

Is the industry facing more stringent regulations and new safety challenges?

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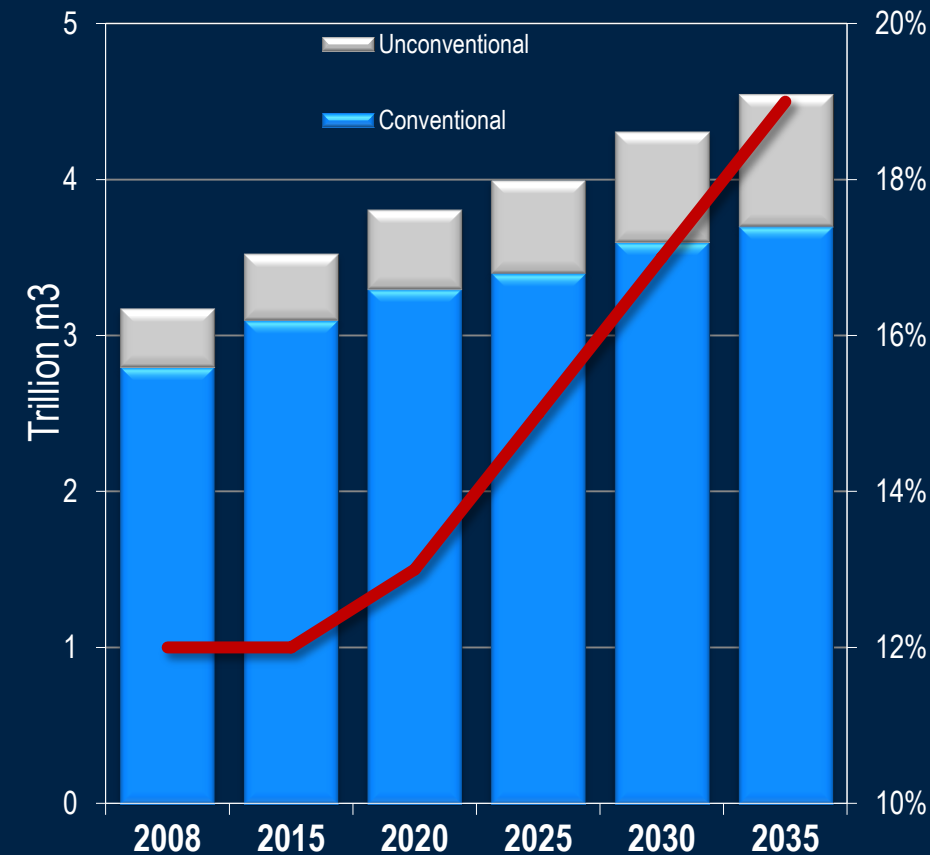
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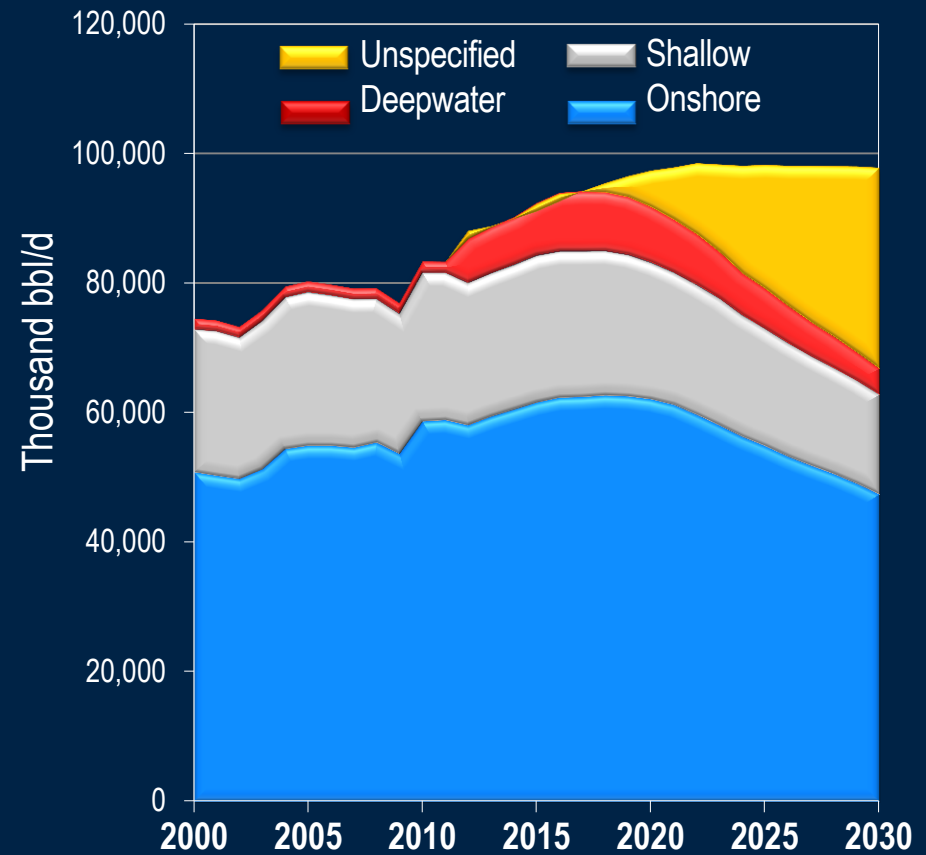
Paris

Increasing Complexity in E&P: Unconventionals, Deepwater

Source of Gas Production



Source of Oil Production



Source: IEA World Energy Outlook 2009, & 2010, WoodMcKenzie

Recent accidents have triggered governments to tighten regulations on environmental review, permitting and drilling / production

		CHANGES IN REGULATION	US
1	Environmental Review	<ul style="list-style-type: none"> • Thorough environmental reviews of lease sales & drilling projects • Support for polluter pay principles & establish off-the-shelf monitoring program 	✓ ✓
2	Permit Issuance	<ul style="list-style-type: none"> • New drilling standards and certification needs by independent 3rd party • Operator to show readiness to handle blowouts & worst case discharge 	✓ ✓
3	Drilling & Production	<ul style="list-style-type: none"> • New drilling standards and requirements for well design, equipment and testing. Implement management programs to reduce risk of human error • Authorised official, professional or 3rd party signoff required at critical steps • Use of offshore skilled and certified personnel • Joint responsibility between operators and contractors • Safety Case regulation 	✓ ✓ ✓ ✓
4	Blowout Containment and Spill Response	<ul style="list-style-type: none"> • Industry and public collaboration to strengthen safety, blowouts prevention and spill response • Inclusion of worst case spill scenario calculations in application package 	✓
5	Oversight – Strengthen Regulator	<ul style="list-style-type: none"> • Establish independent or centralized agency to look after safety, well integrity and environmental management • Regulator with sufficient and skilled resources to approve and supervise plan& operation • Set industry body to self-police and complement the regulator 	✓ ✓ ✓

Recent Trends and Accidents Have Long-Term Impacts

Predicted outcomes



Regulation

- Shift to stricter regulation
- Upgrade standards in environmental, permit, drilling & production and blowout containment/spill response
- Reorganization of regulator



Technology

- Critical for deepwater drilling success
- Opportunities for competitive advantage
- Safety assurance constantly tested and upgraded



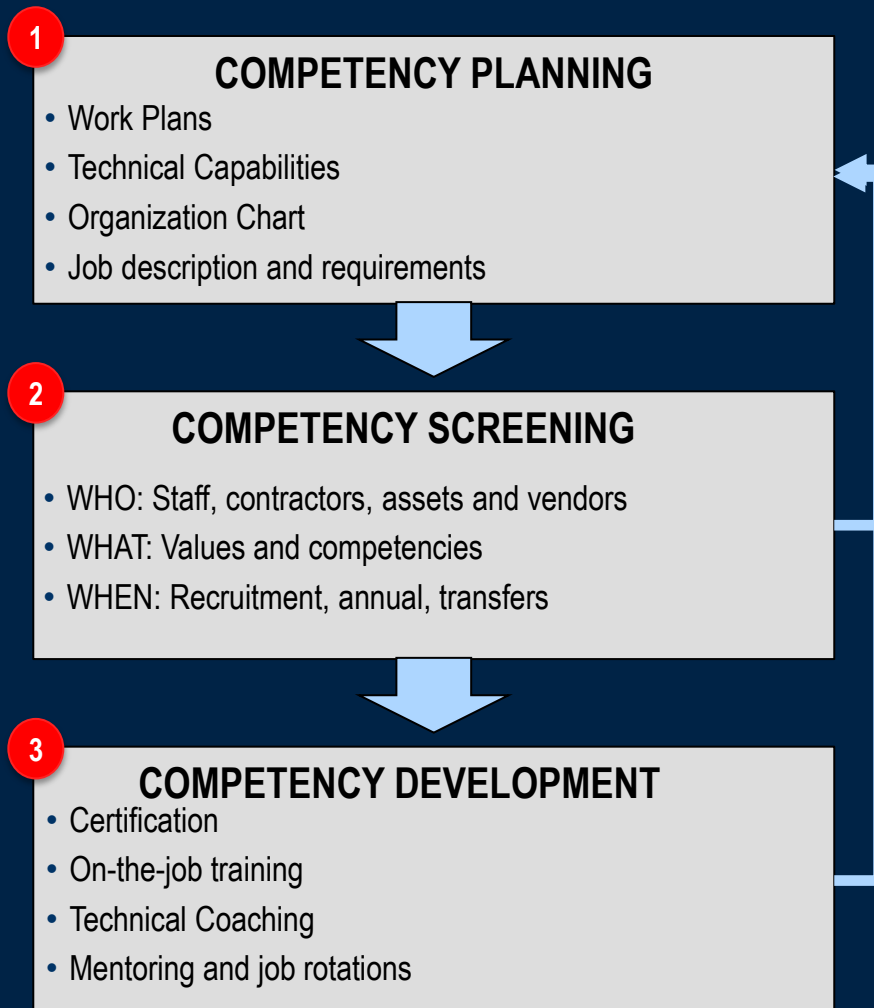
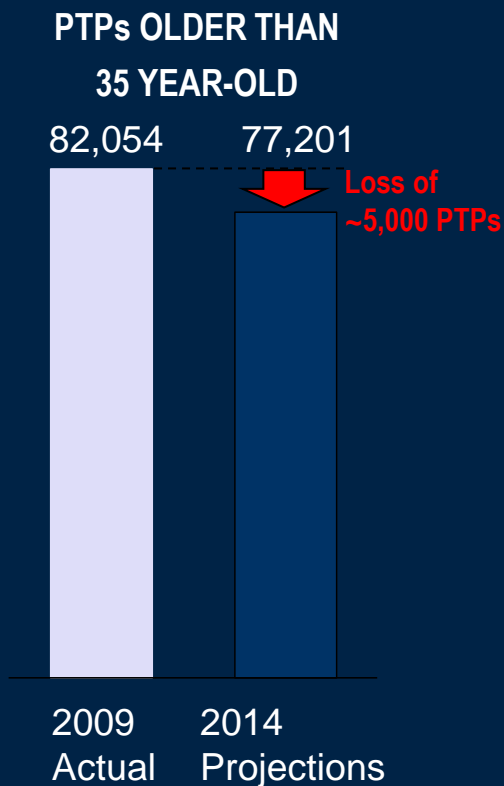
Capability

- Talent and development needs
- Improved processes
- Adequate Management Systems
- New values and behavior

Impact

- Extended timing and availability of supply from deepwater projects
- Cost escalation
- Loss of license to operate for those who do not adapt quickly enough

Projected Competency Requirements for the Oil and Gas Industry



A Service Provider Approach

Operational Integrity—Excellence in Execution

Standardized Maintenance



Centralized Bases



LEAN
Principles

Remote
Operations
Support



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