



# Decision-making in the face of a radically uncertain future

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# Cautionary note

This presentation contains data from Shell's New Lens Scenarios. The New Lens Scenarios are a part of an ongoing process used in Shell for 40 years to challenge executives' perspectives on the future business environment. We base them on plausible assumptions and quantifications, and 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.

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, 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.

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# Energy for a changing world



“Energy is the golden thread that connects economic growth, social equity, and environmental sustainability”

**Ban Ki-Moon**

Former UN Secretary General, April 2012



“The ability to question rather than cling to old beliefs is vital for tackling the energy challenge”

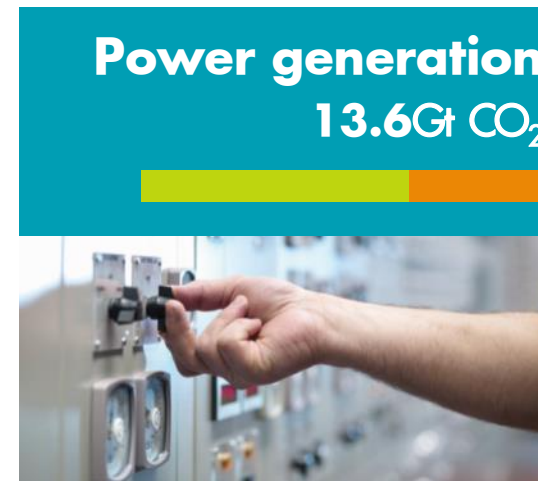
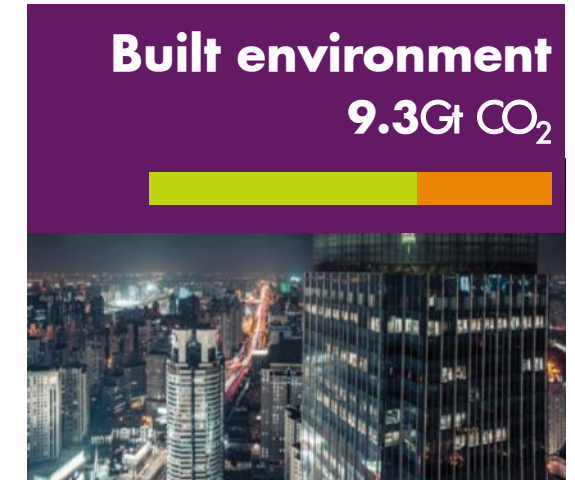
**Ben van Beurden**

CEO Royal Dutch Shell, June 2016






# A transformation of the global economy is needed

Four major sectors where energy is consumed, and that produce significant energy-related CO<sub>2</sub> emissions



## Current status

-  Less difficult to decarbonise
-  ...
-  More difficult to decarbonise

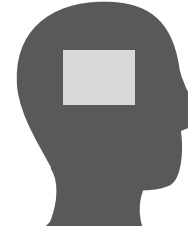


# Exploring alternative futures

- Energy system was complicated
  - Energy transition and digital: major disruptors
  - Past does not predict the future
  - Forecasts are inappropriate
- 
- Radically uncertain future
  - Complex future: needs agility
    - Scenario thinking
    - Decision-making
  - Scenarios are a distinctive Shell capability

From complicated to complex

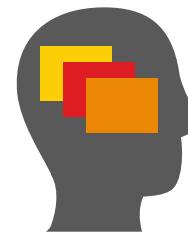
## The Present



## The Path



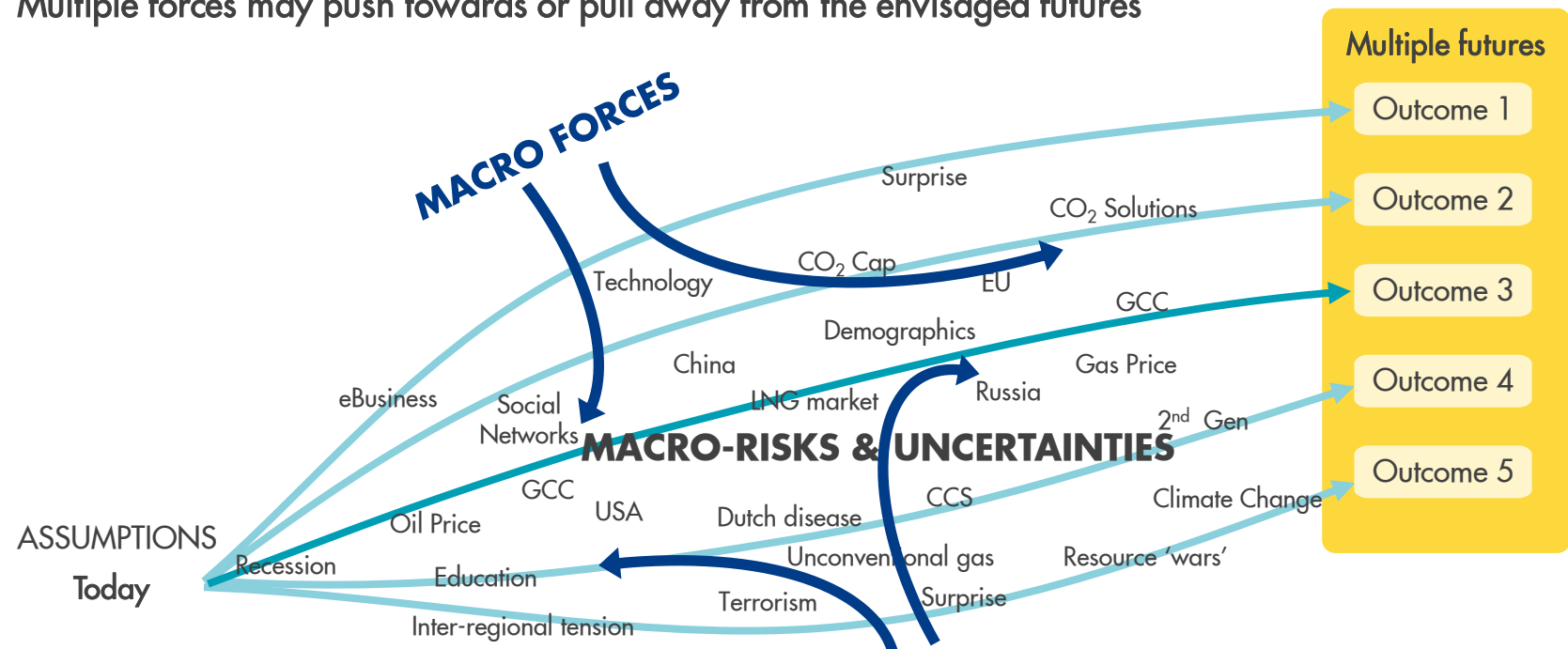
## The Future



# Scenarios are neither forecasts nor plans

- Scenarios are not forecasts; neither are they our business plan
- Shell considers multiple, bespoke scenarios relevant to decisions
- Scenarios usage ranges from evaluation of individual opportunities, to portfolio choices, to overarching strategy development

Multiple forces may push towards or pull away from the envisaged futures



Scenarios stretch our perspectives



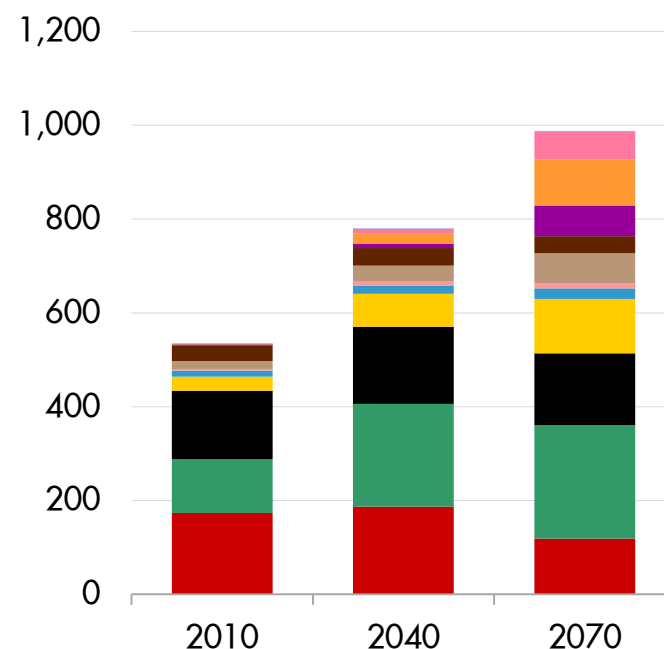
# Comparing two scenarios for primary energy mix

as a result of different policy, GDP, resources and innovation assumptions

Of the New Lens Scenarios, Mountains' drivers result in 'earliest' peak oil demand; Oceans' drivers result in 'latest' peak oil supply

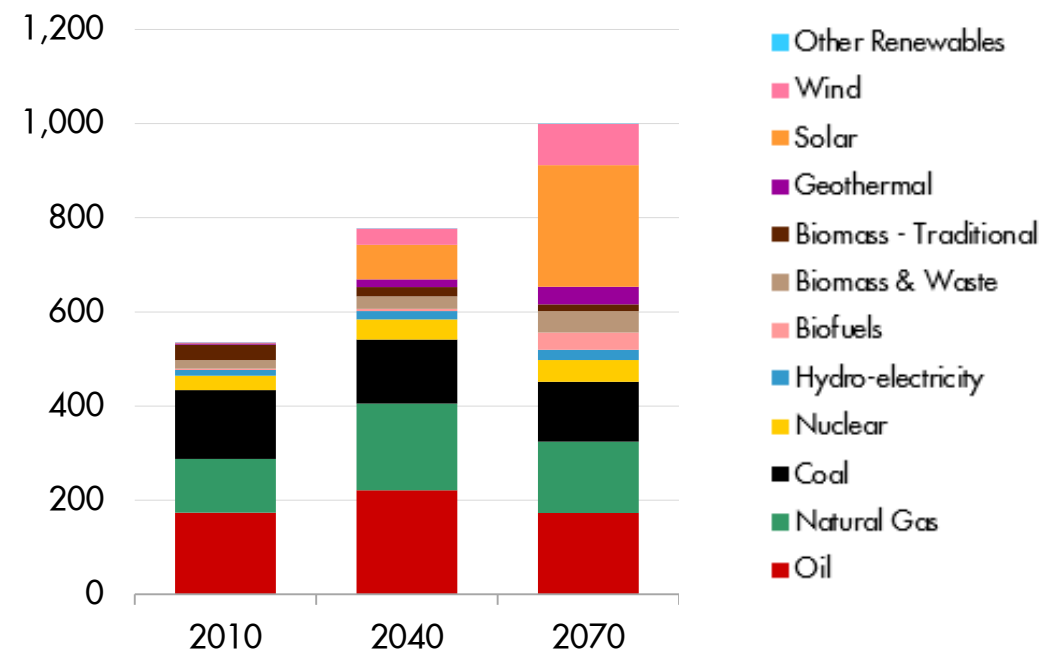
World: Total Primary Energy – Mountains

EJ/year (energy carrier)



World: Total Primary Energy – Oceans

EJ/year (energy carrier)



- Mountains explores the widespread success of shale gas and strong government policy to reduce oil use in Transport and use of CCS to reduce CO<sub>2</sub> emissions
- Oceans explores a highly economically efficient world and strong uptake of Renewables to reduce CO<sub>2</sub> emissions

Source: Shell SX/B Energy New Lens Scenarios

These are not forecasts, but example outputs of scenarios that have been modelled



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# Oil demand context

in an aggressive EV scenario

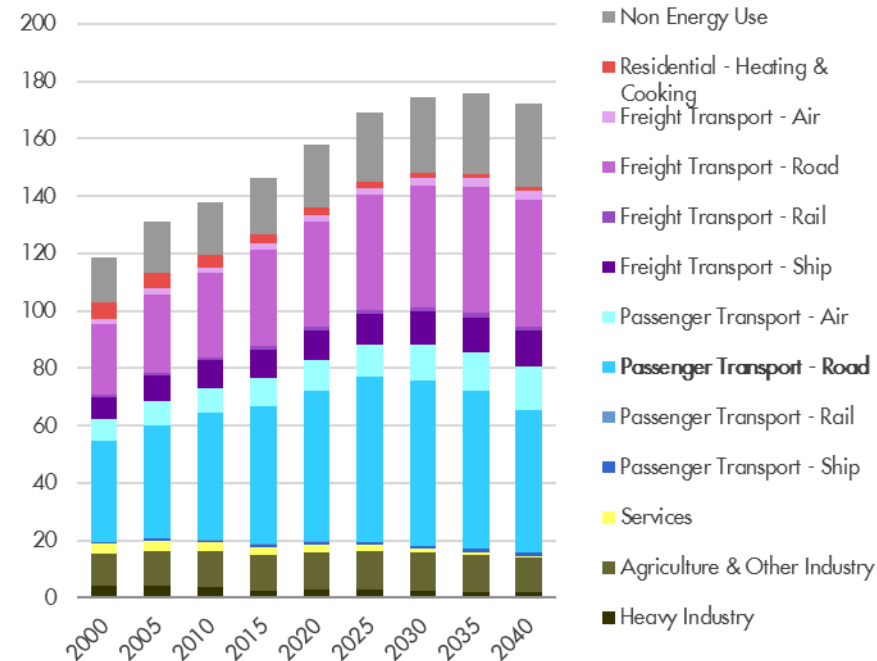
■ Passenger road transport makes up around a third of global oil use

■ Oil demand has fallen in OECD since 2005  
■ Non-OECD oil demand growth 2.5 times the impact of OECD demand decline

- EV mainly impacts passenger road transport (a third of total oil demand)
- ICE efficiency has a much bigger impact over this period
- Overall demand continues to grow underpinned by non-OECD growth

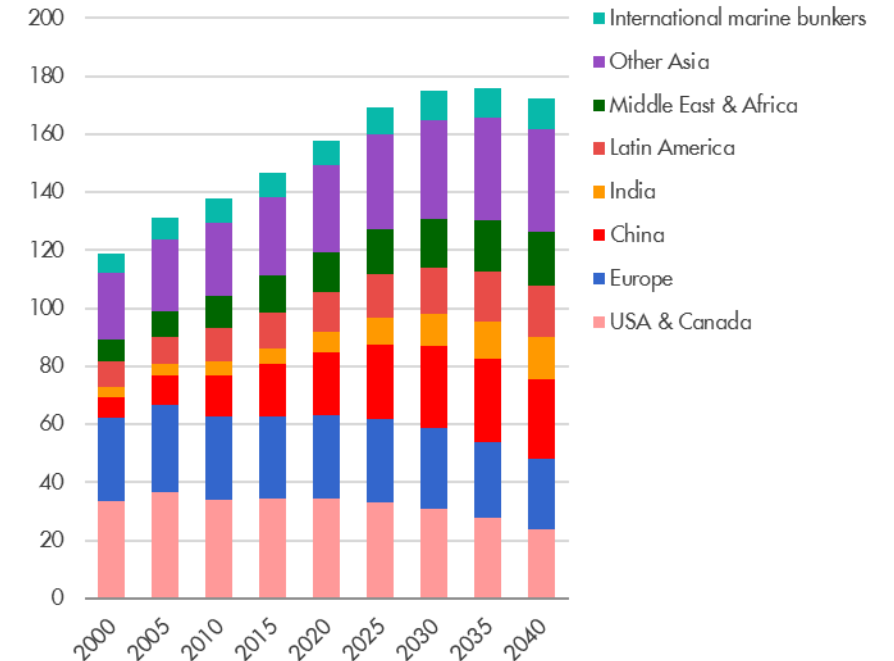
## Global LHCF consumption by Sector

EJ/year (energy carrier)



## Global LHCF consumption by Country

EJ/year (energy carrier)



Source: Shell WEM Disruption example

This is not a forecast, this is one example scenario



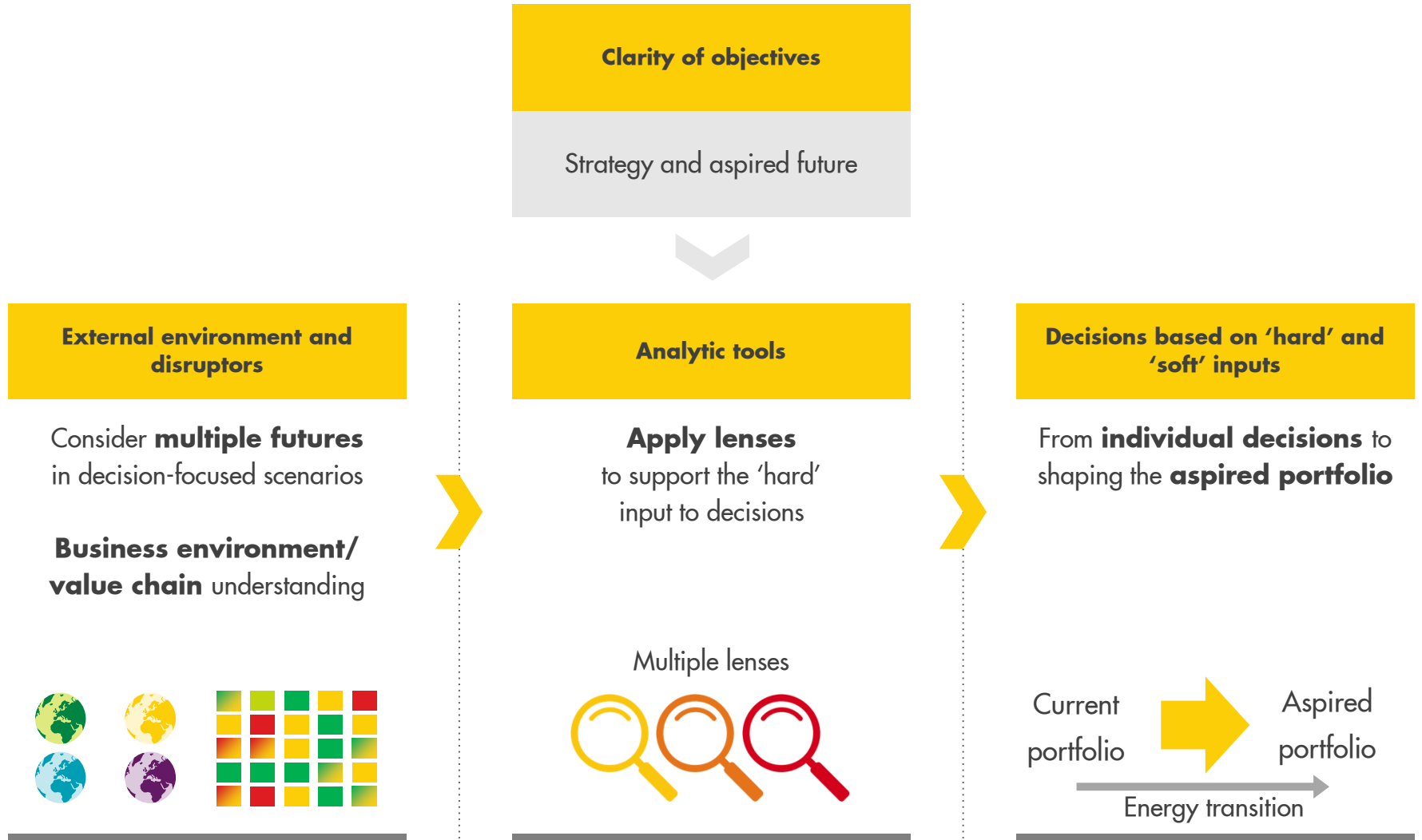
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# Framework for decision making in uncertainty

- Build from 'Future Worlds' + value chain analysis
- Consider "minimise maximum regret"
- Make investment and portfolio decisions



# Future business environment

Key forces re-shaping the energy system going forward

Beliefs		Uncertainties	
Mega Trends			
Energy Transition		<u>Macroeconomics</u>  Example: <ul style="list-style-type: none"><li>■ Sustained era of transition &amp; volatility</li><li>■ Emerging markets drive Global GDP increases</li></ul>	Example: <ul style="list-style-type: none"><li>■ Political tensions &amp; regional instability</li><li>■ Impact of digital technology</li></ul>
		<u>Market</u>  Example: <ul style="list-style-type: none"><li>■ Hydrocarbon demand growth + supply required</li><li>■ Renewables contribution increases significantly</li></ul>	Example: <ul style="list-style-type: none"><li>■ Key pricing mechanisms</li><li>■ Energy transitions impact</li></ul>
	Digitalisation	<u>Industry</u>  Example: <ul style="list-style-type: none"><li>■ Technology &amp; scale alone insufficient</li></ul>	Example: <ul style="list-style-type: none"><li>■ Winning business models &amp; capabilities</li></ul>



Leverage brand, reach  
and core competences

**Shell strongly  
positioned**

Key trends potentially  
re-shape several industries

## Changing landscape

### Energy Transition & Mobility Shifts



### Digitalization & other disruptors



### Shifts in Demographics & Consumer behaviours



## Global Retail

- Global #1 Retailer
- One of the largest B2B payment player

## Global Commercial

- Global #1 Lubricants marketer
- Strong OEM relationships

## Trading and New Energies

- Leading, global energy & carbon trader
- Biofuels and Hydrogen mobility

## Brand, capability and scale

- #1 energy brand
- Financial capability
- Innovation and partnering
- Global footprint and local experience

# Shell's strategy

#makethefuture

## Our Purpose

We power progress together  
by providing more and cleaner  
energy solutions



Underpinned by our Values, Goal Zero, and People



# Investment priorities & strategic intent

## Cash engines

(FCF >0)

- Funds dividends and balance sheet
- Competitive and resilient
- Strong free cash and returns

## Growth priorities

(FCF ~0)

- Emerging cash engines
- Affordable growth in advantaged positions
- FCF and ROACE pathway

## Emerging opportunities

(FCF <0)

- Material future value
- Strategic balance
- Managed exposure while establishing scale

Today



by 2020



OIL PRODUCTS



INTEGRATED GAS



CONVENTIONAL OIL + GAS



CHEMICALS



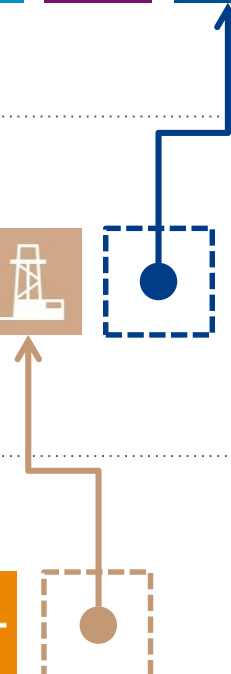
DEEP WATER



NEW ENERGIES

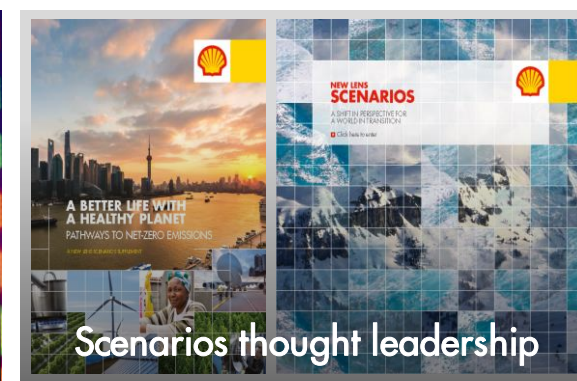


SHALES



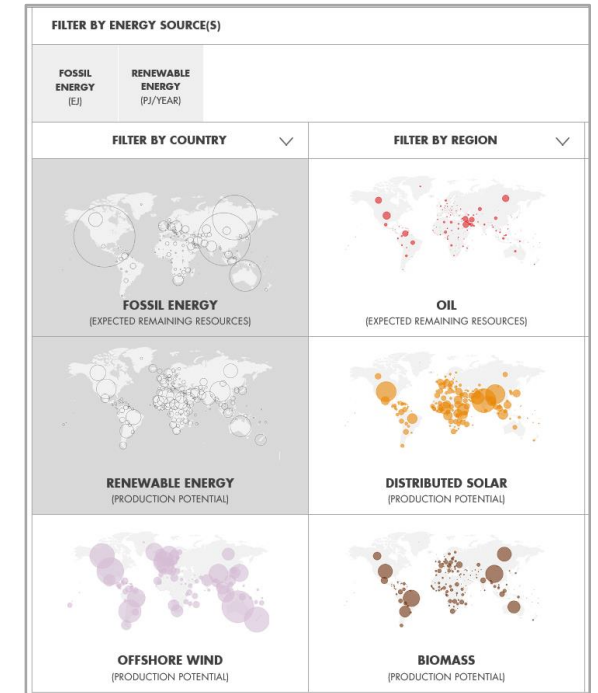
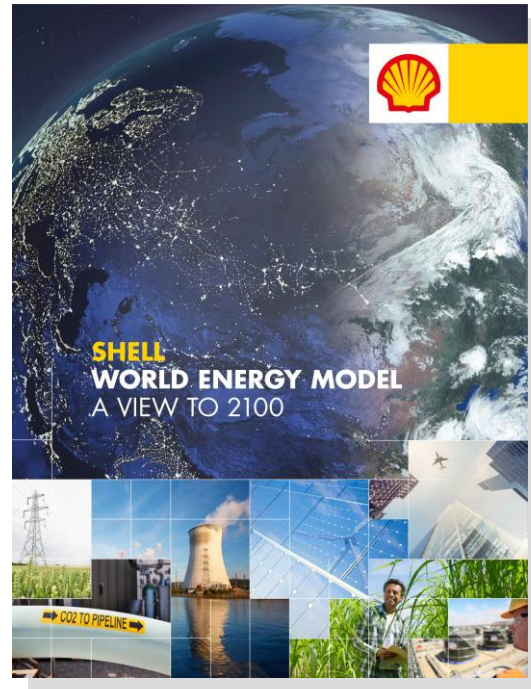


# Shell's activities in the energy transition





# Materials available online



[www.shell.com/  
scenariosenergymodels](http://www.shell.com/scenariosenergymodels)



