



GTL Products From Fuels to Petrochemicals

World Gas Conference
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Qatar Petroleum

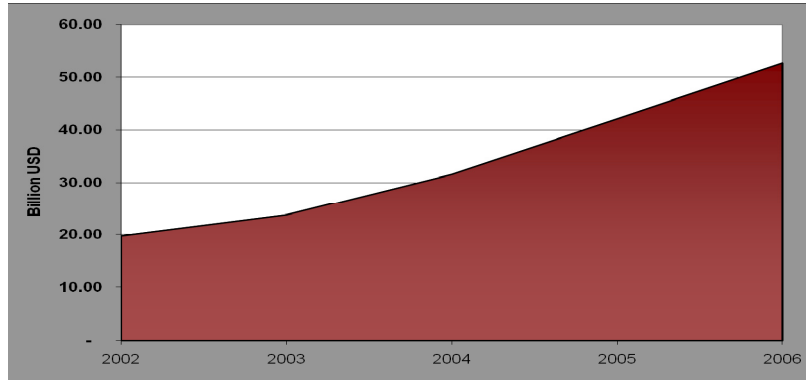


Overview of Qatar Economy

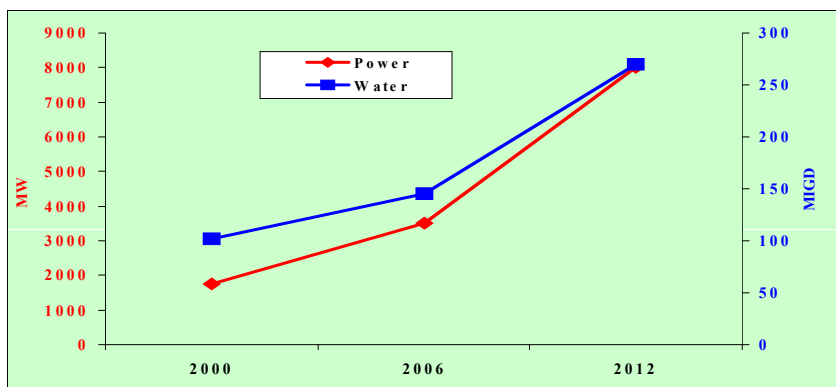
- **Qatar is a hydrocarbon-based economy**
- **60% of Qatar's total GDP is generated by the oil and gas sector**
- **Diversification strategy within hydrocarbon sector has been implemented**
- **Contribution from LNG and petrochemical projects has increased significantly**

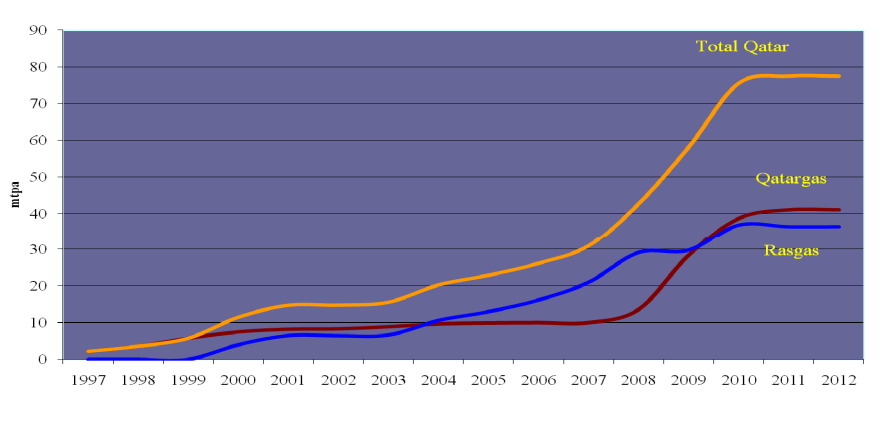


Qatar's GDP 2002 - 2006



Electricity and Water Demand





Qatar's GTL Projects

PROJECT	PARTNER	RELATIONSHIP	CAPACITY (bbls/day)
ORYX	SASOL	PARTNER	34000
PEARL	SHELL	SPA	140000



ORYX GTL Project Details

Gas Feed 320 MMSCF/DAY from Al
Khaleej gas project

Start up Date 2007

Cost approx \$900 million



ORYX Production Slate bbls / day

<u>Product</u>	<u>Original Slate</u>
LPG	3000
Naphtha / Condensate Blend	5500
Diesel / Gasoil	26500
Total	35000



ORYX Production Slate bbls / day

<u>Product</u>	<u>Planned Slate</u>
LPG	3000
Pet. Chem. Naphtha	5500
Jet Kerosene	5000
Diesel / Gasoil*	21500
Total	35000

*Low emission green blend



PEARL GTL

Gas Feed 1600 MMSCF/DAY from dedicated
own offshore facilities

Start up Date 2011

Cost approx \$18 billion



PEARL Production Slate

bbls / day

Product (Tonnes/day)	Original Slate	Product (bbls/day)	Original Slate
Propane	1600	Naphtha	39000
Butane	1400	Diesel	82000
Sulphur	600	Field Condensate	52000



PEARL Production Slate

Product day)(Tonnes/	Planned Slate	Product (bbls/day)	Planned Slate
Propane	1600	Naphtha	25000
Butane	1400	Jet Kerosene	7000
Ethane	2500	Diesel	38000
Sulphur	600	Lube Base oils	32000
		LDF	6000
		Field / plant Condensate	58000



Range of GTL Products

- **LPG's**
- **GTL Naphtha**
- **GTL Kerosene**
- **GTL Gasoil**
- **N-Paraffin C10 – C13 and N-Paraffin C14 – C17**
- **Waxes**
- **Waxy Raffinate**



Use of GTL Products LPG's and Naphtha

- Propane and Butane standard uses as domestic fuels plus MBTE;
- GTL Naphtha – i.e. straight chained – ideal steam cracker feed with higher ethylene and propylene yields than crude oil based naphtha;



Use of GTL Products Kerosene

- **Burning fuel - Lamp oil, greenhouse;**
- **Jet Fuel**
- **Precursor for some n-paraffin detergent uses;**



Use of GTL Products Gasoil

- **Gasoil improver;**
- **Chloro-paraffines;**
 - **Uses as PVC Plasticiser extender;**
 - **Fire Retardant in Plastics;**
 - **Paint extender;**
 - **Solvent in paper industry;**
 - **Source of N-paraffin – see below**



Use of GTL Products Gasoil – N-Paraffin

- C10 to C13 – Light Detergent Feedstock;
 - Linear alkyl Benzene
 - detergent precursor;



Use of GTL Products Gasoil – N-Paraffin

- C14 to C17
 - Heavy Detergent Feedstock Paraffin ;
 - Inks;
 - Cosmetics;
 - Cutting oils;
 - Solvents;
 - Drilling oil components



Use of GTL Products Waxes and Waxy Raffinate

Waxes

Hot melt adhesives;

Inks;

Cable filling;

Graphic Art Mediums

Waxy Raffinate

Synthetic Base oils



Premiums for GTL Products

<u>Product</u>	<u>Comparison</u>	<u>Premium</u>
GTL Naphtha	AG. Open Spec.	\$1 / bbl
GTL Kerosene	AG Kerosene	\$ 0
GTL Gasoil	AG. 0.05% S	\$2 / bbl
GTL Base Oils	Group 3/4 Base Oil	
GTL Wax		
GTL N-paraffin		



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The Global Energy Challenge:
Reviewing the Strategies
for Natural Gas

Thank You