THE ENERGY TRANSFORMATION SCENARIOS

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Warning: Uncertainties Ahead

Shell's scenarios are not intended to be projections or forecasts of the future. Shell's scenarios, including the scenarios contained in this presentation, are not Shell's strategy or business plan. When developing Shell's strategy, our scenarios are one of many variables that we consider. Ultimately, whether society meets its goals to decarbonise is not within Shell's control. While we intend to travel this journey in step with society, only governments can create the framework for success. The **Sky 1.5** scenario starts with data from Shell's **Sky** scenario, but there are important updates. First, the outlook uses the most recent modelling for the impact and recovery from COVID-19 consistent with a **Sky 1.5** scenario narrative. Second, it blends this projection into existing **Sky** (2018) energy system data by around 2030. Third, the extensive scale-up of nature-based solutions is brought into the core scenario, which benefits from extensive new modelling of that scale-up. (In 2018, nature-based solutions required to achieve 1.5°C above pre-industrial levels by the end of this century were analysed as a sensitivity to **Sky.** This analysis was also reviewed and included in the IPCC Special Report on Global Warming of 1.5°C (SR15).) Fourth, our new oil and natural gas supply modelling, with an outlook consistent with the **Sky 1.5** narrative and demand, is presented for the first time. Fifth, the **Sky 1.5** scenario draws on the latest historical data and estimates to 2020 from various sources, particularly the extensive International Energy Agency energy statistics. As with **Sky**, this scenario assumes that society achieves the 1.5°C stretch goal of the Paris Agreement. It is rooted in stretching but realistic development dynamics today, but explores a goal-oriented way to achieve that ambition. We worked back in designing how this could occur, considering the realities of the situation today and taking into account realistic timescales for change. Of course, there is a range of possible paths in detail that society could take to achieve this goal. Although achieving the goal of the Paris Agreement and the future depicted in **Sky 1.5** while maintaining a growing global economy will be extremely challenging, today it is still a technically possible path. However, we believe the window for success is quickly closing.

Shell's operating plan, outlook and budgets are forecasted for a ten-year period and are updated every year. They reflect the current economic environment and what we can reasonably expect to see over the next ten years. Accordingly, Shell's operating plans, outlooks, budgets and pricing assumptions do not reflect our net-zero emissions target. In the future, as society moves towards net-zero emissions, we expect Shell's operating plans, outlooks, budgets and pricing assumptions to reflect this movement. Also, in this presentation we may refer to Shell's "Net Carbon Footprint", which includes Shell's carbon emissions from the production of our energy products, our suppliers' carbon emissions in supplying energy for that production and our customers' carbon emissions associated with their use of the energy products we sell. Shell only controls its own emissions. The use of the term Shell's "Net Carbon Footprint" is for convenience only and not intended to suggest these emissions are those of Shell or its subsidiaries.

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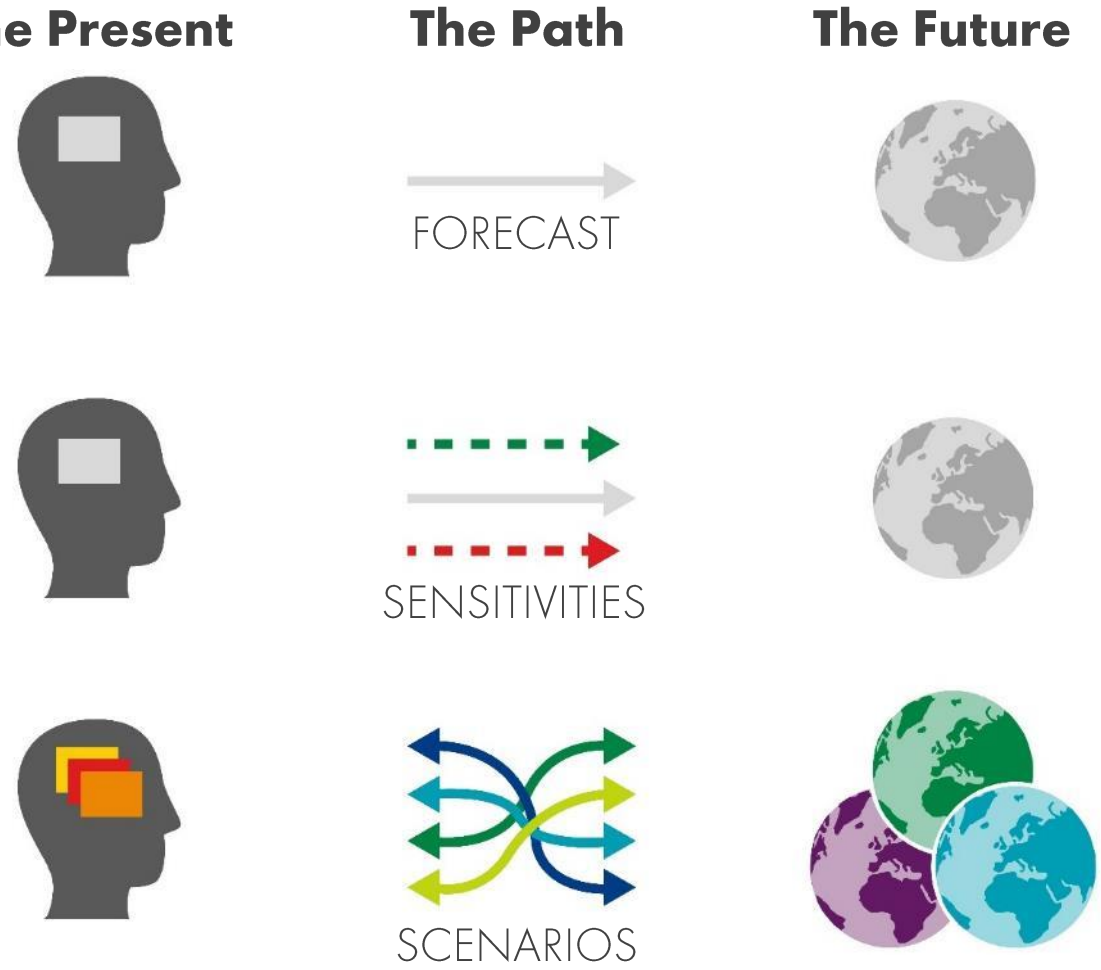
Why scenarios?

Stretch mindsets for better-informed decisions

Help to improve judgment in the face of radical uncertainties



The Energy Transformation Scenarios

Waves Late, but fast decarbonisation

- Wealth first – repair the economy
- Surge in energy use and emissions
- Growing inequality and more frequent and extreme weather events
- Social pressures; issues intensify
- Backlash forces rapid policy-driven reductions in fossil fuels
- 2.3°C above pre-industrial levels by the end of this century

Islands Late and slow decarbonisation

- Security first – growing nationalism
- Frictions in collaboration and trade
- Economies stagnate; growth in energy demand stalls
- Global climate action slows
- Cleaner technology makes slow progress
- 2.5°C above pre-industrial levels by 2100, and still rising

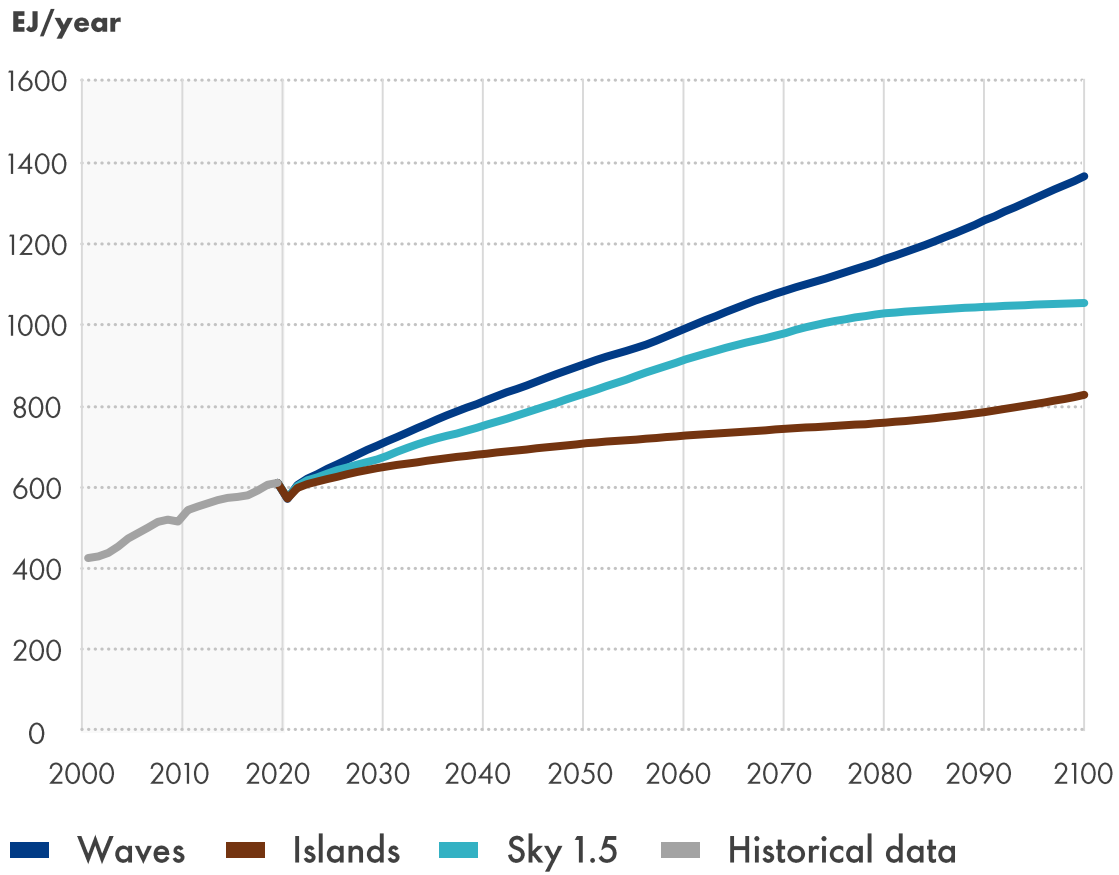
Sky 1.5 Accelerated decarbonisation now

- Health first – well-being is the priority
- People proceed cautiously, economies reopen slowly but steadily
- Recognition of value in alignments
- Green investment reshapes energy system
- Deep structural changes lower emissions
- 1.5°C above pre-industrial levels this century, in line with Paris goal

Energy demand grows and the energy system decarbonises

Energy demand rises, with Sky 1.5 levelling off late-century

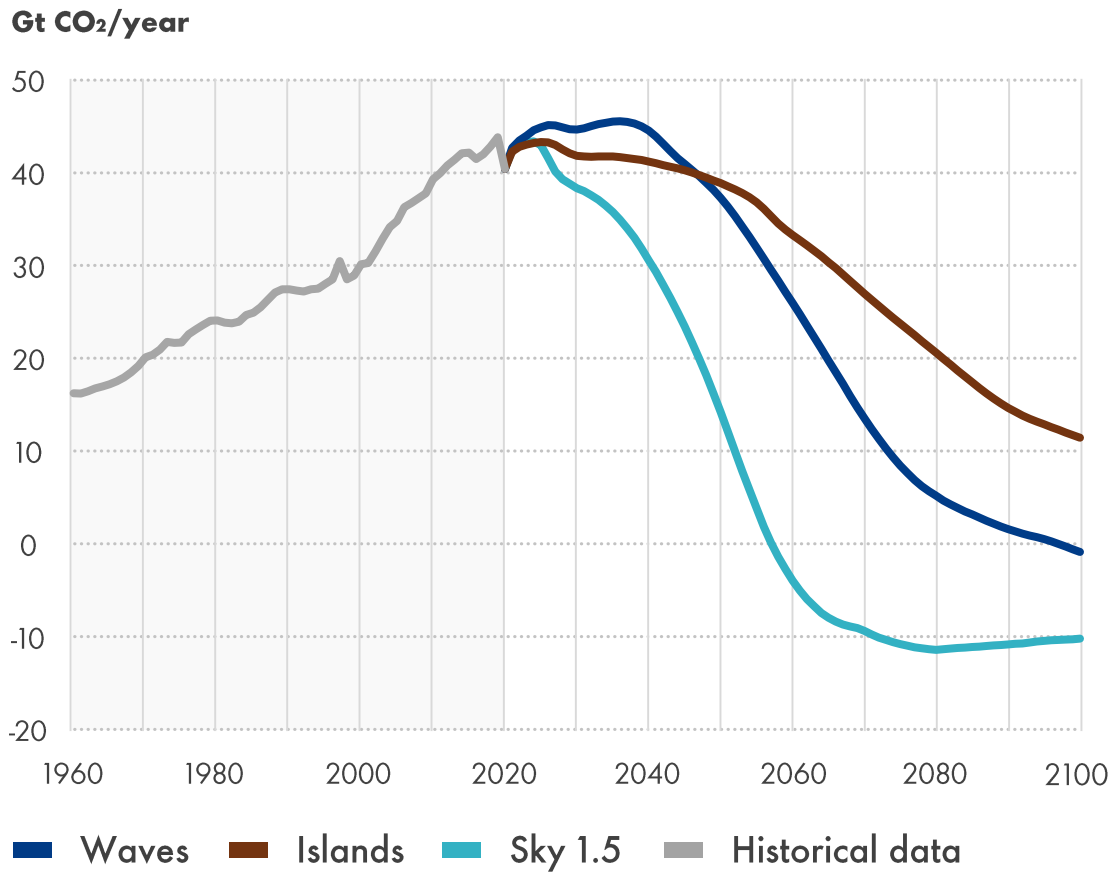
Total primary energy



Source: Shell analysis based on data from the IEA (2020) World Energy Balances (Link), all rights reserved

CO_2 emissions decline towards net-zero, but the pace varies

CO_2 emissions

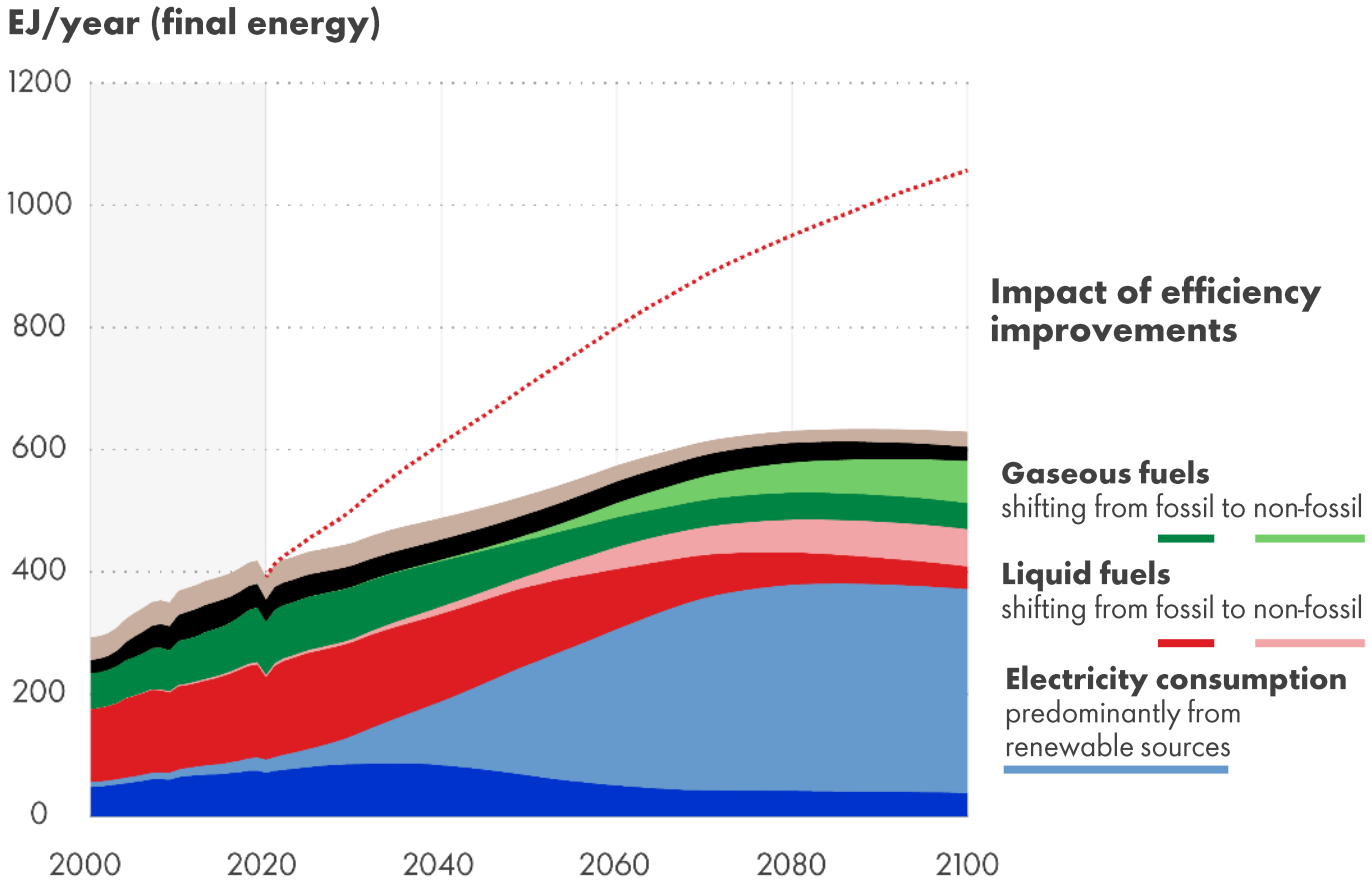


Source: Shell analysis based on data from Global Carbon Project (2020) and the IEA (2020) World Energy Balances (Link), all rights reserved

5 common energy trends across all outlooks – the issue is speed

1. Growing energy needs and efficiency
2. Deep electrification from Renewable sources
3. Need for molecular fuels in hard-to-electrify sectors – increasingly decarbonised
4. Oil and natural gas remain important in key services
5. Emissions removal makes a contribution

Example: Total final consumption of energy – Sky 1.5 scenario



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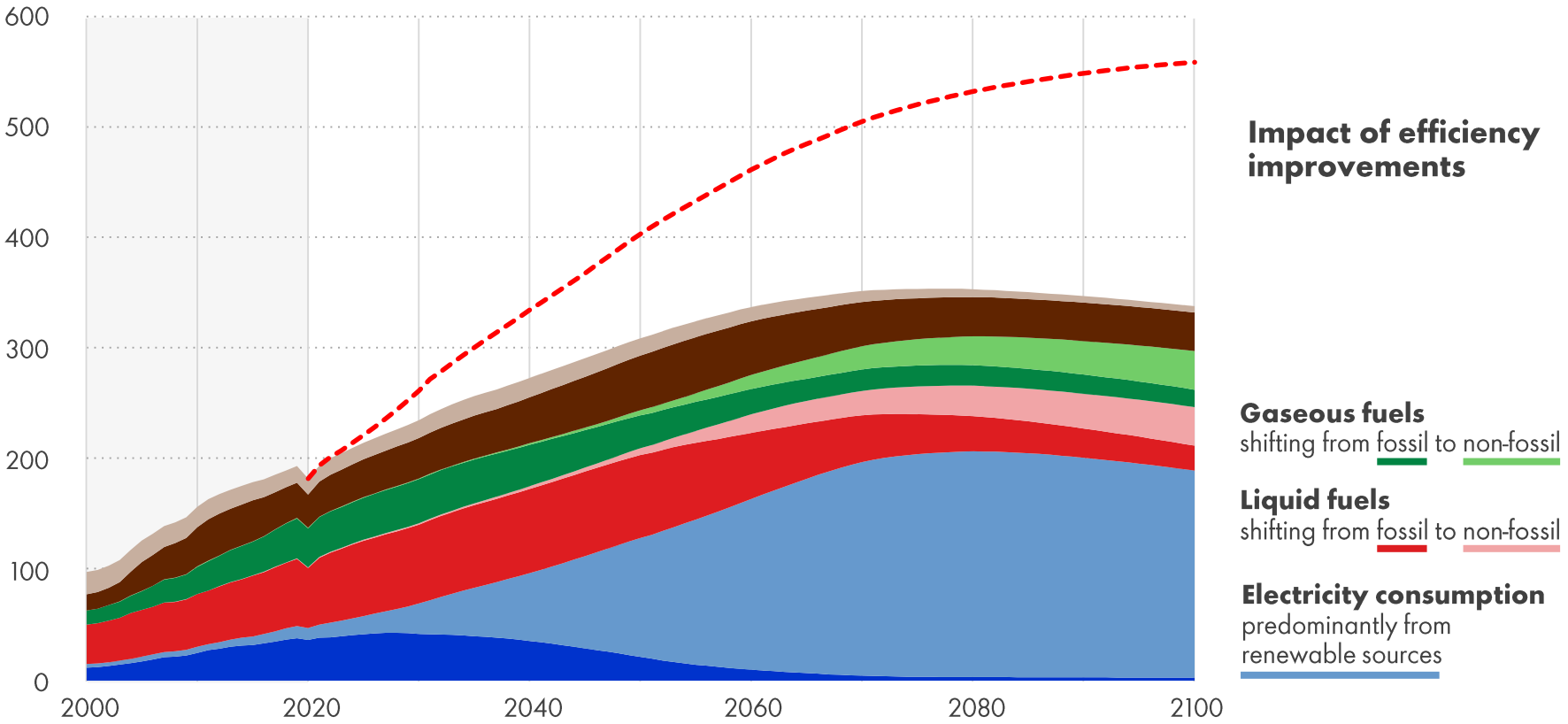
Specific example: Asia

Example: Total final consumption electricity and fuels – Sky 1.5 scenario

EJ/year (final energy)



*Electricity includes commercial heat

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Lessons from history & past crises

Action accelerators

Alignments
Policies, sectors, customers

Smart policy rules and incentives

Pioneer leaders

History has shown that crises can galvanise people into action.

Find out more

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Watch the videos:

Accelerating to net-zero emissions

Scenario overview

50 YEARS
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