

Shell in Nigeria

Unlocking Nigeria's offshore energy in deep water



Bonga

Bonga is Nigeria's first deepwater oil discovery. It has opened a new chapter in the country's energy industry and transferred advanced skills and technology to Nigerians.

In November 2005, the Shell Nigeria Exploration and Production Company Ltd (SNEPCo) began to produce oil and gas at Bonga, 120 kilometres (km) offshore Nigeria in the Gulf of Guinea. The project – the country's first in deep water – increased Nigeria's oil capacity by 10%, allowing Nigeria to remain one of the world's largest energy producers for decades to come.

First discovered in 1995, Bonga lies in water 1000 metres deep across an area of 60 square km. It has the capacity to produce more than 200,000 barrels of oil a day and 150 million cubic feet of gas a day – enough to provide the power for more than 1.5 million average European households – the equivalent of a city the size of Marseille in France. By the end of 2008, Bonga had produced over 200 million barrels of oil.

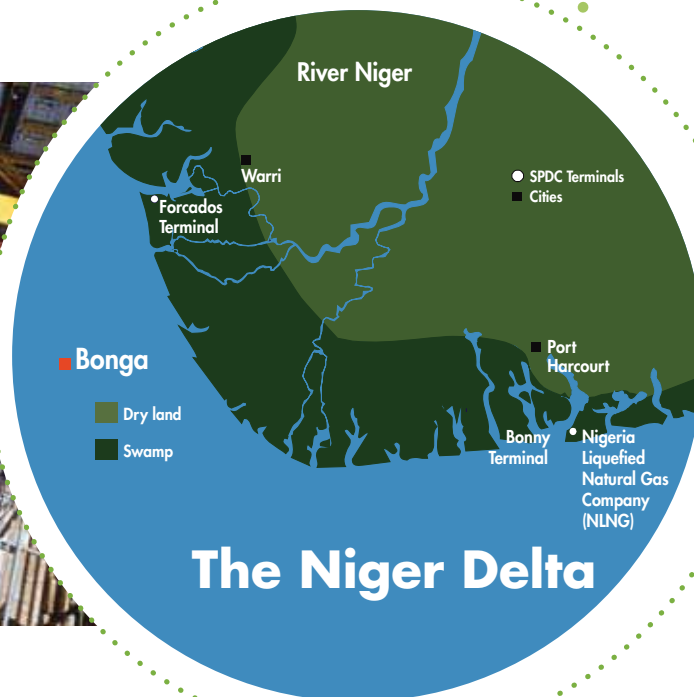
'Bonga has set new standards for the Nigerian energy industry,' says Chike Onyejekwe, SNEPCo Managing Director. 'The skills and technology we have used here will ensure that Nigeria becomes a major offshore producer and will help meet global demand for energy long into the future.'

The Bonga field supplies gas to the Nigeria Liquefied Natural Gas Company Ltd (NLNG) at Bonny Island, from where it is exported to European and other markets. Oil is exported globally from the Bonga FPSO - the giant Floating, Production, Storage and Offloading vessel that is at the heart of the field's development.

Advanced technology and engineering

Bonga is one of the world's largest FPSOs. Three hundred metres long and the height of a 12-storey building, Bonga's deck is the size of three large football fields. It receives crude from production wells on the seabed. The oil is processed onboard, stored and then sent to the single point mooring (SPM) - a buoy anchored nearby that is used to load it onto tankers for export. When fully laden with oil, Bonga weighs 300,000 tonnes. It is held in place by 500-tonne anchors linked by 20 km of high-strength chains.





Constructing Bonga was an international effort involving thousands of workers across the globe. Samsung Heavy Industries built the hull in South Korea. Tug boats then pulled it 24,000 km via Egypt's Suez Canal to Tyne in the north of England, where it was fitted out with processing equipment modules before making its final journey to Nigeria where the last of the equipment was installed.

Nigerian content

Nigerian companies contributed significantly to the success of the Bonga project. Three of the Bonga modules were designed and built in Nigeria. The foundation piles for the FPSO, the risers and the giant single point mooring buoy - at the time, the largest in the world for deepwater operations, weighing about 870 tonnes - were also built in Nigeria.

The project helped create the first generation of Nigerian oil and gas engineers with deep-water experience. When it began, Nigeria had few contractors with the technical capacity or scale to support the development. SNEPCo began training Nigerian operation and production engineers for Bonga in 1999. By the end of 2008, some 75% of Bonga's core offshore staff were Nigerian. Bonga also stimulated the growth of support industries vital to offshore deep-water projects. Nigerdock's Snake Island facility in Lagos, was developed as a support base for Bonga's operations and a modern ABB onshore base was established at Onne in Rivers State in the Niger Delta, for subsea equipment testing and maintenance. Together these have helped create jobs and provide a range of training and maintenance services to the offshore industry. Also at Onne, a contracting company has built an ultra modern facility to coat and insulate pipes -

essential to withstand deep-water conditions. In addition, the project also benefited the wider economy by boosting demand for a range of goods and services including boats, materials, floating hotels, helicopters and manpower.

Bonga today - still innovating

SNEPCo is now working on a new project - the Bonga Main Integrated Project (BMIP) - that will allow the Bonga FPSO to operate at full capacity for longer. The BMIP project will develop deposits to the northwest of the original Bonga production area. These additional reserves lie in average water depths of 1000 -1200 meters. BMIP merges various smaller projects and will involve drilling 36 new wells.

And in March 2008, SNEPCo conducted Nigeria's first-ever four dimensional seismic survey at the Bonga field, covering an area of more than 1000 square km. These are surveys taken at intervals and allow engineers to track movements of oil and water over time and build an accurate understanding of how they are being drained from the field. The results provided valuable information that will allow SNEPCo to maximise production from Bonga and other fields being developed nearby. The survey is a good example of the important contribution Nigerians are making to deepwater exploration in Nigeria. Forty percent of those who worked on the survey are Nigerian and will form the core of the senior crew for further surveys in 2009.