AI at Shell
Making Energy Smarter

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**Shell's net carbon footprint**

Also, in this presentation we may refer to Shell's "Net Carbon Footprint" or "Net Carbon Intensity", which include 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” or “Net Carbon Intensity” are for convenience only and not intended to suggest these emissions are those of Shell plc or its subsidiaries.

**Shell’s net-Zero Emissions Target**

Shell’s operating plan, outlook and budgets are forecasted for a ten-year period and are updated every year. They reflect the current economic environment and what we can reasonably expect to see over the next ten years. Accordingly, they reflect our Scope 1, Scope 2 and Net Carbon Footprint (NCF) targets over the next ten years. However, Shell’s operating plans cannot reflect our 2050 net-zero emissions target and 2035 NCF target, as these targets are currently outside our planning period. In the future, as society moves towards net-zero emissions, we expect Shell’s operating plans to reflect this movement. However, if society is not net zero in 2050, as of today, there would be significant risk that Shell may not meet this target.

**Forward Looking Non-GAAP measures**

This presentation may contain certain forward-looking non-GAAP measures such as [cash capital expenditure] and [divestments]. We are unable to provide a reconciliation of these forward-looking Non-GAAP measures to the most comparable GAAP financial measures because certain information needed to reconcile those Non-GAAP measures to the most comparable GAAP financial measures is dependent on future events some of which are outside the control of Shell, such as oil and gas prices, interest rates and exchange rates. Moreover, estimating such Non-GAAP measures with the required precision necessary to provide a meaningful reconciliation is extremely difficult and could not be accomplished without unreasonable effort. Non-GAAP measures in respect of future periods which cannot be reconciled to the most comparable GAAP financial measure are calculated in a manner which is consistent with the accounting policies applied in Shell plc’s consolidated financial statements.

The contents of websites referred to in this presentation do not form part of this presentation.
TWO FORCES RESHAPING THE ENERGY SYSTEM

- Energy mix changing
- Decarbonisation and decentralisation
- Non traditional competitors and models

ENERGY TRANSITION

- New technology opportunities
- Technology changing business models
- Customer expectations increasing

DIGITALISATION

A DIFFERENT ENERGY SYSTEM
AI is all about data

Collect Data → Store in Public Cloud → Apply Machine Learning or Advanced Analytical Methods → Create actionable insight → Support Decision Making leading to Value Creation
Digital is not new … but availability of technology, data and capabilities is growing at exponential rate

Technology is becoming faster and cheaper over the past ten years

Data is growing exponentially

Volume of data generated (zetabytes)

~90% of all data was created in last 2 years months; much more sophisticated tools to extract value from data
Digitalisation and AI  
Driving efficiency in our existing businesses

Subsurface Data Universe
- One common cloud platform for all subsurface data
- Global access to data and new workflows
- Partner with leading data experts

Well Location Optimisation
- AI automatically identifies and optimizes producer and injector well locations
- Assesses multiple scenarios of reservoir conditions simultaneously

AI Assisted Interpretation
- Redefining workforce capability & mind-set
- Disrupt how hydrocarbons are discovered
- First machine learning application FaultCrawler, made workflow 80% faster

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Digitalisation and AI  
Driving efficiency in our existing businesses

Maximising availability

- Identifies unusual patterns for early intervention or to extend equipment lifetime
- Aggregated trillions of data points through machine learning to detect anomalies.

HSSE for Assets

- Technology and digital solutions are safely powering our progress towards Goal Zero.
- We are using the industrial internet-of-things, robotics, digital realities, and artificial intelligence to transform safety in our assets and projects.
- They make our operations safer by enhancing our staff’s ability to prevent failure and stay out of harm’s way.

Digital twin

- A Digital Twin is a virtual representation of the physical elements and dynamic behaviour of an asset over its lifecycle
- Drives efficiency by enabling remote operations, automation and significantly improved collaboration
External collaboration is vital to developing technology at pace

The Open AI Energy Initiative

An open ecosystem of interoperable AI solutions for the energy industry
Adopting AI at scale across the enterprise
Five principles underpin our digital culture

1. User is Central
2. Data is a valuable asset
3. Businesses own Digital
4. Build in-house capability
5. Act our Way into the future
Our digital technology focus areas

- Computational Science
- Artificial Intelligence
- Blockchain
- Robotics
- 3D printing
- Wearables and New Realities
Collaboration opportunities

■ If you are a technology providers in Digital and AI space, let us know what you can bring to the table, and we take the conversation forward in offline mode.

■ If you are a technologist and looking for right problem to work on with your skills, keep an eye on following web page,

■ If you are a student, enthusiast in doing AI/ML/DL internship on real data and problem, connect us offline.
  ■ Prakalp Somawanshi (https://www.linkedin.com/in/prakalpsomawanshi/)
  ■ Naveen Kapoor (https://www.linkedin.com/in/naveenkapoor/)

■ Shell.ai Hackathons
  ■ EV Charging Network Challenge [2nd Sept 14th Oct]