

Seizing the Opportunity & Developing Sustainable Economic Growth

- What are the challenges ?
- What is needed to develop them ?
- What are the opportunities ?

Mozambique Gas Summit 2013
Maputo, 14 March 2013

Claudio H. Steuer
Principal
SyEnergy Limited
claudio.steuer@SyEnergy.co.uk

Legal disclaimer



SyEnergy Limited accepts no liability whatsoever and does not make or offer any representation, warranty or undertaking, express or implied, for any information, projections and opinions contained in this presentation.

SyEnergy Limited does not undertake any obligation to provide the recipient with access to any additional information or to update or correct any unintended inaccuracies in or omissions from this presentation. This presentation shall not be deemed to be an offer to sell or invitation to invest in SyEnergy Limited or any of its assets and no information set out in this presentation is intended to form the basis of any contract, investment decision or any decision to purchase or invest in any such assets.

The information contained herein is disclosed purely for information purposes only and recipients should rely solely on their own judgement, review and analysis in evaluating the information set out herein.

The recipient is authorized to use the information contained in this presentation in part or whole, on the condition to preserve the content as disclosed herein, and providing the appropriate accreditation of the source.

A brief word about SyEnergy...



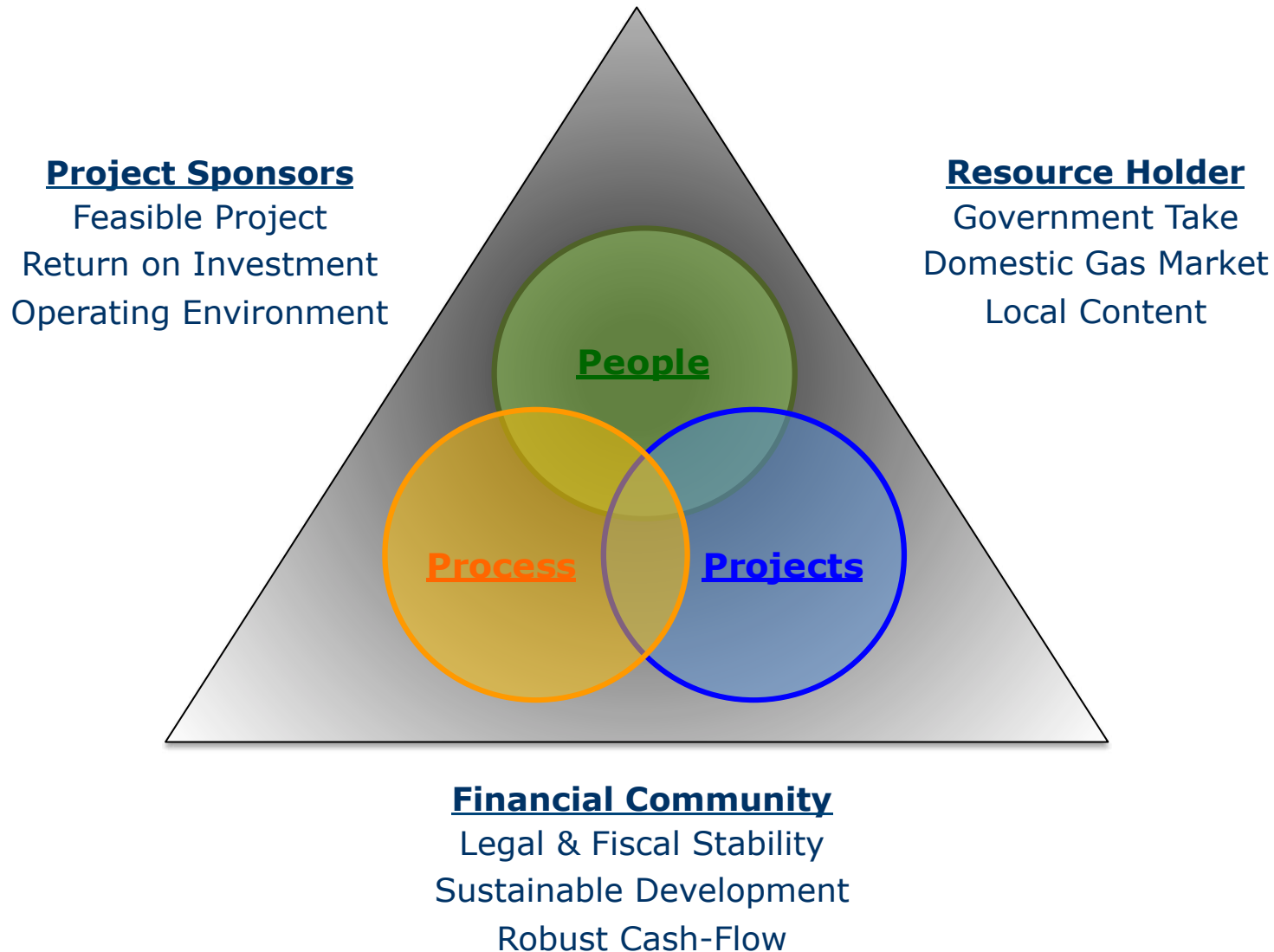
- Energy consultancy focused on strategy, business development and commercial issues
- 25+ years with Shell, ENI, Saipem, Centrica, Blue Power, Hoegh LNG, and Gas Strategies
- Advised clients on energy projects located in West, East & North Africa, South America, USA, Caribbean, Europe, Caspian, Indonesia and Australia.
- Strategy formulation, market entry plans, supply procurement, commercial negotiations
- Upstream and midstream gas/LNG/FLNG business development and commercialisation
- Gas supply planning, infrastructure development, domestic and export gas market studies
- Project contracts, sales & purchase agreements, price reviews, and dispute resolution
- Advice and implementation support focused on long term sustainable value creation
- Independent project assurance reviews and commercial due diligence
- Provision of bespoke energy training

A complete list of services, previous assignments, downloads and links at www.syenergy.co.uk

Seizing the Opportunity & Developing Sustainable Economic Growth

- **What are the challenges ?**
- **What is needed to develop them ?**
- **What are the opportunities ?**

Challenges to Sustainable Economic Growth



Challenges to Sustainable Economic Growth



Source: Economist

Challenges to Sustainable Economic Growth



2008

Gassi Touil (Algeria) – 5 Mtpa

2009

Gorgon (Australia) – 15 Mtpa

2010

PNG LNG (Papua New Guinea) – 6.6 Mtpa

QCLNG (Australia) – 8.6 Mtpa

2011

Donggi Senoro (Indonesia) – 2.0 Mtpa

Gladstone LNG (Australia) – 7.8 Mtpa

AP LNG Train 1 (Australia) – 4.5 Mtpa

Prelude FLNG (Australia) – 3.6 Mtpa

Wheastone (Australia) – 8.9 Mtpa

2012

Ichthys (Australia) – 8.4 Mtpa

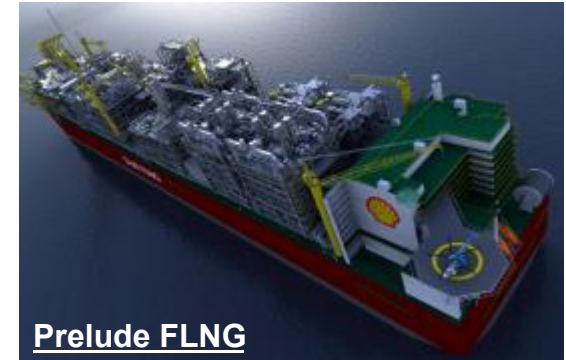
AP LNG Train 2 (Australia) – 4.5 Mtpa

Petronas FLNG (Malaysia) – 1.2 Mtpa

Pacific Rubiales FLNG (Colombia) – 0.5 Mtpa

Sabine Pass (USA) – 9.0 Mtpa

Conventional LNG Unconventional LNG Floating LNG



Prelude FLNG



Pacific Rubiales FLNG



Source: International Gas Union, PFC Energy, ICIS

Seizing the Opportunity & Developing Sustainable Economic Growth

- What are the challenges ?
- **What is needed to develop them ?**
- **What are the opportunities ?**

Unique resources... unique solutions...



- Mozambique has world scale resources... and significant needs...
- Place all eggs in one basket ? Room for diversification ? Simplification ?
- Need to be proactive with sector legislation and commercial / fiscal framework
- Stability of rules and sanctity of contracts is not a luxury
- Quality front-end projects – designing in synergies for valuable outcomes
- “Insanity = doing the same thing over and over again expecting different results”
- “You miss 100% of the goals you do not kick the ball”
- “Creativity is thinking up new things. *Innovation is doing new things*”
- “Management is doing things right; *Leadership is doing the right things*”
- **Government and industry should maintain the Gas Master Plan evergreen**

Source: Luis Steuer/Albert Einstein, Theodore Levitt, Peter Drucker

- Focused policies in education, technical and E&P industry skills development
- **S**pecific **M**easurable **A**ttainable **R**elevant **T**ime-bound policies & objectives
- ~1% of O&G revenues to be invested in qualified projects to develop SEG
- ~25% domestic gas supply obligation *with* gas supply payment guarantee *and* fiscal incentives for domestic gas supply infrastructure development
- Ambitious local content targets... drives costs up and does not create SEG
- Important to develop a track record in project financing – encourages investment
- Be patient... do not expect results overnight... but be firm on long term direction
- Evergreen Gas Master Plan and SMART Government Policies for domestic market infrastructure development and economic growth

Seizing the Opportunity & Developing Sustainable Economic Growth

- What are the challenges ?
- What is needed to develop them ?
- **What are the opportunities ?**

Economic benefits from a 10 Mtpa LNG plant...

- ~\$15 billion capital investment
- ~\$20 billion tax payments over 20 years*
- ~\$7 billion/year in additional GDP*
- ~10,000 construction jobs and ~1,000 long term jobs
- ~15-30,000 indirect new jobs
- 1% of O&G revenues = ~\$65 million/year* to be invested in SEG projects

Scope for synergies with...

- Domestic gas market infrastructure
- Power generation
- Industries: Fertilizers, Cement, Glass, Ceramics, Chemicals, Paper, Metals
- Regional East/South Africa exports

**Synergy does not happen by chance... it has to be designed
Maximize the Mozambique economic multiplier...**

LNG Investment Offers High Economic Benefits



	On-shore LNG	FLNG	sFLNG
Min Size Economic Feasibility	~5 - 10 Mtpa	~2-4 Mtpa	~0.5-2.0 Mtpa
Reserve Requirement (20 years)	5 - 10 Tcf	~2 - 4 Tcf	~0.5 - 2 Tcf
Gas Supply	Upstream Portfolio (AG & NAG)	Single or Multi-field	Single
Gas Transmission System	Multi-Field System	Direct from Field(s)	Onshore or Offshore
On-Shore Facilities	Liquids, Utilities, Living, Roads, etc.	All in FPSO and/or Platform	All in Barge and/or Platform
Storage & Jetty	~2 LNG Tanks & Expensive Jetty	LNG FPSO	Barge and/or LNG Tanker
Loading / Unloading Operations	Channel Traffic, Tugs, Port Fees	Side by Side, Tandem, Flex. Hoses	Side by Side, Tandem, Flex. Hoses
Liquefaction Tech Providers	APC, CoP, Shell, Linde, Axens	APC, Shell, B&V PRICO	B&V PRICO, Nitrogen Expander
Sponsors & Business Model	Multi-Party JV, Vertically Integrated	Multi-Party JV, New Models	Single JV, New Models
Liquefaction Service Fee	Unlikely. EPC Plant. JV Ops Control	FPSO Provider Charter & Operation	Operated/Leased or Buyer Financed
Project Permitting	Large Site, Safety Contours, NIMBY	Normal FPSO	Barge
Start-up after FID	~36 - 60 months	~48 months	~36 months
Typical \$/tonne	~ \$1,200 - \$1,800	~\$1,500	~\$700 - \$1,000

Each solution has its own requirements and benefits...
 What are the potential synergies of each solution ?
 Accelerate Production = Extra Value Creation

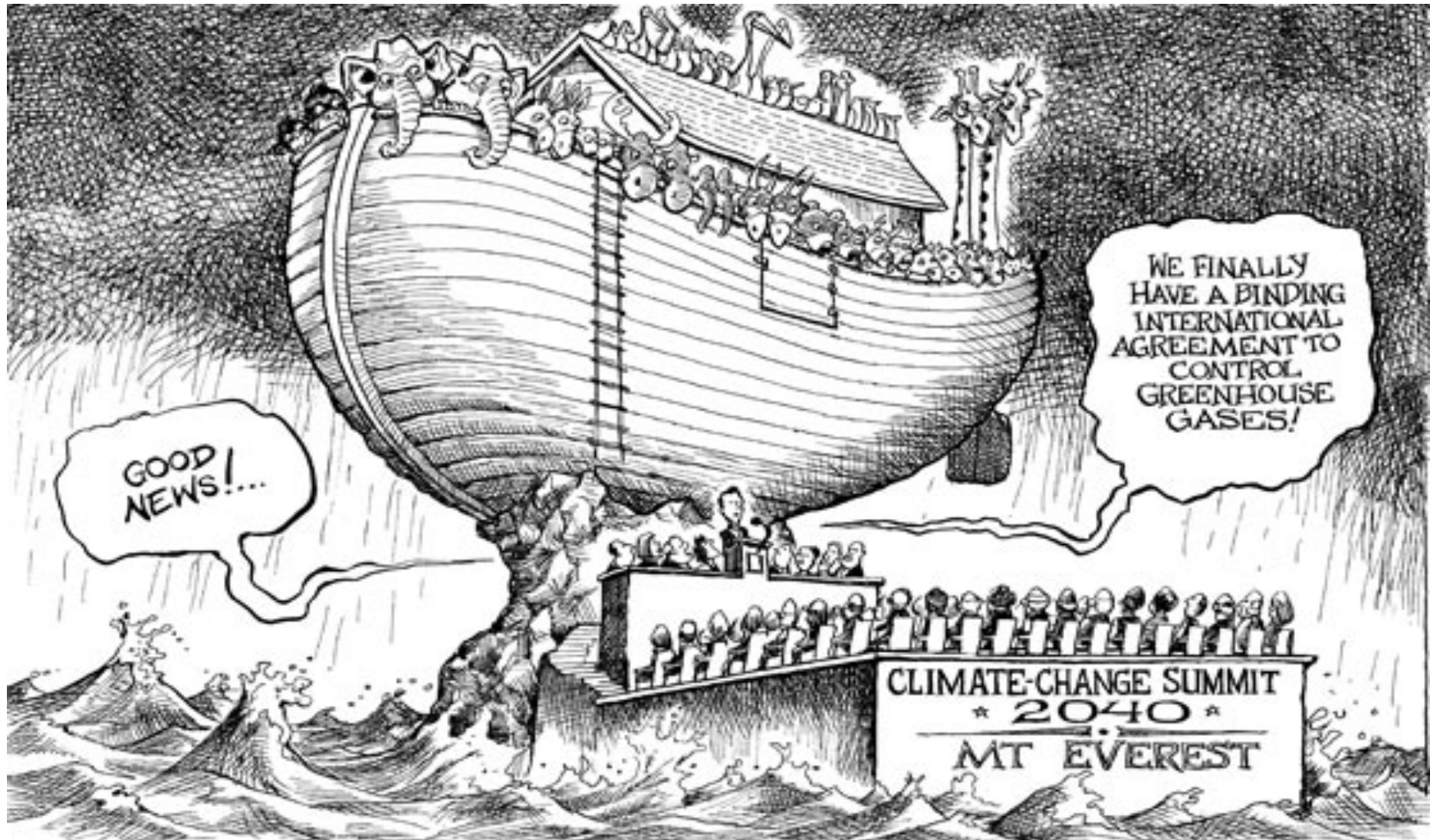
LNG Investments Can Benefit Domestic Market



- ~25% domestic gas supply obligation *with* gas supply payment guarantee *and* fiscal incentives for domestic gas supply infrastructure development
- Marine CNG scalability and flexibility can be used to create domestic and regional “gas demand nodes” which can be supplied by pipeline when economically viable

Developing the potential domestic/regional gas supply capacity *together* with LNG export is highly strategic for Mozambique

Decision making with a sense of urgency...



Source: Economist

Conclusions



- Alignment of all key stakeholders is the main challenge
- Develop and implement a successful LNG export project
- Design in synergies early for valuable outcomes
- S.M.A.R.T policies & objectives
- Blend central planning and grass roots industry/academic initiatives
- Important to develop a track record in project financing
- “You miss 100% of the goals... that you do not kick the ball”
- Be patient... no results overnight... be firm on long term direction
- *Doing the right innovative things = competitive advantage*

Thank You !

Mozambique Gas Summit 2013
Maputo, 14 March 2013

Claudio H. Steuer
SyEnergy Limited
claudio.steuer@SyEnergy.co.uk