Thriving Amidst the Energy Transition

A Shell Perspective

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Definitions & cautionary note

The companies in which Royal Dutch Shell plc directly and indirectly owns investments are separate legal entities. In this **[REPORT/BOOKLET/VIDEO/PRESENTATION, etc.]** "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 its 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 **[REPORT/BOOKLET/VIDEO/PRESENTATION, etc.]** 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 **[REPORT/BOOKLET/VIDEO/PRESENTATION, etc.]** 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 **[REPORT/BOOKLET/VIDEO/PRESENTATION, etc.]**, 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; (m) risks associated with the impact of pandemics, such as the COVID-19 (coronavirus) outbreak; and (n) 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 **[REPORT/BOOKLET/VIDEO/PRESENTATION, etc.]** 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 Form 20-F for the year ended December 31, 2019 (available at www.shell.com/investor and www.sec.gov). These risk factors also expressly qualify all forward-looking statements contained in this **[REPORT/BOOKLET/VIDEO/PRESENTATION, etc.]** and should be considered by the reader. Each forward-looking statement speaks only as of the date of this **[REPORT/BOOKLET/VIDEO/PRESENTATION, etc.]**, ***[insert date]***. 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 **[REPORT/BOOKLET/VIDEO/PRESENTATION, etc.]**.

We may have used certain terms, such as resources, in this **[REPORT/BOOKLET/VIDEO/PRESENTATION, etc.]** that the United States Securities and Exchange Commission (SEC) strictly prohibits us from including in our filings with the SEC. 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.

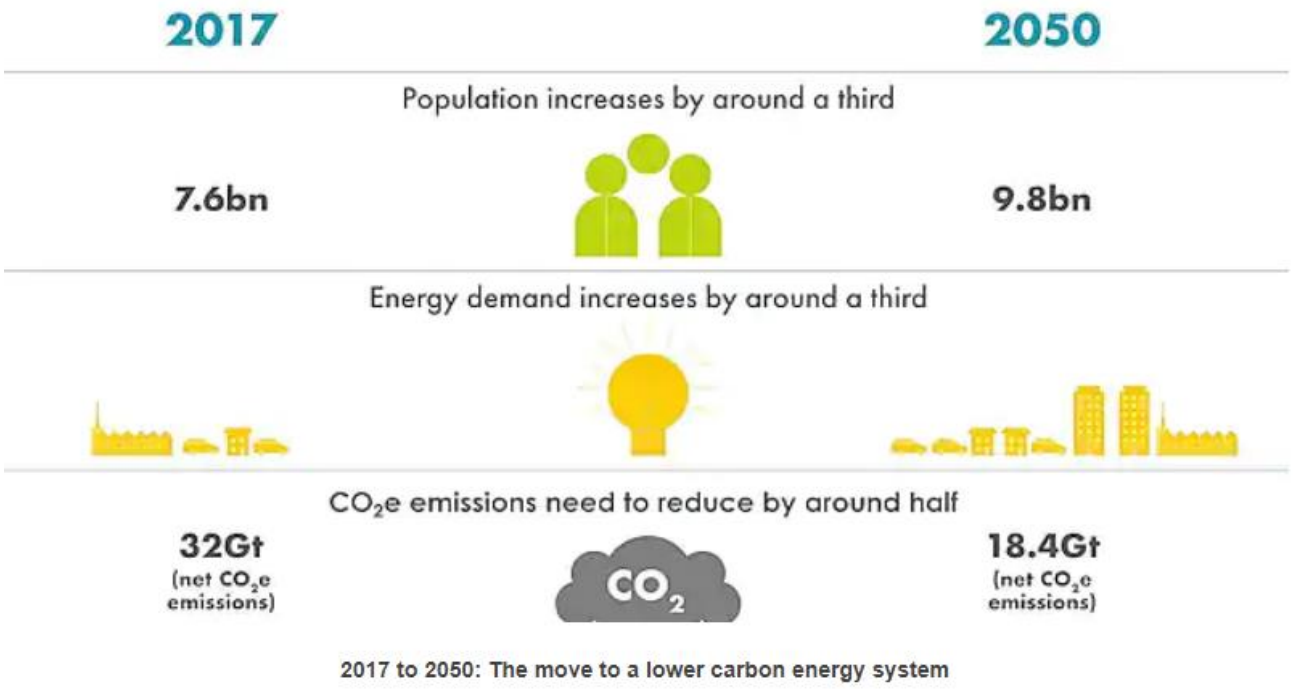
Definitions & cautionary note

This [REPORT/BOOKLET/VIDEO/PRESENTATION, etc.] contains data and analysis from Shell's 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 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.

Additionally, it is important to note that as of August 2020, Shell's operating plans and budgets do not reflect Shell's Net-Zero Emissions ambition. Shell's aim is that, in the future, its operating plans and budgets will change to reflect this movement towards its new Net-Zero Emissions ambition. However, these plans and budgets need to be in step with the movement towards a Net-Zero Emissions economy within society and among Shell's customers.

Also, in this [REPORT/BOOKLET/VIDEO/PRESENTATION, etc.] 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.

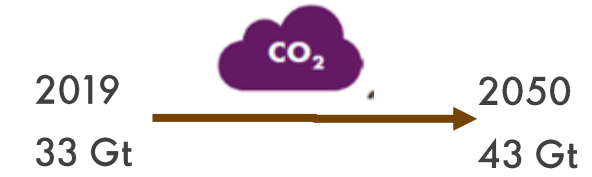
Energy and CO_2 Challenge



From Shell Energy & Innovation: https://www.shell.com/energy-and-innovation/the-energy-future/what-is-shells-net-carbon-footprint-ambition.html

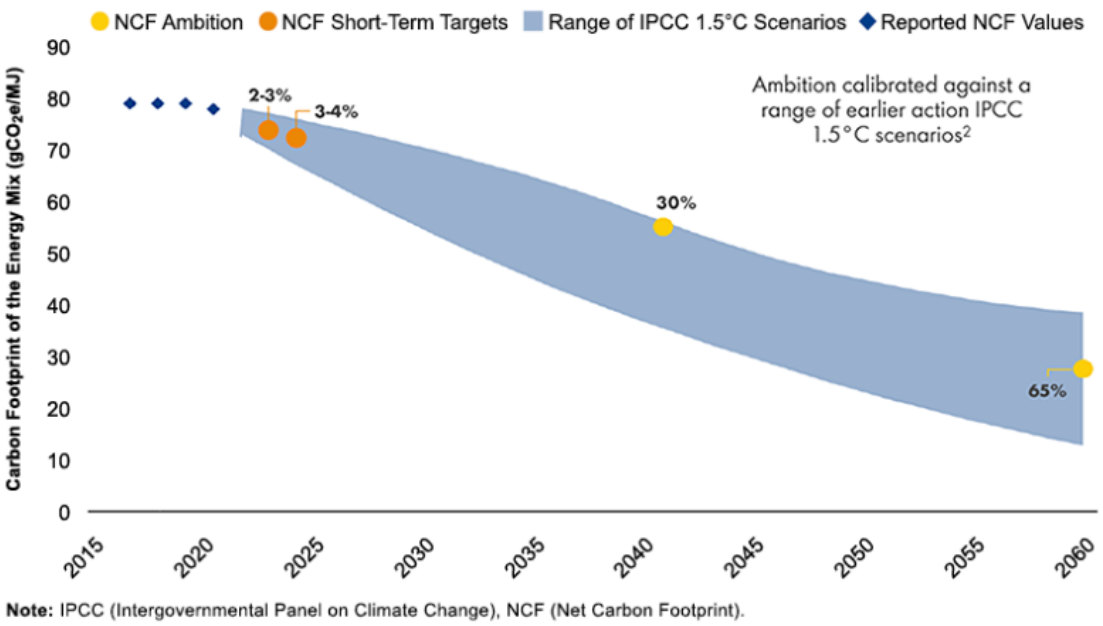
Business as usual reference case: All growth occurs outside OECD

U.S. Energy Information Administration, International Energy Outlook 2019

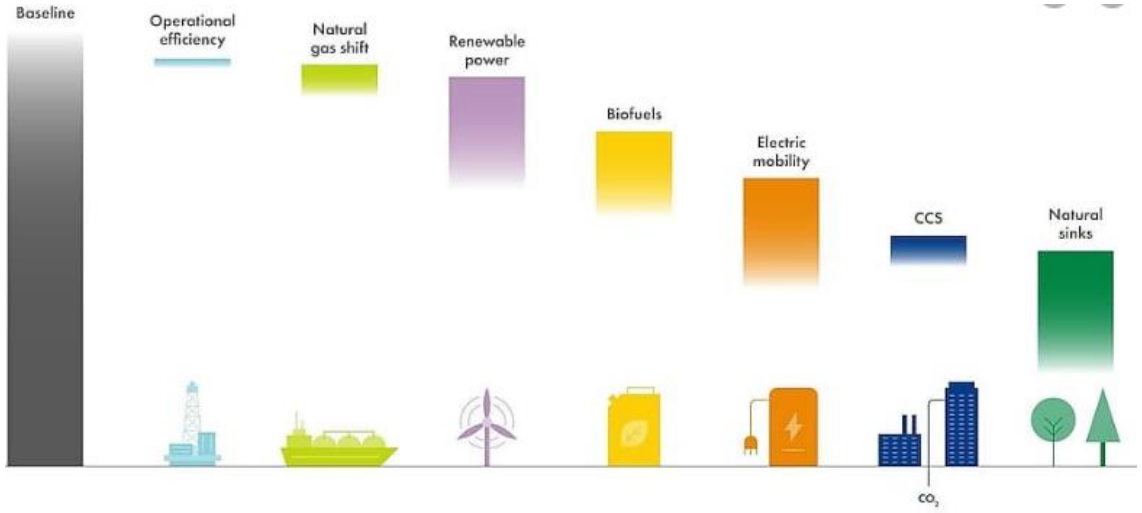


Net Zero Emissions

Shell Accelerated Ambition (2020)



Note: IPCC (Intergovernmental Panel on Climate Change), NCF (Net Carbon Footprint).

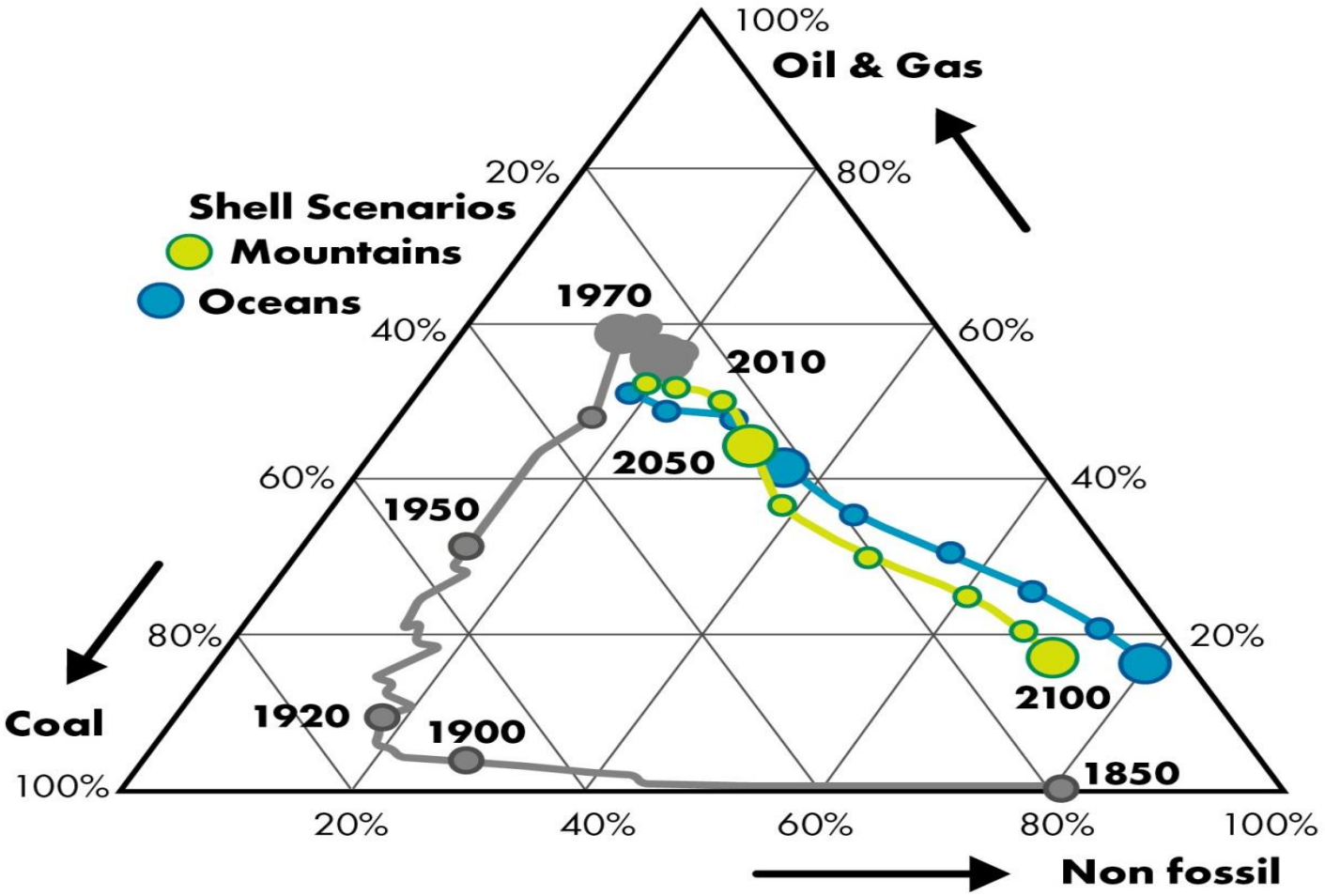


Reduce NCF of energy products sold (scope-3)

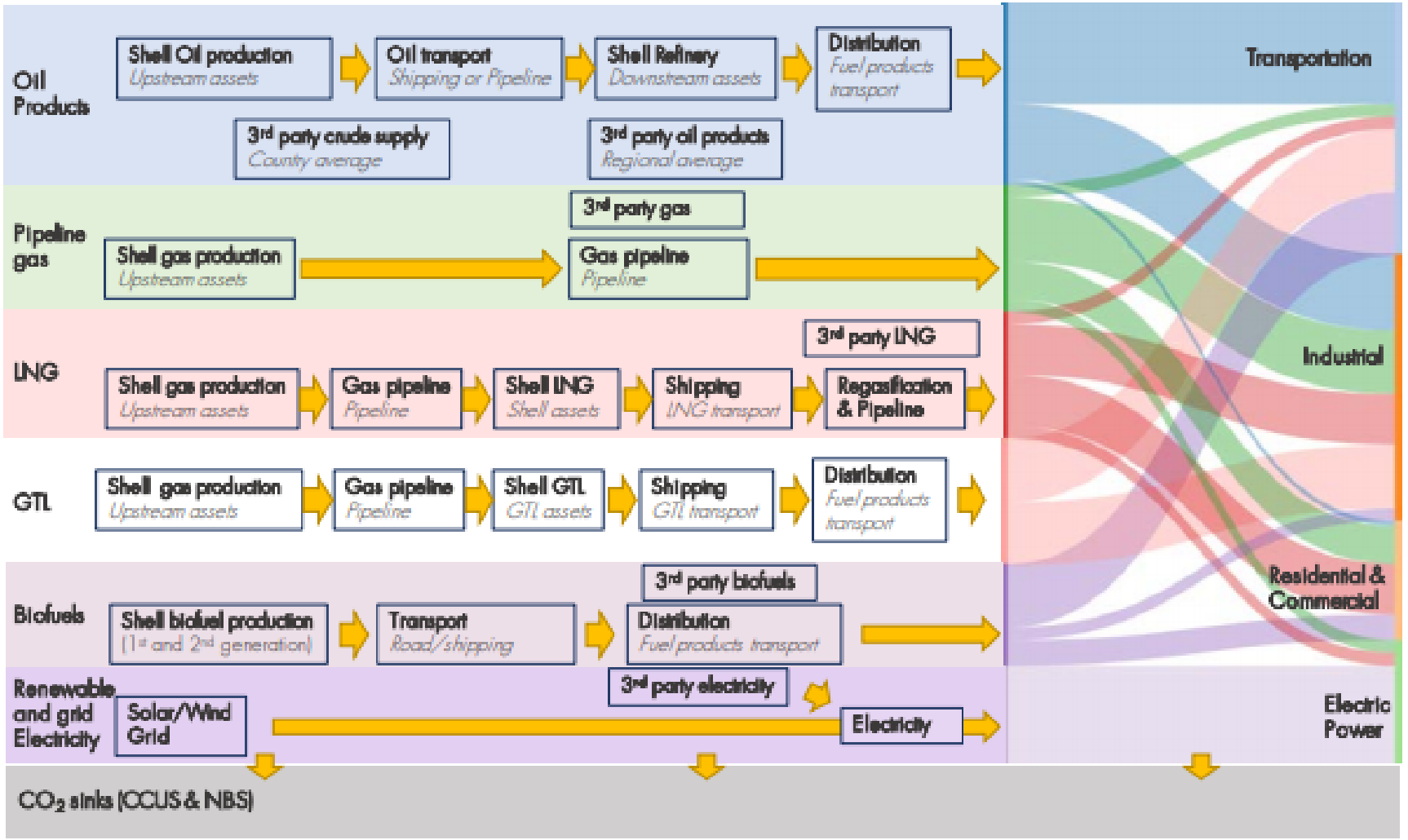
- 30% by 2035
- 65% by 2050
- Help customers reduce emissions from their use to net zero by 2050 or sooner

Net zero emissions from manufacture of all our products by 2050 or sooner.

The Energy Transition …… Coming Full Circle in the Near Future

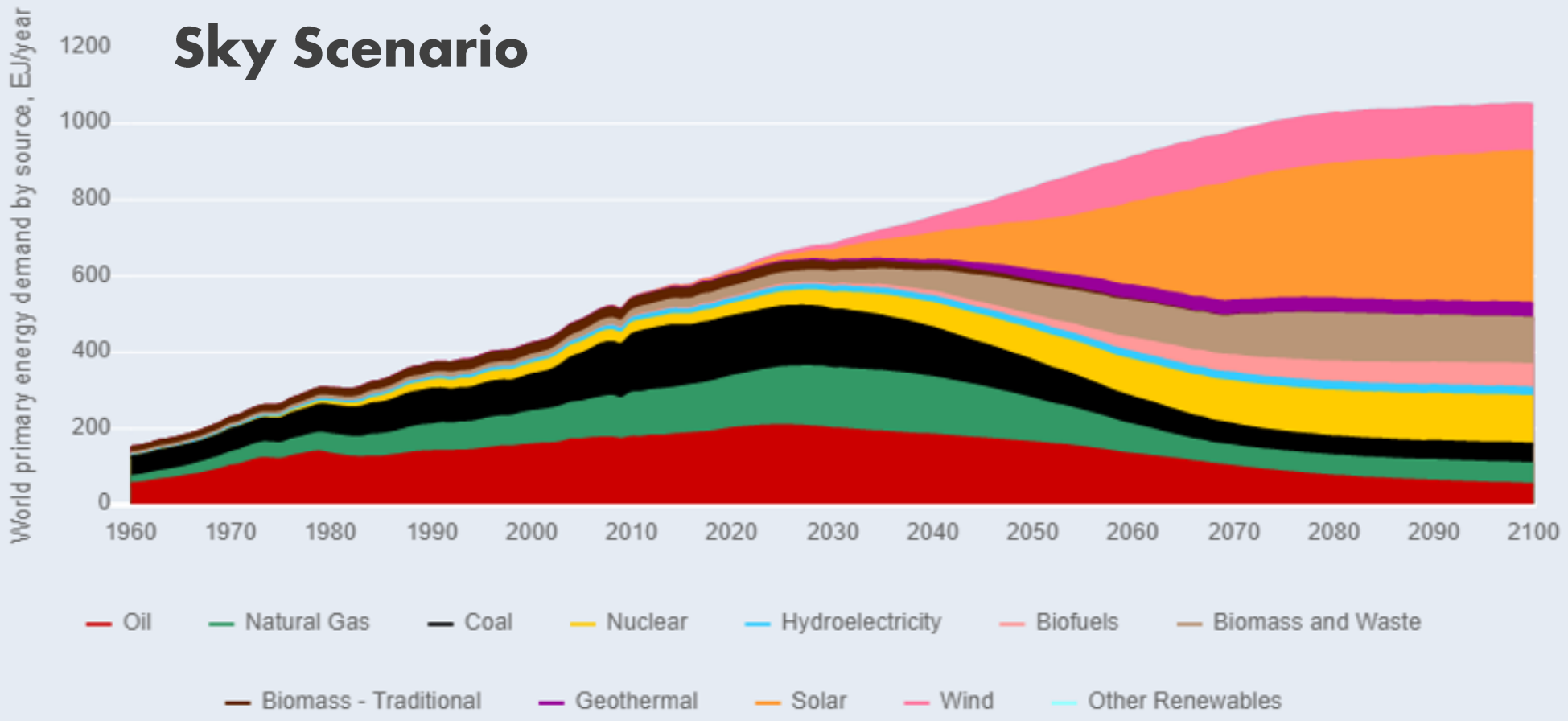


Shell's net carbon footprint mitigation



Shell's net carbon footprint methodology: https://www.shell.com/energy-and-innovation/the-energy-future/what-is-shells-net-carbon-footprint-ambition.html

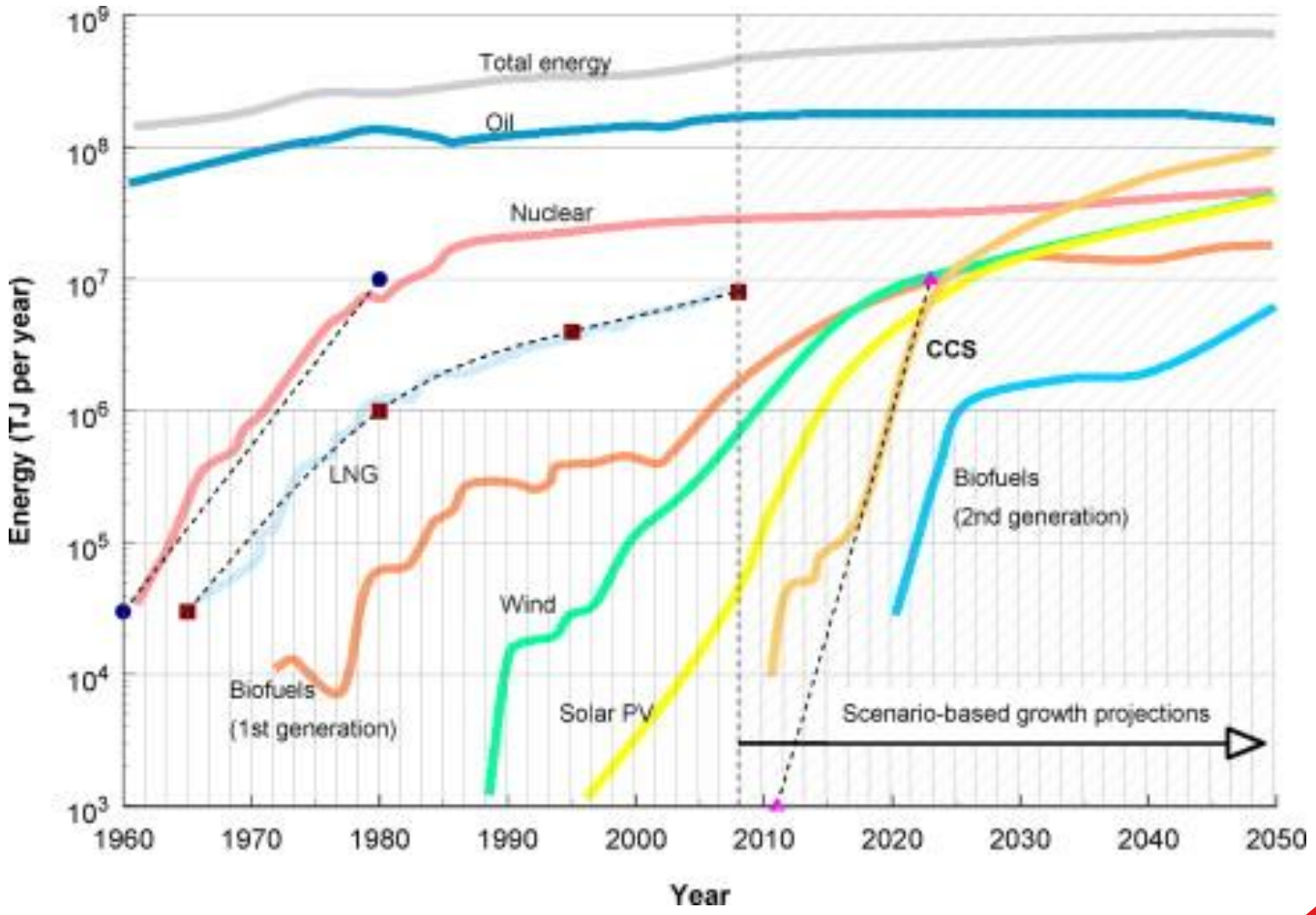
Renewables dominate by mid-century, as wind and solar deployment ramps up



Source: Shell analysis, ***Sky*** scenario

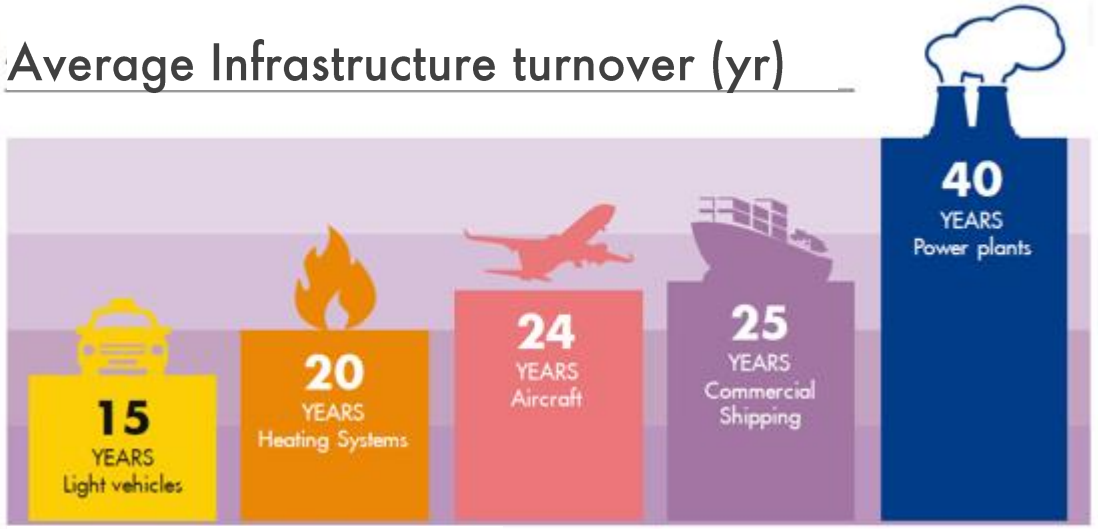
Time and Cost required to change energy infrastructure

Gert Jan Kramer & Martin Haigh Nature 462, 568-569(3 December 2009).



Shell 2016, a Better Life with a Healthy Planet, Pathways to Net-Zero Emissions, a New Lens Scenarios Supplement

Average Infrastructure turnover (yr)



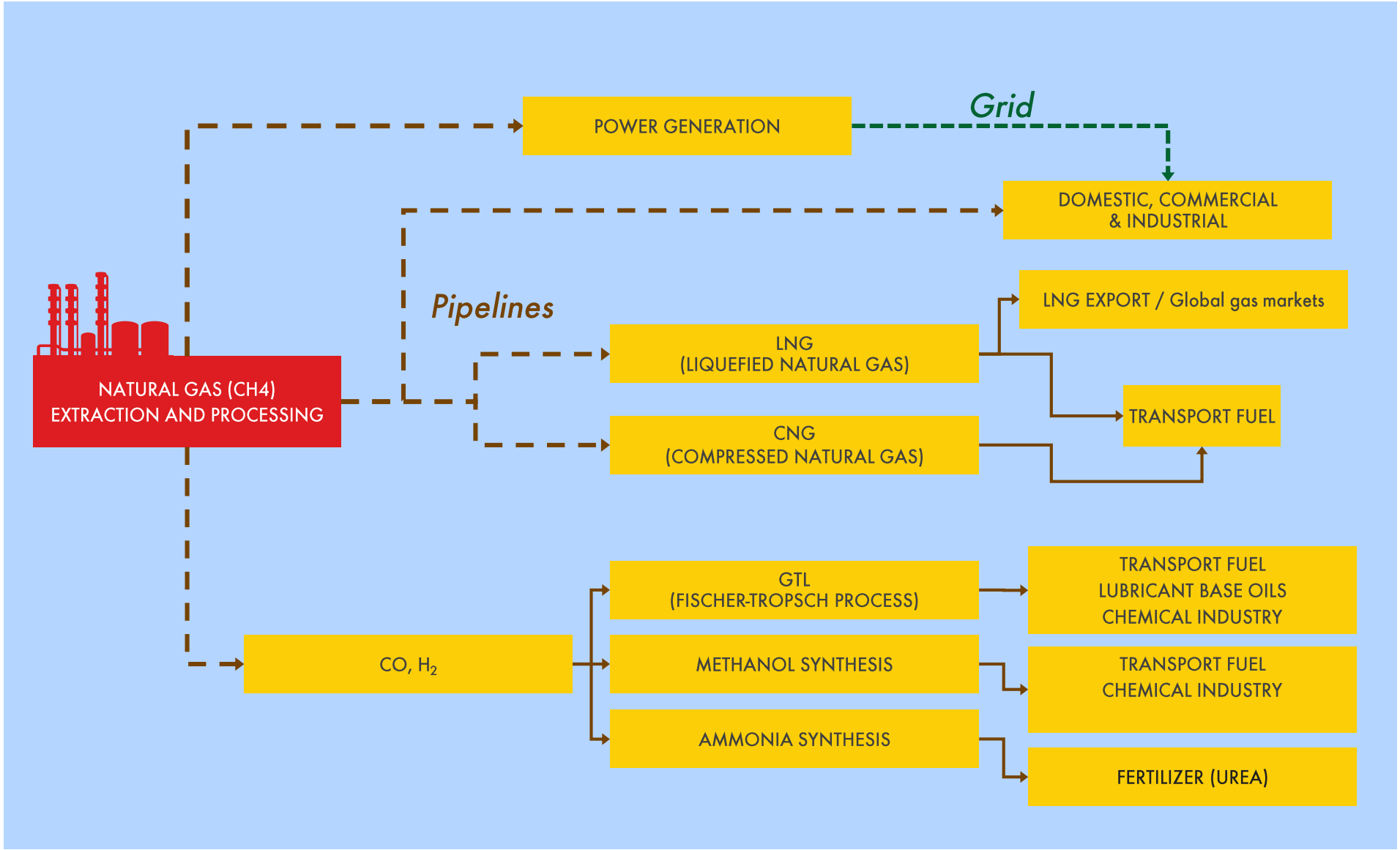
IHS Energy © 2005

13% CCS has the potential to deliver 13% of the required mitigation by 2050 (International Energy Agency)

138 % Without CCS, the cost of limiting global CO_2 emissions to 450 ppm could increase by 138%*

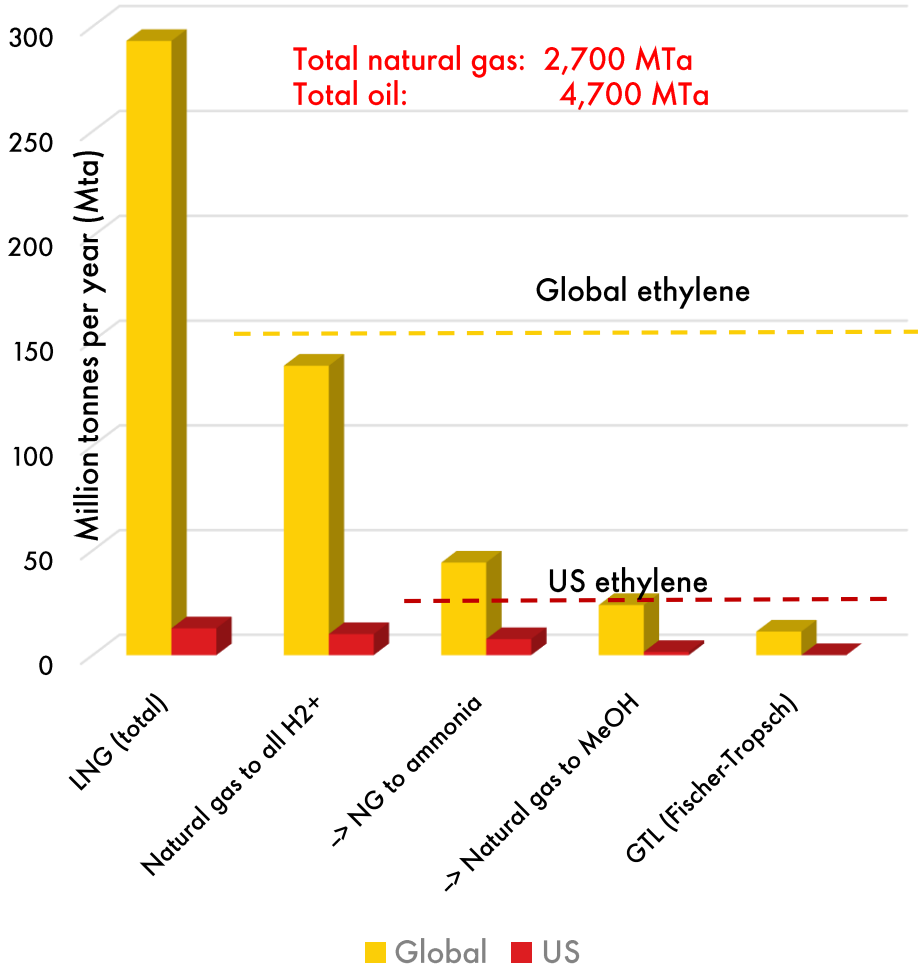
£32 Billion per annum Without CCS, the additional costs to run a decarbonised UK economy in 2050 will be £32 billion.* *IPCC Fifth Assessment Report

Gas monetisation options



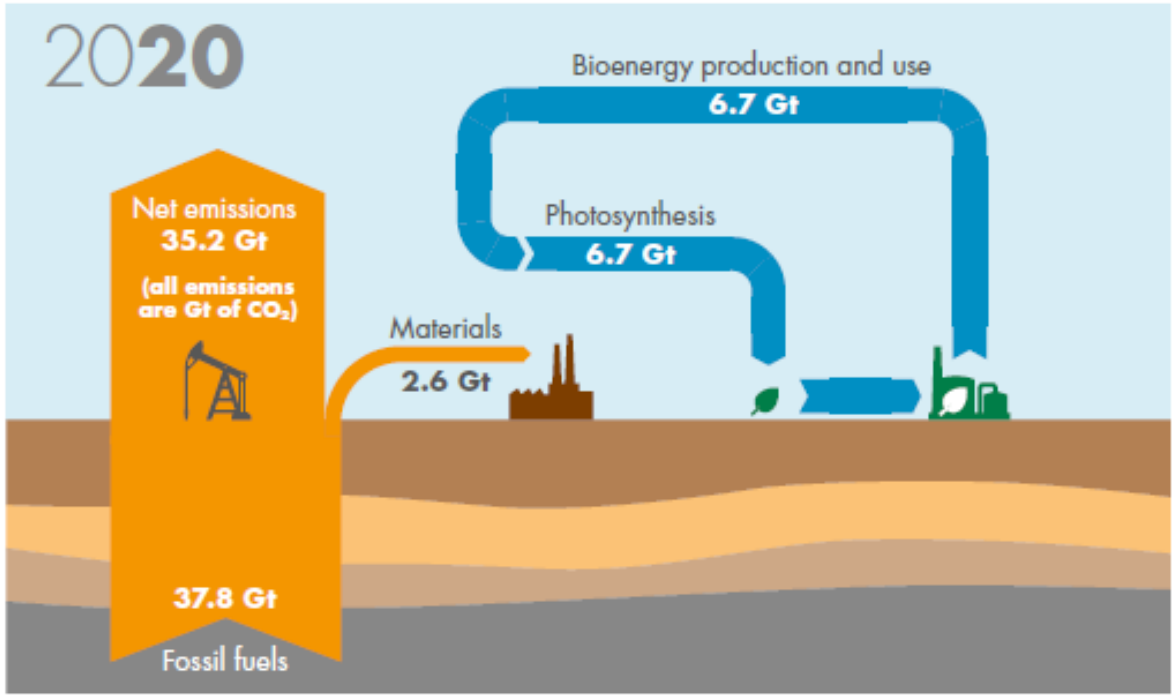
Natural Gas Utilization

Product	Global MT/a	Global %	US MT/a	US %
Natural Gas Production	2706	100%	540	100%
Nat gas to non-fuel products			16	3%
Flared gas	103	4%	7	1%
LNG (total)	293	11%	13	2%
--> Small Scale LNG	20	1%		
Natural gas to Hydrogen	138	5%	10	2%
--> NG to ammonia	44	2%	8	1%
--> Natural gas to MeOH	24	1%	2	0.3%
GTL (Fischer-Tropsch)	11	0.4%	0	0%
Natural Gas Liquids			213	
Ethylene	154		31	
Total fossil non-fuel products			129	

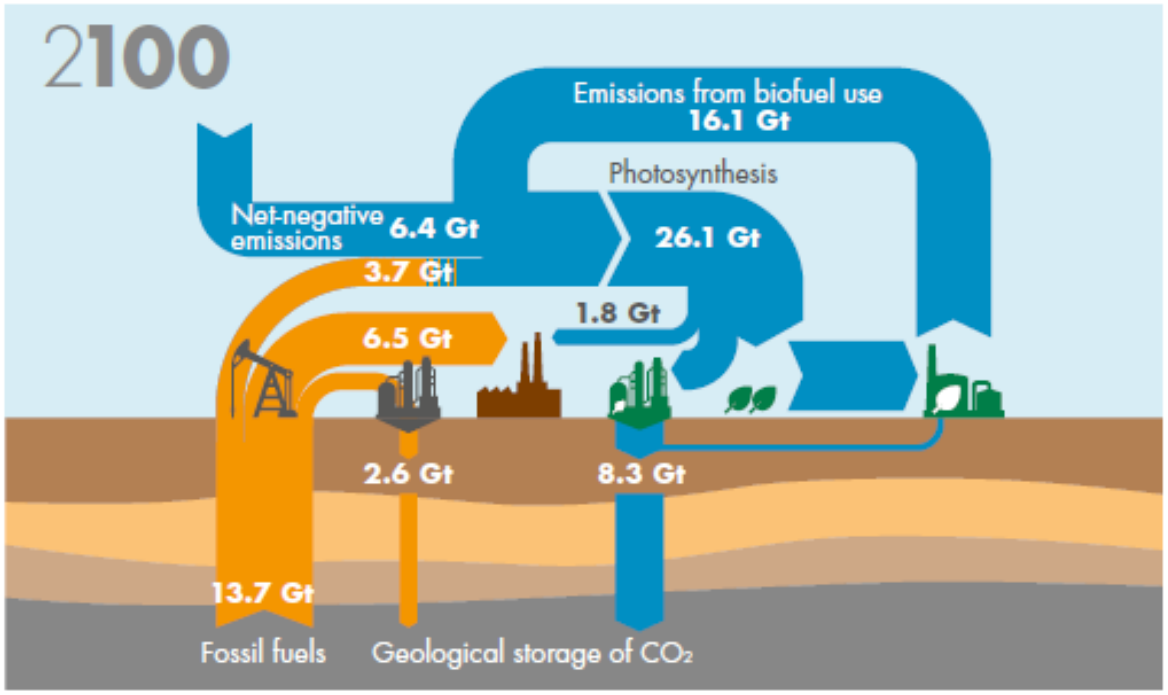


Joseph B. Powell, *Natural gas utilization: Current status and opportunities,* **Catalysis Today, 356,** *in press* (2020).

Carbon management now vs. future



Today, most carbon in fossil energy production is burned and emitted to the atmosphere, while the CO_2 absorbed by wood and other plants used for energy is also returned to the atmosphere.

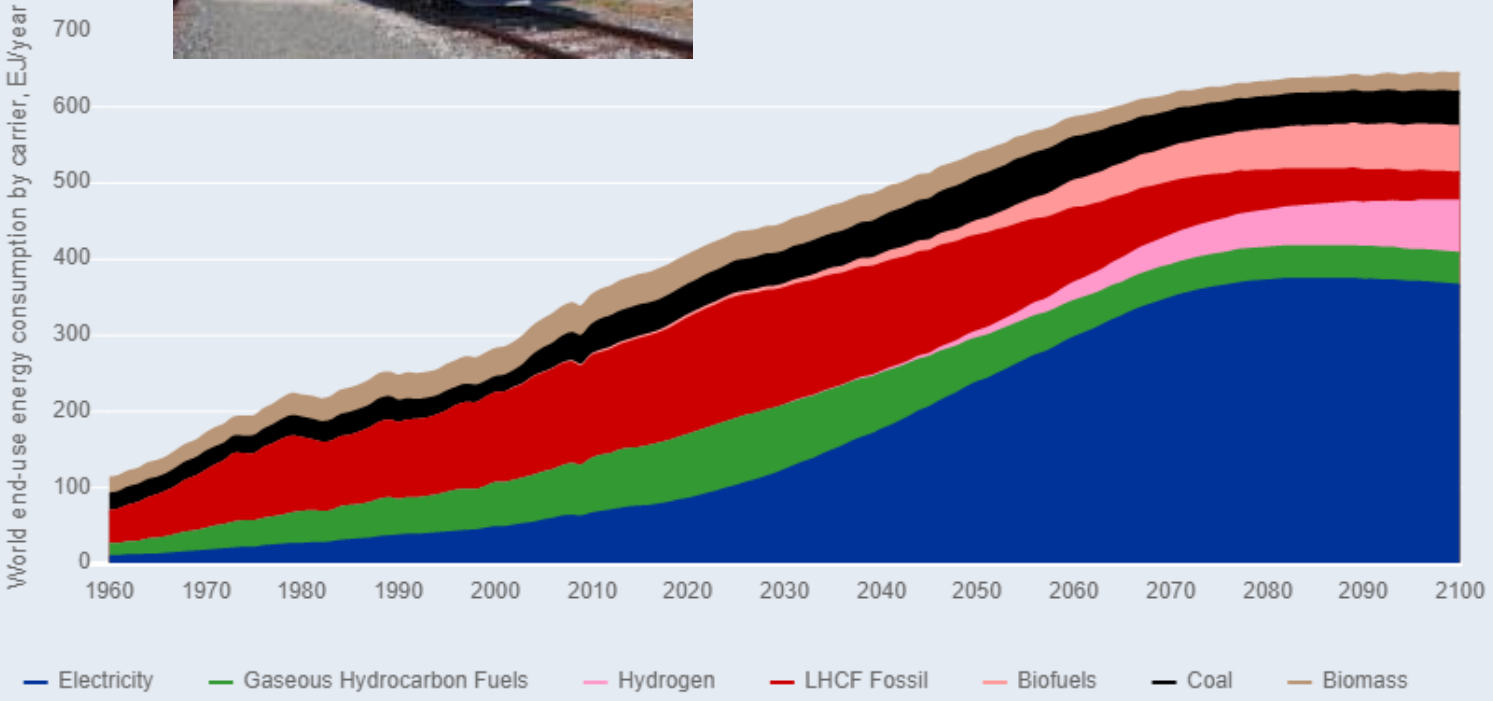


In **Sky**, at 2100, the bioenergy system has reached its resource base limit and is twice the size of the fossil energy system in CO_2 terms. The active management of CO_2 means that the total energy system is providing a drawdown of CO_2 from the atmosphere.

Fossil fuel production | CCS | Biofuel production | Bioenergy with CCS | Carbon in products | Growing biomass

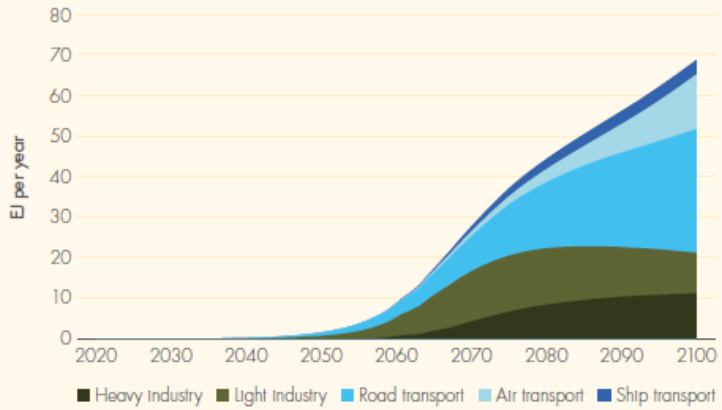
Sky scenarios

Deep electrification + hydrogen & biofuels to decarbonize @ end use



Source: Shell analysis, ***Sky*** scenario
*LHCF : Liquid hydrocarbon fuel

IN **SKY**, HYDROGEN EMERGES AS A MATERIAL ENERGY CARRIER AFTER 2040, PRIMARILY FOR INDUSTRY AND TRANSPORT

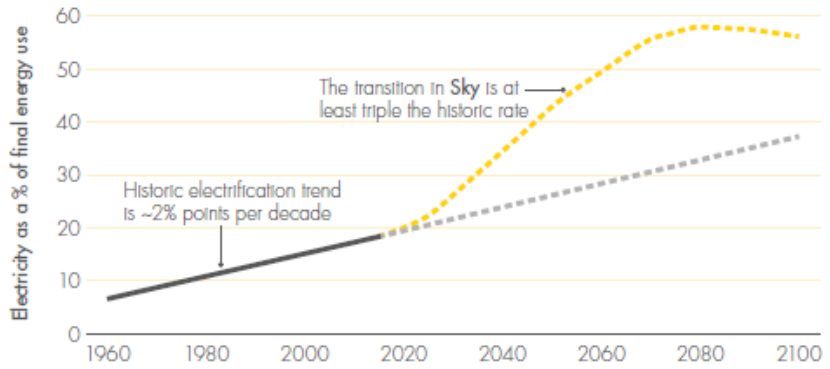


Note: By 2100, hydrogen supplies a quarter of all transport energy demand and over 10% of industrial energy

Source: Shell analysis

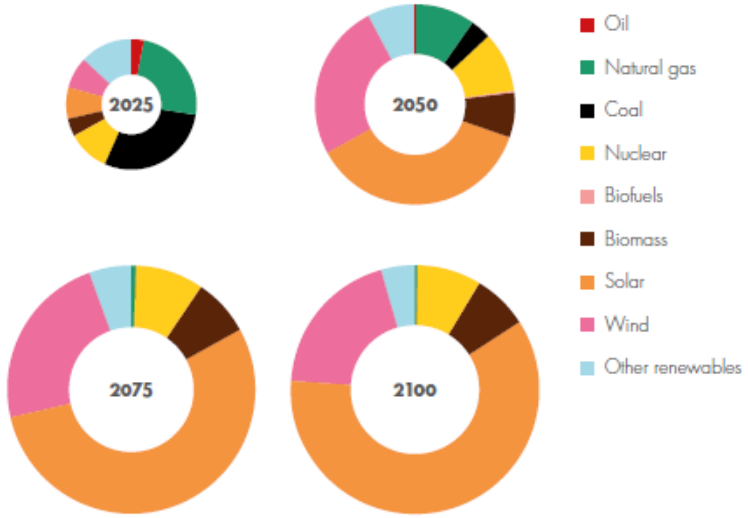
Electrification and Hydrogen (Synergy)

CURRENT ELECTRIFICATION TRENDS ARE NOT SUFFICIENT FOR **SKY**



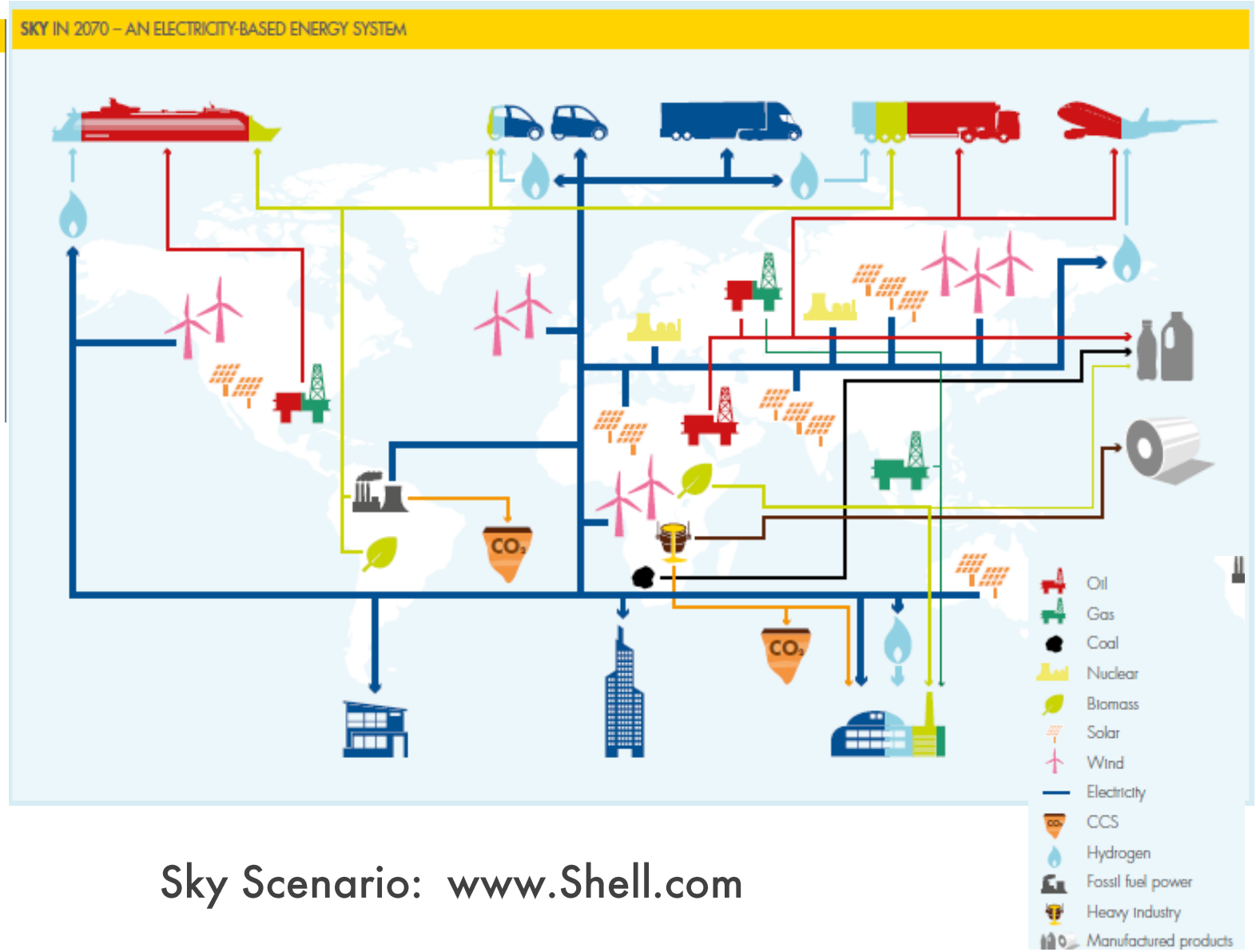
Source: Shell analysis, IEA (historical data)

THE ELECTRICITY MIX SHIFTS HEAVILY TO SOLAR THROUGH THE CENTURY



Note: The diameter of the pie chart represents the total electricity demand.
Source: Shell analysis

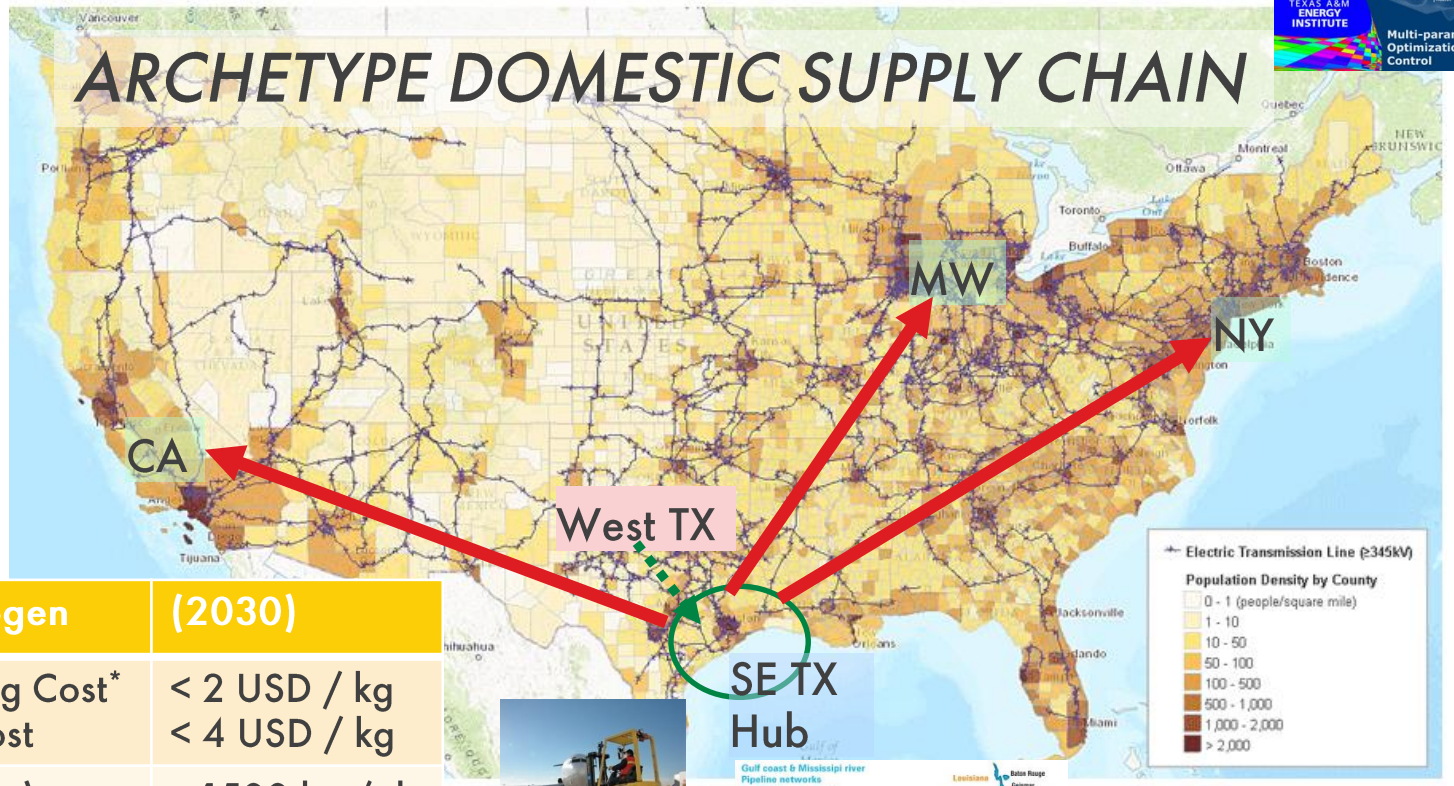
SKY IN 2070 – AN ELECTRICITY-BASED ENERGY SYSTEM



Sky Scenario: www.Shell.com

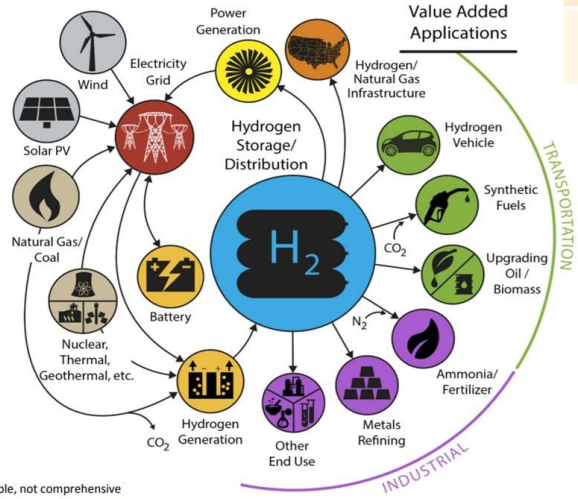
US H_2 Opportunities

- Green / clean H_2 from West TX renewable + SE TX (Houston GC) waste heat
  - SMR/ Methane pyrolysis / water electrolysis
- H_2 heavy duty trucking, industry
- Commercial ride-share (Uber fleet)?
- City lift trucks / buses?
- H_2 Rail transit to US States with clean energy incentives; H_2 + NH_3 pipelines
  - LH_2 or NH_3
- Leveraged demo hub

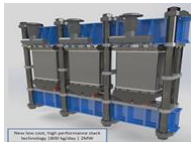


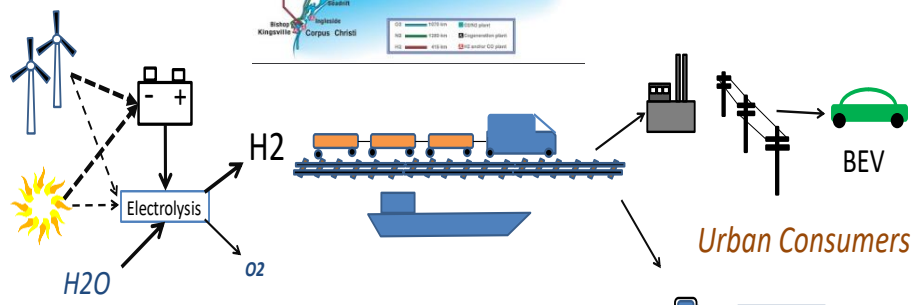
Clean Hydrogen	(2030)
Manufacturing Cost*	< 2 USD / kg
Dispensed Cost	< 4 USD / kg
Scale (per Site)	> 1500 kg / d

H_2 at Scale Energy System



*Illustrative example, not comprehensive
Source: NREL

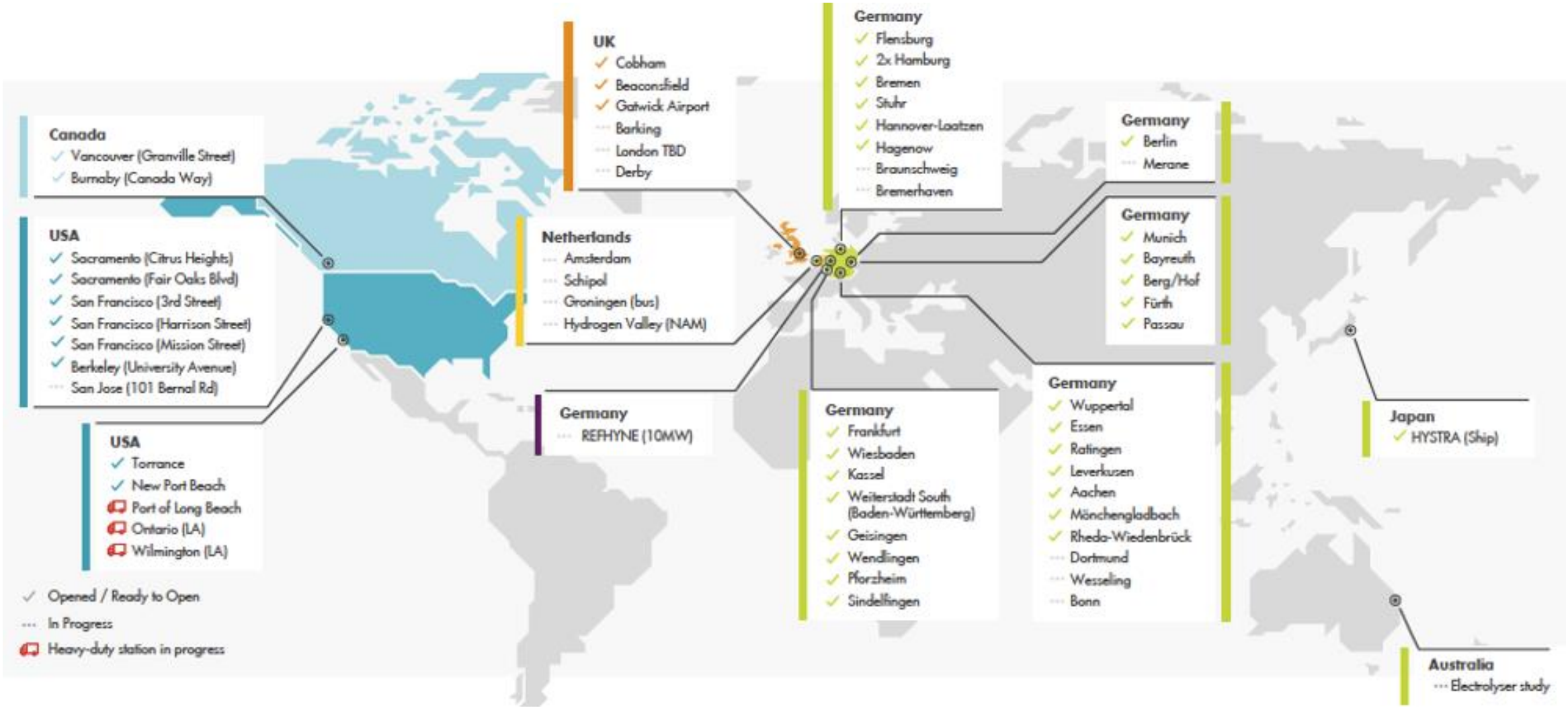




https://www.hydrogen.energy.gov/pdfs/01-satyapal-fcto-updates.pdf

* Distributed small/medium scale

Shell Hydrogen Footprint 2020

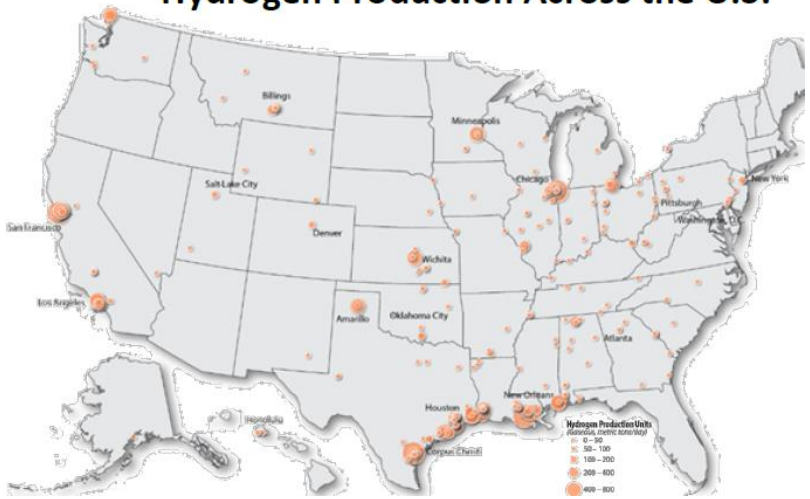


Hydrogen & Fuel Cells U.S.

March 2020

>500MW	Stationary Power
>30,000	Forklifts
>30	Fuel Cell Buses
>45	H_2 Retail Stations
>8,300	Fuel Cell Cars

Hydrogen Production Across the U.S.



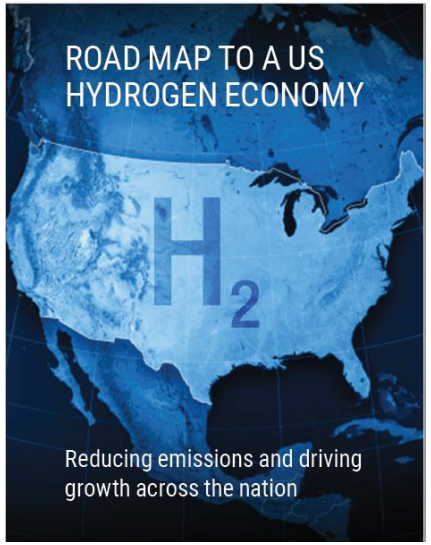
https://www.hydrogen.energy.gov/pdfs/01-satyapal-fcto-updates.pdf

U.S. Hydrogen Roadmap (2019)

Exhibit 6
Scaling hydrogen – ambitious road map milestones

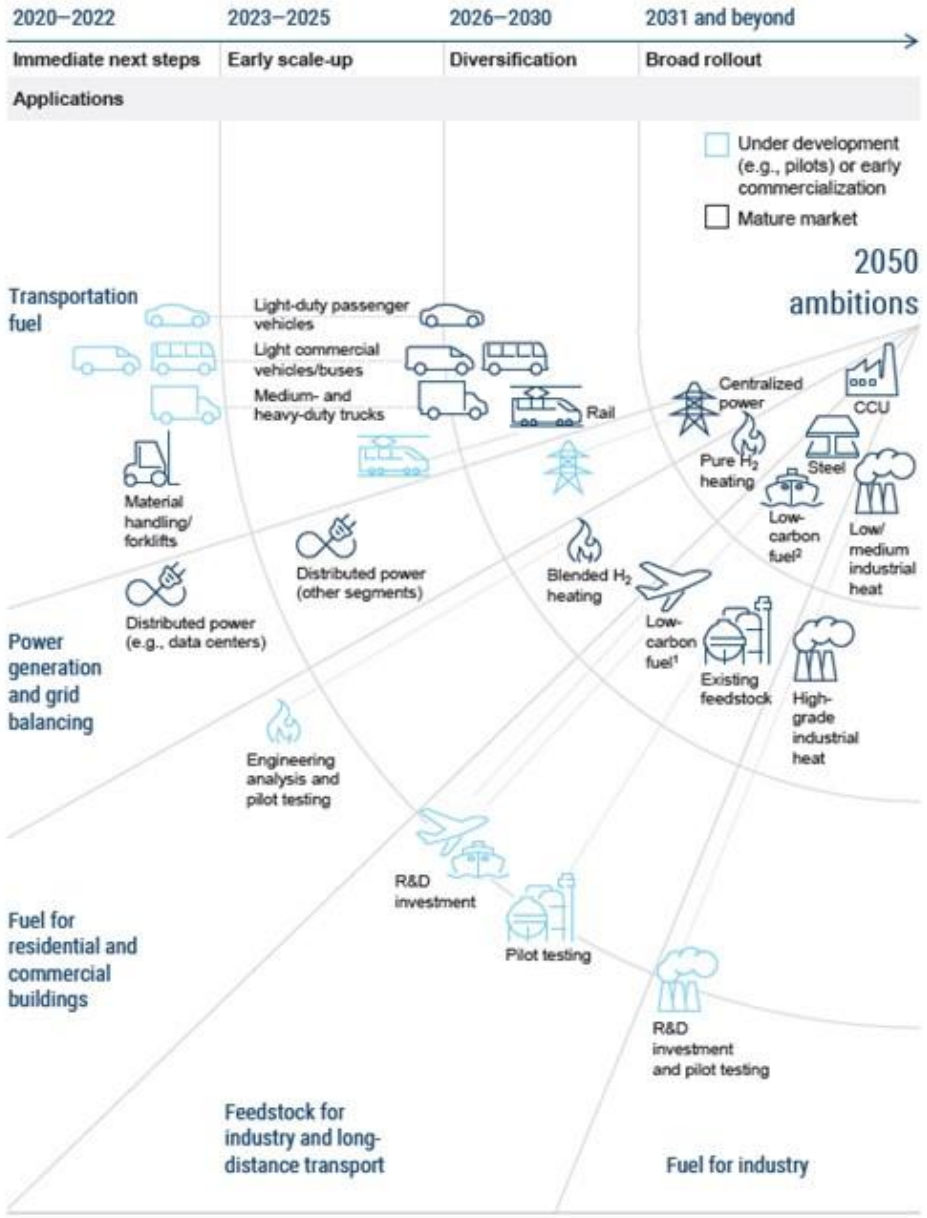
	Today	2022	2025	2030
	Immediate next steps	Early scale-up	Diversification	Broad rollout
H_2 demand, metric tons	11 m	12 m	13 m	17 m
FCEV sales	2,500	30,000	150,000	1,200,000
Material-handling FCEVs	25,000	50,000	125,000	300,000
Fueling stations[1]	63	165[2]	1,000[2]	4,300[3]
Material-handling fueling stations[4]	120	300	600	1,500
Annual investment		$1 bn	$2 bn	$8 bn
New jobs[5]		+50,000	+100,000	+500,000

[1] Includes both fueling stations in operation and in development
[2] Stations of 500 kg/day; does not include material-handling fueling stations
[3] Stations of 1,000 kg/day; does not include material-handling fueling stations
[4] Data from Plug Power
[5] Includes direct, indirect, and resulting jobs, building on an estimated 200,000 jobs in the sector today



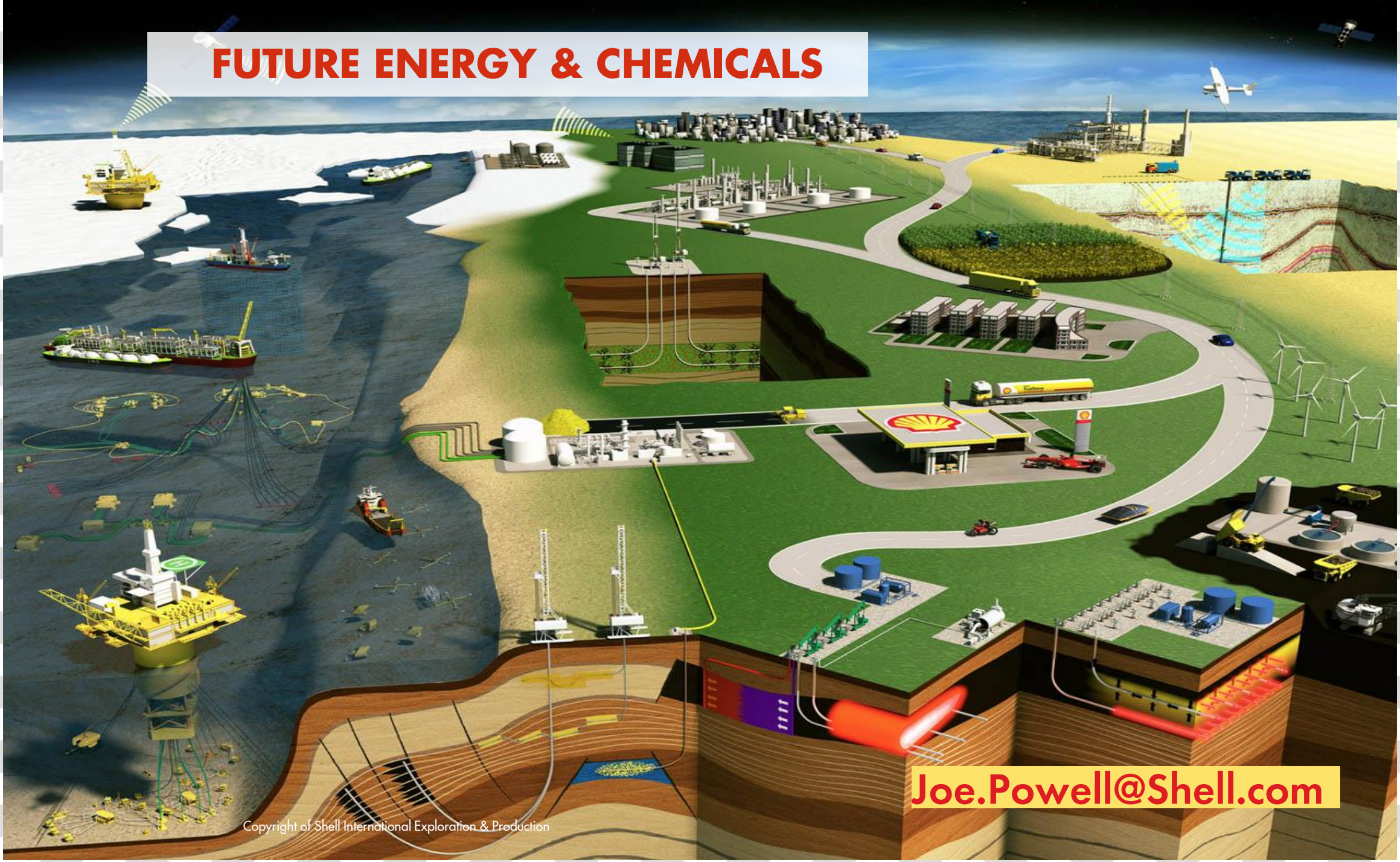
http://www.fchea.org/us-hydrogen-study

Exhibit 5
Hydrogen applications road map



[1] Carbon capture and utilization (for chemicals production)
[2] Biofuel, synfuel, ammonia

FUTURE ENERGY & CHEMICALS



Joe.Powell@Shell.com

Abstract / scope

Ajay, Thomas, Fred, Brett, Loy, Ray, Carlos:
Thank you all for agreeing to present in our “Gulf Coast Clean Energy Session” for the 2020 AIChE Spring Meeting, March 29 - April 2, 2020, at the Hilton Americas and George R. Brown Convention Center, Houston, TX. I have submitted the completed program (see attached) to AIChE, and I am awaiting word on the schedule, which will tell us when our session will be during the conference. Most likely, it will be either March 31 or April 1.
AIChE has a guide for accepted speakers here. Please review this, and let me know if you have any questions. (Note: Some parts of the guide have not been updated, and still relate to earlier conferences. Most importantly, some 2019 dates are given, and the venue is incorrectly stated as the Henry Gonzalez Convention Center. I have contacted AIChE about this.)
Our session is divided into two parts:

- Part 1 focuses mostly on business, policy, and strategy
- Part 2 focuses mainly on technology

We have a total of 5 presentations, with a panel discussion in the sixth slot. The panel discussion (“Clean Energy and Efficiency for US Gulf Coast Industry”) is intended to provide an opportunity for an extended conversation with the audience about possible changes in local industry as the energy landscape evolves. It will start with short statements, followed by an extended period of Q&A.
We will need up to four panelists and a moderator. As presenters, you are obvious candidates for these roles. Please reply to Li Lopez (cc’d) to indicate if you wish to participate. Thanks again for your interest, and your engagement in this program. I look forward to hearing back from you on the panel.
Best wishes, Alan.

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Abstract

Abstract Text:
The world's energy system is in the midst of a fundamental and disruptive transition that will have a direct on impact how energy is produced, processed, transmitted, distributed and consumed. The energy mix of the future will see a substantial penetration of renewables generated from solar, wind, biomass and other natural sources. Conventional oil and gas will remain part of the energy mix but with a relatively lower share and a sharper focus on its generating it at the lowest possible CO2 footprint. Electrification of demand will also play out over the course of the coming decades. This presentation will provide a perspective on how Shell has positioned itself to thrive in the energy transition, especially with respect to its current and planned future operations in the US Gulf Coast. It will also discuss the role of technology in shaping near-term projects such as integrated solar PV and offshore wind, mid-term projects in hydrogen, biofuels, and energy systems integration and storage, and long-term projects designed to make synthetic fuels, utility scale storage systems, and the use of natural gas as an advantaged feedstock to make energy products. The presentation will tie all of the above together and demonstrate that it is possible to provide the world with more and cleaner energy.
Session Selection: