



Energy & Power: A key enabler of economic development

by

Chief Tabetando, Chairman, EurOil Limited

**(Presented by John Griffith, General Manager, Bowleven,
West Africa)**

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OUTLINE:

- Definition and examples of catalysts of economic development
- Relationship between energy and economic development
- Some figures and indicators
- Challenges faced by Cameroon's energy sector
- A case study: The Tanzanian experience
- Conclusion

Definition of an Economic Enabler

An input or factor which:

- Boosts development and production of the original resource
- Provide or stimulate regular income and new capital for investment
- Attracts external financing – DFI by development banks and foreign companies
- Generates additional economic activities which facilitate development of new resources adding further value to the Cameroon economy

Examples of Economic Enablers

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- Social-enablers (education, health, poverty-reduction measures)
- Enablers of rapid economic development (technology and training of manpower)
- Agents of wealth creation (capital availability and access to finance)
- Enablers of government administration and service delivery (security and contract stability for FDI)
- Enabler of industrial development (energy and power)
- Enablers in the agriculture sector (capital and credit, fertilizers and other farming implements,)
- Drivers of private sector development (infrastructure, a conducive legislative and regulatory framework)

Relationship between Energy and Economic Development

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- The relationship is exponential not linear
- $(Q_1, \dots, Q_m) = f(A, X_1, \dots, X_j, E_1, \dots, E_p)$
- where Q_i are various outputs (manufactured goods and services) = Economic growth and added value
- X_i : various inputs (as capital, labor etc)
- E_i : energy inputs (coal, oil, etc)
- A : state of technology as defined by the total factor productivity indicator

Power Generation by Type in Cameroon

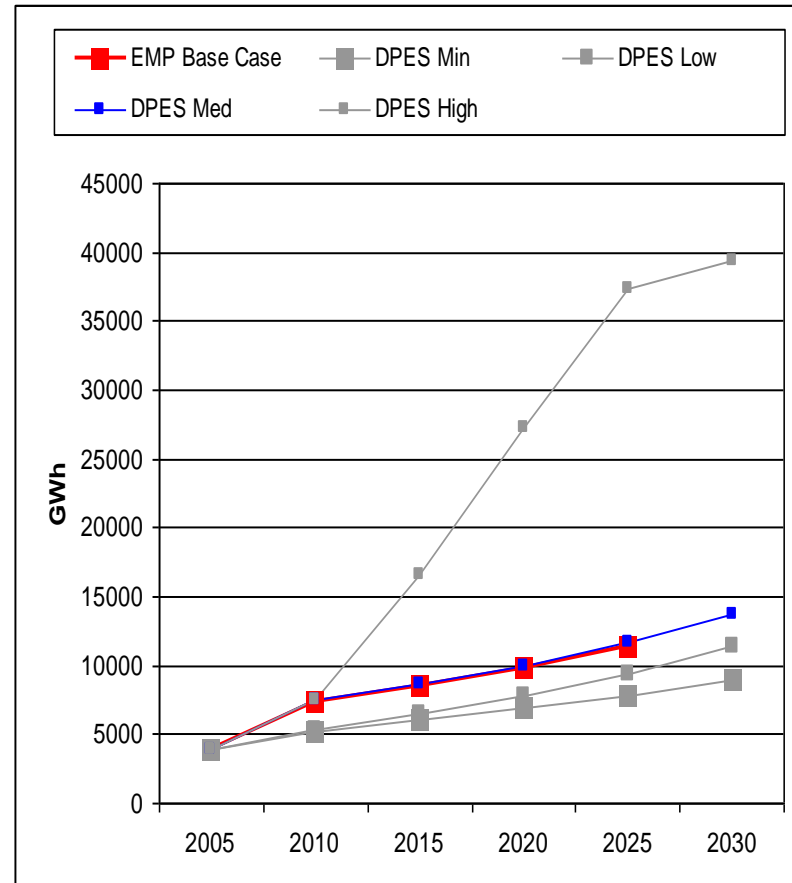
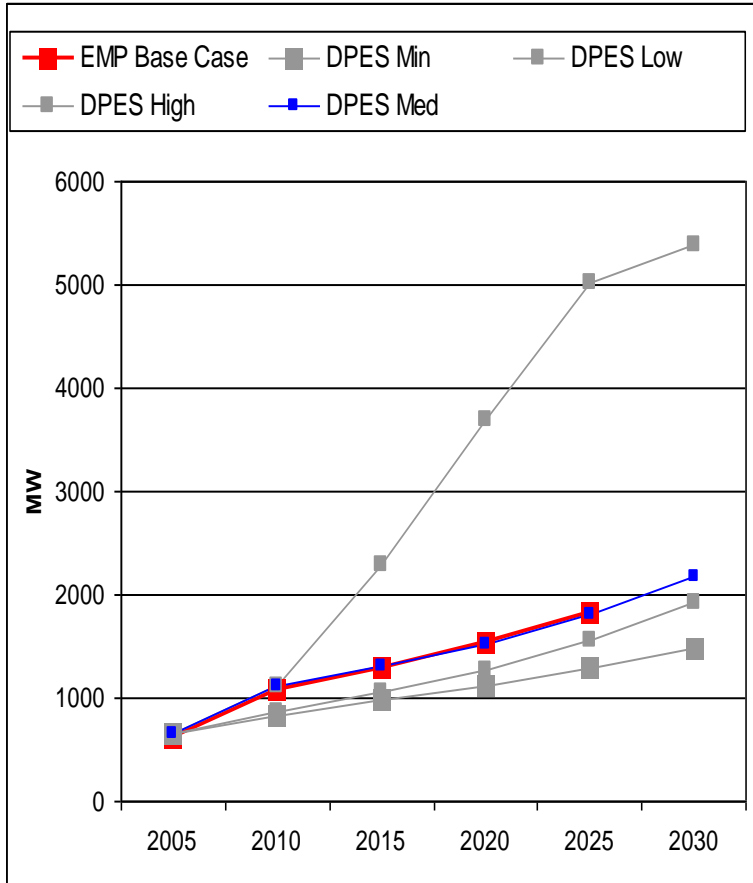
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Plant	Location	Type	Efficiency	Capacity, MW	Start date	Decomm. date
Song LouLou		hydro		394	1980/81/86/88	
Edea	Edea	hydro		263	1957/58/75	
Oyomabang 1	Yaounde	diesel	38.5%	12.5	2000/01	
Oyomabang 2	Yaounde	HFO	44.6%	19.5	2004	
Bassa 2-3	Douala	diesel	38.5%	9	1979	2008
Bassa 4-5	Douala	diesel	38.5%	9.6	2001	
Logbaba	Douala	diesel	38.5%	18	2000/01	
Bafoussam 1-2	Bafoussam	diesel	35%	9.3	1986	2015
Bafoussam 3	Bafoussam	diesel	35%	4.7	2004	
Limbé	Limbé	HFO	44.6%	85	2004	
Total				824.6		

Generation Mix in the S. Network (source: MINEE, 2007)

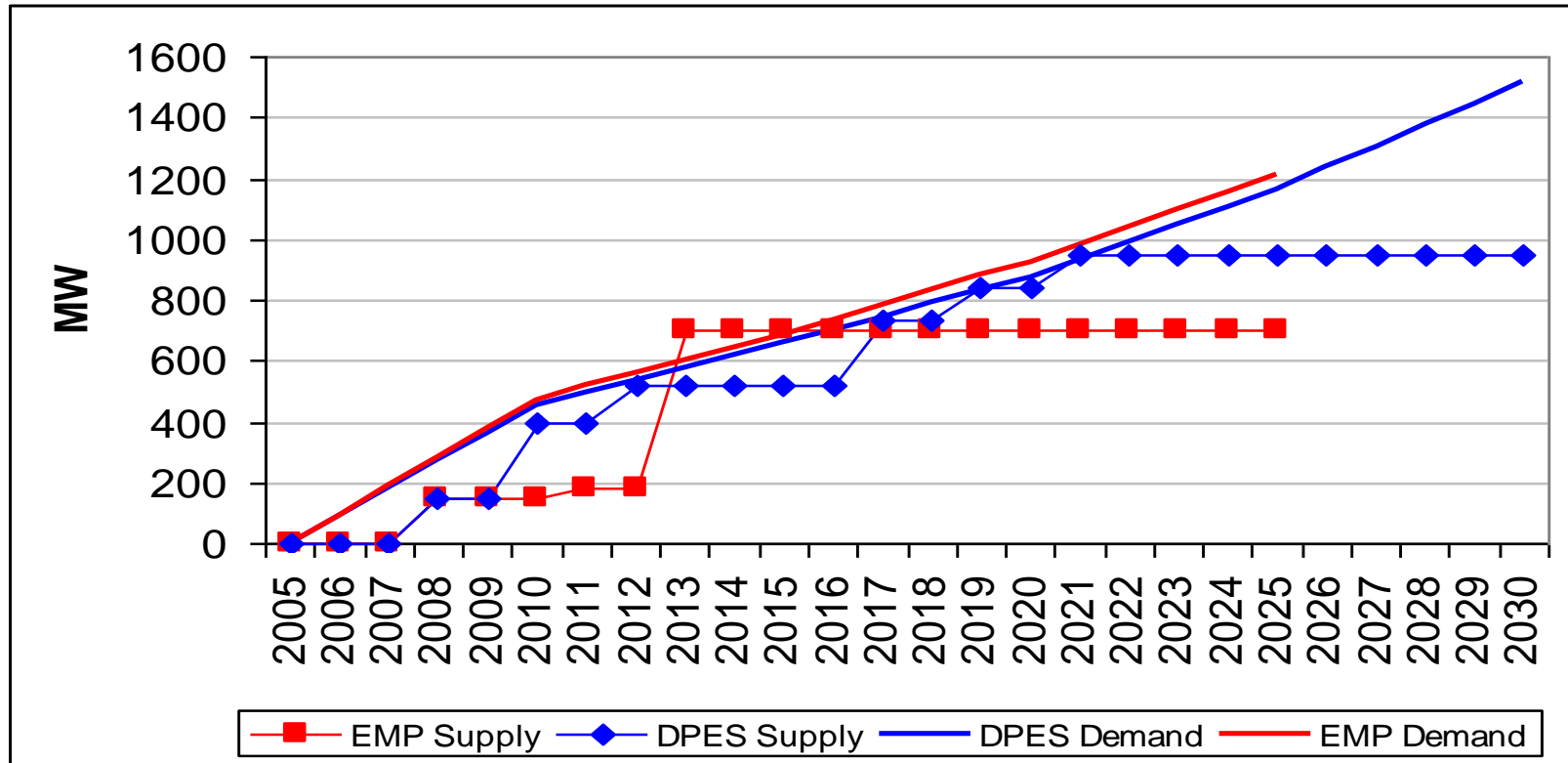
Power Demand Forecasts to 2030



Comparison of Demand Scenarios (Source: PDSE 2030, 2006)

Projected New Demand-Supply Matching to 2030

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Demand-Supply Matching in DPES 2030 and EMP (courtesy PDSE 2030)

New Industrial Power Needs – 2009 to 2025



Project	Location	Start year	Additional MW Required
Aluminium Sector (ALUCAM) I	Edea	2010-2011	275 (450 total)
Aluminium Sector II	Kribi/ Limbé	2015	800
Aluminium Sector III	Kribi/ Limbé	2020	500-900
Aluminium Sector IV	Kribi/ Limbé	2025	450-850
CIMENCAM	Douala	2010	3
CICAM	TBC	TBC	20
AFKO Cement	Limbé	2007	6
Iron and Steel	Kribi	2013	80-160
Agro-industrial development	Benoue	TBC	50
SONARA expansion I	Limbé	2008	3
SONARA expansion II	Limbé	2012	32
Wood Processing	TBC	TBC	50
Petrochemicals	TBC	TBC	20-30
Shipyard	Limbé	2009	6
Kribi Port	Kribi	2015	7
Exports	N/A	TBC	N/A

**List of Industrial Projects according to High Demand Scenario
(Courtesy IPA Energy Consulting, 2006)**

Challenges Facing Cameroon's Energy Sector

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- Demand for power is projected to double by 2025
- Current plans are to fill 80% of demand gap with hydro, which can suffer 40% downtime.
- Shortage of capital – direct foreign investment only
- Need for clarity in the role of the different government agencies and more than one Power Plan
- Limited and costly supplies of fossil fuels – gas is not yet on-stream
- Cameroon's hydrocarbon resources are lightly appraised.
- Technology transfer needs to be stepped up
- Future power needs for industry need definition
- Biomass resources – wood – depleting quickly

Tanzanian experience: Songo Songo Gas

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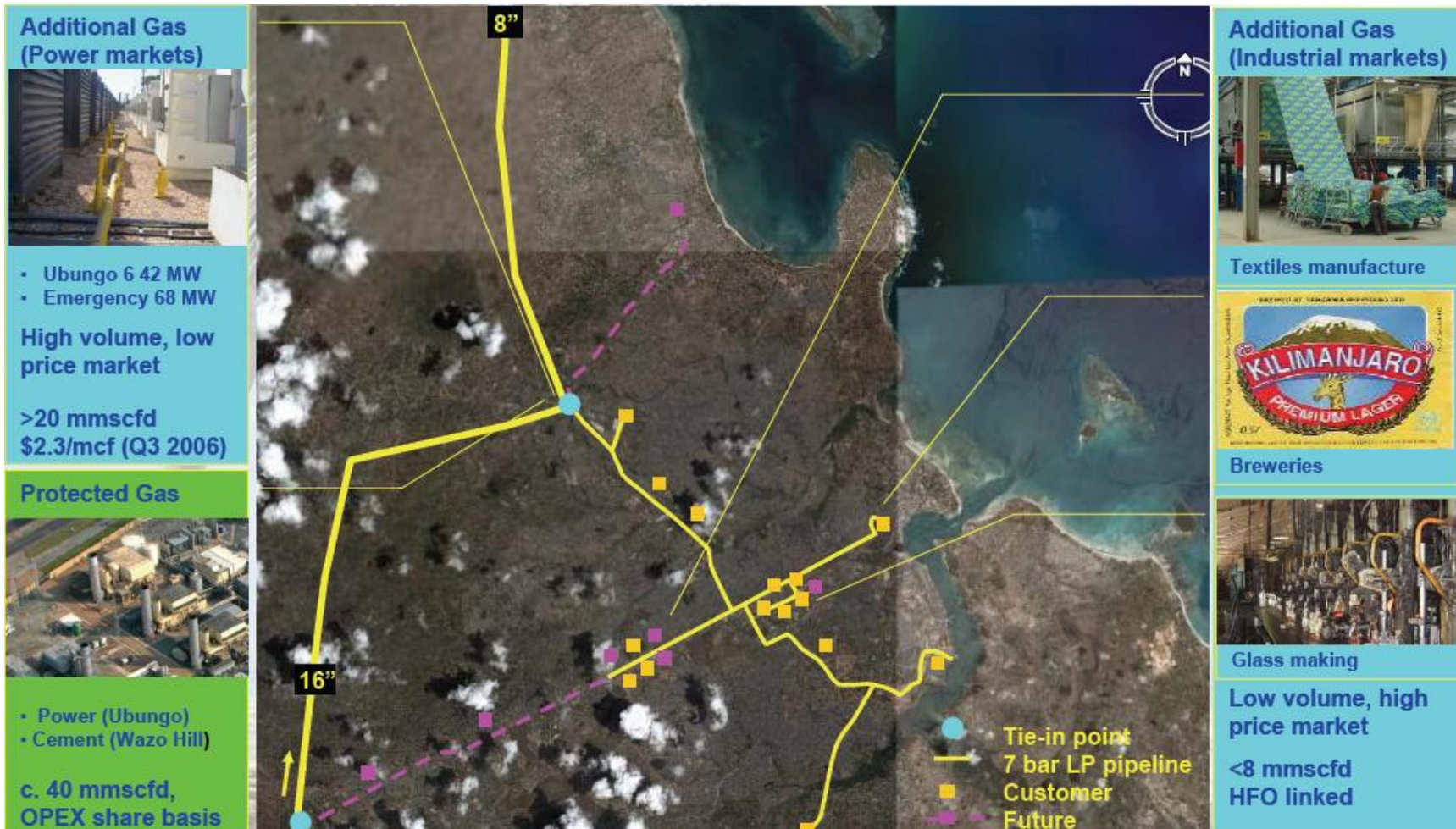
The Details:

- Offshore Tanzania – Discovered by AGIP in 1974
- Appraised by TPDC (8 wells), 1978-82 – Approximately 800 BCF in place
- Project dormant 1982 to 1995 – No perceived market, no financing
- In 1995, Ocelot, Trans Canada Pipe and Government Agencies formed SONGAS to facilitate GTE project
- Financing secured from World Bank and European Development Bank – Oct 2001
- Construction started 2003, first gas mid 2004, now delivering 60 mm scf/day to Dar es Salaam
- For more details go to: www.tpdz.com and www.songas.com

The Transformation:

- Pre July 2004 – Tanzania had 300MW hydro and 250MW imported HFO and Diesel power. Load Shedding up to 40%
- Today – All thermal power is gas at 400+MW base-load, hydro (>300MW) is peak producer. Excess gas is supplied direct to growing industrial base. Export to Kenya being discussed.

Songo Songo Gas – The Dar es Salaam Off-Takers



Songo Songo Gas – The Results So Far:-

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Positive impacts of the project include:

- Cut reliance on imported liquid fuel for power generation
- Reliable supply of cheap energy to reduce shortages and load shedding
- Encourage the development of new infrastructure and industrial activity
- Attracting new investment both domestic and foreign
- Generation of clean energy with positive environmental impacts

Lessons learnt:

- Project development only possible with all stakeholders working together with government agencies under a clear national power plan
- Financing of the construction of a complex value chain made possible by international development finance (World Bank, EDB)



Energy will be a powerful economic enabler if we have:

- State participation – A clearly defined power plan is essential. CGA and other Ministry initiatives a good start
- ...But liberalizing the energy sector and cutting bureaucracy is equally essential
- Diversifying the energy sources makes the economy less vulnerable
- Use Cameroon gas for thermal power generation to cut the energy bill a clear option – but gas must be base-load
- Other uses for gas (LNG, direct export) must be part of the Master Plan – whichever is the strongest economic enabler
- Create an attractive environment for DFI
- Co-responsibility of stakeholders – respecting legal, social and contractual responsibilities
- Replacing biomass and liquid hydrocarbon energy with gas will benefit the environment