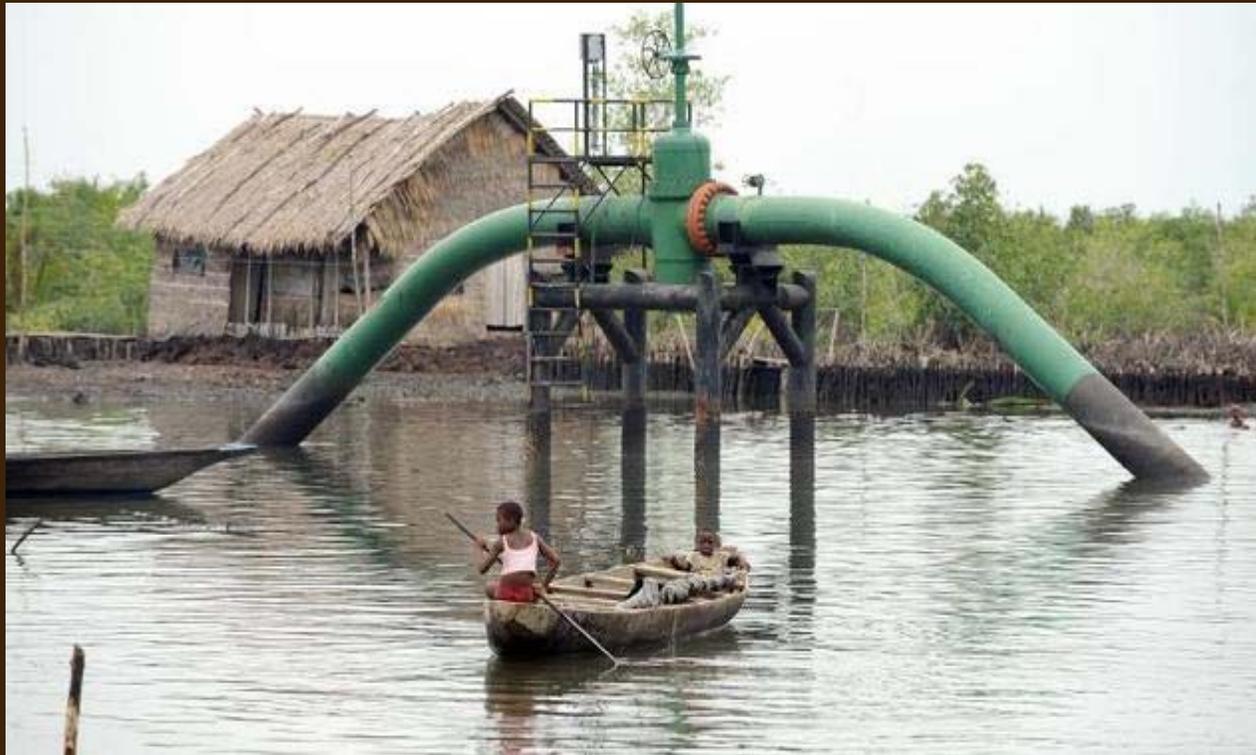


# AFRICA'S POTENTIAL IMPACT ON THE GLOBAL LNG TRADE



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FEBRUARY 9, 2016

KING & SPALDING

# Introduction

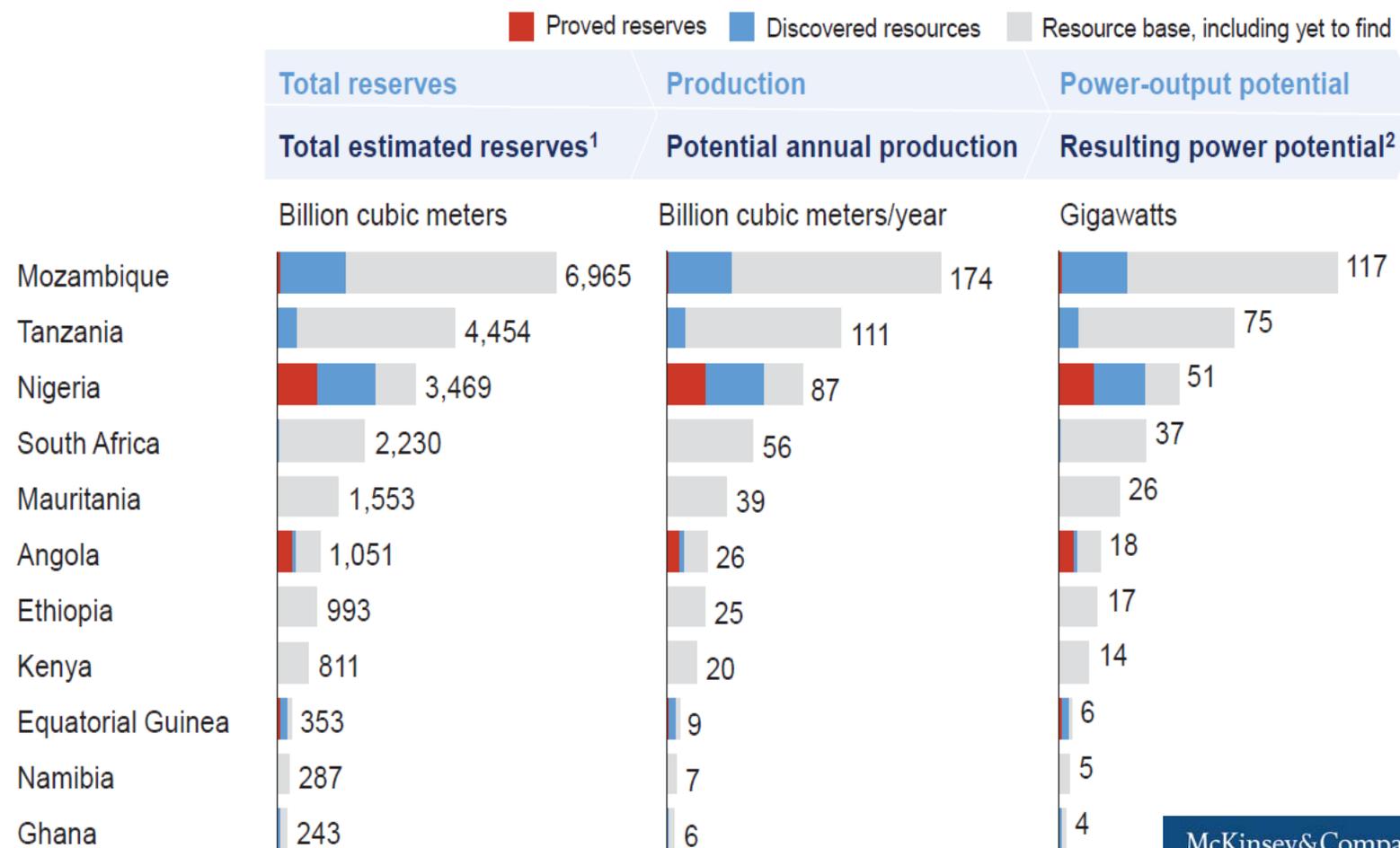
- ❖ Africa has been exporting LNG for over 50 years
- ❖ Several recent major gas discoveries, but timing of production uncertain:
  - ❖ Mozambique Offshore Area 1 (Operated by Anadarko) and Area 4 (Operated by eni) - [up to 200 tcf]
  - ❖ Tanzania Offshore (Operated by Statoil and by BG) [Estimated 55 tcf]
  - ❖ Egypt's Zohr field (Eni) [Potentially 30 tcf]
  - ❖ Mauritania offshore 2015 (Kosmos)
- ❖ Conventional gas resources expected to grow

# Brighter Africa

February 2015

The growth potential of the sub-Saharan electricity sector

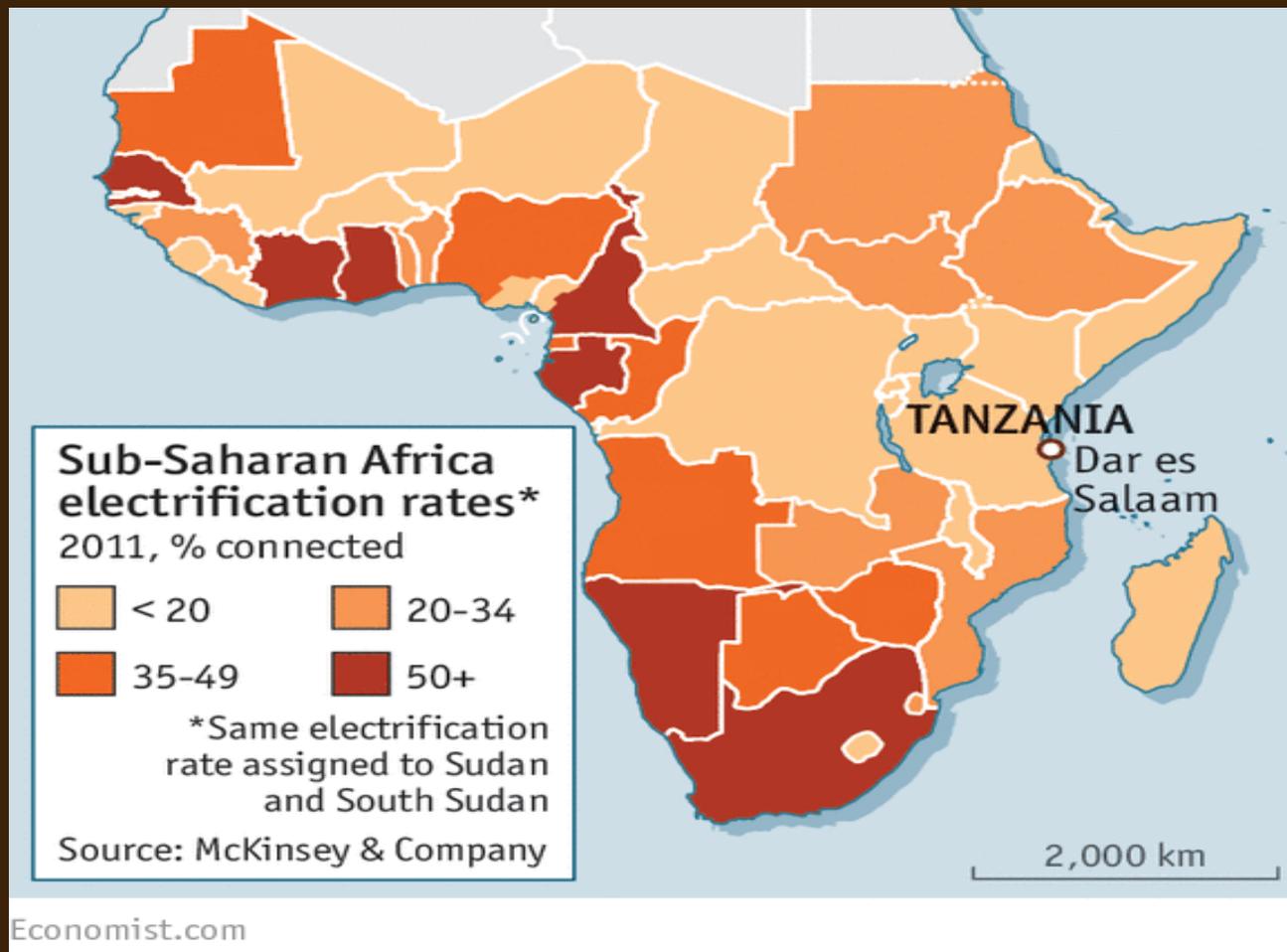
**Exhibit 14** Most conventional sub-Saharan African gas reserves have yet to be found.



McKinsey & Company

# Gas-to-Power in Africa Offers Promise...but

- ❖ Only seven Sub-Saharan countries have electricity access rates exceeding 50% (Cameroon, Côte d'Ivoire, Gabon, Ghana, Namibia, Senegal and South Africa)



# Ambitious Plans for Gas-to-Power

- ❖ South African Department of Energy last year proposed a Gas-to-Power program based on LNG, not shale gas

## Opportunities wide open for LNG, says Western Cape expert

“South Africa should make the most of the massive shake-up in the global gas agenda, which is making natural gas increasingly viable as an energy source, says Western Cape Department of Development and Tourism energy director Jim Petrie...

The big thing that has shifted the gas opportunity globally is liquefied natural gas (LNG). This has exploded the way in which gas moves around the world in a competitive economic environment... There was a need for gas-fired power plants, with support from public-private partnerships and national government for building the terminal and gas-piping infrastructure. Petrie said government would need to defray some of the costs.”

Engineeringnews.co.za Apr 23, 2015

## Example: Morocco Gas-to-Power – Value up to \$4.6 Billion

- ❖ Due to increasing demand of electricity, Morocco plans to increase the share of gas in its energy mix, along with the development of renewables
- ❖ Government recently issued initial phase of tender that would support:
  - ❖ purchase of LNG
  - ❖ construction of marine jetty and onshore LNG import terminal at Jorf Lasfar
  - ❖ construction of pipelines to distribute gas to 2400 MW capacity of combined cycle power plants
- ❖ Project to be undertaken by private parties as Private Power Production under Law N° 40-09, with guaranteed power purchase by ONEE under long-term contract

# Electricity in Africa

## Power hungry

The  
Economist

Electrification plans are stalling because distributors won't pay

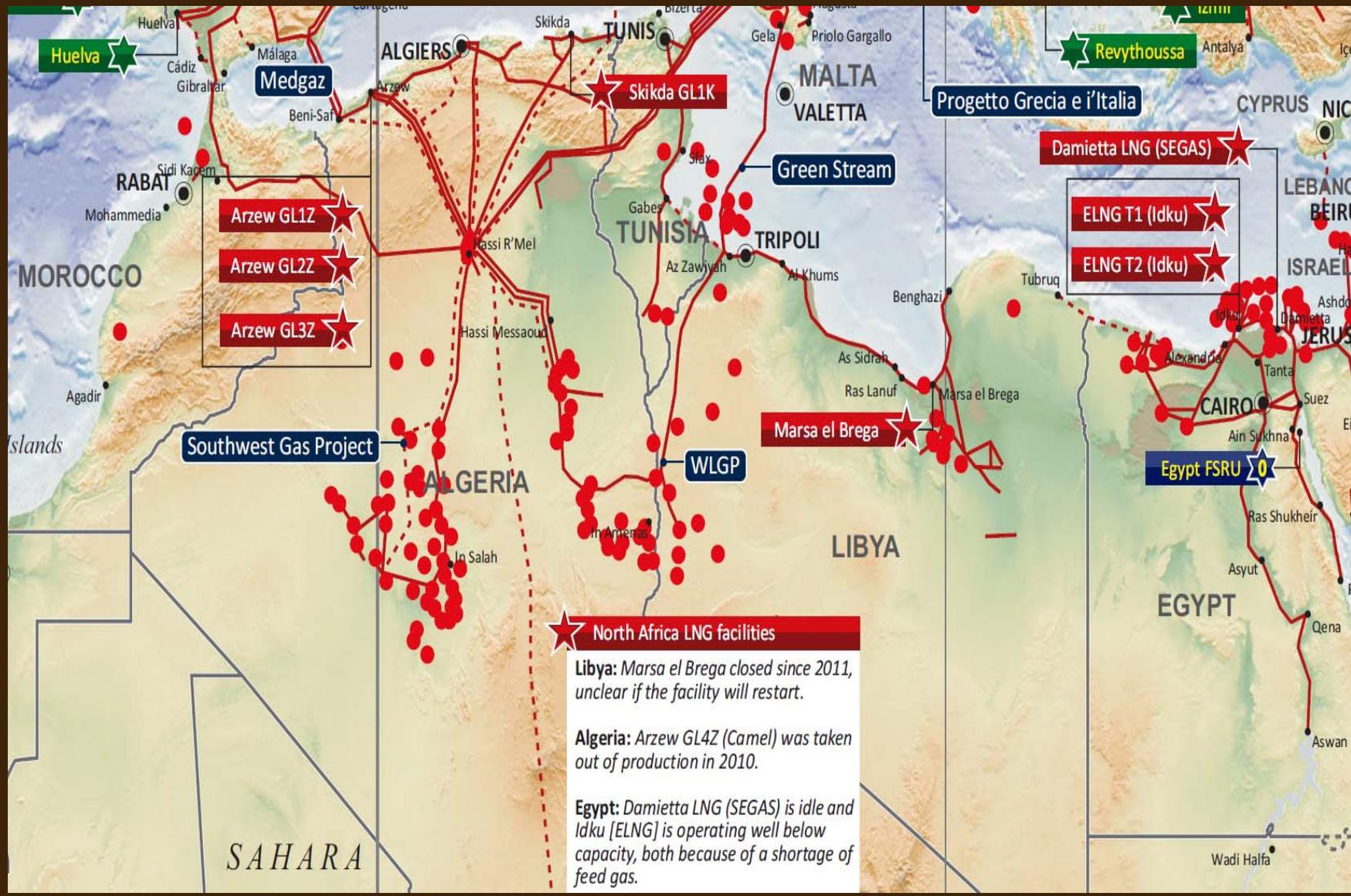
Jan 9th 2016 | DAR ES SALAAM |

### Trouble at Ubungo plant owned by American firm Symbion:

“Tanzania wants to build new gas-fired plants.... Plants such as the one at Ubungo ought to generate lots of extra power cheaply. The trouble is neither a lack of gas to power the plant nor a shortage of demand for the juice it sends down the wire; it is that the only customer does not pay its bills on time. Tanesco, which has a monopoly on distributing power in Tanzania, is severely cash-strapped.... In practice, payments to independent power producers such as Symbion often come last on its list.

...[F]actories, mines and mills need a reliable, large-scale power supply. If Africa is to industrialise, it needs power plants. These will not be built unless customers start paying their electricity bills.”

# North Africa – Declining LNG Supplier



# North African LNG Overview

- ❖ European buyers developed, and historically depended on, North African LNG supply. Times have now changed...
- ❖ *Algeria (1964):*
  - ❖ From world's first export project (1964) to producing only 12.7 MTPA
  - ❖ Liquefaction facilities now at only 50% utilization.
- ❖ *Libya (1970):*
  - ❖ LNG plant shut down in 2011 and unlikely to restart.
- ❖ *Egypt (2005):*
  - ❖ Gas shortages preventing Idku (2005) and Damietta (2005) plants from producing any LNG. Both had been project financed.
  - ❖ Will Eni's offshore gas (or Israeli gas) allow liquefaction to restart.? Or will Eni gas be confined only to domestic market?

# Sub-Saharan: Can it Expand LNG Production?



# Sub-Saharan LNG Overview

## ❖ *Nigeria (1999):*

- ❖ Passage of Nigeria LNG (Fiscal Incentives, Guarantees and Assurances) Act 1990 provided necessary legal foundation
- ❖ Nigeria LNG now producing 19 MTPA, helping Nigeria reduced flaring; project reportedly generated \$85 billion dollars since 1999
- ❖ While Nigeria LNG's success led to similar project proposals (Brass and OK LNG), both failed due to lack of Government stability support and available gas

## ❖ *Equatorial Guinea (2007):*

- ❖ Relatively small producer (3.4 MTPA) with declining reserves
- ❖ Can gas field(s) support continued production after 2023?

## ❖ *Angola (2013)*

- ❖ First associated gas focused plant; proposed in '97
- ❖ One-train plant (5.2 MTPA) now shut down for repairs; restart in '16?

## Pipeline Gas: Limited Success in Sub-Saharan Africa

- ❖ Mozambique to South Africa Pipeline (2004) – helped SA’s switch from coal, but price unfavorable to Mozambique in hindsight
- ❖ West Africa Pipeline (2011) - the first “regional” gas transmission system in sub-Saharan Africa
  - ❖ \$1.2 billion cost
  - ❖ intended to supply Nigerian gas to Benin, Togo and Ghana
  - ❖ has not lived up to the “hype” due to shortage of gas and Nigeria’s growing domestic gas needs
  - ❖ after meeting Lagos gas demands, little is left for Benin, Togo and Ghana



# East African LNG: New Global LNG Frontier?



## East African LNG: The Next Qatar?

- ❖ Mozambique and Tanzanian gas reserves now supporting major proposed LNG projects
  - ❖ Massive reserves could eventually support LNG trains equal or exceeding Qatar's
  - ❖ Projects by Anadarko, eni, Statoil and BG/Shell are at different stages of development
  - ❖ Challenge is distance from key buyers; however, relatively low liquefaction cost attractive to buyers
  - ❖ Would require obtaining project financing funding larger than any in African history
  - ❖ Progress: Mozambique special LNG Decree Law in 2014; recent signing of world's largest gas unitization

# The Future

- ❖ African LNG export projects must compete in a currently over-supplied, low-priced global market
- ❖ East African reserves and Government support of proposed projects should allow overall African LNG exports to grow, eventually
  - ❖ LNG exports have the ability to fundamentally change the GDP of East African nations; and
  - ❖ support new domestic industries supplied by gas
- ❖ LNG has the potential to improve electrification rates
- ❖ Success of proposed Gas-to-Power initiatives remains to be seen
  - ❖ requires Government support, especially via new infrastructure developments and ensuring power providers are creditworthy