



A HISTORY OF
WORKING TOGETHER



20 YEARS OF WORKING TOGETHER

For the past 20 years, PanAfrican Energy Tanzania has played a critical role in Tanzania's shift from costly imported fuel oil to domestic natural gas.

The Songo Songo gas field was discovered by AGIP exploring for oil in 1974. However, the gas field was not brought into production because of a lack of gas markets in Tanzania at that time. Today, PanAfrican Energy produces natural gas which fuels over 55% of the national power grid in Tanzania.

A project over two decades in the making

In 1991 PanAfrican Energy acquired the Songo Songo lease and began development discussions in Tanzania and with international development organizations like the World Bank. In order to secure financing it was clear that a viable market for the potential natural gas production would need to be created. Years of financial, market development and operations planning followed.

By 2001 a consortium to build the transportation infrastructure had been formed and financing secured. In June 2004 the first delivery of natural gas flowed from Songo Songo Island by marine and land pipeline to Dar es Salaam. By July 2004 the Ubungo Power Plant was connected to the gas pipeline and for the first time power was being generated in Tanzania using a natural gas-fired turbine generator. PanAfrican invested over TZsh 14.3 billion before the first gas was sold and more than TZsh 219.2 billion in drilling, infrastructure and capital projects since.

Beginning a move to reliable natural gas

For Tanzania this was good news. The delivery of Songo Songo gas came just as seasonal droughts had begun to severely impact the country's ability

to rely on hydro power. Demand for electricity was continuing to grow every year and the oil-fired Ubungo Power Plant was not able to keep up with demand. The cost of generating power by burning oil was also becoming a matter of grave concern.

Creating the first industrial natural gas market in East Africa

To create a long term sustainable solution, PanAfrican Energy worked closely with the Government of Tanzania, the Tanzania Petroleum Development Corporation (TPDC), TANESCO, the Songas consortium and the World Bank. By the end of 2002 construction of the gas processing facilities was underway on Songo Songo Island.

To meet earlier power demand, Tanzania had introduced power generated by imported fuel oil in the 1980s. By the early 1990s oil prices were rising and price volatility was increasing. Even new thermal power plants at Dar es Salaam could not close the gap between power demand and supply. Power shortages were impacting both Tanzania's national power grid and the growing industrial base in the Dar es Salaam area. Load shedding was becoming common and frustration over power insecurity had become a serious national issue.

While the Songas-owned gas processing plant was being constructed on Songo Songo Island, PanAfrican Energy repaired and commissioned the Songo Songo gas wells to make them production ready.

With power generation gas contracts in place, PanAfrican next turned to the construction of a low pressure pipeline to make Additional

Gas from Songo Songo available to industrial customers. The first two industrial customers were Kioo Glass and Tanzanian Breweries and these were quickly followed in 2005 by four more industrial customers. PanAfrican was able to sell the gas to industrial customers at 20-25% less than the price of heavy fuel oil providing serious motivation for more customers to make the switch from fuel oil to natural gas. Today PanAfrican serves 38 industrial customers which employ over 6,500 people in the Dar es Salaam area, fueling Tanzania's growing industrial sector.

With gas production from the Songo Songo gas field flowing to Dar es Salaam a new level of Tanzanian energy self-sufficiency was being achieved. For the first time Tanzania was able to use its domestic hydrocarbon resources to fuel power generators at the Ubungo plant.

By 2006 an additional development program was launched to meet TANESCO's need for more gas. PanAfrican agreed to sell Additional Gas to fuel 144 MWs (Megawatts) of short term, emergency power generation at Dar es Salaam.



1974

The Songo Songo gas field was discovered by AGIP.



1991

PanAfrican acquires Songo Songo lease.



1997

PanAfrican completes five-well servicing programme on Songo Songo.

1999

Government of Tanzania approves the Songas Project.



2001

Songas Project achieves financial closure.



2003

Tanzanian workforce hired and trained to operate Songo Songo gas plant.

2004

Songo Songo in operation and first shipment of gas was received at Ubungo.

1974

By the 2007 rainy season the reservoirs were filled and increased hydro power generation was possible for several months. With full reservoirs, the demand for rapid expansion of Songo Songo was reduced. The Mtera dam, which supplies water to the 80 MW Mtera and the 204 MW Kidatu hydro stations, rose from a non-operational level of 687 meters above sea level to its maximum capacity of 698 meters. As a result, it was anticipated that these hydro units would have sufficient water to run at high utilisation rates during 2007 and 2008.

This provided an opportunity for PanAfrican to plan a 16-kilometer expansion of its already constructed 28-kilometer gas distribution system in Dar es Salaam. PanAfrican Energy has invested more than TZsh 30.7 billion in its downstream network which includes a TZsh 7.4 billion compressed natural gas (CNG) pilot project, demonstrating PanAfrican's ability to serve both the power and industrial sectors.

However by 2008 capacity at the Songas-owned gas processing plant on Songo Songo Island had reached the system's physical limits and production had to be limited to a maximum of 70 MMscfd.

Committed to increase production to the power sector, in early 2009 PanAfrican Energy financed studies to have the gas plant and transmission infrastructure re-rated to 90MMscfd. This was a critical step in meeting power generation needs. Again in June 2011 the power sector was in desperate need of more natural gas to offset the high cost of liquid fuels. PanAfrican Energy financed studies that demonstrated that it would be safe to have the existing infrastructure re-rated to 110 MMscfd. In response Songas approved the purchase and installation of two new valves to allow the gas plant to be recertified at this level.

PanAfrican received approval to operate the gas processing plant at the 110 MMscfd level, increasing gas supply for urgently needed power generation.

At the same time PanAfrican invested TZsh 7.4 billion to construct a pilot CNG facility and distribution system in Dar es Salaam. The facilities consist of a "mother station" and three "daughter" stations. They supply natural gas (as CNG) to smaller industries and hotels. CNG was also made available as a fuel for trucks and buses that had been converted to run on natural gas.

Committed to continue to increase Songo Songo reserves and availability of natural gas, PanAfrican proposed further expansion. Studies had shown that with two new processing trains and added pipeline compression production could be increased to 144 MMscfd. By twinning the onshore pipeline to Dar es Salaam (laying a second pipeline beside the first) production could be further increased to 200 MMscfd.

ADVANCING NATURAL GAS DEVELOPMENT

Bringing international accolades to Tanzania

Internationally, the Songo Songo project has been well received. A World Bank study reported in 2011 that the Songo Songo project had performed well during its first six years of operation. The project had stimulated the creation of local gas markets. It was also estimated that switching to natural gas had reduced CO2 emissions from power generation and local industries by approximately 2.5 million tonnes from start up in July 2004 through to December 2010.

The Songo Songo project was also credited by the World Bank with bringing additional social benefits to the people of Tanzania. The World Bank reported that "because of the relationship between power supply, economic development and poverty alleviation, the project intended to contribute to a reduction of poverty by unlocking an important and genuine new source for power generation. While the power cuts that occurred during various generation shortage crises had an impact on the country's economic growth, those negative impacts would have been even



COMMITTED TO IMPROVING THE QUALITY OF LIFE ON SONGO SONGO ISLAND

larger without the project's implementation. It is therefore likely that the project's main component positively contributed to poverty alleviation."

The road ahead

To ensure ongoing gas supply, PanAfrican completed well services of the SS-9 well in 2007 and drilled a new well (SS-10) to further increase production and add to the development of the Songo Songo Field.

In early 2012 the Company pushed ahead with the drilling of the new SS-11 development well. A special flexible subsea flowline for the well was fast tracked to maintain field production allowing the well to begin production October 2012. To be able to double deliverability from Songo Songo PanAfrican is working closely with the Government to ensure that the Songo Songo field is ready to produce 200 MMscfd when the Government planned expansion of the gas processing and pipeline is completed.

Paying our fair share

PanAfrican's Songo Songo Production Sharing Agreement signed in August 2001 was freely negotiated and is fully transparent. It ensures that the Government of Tanzania receives substantial revenue from Songo Songo gas. To date, PanAfrican has paid in excess of TZsh 95.4 billion to the Government.

PanAfrican also employs over 90 Tanzanians and pays over TZsh 5.2 billion annually in salaries, benefits and expenses associated with the Company's operation in Tanzania. PanAfrican is a leader in developing employees to meet the demands of the emerging gas industry.

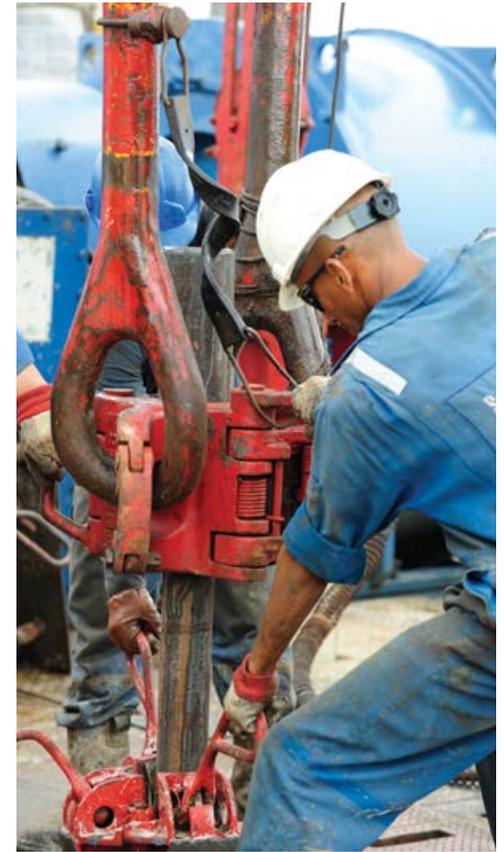
A track record of investment in community and social responsibility

At the same time PanAfrican has continued to expand its environmental and social programmes on Songo Songo Island. As part of this, PanAfrican has assisted in upgrading the local elementary

school facilities and providing much needed educational materials and equipment. Currently, PanAfrican is supporting the kindergarten, which is providing early learning facilities for children aged between three and six years. In addition, students are provided with meals and health check-ups.

The Company has also recruited a professional instructor for the learning centre to provide English language instruction, computer training and entrepreneurship skills to young adults on the island. PanAfrican is also sponsoring three teachers to attend Teacher Training College in Dar es Salaam and is sponsoring 10 students from the island to attend Secondary School in Dar es Salaam. PanAfrican staff are actively involved donating personal time to assist in the children's clinic, where they provide community training in maternal healthcare, HIV awareness, nutrition and vaccination.

So far PanAfrican has spent over TZsh 670 million on social programs in Tanzania and has committed to spend an additional TZsh 550 million in 2013.



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2009

PanAfrican constructs new pressure reduction station to serve Wazo Hill.

PanAfrican completes construction of CNG facilities at Dar es Salaam.

2010

PanAfrican funds study to increase Songo Songo production to at least 140 MMcfd.

PanAfrican increases aid to Songo Songo schools and provides scholarships.

2011

Tanzania announces plan for TZsh 1.8 trillion 532 kilometer coastal pipeline and infrastructure expansion

PanAfrican announces TZsh 208 billion expansion program to increase gas production.

2012

PanAfrican drills and completes SS-11 to increase Songo Songo deliverability.

2013

