

# Emerging market innovations offer the field development template for solving the West's energy crisis

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UK and EU pledges to phase out Russian oil and gas products by 2022 and a spiralling [energy price crisis](#) across the West have sparked a dash for new oil and gas, as other countries race to fill the vacuum. With Moscow currently supplying [40% of the EU's natural gas](#), [27% of its oil](#) and [4% of UK gas](#), there is an urgent imperative to fast-track production of energy supplies from alternative providers. There is now a major opportunity to boost Europe's energy security, reduce energy prices and accelerate economic growth by looking further afield to new energy-rich regions.

Yet weaning Europe off Russian oil and gas within such tight timelines will require new projects to be brought online at unprecedented speed. And many countries will lack the infrastructure and resources to meet the new demand in a fast and cost-effective fashion. The complexity of some offshore platforms may exceed the local manufacturing, logistics and installation capabilities of even resource-rich regions, such as West Africa. Innovative and intelligent offshore engineering will be needed to plug Europe's imminent energy gap, curb energy costs and help new countries scale up production with their own resources.

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## 1. The race to replace Russian energy

Russia's recent cuts in gas exports to Germany have added fresh impetus to Europe's search for different energy sources. The recent REPowerEU plan calls for radical behavioural changes to reduce demand while collectively [diversifying and de-risking supply](#) and switching from fossil fuel to renewable energy. These changes will take significant time, and meanwhile, there is an urgent need for a short-term solution that can help to meet the demand and smooth the transition over to renewables.

This represents an opportunity to turbocharge social and economic development across markets with abundant oil and gas resources, from West Africa to South America. For example, historical energy trading relations and [existing pipeline infrastructure](#) between Europe and Africa mean the continent is ideally positioned to support with current demand. The EU is already in [advanced discussions](#) to boost LNG imports from African countries, including Egypt and Algeria. And there are also [moves to unfreeze](#) Venezuela's long-suspended oil flows to Europe.



Finding different energy sources within the required timescale will require an unprecedented race to reach first production across new fields, especially in countries where production capacity, training and infrastructure are less developed. Some of these countries may lack the large construction yards, ports and in-country installation equipment needed to construct, carry, and assemble conventional offshore oil and gas platforms. It can also be costly and time-consuming to use large, over engineered platform designs for the many smaller fields that could rapidly fulfil Europe's short-term energy needs.

## 2. Lean engineering could fast-track production

We need a revolution in lean engineering that fast-tracks energy production and maximises the use of existing and in-country resources. This would boost local economies, while helping to quickly fill the Russia-sized hole in the global energy supply.

Cost-efficient, quickly assembled infrastructure from [mobile offshore production units](#) (MOPUs) to [minimum facility offshore platforms](#) can significantly improve the project economics of field developments, especially for smaller fields. New minimalist, modular designs can be scaled from monopiles for small fields with one or two wells to conductor or jacket supported platforms for extra capacity. These lightweight, modular platforms can be rapidly manufactured, transported and assembled with small yards and minimal facilities.

For example, pioneering projects to increase gas production in West Africa illustrate how smart offshore platform designs can help rapidly ramp up production in the region, utilising local resources, and generating local content. We worked with a local operator in Nigeria who harnessed lightweight, low-cost, and locally fabricated platforms to increase its oil and gas production in the Niger Delta. Using the intelligently engineered modular Sea Swift as a Conductor Supported Platform design enabled a phased installation, allowing production to commence during construction and accelerated time to first oil by six months. The platform was entirely manufactured using existing facilities in-country, assembled in a local quayside, and installed using local, already in-country assets.

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The design was optimised to use less steel, enabling cost-effective development and deployment. It will ultimately deliver around [185 million barrels](#) of oil and 637 billion cubic feet of gas reserves for Nigeria, and these innovations could be extended to [many marginal fields](#) set for development across the country.

Angola is another country with huge opportunity to further tap into its abundant offshore energy resources. We are supporting a supermajor to develop multiple platforms that will support the production of approx. 5000 barrels a day per well, with a 20-year production life. The platforms use existing in-country resources in the Cabinda Province, Angola. A knowledge transfer partnership will also help to increase the proportion of Angolan engineers on the design team, boosting local skills for future projects.

However, in smaller fields where a fixed platform is not economically viable, there are other options available. For example, fast-tracking production can include installing wellbay modules on the hulls of MOPUs, thus removing the need for any platform.



These can provide a fast track to first production across fields with just a few wells or can be used while awaiting construction of bigger permanent platforms. These minimalist, low-cost and efficient solutions are ideal for regions with multiple smaller fields in shallow water depths. They also offer a template for small independent operators across the region to accelerate energy production with local assets that might otherwise not be used.



### 3. A fast track out of the energy security crisis

The energy price crunch and the ongoing Ukraine crisis have spurred an international search for new energy sources and raised the stakes in the race to first production. We cannot afford to sit and wait for large, costly, and complex fossil fuel projects or renewable developments with multi-year timescales. Regions, such as West Africa, with abundant, accessible offshore energy reserves, are ideally positioned to step into the breach.

Yet this will require innovations capable of maximising the speed and cost-efficiency of production in emerging markets. The key is to apply the principles of lean engineering to offshore energy holistically and create minimalist, modular field development solutions that are designed for in-country fabrication, installation, and maintenance with limited local resources.

This could help to efficiently plug the looming gap in Europe's energy supply and offer a sustainable path to economic progress and energy autonomy for markets across the world.

**To learn more about our field development solutions, including Flagship Sea Swift modular platform**

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From seabed to surface, oil and gas to wind and hydrogen, Aquaterra Energy is the offshore energy industry's first choice for offshore products, systems, and projects around the world. Swift, flexible, and responsive, Aquaterra Energy's engineers and analysts create the solutions customers need, while delivering operational improvements, efficiency gains and supporting decarbonisation efforts – whatever their circumstances

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