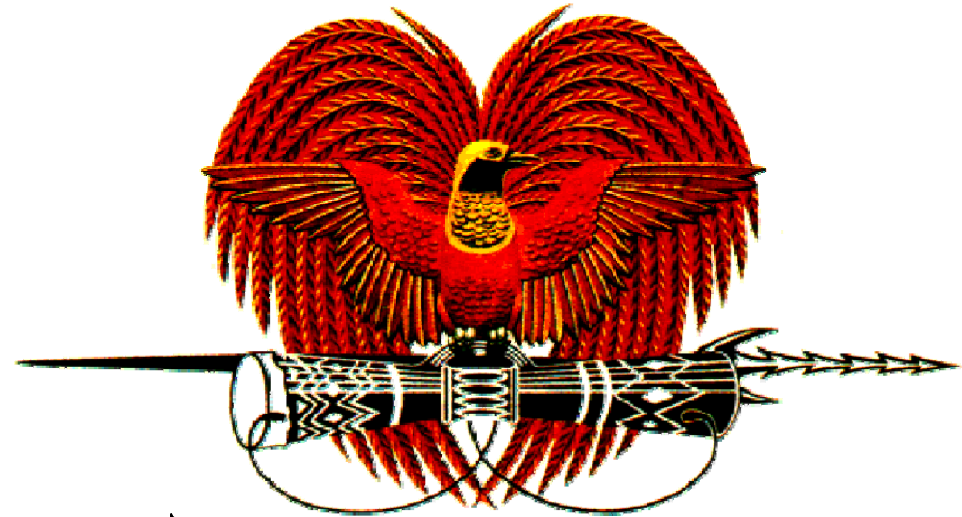


Gas Project Coordination Office



PAPUA NEW GUINEA

PNG LNG PROJECT

101 – Presentation to NEFC

Dairi Vele – Project Director

24 July 2009

The PNG LNG Project.

Why so much attention?



- ❖ The PNG LNG Joint Venture members are strong: ExxonMobil, Oil Search, Santos, Nippon, Eda Oil & MRDC
- ❖ The JV have all the required components: owns gas resources, can find funds, have access to gas sales markets, and can build LNG plants
- ❖ The preliminary LNG economics look good and critical foundation commercial agreements have been agreed
- ❖ Now in FEED (\$400M investment), the process which *may* lead to a Final Investment Decision and Construction of an LNG plant in PNG.

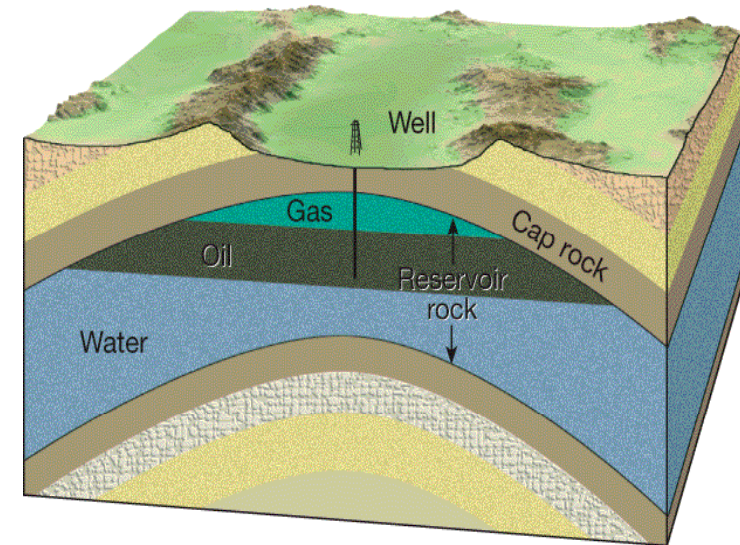
The Project prospects is high: it will normally happen

- ❖ If the Project goes ahead it will fundamentally change the fiscal position of PNG for decades
 - Project spend over \$10,000m (2007 Real)
 - 30yr State take about \$32,000m (2007 money)
- ❖ A great opportunity for the local economy and industry and should bring huge benefits to the nation.
 - Massive up-skilling and training initiative

Review of Hydrocarbon Production



- ❖ An oilfield has multiple wells drilled in a single reservoir
- ❖ Relatively expensive in PNG
 - Kutubu: 60 wells
 - Moran: 13 wells
 - Hides: 4 wells
 - Gobe: 25 well
- ❖ In reality, fields produce a combination of:
 - Hydrocarbons
 - Water
 - Nitrogen (little in PNG)
 - Carbon Dioxide (little in PNG)
 - Hydrogen Sulphide (only in Pandora in PNG)
 - Helium (little in PNG)
 - Mercury (little in PNG)



The components of all oil/gas fields :

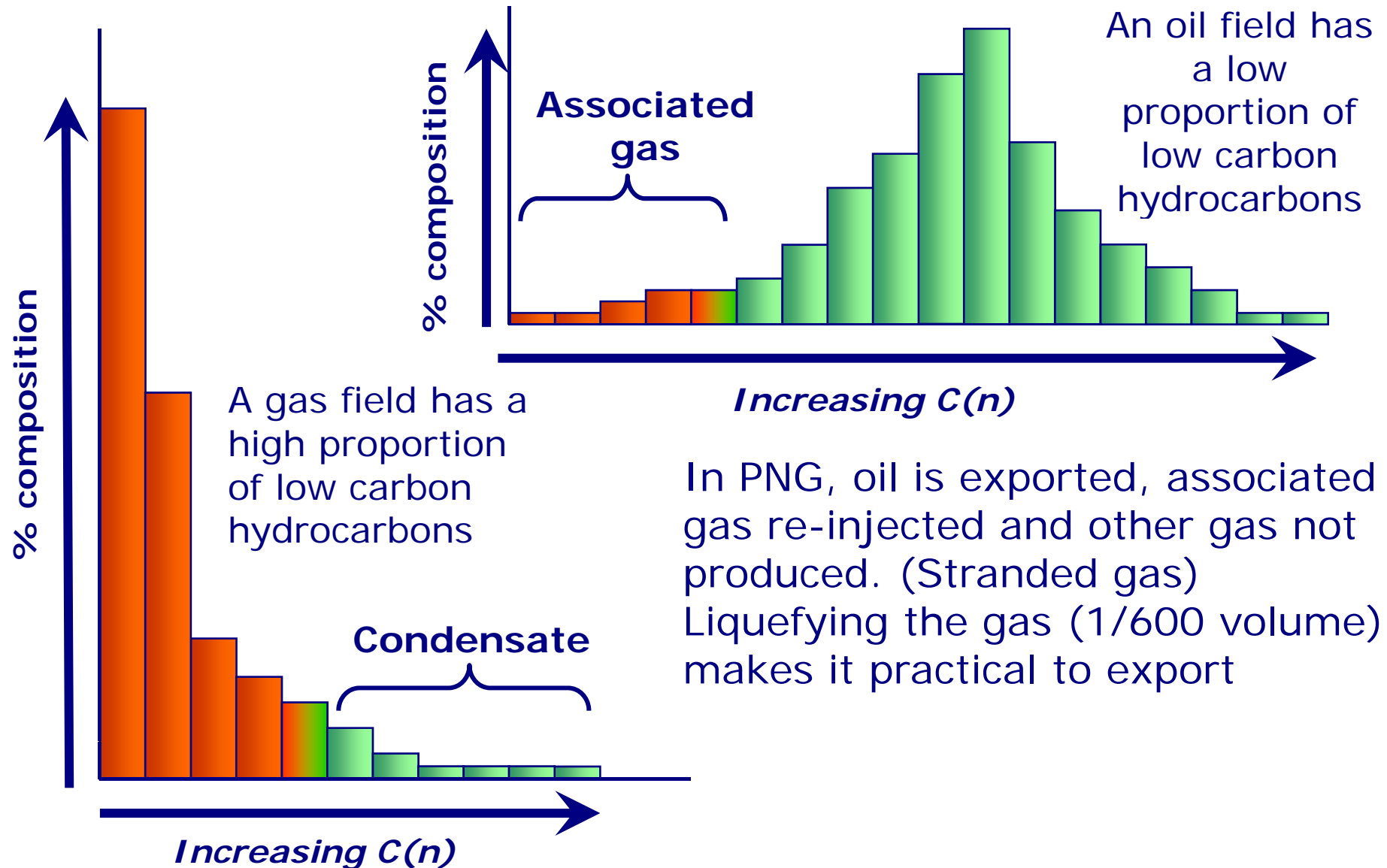
- The cap-rock or seal*
- The permeable reservoir rock*
- Source rock*
- Reservoir fluids*

Hydrocarbons-what they are



Formula (C_xH_{2x+2})	Name	State @ RT	Use
CH_4	Methane	Gas	Fuel
C_2H_6	Ethane	Gas	Fuel/Chems
C_3H_8	Propane	Gas	Fuel/Chems
C_4H_{10}	Butane	Gas	Fuel/Chems
$C_{5-10}H_{(12-22)}$	Gasoline	Gas/Oil	Petrol
C_{11-12}	Kero/Jet A1	Oil	Aviation
C_{13-17}	Light Gas Oil	Oil	Diesel
C_{18-25}	Heavy Gas Oil	Oil	Bunker fuel
C_{26-38}	Lubs & waxes	Thick Oil	Lubrication
C_{38+}	Residuum	Vey thick Oil	Tar, asphalt

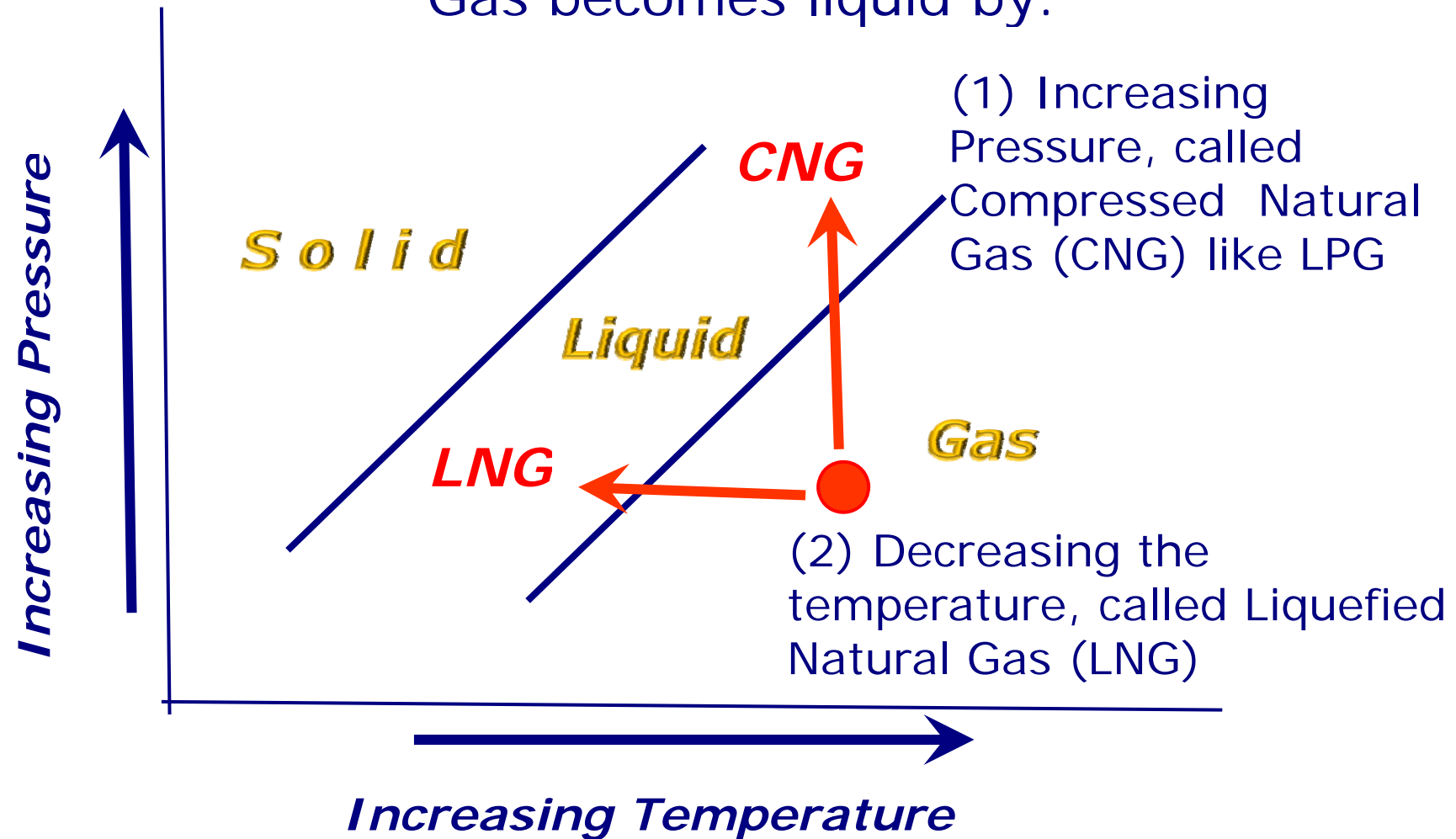
The composition of Oil and Gas fields



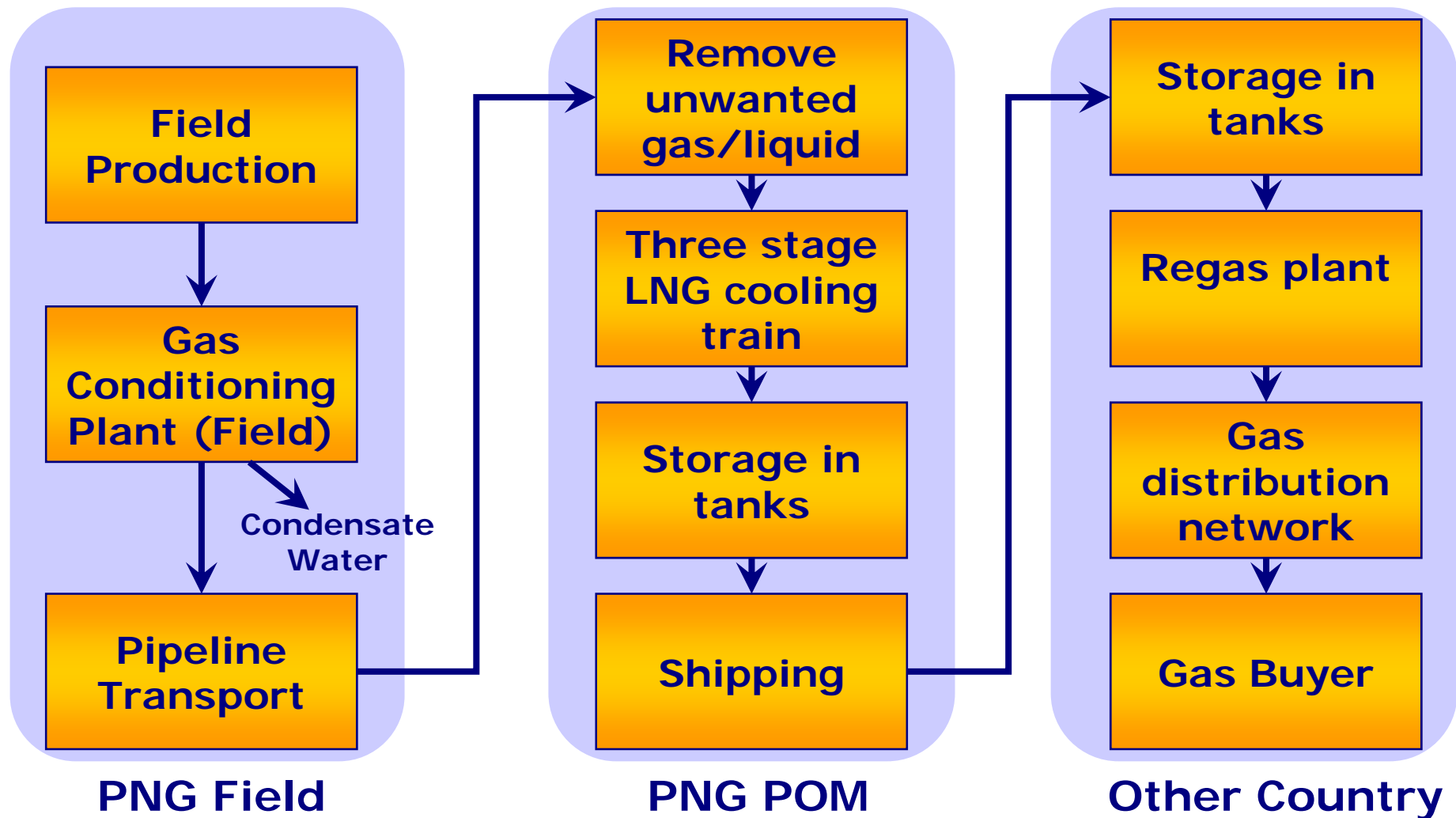
Changing Gas to Liquid (Pressure/Temperature relationship)

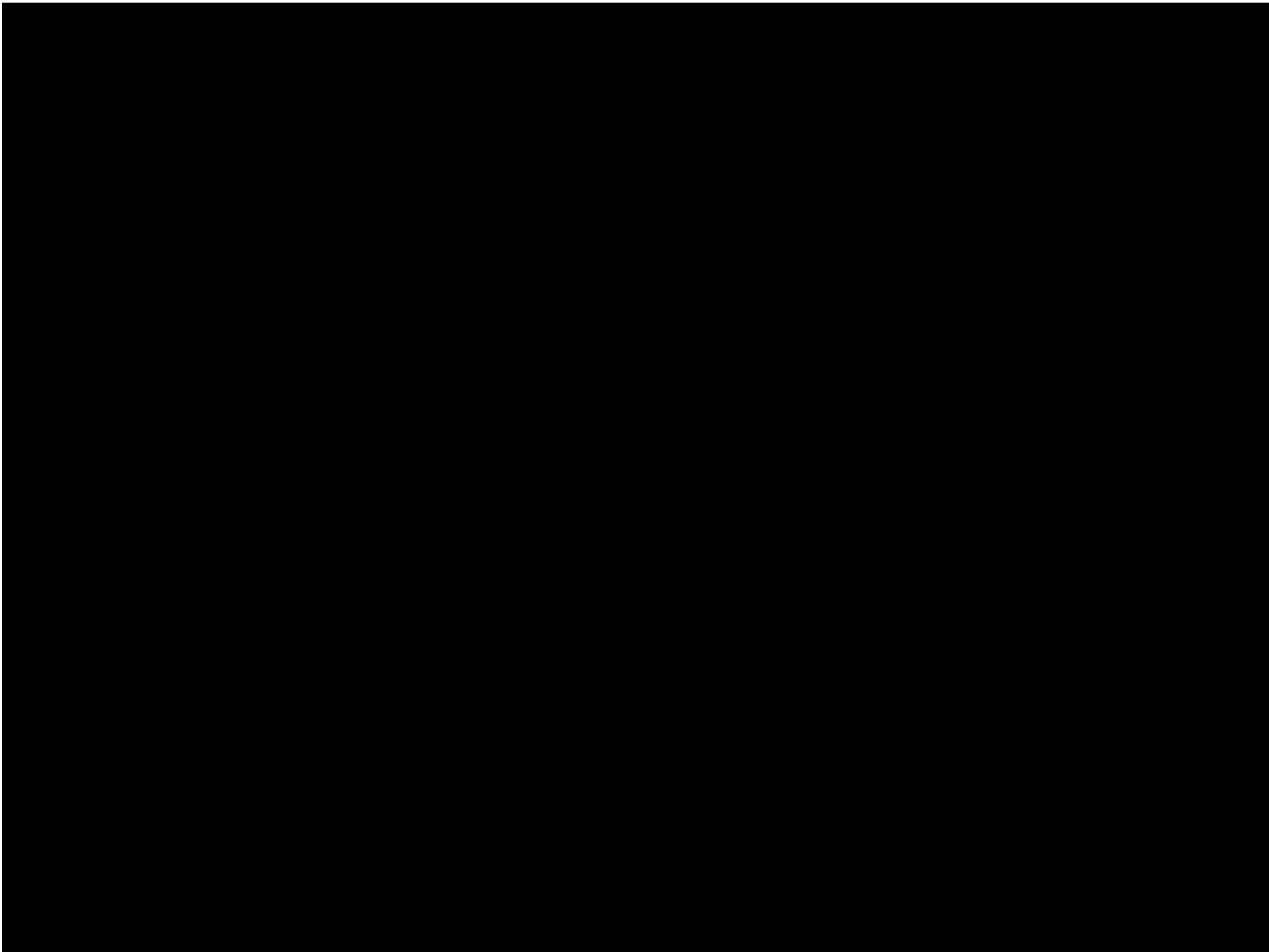


Gas becomes liquid by:



The LNG Process





The Value of LNG



-
- ❖ Delivered LNG is used for:
 - Power generation in gas fired power generators
 - City gas (cooking, heating)
 - Industrial consumption (smelters, petrochemicals)

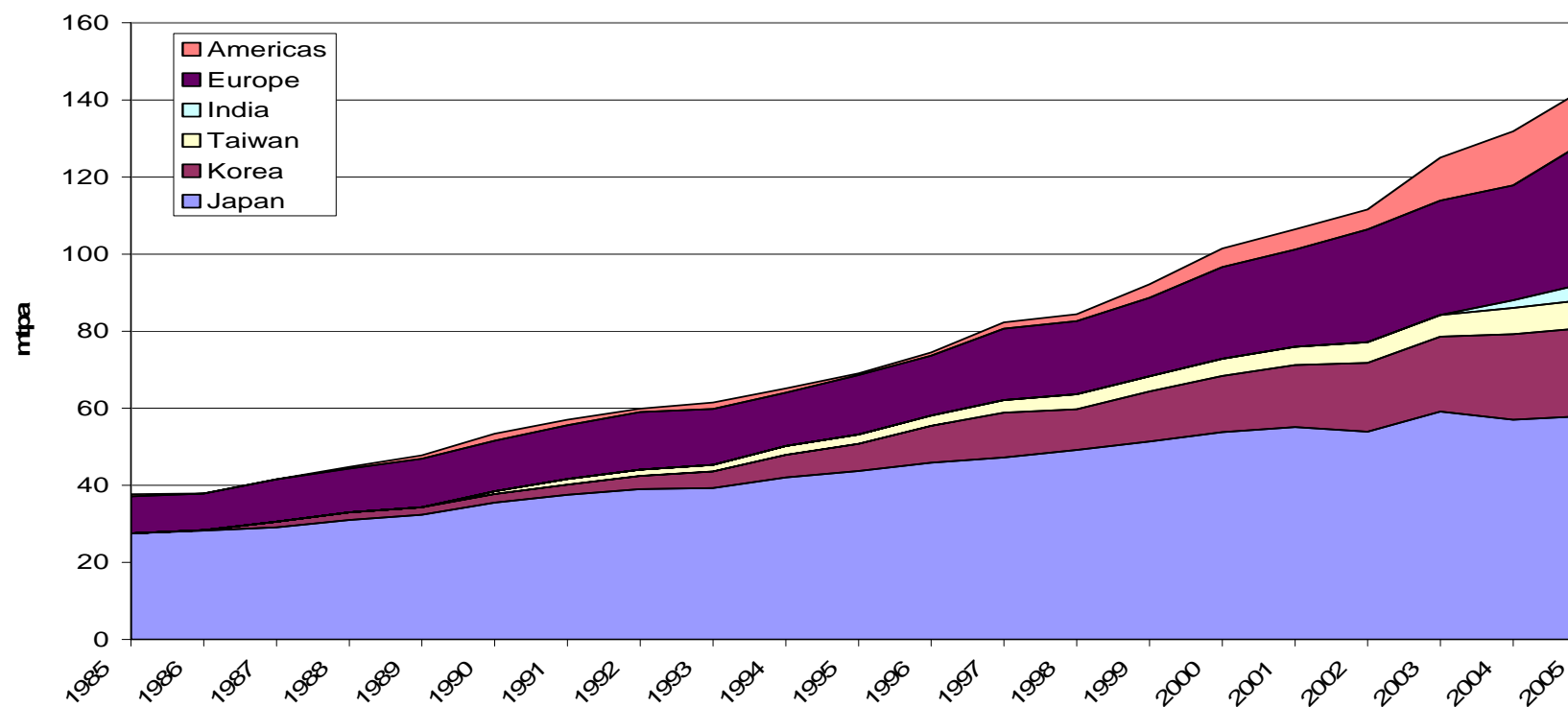
 - ❖ LNG (like oil) is aimed at the Global market
 - Not tied by pipelines
 - Swaps and arbitrage

 - ❖ PNG LNG will target Japan, Korea, Taiwan, China and India.
 - JCC Market (linked to oil price)

Historical LNG Demand



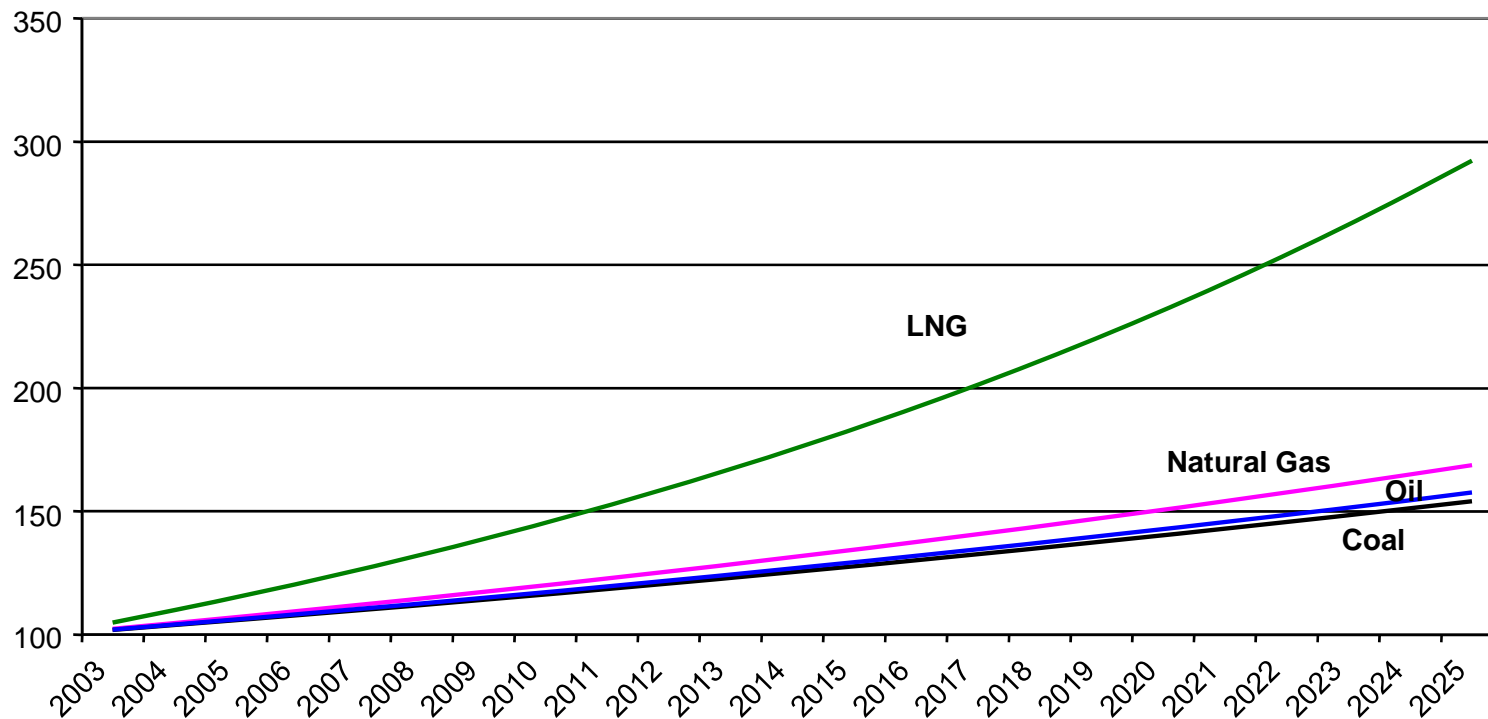
Global LNG Imports



Future LNG Demand

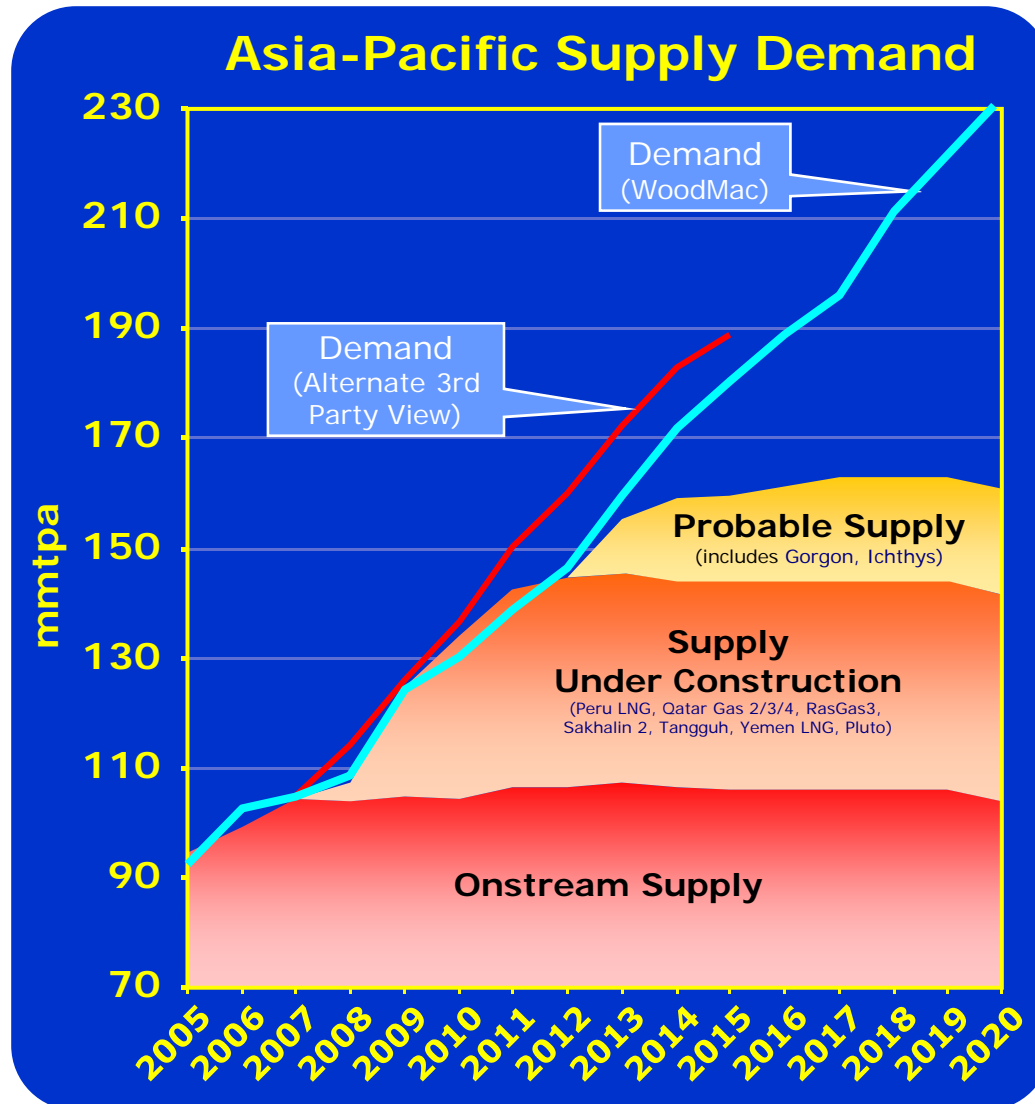


Growth Comparison by Fuel, World 2003-2025
(Base 2002=100)



Source: Energy Information Agency (EIA) International Energy Outlook 2005

The Regional LNG Market



❖ Good Points for PNG LNG

- Predicted to grow
- Very strong demand in large emerging countries (India & China)
- Delays to competing projects (good for us)
- Indonesia supply reductions
- Strong LNG prices linked to oil price

❖ Bad Points for PNG LNG

- Global LNG alternatives, particularly AU & ME
- Alternative untapped sources available
- Security of supply and construction risk
- High delivery cost to plant

Kenai, Alaska



Startup

June 1969

Capacity

1.5 MTPA

Owners

ConocoPhillips,
Marathon

Atlantic LNG



Startup

Train1	1999
Train 2& 3	2002/2003
Train 4	2006

Capacity, MTPA

Train 1	3.0
Train 2	3.3
Train 3	3.3
Train 4	5.2

Owners

Atlantic LNG
BP
British Gas
Repsol
NGC
Tractebel

Idku, Egypt



Startup

Train 1 May 2005

Train 2 Sept 2005

Capacity

4.1 MTPA

4.1 MTPA

Owners

BG,

Petronas,

Egyptian Natural Gas

Egyptian General

Petroleum.

Darwin, Australia



Startup

Dec 2005

Capacity

3.7 MTPA

Owners

ConocoPhillips,
ENI,
Santos,
INPEX,
Tokyo Electric
Tokyo Gas

Sites under construction



❖ Large construction site

- Reducing in size when facility finished



LNG carriers are Big Ships



- ❖ Moss Tanker
 - 290m x 48m x 11m
- ❖ New membrane
 - 300m x 50m x 12m



- ❖ Will require new ports, special tugs, and other special handling services

Oil & Gas fields in PNG



Many oilfields are nearing the end of their life

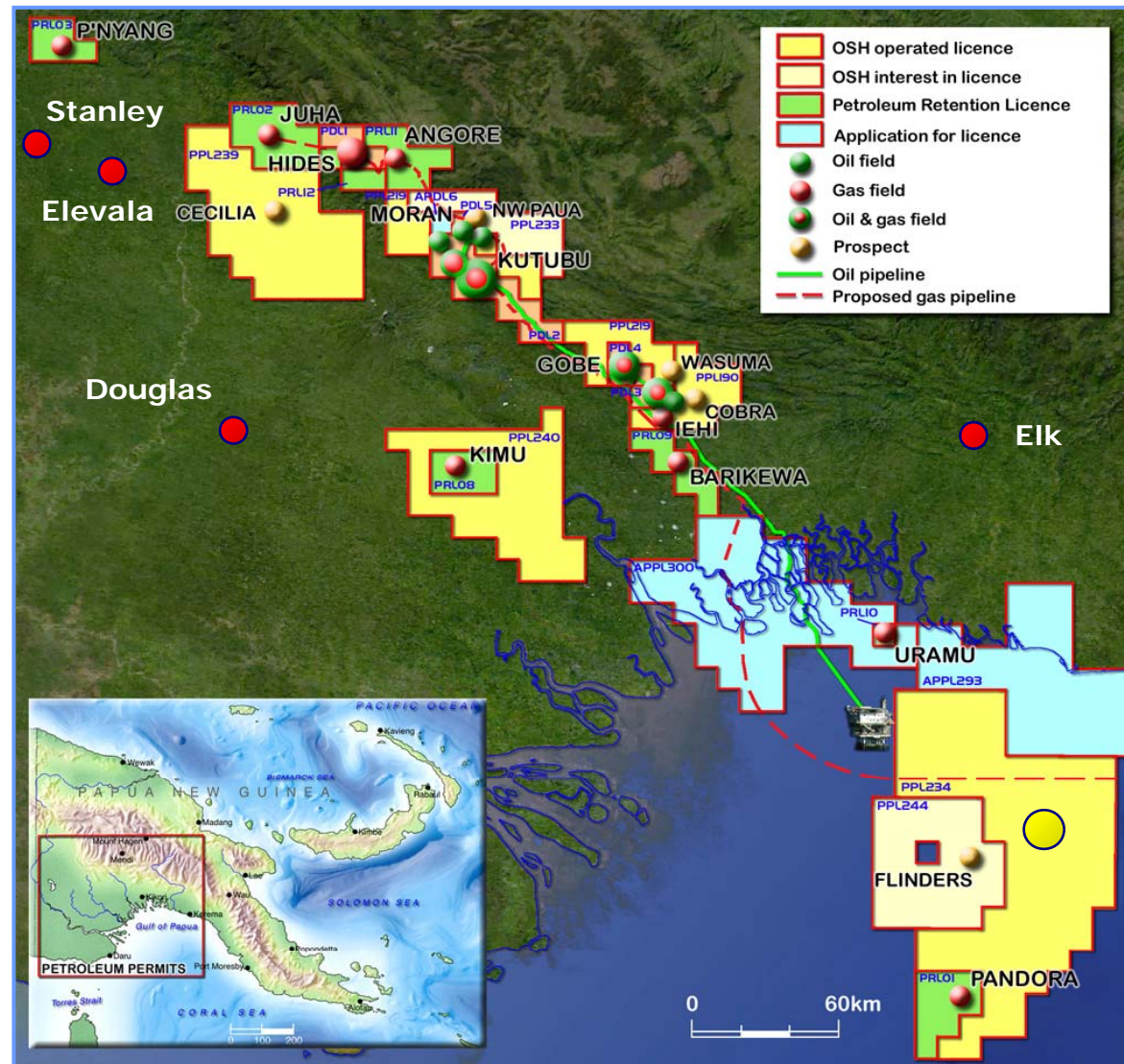
All gas fields are incidental to oilfield exploration

All gas fields are currently stranded, (except HGTE)

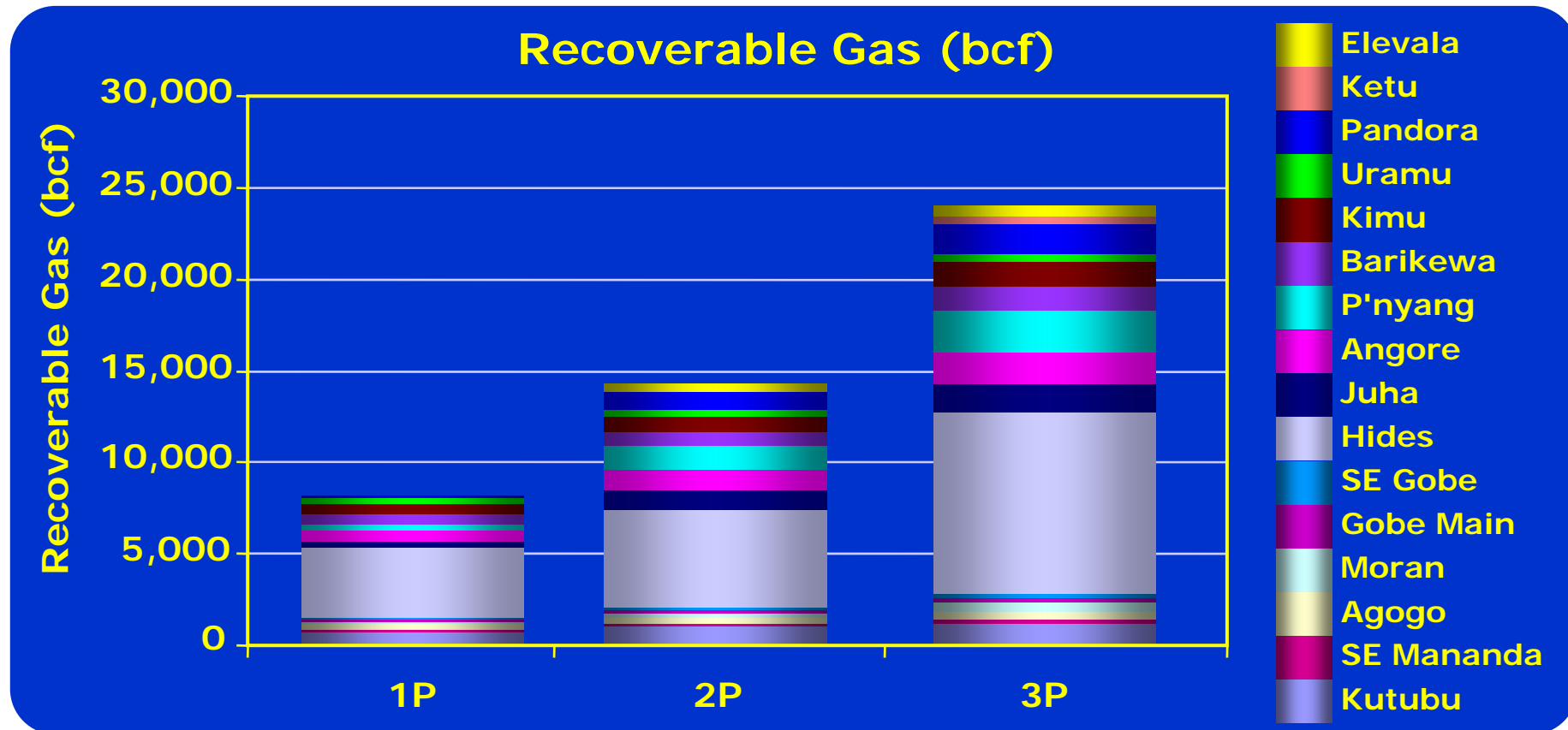
The major certified gas fields are:

Hides, Juha, Angore, Kutubu and Gobe

These are dedicated to the PNG LNG Project.

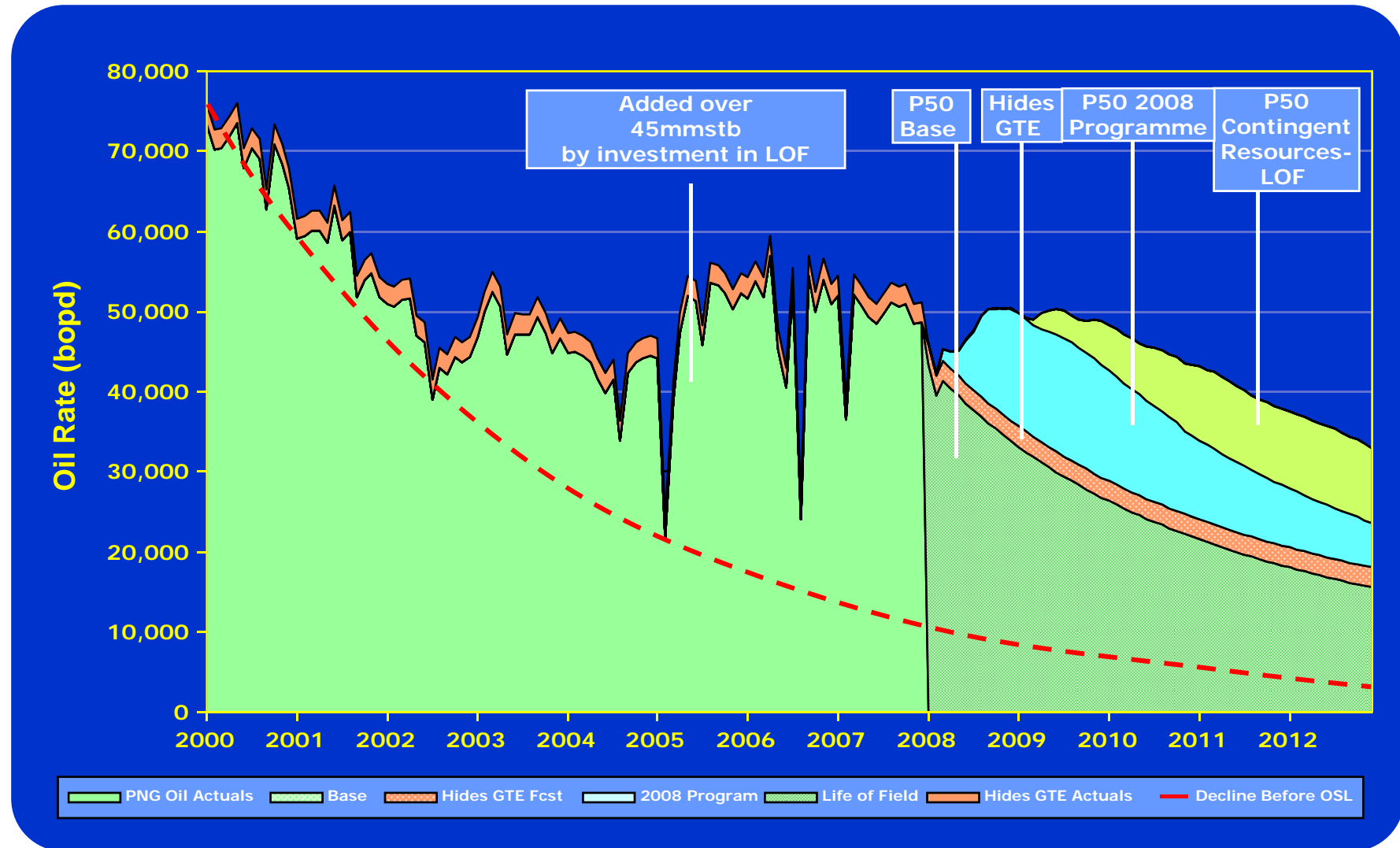


PNG Gas Resources Q3 2006

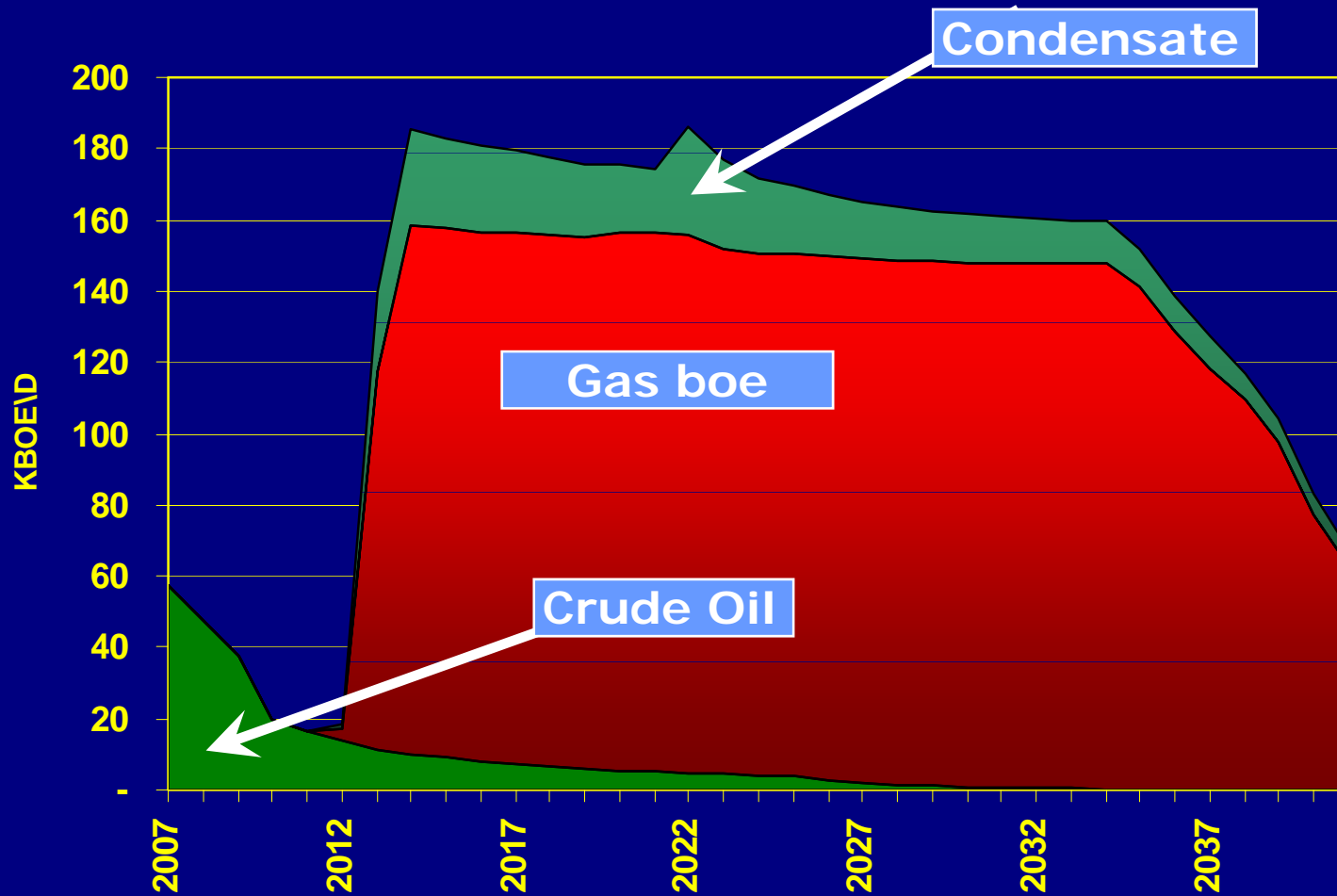


- ❖ 1P Proven “bankable” resources called reserves: 7TCF
- ❖ 2P Proven and probable resources, or likely resources: 14TCF
- ❖ 3P Proven, probable and possible resources: 24TCF

PNG Oil Production



PNG Oil & LNG Production



Project Overview.

Production Facilities and Pipelines



❖ Fields:

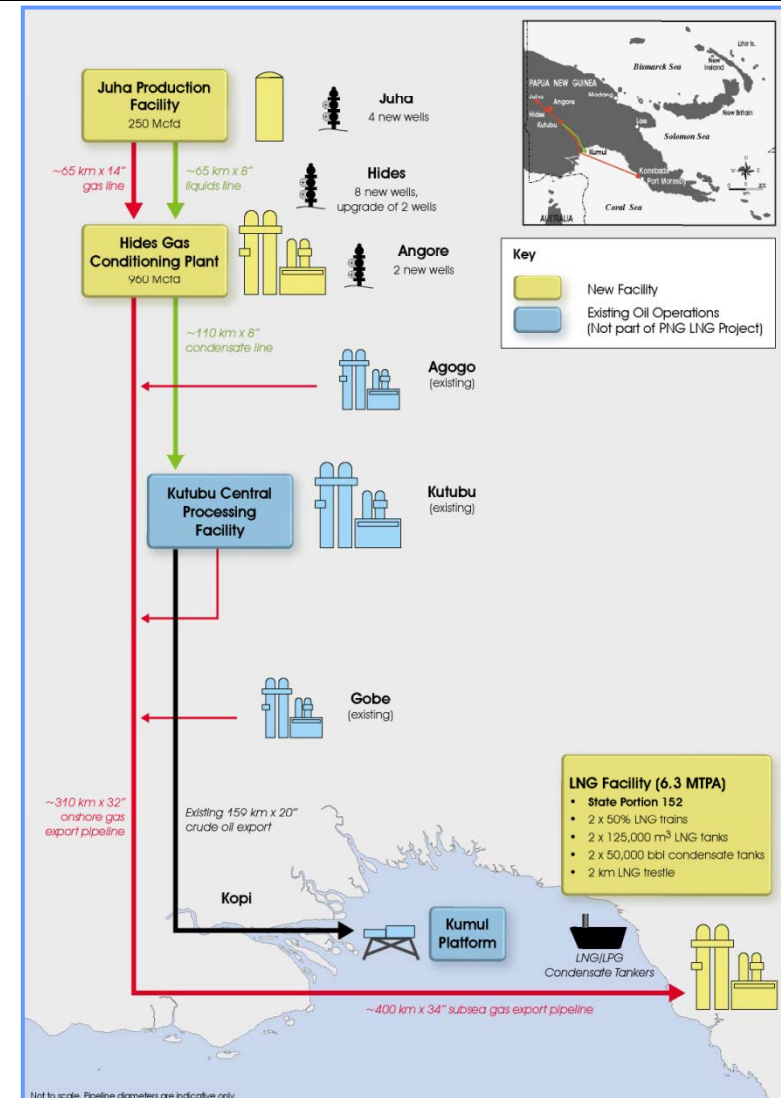
- Hides , Angore
- Kutubu, Moran, Gobe (using oil wells)
- Juha (later)

❖ Gas production facilities:

- Hides Gas Conditioning Plant (HGCP)
- Juha Production Facility (JPF) ~ year 10
- Amendments to Oil Field processing plants

❖ Main Pipelines:

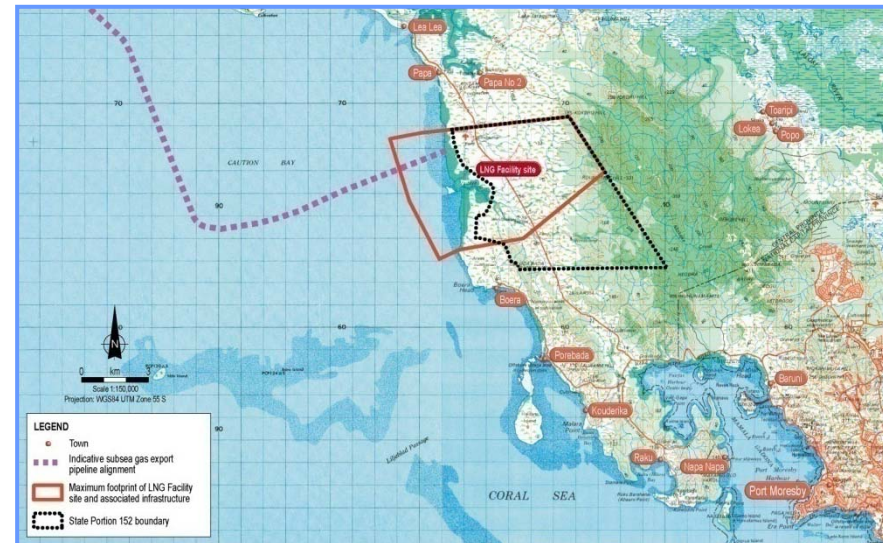
- Gas Pipelines
 - ❖ Juha to Hides Gas Conditioning Plant (HGCP)
 - ❖ HGCP to Omati River landfall
 - ❖ Omati River to LNG facility site, (POM)
- Condensate and Liquids Pipelines
 - ❖ JPF to HGCP (liquids)
 - ❖ HGCP to Kutubu Central Processing Facility



Project Overview. The LNG Facility



- ❖ LNG facility will be on Portion 152
- ❖ LNG facility—
 - Gas Scrubber
 - Twin 3.4MT/yr trains
 - LNG is stored in insulated tanks at the facility
 - 2km LNG loading jetty
 - Approx. 35 x 185kt shipments/year
- ❖ Supporting facilities and infrastructure:
 - Large camp for construction (~7,500)
 - Permanent Operations camp(~500)
 - Material offloading facility
 - Upgrade of existing road between LNG facility and Port Moresby
 - Rerouting of the road around the LNG facility
 - Very large temporary lay-down areas during construction only



Key Commercial Concepts



❖ Financial

- Total Project Costs (w/o fees) over US\$10-11b (2007 Real)
 - ❖ Very big project for any country
 - ❖ Biggest LNG Project Finance arrangement ever
- State back-in will be about 19.4%

❖ Powerful JV strength

- State and L/O
- EM experience & size
- OSL with PNG experience
- STO with AU experience

Estimated final Equity
Participants (after
government back-in)

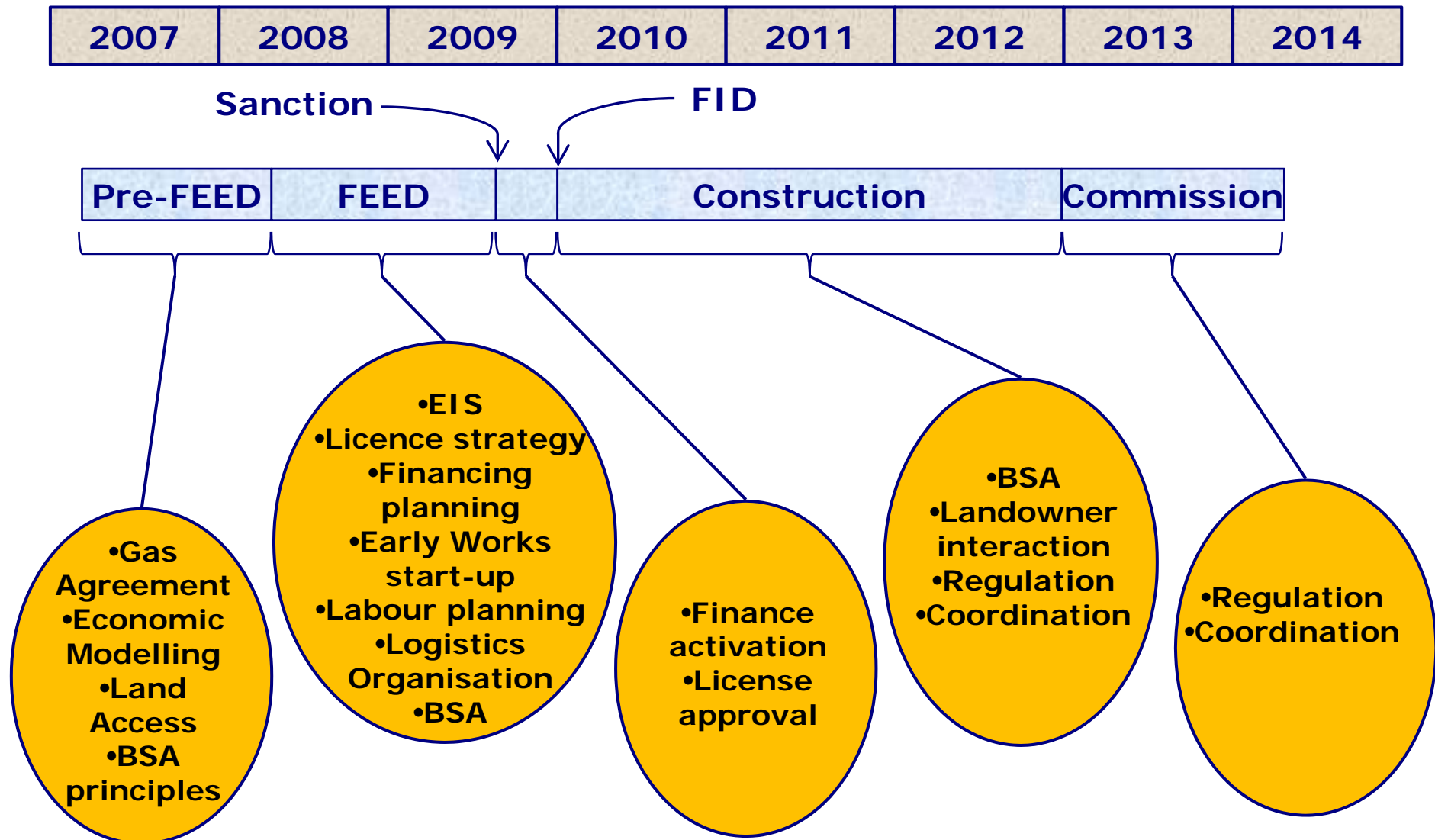
JV Partners	
ExxonMobil (LNG Operator)	34.0%
Oil Search (Oil Operator)	27.8%
State & L/O	19.4%
Santos	14.4%
Nippon	4.4%

Economic Importance of PNG LNG



- ❖ ACIL Tasman Independent Economic Impact Report 6 February 2008
 - Based on a \$36:65:100 oil price model
 - *“Affects economy of PNG and its balance of trade situation profoundly”*
 - GDP will more than double (K8.65bn (2006) to K18.2bn average during production phase)
 - Oil & gas exports increase 4 fold
 - Huge cash flows to Government – national and provincial - and landowners through tax, royalties, levies and equity participation (direct cash payments of about K100bn to PNG Gov't / Landowners over 30 years)
 - Economic (Gas) Agreement allows quick return to the State
 - More than fills the gap left by other projects decline
 - Up to 7,500 jobs in initial phase, (latest estimate is higher), 20% by nationals; 850 full time positions, developing national workforce over time
- ❖ Builds initial infrastructure for national gas development
 - Other gas developments almost certain to follow
- ❖ Step change for PNG's credibility internationally
 - Easier access to finance for secondary projects

State Schedule and Milestones



State Deliverables



- ❖ Some important milestones already delivered
 - Gas Agreement
 - Amendments to 9 Acts and 3 Regulations
 - ❖ No exemption from Work Permit or Visa process (first “Project” ever)

- ❖ Many State Deliverables critical to the Project’s success

- ❖ Many different Departments, Agencies and Government Offices impacted

DPE

DLPP

DEC

IRC

Treasury

PNG Ports

Foreign Affairs

IPA

NAQIA

IPBC

Customs

Immigration

BPNG

NEFC

Statistics

DTI

DLIR

LLG

Provincial Govs

CAA

Climate Change

AG

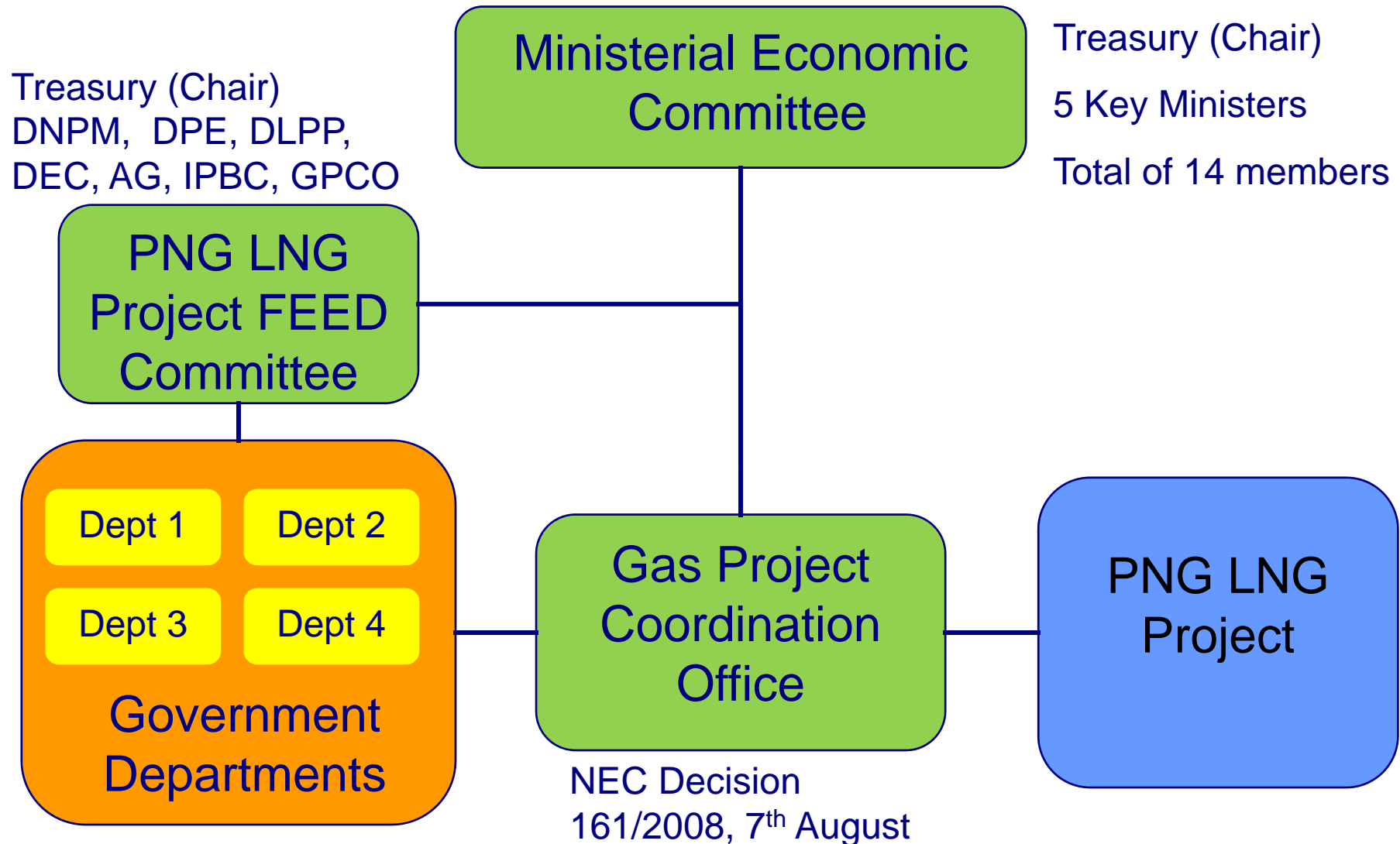
Education

DNPM

Works

- ❖ State have created the Gas Project Coordination Office to assist in coordinating this

Gas Coordination Structure



GPCO Organisation



Dairi Vele
Director

Key advisors

Department
Secondees

Brian Rapson
Coordination

Carl Okuk
Legal

Lars Mortensen
Financial

Support Staff as required

- ❖ Established by NEC Decision 161/2008 on the 7th August
“to be the focal point for the Project for all contact and engagement with the State, with the responsibility for the management, leadership, facilitation and coordination of all the technical inputs from respective State Agencies”
- ❖ Will be located on 11th floor Pacific Place

GPCO Key Deliverables



❖ Coordination

- Work with Project to understand requirements
- Work with government agencies to plan their position.
- Facilitate meeting between the State and the Project
- Document process, milestones, issues, minutes

❖ Planning

- Develop Integrated Work Plan for State deliverables
- Maintain the “issues database” related to State deliverables
- Watch for opportunities for the State falling off the “train”

❖ Communication

- Keep the impacted government agencies up to date with Project and the Integrated State's Progress
- Point of contact for both the State and the Project



THANK YOU