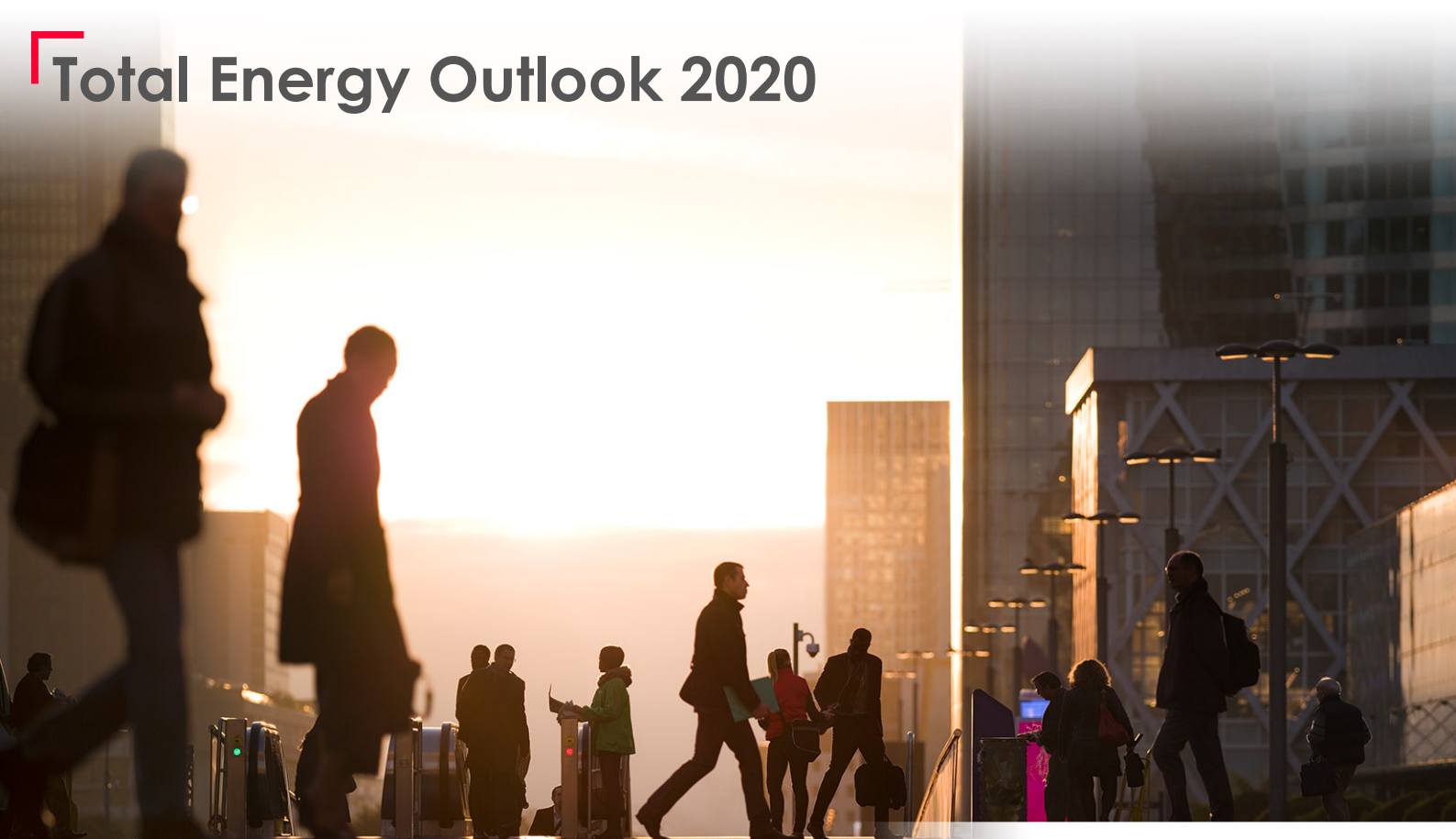


Total Energy Outlook 2020



More energy, less carbon

The world needs a Net Zero ambition

More people, with better living standards



Assumptions

- World population: from 7.6 to 9.7 Ghab in 2050
- World GDP to grow +3.3%/yr
- Historical data: +3.6%/yr over the last 20 years, with primary energy up +2.0%/yr

Less carbon



Collective mobilization

- Paris Agreement
- Regulations & mandates at State & Local levels
- Investors push / access to finance
- Industry mobilization
- Consumers
- Technology & Innovation

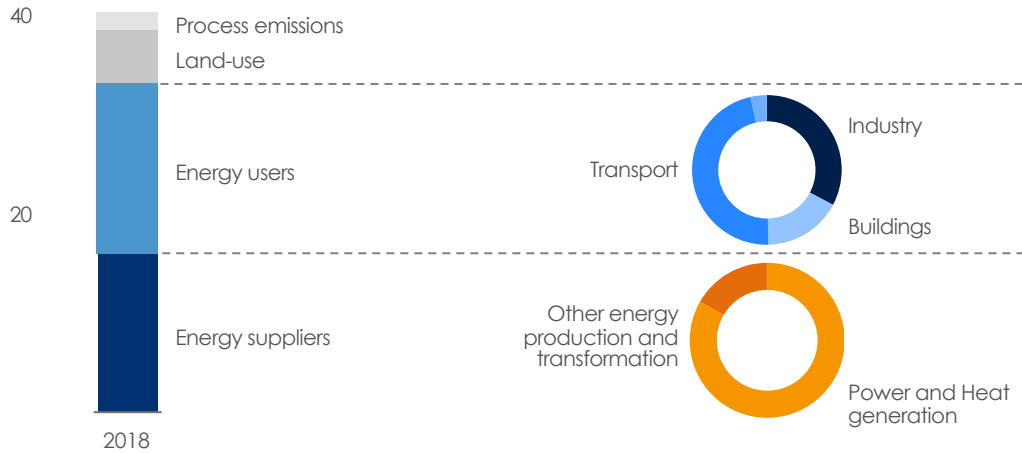
More energy and less carbon: a challenge for society as a whole

Worldwide emissions

Facts for the climate challenge

Worldwide CO₂ emissions

Gt



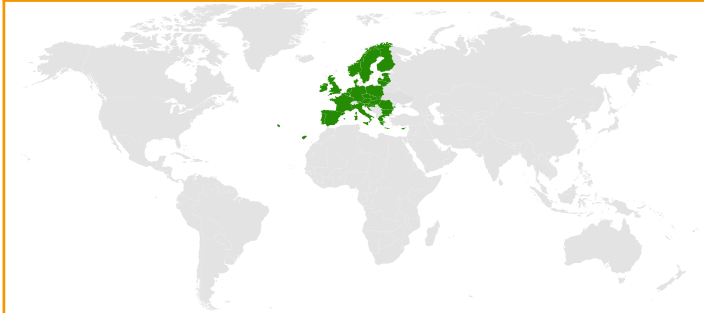
Net Zero target requires decarbonization of both energy supply and demand
Europe paving the way

Source: Enerdata, TOTAL analysis

Total Energy Outlook

2 scenarios addressing more energy and less carbon

Momentum



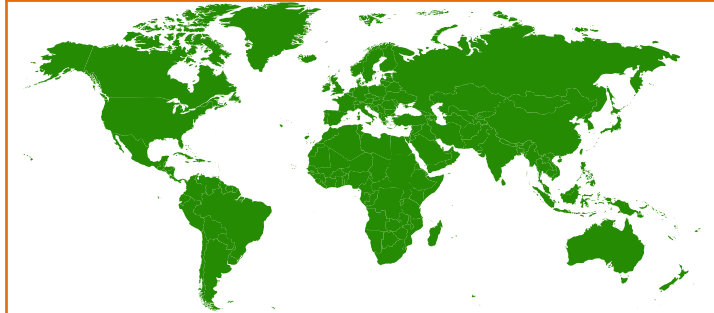
Green Deal in Europe

Outside of Europe, actions based on countries targets & 2019 NDCs

Aggressive deployment of proven technologies: EVs, Solar & Wind, biofuels

Primary energy demand up +0,6%/yr

Rupture



All countries committed towards Net Zero with strong shifts in public policies

Technology break-throughs are a prerequisite, with new industries at scale: hydrogen, synthetic fuels, carbon capture, etc.









Primary energy demand up +0,4%/yr

In line with best practices but not enough to meet well-below 2°C targets globally (+2.5 – 3.0°C in 2100)

Scenario consistent with +1.5-1.7°C target

Key modeling drivers of our scenarios

Sector based assumptions

		2018	Momentum 2050	Rupture 2050
	Strong electrification of end-use	~20% of final demand	~30%	~40%
	Deep decarbonization of power supply	solar+wind: ~100 GW/y capacity additions since 2010	Pace x2 (> 200GW/y)	Pace x5 (> 500GW/y)
	Gas getting greener	~0.1% green gases in gas supply	~8%	> 25%
	Sustainable mobility	< 1% EV in light vehicles fleet	~60%	~75%
		~100% kerosene fueling aircrafts	Sust. aviation fuels @ ~15% of demand	SAF @ ~60%
	Optimizing plastics demand	7% recycled	40% recycled SUP* ban EUR & China in 2040	~50% recycled Worldwide SUP* ban in 2040
	CCS to abate remaining emissions	~35Mt (0.1% CO ₂ emissions)	2Gt (~6%)	7.5Gt (~50%)
	Energy efficiency acceleration	1.6%/y energy intensity improvement since 2000	+2.6%/y	+2.9%/y

* SUP: single-use plastics

Key drivers for more energy & less carbon

Our forward looking approach

- Energy demand increasing in all scenarios
- Electrification of end-uses is massive and gaining pace – the power sector must be decarbonized
- Oil demand will reach a plateau around 2030 and decline due to transport and petchem accelerated transformation
- Gas will continue to play a key role for decades (power systems, heat, transport)

- Liquids & Gases will become greener: increased penetration of renewable fuels
- Promising potential for H2 to decarbonize industry, heavy duty transport and gases
- Much stronger role of electricity storage
- Carbon sinks are a necessity to reach Net Zero

Total Energy Outlook 2020

Momentum & Rupture scenarios

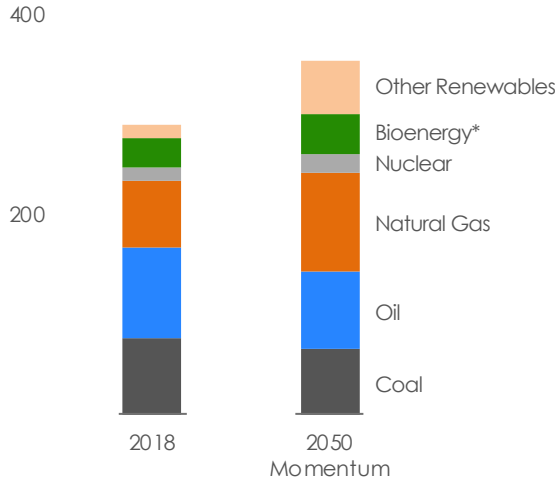


Momentum scenario overview

A multi-energy transition coupled with high energy efficiency

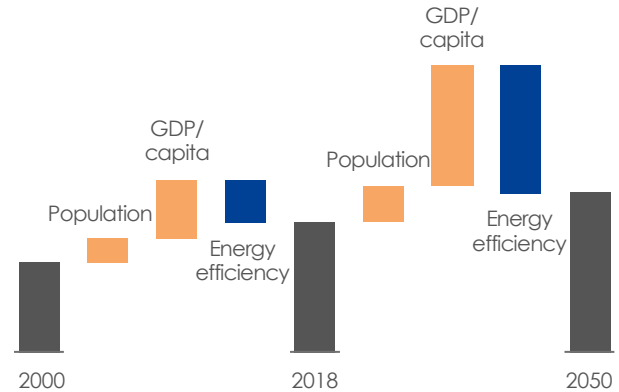
World primary energy demand

Mboe/d



World primary energy demand

Mboe/d



- Energy demand growth: +25% by 2050
- Renewables & natural gas playing key complementary roles
- Coal gone in Europe but hard to phase out worldwide

- Significant energy efficiency gains worldwide
- Increase in non-OECD energy demand (+1.2%/yr): growing population aiming at higher living standards
- OECD demand down 16 Mboe/d

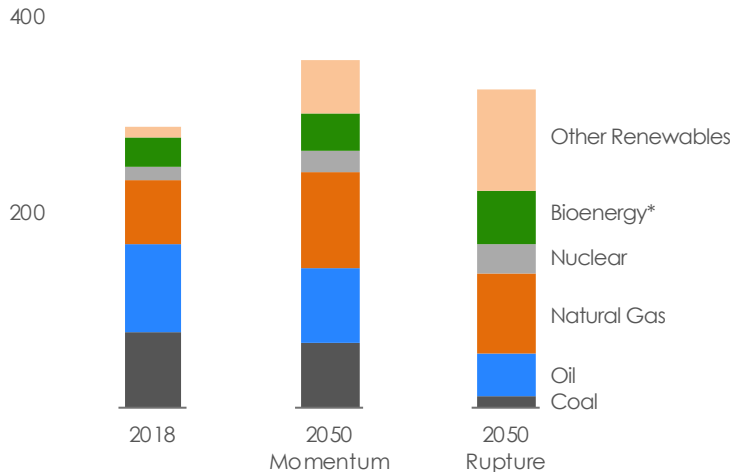
* Includes traditional biomass, biofuels, biogas...

Rupture scenario overview

Net Zero requires radical transformation of our energy consumption

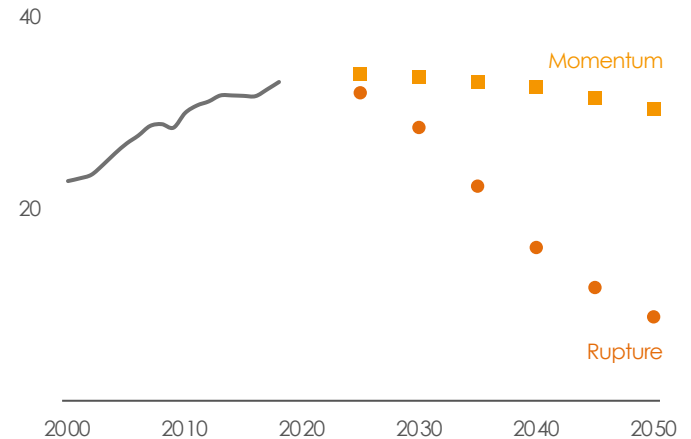
World primary energy demand

Mboe/d



World CO₂ emissions

Gt/y



- Rupture combines a +10% increase in energy demand with a CO₂ trajectory consistent with climate goals (1.5-1.7°C)
- Oil peaks by 2030 and coal almost disappears
- Gas still key to ensure power grid stability & flexibility

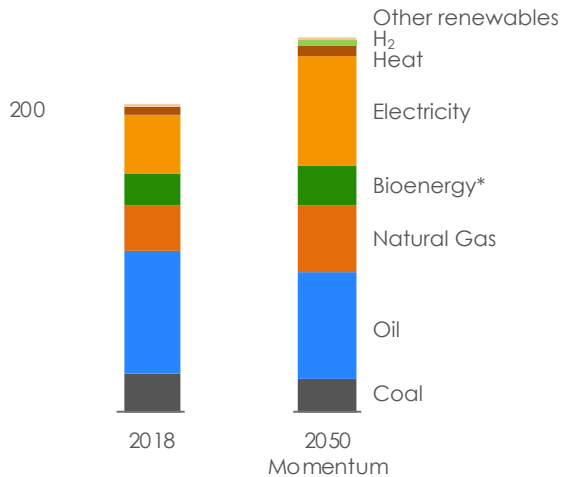
- Emissions divided by 4 by 2050, falling from 33 Gt to 8 Gt net of CCS modelled at 7.5 Gt
- Residual emissions to be addressed with nature-based solutions and future technologies (Direct Air Capture, etc.)

* Includes traditional biomass, biofuels, biogas...

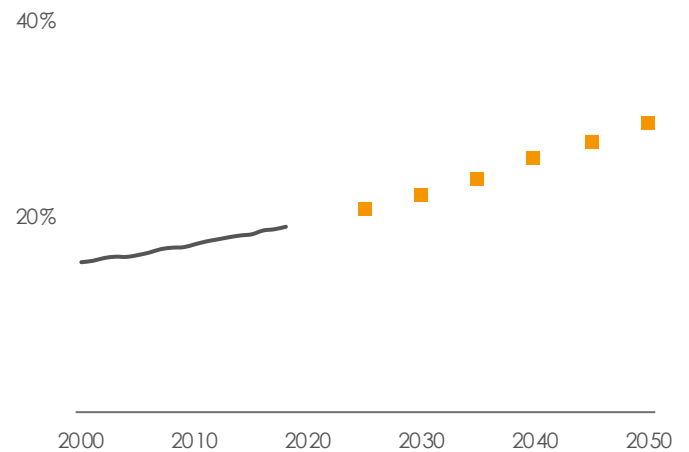
Momentum: end-user energy demand

Electricity takes the lead over oil

Total final consumption
Mboe/d



Share of electricity in total final consumption
%



- Electricity covering ~75% of energy demand growth
- Gas partially replacing coal & oil

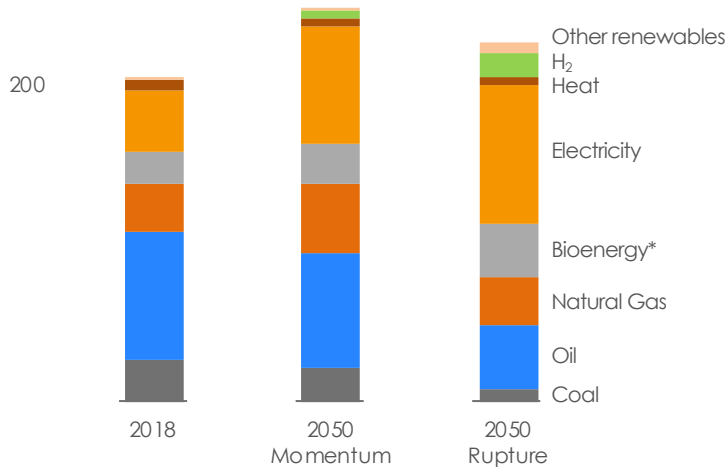
- NDCs decarbonizing strategies relying on electrification deployed on global scale
- Assumes power becomes greener

* Includes traditional biomass, biofuels, biogas...

Rupture: end-user energy demand

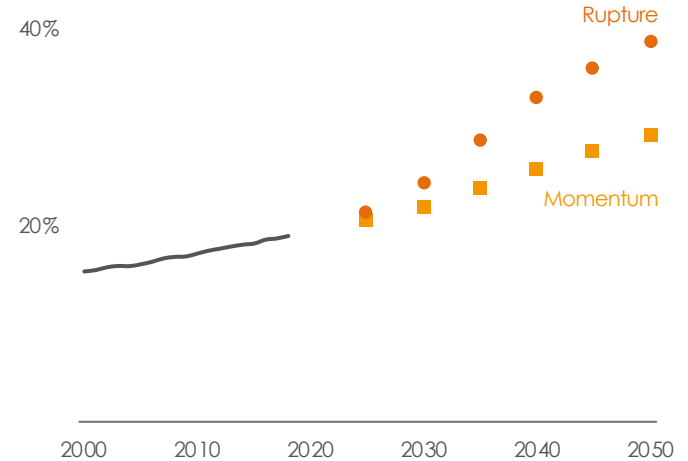
Massive electrification key to decarbonization

Total final consumption
Mboe/d



- Power, hydrogen, biogas and biofuels account for > 50% of end-demand
- Oil still needed in some transportation segments

Share of electricity in total final consumption
%



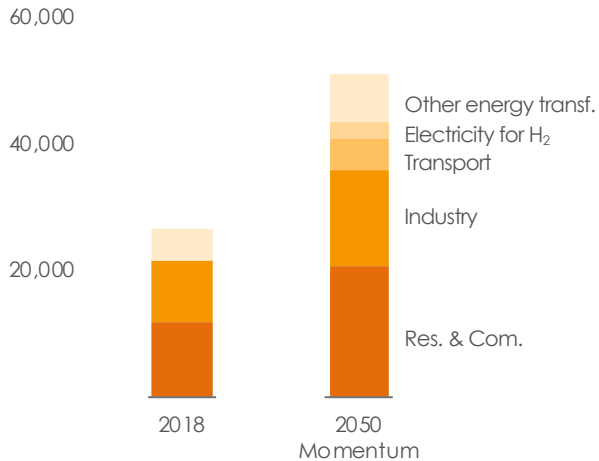
- Rupture assumes even more aggressive electrification of end-user demand
- Need to step up efforts as of now

* Includes traditional biomass, biofuels, biogas...

Momentum: power demand

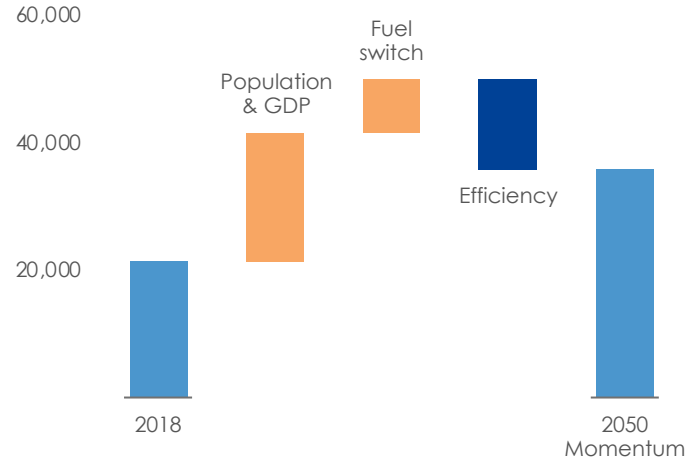
All sectors electrifying

World power demand by sector
TWh



- ~60% of growth coming from Res. & Com. and Industry due to emerging markets' access to energy and substitution
- Aggressive assumptions for transport electrification in Europe, China & the US, reaching 12% of power demand

Focus on Res. & Com. + Industry demand
TWh

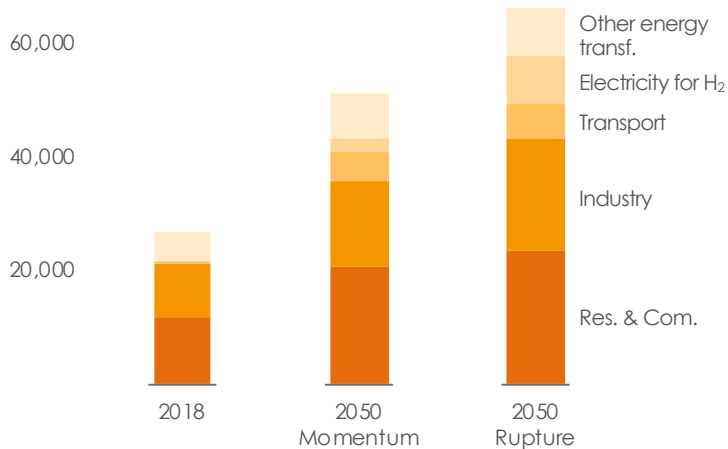


- Power demand growth driven by rising living standards and GDP expansion (especially in emerging markets)
- Energy efficiency gains in various end-user applications limiting overall power demand growth

Rupture: power demand

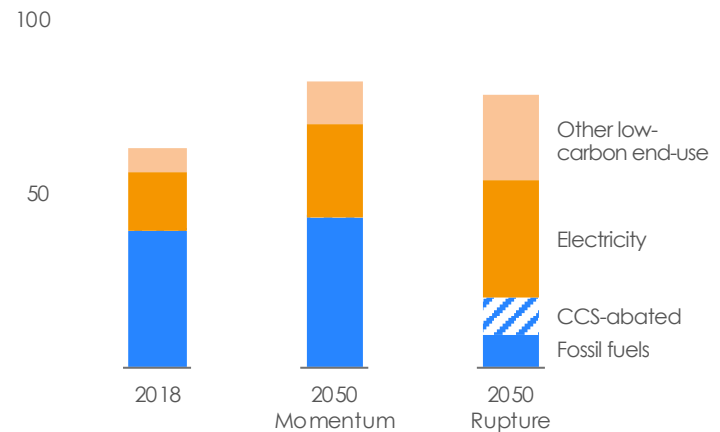
Electricity is the energy of the 21st century

World power demand by sector
TWh



- Net Zero policies trigger massive increase in power demand
- Electricity also becomes widely-used to produce green H₂: 12% of power demand in Rupture 2050

Industry final energy mix
Mboe/d

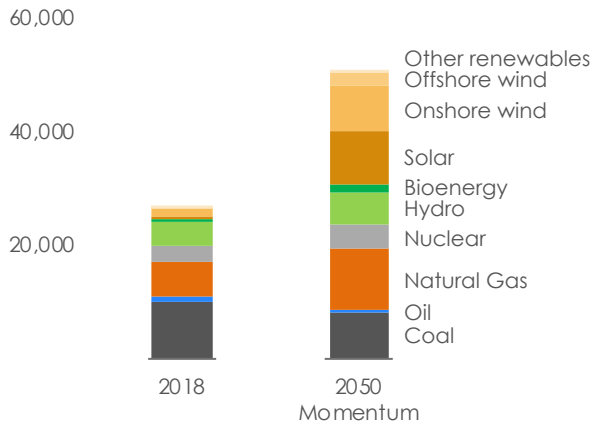


- Some industries (chemicals, cement, steel...) are hard to electrify, therefore requesting alternative fuels (bioenergy, hydrogen...) complementing natural gas and CCS
- In Rupture, ~50% of remaining combusted fossil fuels are CCS-abated

Momentum: power generation

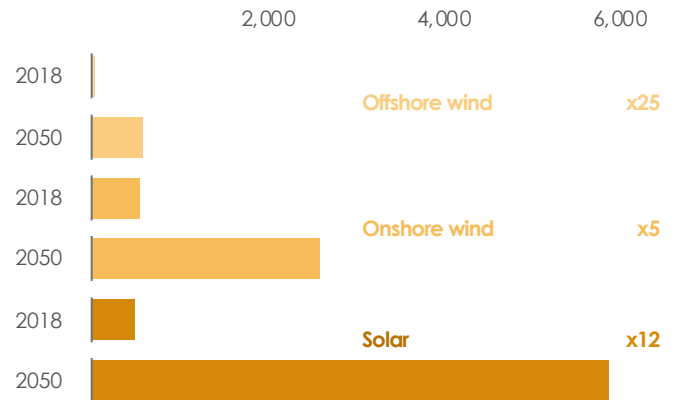
Renewables taking the lion's share

World power generation by fuel
TWh



- Wind & solar representing ~70% of Power Generation growth
- Gas growing with renewables to manage intermittency and seasonality, and replacing some coal, esp. in OECD countries

World solar & wind capacities
GW

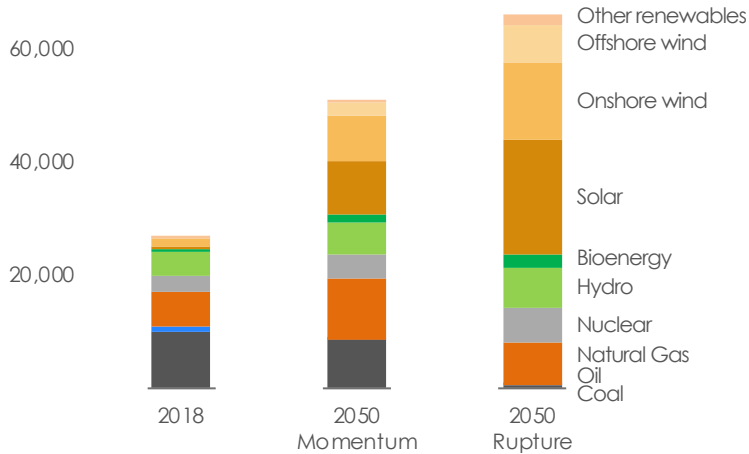


- Doubling pace of annual capacities growth vs last 10 years
- Halving power sector carbon intensity, from 460 gCO₂/kWh in 2018 to 220 gCO₂/kWh in 2050, allows CO₂ savings of ~14 Gt.

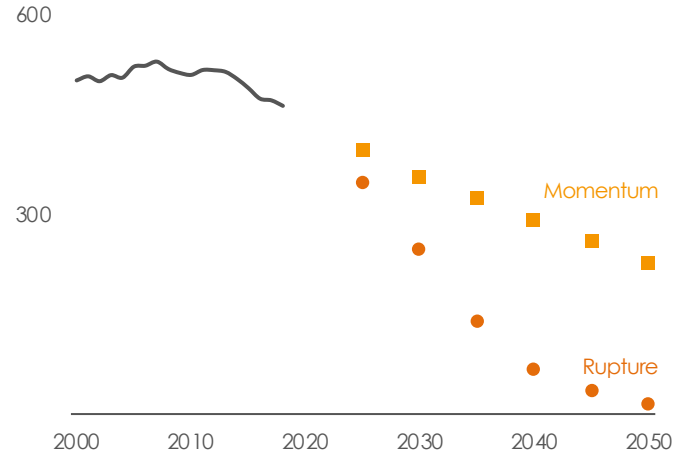
Rupture: power generation

Deep decarbonization, through solar & wind

World power generation by fuel
TWh



World power generation emission factor
gCO₂/kWh



- Wind and solar represent more than the global net incremental demand by 2050, leading to ~80% of Power from renewables
- Coal disappears in Rupture at worldwide scale

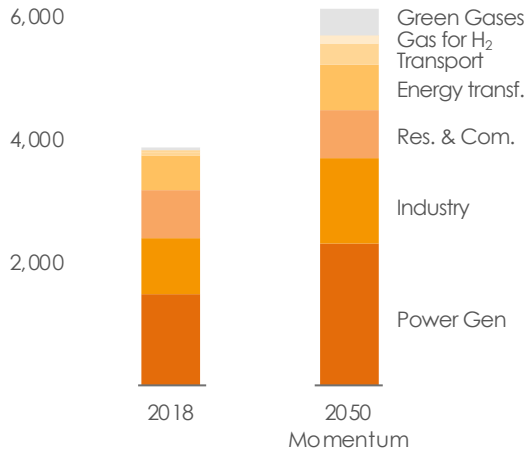
- Power sector becomes almost carbon neutral

Momentum: gases demand

Natural gas is key in energy transition

Gases demand

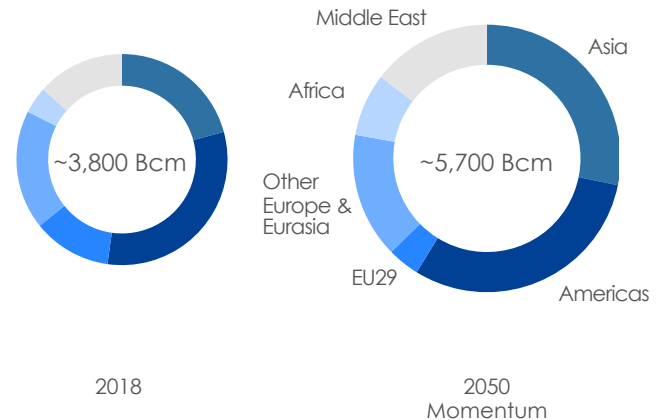
Bcm*



- Gas continuing to play a key role in Power Gen, Res. & Com. (buildings) and Industry (heat, feedstock)
- Growing use in transport
- ~8% of green gases penetration in 2050, led by Europe (50% of global world demand in 2050)

* For hydrogen: volumetric equivalence of natural gas in energy terms

Natural gas demand by region

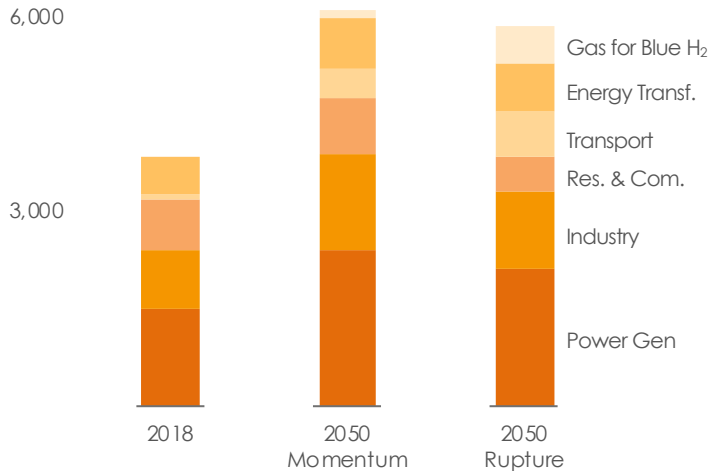


- Natural gas demand driven by Asia (~40% of world growth) with volumes more than doubling in China & India
- The US remains the first gas consumer in 2050 with ~19% of world demand

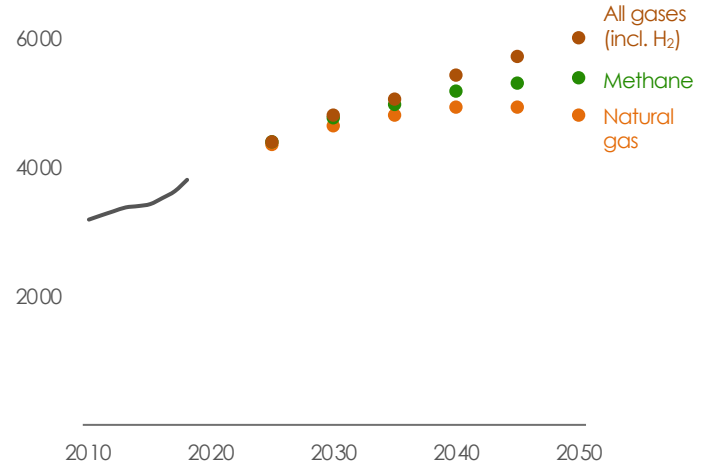
Rupture: gases demand

Growth and versatility of natural gas

Gases demand
Bcm*



World gases supply in Rupture
Bcm*



Gas playing a central role on the path to carbon neutrality

- Flexible, affordable, reliable
- Available infrastructure
- Multiple uses in all sectors

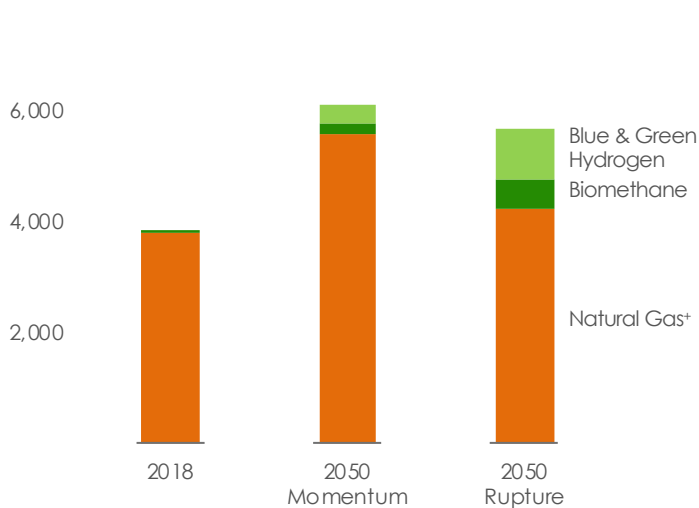
- Natural gas complemented with biomethane first, then with H₂
- Natural gas peaking by 2040, overall gases on the rise to 2050

* For hydrogen: volumetric equivalence of natural gas in energy terms

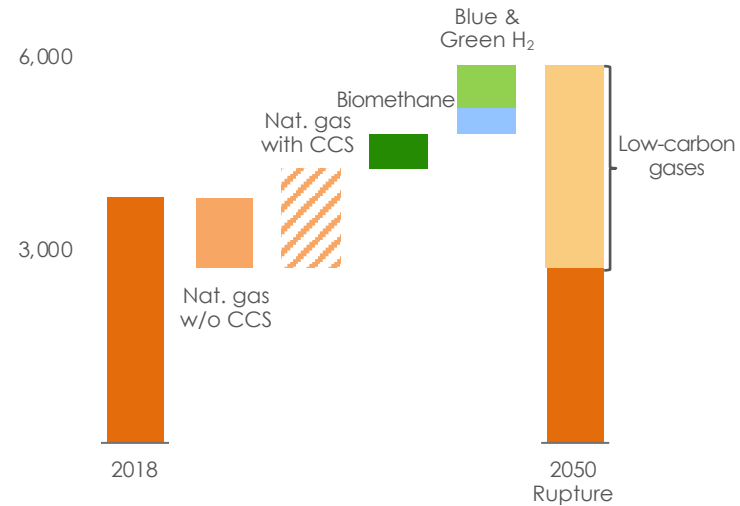
Gases supply

Gas going greener

World gases supply by type
Bcm*



World gases decarbonization in Rupture
Bcm*



- Gases must and will go greener, with biomethane and low-carbon H₂: >25% of total gases in 2050 in Rupture

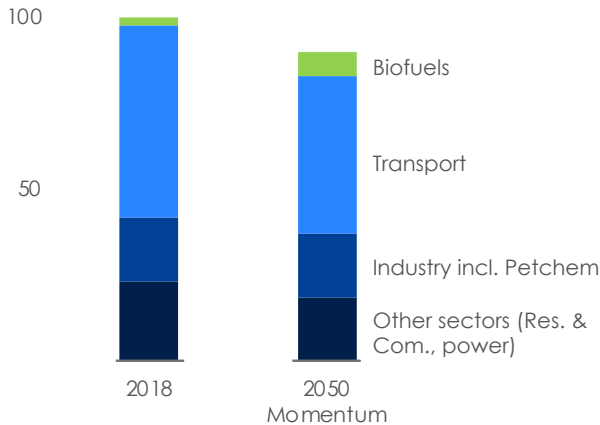
- Over 50% of gas use at almost zero emissions through Green Gases & CCS

* For hydrogen: volumetric equivalence of natural gas in energy terms
+ Primary natural gas demand excl. the portion used to produce hydrogen through SMR+CCS

Momentum: liquids demand

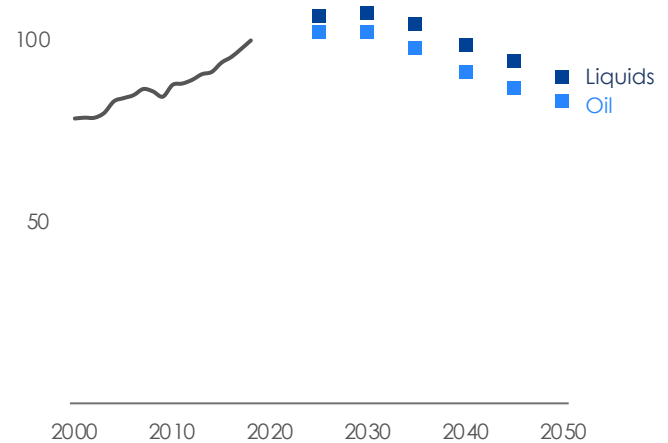
Oil will be complemented by biofuels

Liquids demand
Mb/d



- Acceleration of innovation to substitute oil use
- Energy efficiency gains and regulation impacting oil demand for both transport & petchems with Europe leading the way

Liquids and oil demand
Mb/d

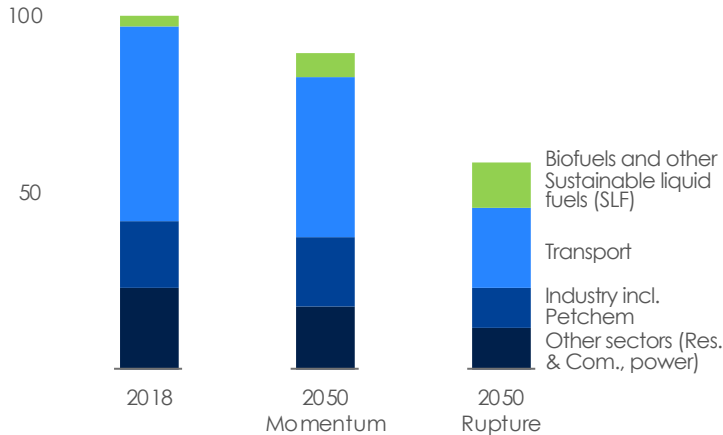


- Oil demand reaching a plateau by 2030, then declining
- Overall liquids demand goes greener with Biofuels

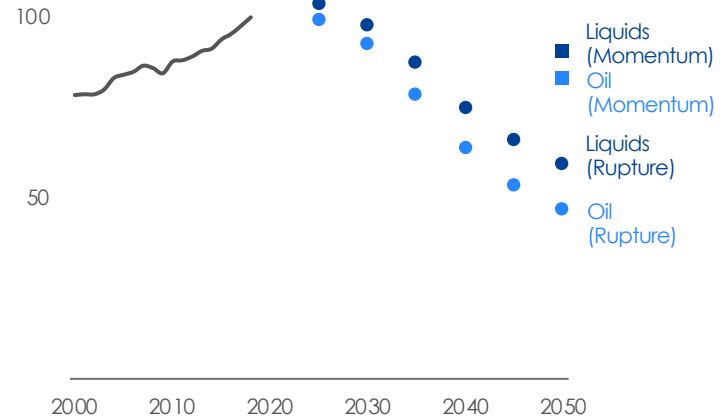
Rupture: liquids demand

Strong contribution of sustainable liquid fuels

Liquids demand
Mb/d



Liquids and oil demand
Mb/d



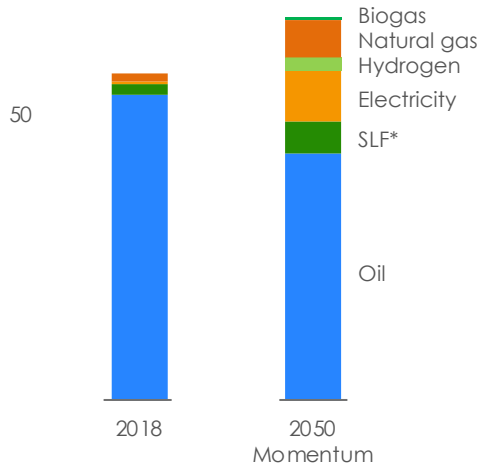
- Carbon neutrality requires massive adoption of sustainable liquid fuels (biofuels first, then synthetic fuels*), reaching more than 20% of liquids demand in 2050
- Oil demand still represents ~45 Mb/d in Rupture 2050, mainly in emerging markets' transportation sector

* Synthetic fuels = H₂+CO₂

Momentum: zoom transport

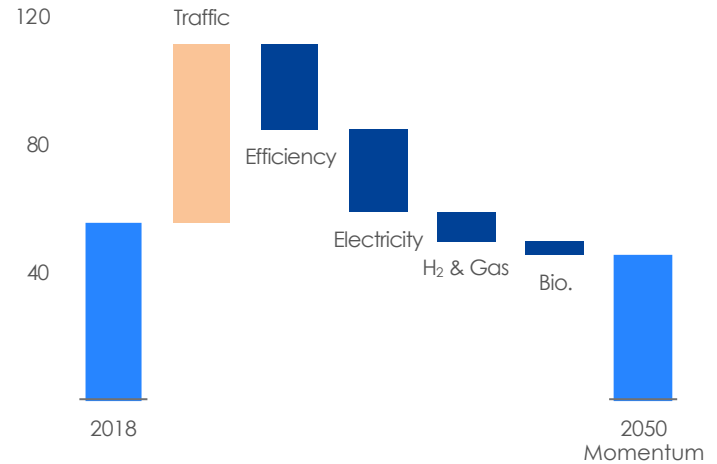
Acceleration of oil substitution

Energy mix in Transport
Mboe/d



- Decrease by ~25% of carbon intensity by 2050, saving more than 2 GtCO₂/y despite demand growth

Oil demand in Transport
Mb/d



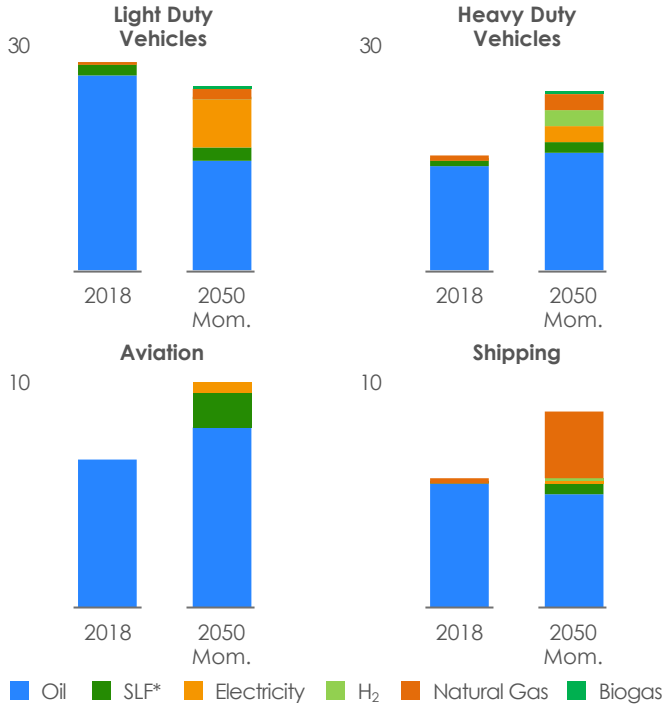
- Massive growth of traffic: access to mobility and steady pick up freight transportation
- Impact on oil demand more than offset by engine efficiency and fuel switch to electricity, gas and biofuels

* Sustainable Liquid Fuels

Momentum: zoom transport

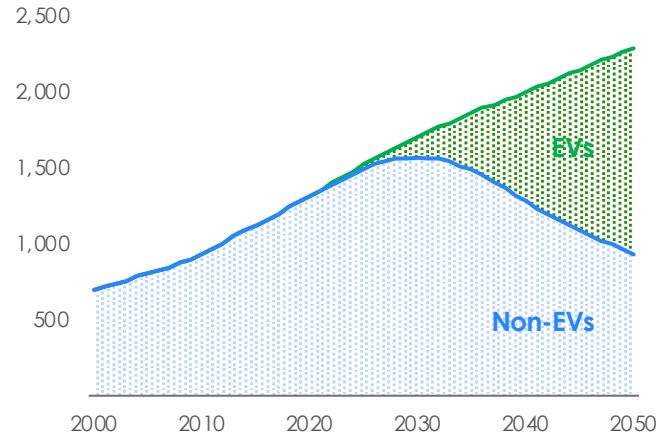
Energy mix changes varying across sectors

Transport energy mix by sector
Mboe/d



* Sustainable Liquid Fuels

Light Vehicles World fleet
millions



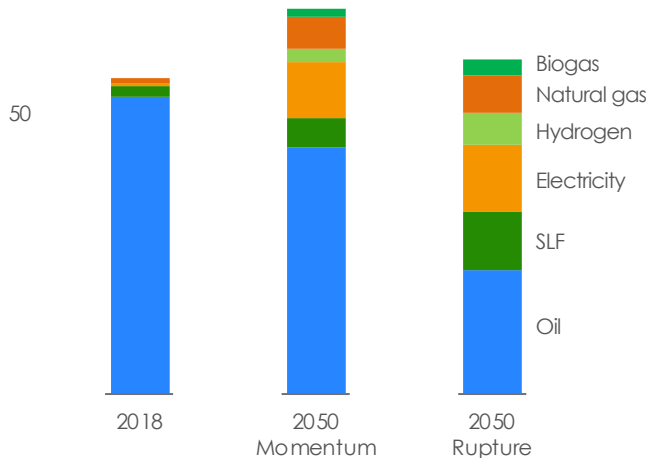
Aggressive assumptions on Electric Vehicles penetration:
60% worldwide, with China & Europe at ~90%

Rupture: zoom transport

Moving towards Net Zero requires a revolution in transport

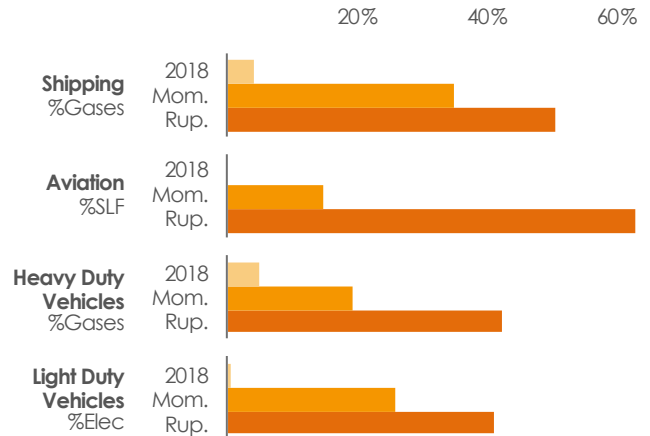
Transport energy mix

Mboe/d



Most promising energies by Transport categories

% total demand



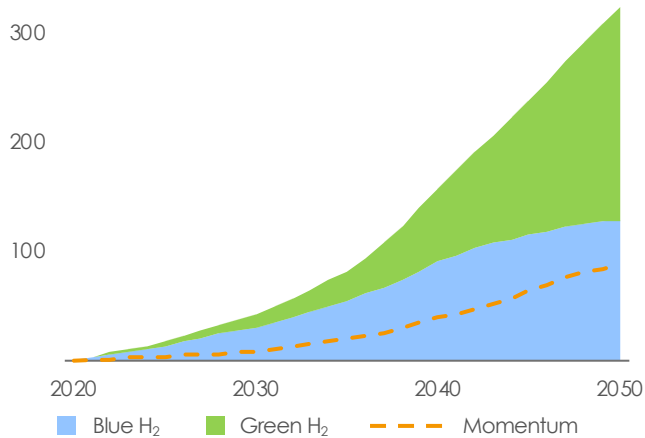
Radical acceleration in Rupture:

- More autonomy in batteries, allowing for strong electrification of Light Vehicles
- Massive development of H₂ & SLF, fueling Heavy Duty Vehicles and Aviation
- Gas with incorporation of biogas, especially for Shipping and Heavy Duty Vehicles

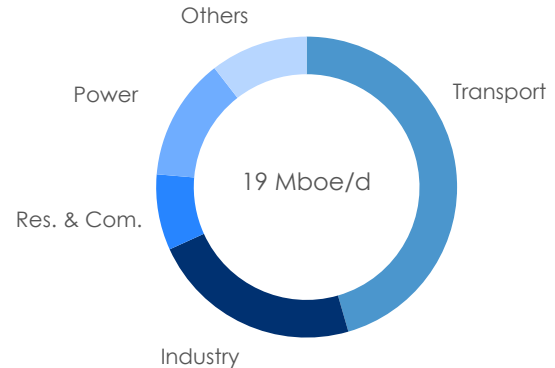
Low-carbon hydrogen

Emerging as a promising contributor to Net Zero

World hydrogen supply
MtH₂



Green and Blue H₂ use by sector
in Rupture (2050)



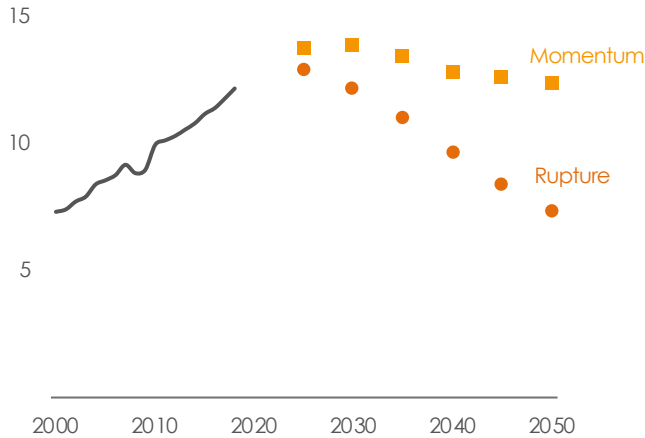
- Big potential in Transport (gas & H₂-based liquids), Industry (Steel, Petrochemicals, Cement), storage and gas networks
- Costs have to come down in order to support H₂ adoption and industrial scale up

Zoom Petrochemicals

Recycling and single use plastics ban limiting oil demand for plastics

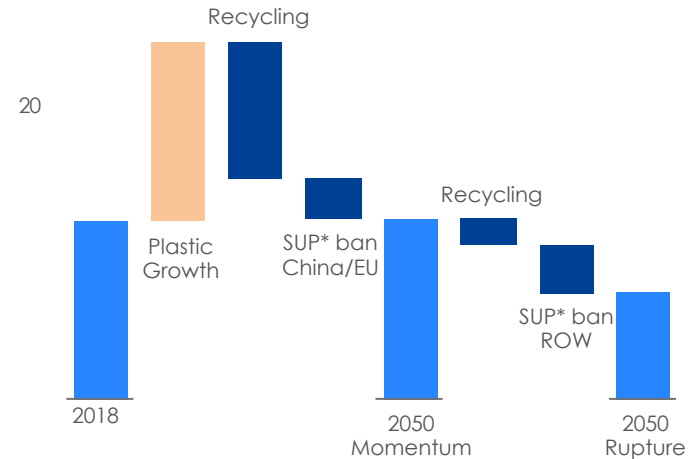
Oil demand for petrochemicals

Mb/d



Impacts on oil demand for petrochemicals

Mb/d



Rupture scenario:

- Steady increase in recycling, from 7% to ~50% of remaining plastics in 2050 (vs 40% in Momentum)
- SUP ban implemented in 2040 worldwide (vs Europe & China only in Momentum)
- Bioplastics likely to remain a niche market

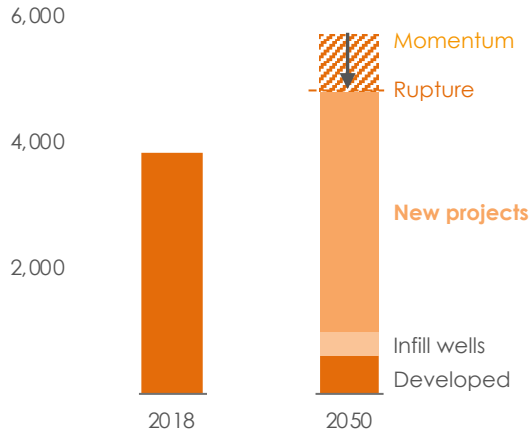
* SUP: Single Use Plastics

Energy supply

Investment required to meet demand trends

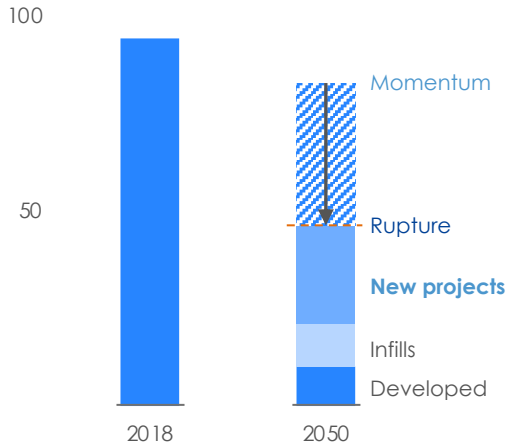
Natural gas supply

Bcm



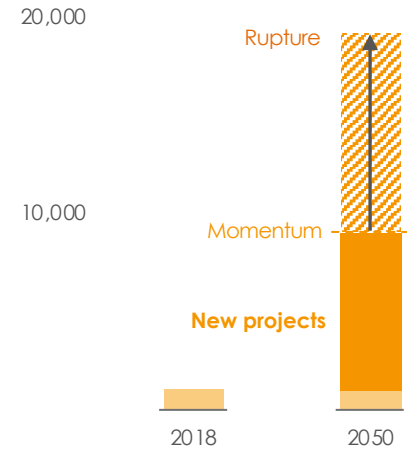
Oil supply

Mb/d



Solar & wind capacities

GW



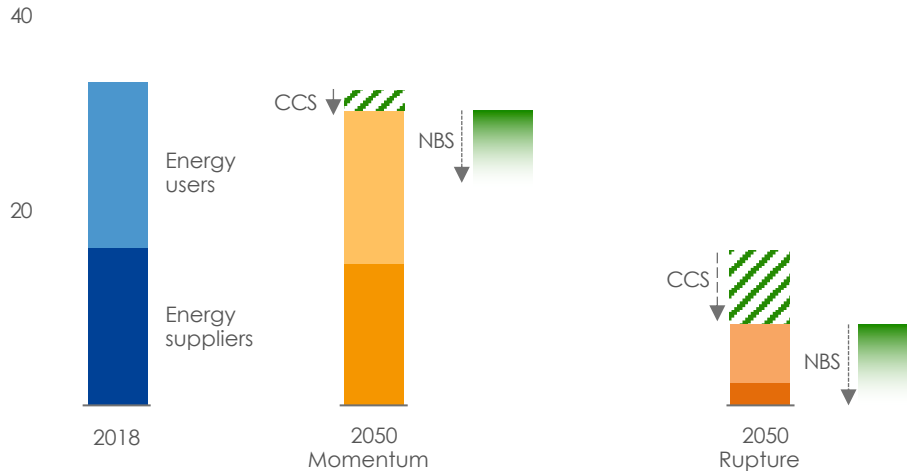
Significant investments in new O&G projects needed to offset natural decline and in renewables to support low-carbon electrification

CO₂ emissions

A rupture is needed, including CCS & NBS, to abate emissions

Worldwide energy-related CO₂ emissions

Gt/y



- Rupture: CCS and NBS necessary to get to Net Zero
- CCS mainly on power generation and industry
- Policy drivers: Carbon pricing, strong regulations and mandates, support to Innovation









Total Energy Outlook 2020

Zoom Europe



Key modeling drivers of our Green Deal scenario

Carbon neutrality requires a new energy system

		2018	Green Deal 2050
	Strong electrification of end-use	~20% of final energy demand	Massive electrification, up to ~45%
	Deep decarbonization of power supply	Coal share in generation mix: 20%	Coal completely phased-out
	Gas getting greener	< 1% green gases* in Europe gas supply	~60% of green gases
	Sustainable mobility	< 1% EV in light vehicles fleet	~90%
		~100% kerosene fueling aircrafts	SAF @ ~80%
	Optimizing plastics demand	10% recycled	~55% recycled Europe SUP ban in 2040
	CCS to abate remaining emissions	< 10 MtCO ₂ captured	0.4 Gt p.a.
	Energy efficiency acceleration	1.6%/y final energy intensity improvement since 2000	Doubling the pace until 2050

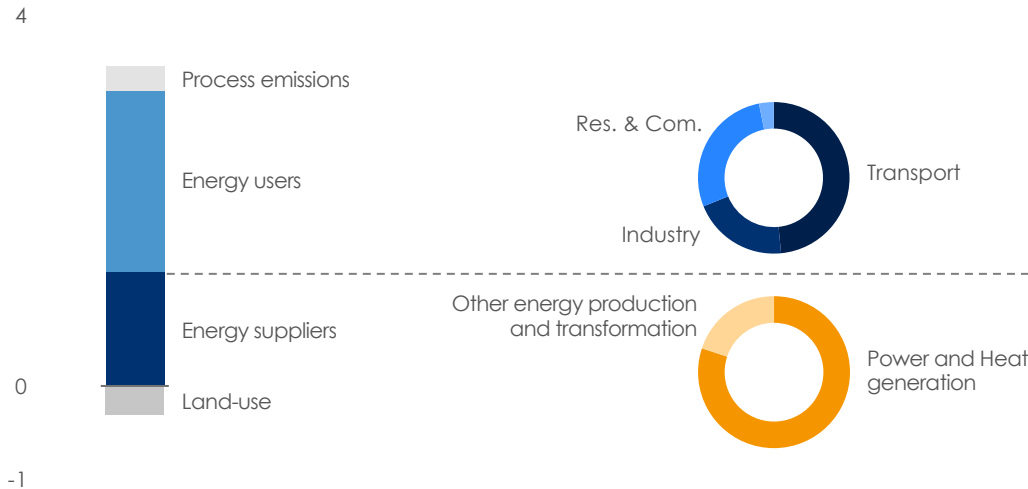
* Share of low-carbon hydrogen and biomethane in total gas use
SUP: single-use plastics

EU29 CO₂ emissions

Facts of the challenge

2018 EU29 CO₂ emissions

Gt

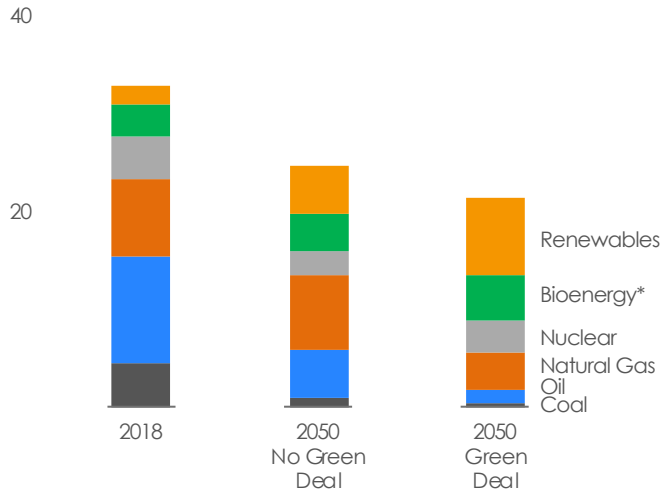


- Reaching Net Zero requires a combination of regulation, market instruments (incl.CO₂ pricing), technology breakthroughs & scale up (H₂, CCS, storage, SLF) and end user changes
- Cost-efficiency and affordability will be key for citizen acceptance

Europe Net Zero 2050 – illustrative Green Deal scenario

Carbon neutrality drives major transformations

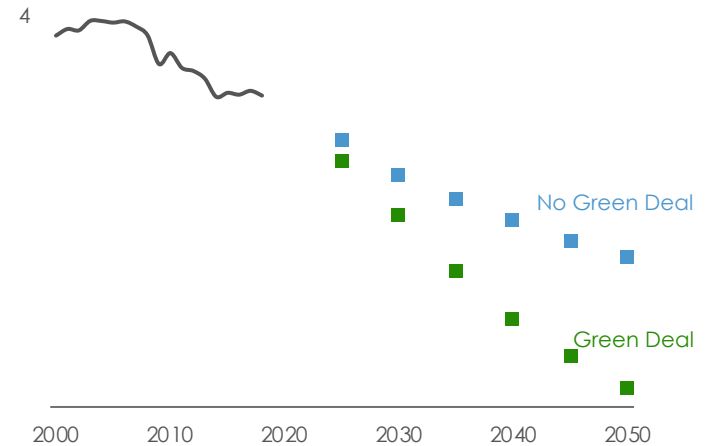
EU29 primary energy demand
Mboe/d



- Primary energy demand decreases by ~35% with Green Deal by 2050
- Fossil fuels share down from ~70% in 2018 to ~25%
- Residual demand for oil: 0.3 Mbd in transports, 0.8 Mbd for industry (incl. petchems)
- Natural gas keeping a key role in power and for blue H₂

* Includes traditional biomass, biofuels, biogas...

EU29 CO₂ emissions
Gt/y

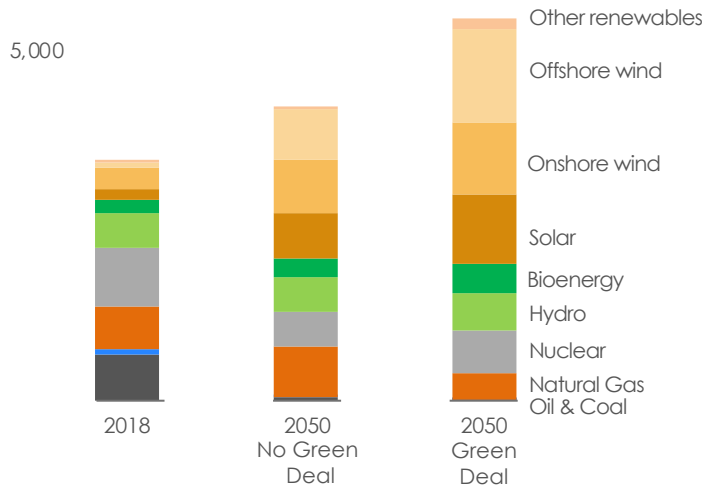


- CO₂ emissions cut by ~55% in 2030 vs. 1990 and by ~95% in 2050, net of 0.4 GtCO₂/y of CCS

Europe Net Zero - power outlook

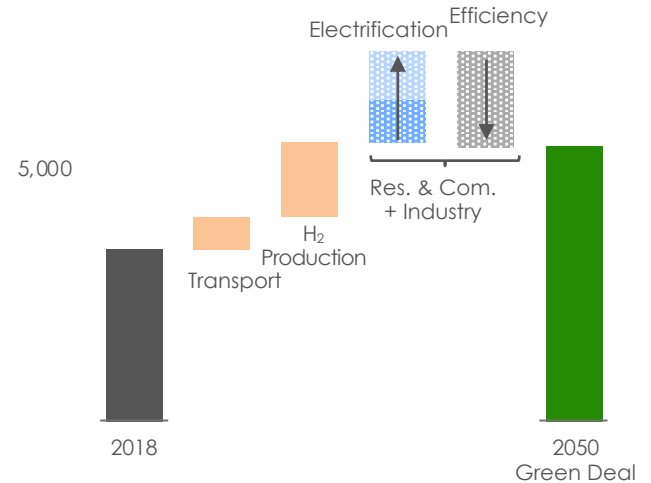
Renewables at the heart of Europe's electrification

EU29 power generation by fuel
TWh



- Renewables reach 80% of total generation in 2050
- Gas, batteries and hydrogen key to ensure firm power
- Power demand further increased by green H₂ production: >25% of power generation in 2050

Europe electricity demand growth in Green Deal
TWh



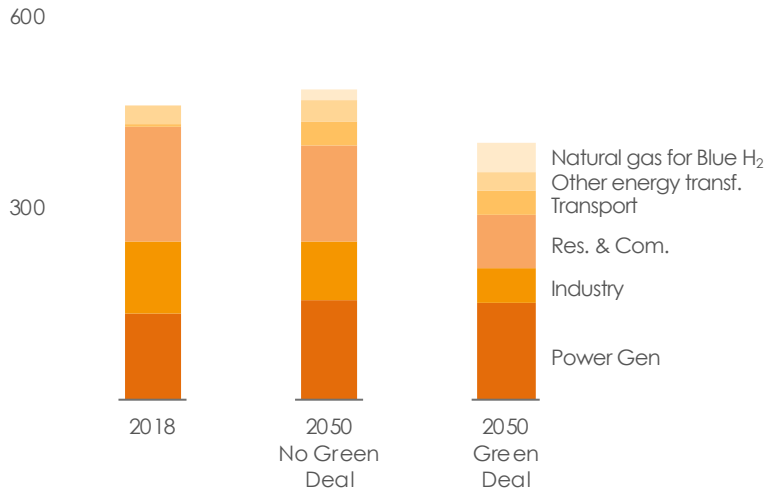
- Transport and green H₂ drive electricity demand – accounting for respectively 1/3 and 2/3 of demand growth by 2050
- Energy efficiency offsets industry and Res. & Com. electrification

Europe Net Zero – gases supply & demand

Gas keeps a central role

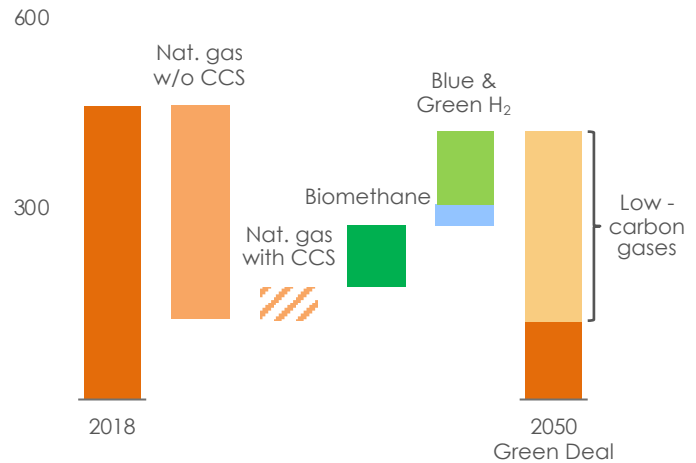
Europe Gases demand

Bcm*



Europe gases decarbonization in Green Deal

Bcm*



- All gases combined equivalent to ~35% of Europe primary energy demand in 2050 (24% today, natural gas only)

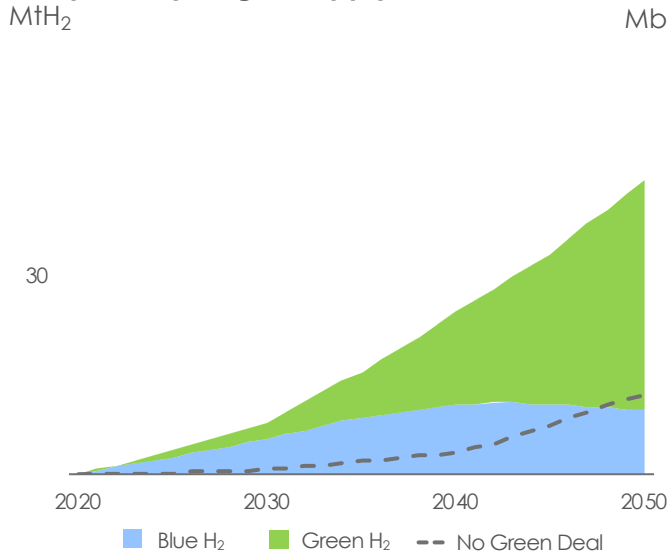
- Almost 3/4 of European gas is low-carbon through green gases and CCS by 2050

* For hydrogen : volumetric equivalence of natural gas in energy terms

Europe Net Zero - zoom green gases

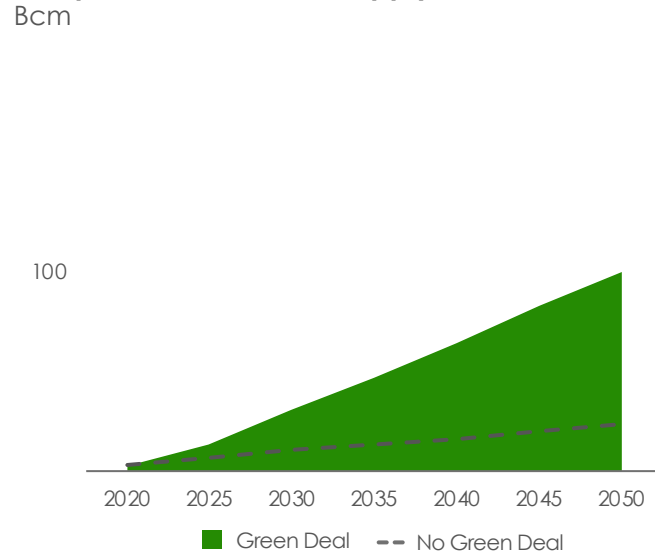
Green gases support the European deep decarbonization

European hydrogen supply



- Blue H₂ likely to scale before green H₂ - both are required
- Reuse of existing infrastructure is an asset for Europe

European biomethane supply



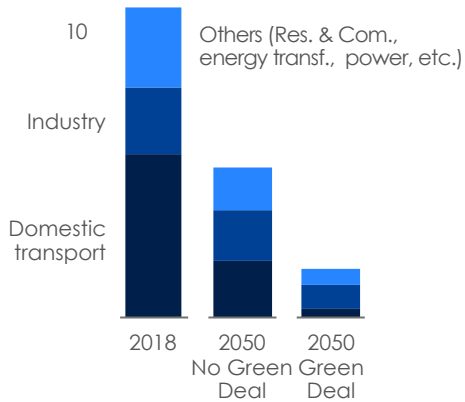
- Biomethane also a scalable green gas, with local benefits, but more limited in potential in the long run

Green gases deployment requires large renewable energy resources (biomass, wind & solar, etc.)

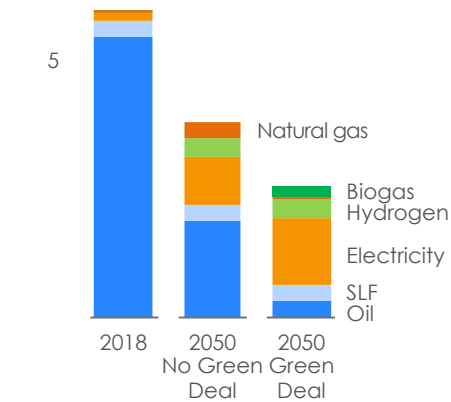
Europe Net Zero – oil demand

Green Deal reinventing transport

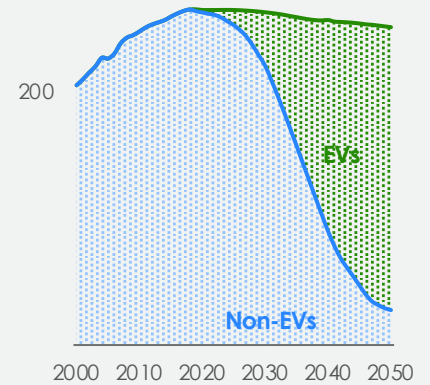
Europe oil demand
Mb/d



Europe transport energy mix*
Mboe/d



Light vehicles fleet
Millions



EVs' share of LVs in 2050:
Europe: ~90%

- Oil demand becomes marginal. Plastics used selectively (lighter materials,...)
- Transport energy consumption divided by more than 2 owing to energy efficiency gains and electrification
- ~85% decarbonized energy leading to a ~90% reduction in transport CO₂ emissions

* Excluding international aviation & shipping

10 no-regret moves towards decarbonization

Europe paving the way to carbon neutrality

Increase energy efficiency



Doubling the pace
(vs hist. trend)

Put a higher price on CO₂



Efficient EU
ETS / CBAM*

Make electricity greener



80% coming
from **REN**

Eliminate coal



Complete
phase-out in
power

Pursue gases innovation
for efficient energy
system balancing



~35% of
energy
demand

Expand the low carbon
hydrogen market &
electricity storage



H₂ ~10%
final energy

Promote sustainable liquids
& gases



~50% for SLF
incorporation

Make more efficient
plastics use



SUP ban
2040

CCS is mandatory, not
an option



CO₂
captured
0.4 Gt/y

Faster clean energy
innovation



1T\$ GD
investment
plan

* Carbon Border Adjustment Mechanism

Disclaimer

This document may contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, notably with respect to the financial condition, results of operations, business activities and industrial strategy of TOTAL. This document may also contain statements regarding the perspectives, objectives and goals of the Group, including with respect to climate change and carbon neutrality (net zero emissions). An ambition expresses an outcome desired by the Group, it being specified that the means to be deployed do not depend solely on TOTAL. These forward-looking statements may generally be identified by the use of the future or conditional tense or forward-looking words such as "envisions", "intends", "anticipates", "believes", "considers", "plans", "expects", "thinks", "targets", "aims" or similar terminology. Such forward-looking statements included in this document are based on economic data, estimates and assumptions prepared in a given economic, competitive and regulatory environment and considered to be reasonable by the Group as of the date of this document.

These forward-looking statements are not historical data and should not be interpreted as assurances that the perspectives, objectives or goals announced will be achieved. They may prove to be inaccurate in the future, and may evolve or be modified with a significant difference between the actual results and those initially estimated, due to the uncertainties notably related to the economic, financial, competitive and regulatory environment, or due to the occurrence of risk factors, such as, notably, the price fluctuations in crude oil and natural gas, the evolution of the demand and price of petroleum products, the changes in production results and reserves estimates, the ability to achieve cost reductions and operating efficiencies without unduly disrupting business operations, changes in laws and regulations including those related to the environment and climate, currency fluctuations, as well as economic and political developments, changes in market conditions, loss of market share and changes in consumer preferences including those due to epidemics such as Covid-19. Additionally, certain financial information is based on estimates particularly in the assessment of the recoverable value of assets and potential impairments of assets relating thereto.

Neither TOTAL nor any of its subsidiaries assumes any obligation to update publicly any forward-looking information or statement, objectives or trends contained in this document whether as a result of new information, future events or otherwise. Further information on factors, risks and uncertainties that could affect the Group's business, financial condition, including its operating income and cash flow, reputation or outlook is provided in the most recent version of the Universal Registration Document which is filed by the Company with the French Autorité des Marchés Financiers and the annual report on Form 20-F/A filed with the United States Securities and Exchange Commission ("SEC").

Financial information by business segment is reported in accordance with the internal reporting system and shows internal segment information that is used to manage and measure the performance of TOTAL. In addition to IFRS measures, certain alternative performance indicators are presented, such as performance indicators excluding the adjustment items described below (adjusted operating income, adjusted net operating income, adjusted net income), return on equity (ROE), return on average capital employed (ROACE), gearing ratio and operating cash flow before working capital changes. These indicators are meant to facilitate the analysis of the financial performance of TOTAL and the comparison of income between periods. They allow investors to track the measures used internally to manage and measure the performance of the Group.

These adjustment items include:

(i) Special items

Due to their unusual nature or particular significance, certain transactions qualified as "special items" are excluded from the business segment figures. In general, special items relate to transactions that are significant, infrequent or unusual.

However, in certain instances, transactions such as restructuring costs or asset disposals, which are not considered to be representative of the normal course of business, may be qualified as special items although they may have occurred within prior years or are likely to occur again within the coming years.

(ii) Inventory valuation effect

The adjusted results of the Refining & Chemicals and Marketing & Services segments are presented according to the replacement cost method. This method is used to assess the segments' performance and facilitate the comparability of the segments' performance with those of its competitors.

In the replacement cost method, which approximates the LIFO (Last-In, First-Out) method, the variation of inventory values in the statement of income is, depending on the nature of the inventory, determined using either the month-end price differentials between one period and another or the average prices of the period rather than the historical value. The inventory valuation effect is the difference between the results according to the FIFO (First-In, First-Out) and the replacement cost.

(iii) Effect of changes in fair value

The effect of changes in fair value presented as an adjustment item reflects for some transactions differences between internal measures of performance used by TOTAL's management and the accounting for these transactions under IFRS.

IFRS requires that trading inventories be recorded at their fair value using period-end spot prices. In order to best reflect the management of economic exposure through derivative transactions, internal indicators used to measure performance include valuations of trading inventories based on forward prices.

TOTAL, in its trading activities, enters into storage contracts, whose future effects are recorded at fair value in Group's internal economic performance. IFRS precludes recognition of this fair value effect.

Furthermore, TOTAL enters into derivative instruments to risk manage certain operational contracts or assets. Under IFRS, these derivatives are recorded at fair value while the underlying operational transactions are recorded as they occur. Internal indicators defer the fair value on derivatives to match with the transaction occurrence.

The adjusted results (adjusted operating income, adjusted net operating income, adjusted net income) are defined as replacement cost results, adjusted for special items, excluding the effect of changes in fair value.

Euro amounts presented herein represent dollar amounts converted at the average euro-dollar (€-\$) exchange rate for the applicable period and are not the result of financial statements prepared in euros.

This document also contains extra-financial performance indicators, including a carbon intensity indicator for energy products used by Total customers, that measures the average greenhouse gas emissions of those products, from their production to their end use, per unit of energy. This indicator covers the direct GHG emissions of production and processing facilities (scope 1) and their indirect emissions associated with energy purchase (Scope 2), as well as the emissions associated with the use of products by the customers of the Group (Scope 3) which Total does not control (for the definitions of scopes 1, 2 and 3, refer to Total's Universal Registration Document).

Cautionary Note to U.S. Investors – The SEC permits oil and gas companies, in their filings with the SEC, to separately disclose proved, probable and possible reserves that a company has determined in accordance with SEC rules. We may use certain terms in this presentation, such as "potential reserves" or "resources", that the SEC's guidelines strictly prohibit us from including in filings with the SEC. U.S. investors are urged to consider closely the disclosure in our Form 20-F/A, File No 1-10888, available from us at 2, place Jean Millier – Arche Nord Couplee/Regnault – 92078 Paris-La Défense Cedex, France, or at our website total.com. You can also obtain this form from the SEC by calling 1-800-SEC-0330 or on the SEC's website sec.gov.

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