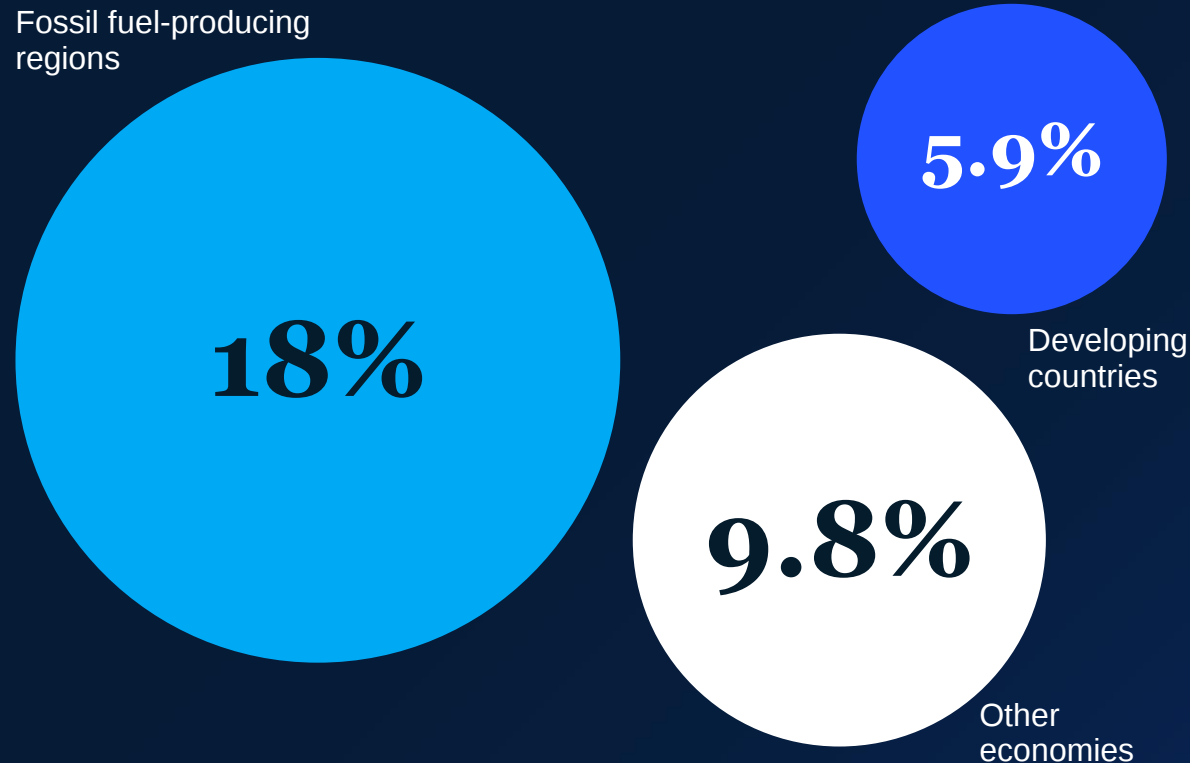
Expanding climate finance requires going **beyond the energy transition** to decarbonize sectors such as agriculture and buildings, as well as stopping deforestation

1. Private funding includes VC, PE, and Corporate investments. The range is determined by annualizing estimates of private capital flows over the past 5 years. Climate finance include all investment descriptions that match keywords associated with decarbonization solutions, such as 'electric vehicles', 'solar power', or 'fugitive methane'

2. The upper range reflects the inclusion of non-CO2 emissions, converted into CO2-equivalents based on GWP20 conversion factors. Agriculture and Industry each account for (40-50%) of global non-CO2 emissions that must be mitigated to limit global warming

Mixed Bag – Fossil fuel-rich regions will face significant financial exposure during the net-zero transition

Average annual share of GDP spent on physical assets for energy and land-use systems, by region, 2020–50, % of regional GDP



Key insights

While the **shift to low-emission assets** presents unprecedented opportunities, the **landscape is nuanced**

Developing economies and regions abundant in fossil fuels will face varying degrees of **financial exposure during the net-zero transition**

The **uneven distribution** of opportunities underscores the **need for businesses to navigate challenges and capitalize on potential gains** with strategic insights and adaptability

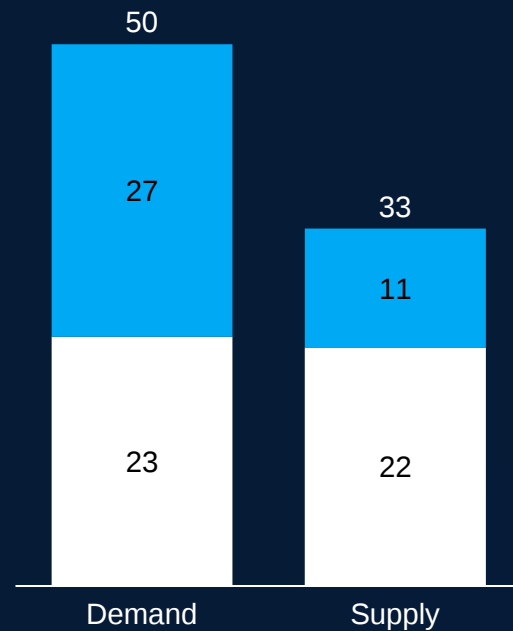
Companies must **carefully assess** their positions in this **evolving landscape**, recognizing that the road to a sustainable future is **multifaceted and requires tailored approaches** for different regions and economic contexts.

Pitfalls – Accelerated transition involves risks, as supply shortages of green materials may distance companies from sustainability...

Projected demand and supply in 2030, by market

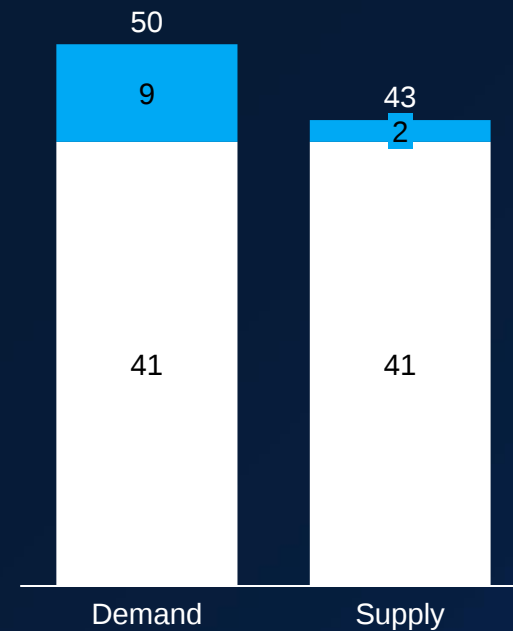
■ Ambitious ■ Base scenario

European flat green steel, million metric tons



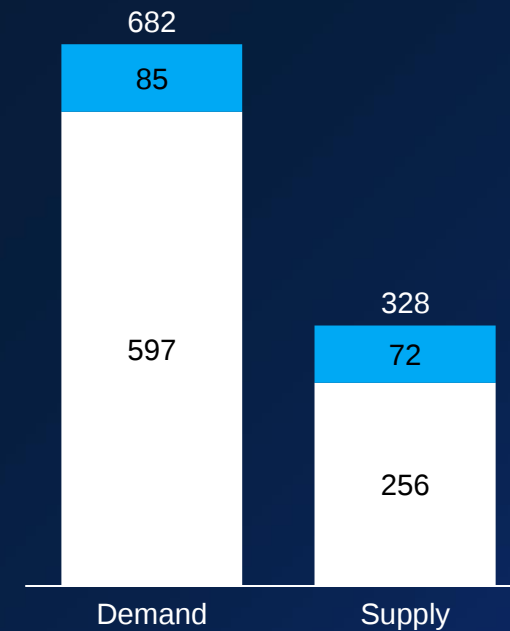
Demand could grow faster than the industry can decarbonize its asset base or build low-emissions production capacity

Global green or secondary aluminum, million metric tons



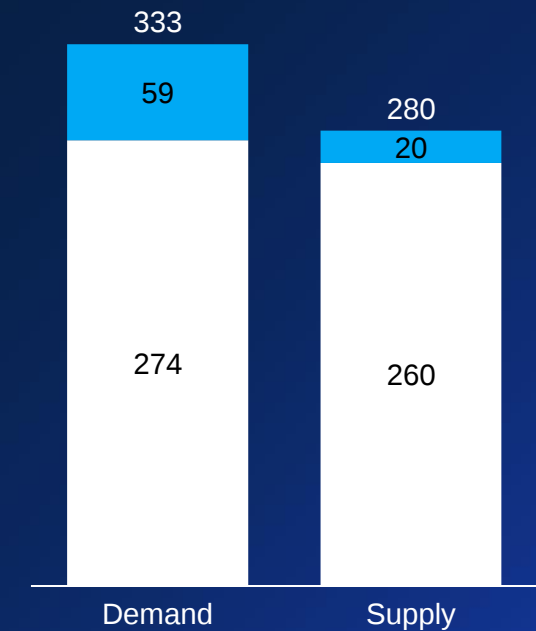
Demand and supply could be nearly balanced, with most of the supply coming from secondary aluminum

Global automotive-grade recycled PP¹, thousand metric tons



In the near term, suppliers electrify processes; in the longer term, they will use electric crackers or bio-feedstocks

European low-carbon battery², gigawatt-hours



Demand exceeds supply by 5 – 19% depending on the scenario

1. Polypropylene

2. Low-carbon batteries defined as <42 kilograms of CO2 equivalent per kilowatt-hour

Pitfalls – ... and players must ensure robust green material sourcing and supply strategies to avoid another semicon shortage

To meet net zero targets, companies must **decarbonize the full supply chain, including raw materials**

Capital markets and financiers increasingly ask for decarbonization requirements, showing need for action

Across all relevant materials - current **investments in low carbon material production fall far short of industry demand** to achieve existing decarbonization target commitments (e.g. 2x demand for green steel)

Post-2025 a large demand-supply imbalance for low-carbon materials like steel will exist

Time to act is now

Identify **low-carbon sourcing strategies and secure capacity of green materials** to prevent shortages

Quantify **overall value at stake and mitigate risk of increased prices** or reduced availability for low-carbon raw materials and components

Consider **new sourcing models, partnerships and alliances**

Like current semi shortages/ price volatility, low-carbon materials will have prolonged & costly shortages

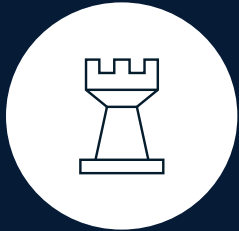


Lessons learned – Going for the Net-Zero is a requirement but also an opportunity not to miss



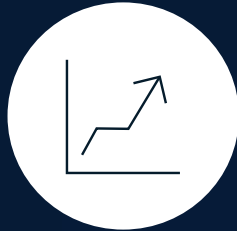
**Significant
new markets**

\$10 trillion
in annual climate
revenue across
various industries for
next 30+ years



**First movers
capturing value**

50%
faster growth in
sustainable brands,
e.g., Unilever's
Sustainable Living,
Tesla, etc.



**Increasing
investor
requirement**

2-5x
multiple uplift for
companies with strong
climate focus
(climate risk is priced
into brown companies)



**Bolder
environmental
regulation**

30-50%
corporate profits at
risk from regulatory
action
e.g., with carbon
pricing in EU, SEC
new reporting
requirements



**Shifting customer
expectations**

15-30%
price premium for
climate-friendly, net-
zero products and
services across B2C
and B2B sectors



**Talent moving
to climate
companies**

80%
of millennials want to
work for a company
strong on climate/ESG

The great capital reallocation – What does this mean for Spain and Portugal?

~€2.5

trillions in Spain

~€0.5

trillions in Portugal

Investment across sectors

- Power
- Buildings
- Agriculture
- Industry
- Transport
- Infrastructure

~6-7%

of today's GDP spent every year until 2050

Spain and Portugal natural endowments

Natural conditions and raw materials

~300 days of sun

5-10% above average wind resources

~30% of EU's lithium estimated production capacity by 2030

Industrial base and talent pool

2nd largest car manufacturer in Europe

3rd largest steel producer

~2 Mn engineers and scientists

Developed infrastructure

18 Deep-sea seaports

~20% of EU's container port traffic

~25% of EU Liquefied Natural Gas import capacity (largest in EU)



Spain and Portugal have an unprecedented opportunity to reindustrialize by leveraging clean energy sources

Energy play – *Lead on low-cost green energy production*

Value-chain play – *Scale up existing industries and develop new ones through decarbonization levers*



Electrification and Renewables

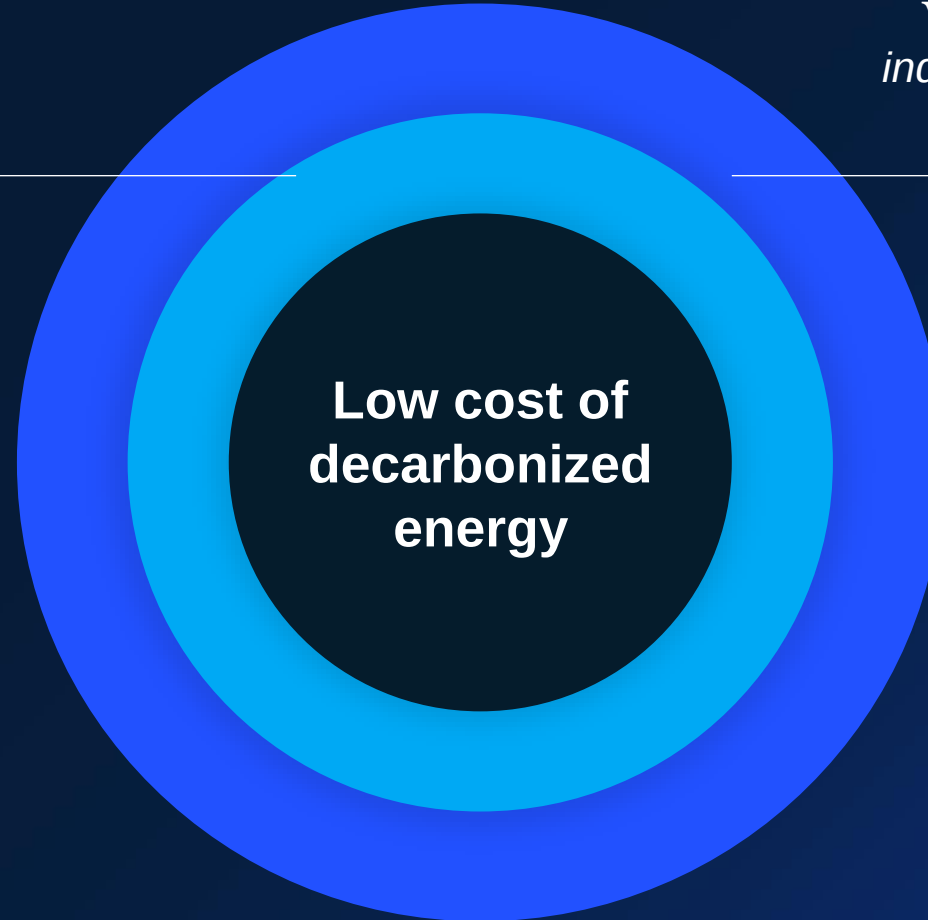


Renewable molecules and circular materials



Green Hydrogen ecosystem

Others...



Green Heavy Industries (e.g. Steel, Chemicals...)



EV Production



Batteries ecosystem

Others...

Energy play – what is the size of the opportunity until 2030?

Electricity demand increase

30-50%

Additional installed renewable energy capacity,
doubling its capacity relatively to 2022

+90 GW

Demand for green hydrogen met by local
production

100%

Of the current natural gas network supplied with
biomethane

+5%

Value chain play – what is the size of the opportunity until 2030?

30%

of CO₂-heavy steel converted to green steel by 2035

10%

of Europe's green ammonia demand fulfilled

+3 M

Electric vehicles produced by 2030

~190 GWh

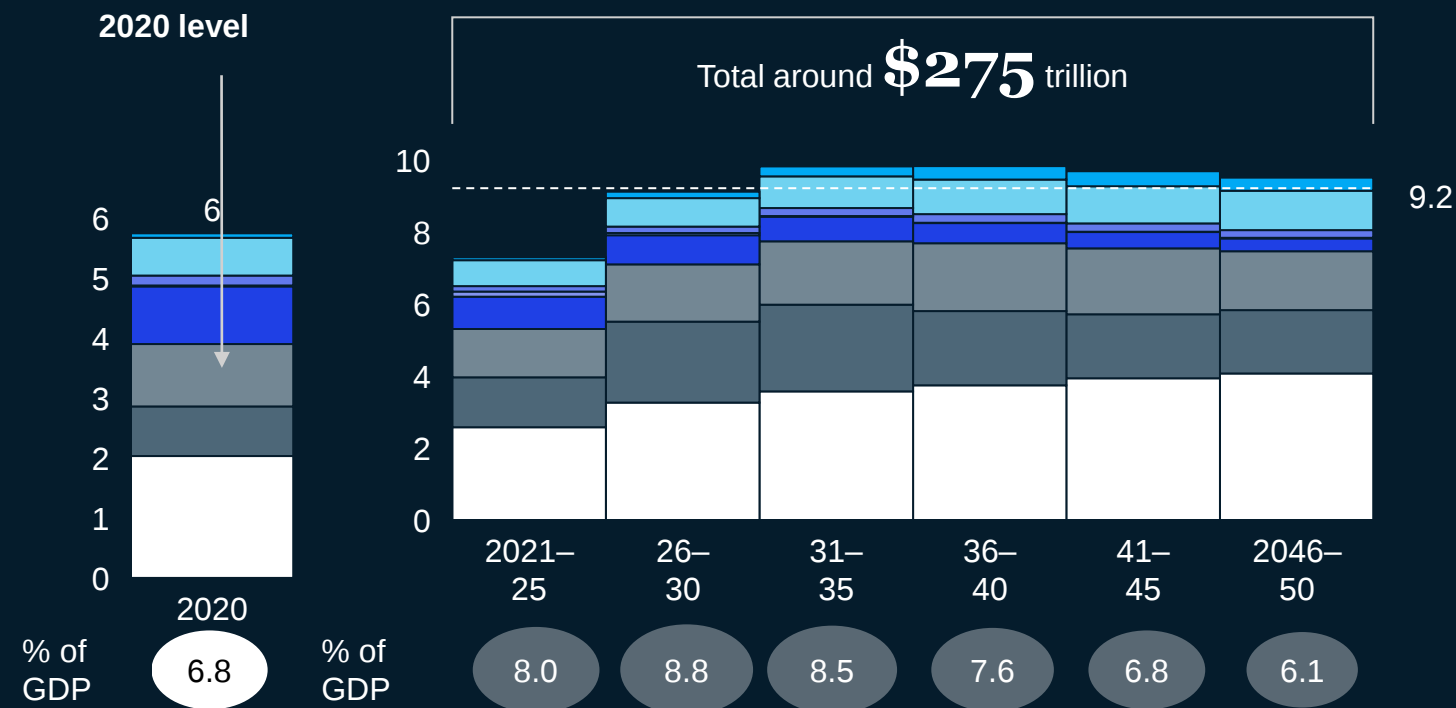
of battery cell production in Spain and Portugal

Backup

Big Spender – Climate transition will spark the greatest capital reallocation in a century, with ~\$9.2T annual spending on physical assets

--- Average Hydrogen, bio-fuels, and heat Agriculture Industry Forestry Fossil fuels Buildings Power Mobility

Estimated annual spend on physical assets for energy and land-use systems to achieve net zero by 2050,^{1,2} \$ trillion per year



Spending is expected to be front-loaded in the next decade and unevenly dispersed across countries and sectors

The transition will bring **many growth opportunities**, as decarbonization creates efficiencies and **opens markets for low-emissions products and services**

The \$9.2 trillion in annual average spending consists of:

- \$2.7T continued spending on high-emissions assets
- \$2T continued spending on low emissions assets
- \$1T spending reallocated from high to low emissions assets
- **\$3.5T additional spending** on low-emissions assets vs. today

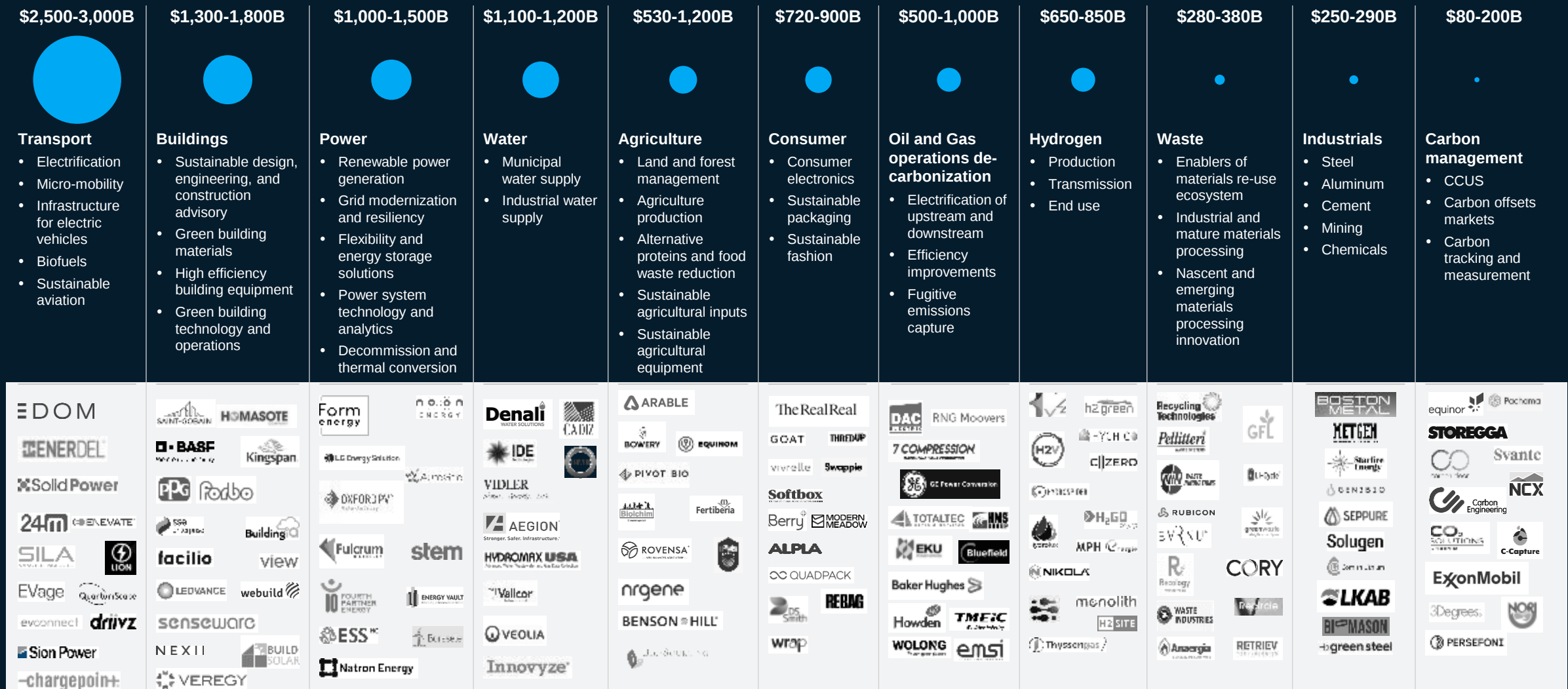
1. Includes size of the total spending on physical assets in power, mobility, fossil fuels, biofuels, hydrogen, heat, CCS (not including storage), buildings, industry (steel and cement), agriculture, and forestry. Estimation includes spend for physical assets across various forms of energy supply (for example, power systems, hydrogen, and biofuel supply), energy demand (for example, for vehicles, alternate methods of steel and cement production), and various forms of land use (for example, GHG-efficient farming practices). This includes both what are typically considered "investments" in national accounts and spend, in some cases, on consumer durables such as personal cars. Annual average over 5-year periods

2. Scenario based on the Network for Greening the Financial System Net Zero 2050 scenario

Climate Offense – Eleven value pools could generate more than \$12 trillion in annual revenues by 2030

Investable themes – addressable market size in 2030, including venture, PE, and infra capital (\$B)

Preliminary, Not Exhaustive



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