Tapping into Africa's '400 gigawatts' of potential gas-generated power

Jon Marks

Chairman, Cross border Information

Power and Electricity World

Johannesburg, 28 March 2017

Africa switched on by gas-to-power potential

- **African Energy Live Data** records 80.8GW of existing installed GTP capacity and 84.5GW planned / under construction – underlining gas's status as the 'transition fuel'.
- Gas is likely to become the dominant generating technology for electricity supply by 2030.
- The large gas discoveries in Mozambique and Tanzania are likely to support GTP growth in the next decade.
- Increasing trend of importing LNG to compensate for maturing domestic gas production and maintain supply. (Most countries are opting for floating storage and re-gasification units. FSRUs) are making LNG imports more accessible.

AFRICAN ENERGY

CbI Cross-border Information

Africa set to switch on gas-to-power potential

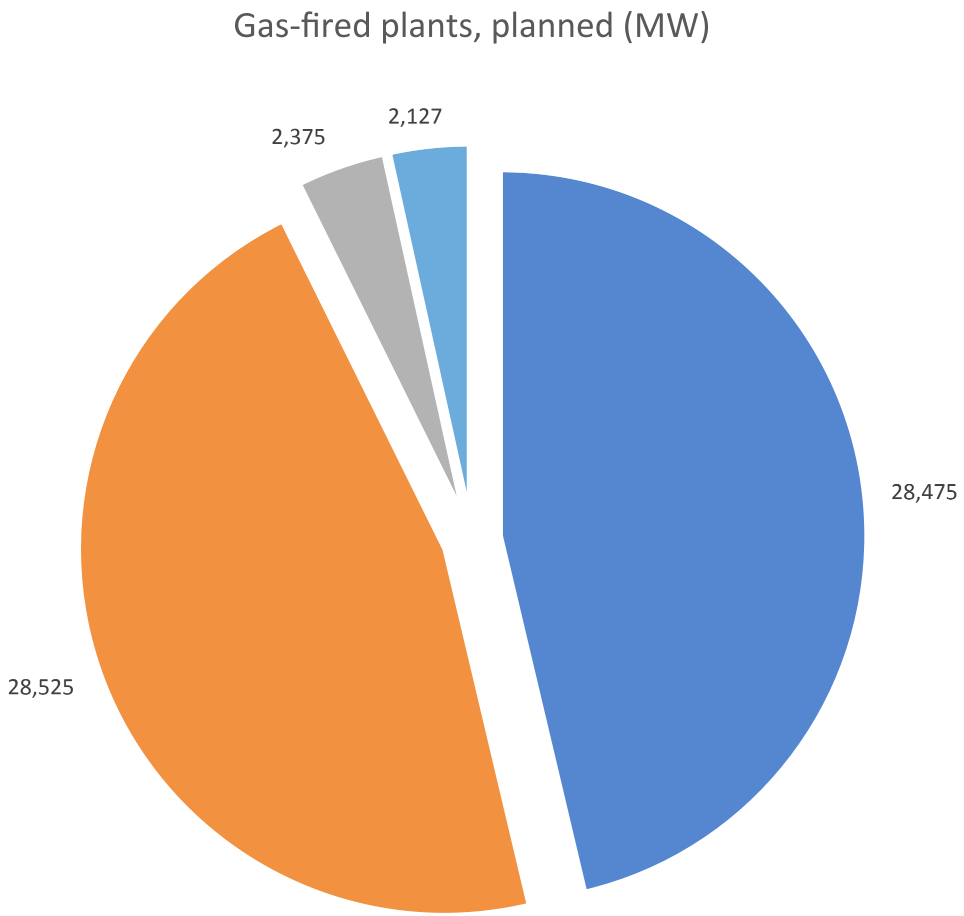
- According to the EIA's 2016 *International Energy Outlook* projections, Africa's natural gas consumption will increase by an average of 3.3%/yr in 2012-40.
- Represented in a big build in some countries – 20GW-plus under way in Algeria
- Gas exports seem less attractive with lower prices, so Africa is turning its attention to using gas resources domestically – provided the pricing is right.

AFRICAN ENERGY

CbI Cross-border Information

Planned

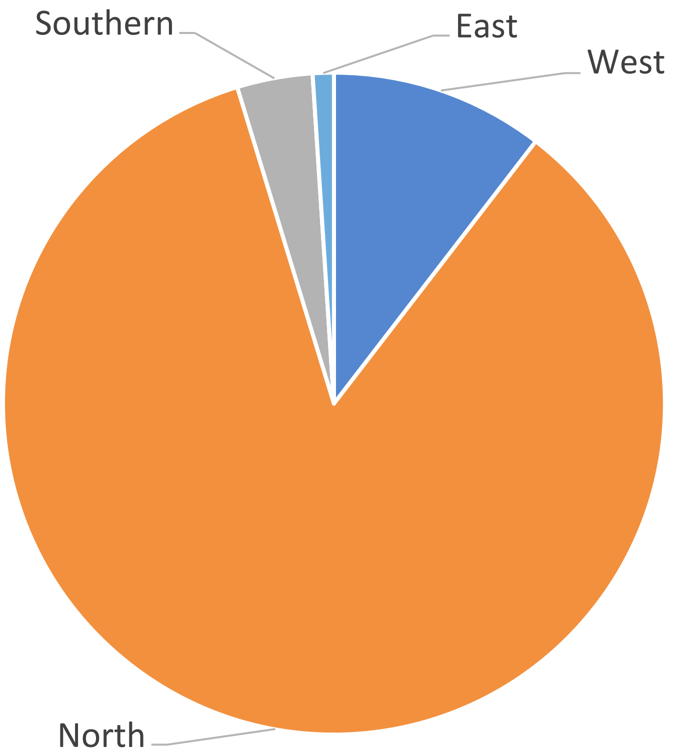
- **Total: 61.5 GW**
- West Africa: 28,475MW
- North Africa: 28,525MW – low
- Southern Africa: 2,375MW
- East Africa: 2,127MW
- HEP, diesel dominate Central Africa



Gas-fired plants under construction

- **Total: 23 GW**
- West Africa: 2,434MW
- North Africa: 19,777MW
  - 14.3 GW of this Siemens plants Egypt
- Southern Africa: 860MW
- East Africa: 240MW

Gas-fired plants, under construction (MW)



AFRICAN ENERGY

CbI Cross-border Information

Pipelines to evacuate the gas

- Nigeria and Morocco joint venture gas pipeline to link Africa to Europe – rivalling Nigeria-Algeria Trans-Saharan Pipeline (PIDA project)
  - Is there feedstock?
- Mozambique-South Africa works
  - Pande and Temane provide
- WAGP doesn’t
  - Posing problems for Nigeria’s partners

AFRICAN ENERGY

CbI Cross-border Information

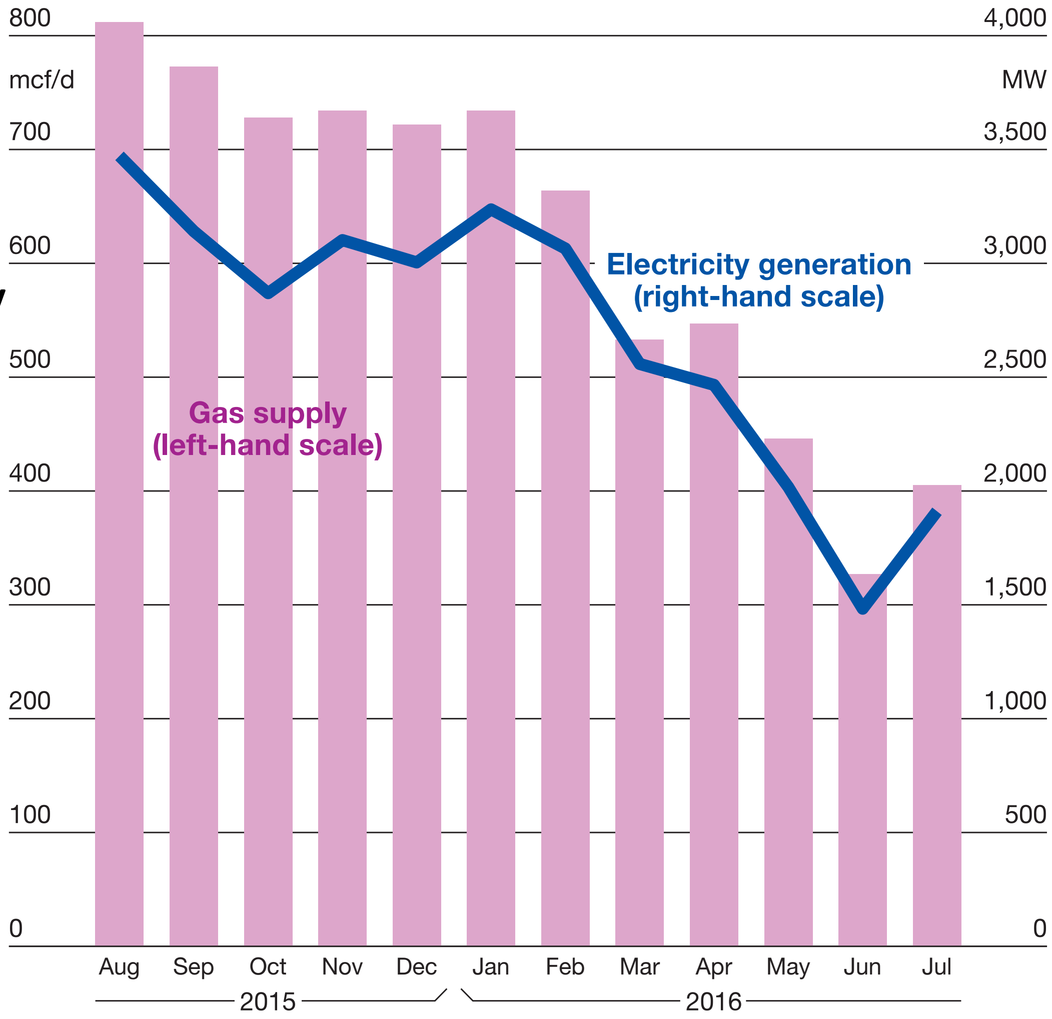
Greater regional integration would expand gas options

- In the north, Algerian gas supplies Morocco and Tunisia – despite strategic reservations. South Africa and a few others import gas now
- In southern Africa, a lot of interest (but not yet power) is being generated by offshore Mozambique, which could supply South Africa and other SAPP partners
- Trust is an issue: West Africa should be better connected but the West Africa Gas Pipeline (WAGP) has never functioned as planned.
- Benin, Ghana etc planning FSRUs…

Nigeria – no eldorado yet

- Estimated **192tcf of proven gas reserves** according to NNPC, **but only 0.6bcf/d delivered** to the power sector in 2016 (8.2% of total production).
- Despite 11.1GW of installed gas-fired capacity, only around 2.2GW was generated in 2016, primarily due to gas supply constraints.
- National Integrated Power Projects (NIPPs) – many built, some without gas supplies or firm GSAs. Privatisation process has ground to a halt.
- Due to security concerns, IOCs have started to divest assets, but local companies are taking up an increasing role in gas E&P.

GAS SUPPLY vs ELECTRICITY GENERATION



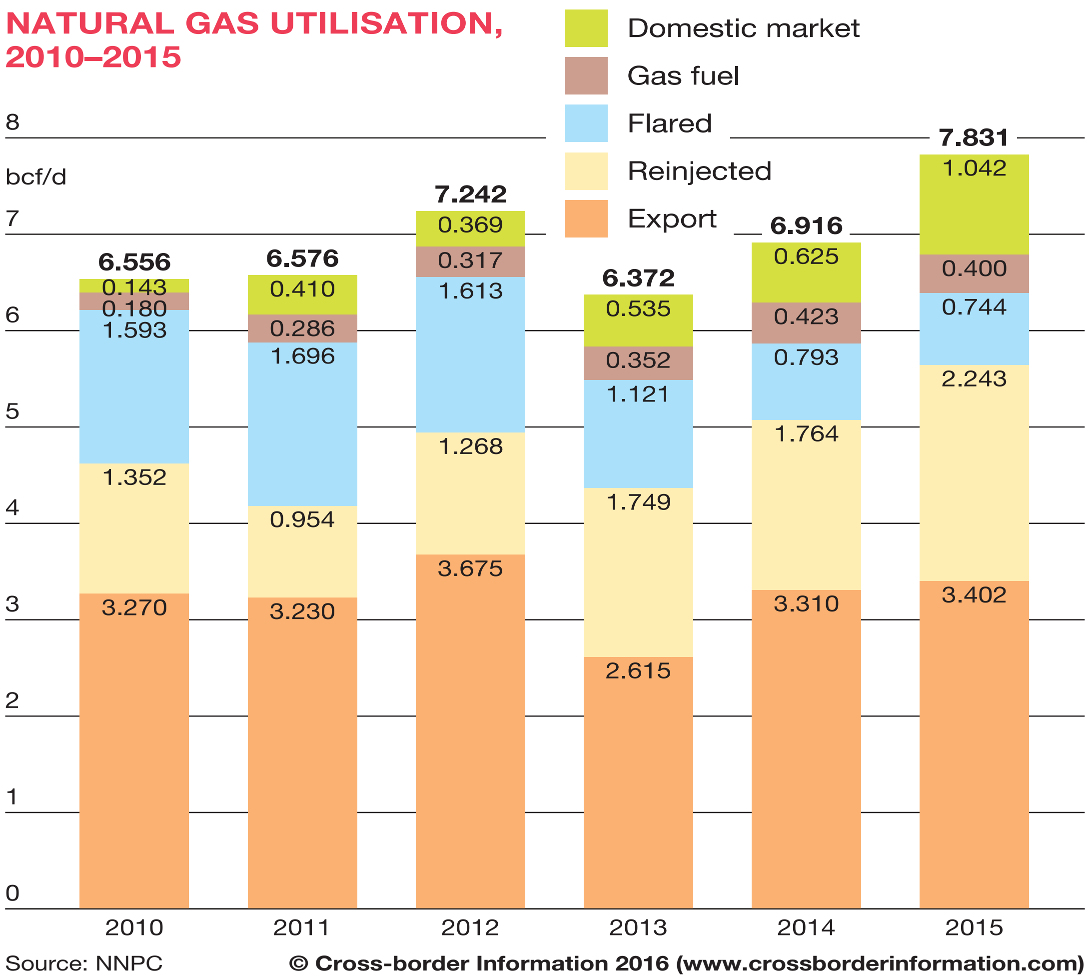
Source: NNPC

AFRICAN ENERGY

CbI Cross-border Information

Nigeria finances

- Liquidity problems have hit the power sector hard, with some payments to gas companies being deferred. Total debt of the sector now around $3bn.
- Foreign exchange shortages adds to woes – gas paid in dollars but cash flow of power sector in naira.



AFRICAN ENERGY

CbI Cross-border Information

Mozambique

- Discovered by Eni in 2010, reserves in Mozambique's Rovuma Basin amount to an estimated **190 trillion cubic feet (tcf) of natural gas**– giving it global-scale reserves. If plans to export LNG come to fruition, Mozambique’s economy should emerge from debt and other problems.
- Coral FLNG and Exxon buy-in give real hope of FID by end-2017
- Some GTP domestically:
  - 100MW Ressano Garcia plant commissioned in 2016.
  - 106MW Maputo plant in construction.

Potentially much more to come…

AFRICAN ENERGY

CbI Cross-border Information

Mozambique

- Gas and electricity infrastructure is extremely limited in the north-east where bg new projects are planned.
- Power can't currently be transmitted from north to the more industrialised south; electrification levels are weak.
- ExxonMobil and Eni agreed on 9 March for the US supermajor to take an indirect 25% stake in Area 4 for $2.8bn in cash. Eni will continue to lead on Coral FLNG, while ExxonMobil will lead the construction and operation of onshore liquefaction facilities.

Tanzania

- Tanzania has a successful GTP project (Songas) and a lot more natural gas – in recent years logging huge recoverable discoveries in the Indian Ocean. A 2.17 tcf discovery announced in February 2016 raisied total estimated recoverable reserves to more than **57 tcf**.
- Most of the gas discoveries in Tanzania were made in deep-sea offshore blocks south of the country near the site of a planned LNG plant.
- Songas showed Tanzania could provide a GTP model, but is the business environment right for a bigger project now?

AFRICAN ENERGY

CbI Cross-border Information

Tanzania

- Questions over whether it can deliver a deal with major offshore players and deliver gas. Policy seems to be fluctuating in ways that concern investors…
- There are projects: 250MW Somanga Fungu GTP planning to tender – *African Energy* reported that Tanesco was ‘awaiting approvals’ from its public-private partnership unit. This is expected to kick off a series of tenders including 300MW Kinyerezi III phase one and 330MW Kinyerezi IV CCGT
- …if the business environment is right

AFRICAN ENERGY

CbI Cross-border Information

Money: financing new GTP projects

- Banks, private equity, potentially stock markets want to buy into the ‘transition fuel’ and Africa’s GTP potential.
- There are a lot of studies under way (we are doing a lot of work) reflecting a lot of ambitions…
- Which can be achieved if the essentials are met:
  - (i) Gas availability – as NIPPs and other projects found
  - (ii) Bankable projects – we’re back to cost-reflective tariffs and traditional pitfalls
  - (iii) The right governance structures
- We know the questions and their answers. The devil is in the detail…

AFRICAN ENERGY

CbI Cross-border Information