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Tanzania & Extractives ----- Transformation or just **BIG** Numbers?



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**Presentation to REPOA/WIDER Conference
Transformation for Growth, Employment and Poverty
Reduction**

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Outline



1. Introduction: Economic Transformation: always the objective
2. Gold Mining 1998-2010: the 1st opportunity
3. Outcomes: Why the disappointments?
4. Natural Gas 2014 onwards : the 2nd opportunity
5. The short-terms benefits: near shore gas
6. Longer term: deep-water off-shore gas
7. Policy challenges

1. Introduction



- The First Five Year Plan 1964 -1969 targeted:
 - Reduction Primary Production share: from 60% to 39% by 1980
 - Increase in Industrial Activities share (Manufacturing, construction) from 13% to 27% by 1980 (Table III)
- BUT **50 years later** as the UN Human Development Report 2014 notes the share of industry has increased from 18% in 2001 to only 22.1% in 2012. Within this overall increase:
 - Mining's share rose : 1.8% of GDP in 2000 to 3.3% by 2010
 - Construction's share rose: 8.2% of GDP to 10.8% by 2010
 - Manufacturing's share remained constant at around 8 %
 - Low productivity rural activities including services remain the dominant sector
- Some transformation – Yes but “*Tanzania’s impressive economic growth in the last decade has failed to translate into meaningful improvements in human development.*” (UNDP pg xiii)



2. Gold mining – 1998 to 2012 – the first opportunity



- Progress from 1964 onwards in changing the basic structure of the Tanzanian economy in the manner envisaged by Julius Nyerere and other leaders had been consistently disappointing for more than 30 years
- But there signs of change from the end of the 1990s when gold and diamond investments resurged
- As a result from 2000 MINERAL PRODUCTION rose very rapidly
- In terms of EXPORT composition the changes were also dramatic and were almost entirely associated with minerals (gold and diamonds)
- In terms of GDP – there was also a visible change to an increased share of Mining and Manufacturing



Review some of the Facts behind these statements

Foreign direct investment surged (Source: UNCTAD)



1. Africa

Table A. Distribution of FDI flows among economies, by range,^a 2013

Range	Inflows	Outflows
Above \$3.0 billion	South Africa, Mozambique, Nigeria, Egypt, Morocco, Ghana and Sudan	South Africa
\$2.0 to \$2.9 billion	Democratic Republic of the Congo and the Congo	Angola
\$1.0 to \$1.9 billion	Equatorial Guinea, United Republic of Tanzania, Zambia, Algeria, Mauritania, Uganda, Tunisia and Liberia	Nigeria
\$0.5 to \$0.9 billion	Ethiopia, Gabon, Madagascar, Libya, Namibia, Niger, Sierra Leone, Cameroon, Chad and Kenya	Sudan and Liberia
\$0.1 to \$0.4 billion	Mali, Zimbabwe, Burkina Faso, Côte d'Ivoire, Benin, Senegal, Djibouti, Mauritius, Botswana, Seychelles, Malawi, Rwanda and Somalia	Democratic Republic of the Congo, Morocco, Egypt, Zambia, Libya, Cameroon and Mauritius
Below \$0.1 billion	Togo, Swaziland, Lesotho, Eritrea, São Tomé and Príncipe, Gambia, Guinea, Cabo Verde, Guinea-Bissau, Comoros, Burundi, Central African Republic and Angola	Gabon, Burkina Faso, Malawi, Benin, Togo, Côte d'Ivoire, Senegal, Zimbabwe, Tunisia, Lesotho, Rwanda, Mali, Ghana, Seychelles, Kenya, Mauritania, Cabo Verde, Guinea, Swaziland, Guinea-Bissau, São Tomé and Príncipe, Botswana, Mozambique, Uganda, Niger, Namibia and Algeria

^a Economies are listed according to the magnitude of their FDI flows.

▪ UNCTAD *World Investment Report 2014* data tells us that:

▪ Tanzania is already a leading non-oil destination for FDI in Africa after South Africa

▪ FDI flows of \$10 million or less per annum in the 1990s have grown ONE HUNDRED-FOLD to over \$2,000 million per annum by 2013 as gas investments also materialised!

▪ **A large percentage of Tanzania's total FDI stock > \$10 billion is associated with minerals and more recently oil and gas.**

GDP - No Structural change 1965 to end 1990s but some visible movement thereafter

Sector Shares since 2000	2000	2001	2002	2003	2004	2005	2006	2007
MINING	1.5	1.8	2.1	2.4	2.6	2.9	3.2	3.5
Total GDP	100. 0	100. 0	100. 0	100. 0	100. 0	100. 0	100. 0	100. 0
Monetary GDP	83.9	83.9	84.2	84.4	83.6	84.1	84.5	84.8
All Agriculture (Monetary)	18.2	17.7	17.5	17.4	17.2	16.2	15.3	15.1
Crop Husbandry	13.0	12.7	12.7	12.6	12.5	11.5	10.6	10.7
Other Agriculture	5.2	5.1	4.8	4.8	4.7	4.7	4.6	4.3
All Industry, Mining and Construction	16.9	17.0	18.7	20.1	19.9	19.7	19.6	19.9
Manufacturing	8.8	8.4	8.3	8.3	8.1	7.9	7.8	7.8
Other Industry and Construction	6.7	6.9	8.3	9.5	9.3	8.9	8.6	8.6
Services	41.6	41.7	40.5	39.3	38.8	39.1	40.0	40.2

Sustained gains in per capita incomes followed

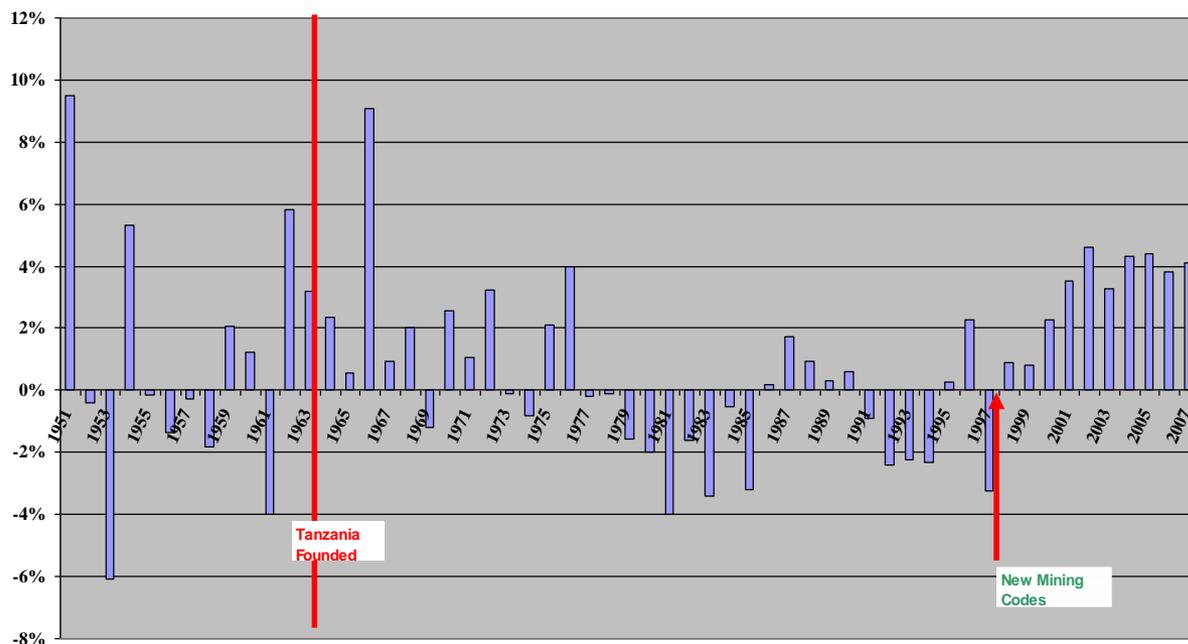


Per capita income gains 1950 to 2007

After 2000: a visibly more successful pattern of income growth

Since 2007: – growth has remained consistently high and positive (c. 7% or 5% per capita)

Result: The Tanzanian people have fared much better since the 1996 reforms (including of mining) than in most other periods of post-Independence history



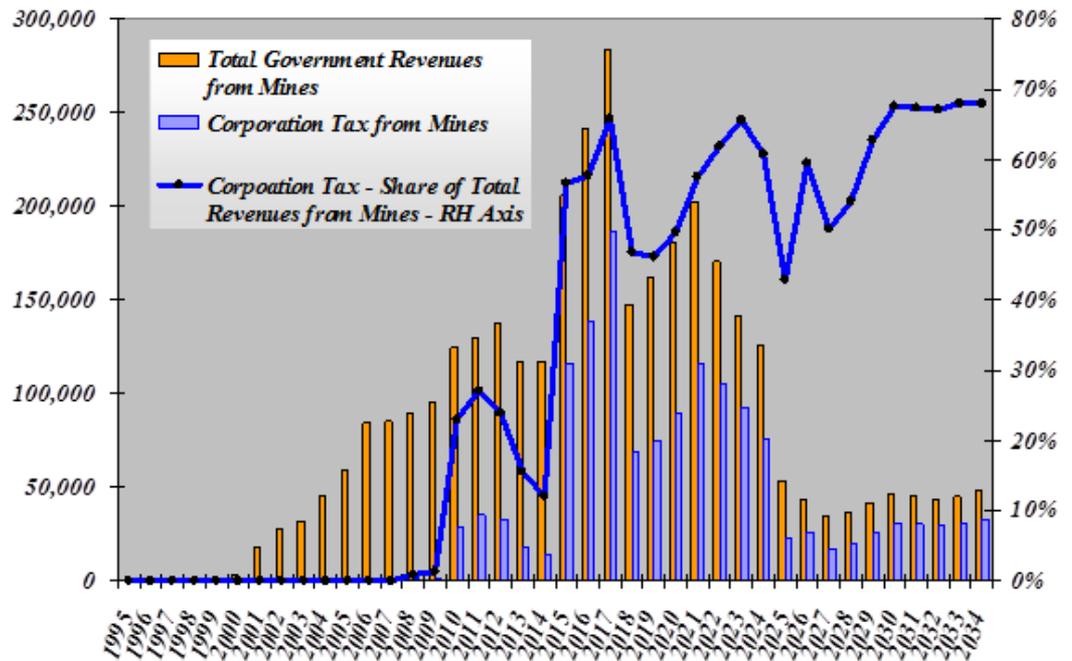
Source: Angus Maddison and University of Groningen

Also a big increase in government revenues



- GOVERNMENT REVENUE from Mining had to 2008 been very low – and was much criticised (e.g. in *Golden Opportunity Report - 2008*)
- but by 2010 the natural life cycle of production and revenue-take was already moving that revenue-take from only \$20 million (2% of total tax revenues) rapidly upwards
- By 2011/12 the TEITI was reporting mining tax revenues of \$390 million which was then around 10% of government total revenues

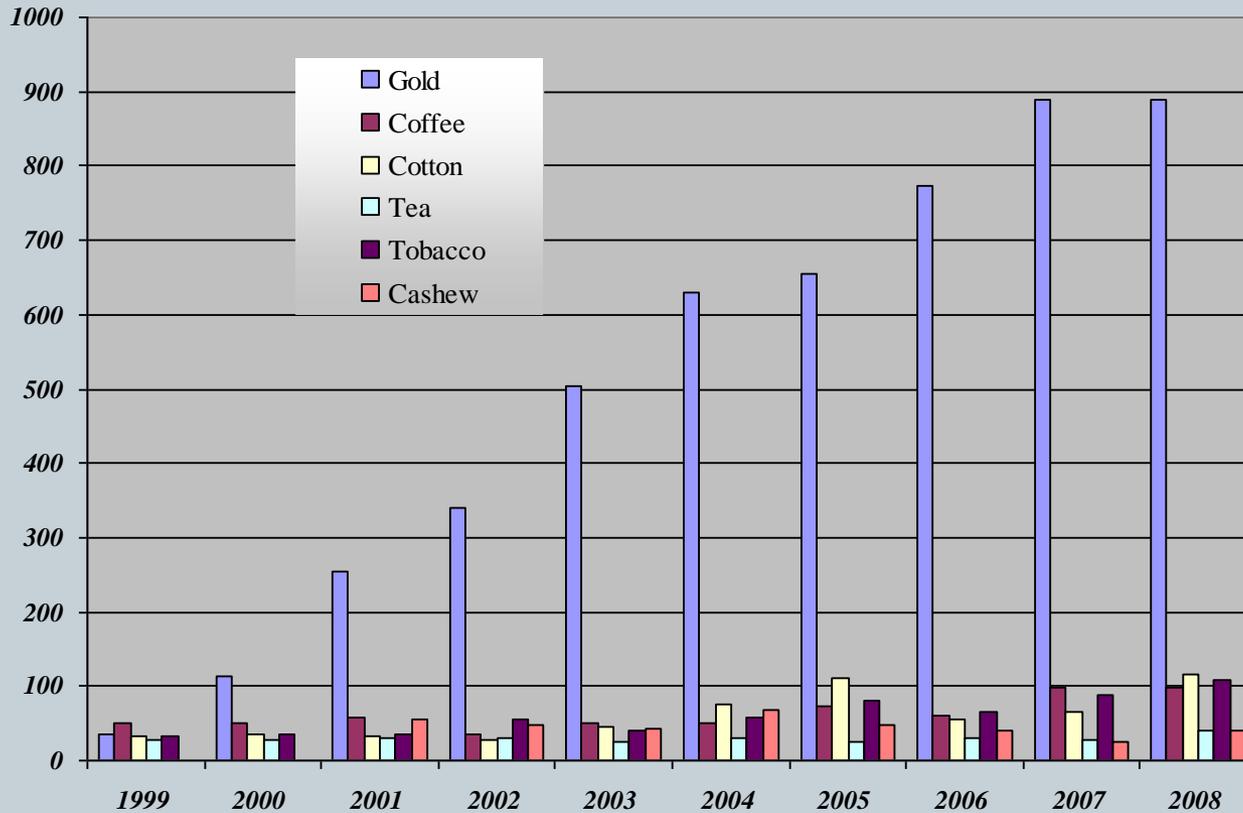
Predicted revenue from 5 major mines to 2034



Source: ICMM – Mining: What future can we expect, 2008

Exports: Gold overtook traditional exports by 2000

(\$ million)

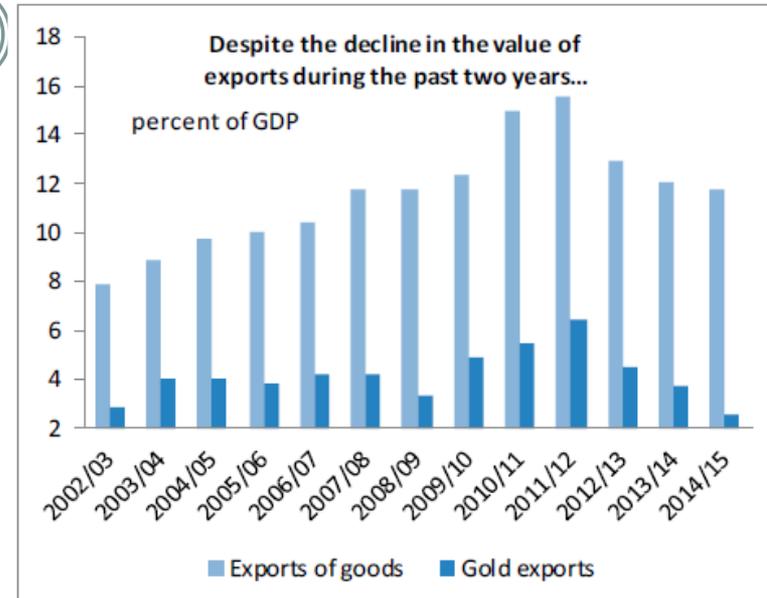
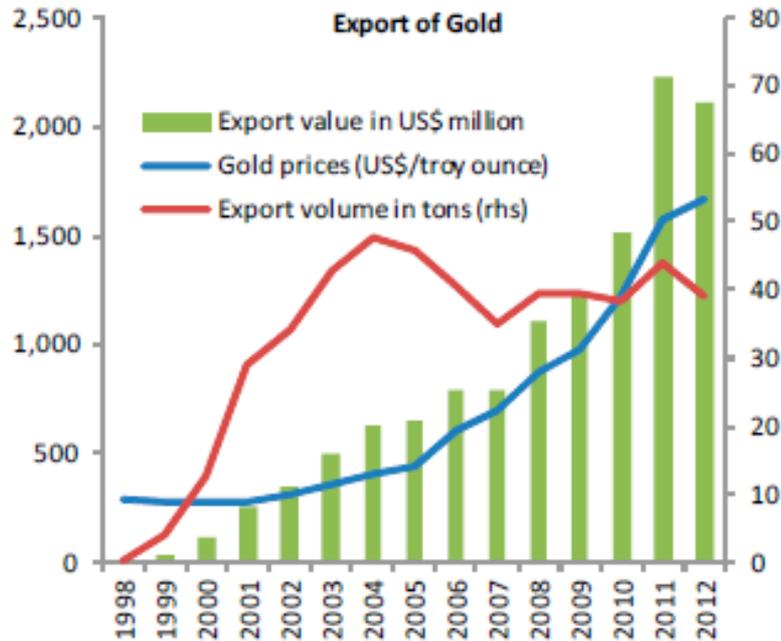


Note:

The radical differences between 1999 and 2008 – sustained through 2013

...a tendency sustained to 2012 before falling away

(Source IMF 2014 and 2016)



Gold exports of circa \$1.7 billion in 2013/14 fell to \$1.2 billion by 2015/16 but gold is still equal to the total exports of all traditional agricultural products

3. Outcomes: why the disappointments?



- **So BIG numbers BIG opportunity – but outcomes disappointing – WHY?**
- UK and North Sea Oil
- Bulyanhulu and Buzwagi (gold and diamond mining communities – Geita and Mwadui mines)
 - Incomes had increased but local inflation higher
 - Jobs had been created but much inward labour migration had lessened benefits to local populations.
 - Health services better but unequal access created sense of greater inequality
 - Bigger strain on local public services with no compensating gains in local public revenues
 - Some gains in nutritional status for children
- So no universal condemnation of the mining companies but no obvious sense that inclusive growth had been fostered by arrival of mining

Some in Tanzania understood the opportunity very well



Judge Mark Bomani (*Report of the Presidential Committee to Review and Advise Government on Management of the Mineral Sector 2008*) recommended several improvements in policy, including:

- Greater recognition of shared responsibilities of the government working WITH mining companies to support infrastructure in mining areas covering roads, electricity, water and social services such as village dispensaries, schools and security services.
- Better integrating compensation systems (e.g. for resettlement) with the needs of both the local communities and the mining companies to, for example ensure new business start-ups for development based around mines
- Improved training: tighter requirements on companies but also more systematic government-driven arrangements, including larger budgets for existing other training institutions.
- Mining towns – their development has been haphazard- the government should work more closely with the companies to plan and monitor the development of these towns.
- Improved policies and programmes to help strengthen any sector working closely with the mining sector to capture *'the immense benefits that the growing mining industry provides'*.
- A better share of mineral revenues to local areas (Ghana-style)

The obvious(?) planning challenge

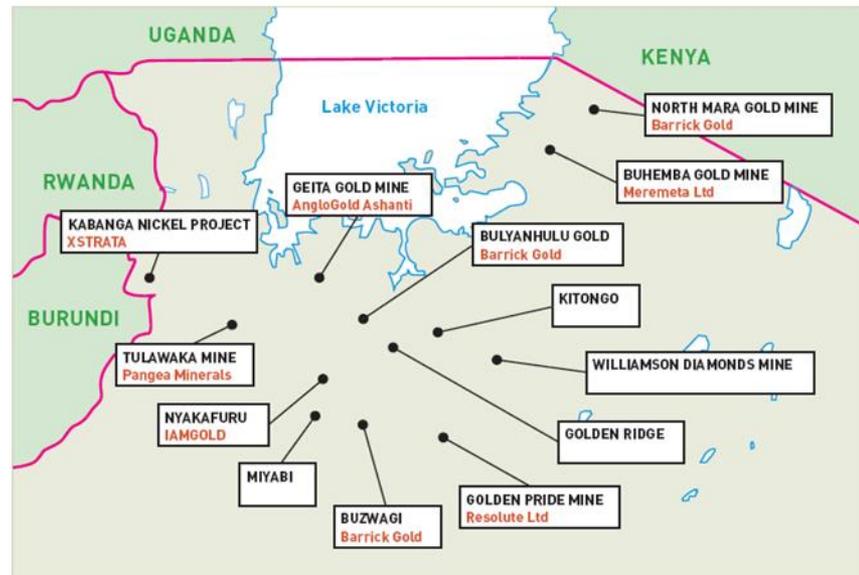
Multi million dollars of new private investment in contiguous areas was surely the basis for systematic planned development!

- What are now being called Resource Corridors or Spatial Development Initiatives (SDIs) examples include Maputo Development Corridor and Simandou Integrated Mining and Infrastructure project

But in the event Tanzanian policy put all its efforts into one other of the Bomani recommendations – a reform of the royalty system.

- With the benefit of hindsight – not a priority

Major mine locations in Tanzania in 2008



4. Natural Gas 2014 onwards : the 2nd opportunity

What will this, can this do for the economy?

TWO Answers:

1. Short-term: Onshore or near shore gas discoveries - new energy-generation possibilities
2. Longer-term: Deep offshore discoveries – new export revenues and new industries?

Oil and Gas in Tanzania



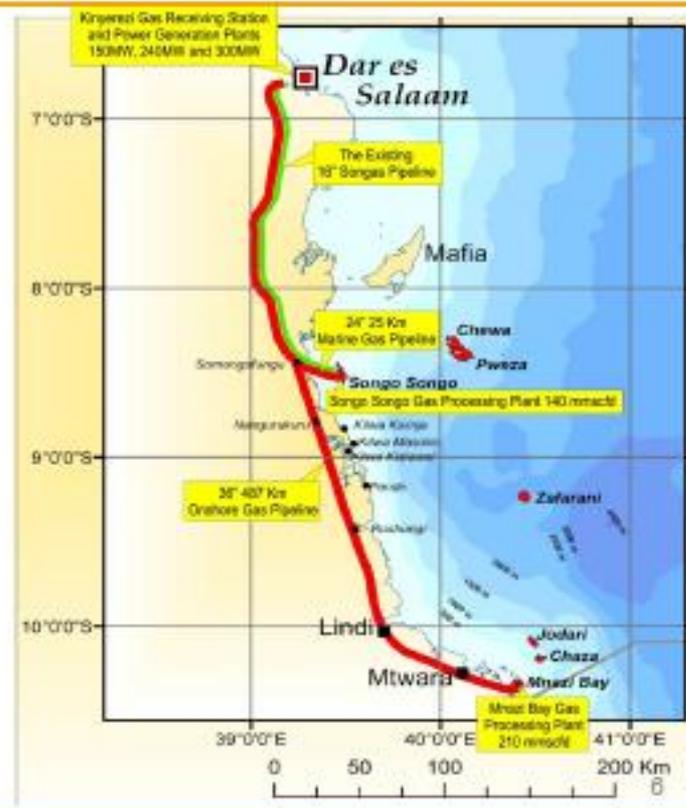
- Tanzania currently has no commercial OIL discoveries
- but there are at least 4 small producing or imminently producing GAS fields (Songo Songo – since 2004, Mnazi Bay –since 2015, Killwani North (Aminex) and Ruvu Basin (Dodsai of UAE) – both from 2016.
- Songo Songo is quite small and took decades to bring to commercial production – partly due to
 - The limited local market
 - the impracticability of export (in view of the apparently limited reserves)
- In this context more recent gas developments in Mnazi Bay (since 2015) are significant and already delivering
- In addition, there are now much larger, very promising gas discoveries (but less imminent for production) in the deep Indian Ocean: offshore blocks have been licensed by the government to BG, Statoil, Petrobras, Shell and to other international companies.

New gas – initial stage development – from 2015

(Source: Wentworth Resources Ltd.)



- Government-owned 36" pipeline from Mnazi Bay to Dar es Salaam
 - Includes 210 mmscf/d gas processing facility at Madimba (in Mnazi Bay concession)
 - Pipeline capacity ~ 750 mmscf/d
- Financed by China Exim Bank / constructed by CNPC
- Construction well underway with expected completion and commissioning in Q1 2015
- Primary markets for gas expected to be power generation and industrial use

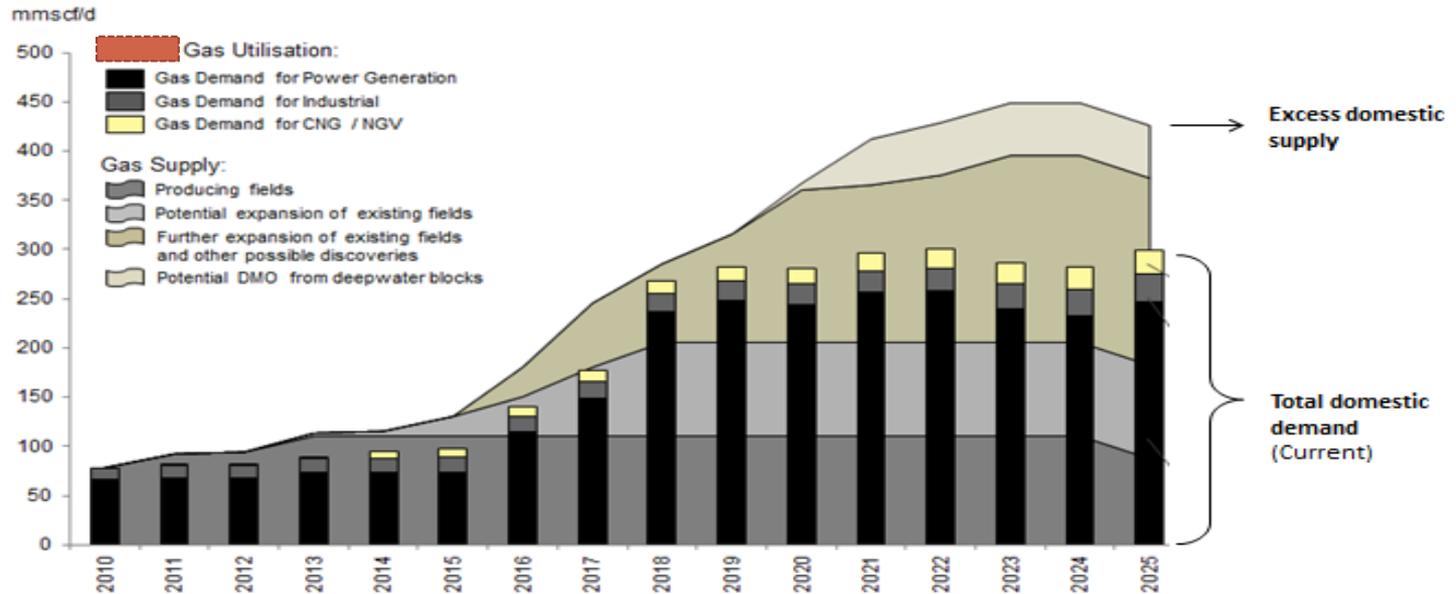


5. Short-term benefits



1. They have justified the building of a new high capacity \$1.2 billion gas pipeline from Mnazi Bay to Dar – financed by China Exim Bank. This will have substantial capacity – greater than that supplied by the early stage gas
2. The 2015 Gas Sales Agreement (between the producer and TPDC) involves a gas selling price at Mtwara of \$3.07 per mcf allowing TPDC to sell that gas to TANESCO in Dar at around \$5.00. This should allow TANESCO to generate power at nearer 12c/kwh rather than current cost of power generation of around 35c/kwh - using emergency power (diesel fuel, jet fuel etc).
3. On this basis with TANESCO previously selling power to their consumers at around 16c/kwh, the huge Tanzanian government subsidy to TANESCO will be (has been) significantly reduced (Tsh 399 billion 2013/14 – 0.5% of GDP – equivalent to 4% of total government revenues.
4. The producers have financed part of their investment cost locally and this will be a good early stage loan for the restructured Tanzanian Investment Bank (TIB)

Gas Supply and Demand – uses 2010 to 2025 (anticipated)



- Production from Songa Songa = < 100 mmscf/d
- From 2015 – Mnazi Bay Concession Partners (Maurel et Prom and Wentworth) will add 80 mmscf/d rising to 130 mmscf/d by 2016/17 (GSA):
- From late 2016 - Aminex at Killwani North expects circa 20-30 mmscf/d (via Songa Songa) and Dodsai Ruvu Basis is also coming
- So by 2018, enough gas to meet a substantial part Tanzania's rising needs for energy generation and at lower costs.

Plus some new industrial opportunities



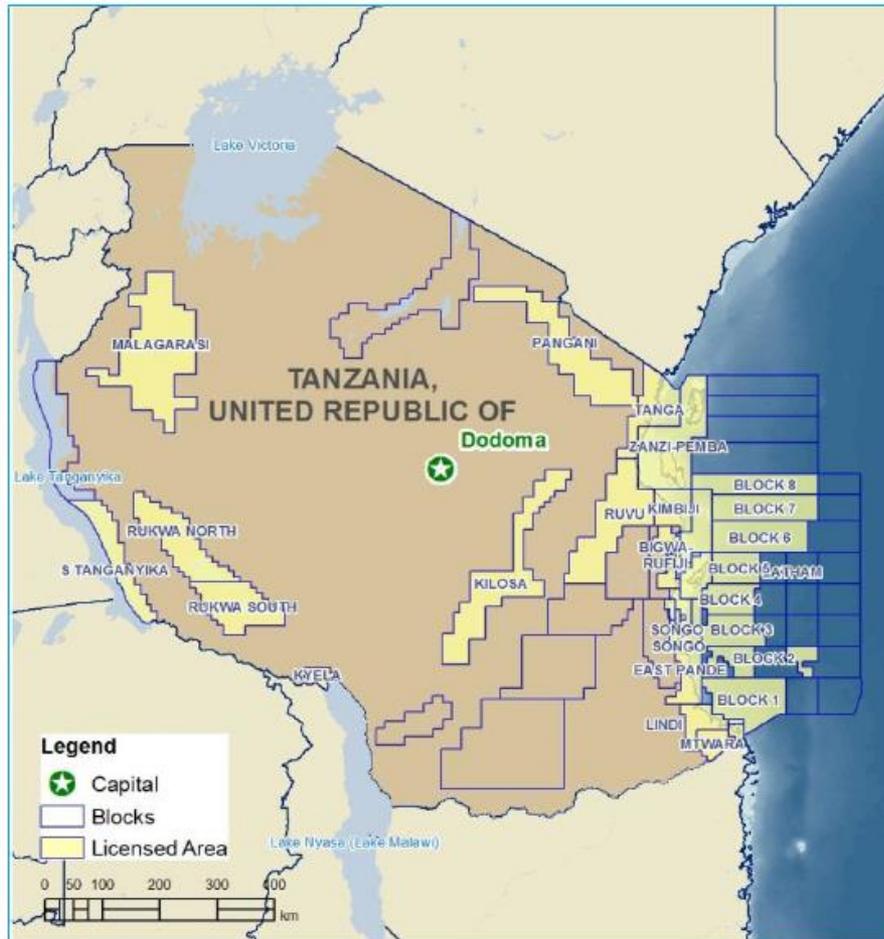
Already we see in 2016 at least some major industrial spin offs

- A huge \$500 million investment in Cement Production at Mtwara by Dangote Cement (from W. Africa) which:
 - will create many hundreds of additional jobs
 - \$500,000 social investment committed to the Mtwara community
 - will use cheap gas from Mnazi Bay to power its own energy generation
 - will gear it up to provide to meet the huge growth in demand for cement from the further gas investments post 2018
 - will reportedly make Tanzania self-sufficient in cement even as demand rises
- Commitment to establish a large Industrial Park as part of the agreement to provide land for the use of the BG/TPDC plant for LNG near Lindi
- Other important industrial investments seem likely once the deep-water gas begins to produce (see later slides)

Big Results Now – 5 million more Tanzanians with electricity

	Generation	Transmission	Distribution
			
	7 new plants	7 new lines	590,000 new connections
	1,310 MW in new capacity	3100 km of new high voltage lines	~5 million more people with electricity access
	14,000 GWh of annual energy generated	236 kWh/capita of annual energy delivered	30% electrification access
Projects planned for delivery	<ul style="list-style-type: none"> Mwanza (HFO) Kinyerezi I Kinyerezi II Kinyerezi III Kinyerezi IV Singida Geo Wind Ph.1 Kilwa Energy Ph.1 	<ul style="list-style-type: none"> Backbone Dar-Arusha Singida-Arusha Somanga-Kinyerezi Makambako-Songea North West Grid Phase1 Dar-Dodoma 	<ul style="list-style-type: none"> SSMP I & II Pending/new Customer Applications Urban Network Expansion Underline Distribution Bulyanhulu - Geita Tx line projects Electrification of Health & Education facilities in rural areas Backbone Tx (BTIP) Mini Hydro ORIO Electricity V TAZAMA Fuel Pump Grid Extension (Turnkey Phase 2) Low Cost Design

6. The longer-term and deep-water offshore gas



Source: PetroView®

This gets most of the headlines
– huge sums involved

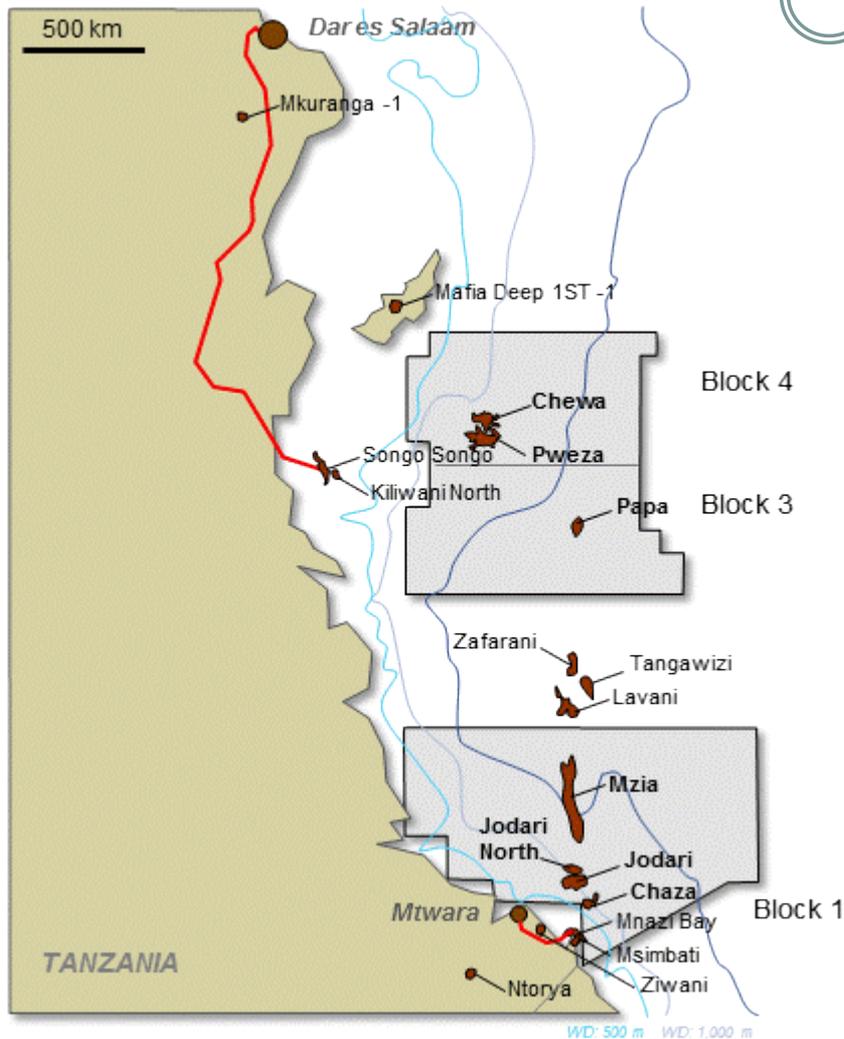
Blocks 1,3 and 4 = BGG
(British Gas Group)- now
Shell/Ophir

Block 2 = Statoil

Blocks 5,6 and 8 = Petrobras
(some with Shell)

Blocks 9,10, 11 and 12 = Shell
(into Zanzibar waters)

BG concessions - offshore deep-water gas



- Sixteen successful wells identified by BGG
- 1,400 metres of water
- 2,000 metres below the seabed

BG project assumptions (some from PSA)



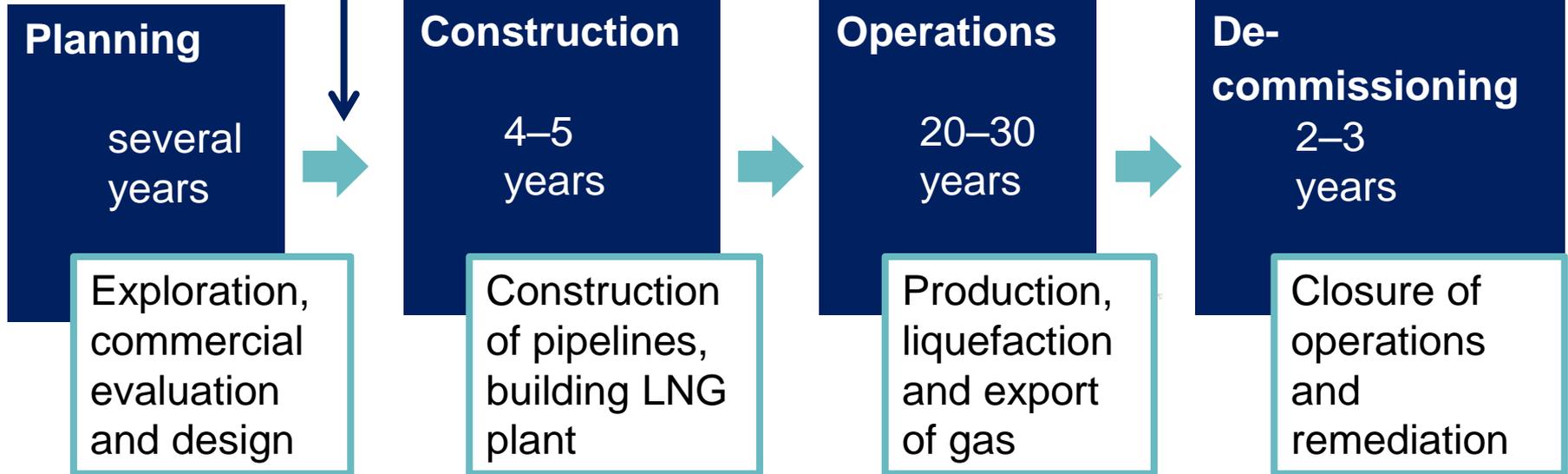
- Two-train LNG liquefaction plant onshore
- Assumed 5% minimum domestic market obligation
- Assumed TPDC takes 12.5% equity on behalf of GoT

Key Assumptions	Production (MMTpa)	Price (US\$/mmBtu, fob)
High price scenario	7.4	13.00
Low price scenario	7.4	8.00

Project timeline



Final
Investment
Decision



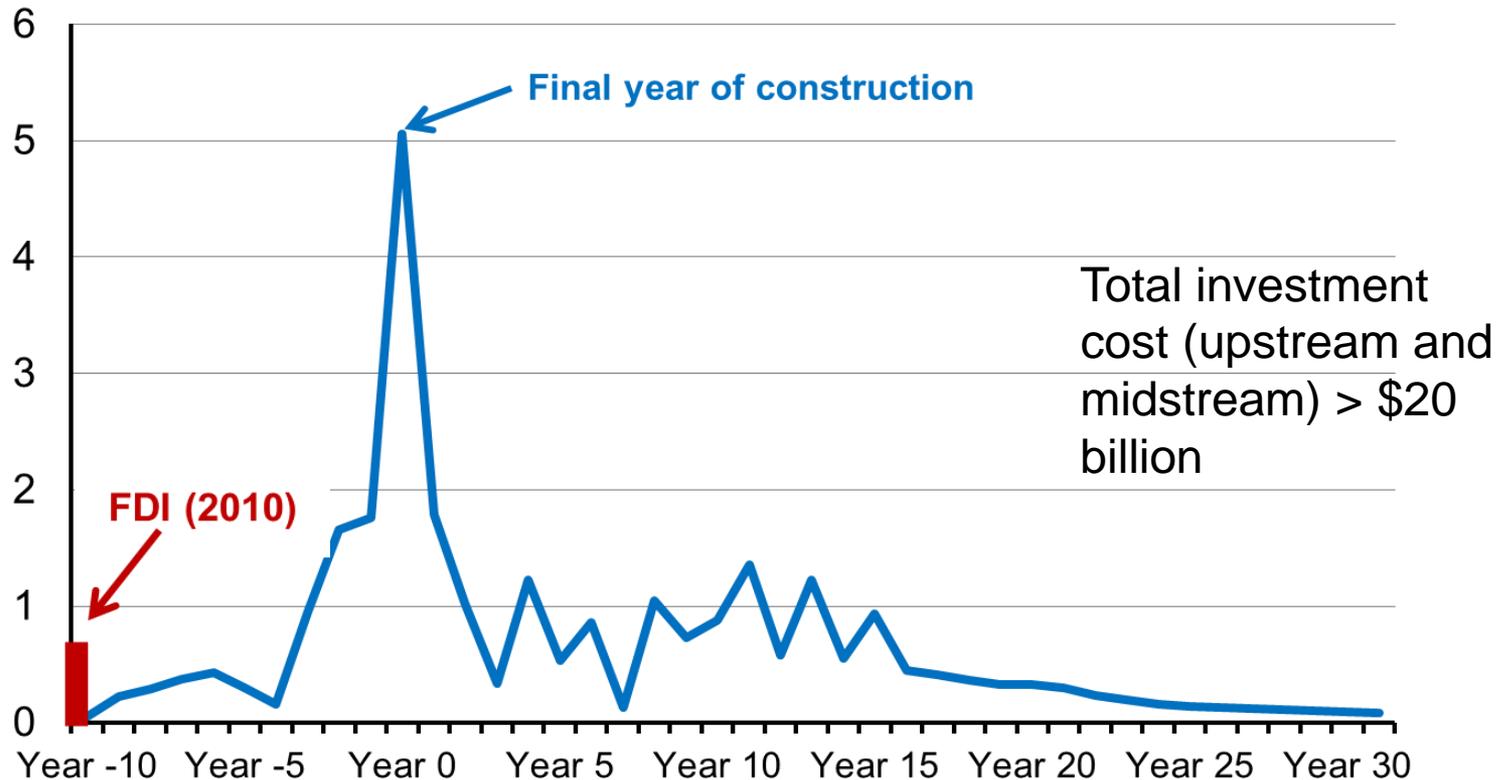
Likely macroeconomic impacts



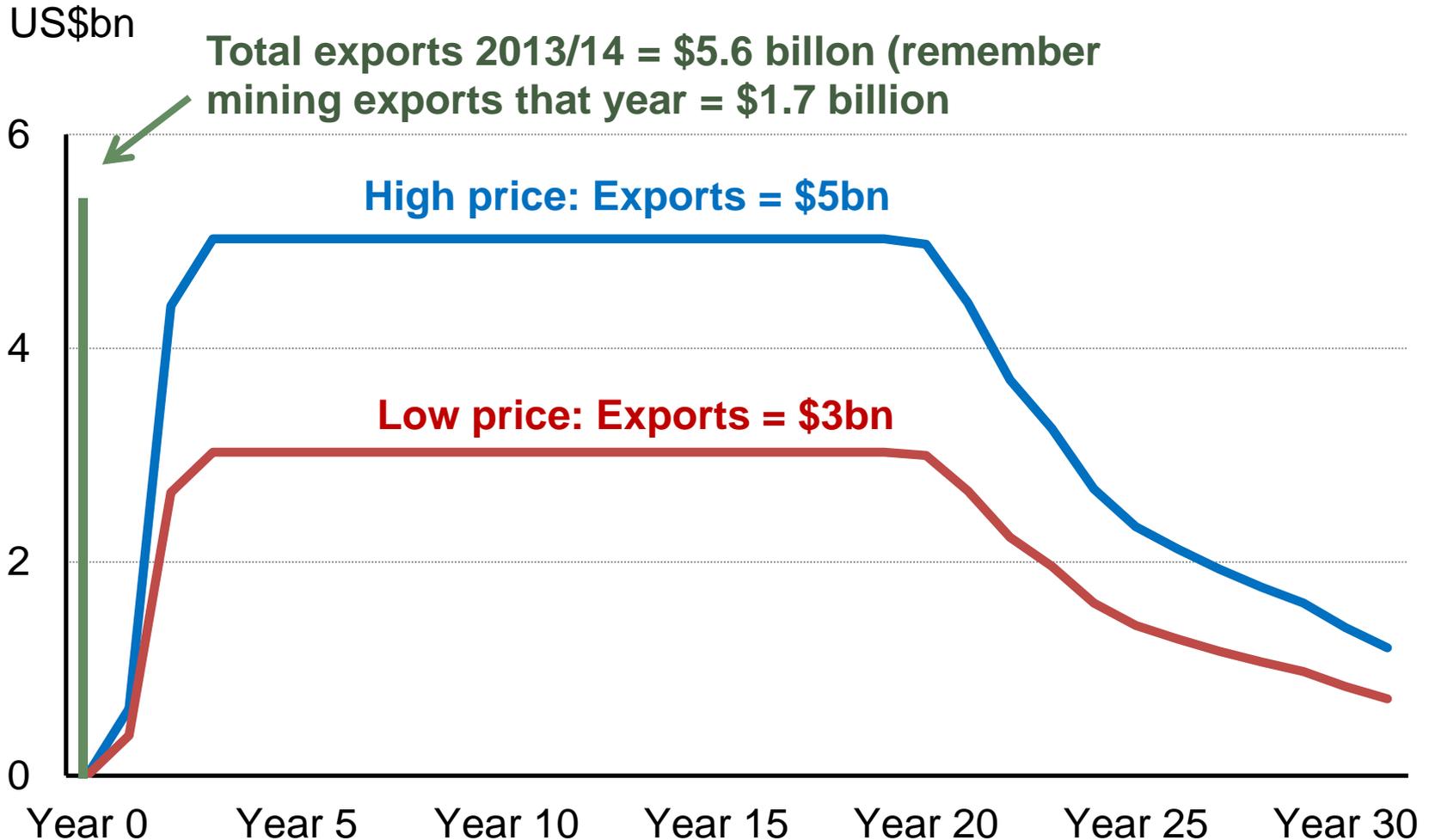
- Investment (Foreign Direct Investment)
- Exports
- Government Revenue
- Jobs
- Domestic Gas Supply



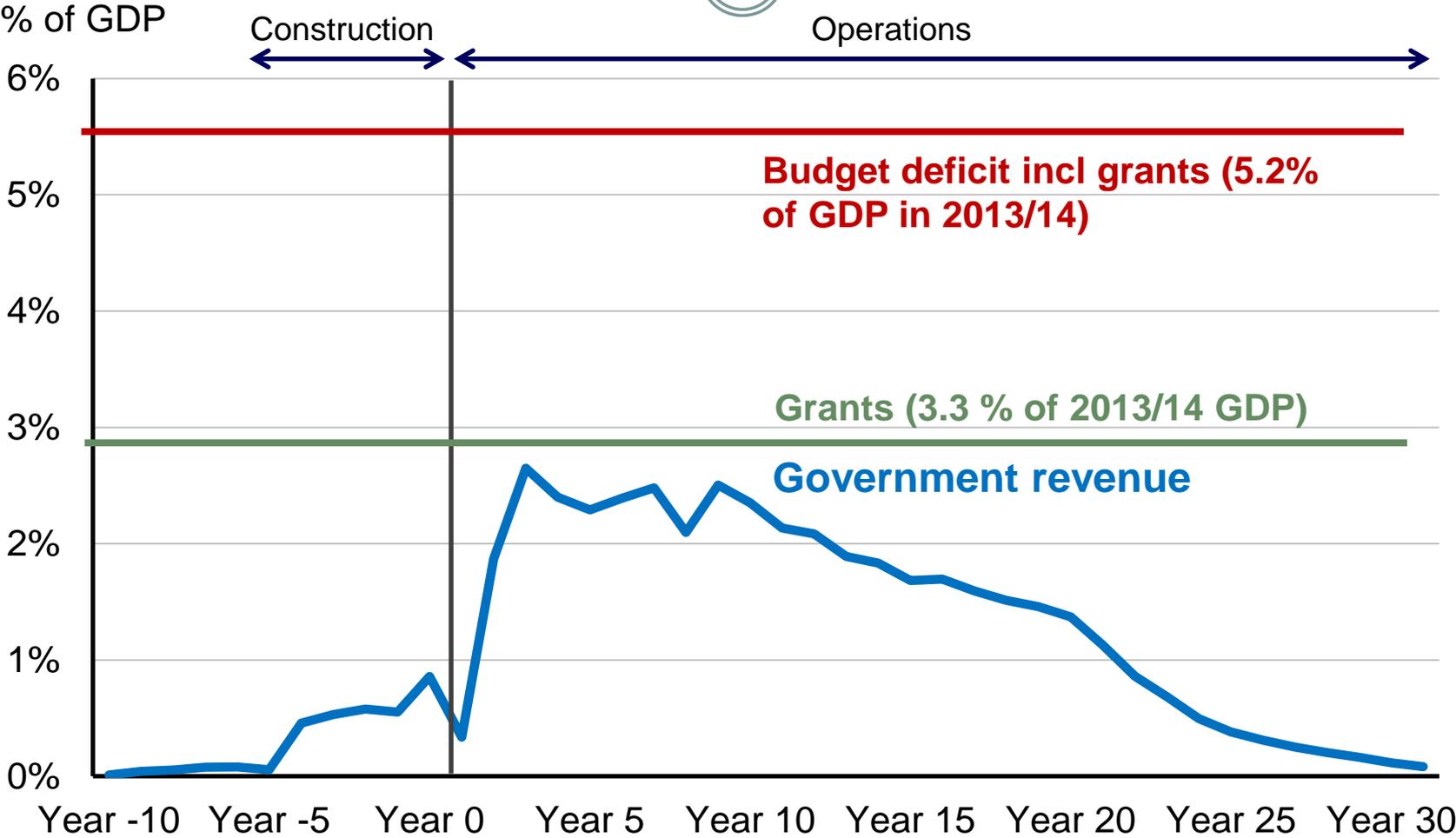
A potentially huge investment outlay (\$ billion)



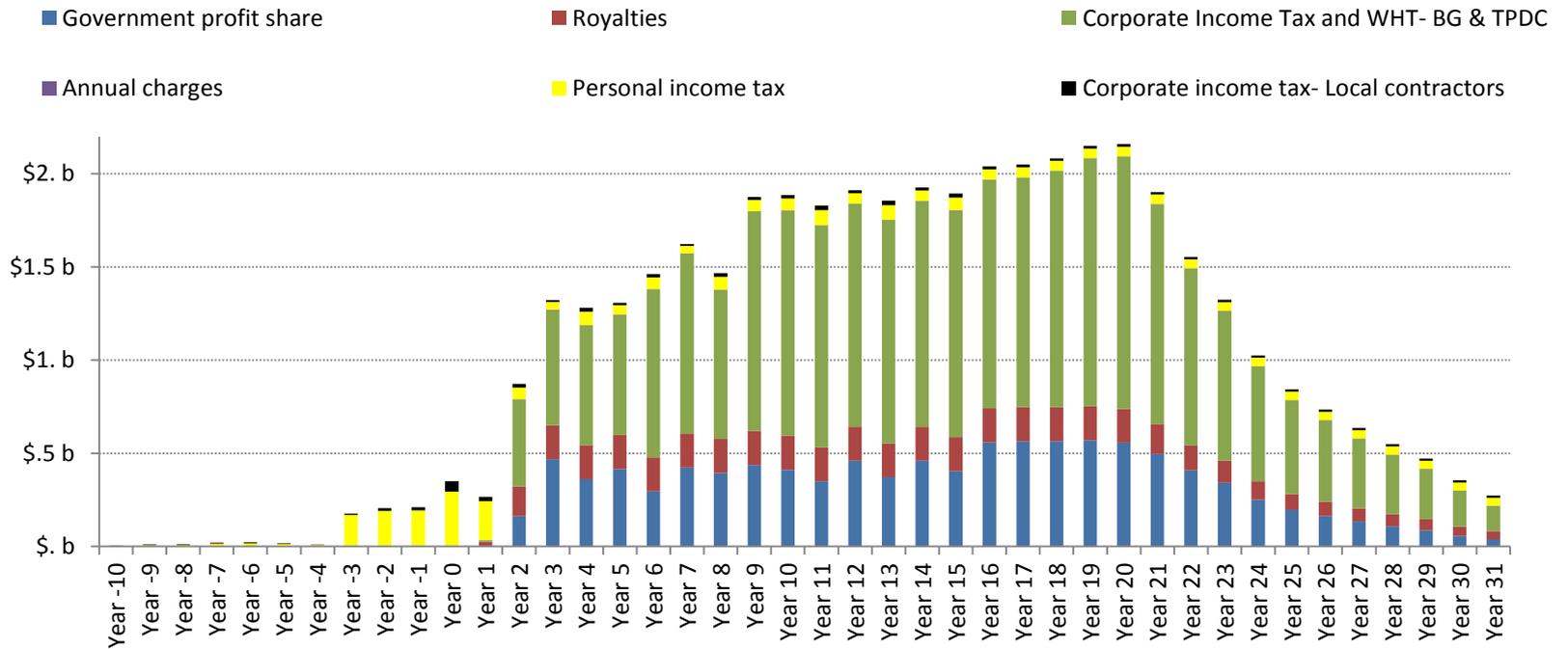
.....will result in a large export expansion (LNG)



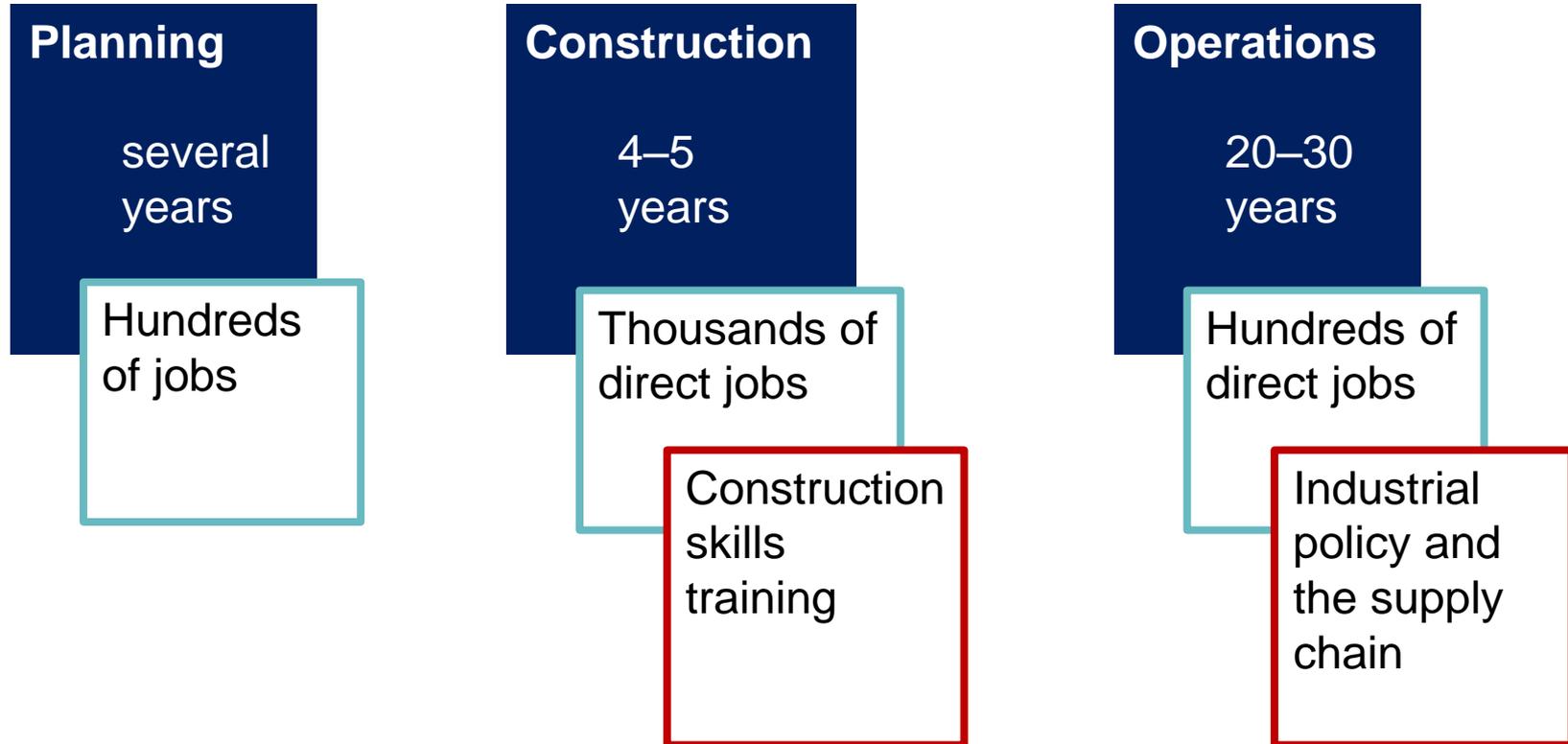
.....and via the PSA an early boost to government revenues



..... part of early revenues are from PSA production share (channelled via TPDC)

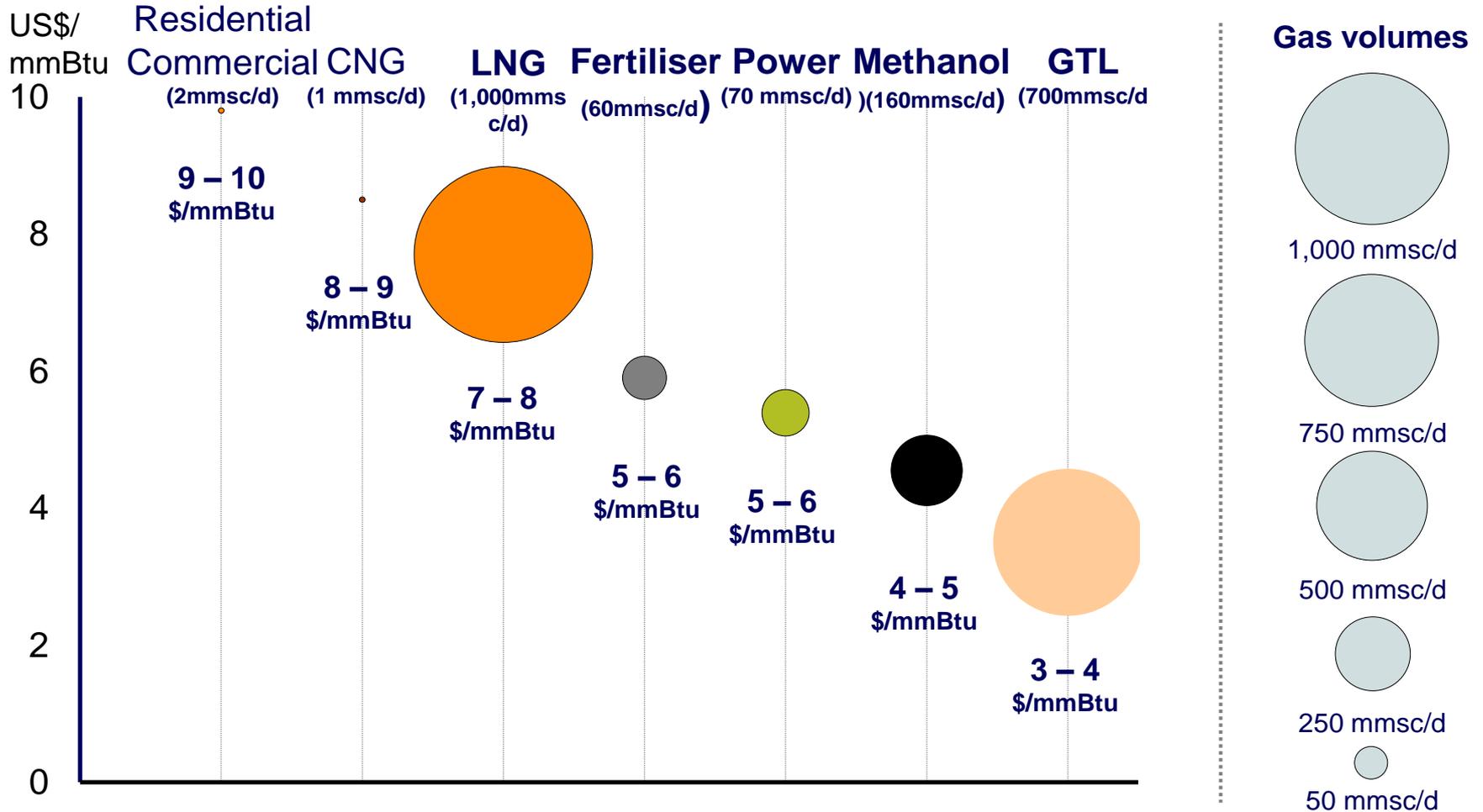


.....but direct JOB creation is mainly significant in the construction phase



Ranking of possible uses of gas

Maximum input prices and projected volumes



But the capital cost of different possible uses also vary widely



Expanding Existing Uses:

1. Power \$500 million for c. 540 MW – Usage 250mmsc/d by 2025
2. CNG/NGV \$ <1 m (for 10,000 customers) – Usage c. 1 mmsc/d
3. Industrial CNG/NGV \$1-2million per station - Usage < 1 mmsc/d

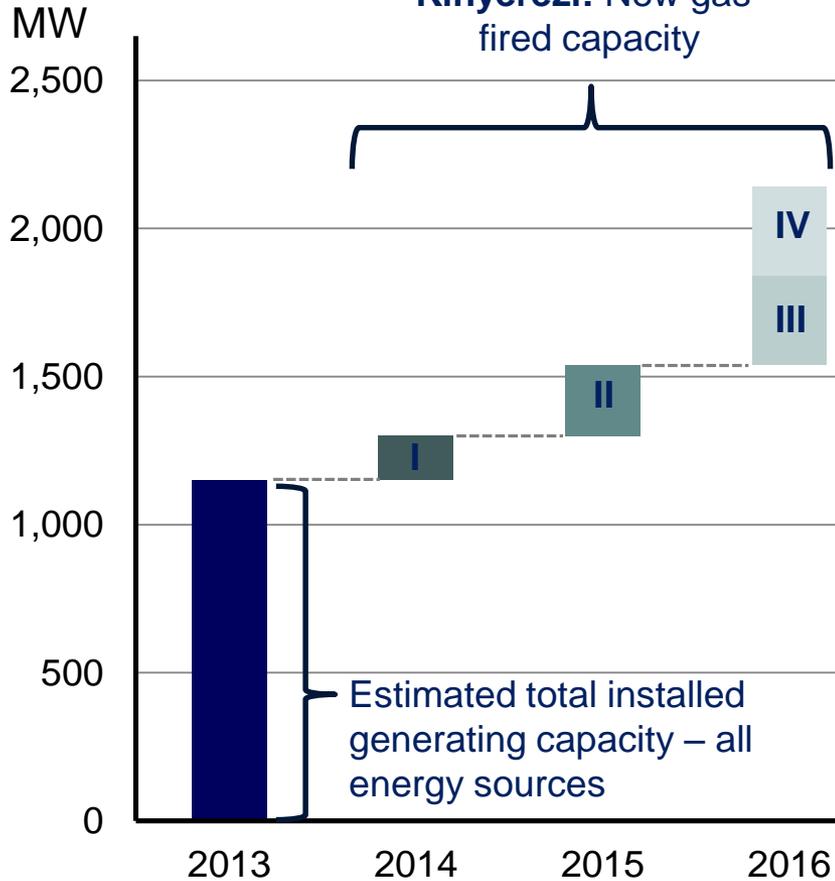
Possible New Uses (all require substantial export markets at this scale):

4. LNG (\$8.6 billion for two LNG trains - Usage (1,100 mmsc/d)
5. Fertilisers (\$1.6 billion for ammonia/urea – Usage 60 mmsc/d)
6. Methanol (\$1.7 billion for world class plant – Usage 160 mmsc/d)
7. Gas to Liquid (\$7.5 billion for 70,000 b/d) - Usage (700 mmsc/d)

Gas is key to these desired outcomes

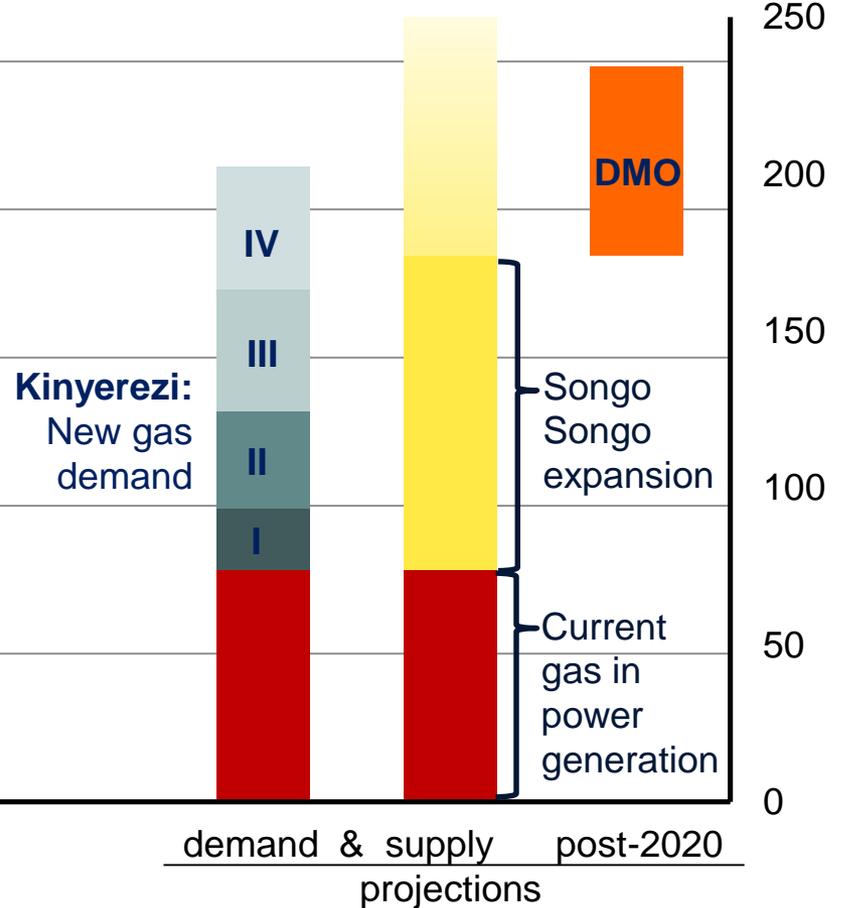


Generating capacity
MW



Gas volumes

mmscuf/d

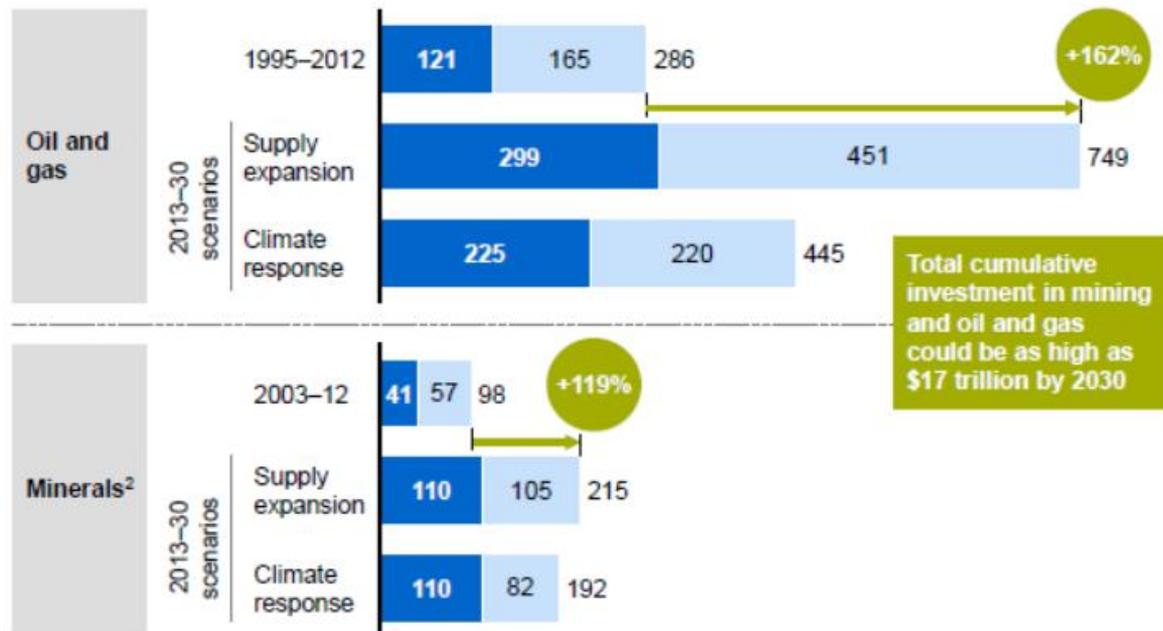


7. The policy challenges

Tanzania shares these challenges with many other countries:

- Still growing global demand for minerals, oil and gas: the climate change agenda notwithstanding
- Sources of supply increasingly in low and middle income countries
- So large future investments to be expected (Source: McKinsey G I)

Investment in oil and gas and minerals may need to increase at more than double historical rates to meet new demand and replace existing supply
 Annual investment requirements¹
 2012 \$ billion



New WIDER Project: Extractives and Development



- Launched November 2015
- Highly relevant to Tanzania and so the REPOA programme
- Coordinated by Tony Addison and Alan Roe
- Broad-ranging agenda of research issues from the role of extractives in the new industrial policies (Linn, Stiglitz, Rodrik et al), through macro/revenue management and international initiatives (e.g. EITI and Natural Resources Charter) to community level management)
- 34 authors so far recruited from industry, government, regulators, international agencies, academics
- Web site up and running – see www.wider.org/e24
- First 10 Working Papers to be uploaded in next few weeks

Can Tanzania become an oil and gas economy?



Technical constraints:

Numerous difficult technical problems to solve in extracting gas from several miles into the Indian Ocean under 1,400 metres of water and a further 2,000 metres of variable sea bed strata

Commercial Constraints:

1. For the Companies – can they justify the huge upstream and mid stream investments given their (changing) expectations of the global market (e.g. for LNG)?
2. For the Government and TPDC – can they finance the very large infrastructure and supporting investments needed to ensure the delivery and effective usage of the available gas (and oil)? WHO will coordinate?
3. Will the global demand and supply situation remain favourable to exploiting the Tanzanian resources?

Critical Issues to be managed to support transformation this time



- **Expectations management:** A communications strategy is needed immediately to manage expectations in government, in the affected local communities and in the country more generally.
- **Skills development:** More needs to be done to develop skills in both the private and public sectors. Although few direct jobs will be created there are very large opportunities for *indirect* job creation through linkages to the rest of the economy.
- **Public sector capacity:** This is currently weak in the area of contract negotiation, regulation of the sector, contract management, and management of the fiscal regime.
- **The reformed National Oil and Gas company (TPDC)** – its financing, its specific roles, building its capacities
- **Infrastructure development:** Government revenues from the gas sector must be used in part to build the infrastructure needed to attract investment in other areas - a real – but difficult - opportunity to diversify the economy and contribute to industrialisation

.....Continued



- **Macro-economic and revenue management:** The government needs to exercise caution on the macroeconomic fundamentals to avoid exchange rate appreciation and damage to traditional export activities. (the Dutch Disease problem)
 - **Sovereign wealth fund:** Should there be one?
 - **Stabilization arrangements** – against volatile prices: should these be set up?
- **Inclusive growth: ensuring that no sector is left behind:** The government needs policies/strategies to ensure that other sectors of the economy are not left behind. Much of the emphasis must lie in skills and knowledge and the government should focus on building human capacity in all sectors.
- **Transparency and good governance:** Tanzania is fortunate to discover gas now. They can learn from lessons from other countries on the importance of transparency and good governance.
- **Above all the politics of the situation:** how to protect this unique opportunity from political opportunism and mismanagement !

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Transformation or just BIG Numbers?

Many thanks

Questions and comments to Alan Roe

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