Shell Deep Water Developments

Sustainable Changes Required to Restore Competitiveness

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Agenda

- Case for Action
- Shell’s Deep Water Landscape
- Seven Ways To Restore Competitiveness
- Examples from Shell
- Conclusion
The Deep Water oil sector should increase its efficiency, implement structural improvements, and regain sustainable competitiveness for the future.

1. Current levels of oil price have been seen before

   "Industry unhealthy and unaffordable signs" way ahead of the oil price collapse.
   - Levels of capital allocation were worsening with cycle times prolonged and unit operating costs increasing.

2. Breakeven prices of Shale is driving competition

   "Energy companies need courage to make decisions throughout the oil price cycles."
   - Oil and gas projects have been profitable when prices were at similar levels.
   - Downcycle is an opportunity to regain competitiveness.

"Deep Water requires unique and more urgent choices."
- Long growth cycles exposed to volatility.
- Compete with Shales where efficiency initiatives are now being realized.

"Renewables quickly catching up with Oil and Gas."
- O&G industry need to remain competitive during the energy transition.
Shell’s Deep Water landscape

- Shell has a world class Deep Water portfolio and is the largest IOC DW operator.
- Abundance of choices in countries where Shell has expertise, long-time relationships, and critical infrastructure, with a strong development pipeline and production on-stream.
- In the last two years, added production from Bonga Main Phase 3 in Nigeria, Stones in the GoM and BC-10 Phase 3 & Lula, Libra, Lapa in Brazil.
- In the GoM, projects such as Kaikias, Coulomb Ph 2, and Appomattox are under construction as well as several other Brazilian projects.
- Shell has a healthy portfolio of new investment options in our Deep Water funnel.
Shell Deep Water
A leading IOC position

How was this achieved?

Strong deep water capabilities combined with advantaged portfolio

- Deep water pioneer
- Top tier acreage & basins
- Global scale provides competitive advantage

Advantaged portfolio
Thousand boe per day

Competitive growth
Pre-FID funnel break-even price $ per barrel

Production excellence

- Structural operating cost reductions with further opportunity
- Disciplined approach to maximize availability
- Up to 70kboe/d production unlocked in 2017
Sustainable Changes Required to Restore Competitiveness

Shell DW Well costs are down 50%, durations are down

- Competitive Scoping: Starting from a minimum technical scope and identifying key value adding scope additions.
- Efficient Execution: Being more capital efficient in execution.
- Supply Chain Transformation: Manage the supply chain “as a system,” understanding the critical interfaces that will deliver improved efficiency, driving out waste.
- Technology & Innovation
  - Cost reducing and enabling “big ticket technologies”
  - Automation/digitalization will be axial forces in the improvement journey.
- Cutting Cycle Time
- System Engineering: Optimize full value chain
- Industry Collaboration (open access, sharing)
Competitive Scoping: Vito Example
Transformational changes make project competitive and affordable

1. **Project Concept:** Simple = Cheaper

2. **>60% Cost Reduction:** Through Competitive Scoping

3. **Further Cost Reduction:** Through competitive benchmarking and leveraging partners

4. **Re-invented Project:** Focus on value levers with strong team integration and stakeholder engagement
Competitive Scoping & Efficient Execution: Kaikias Example
One of the most competitive projects in the GoM

1. **Project Concept:** Simple = Safer = Cheaper = Faster

2. **Cost Reduction:** >20% of cost reduction after FID

3. **Volume Addition:** Significant upside found via pilot hole

4. **Schedule:** >6 months of FOD acceleration, BIC performance
Efficient Execution: Appomattox Example

Project cost reduced >25% since sanction

1 Efficient Execution: Drilling, SURF and Topsides activities

2 Efficient Execution Principles from Appomattox
- High level of team integration – Construction, Operations, Engineering, and Subsurface
- New build - high capability rig.
- Significantly reconfigured logistics
- Rapid application of learnings improves drilling performance & optimizes well design.
- Pipeline (PL) crossing design innovations improves installation efficiency; reduces safety exposure.

3 Hull arrives on schedule

4 Efficient Lift/Set Campaign: through detailed planning & construction execution at multiple sites
Supply Chain Transformation: GOM Planning & Logistics

Optimization resulted in a $600-million spend reduction over the last 3 years

1. **Lean Transformation** through vessel scheduling & planning

2. **Significant Spend Reduction:** of 60% within 3 years

3. **Technology Application:** Integrating various systems

4. **Reduced helicopter & Vessel support:** through logistics resources optimization

**Bar Chart:**
- Collaborative approach between the business and Logistics to change the ways of working.
- Focus on performance management KPIs to drive transparency and identify inefficiencies.

**Graphs:**
- USD (Mln) ~60%

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Technology & Innovative Application: Libra Example
Combined savings from various technology elements leads to lower breakeven prices

1 Technology Application: Drives higher recovery & lower cost

Libra 35

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2 50% Cost Reduction and 30% BEP Reduction

Libra-1 Project Capex

Libra-1 BEP

3 SURF Technology Application Examples

- Single WAG injection flow lines
- Hybrid composite flexibles riser
- Replacing 6” service lines

4 Technology Solutions from Reservoir to Offloading

Shell
**We don’t have all the answers; sustaining competitiveness requires more integrated solutions.**

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| **2** | Cutting Cycle Time | **5** | System Engineering/ Optimize Value Chain

*Innovative commercial deals*

| **3** | Industry Collaboration | **6** | Subsurface Uncertainties |

*February 2018*