

How APAC is balancing unmatched growth and complexity with the energy transition

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In the Asia-Pacific (APAC) region, rapid population growth, industrial expansion, and economic development have propelled energy demand to unprecedented levels, with the region projected to maintain a [50% share of global primary energy demand](#) until 2050. But this growth is accompanied by a parallel challenge. Namely, how to meet surging demand while staying committed to decarbonisation, with APAC also accounting for an expected [60% share of global carbon emissions until mid-century](#).

Matching the region's growth is also its complexity, with huge variance in infrastructure, resources, and policy priorities between nations. Each country has unique challenges shaped by their geography, industrial structure, and regulatory landscape. This means there can't be a one size fits all approach. For example, while Indonesia is [pursuing geothermal expansion, hydrogen development, and carbon capture](#), Vietnam has [led the way on the rapid adoption of solar and wind energy](#).

For those operating in APAC, success means balancing growth with decarbonisation, while adapting, innovating, and working with the unique conditions of each country on the ground and across borders.

Tapping into new resources

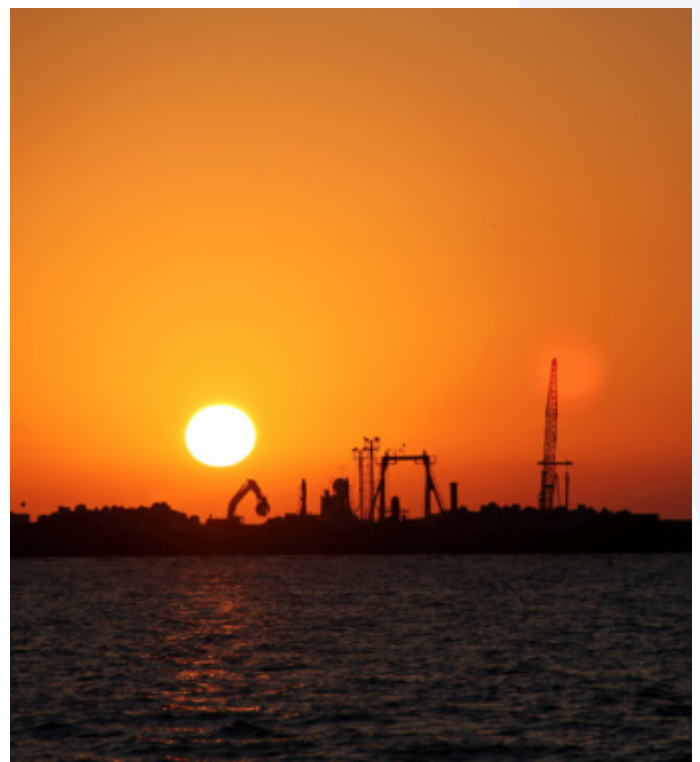
To meet rapidly growing demand, energy production across APAC is expanding. Oil and gas continues to play a crucial role, with LNG demand surging, particularly in China, India, and Southeast Asia, driving new investments in exploration and infrastructure. Over the next decade, APAC is expected to [invest \\$3.3 trillion](#) in power generation, with fossil fuels maintaining a significant share.

At the same time, APAC's easily accessible fossil fuel reserves are depleting, forcing the industry to turn to smaller, more complex resources. This demands a departure from traditional methods, embracing flexible and modular technologies like conductor-supported platforms, advanced drilling systems, and [enhanced riser designs](#) that enable these previously untapped resources to be made technically and economically viable.

Take the [shallow waters of Bohai Bay](#) in the Gulf of China, an area comparable to the North Sea in scale and significance. As China's first offshore oil-producing area, with predominantly shallow depths, conventional infrastructure like semi-submersibles are impractical for developments in the field. Instead, modular solutions such as the [Sea Swift](#) platform, which can be installed directly from jack-up rigs, offer an efficient and safe alternative. By reducing the need for heavy-lift vessels, these platforms lower costs and improve project timelines while maintaining rigorous safety standards.

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In markets like China and Japan, other technologies such as subsea drilling from jack-up rigs are also gaining traction for this same reason. Although proven in other regions, they represent a new frontier for these countries, offering both operational efficiency and the potential to tap into previously economically infeasible fields, while reducing environmental impact.



CCS will facilitate APAC's journey

However, with emissions rising [151% since 2000](#), the need for decarbonisation is also clear. Carbon capture and storage (CCS) is emerging as a critical piece of this puzzle, not only addressing emissions from existing assets, but also shaping the long-term viability of offshore energy. But, while momentum is building, each region must navigate its own regulatory and commercial realities, requiring tailored approaches.

With around [200 offshore fields in Southeast Asia](#) expected to cease production by 2030, these could present an opportunity for repurposing as CCS, or even hydrogen storage facilities.

Malaysia is already taking steps in this direction. Petronas has identified vast storage potential in depleted gas reservoirs offshore Peninsular Malaysia and Sarawak, with over [46 trillion cubic feet available](#). To advance these opportunities, ExxonMobil and Petronas are working together to [assess CO₂ storage sites](#) and establish viable commercial frameworks.

Similarly, [Indonesia has vast offshore storage potential](#) and the country has approved CCS projects involving [bp](#), [INPEX](#), and [Repsol](#), signalling its readiness while also forging international relationships to accelerate deployment.

However, scaling up CCS presents several technical challenges, not least being ensuring the integrity of legacy well formations to prevent CO₂ leakage. Advanced well intervention technologies, like [Aquaterra Energy's Recoverable Abandonment Frame](#) are pioneering cost-effective solutions to support the efficient re-entry of these wells, to establish an environmental and pressure-retaining barrier, ensuring safe re-abandonment and readiness for their long-term viability for carbon storage.

Equally important is ensuring that once CO₂ is stored, it remains securely in place, particularly in a region which is known for being geologically active. Cutting-edge monitoring technologies can provide continuous, remote oversight of storage sites post-injection, detecting potential leaks or seismic activity throughout the lifecycle of a project. These innovations offer comprehensive, long-term assurances that stored carbon remains contained.

By leveraging these technologies, operators across APAC can not only reduce costs but also accelerate offshore CCS development. With greater confidence in carbon security, countries such as Indonesia and Malaysia can transform depleted oil and gas formations and saline aquifers into reliable CCS storage sites, driving the region toward a low-carbon future.

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Empowering regional development

The APAC region's diversity extends beyond geography to include unique regulatory environments and priorities. A unifying theme, however, is the growing emphasis on local content. For instance, Indonesia has introduced an update to PTK 007 which outlines how local companies are to be given preferential treatment during procurement activities, while in China, local sourcing is critical, even if not explicitly legislated.

Foreign companies navigating these markets must do more than introduce advanced technologies; they must invest in local partnerships, transfer knowledge, and build regional capabilities. By aligning global expertise with local insights, they can empower local content to propel APAC's low-carbon future. This ensures solutions that are not only technically innovative but also culturally and economically resonant. Such an approach strengthens trust and positions international companies as key contributors to both regional progress and national aspirations.

A collaborative future

APAC's offshore energy journey is fundamentally a collaborative endeavour. As the region's energy demand continues to surge, its leaders face the dual challenge of meeting immediate needs while laying the groundwork for sustainable growth that meets global climate goals. Through technologies like reduced steel platforms and offshore CCS, the region is bridging operational challenges with its decarbonisation goals. At the same time, prioritising local partnerships will underscore the importance of shared progress.

This balancing act – between growth and sustainability, global expertise and local insight – defines APAC's energy transformation. By embracing innovation and collaboration, the region is charting a course that not only addresses its energy demands but also sets a global benchmark for sustainable development.



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For more information on our CCS well re-entry services visit us [here](#).

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