

# UPGRADING AGEING OILFIELD INFRASTRUCTURE

April 2024

Upgrading ageing oilfield infrastructure presents several challenges, ranging from technical and financial constraints to environmental and regulatory considerations. These include:

**Cost** of upgrading ageing oilfield infrastructure is high and the cost of replacing or refurbishing equipment, pipelines and facilities can be prohibitive particularly when the refurbishment is extensive or remotely located.

**Technical Complexity** of upgrading aged technology to newer, more efficient technologies can be technically challenging, requiring careful planning and execution to minimise disruptions to production.

**Safety and Reliability** of ageing infrastructure presents challenges when prone to failure and can result in safety incidents, environmental damage, and costly downtime. Upgrades to improve safety and reliability requires thorough risk assessment, engineering expertise and adherence to strict regulatory standards.

**Environmental Impact and Regulations** associated with aged infrastructure is high and the potential risk of spills or leaks during construction or operation and minimising the impact that may arise from upgrades requires extensive knowledge, understanding, monitoring and compliance.

**Supply Chain and Logistics** plays a pivotal role in the upgrade of oilfield infrastructure, particularly in the instances where locations are remote and transporting of equipment and materials can be logistically challenging and expensive. Managing the co-ordination process to ensure timely and safe delivery of equipment and materials is critical to the success of any upgrade project.

**Workforce skills** is vital to the success of an upgrade project and the skills and expertise needed may be in short supply particularly in remote areas. Training existing personnel and recruiting new talent both pose a challenge particularly where the oil and gas industry is in decline.

This challenge poses huge cost pressures to the project.

**Long Term Viability** considerations are essential as part of the project analysis phase. Many factors such as declining reserves, changing environmental regulations and changing market conditions are just a few that need to be considered to ensure that investments in infrastructure upgrades are economically and environmentally sustainable in the long run.

**Addressing these challenges requires collaboration between industry stakeholders, regulators, and local communities to ensure that oilfield infrastructure upgrades are conducted safely, responsibly and in accordance with regulatory requirements.**

Meeting the challenges of upgrading ageing oilfield infrastructure requires a comprehensive approach that involves careful planning, collaboration, innovation, and adherence to best practices. Strategies to address these challenges include:

**Risk Assessment and Planning** are used to identify potential hazards and challenges associated with upgrading ageing infrastructure. Development of comprehensive upgrade plans that address safety, environmental, regulatory, and logistical considerations is imperative.

**Investment and Financing** from a combination of internal and external sources and government incentives and prioritisation of investments based on their potential to improve safety, reliability, and efficiency while minimising environmental impacts play a pivotal role in securing project success.

**Technology and Innovation** whilst significantly challenging in ageing infrastructure can be modernised through leveraging of advances such as digital monitoring and automation, advanced materials and predictive maintenance to improve performance and lifespan of oilfield equipment and facilities.



**Collaboration, Compliance and Regulatory Engagement** are key to ensure compliance with safety, environmental, and operational standards. Engaging proactively will save time, cost and potentially address regulatory hurdles and streamline permitting and approvals in an efficient manner.

**Environmental Stewardship** as part of a wider ESG strategy to ensure minimisation of any environmental impacts as a result of the oilfield upgrade project is key to project success. Considerations of environmentally friendly materials, adopting pollution prevention practices, and implementing wildlife protection measures are but a few to be included in the plan. Incorporating renewable energy sources and carbon capture technologies to reduce greenhouse gas emissions are a few other considerations.



By adopting these strategies and approaches, oil and gas companies can effectively meet the challenges facing them in the upgrade of ageing infrastructure while enhancing safety, reliability, and environmental performance. With all projects but more importantly with these highly complex and technical projects, collaboration, innovation, and a commitment to best practices are key to achieving successful outcomes in the upgrade to ageing oilfield infrastructure.

---

**To find out more please contact one of our experts below:**



**DAVID TOMASI**  
Moore Global Energy, Mining and  
Renewables Sector Leader  
[david.tomasi@moore-australia.com.au](mailto:david.tomasi@moore-australia.com.au)



**PAUL CALLAGHAN**  
Moore Global Energy  
Sub-Sector Leader  
[paul.callaghan@moore-oman.com](mailto:paul.callaghan@moore-oman.com)