Decision-making in the face of a radically uncertain future

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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 CO₂ emissions:

- **Industry**: 13 Gt CO₂
- **Transport**: 8.5 Gt CO₂
- **Built environment**: 9.3 Gt CO₂
- **Power generation**: 13.6 Gt CO₂

**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

From complicated to complex
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
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

- Mountains explores the widespread success of shale gas and strong government policy to reduce oil use in Transport and use of CCS to reduce CO₂ emissions
- Oceans explores a highly economically efficient world and strong uptake of Renewables to reduce CO₂ emissions

Source: Shell Sx/B Energy New Lens Scenarios
These are not forecasts, but example outputs of scenarios that have been modelled
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
**Framework for decision making in uncertainty**

- Build from ‘Future Worlds’ + value chain analysis
- Consider “minimise maximum regret”
- Make investment and portfolio decisions

**External environment and disruptors**
- Consider **multiple futures** in decision-focused scenarios
- **Business environment/value chain** understanding

**Analytic tools**
- **Apply lenses** to support the ‘hard’ input to decisions
- **Multiple lenses**

**Decisions based on ‘hard’ and ‘soft’ inputs**
- From **individual decisions** to shaping the **aspired portfolio**
- Current portfolio → Aspired portfolio → Energy transition

**Strategy and aspired future**

**Clarity of objectives**
# Future business environment

## Key forces re-shaping the energy system going forward

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<th>Energy Transition</th>
<th>Digitalisation</th>
<th>Beliefs</th>
<th>Uncertainties</th>
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<td>Example:</td>
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<td>- Sustained era of transition &amp; volatility</td>
<td>- Political tensions &amp; regional instability</td>
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<td>- Emerging markets drive Global GDP increases</td>
<td>- Impact of digital technology</td>
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<td><strong>Market</strong></td>
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<td>- Hydrocarbon demand growth + supply required</td>
<td>- Key pricing mechanisms</td>
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<td>- Renewables contribution increases significantly</td>
<td>- Energy transitions impact</td>
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<td><strong>Industry</strong></td>
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<td>Example:</td>
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<td>- Technology &amp; scale alone insufficient</td>
<td>- Winning business models &amp; capabilities</td>
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Leverage brand, reach and core competences

Shell strongly positioned

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

Key trends potentially re-shape several industries
Shell’s strategy

#makethefuture

Our Purpose
We power progress together by providing more and cleaner energy solutions

Strategic ambitions
- Providing a World Class Investment
- Thriving in the Energy Transition
- Strong social License to Operate

Winning Capabilities
- Customer Centricity
- Commercial Value Delivery
- Technology Commercialisation
- Project Delivery
- Operational Excellence

Aspired Portfolio

Cash Engines

Growth Priorities

Emerging Opportunities

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
Shell’s activities in the energy transition

Developing our gas business
Biofuels business
New Energies business
Developing CCS
R&D in low carbon technologies
Shell Technology Ventures
Advocate CO₂ pricing
Scenarios thought leadership
Coalitions & government advisory