



TANZANIA: AN EMERGING ENERGY PRODUCER

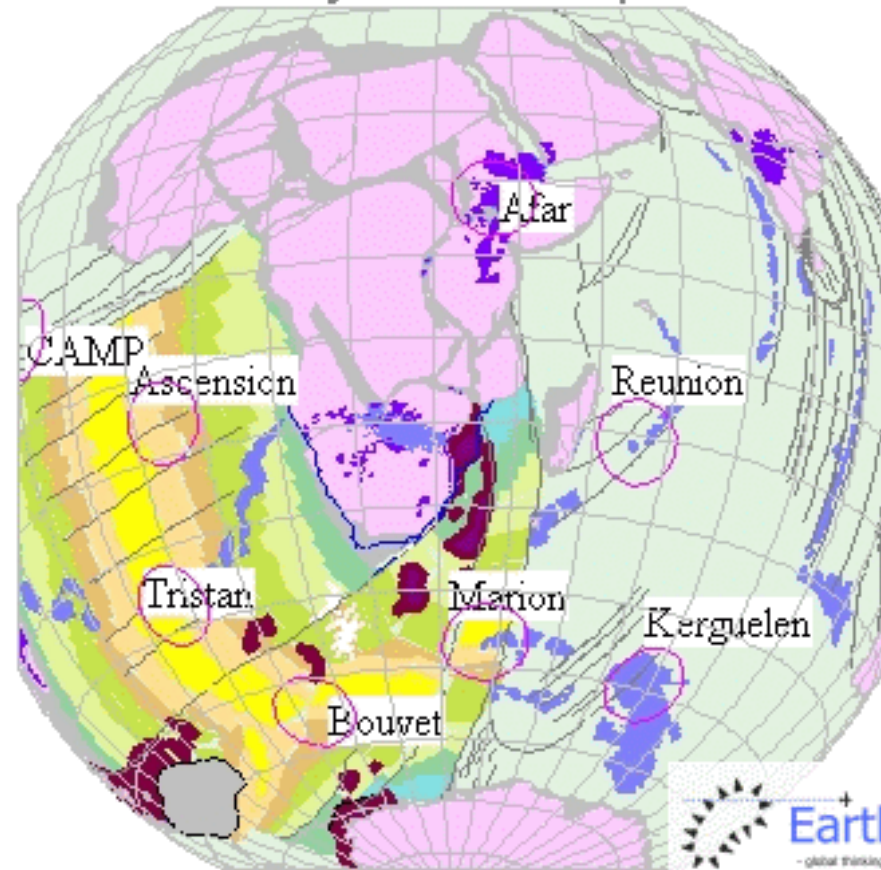
PROF. S. MUHONGO (MP)
MINISTER FOR ENERGY AND MINERALS
UNITED REPUBLIC OF TANZANIA

CHATHAM HOUSE, LONDON

TUESDAY, 26 FEBRUARY 2013



0.00 Ma :: CR10aaay.rot :: Bouvet Triple Junction :: April 2010

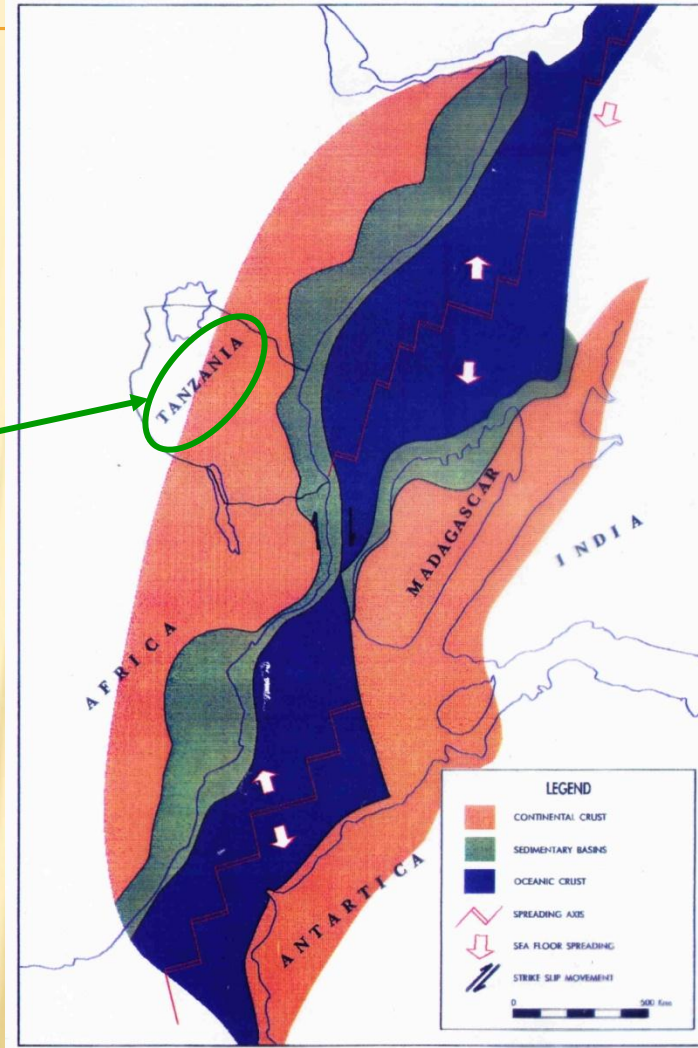


Earthworks
— global thinking in exploration geoscience

EARLY CRETACEOUS

Breakup of Pangaea (135-96 Ma)

During the Cretaceous, the supercontinent Pangaea completed its tectonic breakup into present day continents



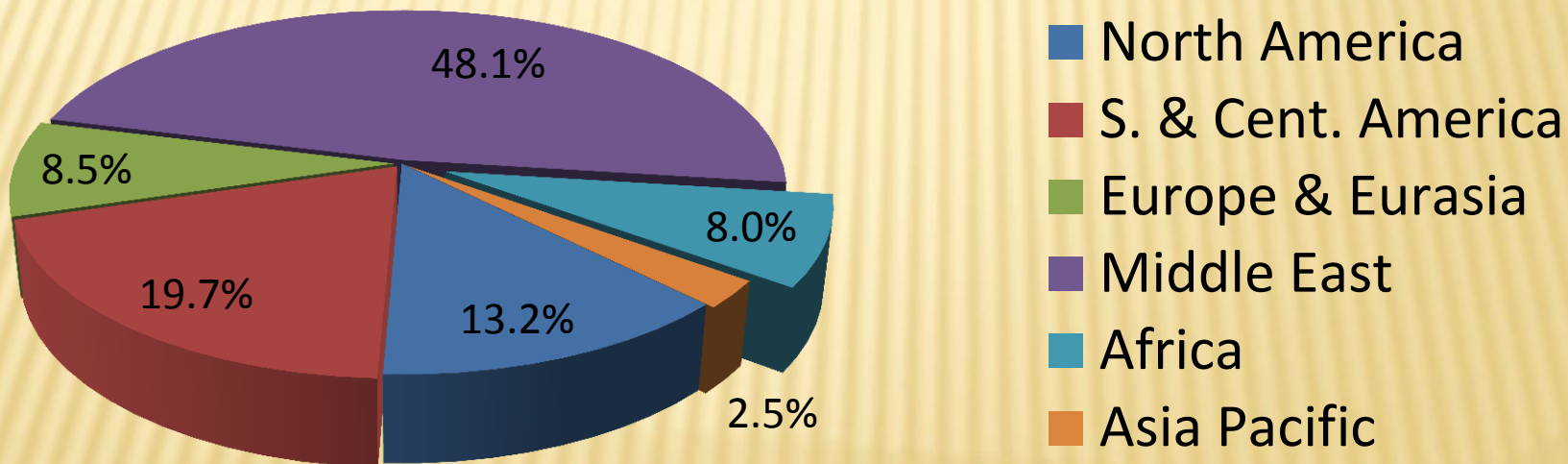


World Oil and Gas Reserves



TOTAL PROVED OIL RESERVES

- 1652 billion barrels
- recoverable in the future from known reservoirs under existing economic and operating conditions

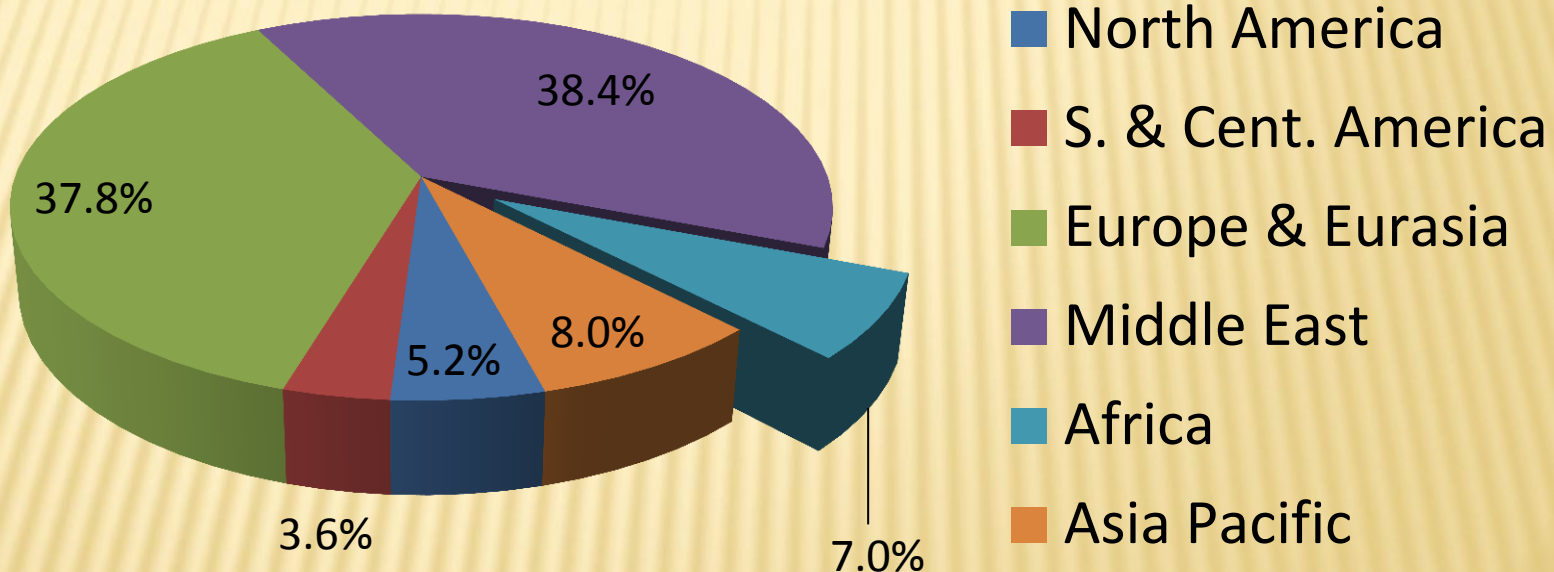




TOTAL PROVED GAS RESERVES



□ 208 trillion cubic metres





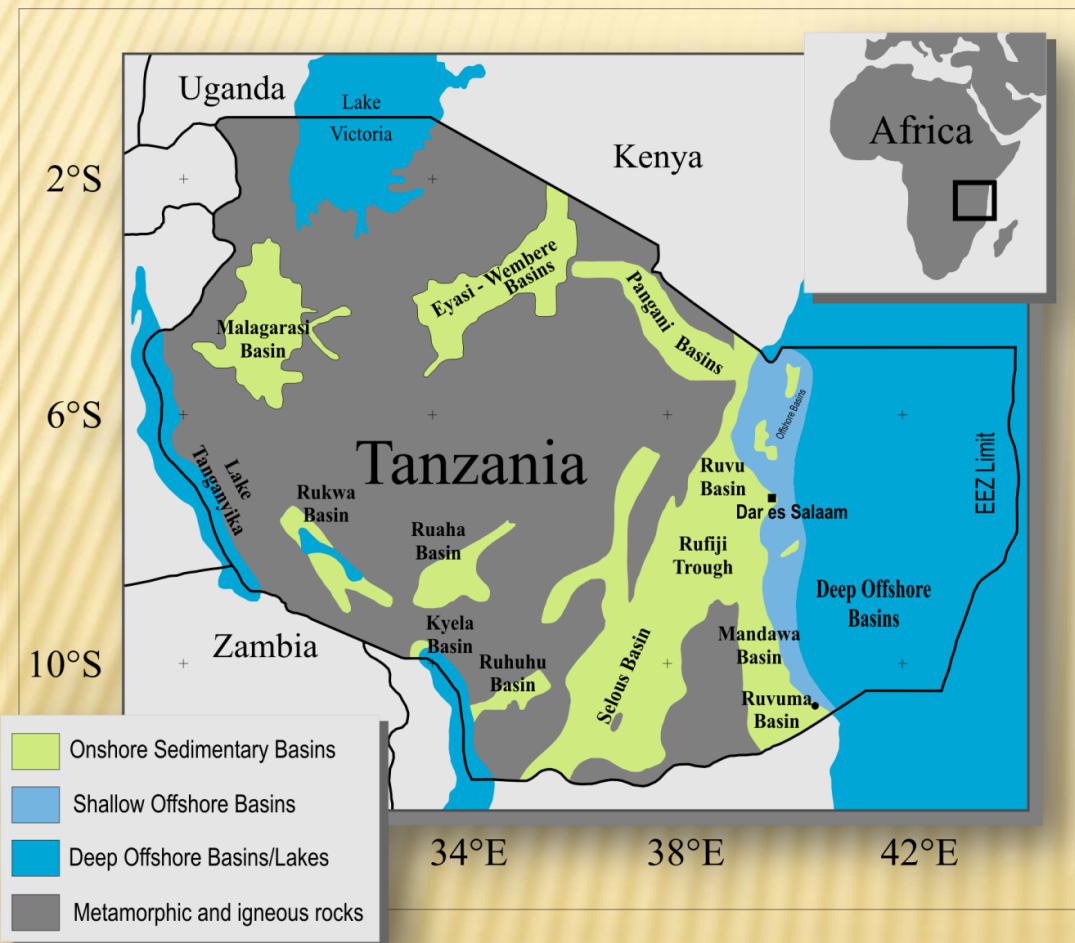
Emerging **TANZANIA'S** Prospects



Sedimentary Basins of Tanzania

Geological/structural settings

- ❑ Inland Basins and Modern Rift System: **114,000 km²**
- ❑ Coastal and continental shelf basins: **280,000 km²**
- ❑ Deep Sea Basins: **140,000 km²**
- ❑ **TOTAL: 534,000 km²**





Key Legislations

Petroleum (Exploration and Production) Act, 1980

- ❑ Framework for application, award, modification, cancellation and relinquishment of petroleum exploration and production licences

Income Tax Act 2004

- ❑ Framework for taxation

Model Production Sharing Agreement (MPSA 2008)

- ❑ Tripartite draft Agreement (Government, TPDC and Contractor)
- ❑ Defines all parties rights and obligations



Exploration for Oil and Gas

Started in 1952

Total geophysical data coverage to date

- **Seismic**

	2D (Km)	3D (Sq. Km)
onshore	25,875	NONE
offshore	72,281	15,644
beyond EEZ	10,151	NONE
TOTAL	108,207	15,644

- **Airborne magnetic and gravity:** onshore and shelf
- **Shipborne magnetic and gravity :** deep sea and L. Tanganyika
- **Land gravity:** in some basins



Exploration ...*cont*

- 67 wells drilled since 1954
 - 16 discovery wells
 - Drilling in progress - 2 wells



Expected Drilling for 2012/13



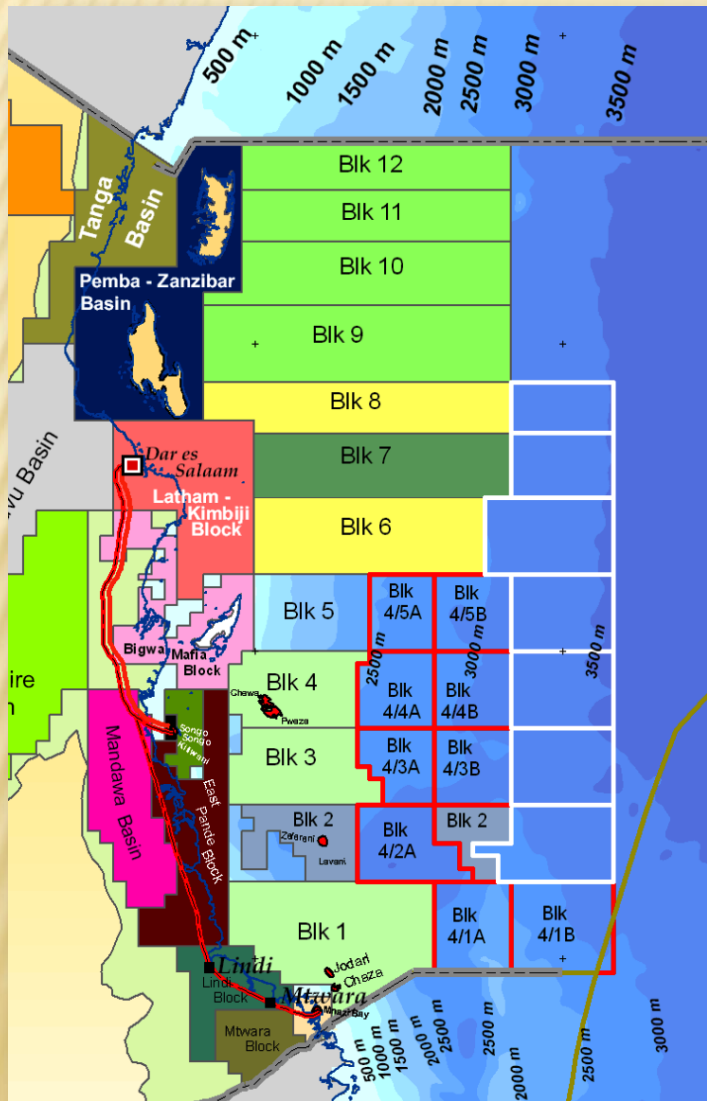
Operator	Licence	No. of Wells	
Maurel et Prom	Mnazi Bay	1	
Statoil	Block 2	3	1 in progress
Ndovu	Ruvuma Licence	2	
BG	Block1	3	1 in progress
Dodsal	Ruvu Block	1	
Heritage	Latham	1	
Dominion	Block-7	1	
Afren	Tanga	1	
Ophir	E. Pande	1	
Petrodel	Kimbiji	1	
Hydrotanz	Mnazi-Bay	1	
PanAfrica	Songo Songo	1	
	Approx. total	17	



New Opportunities in Tanzania



New Opportunities

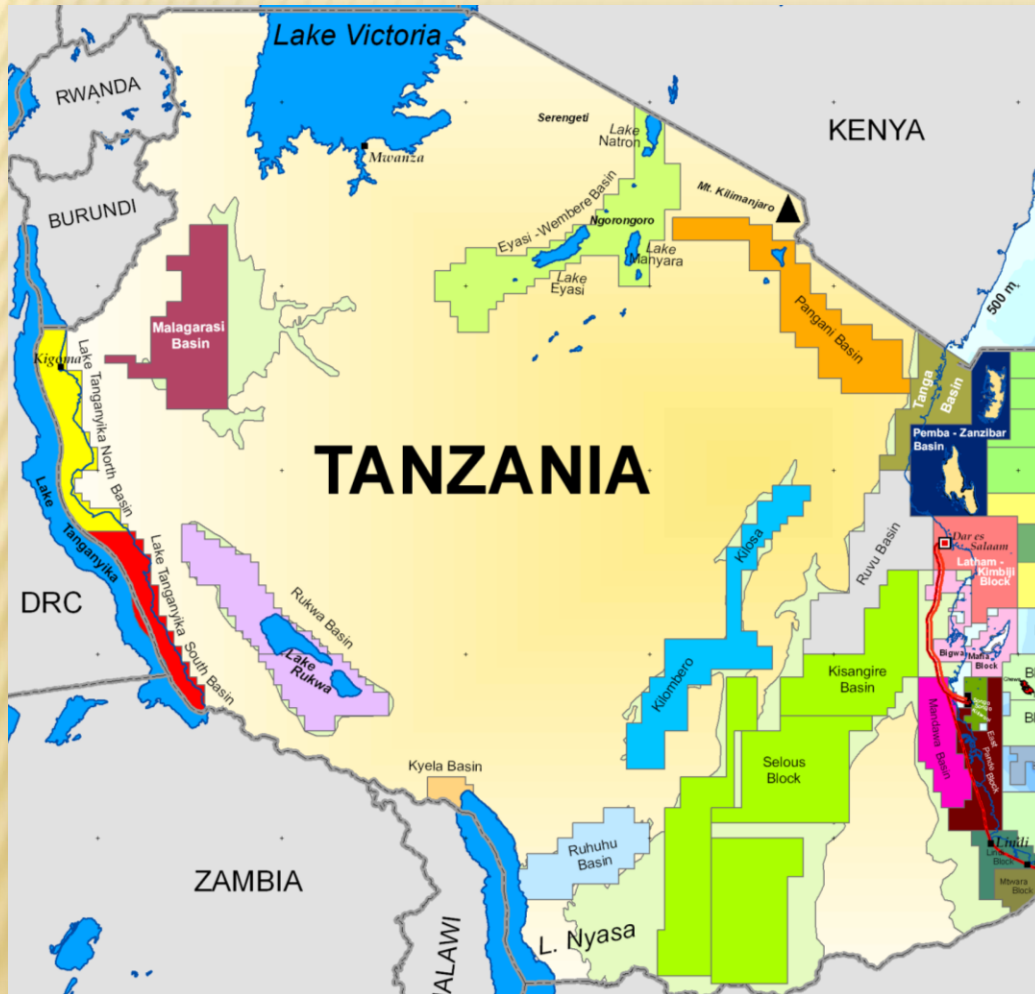


Deep Sea Blocks

- 9 blocks will be offered through the 4th licensing round
- to be launched after ratification of the Gas Policy
- Possibly in Q4 of 2013



New Opportunities cont



Onshore Blocks

Under Applications

- ✗ Ruhuhu Basin
- ✗ Lake Tanganyika North
- ✗ Kisangire
- ✗ Selous Basin
- ✗ Luwegu and Tunduru
- ✗ Eyasi Wembere

Open Acreages

- ✗ Mandawa Basin



Gas Fields

- ❑ Songo Songo
- ❑ Mnazi Bay
- ❑ Mkuranga
- ❑ Kiliwani
- ❑ Ntorya
- ❑ Deep Sea



Gas Fields - Songo Songo



- ✗ Discovered in 1974
- ✗ Development for commercial operations started in June 2000
- ✗ Commercial production started in July 2004
- ✗ Producing 103 mmscfd





Gas Fields - Songo Songo ...cont

Songo Songo Gas Utilization

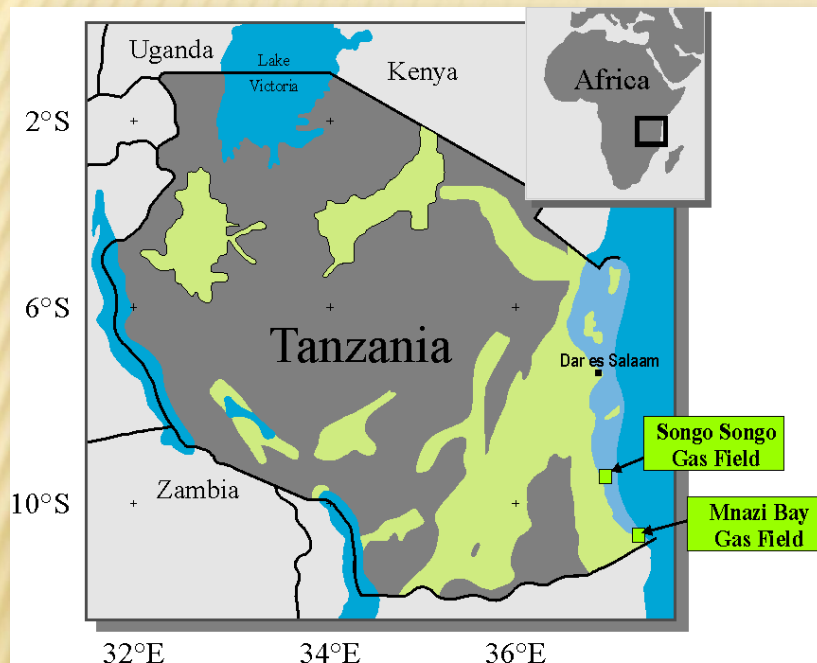


- Power generation in Dar Es Salaam (414 MW)
- Heating source in industries in Dar Es Salaam - 37 industries currently connected
- Compressed Natural Gas (CNG) for domestic use, hotels and vehicles in Dar Es Salaam

Demand for Gas in Dar Es Salaam is higher than the Production



Gas Fields – Mnazi Bay

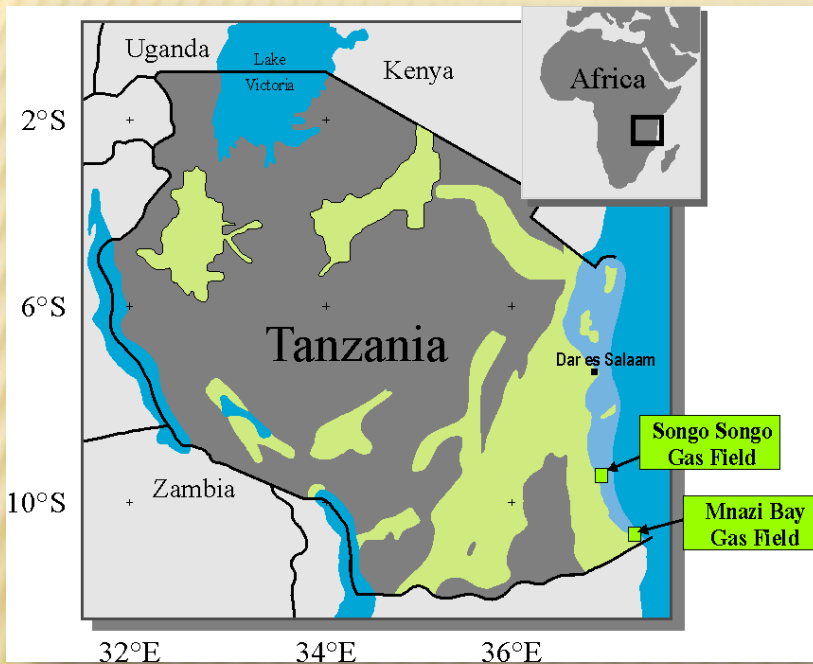


- ❑ discovered in 1982
- ❑ developed in 2002
- ❑ commercial production started in 2006
- ❑ Used for power generation: 18 MW installed.





Gas Fields – Mnazi Baycont



Processing Plant

- + Located onshore at the Msimbati Peninsula
- + Process up to 10 mmscfd
- + Current demand 1.5 – 2.0 mmscfd

Transportation

- + 8 inch-pipe, 27km long from Mnazi Bay to Mtwara

Maximum Throughput 70 mmscfd





Gas Fields – Mnazi Baycont



Mnazi Bay Gas Utilization

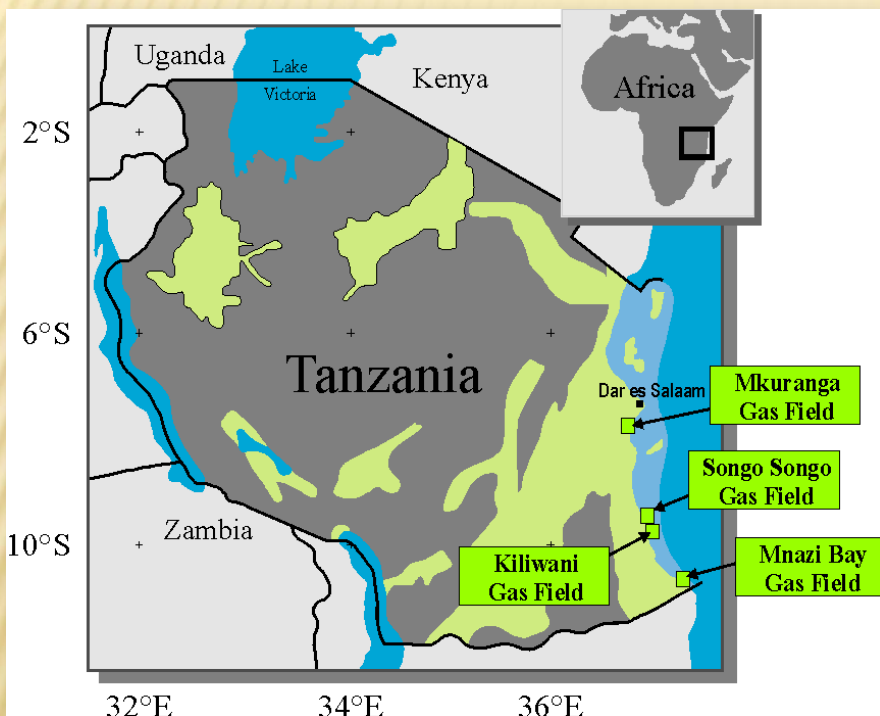
- ❑ Power Generation in Mtwara
 - + 18 MW gas generators installed in Mtwara
 - + Power demand Mtwara and Lindi Regions: 12 -15 MW

Infrastructure is being put to utilise the potential for power generation – 36 inch pipeline under construction

>400 MW in Mtwara



Gas Fields – Mkuranga and Kiliwani



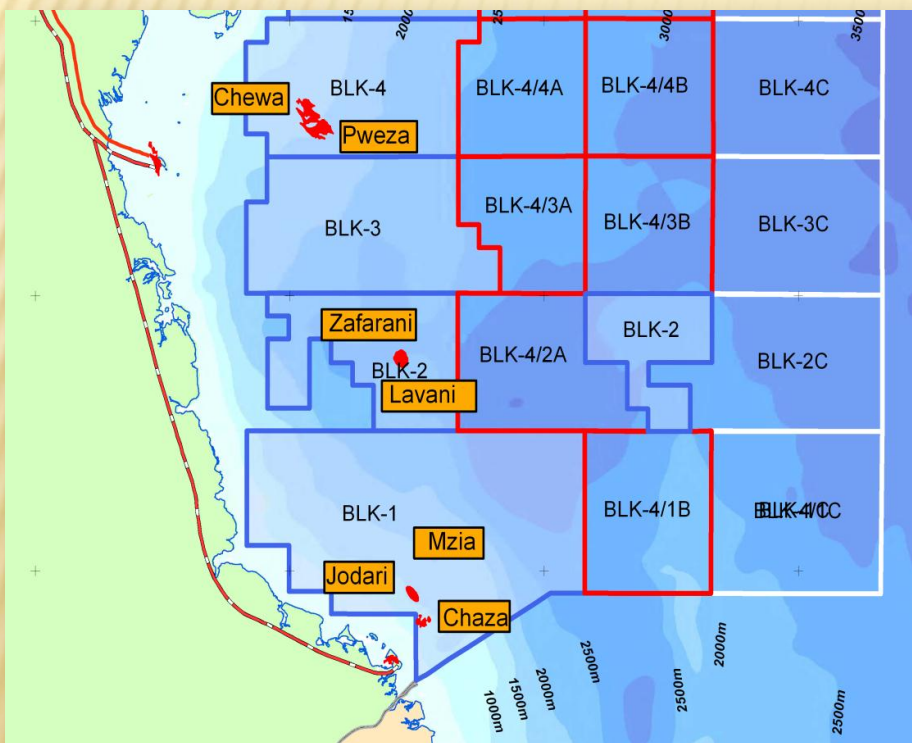
- Mkuranga Gas Field**
 - + Discovered in 2007, 50 km south of Dar Es Salaam
- Kiliwani Gas Field**
 - + Discovered in 2008 south of Songo Songo
- Ntorya Gas Field**
 - + Discovered in 2012, approx. 35 km west of Mtwara

Utilization awaits infrastructure

Plan: to connect these fields to the 532 km-Gas Pipeline under construction



Gas Fields – Deep Sea



- ❑ drilling started in 2010
 - + First discovery Pweza-1 Well in Block-4 drilled by Ophir.
- ❑ more discovery wells drilled in blocks 1, 2, 3 and 4
- ❑ to date 11 wells drilled
 - + 8 wells – gas discoveries
 - + 2 Appraisal Wells
 - + 1 Dry well
- ❑ Success Ratio \approx 90%



Summary of Gas Reserves in Tanzania



	GIIP (tcf)	Proven (tcf)
Songo Songo	1 to 2.5	0.880
Mnazi Bay	3 to 5	0.262
Mkuranga	0.200	0.200
Kiliwani	0.070	0.027
Mtwara-Ntorya	0.178	
Deep Sea	29.570	
Total	<u>35.768</u> Gas Initially in Place (GIIP)	<u>1.369</u>



POLICY AND LEGAL FRAMEWORK



- ✘ In the light of recent big gas discoveries the Government is coming up with appropriate policies and legal frameworks to guide future exploration, and exploitation of the resources.
 - + Gas Policy – is in the final stage
 - + Gas Act -
 - + Gas Utilization Master Plan – is almost ready
 - + Petroleum Exploration Policy under preparation
 - + Petroleum Exploration and Production Act 1980 under review

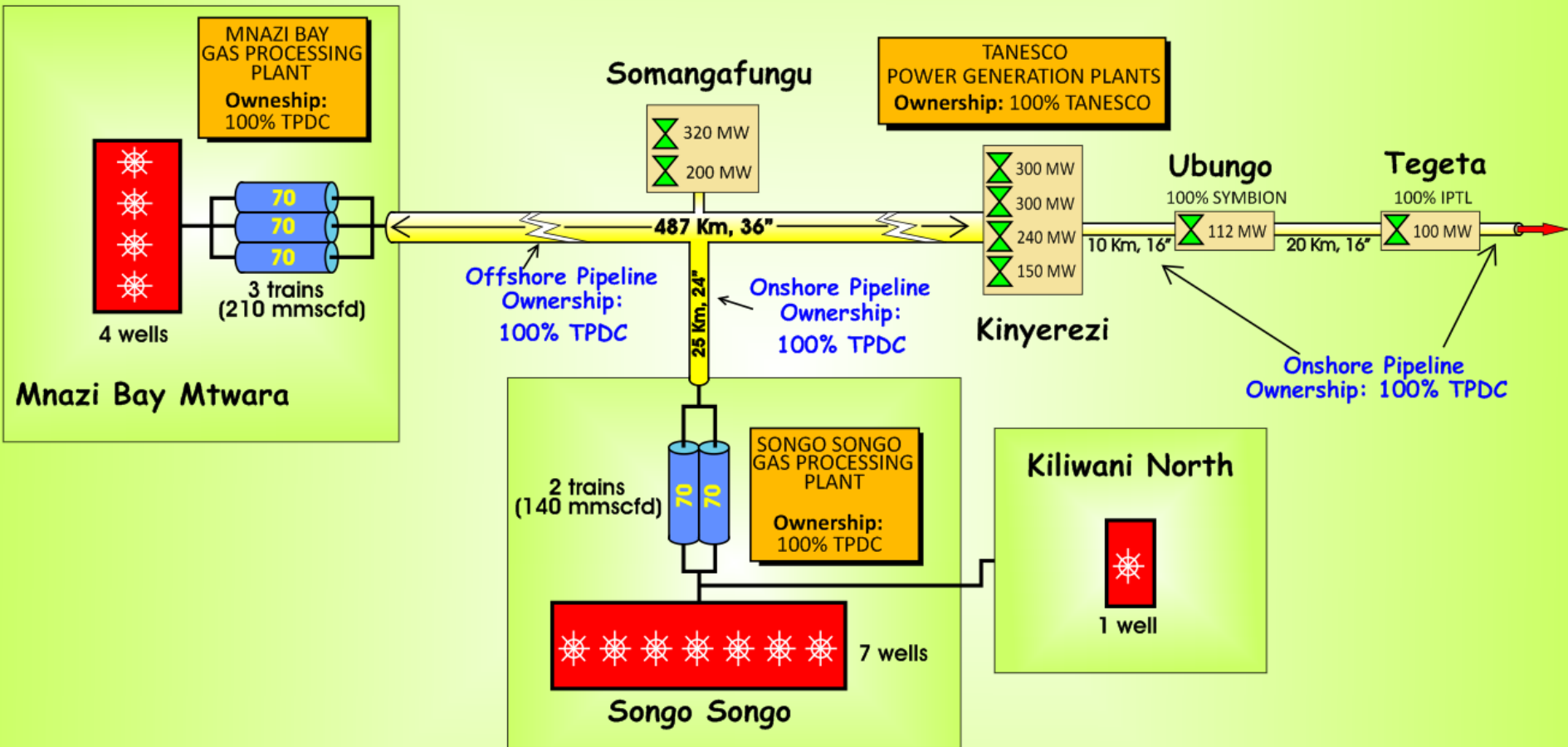


OPPORTUNITIES FOR DOWNSTREAM

- × Gas pipe line from Mtwara to Dar es Salaam
 - + 532 km-long: up to 784 mmscfd
- × Power generation from Natural Gas
- × Fertilizer manufacture
- × LNG
- × Smelting plants
- × Cement factories
- × Gas for: Industries, Vehicles, Household
- × Gas for Fertilizers
- × Methanol
- × Plastic factories
- × Petrochemical industries



GAS PIPELINE PROJECT



COALFIELDS OF TANZANIA

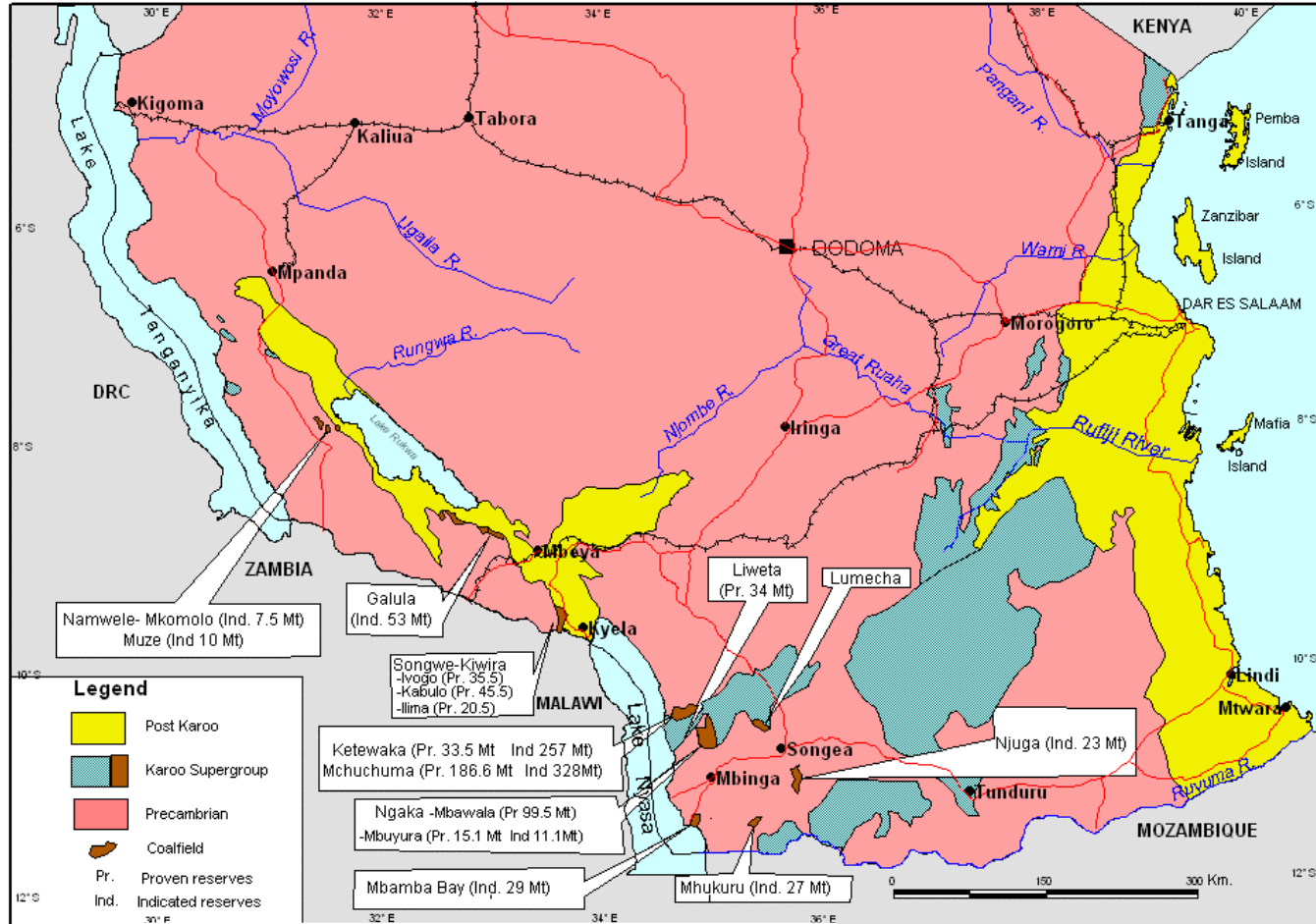


Fig1



URANIUM DEPOSITS

◆ MKUJU PROJECT: 137.3 Million Lbs

Namtumbo - 35.9 MILLION LBS

Tunduru - 101.4 MILLION LBS

◆ MANYONI PROJECT: 19 Million Lbs (57 M tonnes)

Prospecting Licenses (Regions):

Arusha, Dodoma, Iringa, Lindi, Ruvuma, Mbeya, Morogoro, Mtwara, Rukwa, Shinyanga, Singida and Tanga

4. Namibia: 4,496 tons, 8.4% world's production

5. Niger: 4,198 tons, 7.8%

11. Malawi: 670 tons, 1.2%

12. South Africa: 583 tons, 1.1%



RENEWABLE ENERGIES

RENEWABLE ENERGY SOURCES WORLDWIDE AT THE END OF 2008 (SOURCE: REN21)



Solar

7.2 TW



Hydro

870 TW



Wind

32 TW



Geothermal

15 TW

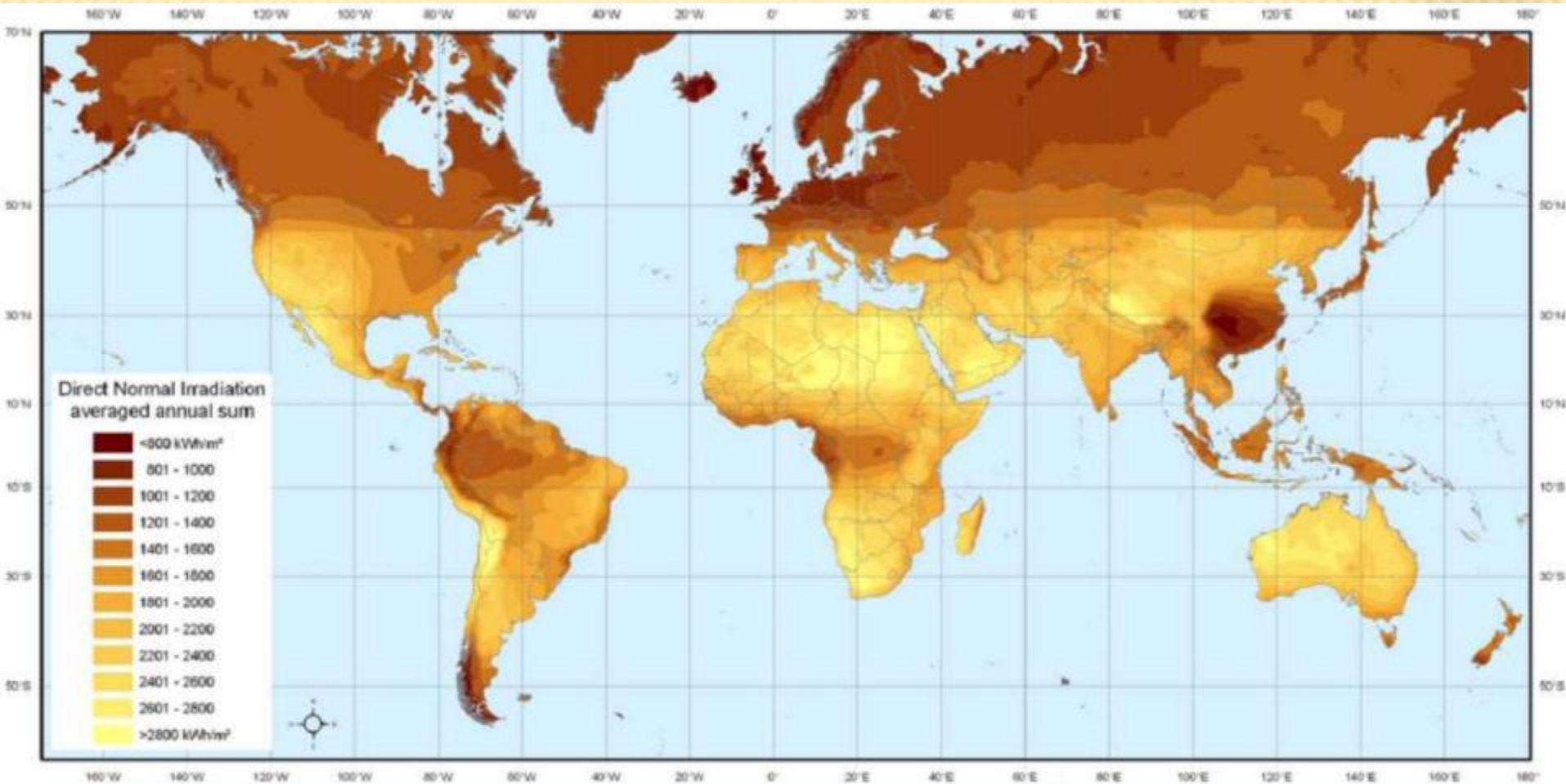


**Global
Consumption**

Available renewable energy The volume of the cubes represent the amount of available geothermal, hydropower, wind and solar energy in TW, although only a small portion is recoverable. The small red cube shows the proportional global energy consumption

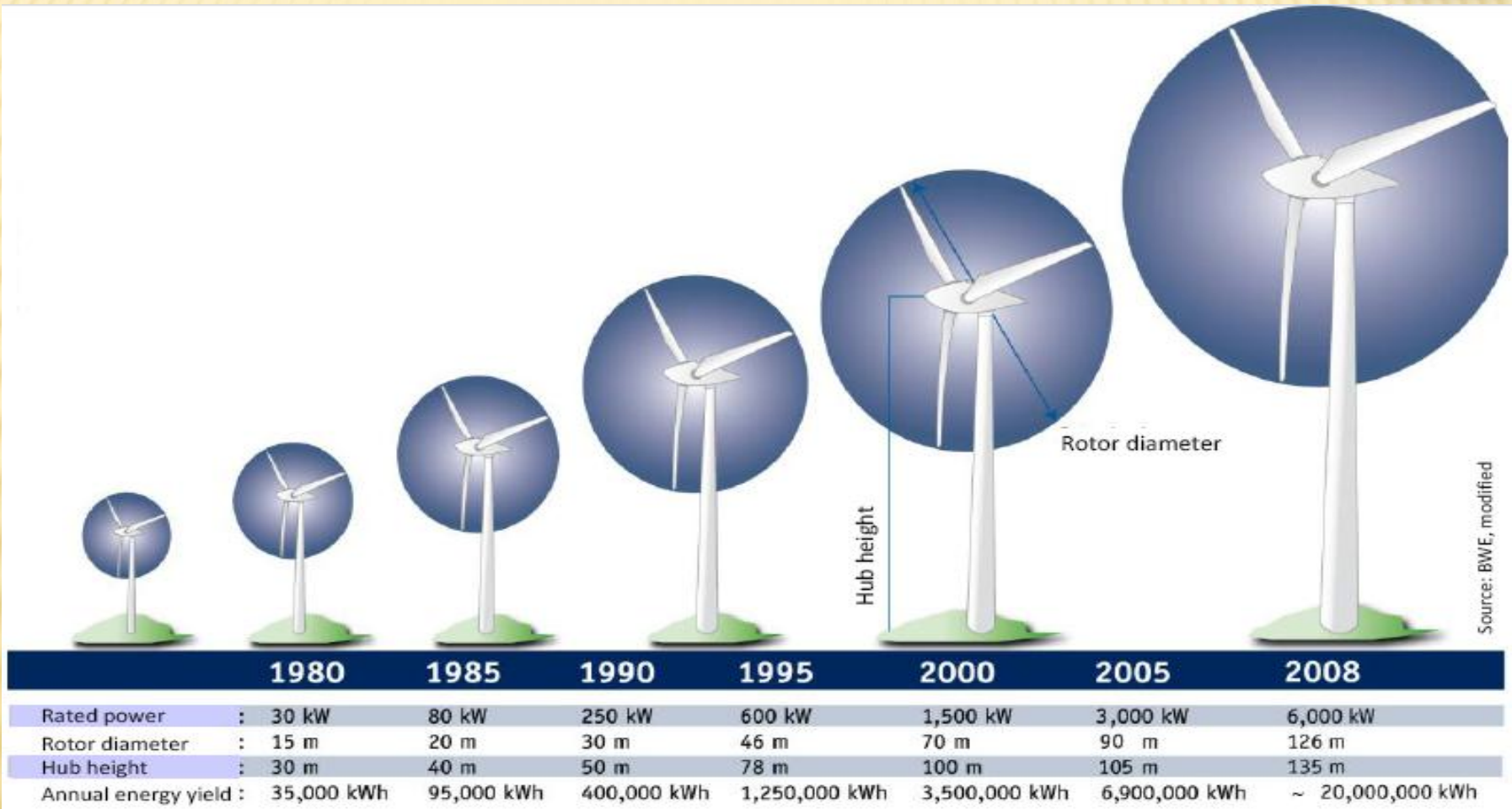
GLOBAL SOLAR POTENTIAL

(Source: DLR 2009, Derived from NASA SSE 6.0 Dataset (NASA 2009))



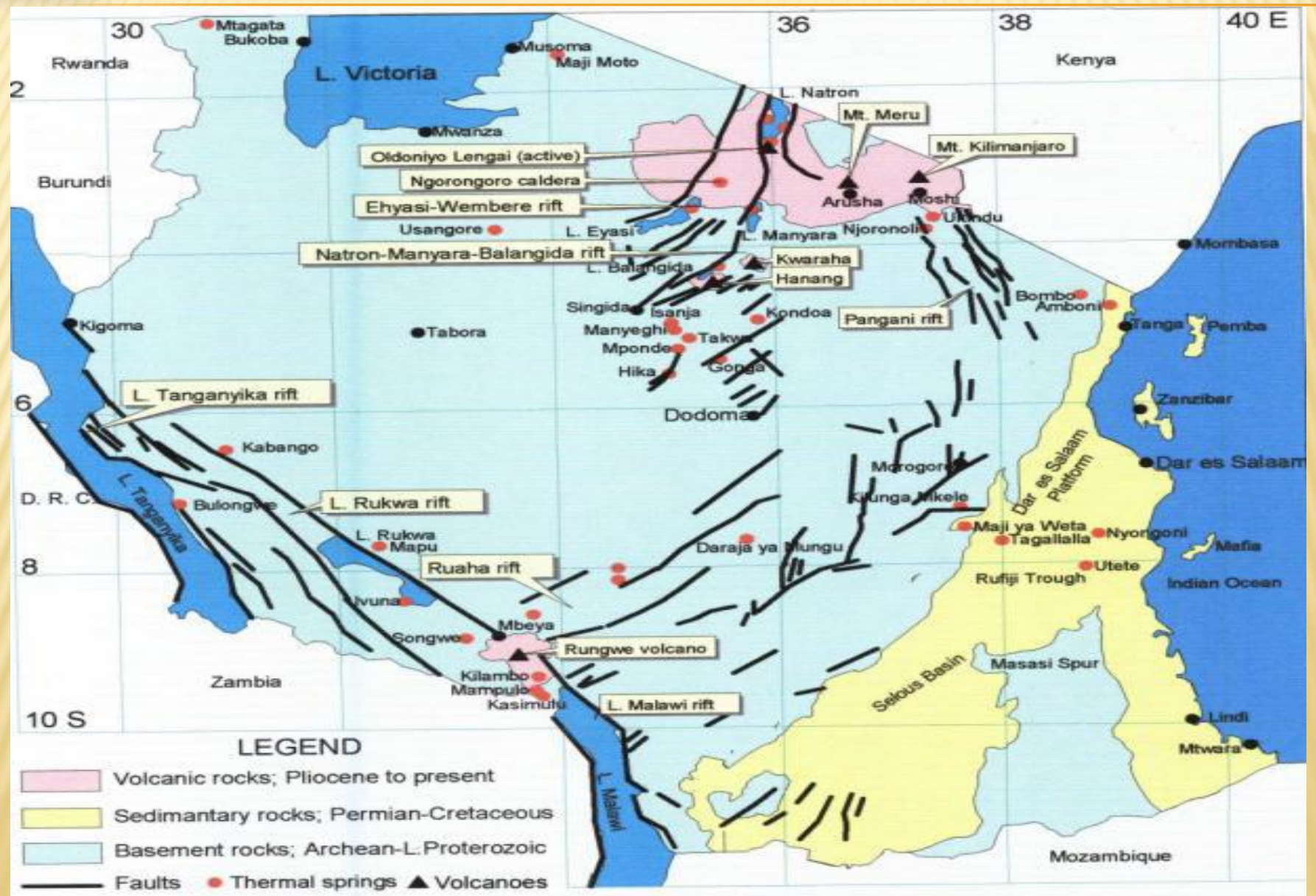
(S Source: DLR 2009, which was derived from NASA SSE 6.0 dataset (NASA))

Wind Energy: 1980-2008





GEO THERMAL POTENTIAL IN TANZANIA



COMPAGNIE THERMIQUE DE SAVANNAH



CTSAV



WHO IS A FRIEND?

When asked, „What is a friend?“

Aristotle (384-322 BC) replied:

„One soul inhabiting two bodies“

(TANZANIA & UNITED KINGDOM)

**WELCOME TO TANZANIA - THE
APPROPRIATE DESTINATION FOR YOUR
INVESTMENTS**