



Sky scenario, quantification and decision making

Royal Dutch Shell plc
March 20, 2019

#makethefuture



Agenda

Welcome and Moderation

Tjerk Huysinga
EVP Investor Relations



Scenarios in Shell

Ed Daniels
EVP Strategy and Portfolio



Sky Scenario and sneak- preview Sky interactive tool

Wim Thomas
Chief Energy Advisor



Contact

Frederike Klatschow
Senior Investor Relations Officer –
ESG
Frederike.Lehmann@shell.com



Cautionary note

This presentation contains data and analysis from Shell's new Sky scenario. Unlike Shell's previously published Mountains and Oceans exploratory scenarios, the Sky scenario is based on the assumption that society reaches the Paris Agreement's goal of holding the rise in global average temperatures this century to well below two degrees Celsius (2°C) above pre-industrial levels. 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 almost 50 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 the Net Carbon Footprint of our energy products 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 the Net Carbon Footprint of our energy products, 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 around 20% in 2035 and by around 50% in 2050.

We also refer to "Shell's Net Carbon Footprint" in this presentation. This 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 but, to support society in achieving the Paris Agreement goals, we aim to help and influence such suppliers and consumers to likewise lower their emissions. The use of the terminology "Shell's Net Carbon Footprint" is for convenience only and not intended to suggest these emissions are those of Shell or its subsidiaries.

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 Royal Dutch Shell plc and subsidiaries in general or to those who work for them. These terms are also used where no useful purpose is served by identifying the particular entity or entities. "Subsidiaries", "Shell subsidiaries" and "Shell companies" as used in this presentation refer to entities 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 an entity or unincorporated joint arrangement, after exclusion of all third-party interest.

This presentation contains forward-looking statements (within the meaning of the U.S. Private Securities Litigation Reform Act of 1995) concerning the financial condition, results of operations and businesses of Royal Dutch Shell. All statements other than statements of historical fact are, or may be deemed to be, forward-looking statements. Forward-looking statements are statements of future expectations that are based on management's current expectations and assumptions and involve known and unknown risks and uncertainties that could cause actual results, performance or events to differ materially from those expressed or implied in these statements. Forward-looking statements include, among other things, statements concerning the potential exposure of Royal Dutch Shell to market risks and statements expressing management's expectations, beliefs, estimates, forecasts, projections and assumptions. These forward-looking statements are identified by their use of terms and phrases such as "aim", "ambition", "anticipate", "believe", "could", "estimate", "expect", "goals", "intend", "may", "objectives", "outlook", "plan", "probably", "project", "risks", "schedule", "seek", "should", "target", "will" and similar terms and phrases. There are a number of factors that could affect the future operations of Royal Dutch Shell and could cause those results to differ materially from those expressed in the forward-looking statements included in this presentation, including (without limitation): (a) price fluctuations in crude oil and natural gas; (b) changes in demand for Shell's products; (c) currency fluctuations; (d) drilling and production results; (e) reserves estimates; (f) loss of market share and industry competition; (g) environmental and physical risks; (h) risks associated with the identification of suitable potential acquisition properties and targets, and successful negotiation and completion of such transactions; (i) the risk of doing business in developing countries and countries subject to international sanctions; (j) legislative, fiscal and regulatory developments including regulatory measures addressing climate change; (k) economic and financial market conditions in various countries and regions; (l) political risks, including the risks of expropriation and renegotiation of the terms of contracts with governmental entities, delays or advancements in the approval of projects and delays in the reimbursement for shared costs; and (m) changes in trading conditions. No assurance is provided that future dividend payments will match or exceed previous dividend payments. All forward-looking statements contained in this presentation are expressly qualified in their entirety by the cautionary statements contained or referred to in this section. Readers should not place undue reliance on forward-looking statements. Additional risk factors that may affect future results are contained in Royal Dutch Shell's 20-F for the year ended December 31, 2018 (available at www.shell.com/investor and www.sec.gov). These risk factors also expressly qualify all forward looking statements contained in this presentation and should be considered by the reader. Each forward-looking statement speaks only as of the date of this presentation **20 March, 2019**. Neither Royal Dutch Shell plc nor any of its subsidiaries undertake any obligation to publicly update or revise any forward-looking statement as a result of new information, future events or other information. In light of these risks, results could differ materially from those stated, implied or inferred from the forward-looking statements contained in this presentation.

We may have used certain terms, such as resources, in this presentation that United States Securities and Exchange Commission (SEC) strictly prohibits us from including in our filings with the SEC. U.S. Investors are urged to consider closely the disclosure in our Form 20-F, File No 1-32575, available on the SEC website www.sec.gov.





Ed Daniels

EVP Strategy & Portfolio

Royal Dutch Shell



Royal Dutch Shell

March 20, 2019

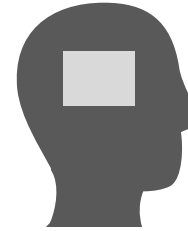
Exploring alternative futures

- Energy transition and digital: major disruptors
- Past does not predict the future
- Forecasts are inappropriate

- Radically uncertain future needs
 - Scenario thinking
 - Agile decision-making
- Scenarios are a distinctive Shell capability

**From complicated
to complex**

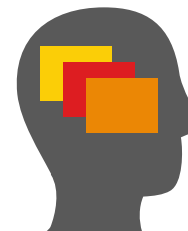
The Present



The Path



The Future



Shell's Strategy

Our Purpose

We power progress together by providing more and cleaner energy solutions

#makethefuture

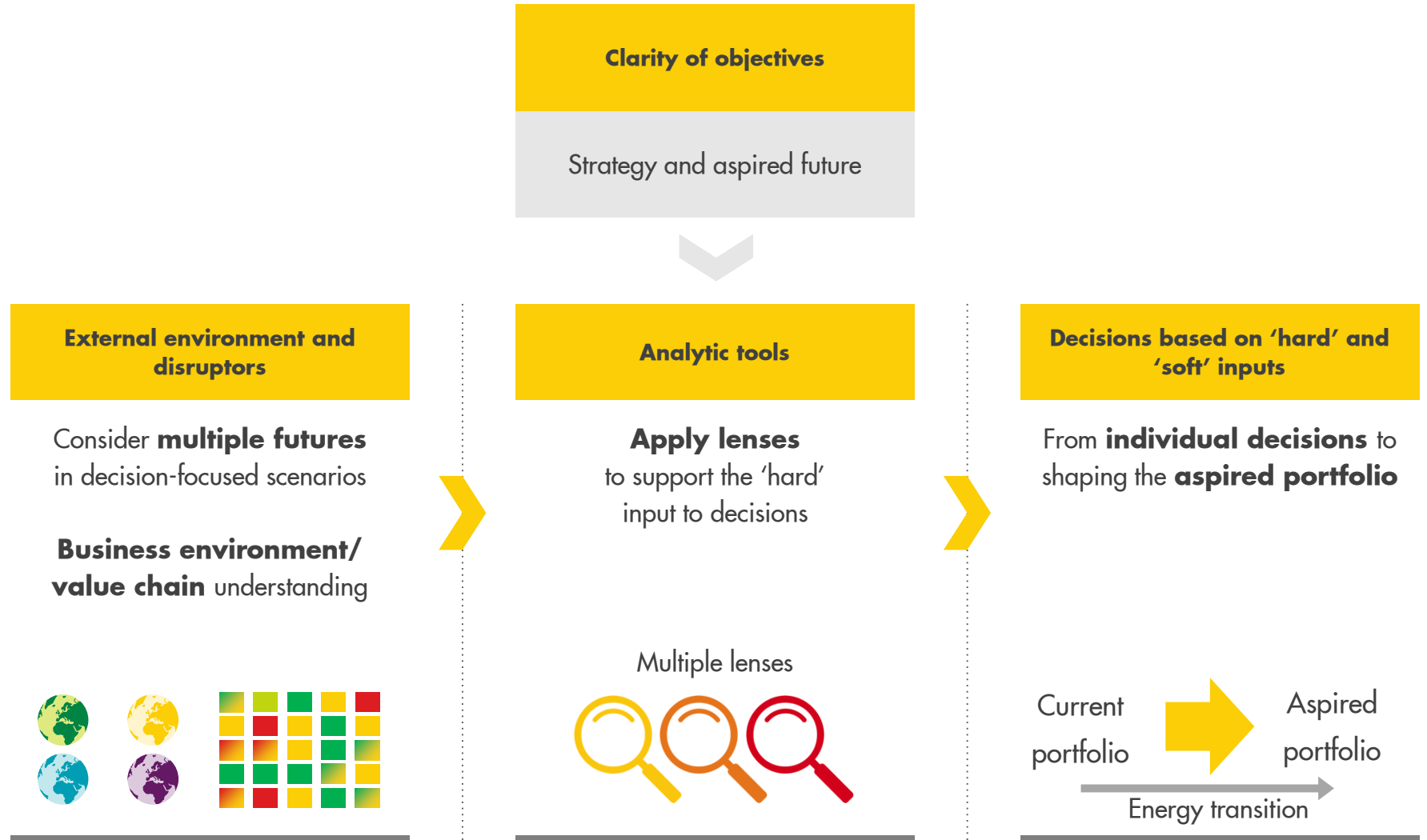


Underpinned by our Values, Goal Zero, and People



Framework for decision making in uncertainty

- Consider “minimise maximum regret”
- Make investment and portfolio decisions





Shell Scenario **Sky**

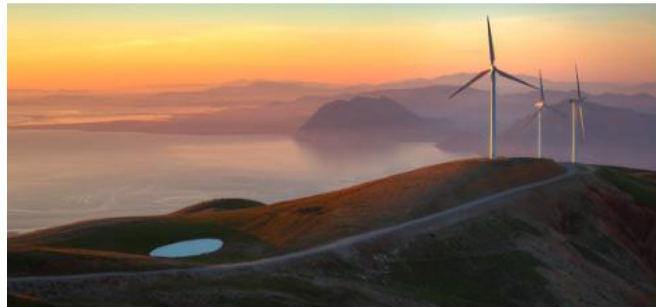
Meeting the Goals of the Paris Agreement

Wim Thomas
Chief Energy Advisor



The **Sky** scenario illustrates a technically possible, but challenging pathway for society to achieve the goals of the Paris Agreement. **Sky** builds on previous Shell scenarios publications and is our most optimistic scenario in terms of climate outcomes.

1980 1990 2000 2010 2020 2030 2040 2050 2060 2070 2080 2090 2100



Highlights

Learn how a new energy system could unfold between now and 2070. Scroll through the pages as we tell the story of a possible vision of the future.

Learn more



Signposts

Explore the **Sky** scenario timeline to the end of the century. Roll over the icons to read about the key milestones in this journey to a net-zero emissions world.

Discover insights

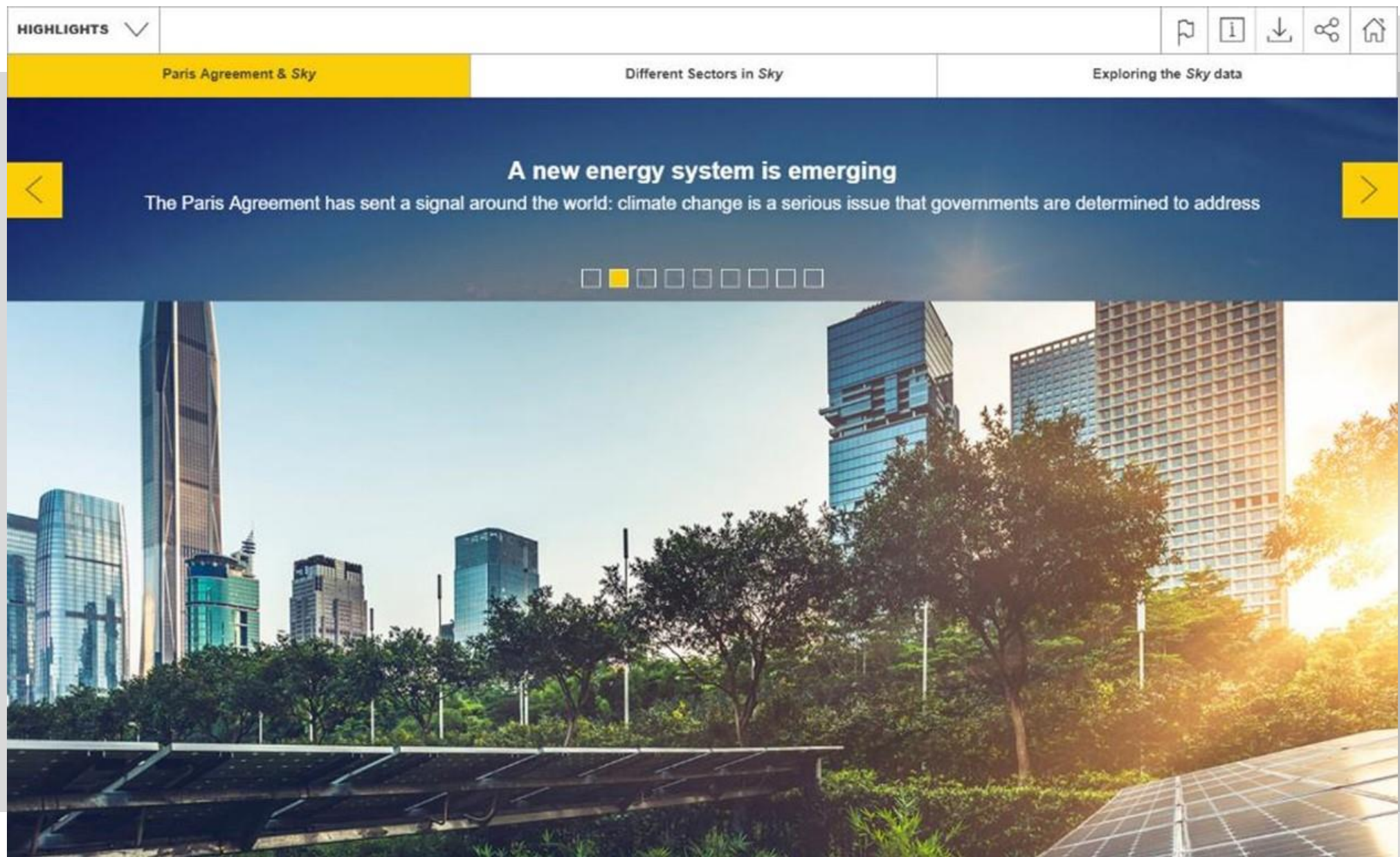


Dashboard

Explore the numbers behind the **Sky** scenario using our data dashboard. Select a geographic region and a data table and view in chart form.

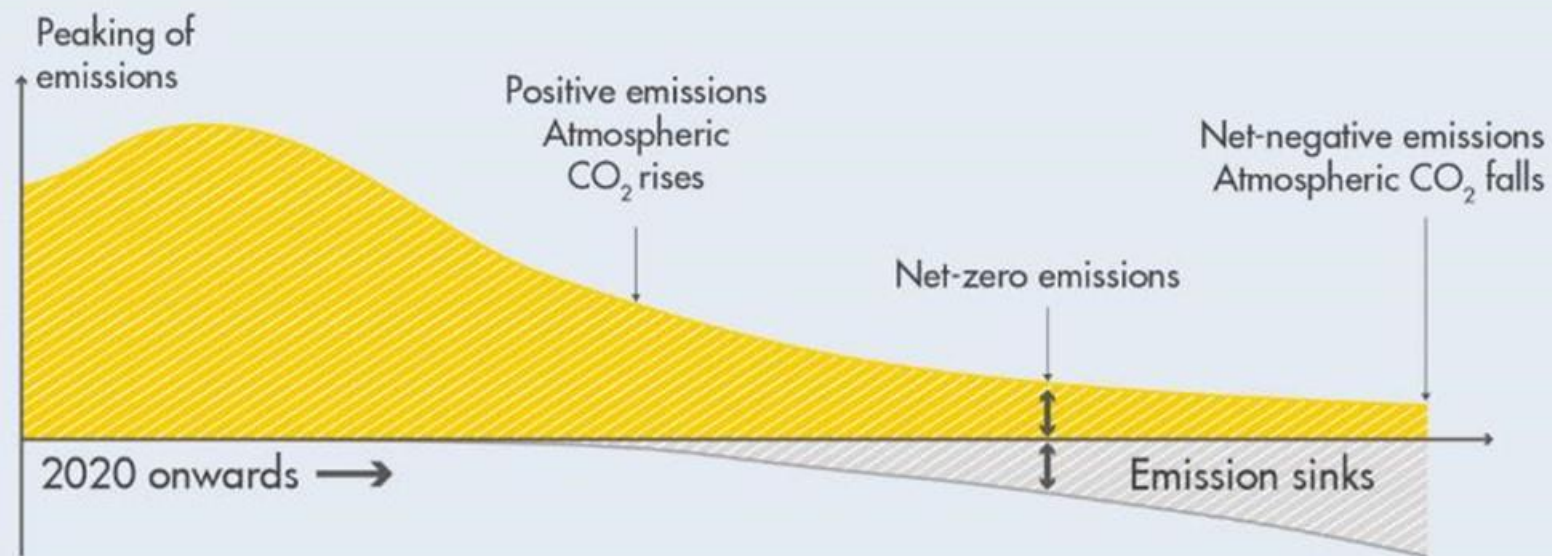
Explore charts





The Paris Agreement calls for an early peak in emissions

Net-zero emissions must be achieved during the second half of the century



Source: Shell Schematic

Sky relies on a complex combination of mutually reinforcing drivers



Carbon pricing



Energy efficiency



Electrification



New energy systems



Carbon capture and storage



End deforestation



Changing socio-political mindset

Sky relies on a complex combination of mutually reinforcing drivers



A change in consumer mindset means that people preferentially choose low-carbon, high-efficiency options to meet their energy service needs.



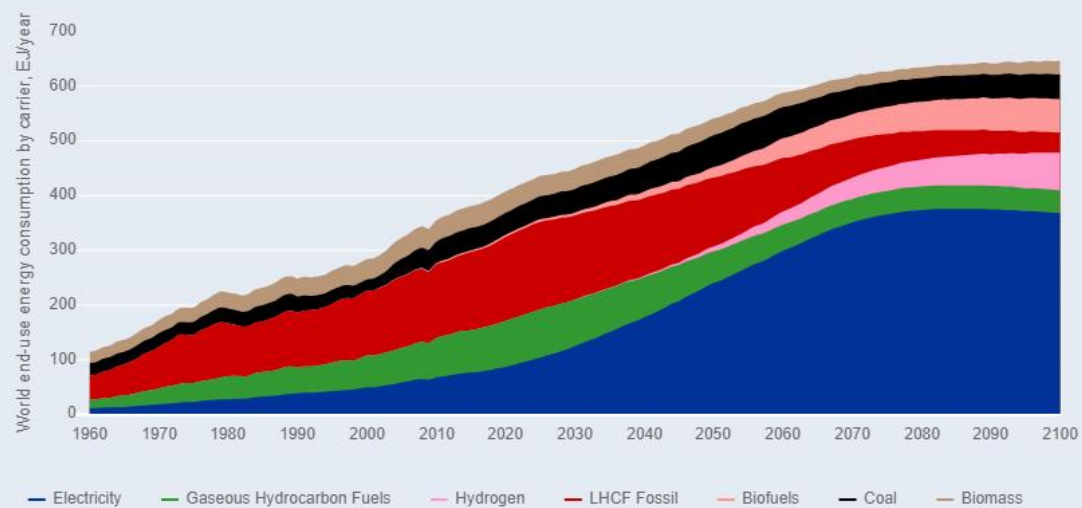
End deforestation



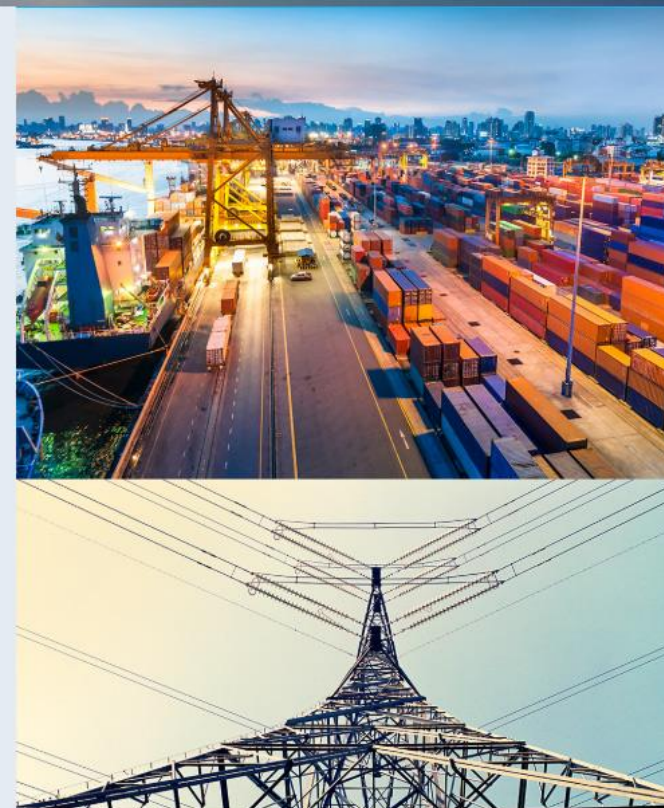
Changing socio-political mindset

Deep electrification transforms global final energy consumption in Sky

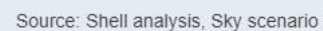
Nevertheless, the need for liquid and gaseous fuels in hard-to-electrify sectors remains significant, with biofuels and hydrogen emerging as major fuels to satisfy growth in overall energy services demand



Source: Shell analysis, Sky scenario

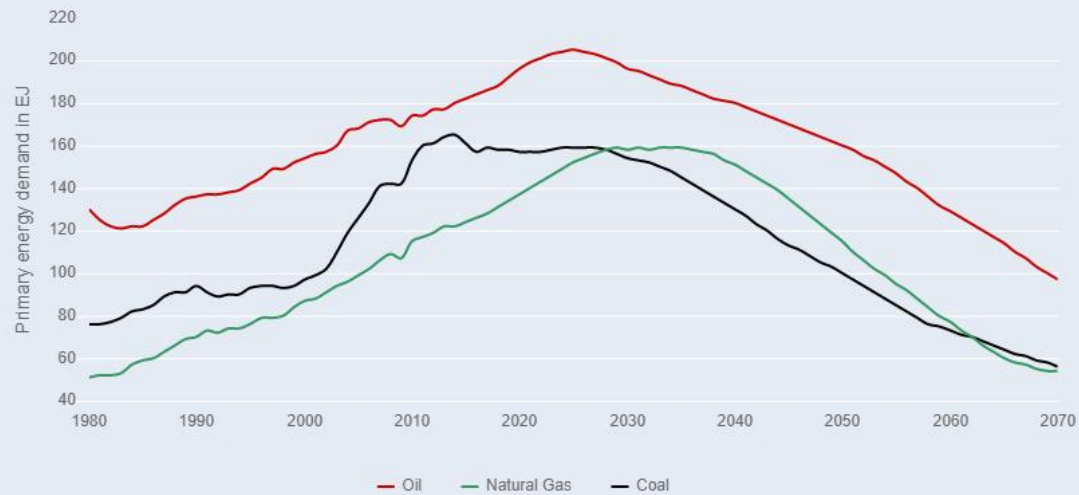


<



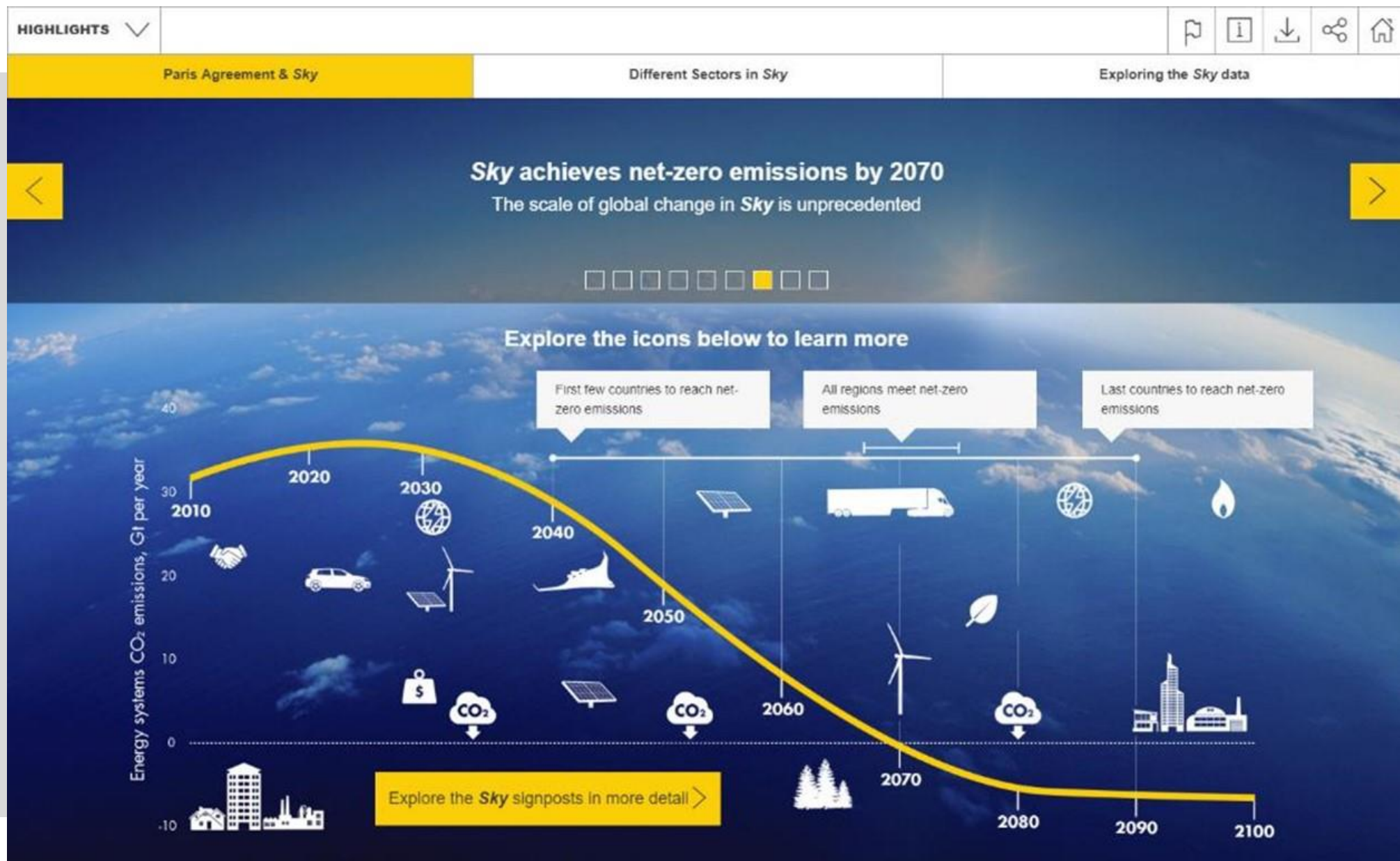
Fossil fuel demand peaks in the 2030s but remain in sectors where substitution is difficult

Global coal demand declines in the mid-2020s. Oil demand peaks in 2025 but remain critical for air transport and non-energy use. Natural gas serves as a transition fuel into the 2030s prior to a large-scale shift to non-fossil power generation.

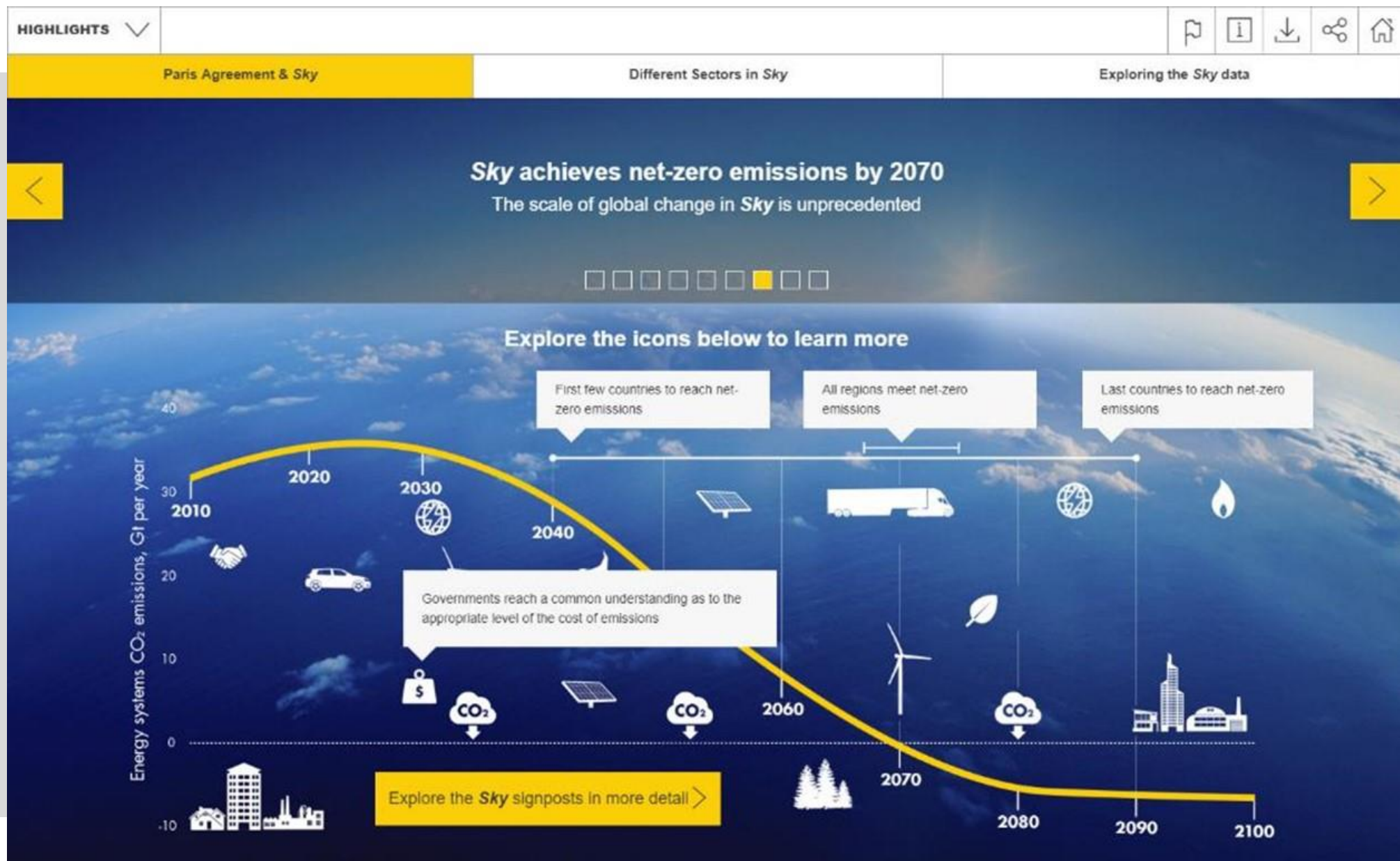


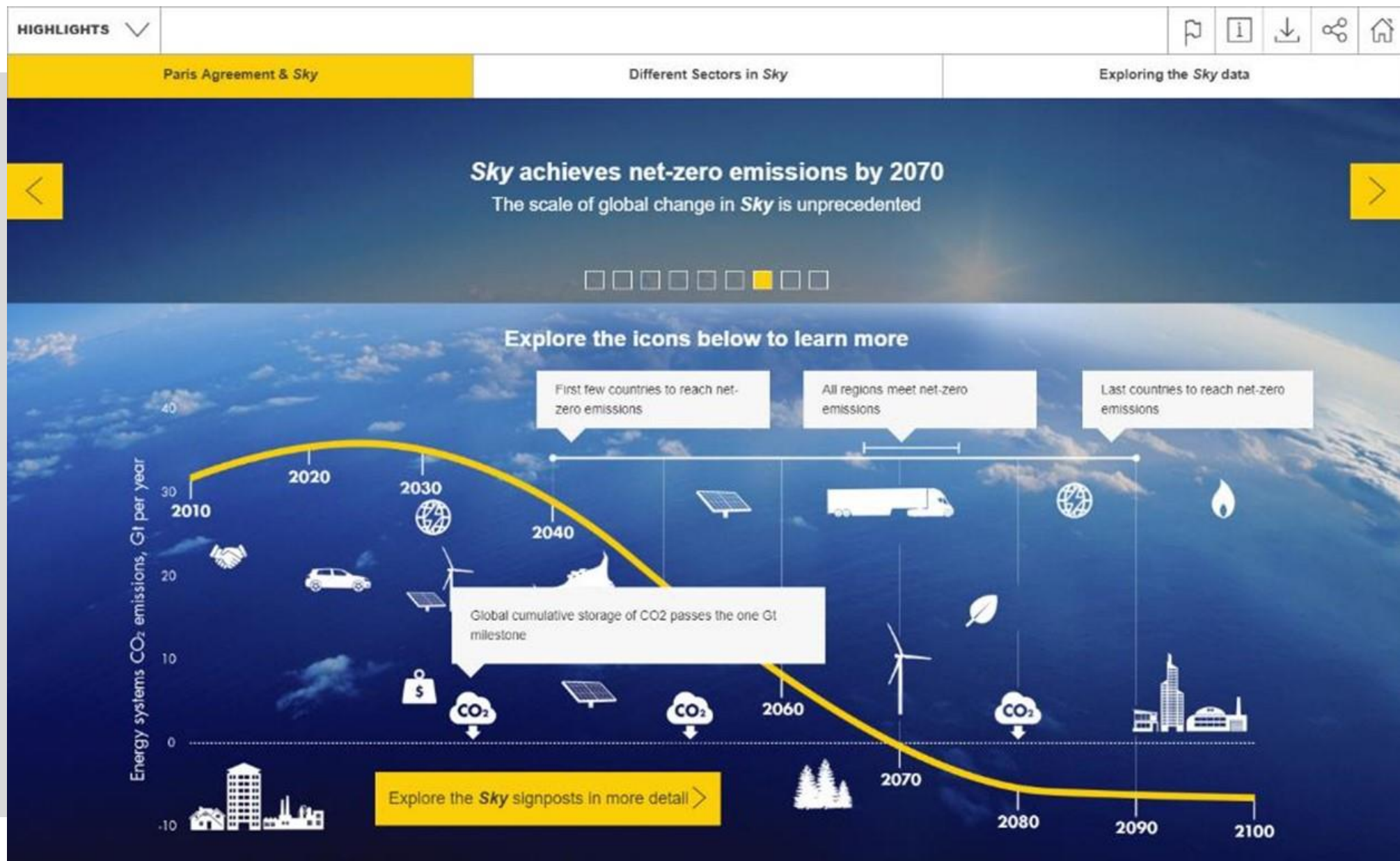
Source: Shell analysis, Sky scenario

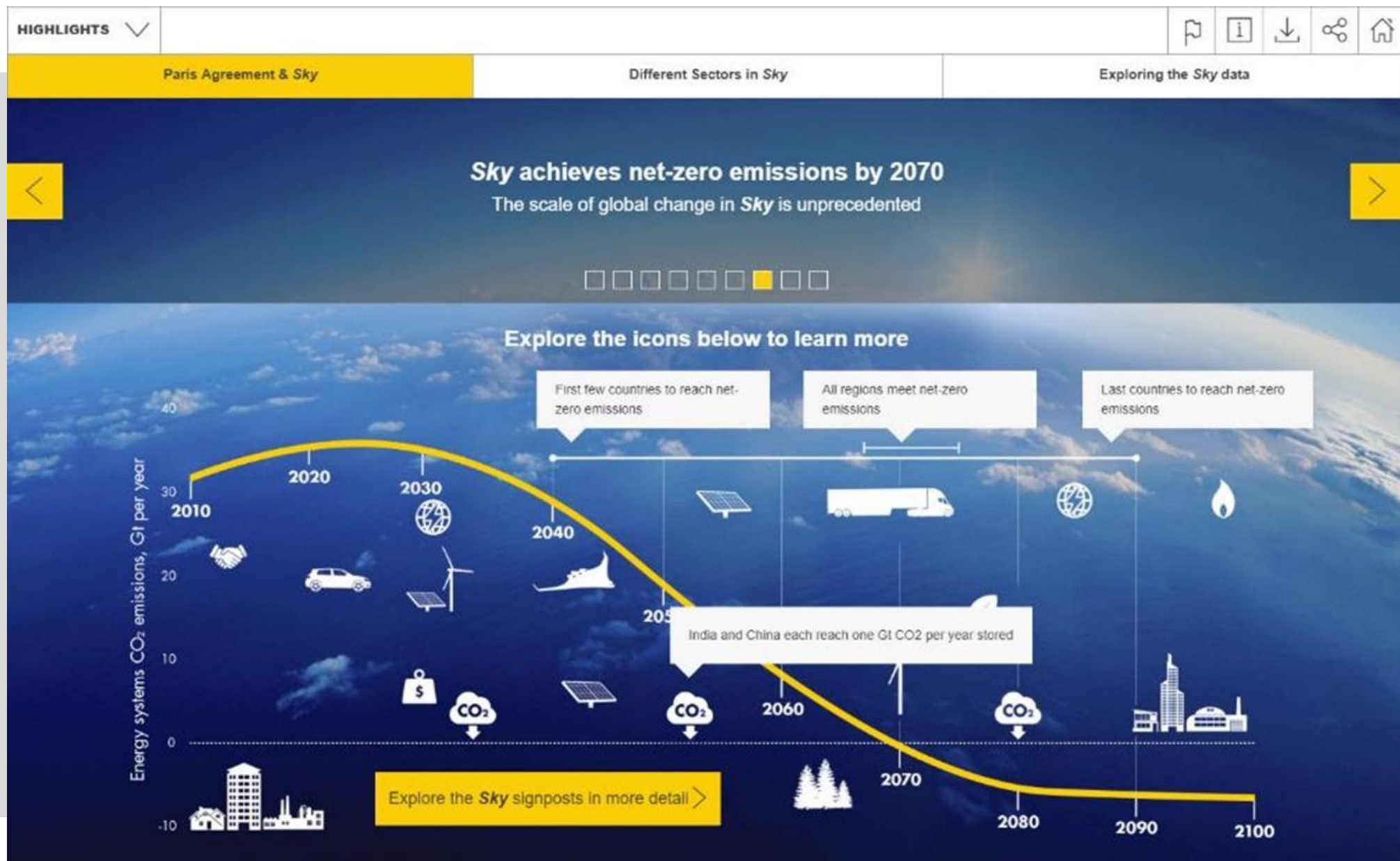








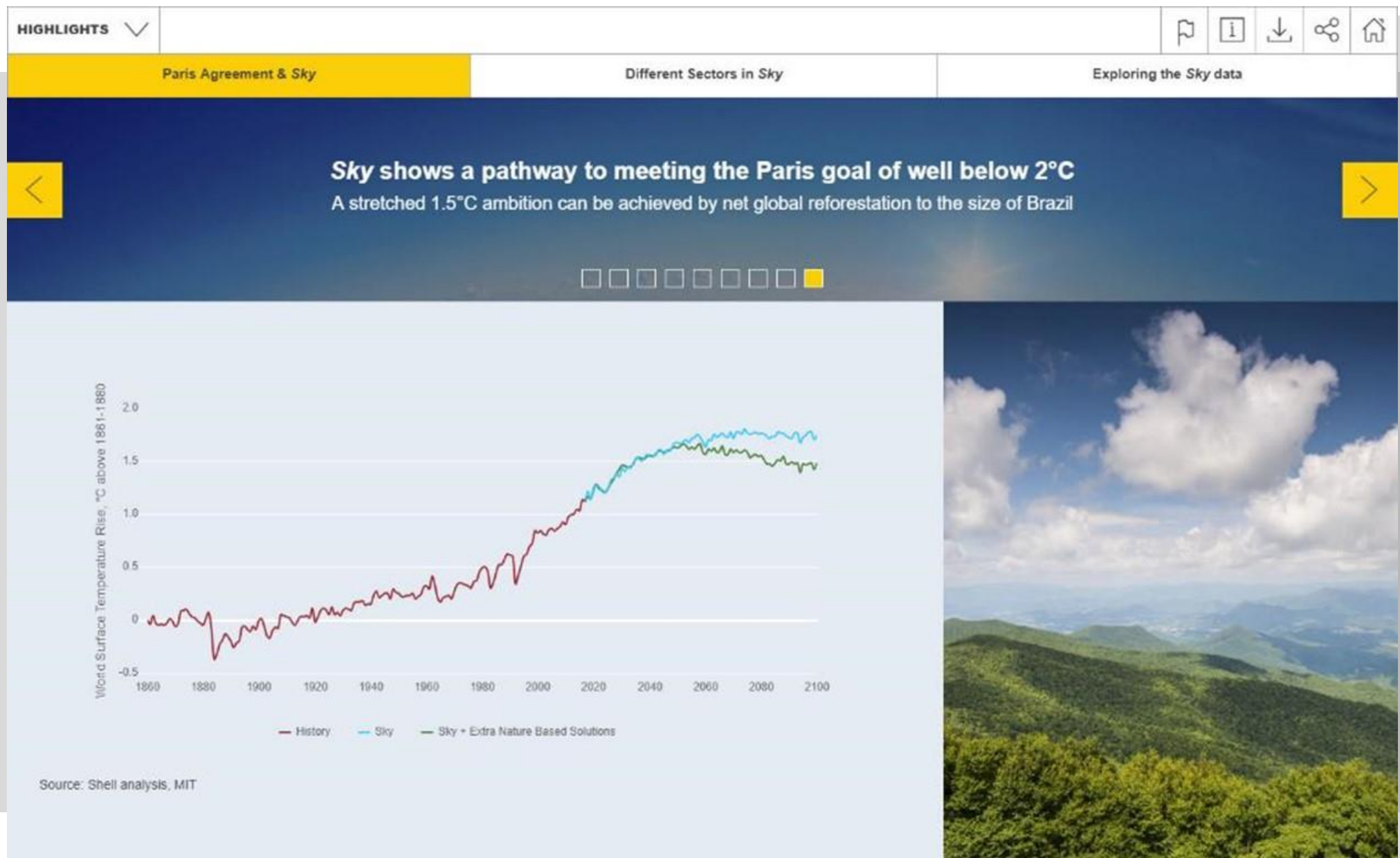












HIGHLIGHTS

Paris Agreement & Sky





Different Sectors in Sky

Exploring the Sky data

<

Sky requires effective re-wiring of the global economy in just 50 years

Significant change is needed across all sectors

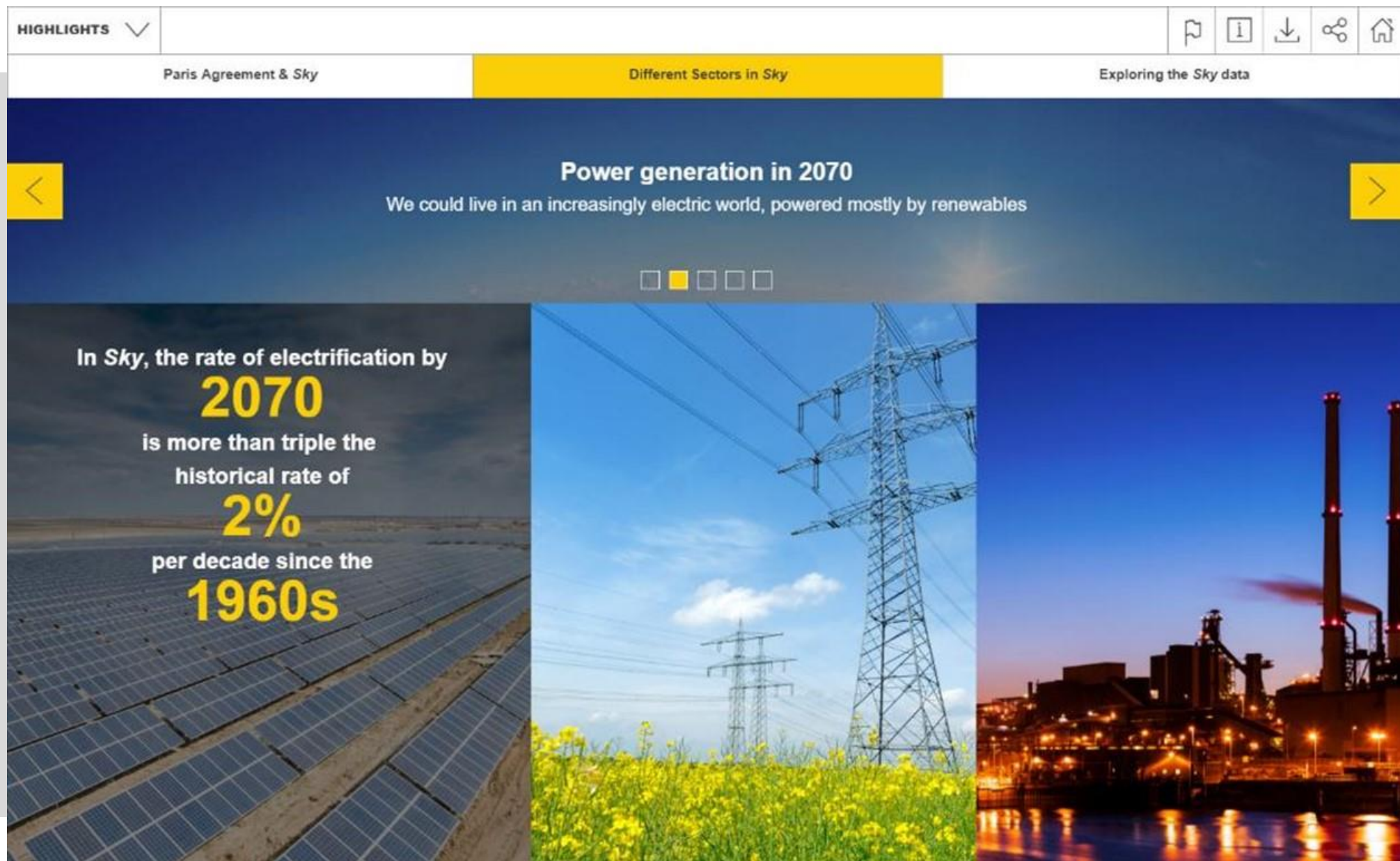


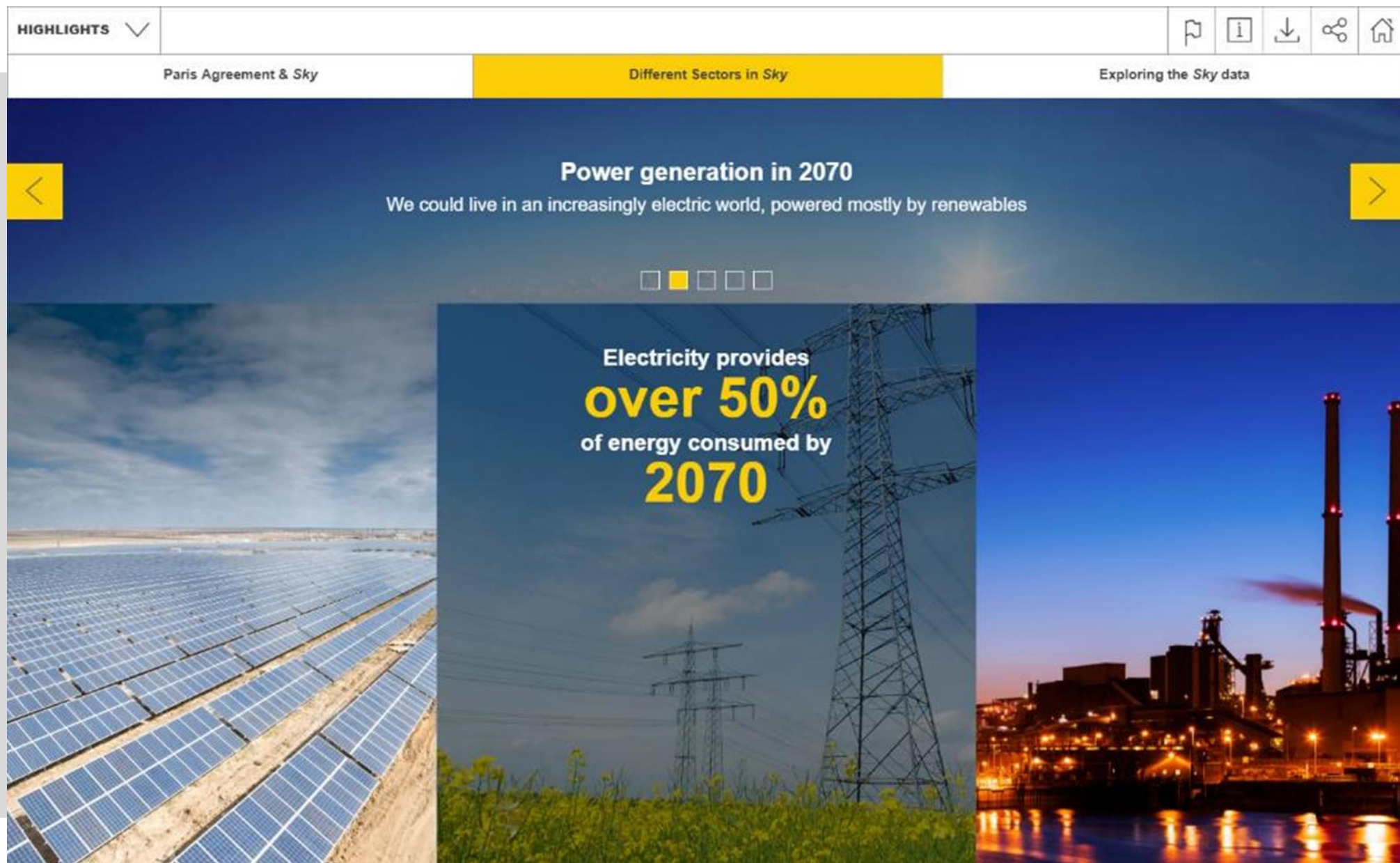
Industry & Agriculture

Copyright of Shell International

March 2019

26





HIGHLIGHTS

Paris Agreement & Sky

Different Sectors in Sky

Exploring the Sky data


<

Industry & Agriculture in 2070

>

A mix of government policies and consumer demand could help industry and agriculture become more energy efficient

In Sky, some
10,000
carbon capture and storage
facilities are needed by
2070
to address emissions from industries
like steel, cement and iron



Copyright of Shell International

March 2019

29

HIGHLIGHTS

Paris Agreement & Sky

Different Sectors in Sky


Exploring the Sky data

<


Industry & Agriculture in 2070

>

A mix of government policies and consumer demand could help industry and agriculture become more energy efficient



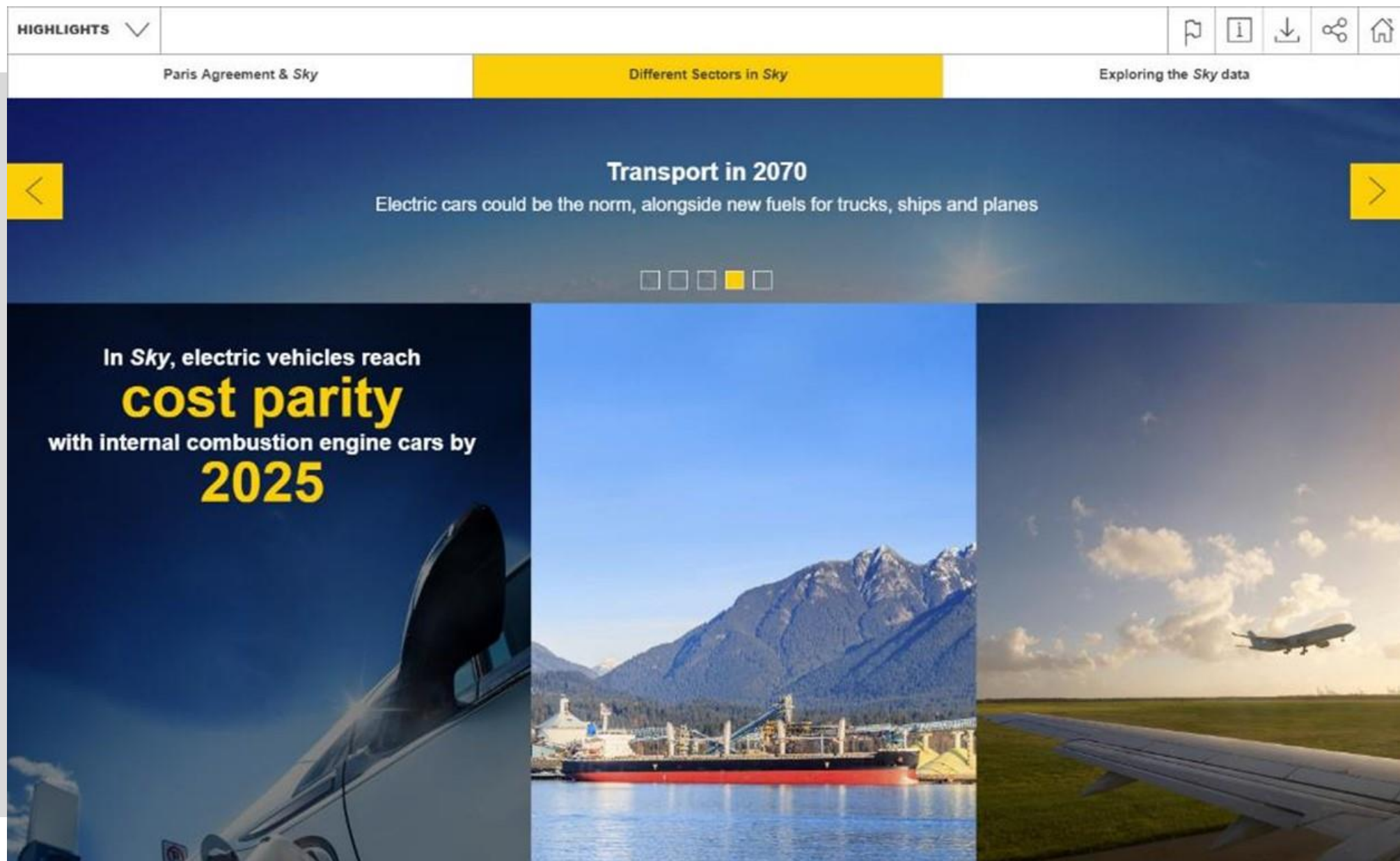
Net
CO₂ emissions
from land-use
change reaches
zero by 2070

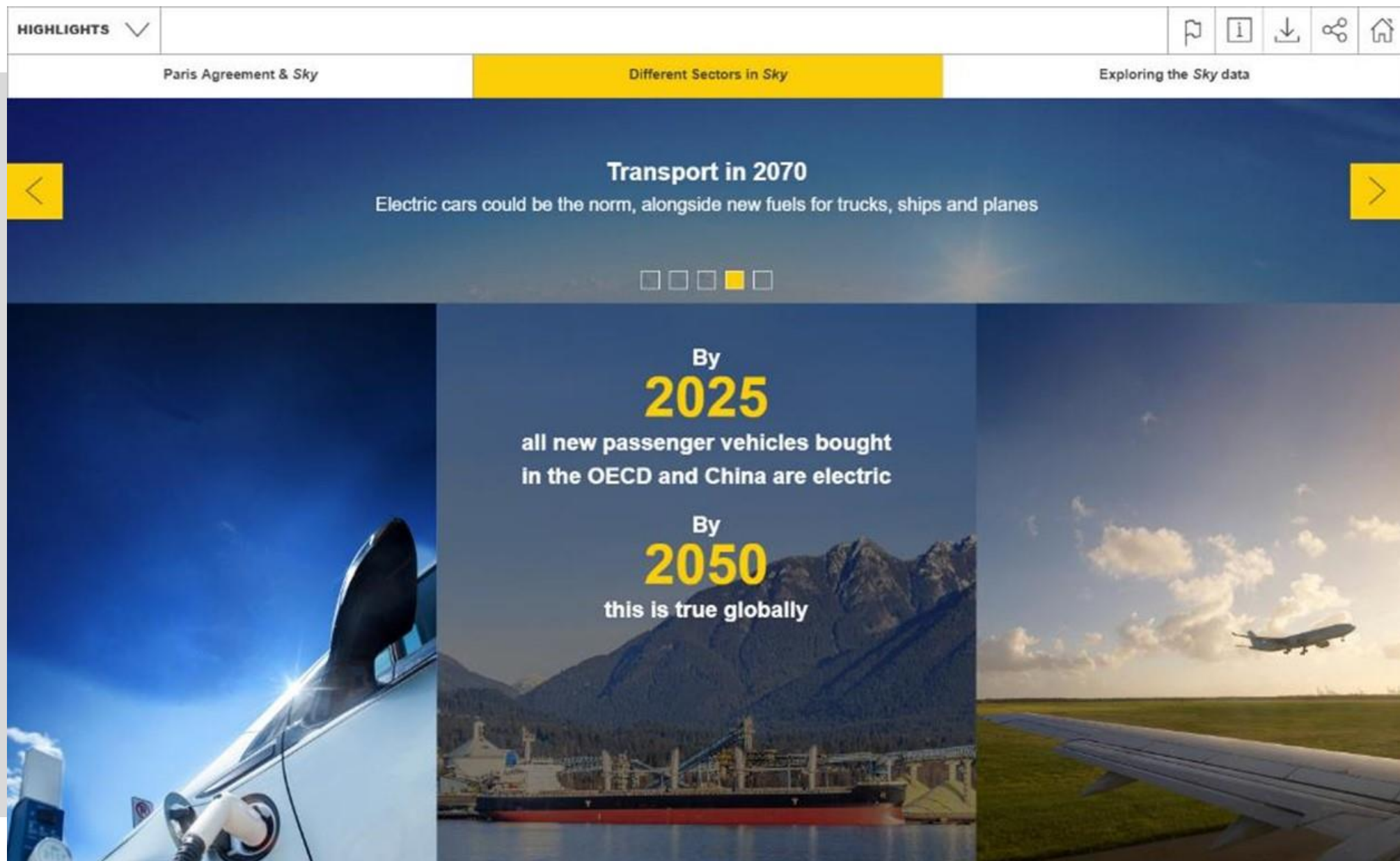


Copyright of Shell International

March 2019

30





HIGHLIGHTS

Paris Agreement & Sky

Different Sectors in Sky


Exploring the Sky data

<

Buildings & Cities in 2070

Homes and cities of the future could be carbon neutral, and super-efficient

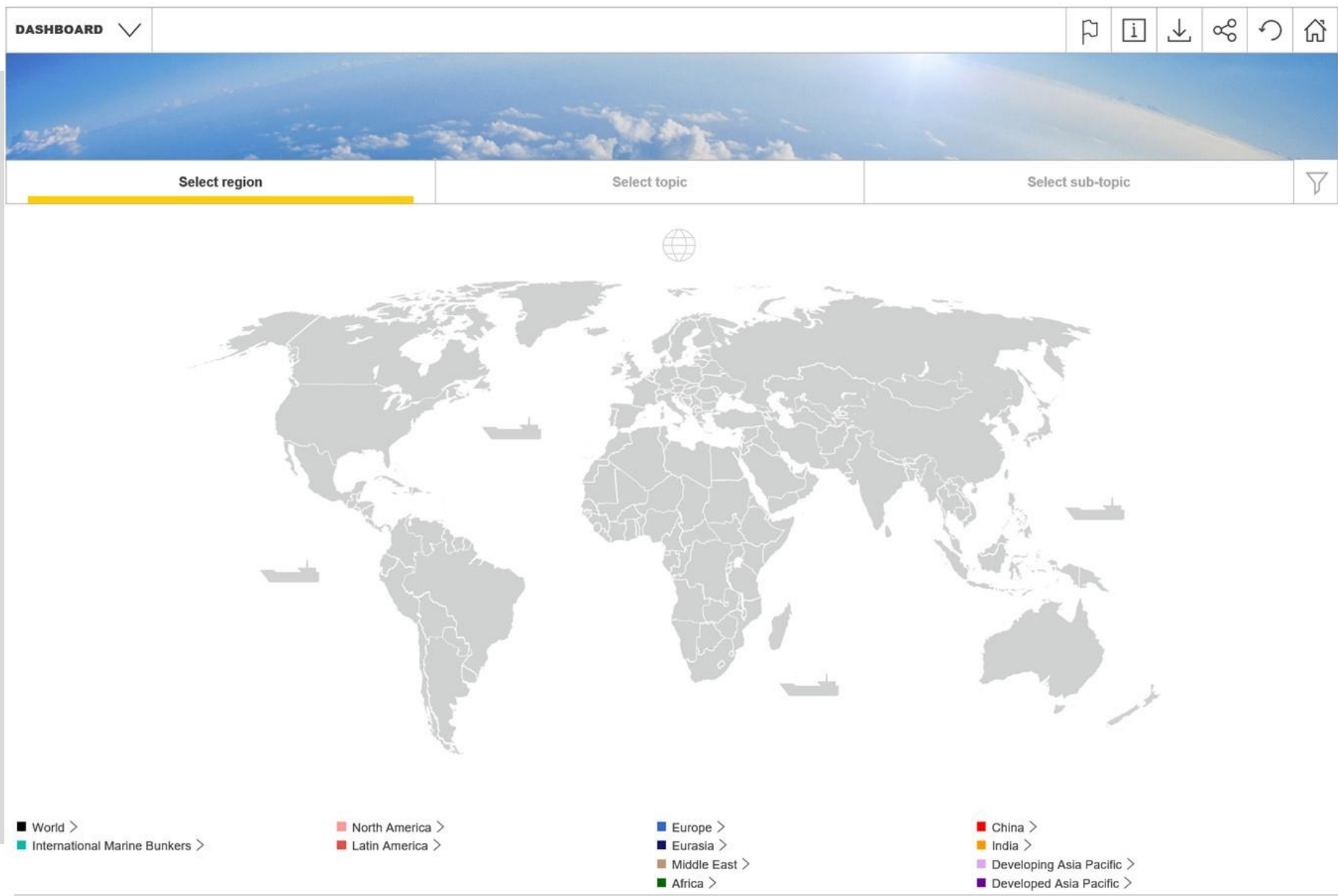
Buildings are almost
100%
electrified by
2070

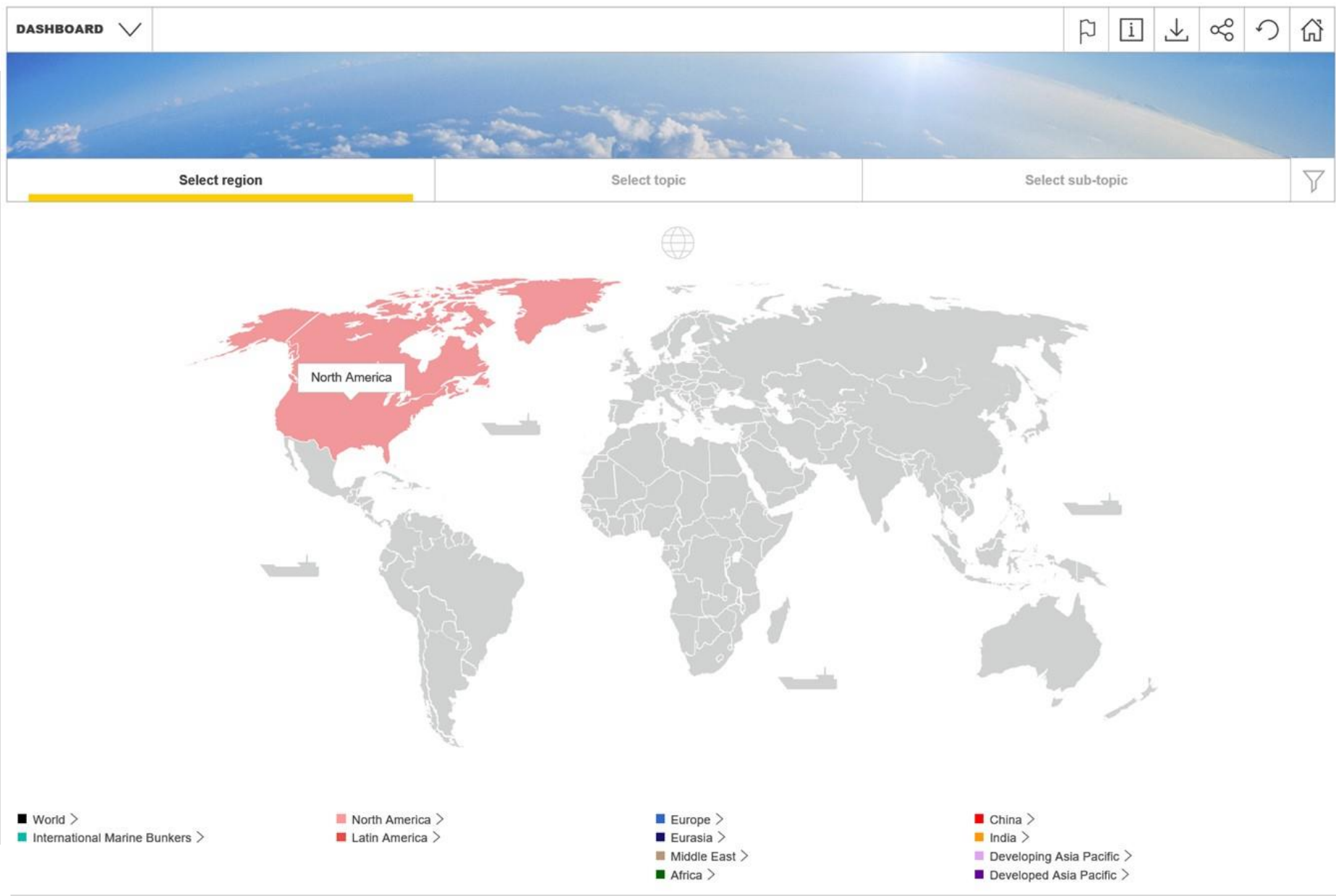


Copyright of Shell International

March 2019

33





DASHBOARD

North America

Select topic

Select sub-topic

Socio-economic

Total final consumption

Total primary energy

Energy service

Electricity

Emissions

DASHBOARD

North America

Select topic

Select sub-topic

Socio-economic

Total final consumption

Total primary energy

Energy service

Electricity

Emissions

DASHBOARD

North America

Total primary energy

Select sub-topic

All energy sources

Oil

Biofuels

Natural gas

Coal

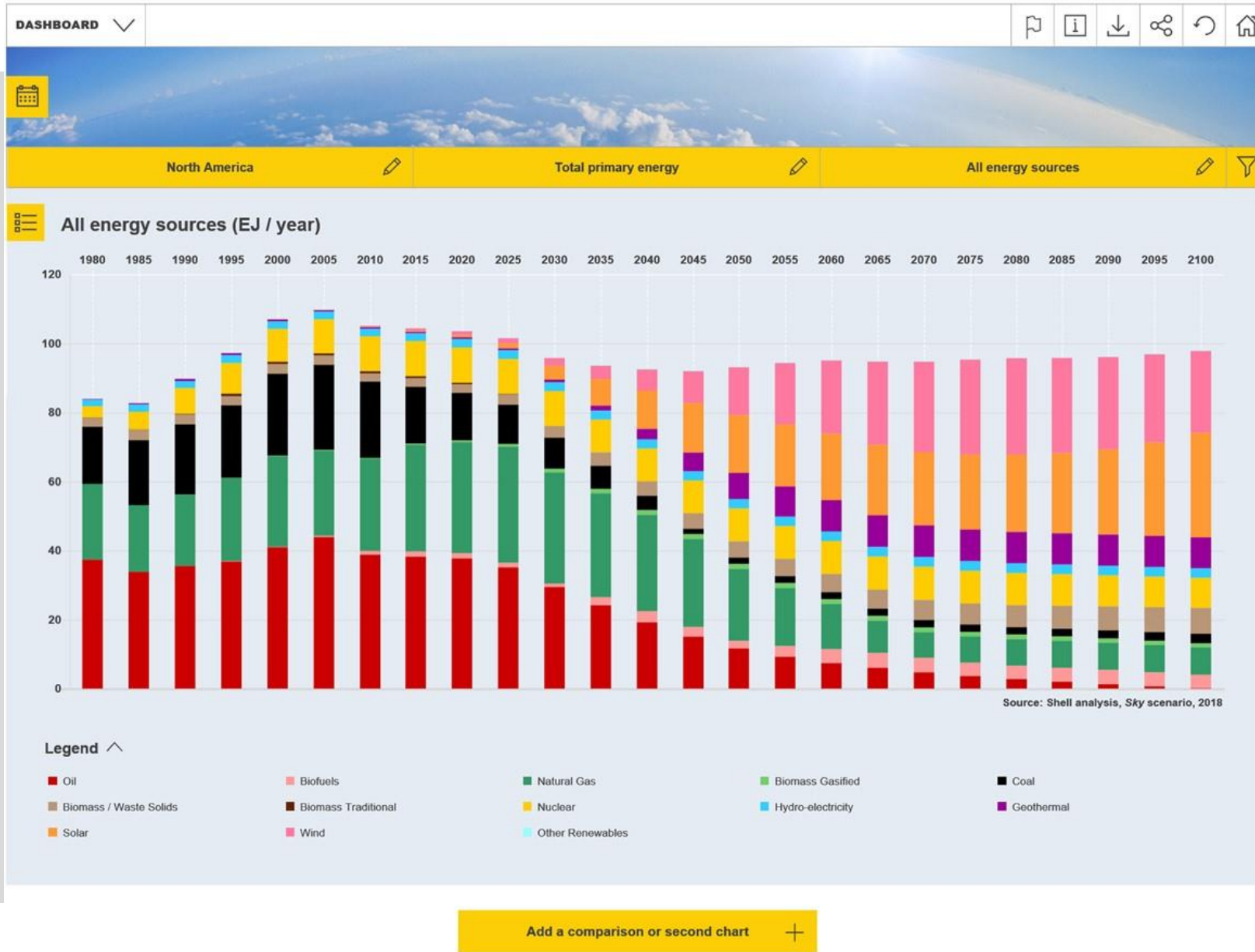
Nuclear

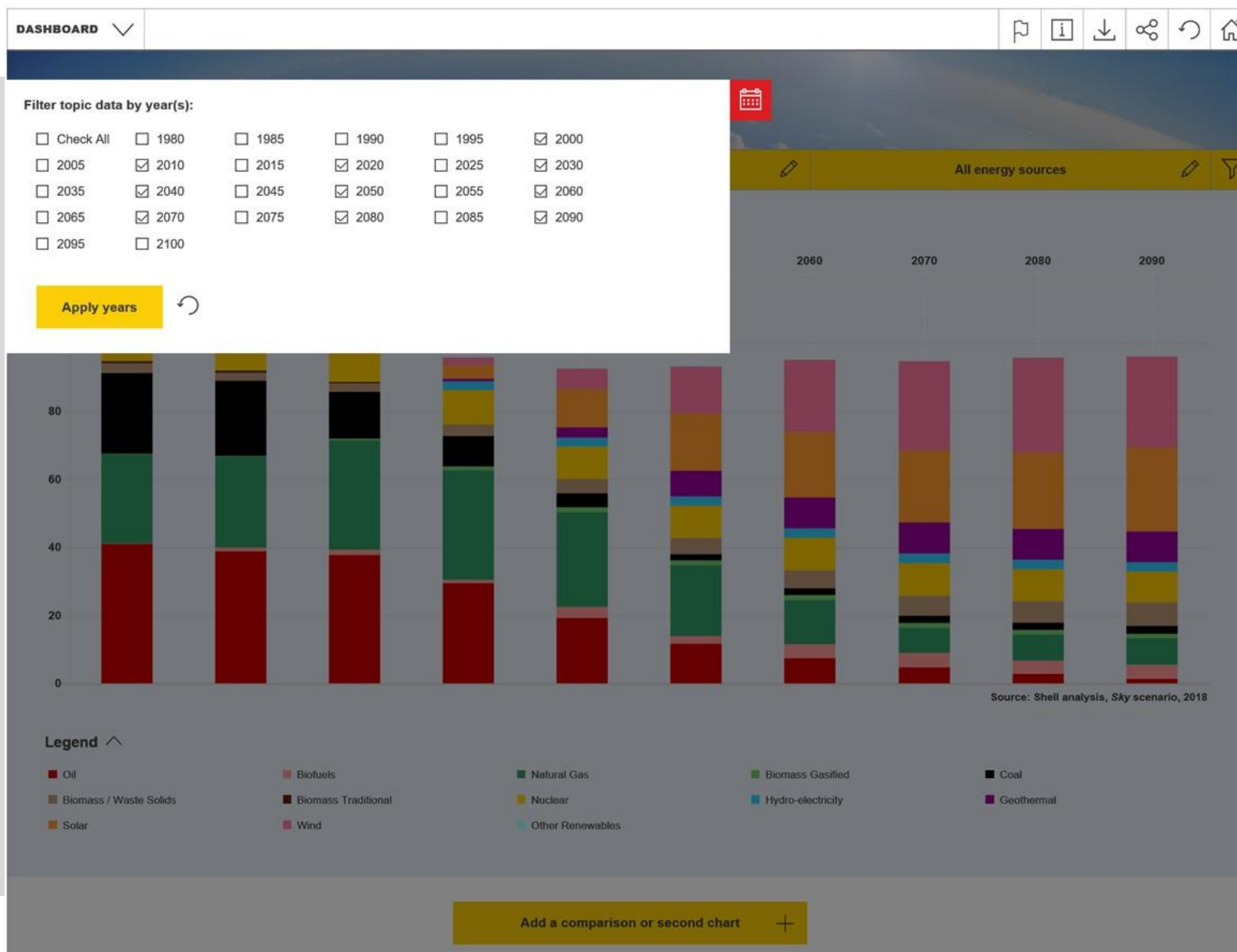
Hydro-electricity

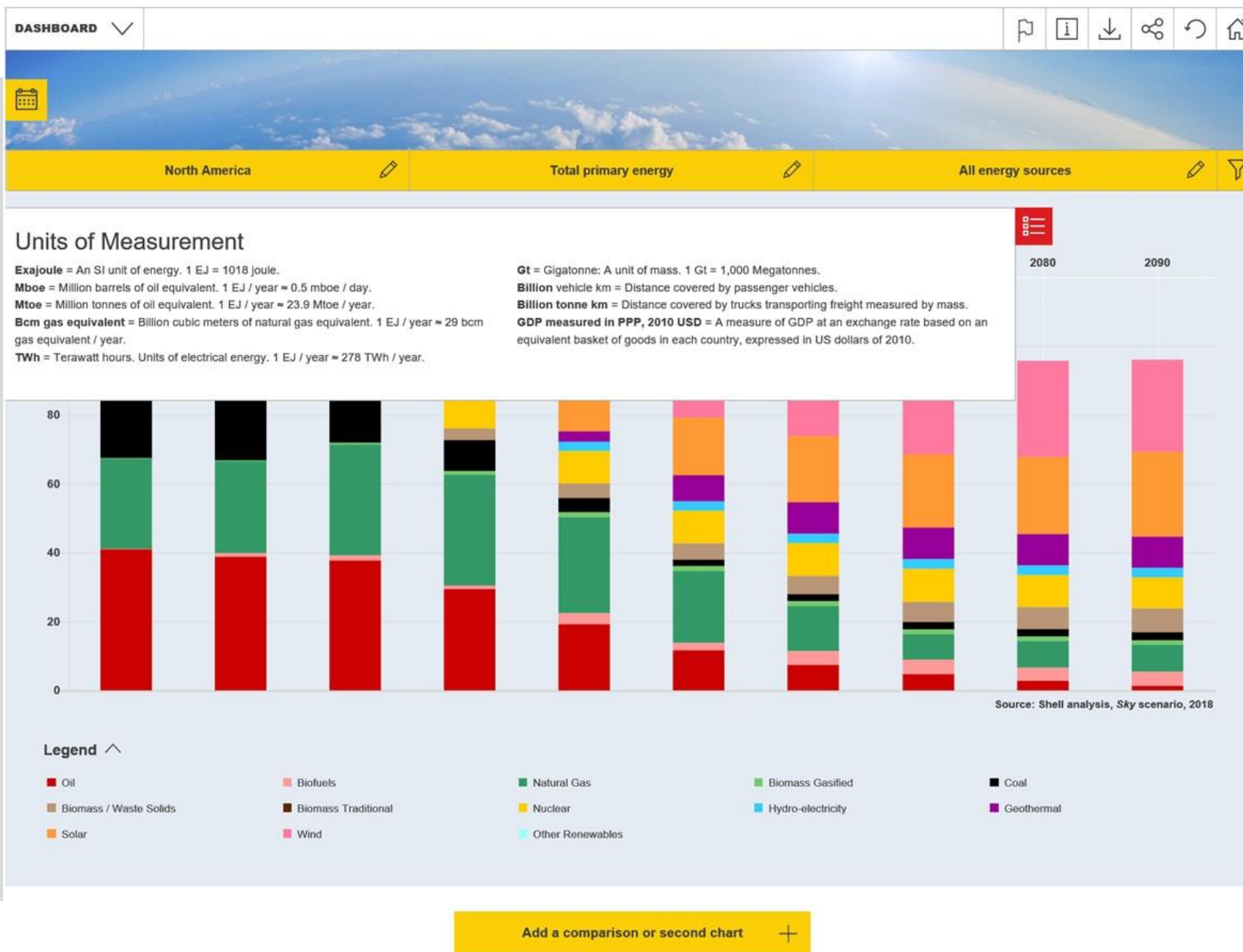
Solar

Wind

Other renewables












DASHBOARD ▾

🚩 ⓘ ⬇️ 🔗 ↺ 🏠


North America ✎

Select topic


Select sub-topic 🔍




Socio-economic




Total final consumption




Total primary energy



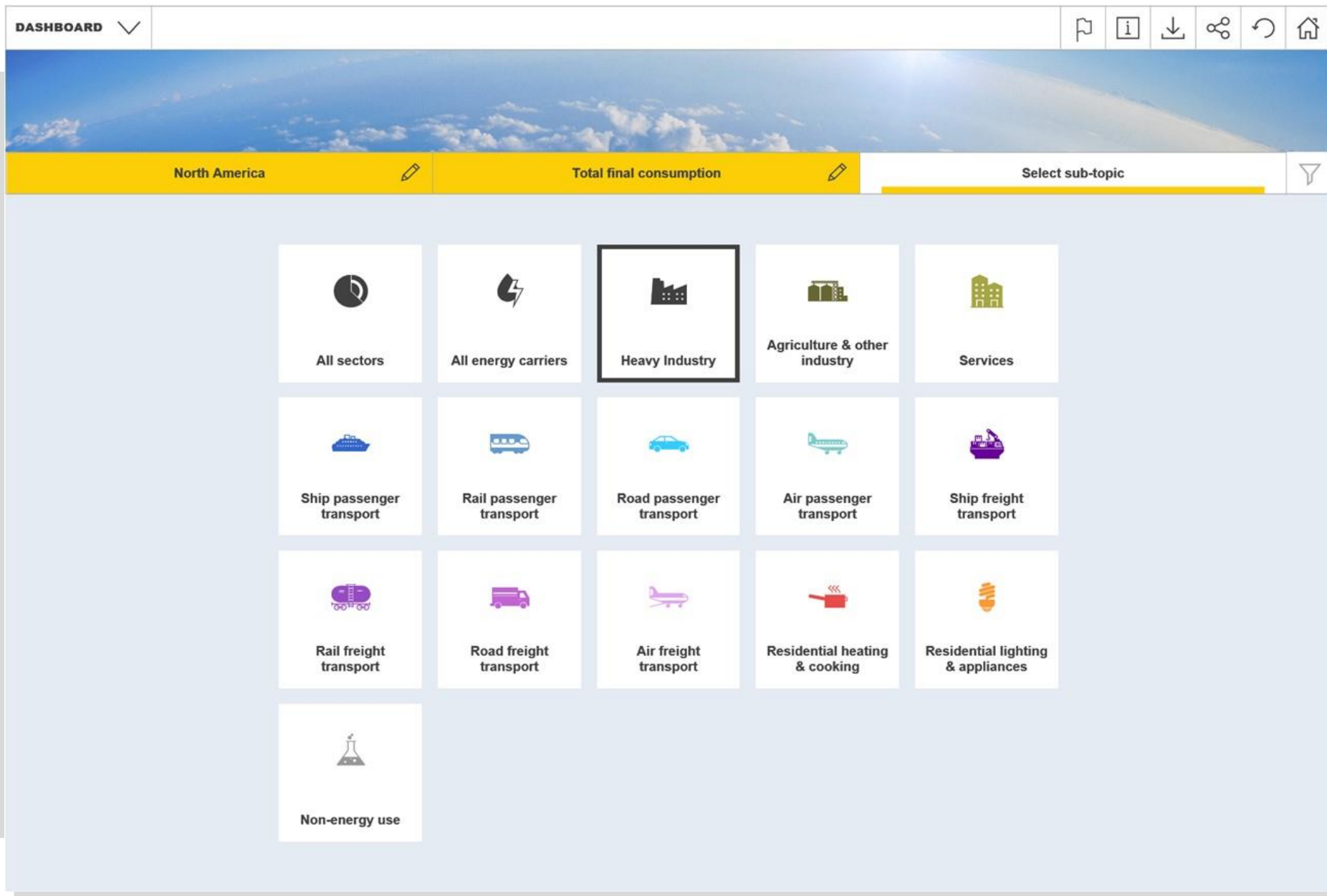
Energy service

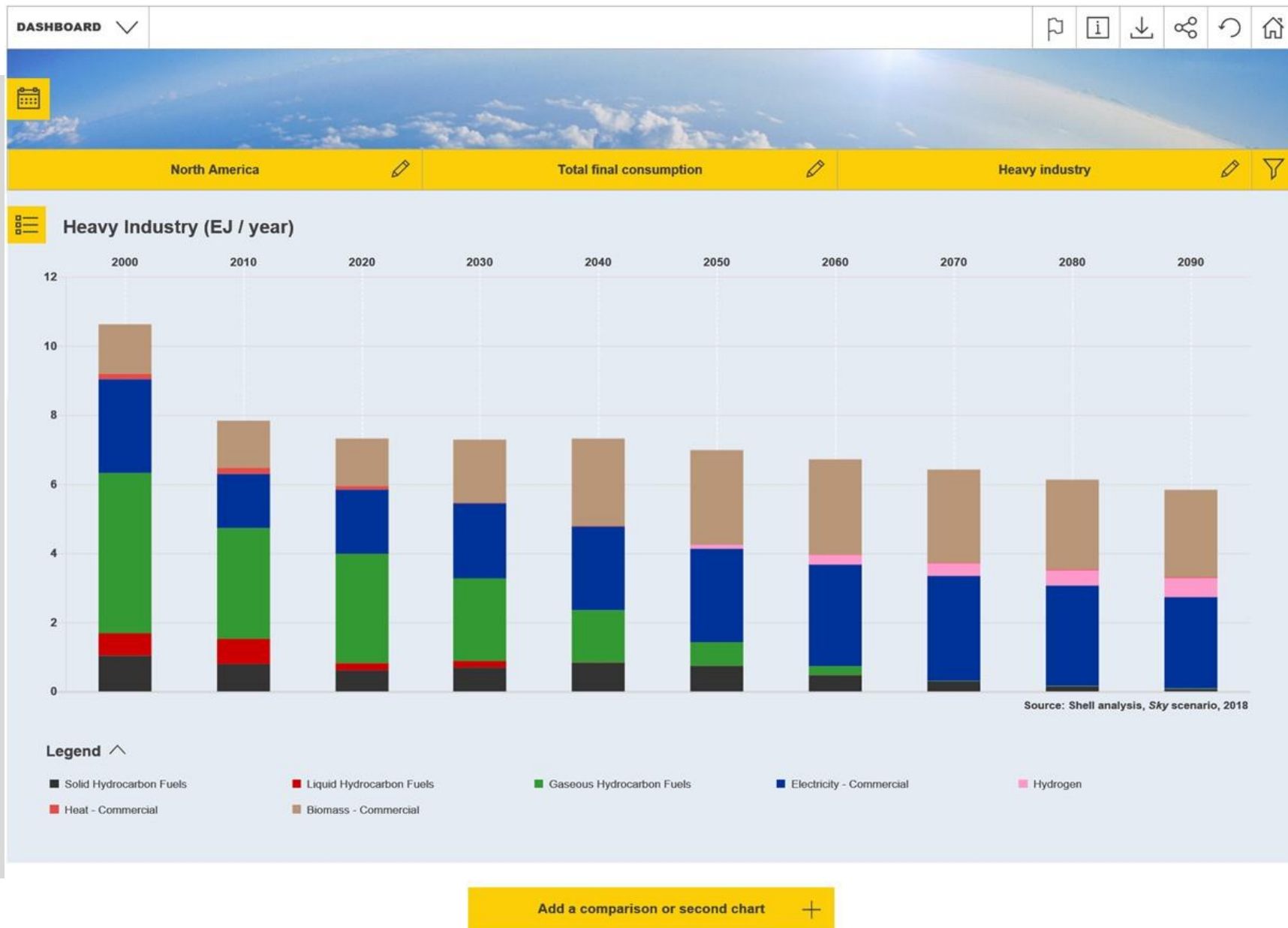


Electricity



Emissions





DASHBOARD

North America

Select topic

Select sub-topic

Socio-economic


Total final consumption







Total primary energy


Energy service


Electricity


Emissions


DASHBOARD 







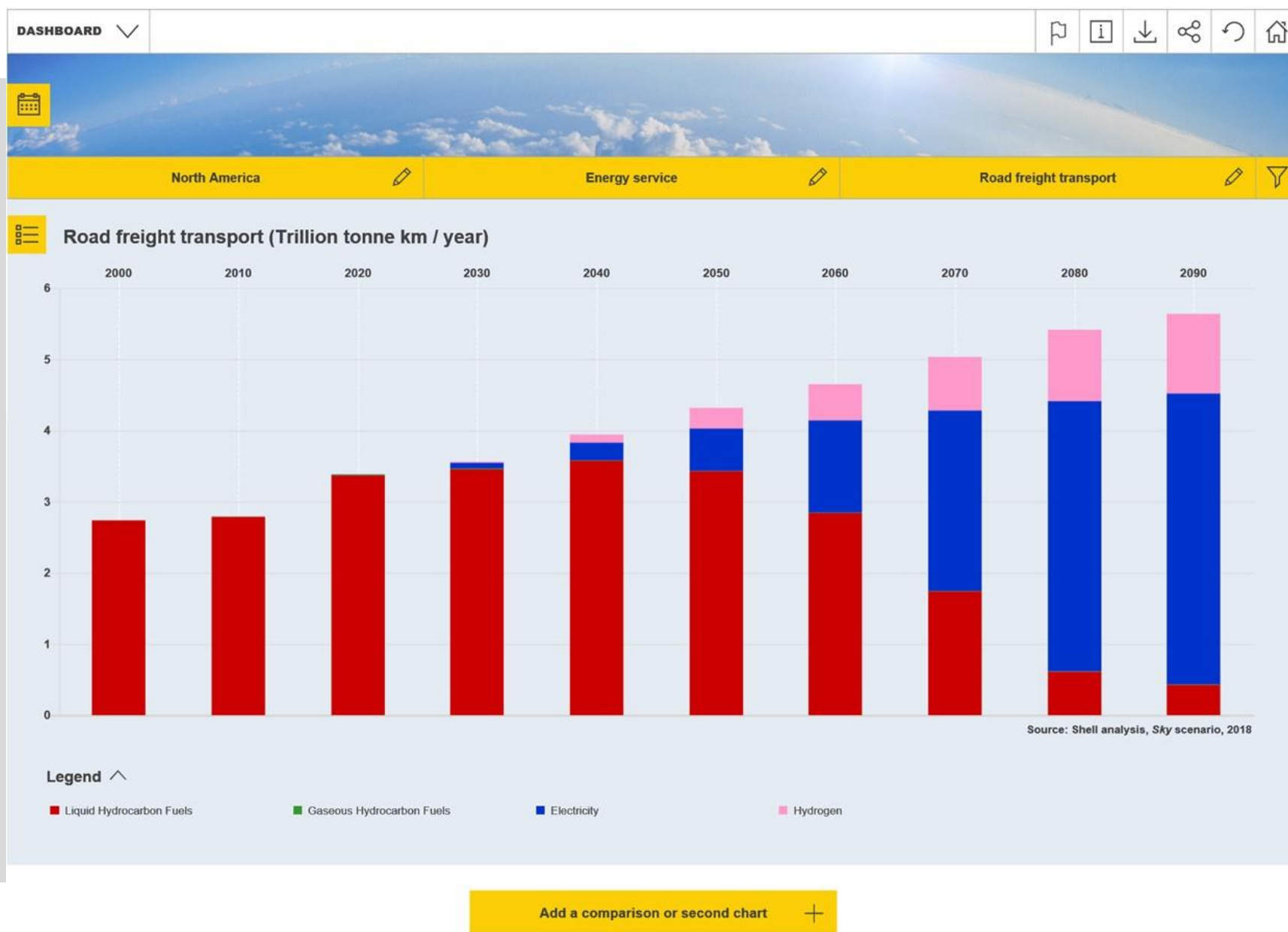
North America

Energy service

Select sub-topic


Road passenger
transport


Road freight
transport




DASHBOARD


North America

Select topic


Select sub-topic




Socio-economic




Total final consumption




Total primary energy



Energy service



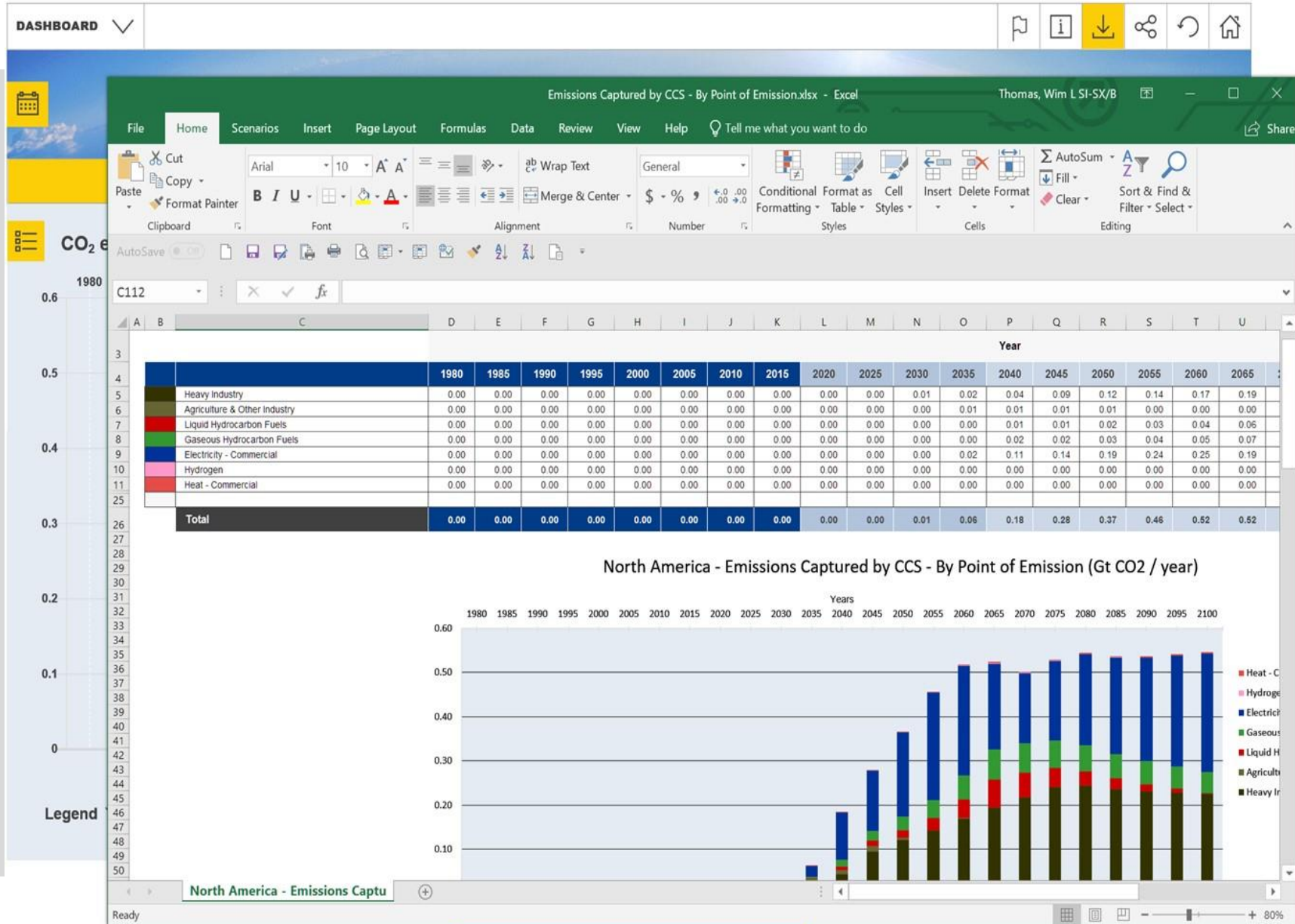
Electricity



Emissions



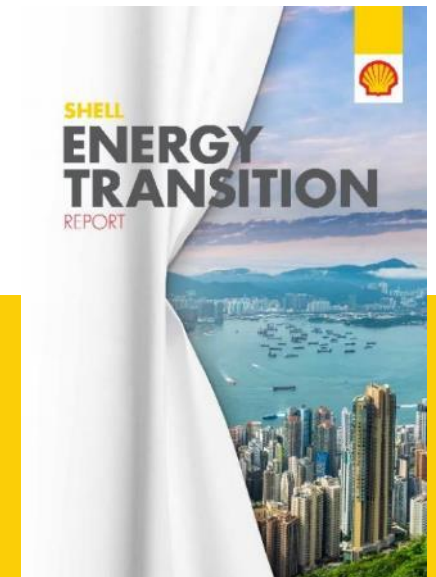
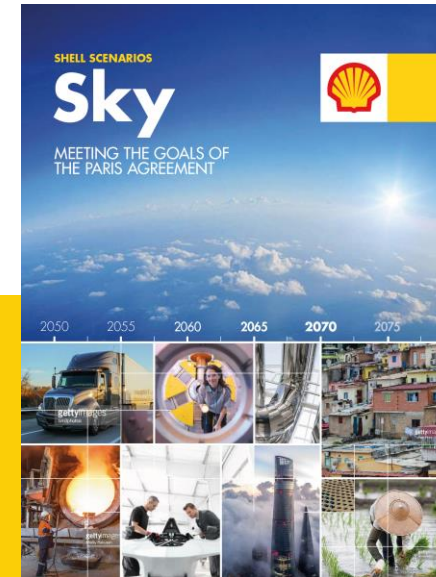
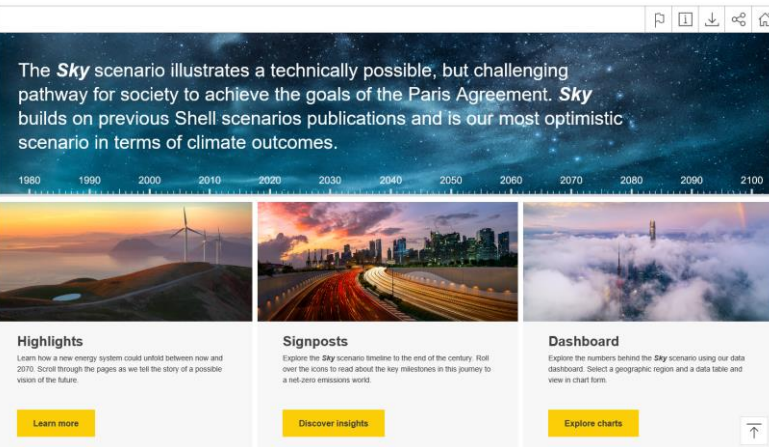






Online material available

Interactive tool launch on 26th March



www.shell.com/skyscenario
#ShellScenarios

