

Meeting the Goals of the Paris Agreement

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WARNING: Uncertainties ahead

This presentation contains data from Shell's new Sky Scenario. Unlike Shell's previously published Mountains and Oceans exploratory scenarios, the Sky Scenario is targeted through the assumption that society reaches the Paris Agreement's goal of holding global average temperatures to well below 2°C. Unlike Shell's Mountains and Oceans scenarios which unfolded in an open-ended way based upon plausible assumptions and quantifications, the Sky Scenario was specifically designed to reach the Paris Agreement's goal in a technically possible manner. These scenarios are a part of an ongoing process used in Shell for over 40 years to challenge executives' perspectives on the future business environment. They are designed to stretch management to consider even events that may only be remotely possible. Scenarios, therefore, are not intended to be predictions of likely future events or outcomes and investors should not rely on them when making an investment decision with regard to Royal Dutch Shell plc securities.

Additionally, it is important to note that Shell's existing portfolio has been decades in development. While we believe our portfolio is resilient under a wide range of outlooks, including the IEA's 450 scenario (World Energy Outlook 2016), it includes assets across a spectrum of energy intensities including some with above-average intensity. While we seek to enhance our operations' average energy intensity through both the development of new projects and divestments, we have no immediate plans to move to a net-zero emissions portfolio over our investment horizon of 10-20 years. Although, we have no immediate plans to move to a net-zero emissions portfolio, in November of 2017, we announced our ambition to reduce our net carbon footprint in accordance with society's implementation of the Paris Agreement's goal of holding global average temperature to well below 2°C above pre-industrial levels. Accordingly, assuming society aligns itself with the Paris Agreement's goals, we aim to reduce our net carbon footprint, which includes not only our direct and indirect carbon emissions, associated with producing the energy products which we sell, but also our customers' emissions from their use of the energy products that we sell, by 20% in 2035 and by 50% in 2050.

The companies in which Royal Dutch Shell plc directly and indirectly owns investments are separate legal entities. In this presentation "Shell", "Shell group" and "Royal Dutch Shell" are sometimes used for convenience where references are made to Royal Dutch Shell plc and its subsidiaries in general. Likewise, the words "we", "us" and "our" are also used to refer to subsidiaries in general or to those who work for them. These expressions are also used where no useful purpose is served by identifying the particular company or companies. "Subsidiaries", "Shell subsidiaries" and "Shell companies" as used in this presentation refer to companies over which Royal Dutch Shell plc either directly or indirectly has control. Entities and unincorporated arrangements over which Shell has joint control are generally referred to as "joint ventures" and "joint operations" respectively. Entities over which Shell has significant influence but neither control nor joint control are referred to as "associates". The term "Shell interest" is used for convenience to indicate the direct and/or indirect ownership interest held by Shell in a venture, partnership or company, after exclusion of all third-party interest.

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The goals of the Paris Agreement



...aim to reach global peaking of greenhouse gas emissions as soon as possible;

Holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels



...achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century.

The New Lens Scenarios Family

Looking
beyond

Mountains and Oceans



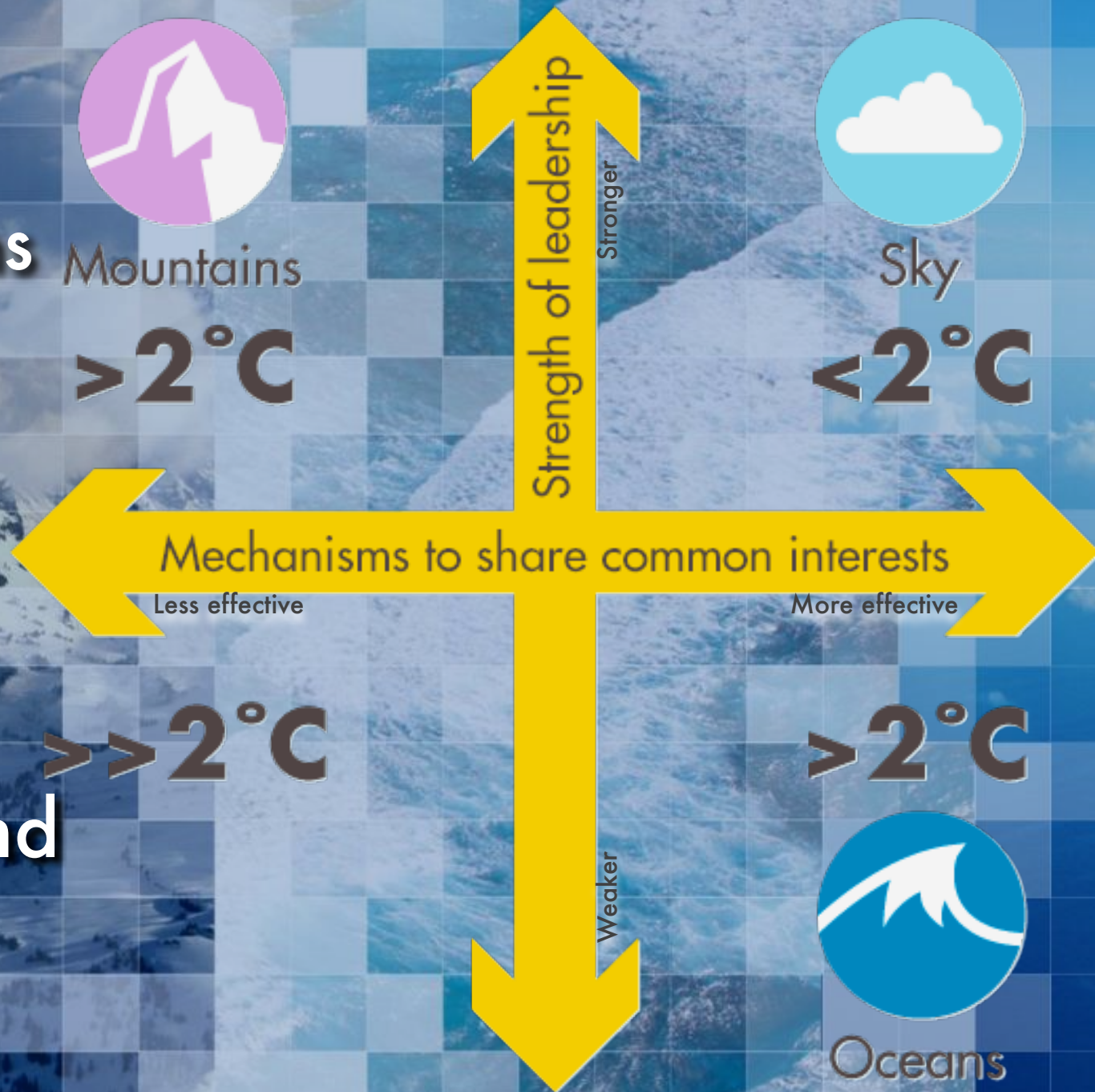
Mountains

>2°C



Sky

<2°C



>>2°C

>2°C



Oceans

... to **Sky**

In Sky, six big steps forward from now to 2070 . . . illustrating the interplay of technology innovation, public policy, market forces, and human behaviour



Carbon pricing



Energy efficiency



Electrification of
final energy



Growing new
energy systems



Carbon capture
and storage



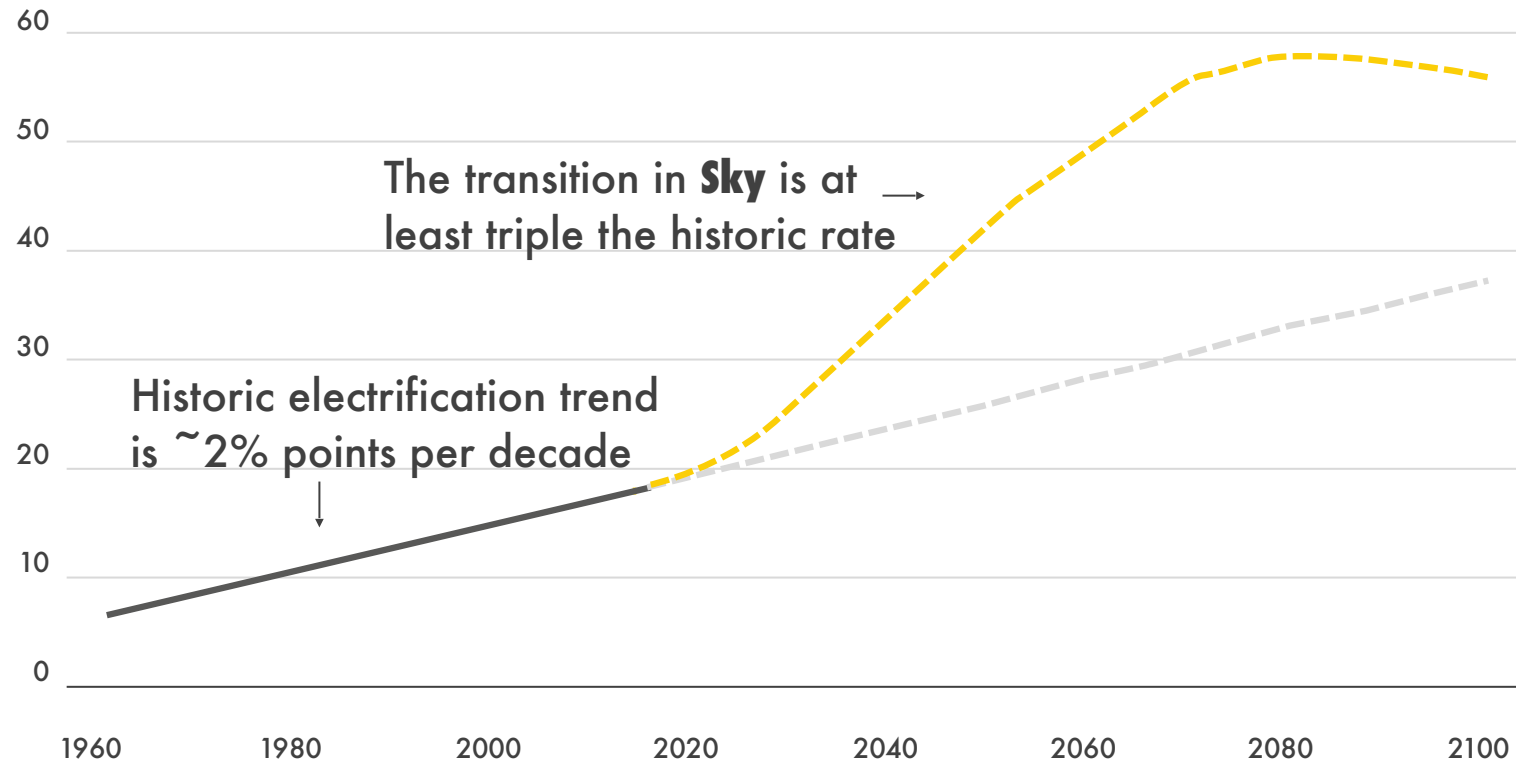
Ending deforestation



. . . underpinned by a changing consumer mind-set and societal license for change.

A major ramp-up in electrification

Electricity as a % of final energy use



Source: Shell analysis, Sky scenario

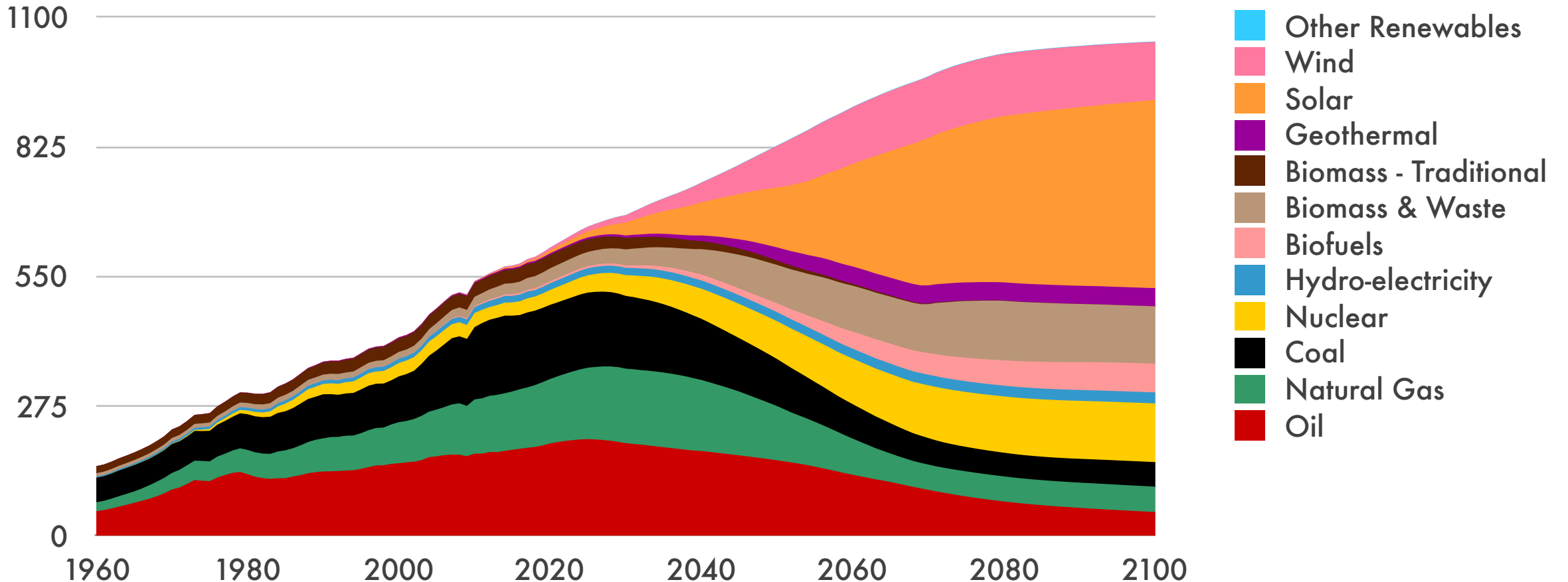
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New energy systems emerge

The major sources of primary energy shift in Sky

World total primary energy by source, EJ/year

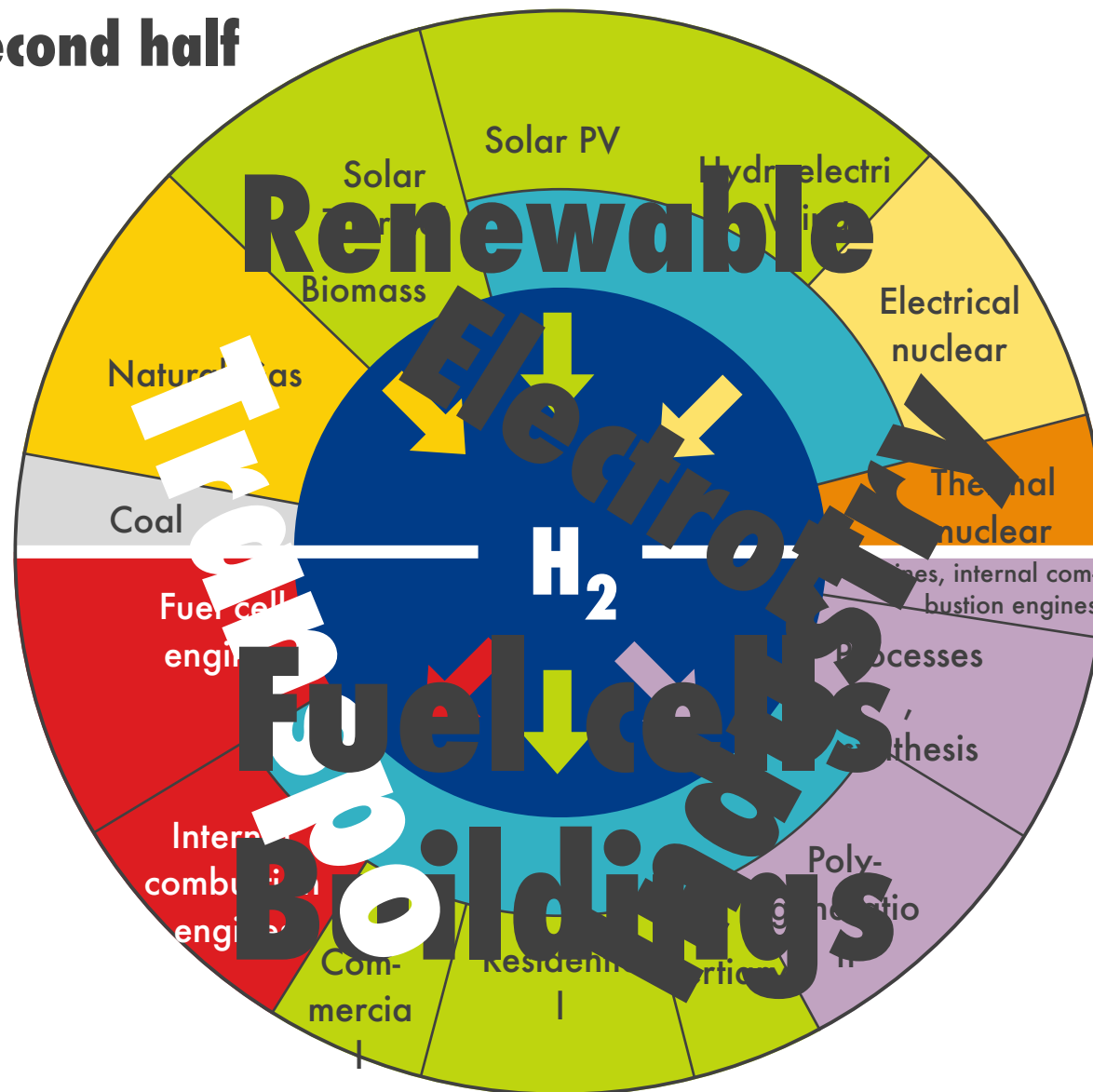
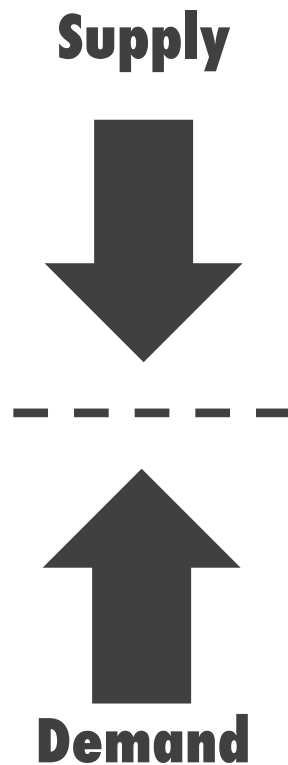


Source: Shell analysis, Sky scenario

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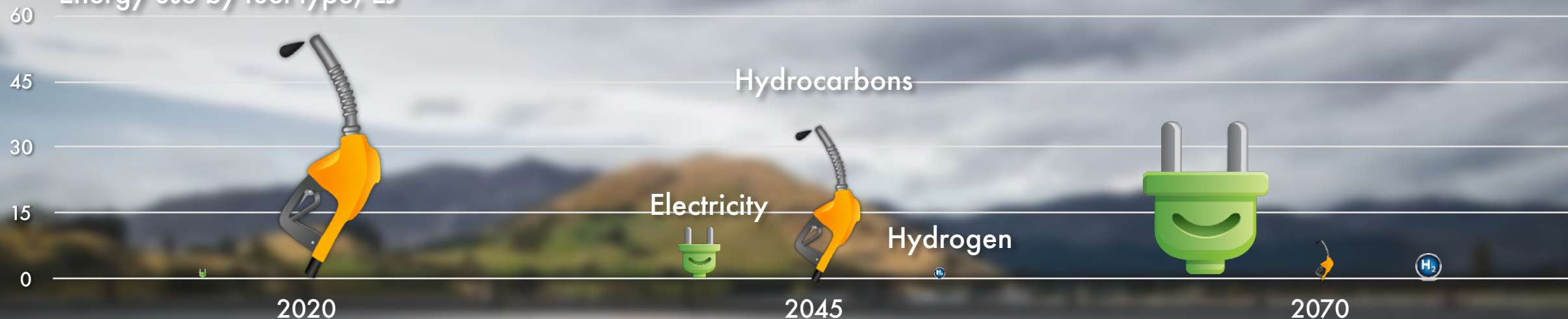
Hydrogen becomes significant in the second half of the century

A hydrogen based energy delivery system

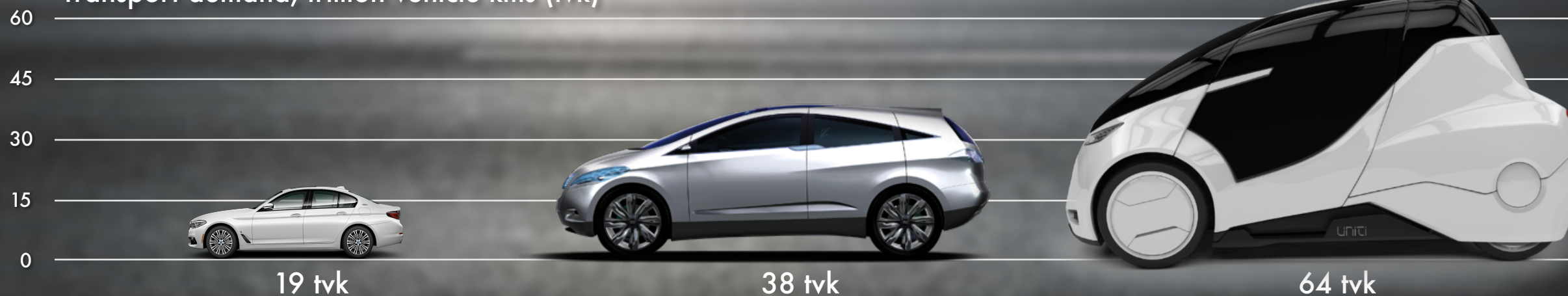


Passenger road transport trends in Sky

Energy use by fuel type, EJ



Transport demand, trillion vehicle kms (tvk)



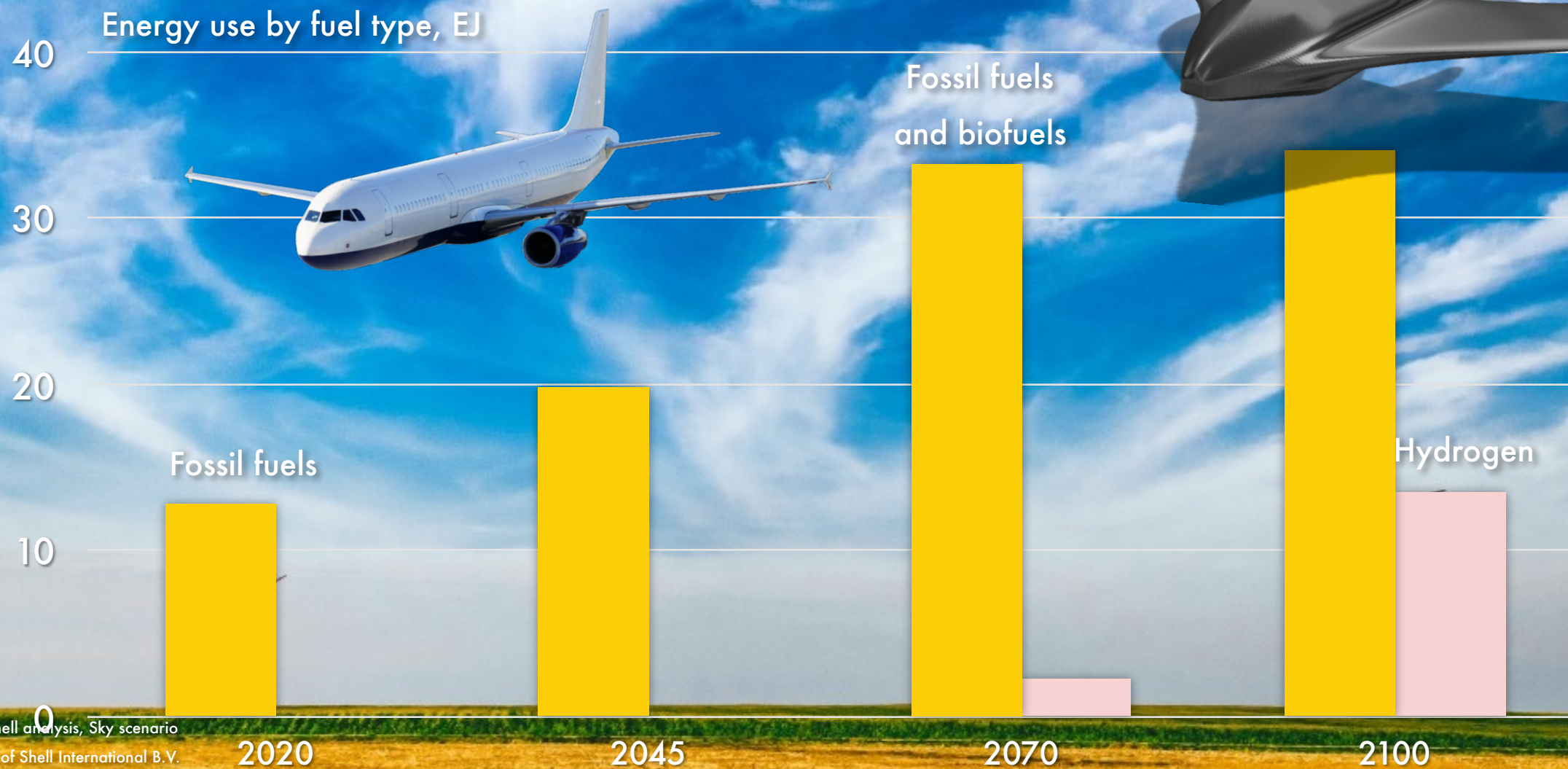
Source: Shell analysis, Sky scenario

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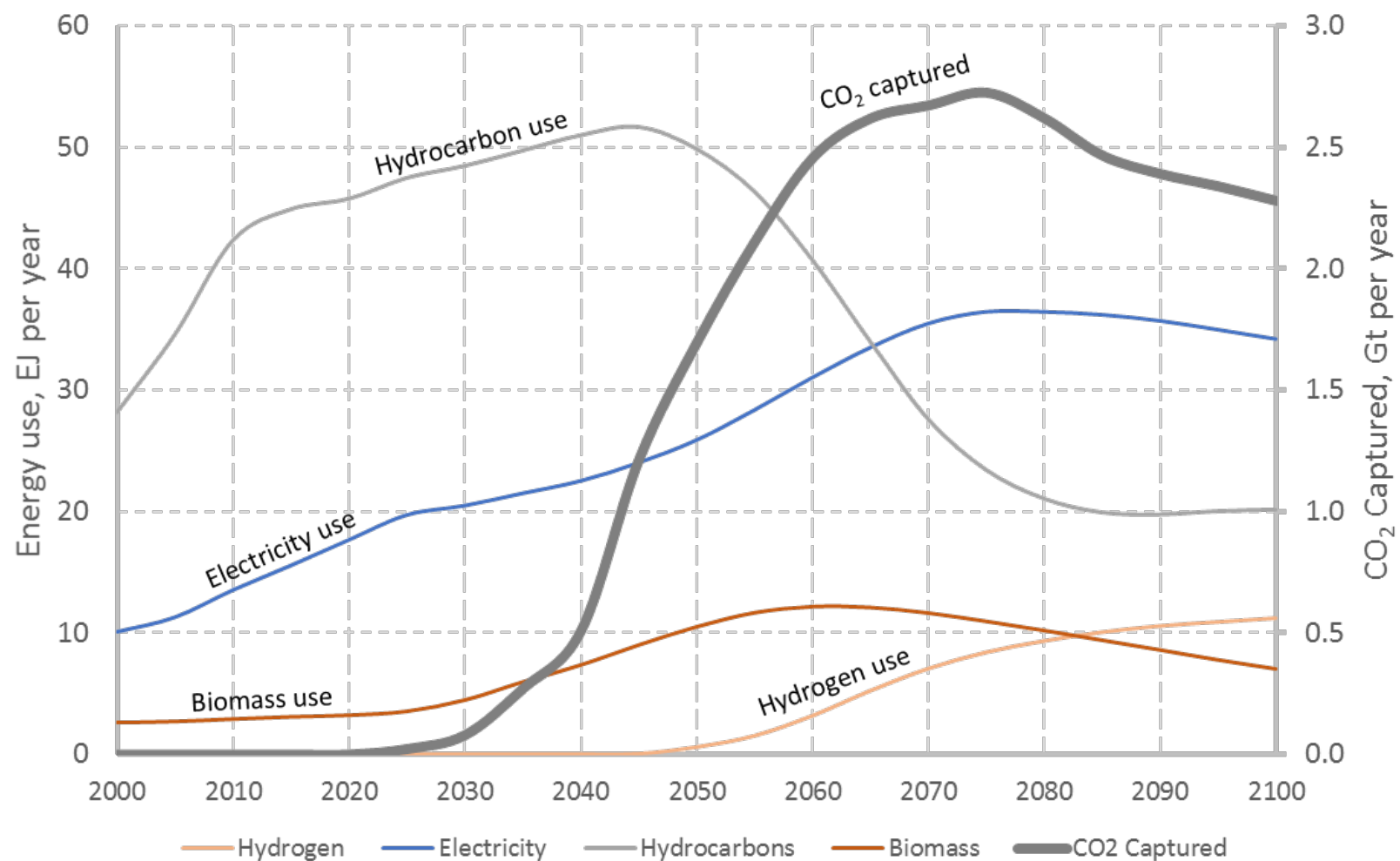
Sky imagines a new business model for passenger vehicle manufacture with bespoke local fabrication of bodies 3D printed on to flat-pack electric chassis



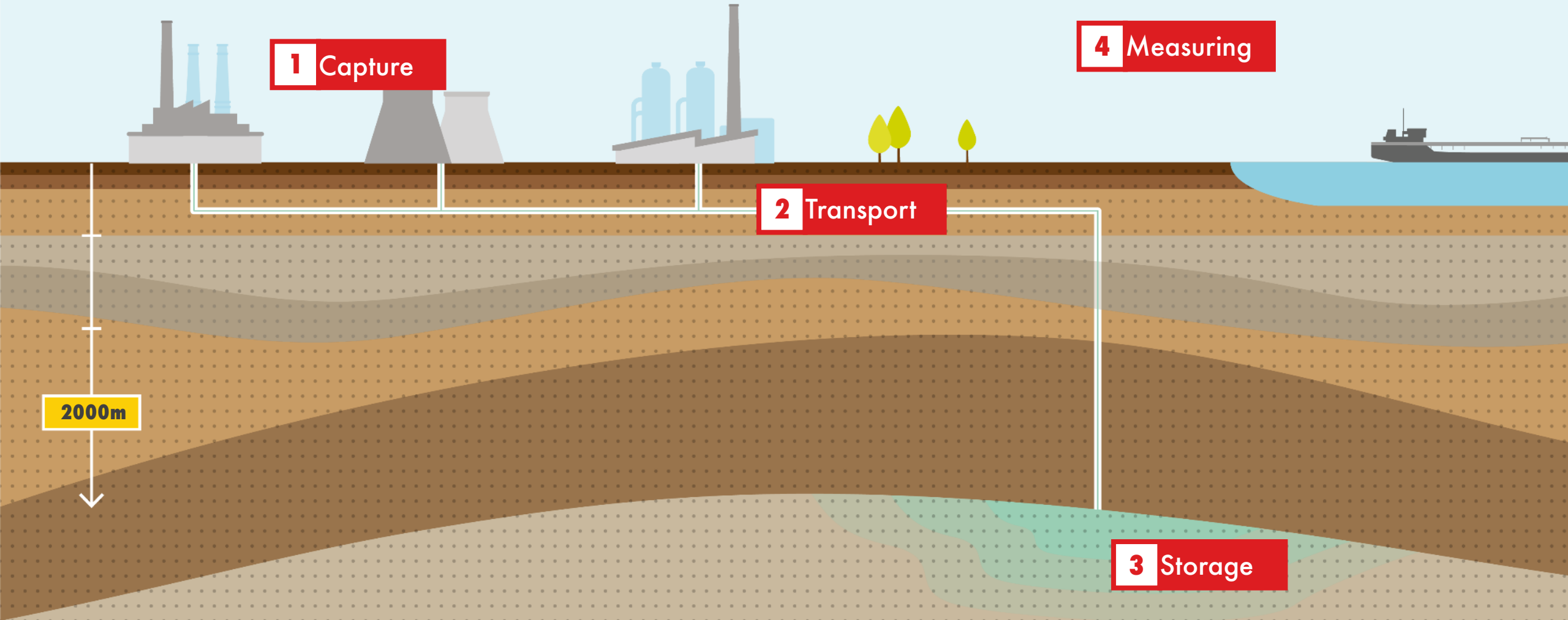
Aviation fuel trends to 2100 in Sky



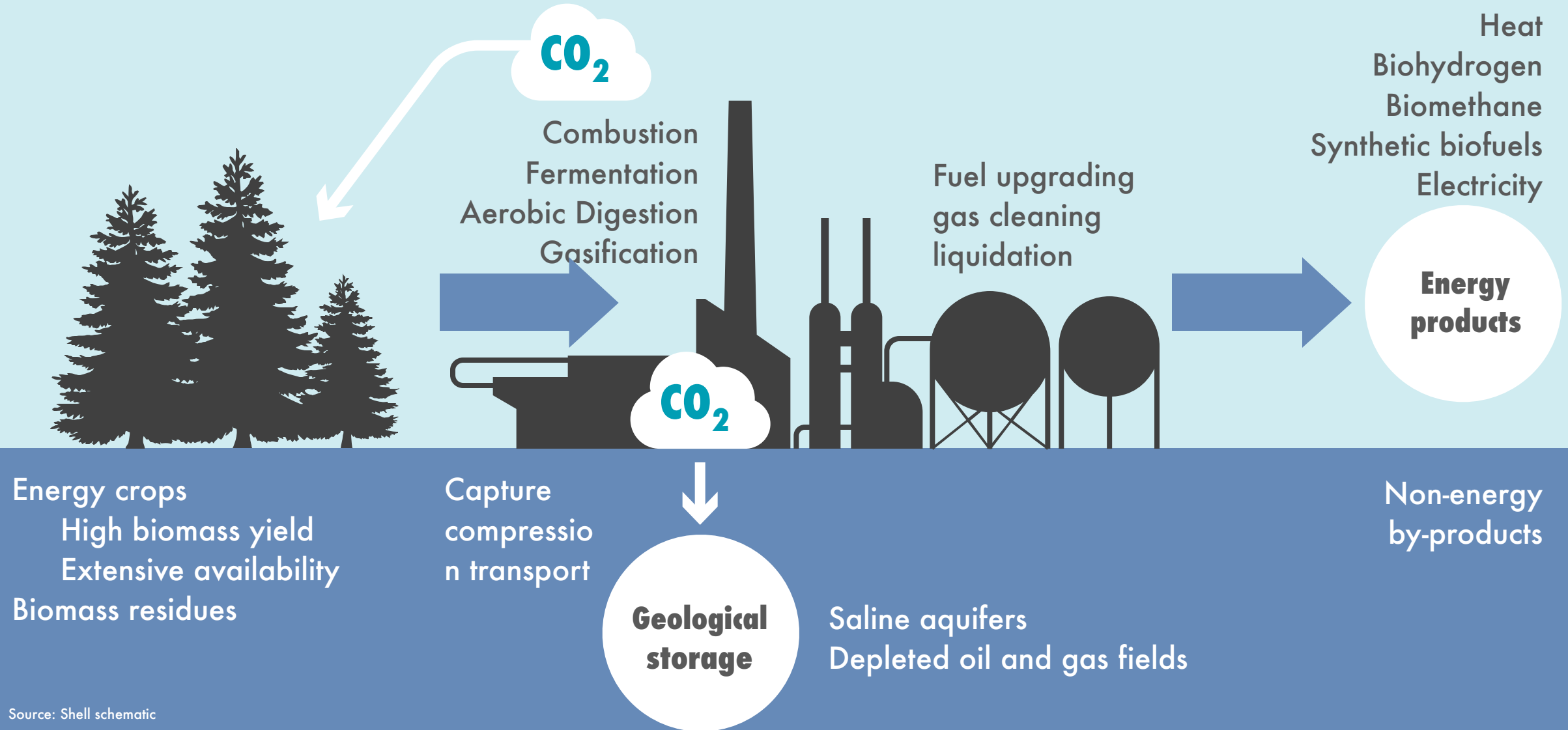
Sky Heavy Industry Decarbonisation Pathway



A man-made sink: Carbon capture and storage (CCS)



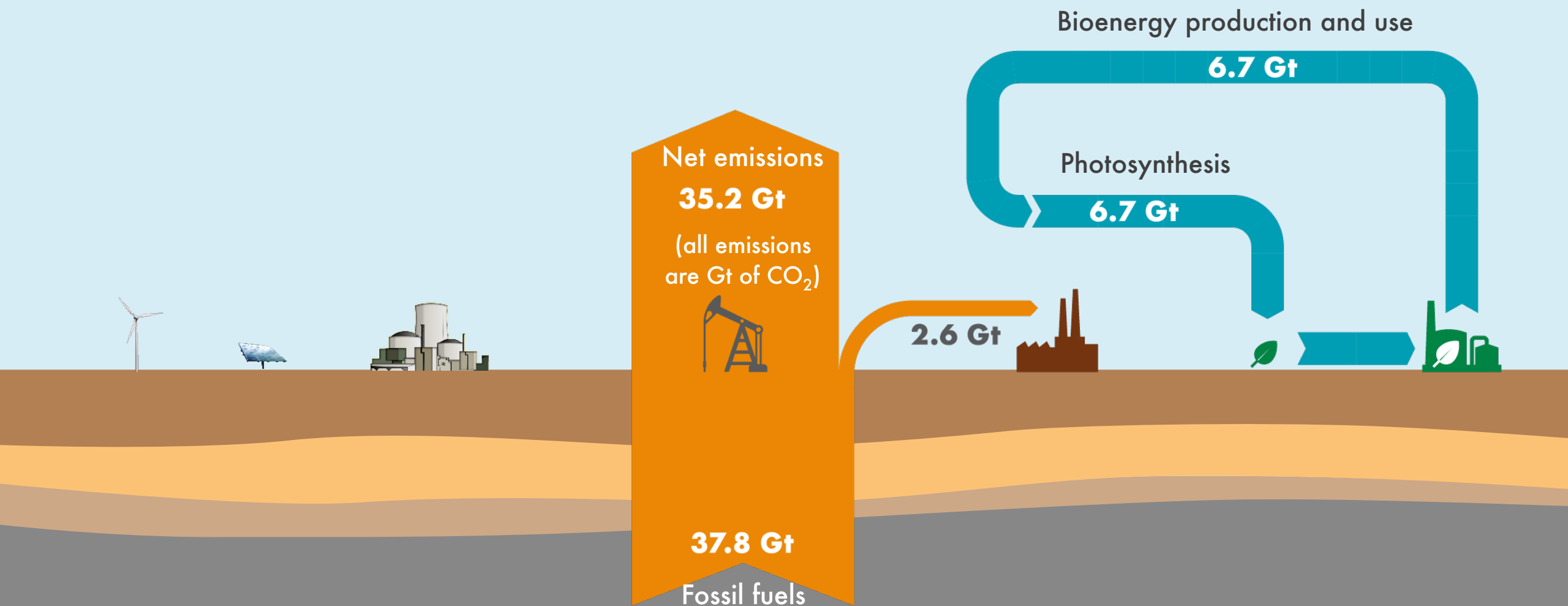
Bioenergy with CCS (BECCS) has an important role to play



Source: Shell schematic

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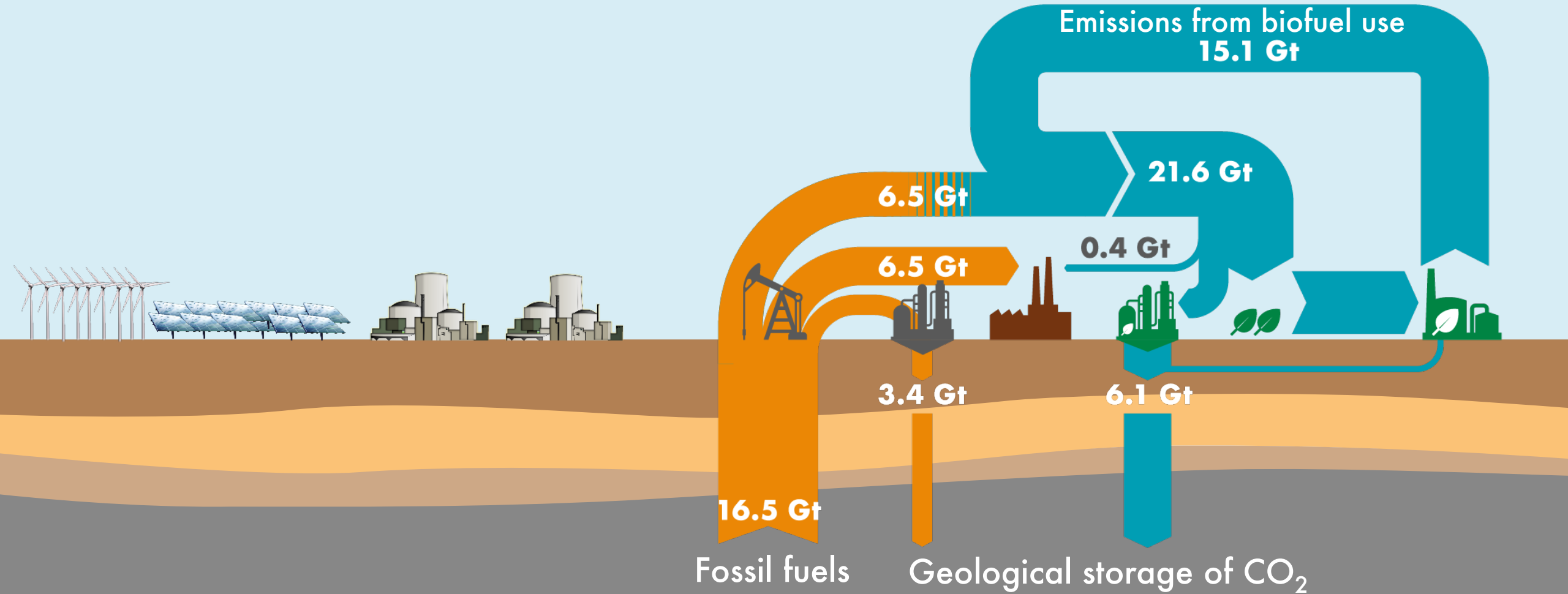
2020



2070

Sky:

Achieving the balance in 2070
Net-zero emissions for energy



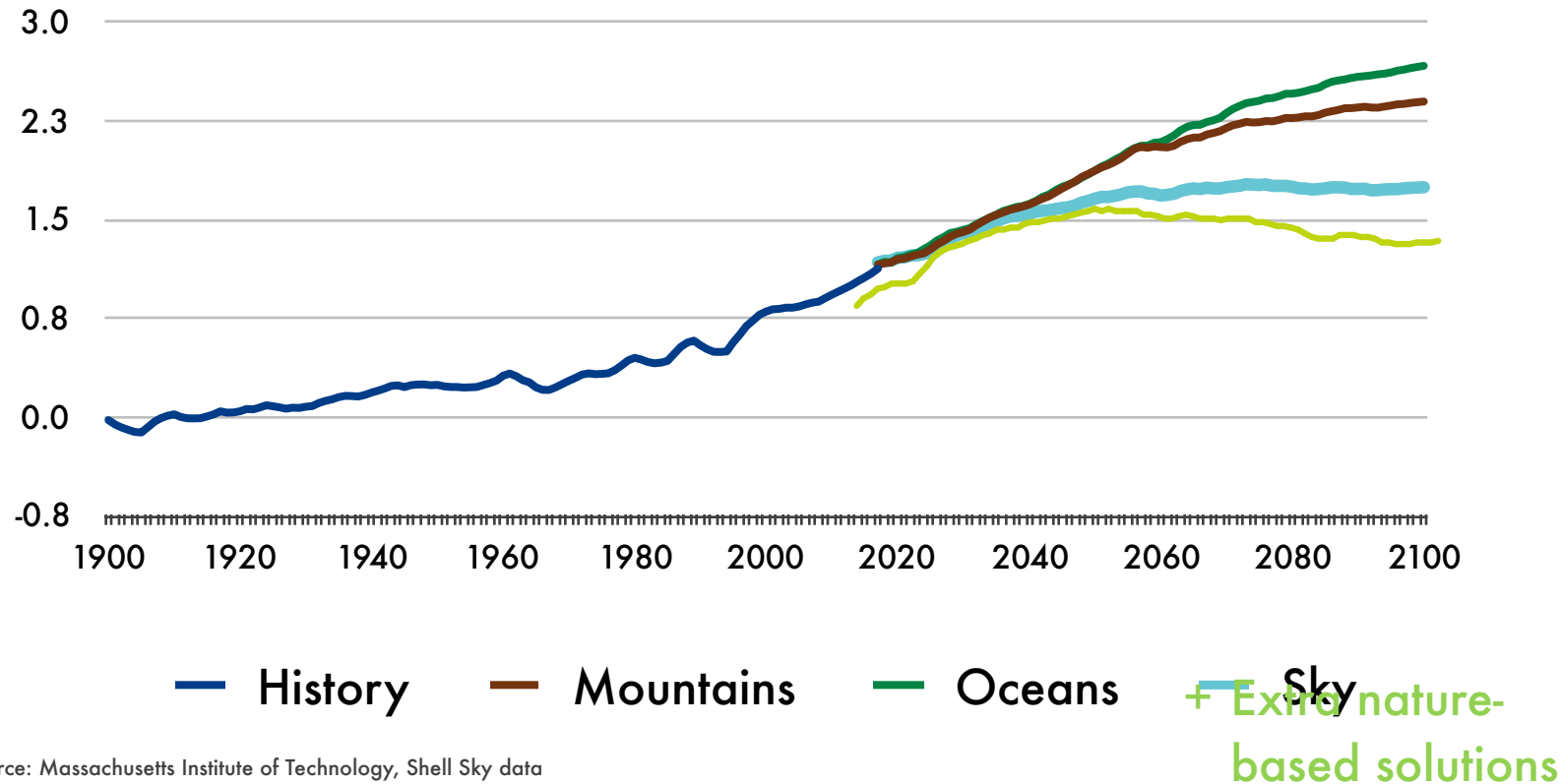
Source: Shell analysis, Sky scenario

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Sky meets the Paris goal

MIT assessment of climate impact

Average global surface temperature rise (°C)



Source: Massachusetts Institute of Technology, Shell Sky data

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In addition, increasing global forest coverage by an area the size of Brazil offers potential to deliver the stretched 1.5°C ambition of the Paris Agreement

Read more about Sky and download the data-set

www.shell.com/skyscenario

