

# LPG in Brazil : At a Crossroads

GLOTEC – LAM

Global Technology Network Latin America

Ernst BRANDSTAETTER – August 2017



**AIGLP**

Asociación Interamericana de Gas Licuado de Petróleo  
Associação Inter-Americana de Gás Liquefeito de Petróleo



**Gás LP**  
ENERGIA  
EXCEPCIONAL



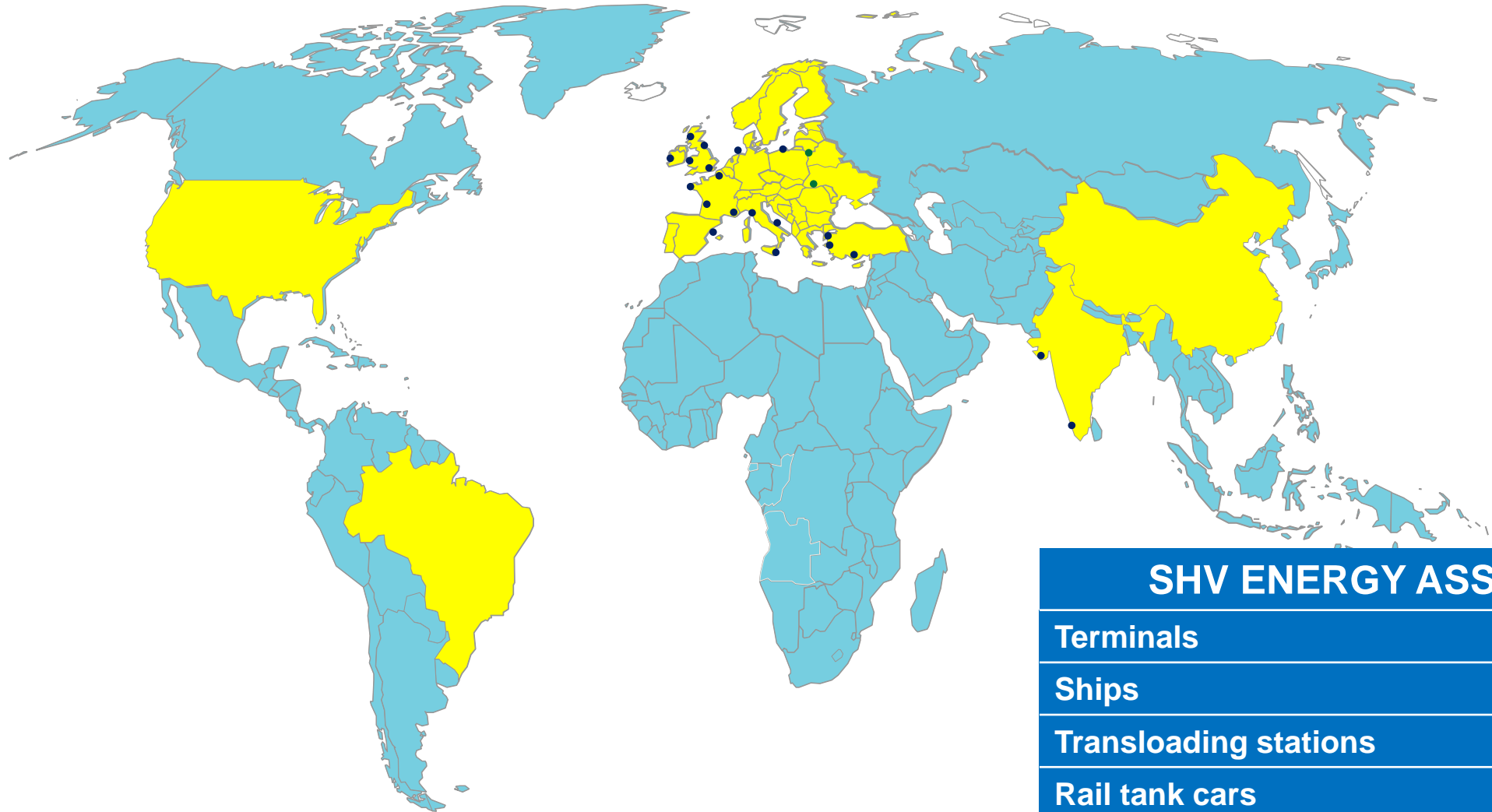
**WLPGA**

# TABLE OF CONTENTS

- SHV Energy
- Global LPG demand
- LPG SD balance by region
- LPG seaborne flows
- LPG price benchmarks
- Brazil
  - Market snapshot
  - LPG SD balance
  - Infrastructure and assets
  - Summary of facts
- India
  - Market snapshot
  - Market shares
  - LPG SD balance
  - Infrastructure and assets
  - Tailor-made supply system
  - Challenges and risks
- Conclusion



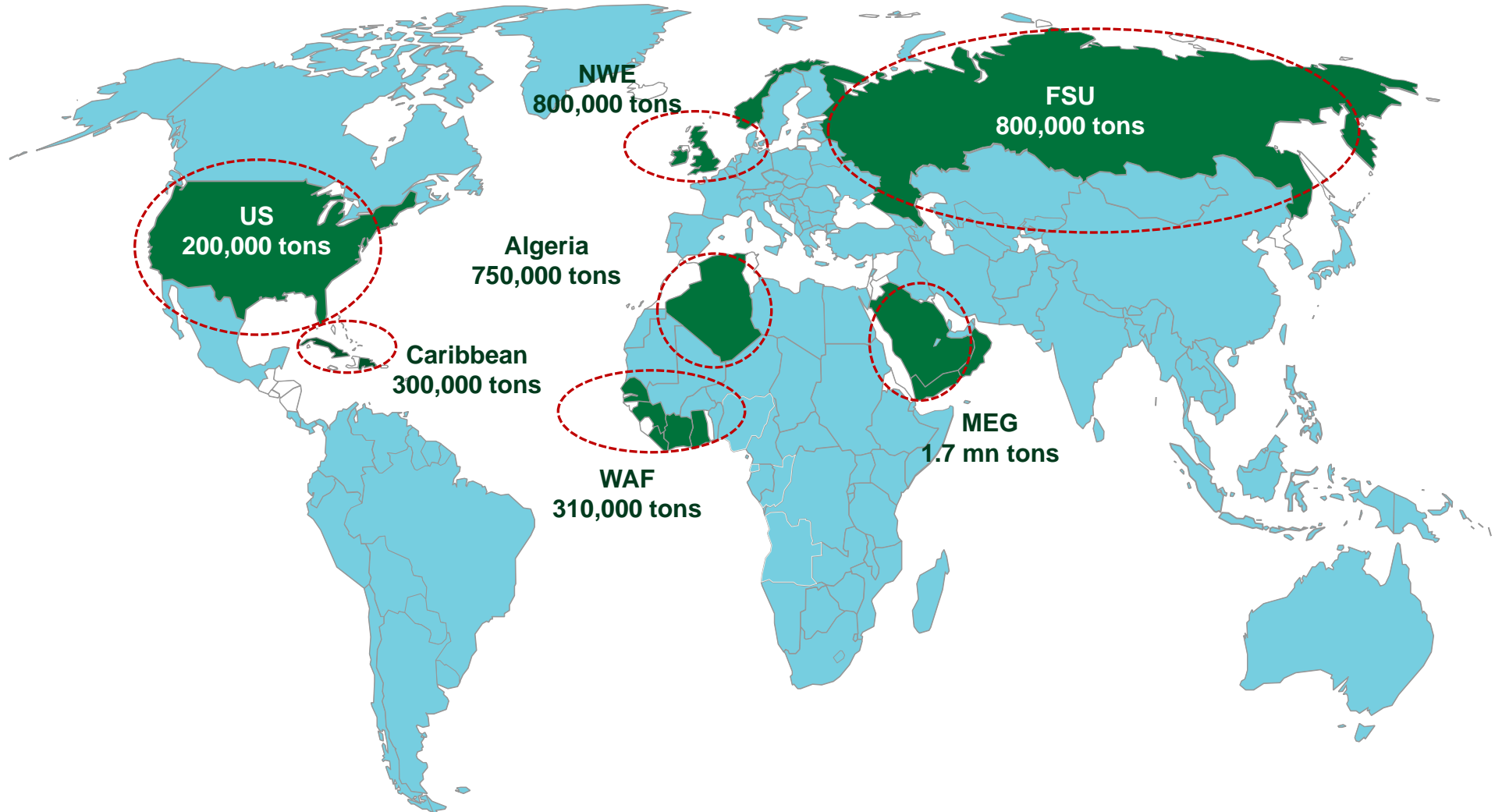
# SHV ENERGY IN THE WORLD



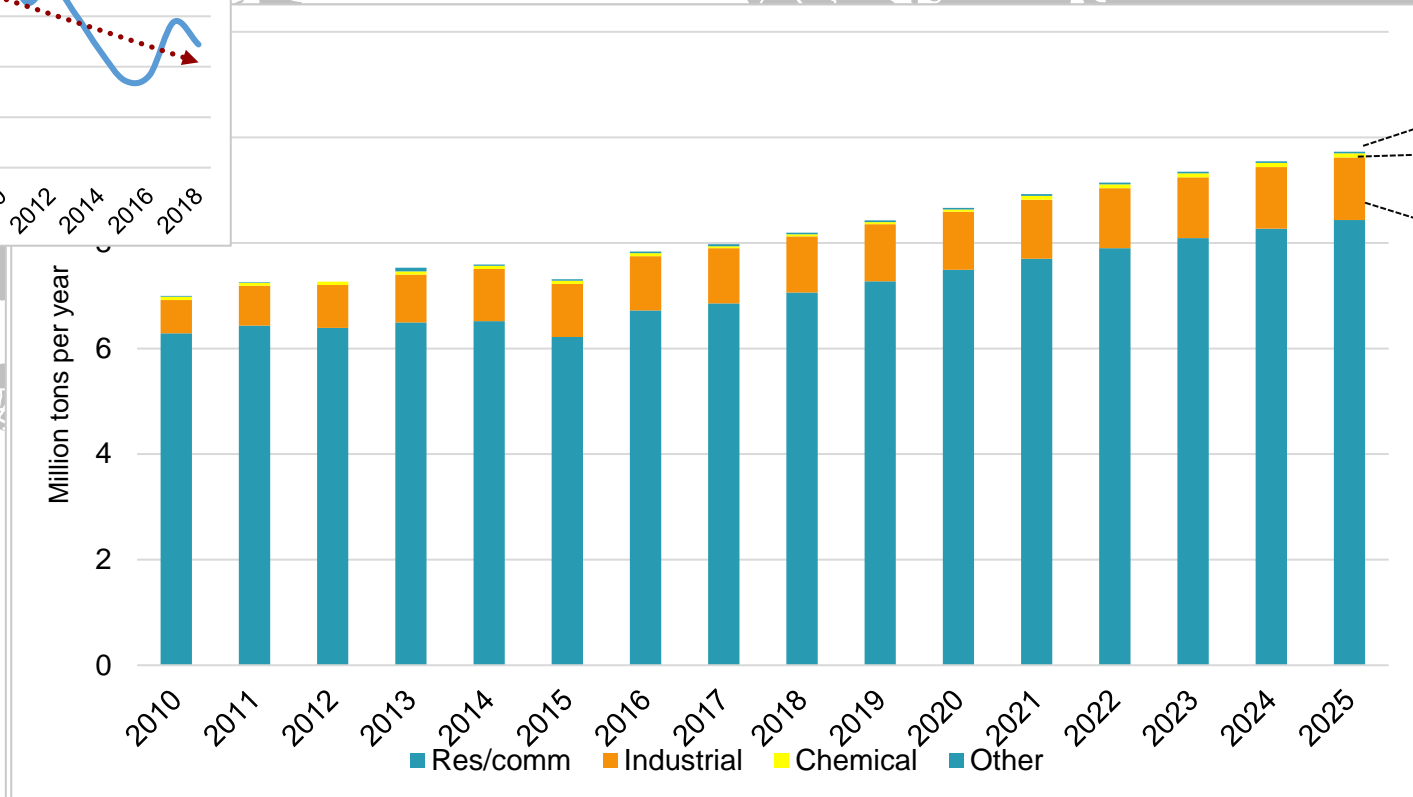
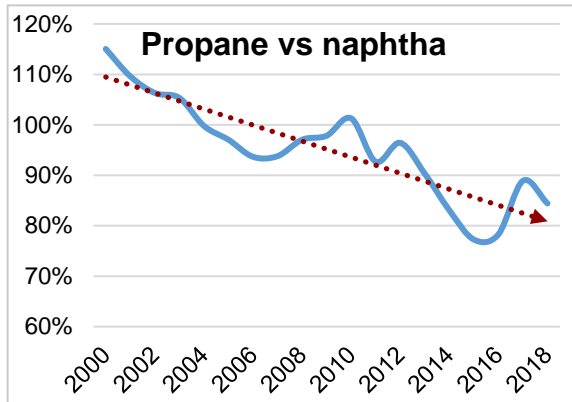
## SHV ENERGY ASSETS

Terminals	20
Ships	10
Transloading stations	2
Rail tank cars	500
Physical Volume (mn MT)	5.5

# SUPPLIER ANALYSIS (SEABORNE) – 2016



# GLOBAL LPG DEMAND



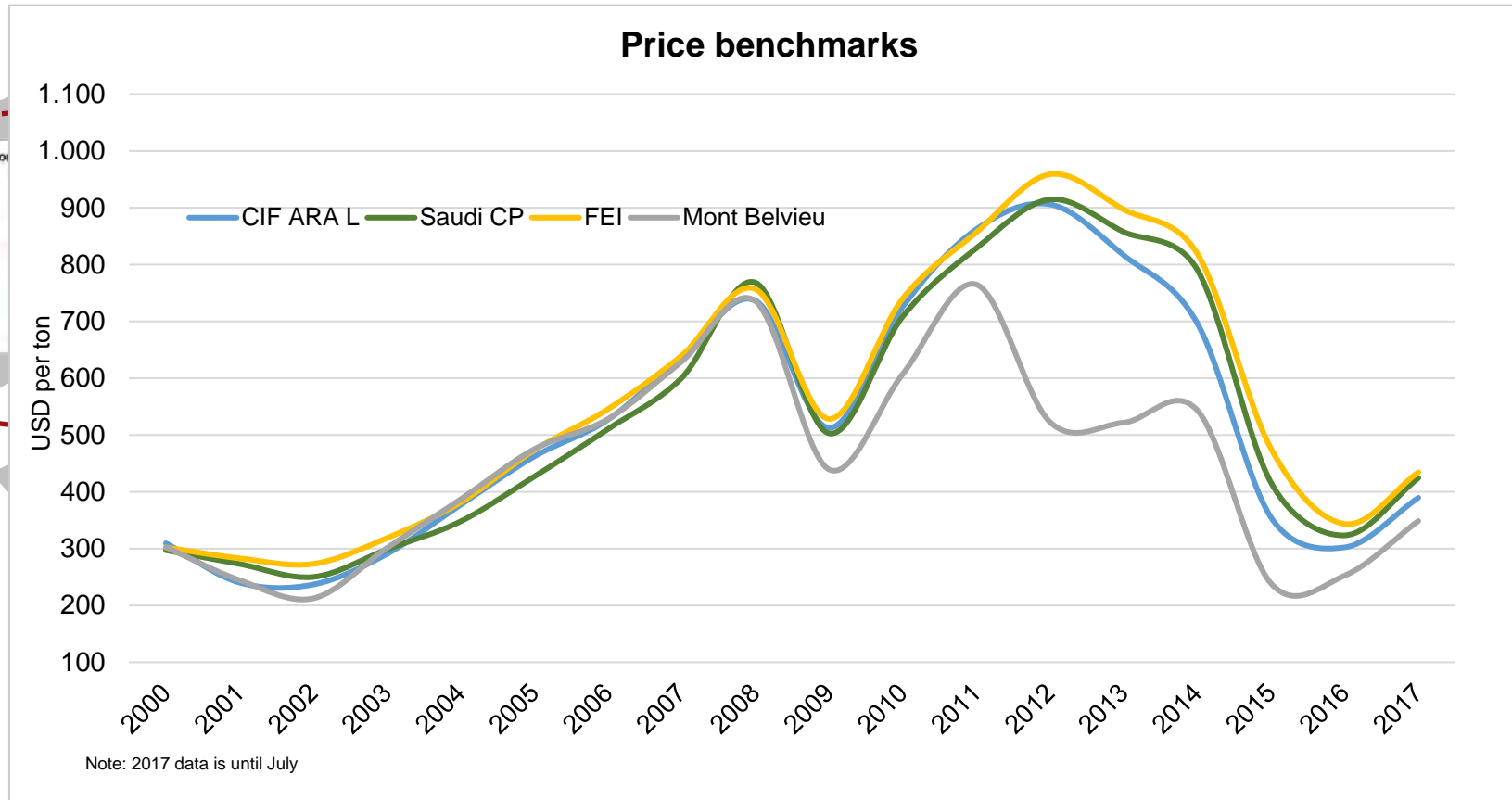
**CAGR 2017-2025**  
 Other: -2.1%  
 Other: +0.1%  
 Chemical: +10%

**Industrial: +1.6%**  
 Industrial: +1.1%

**Res/comm: +3.1%**  
 Res/comm: +2.6%

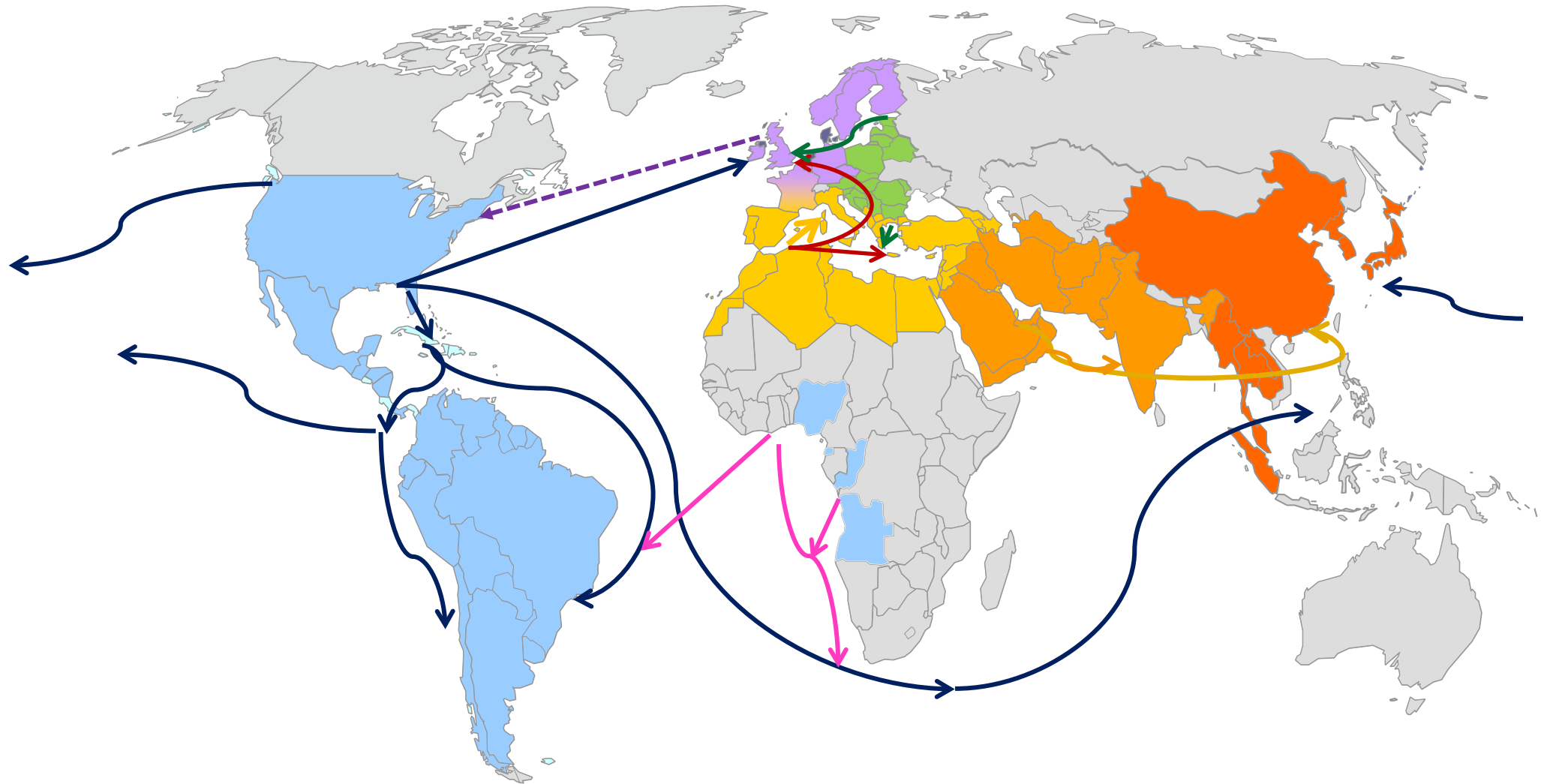
# LPG SUPPLY-DEMAND BALANCE BY REGION

■ Production  
■ Demand

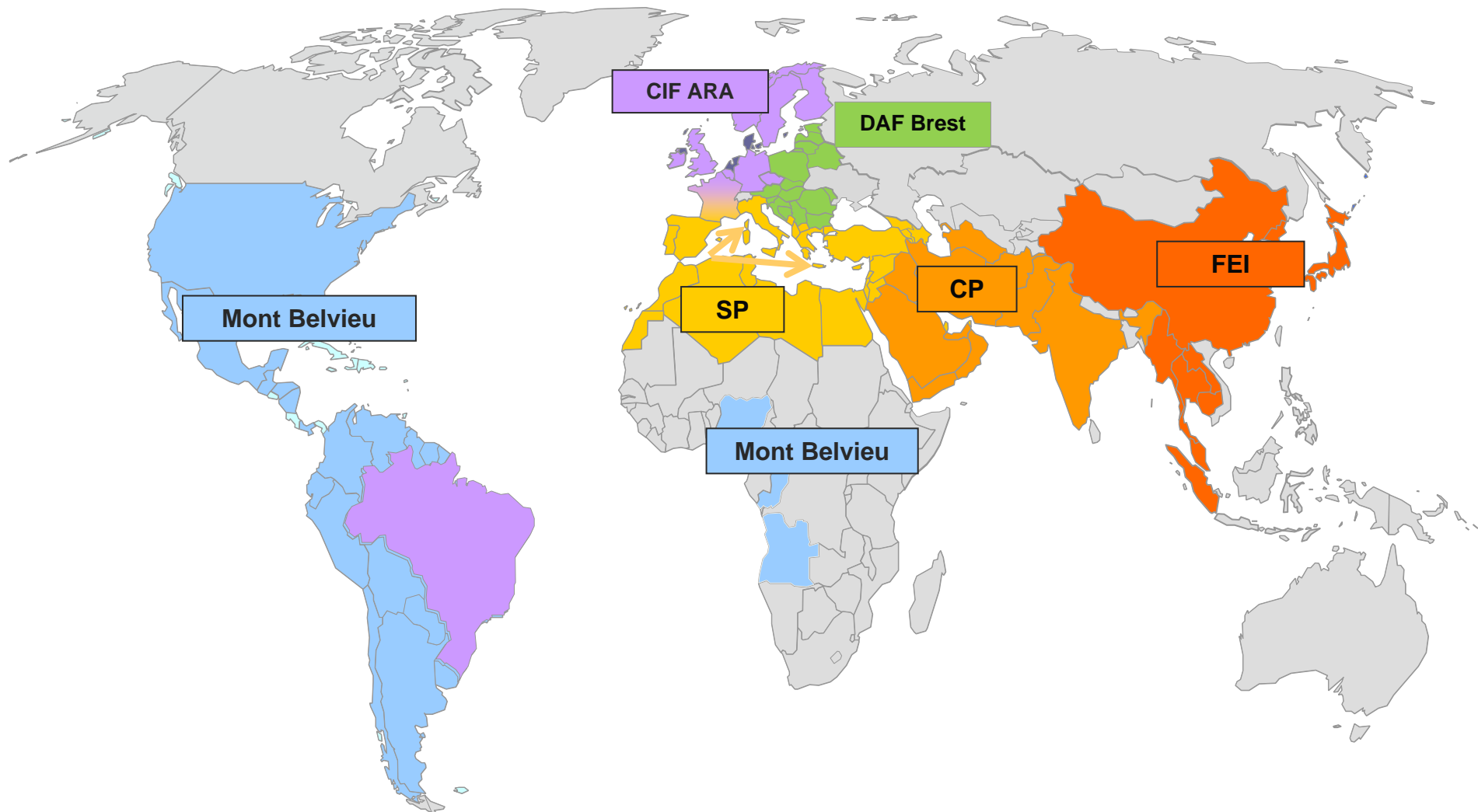


Global market to remain long

# LPG SEABORNE FLOWS

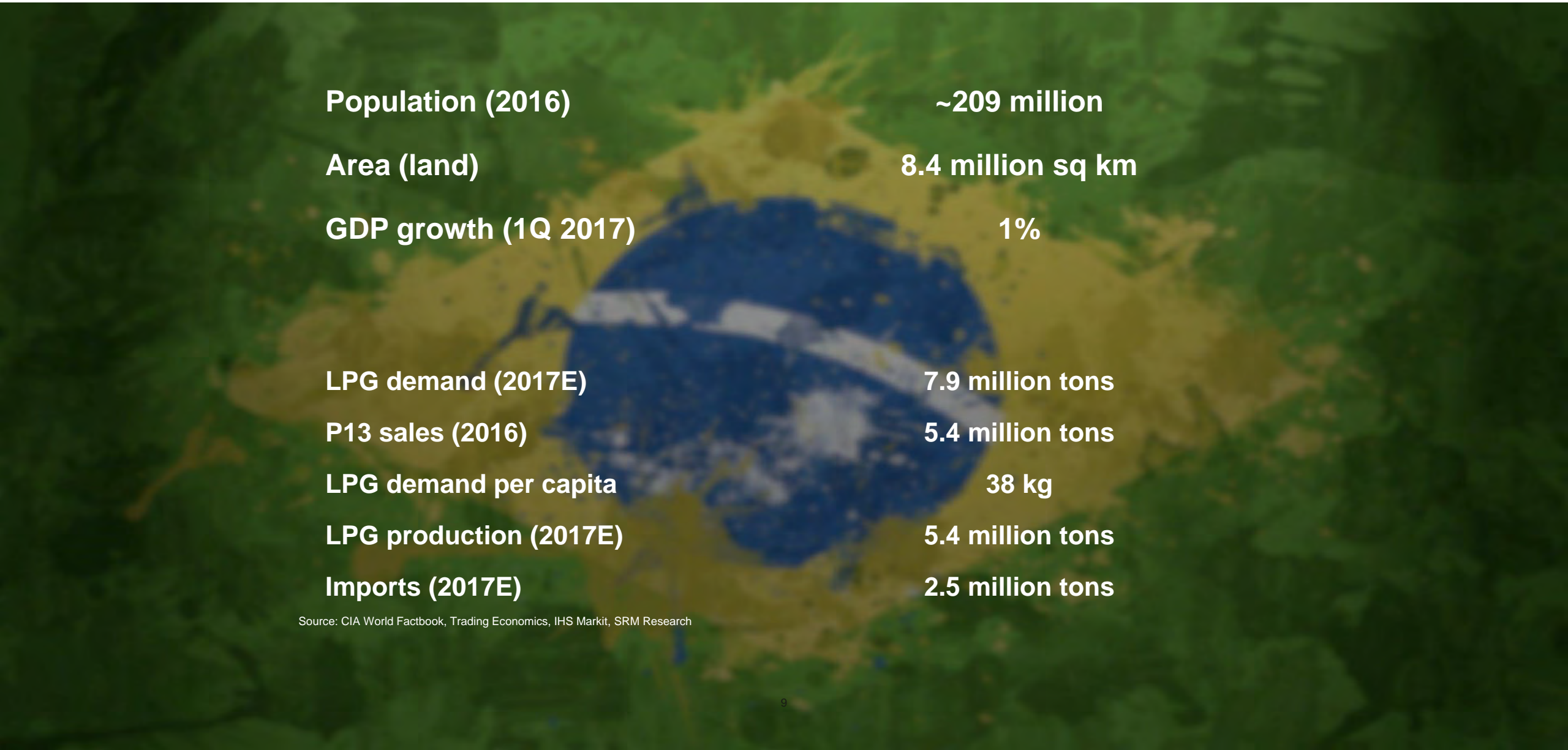


# LPG PRICE BENCHMARKS





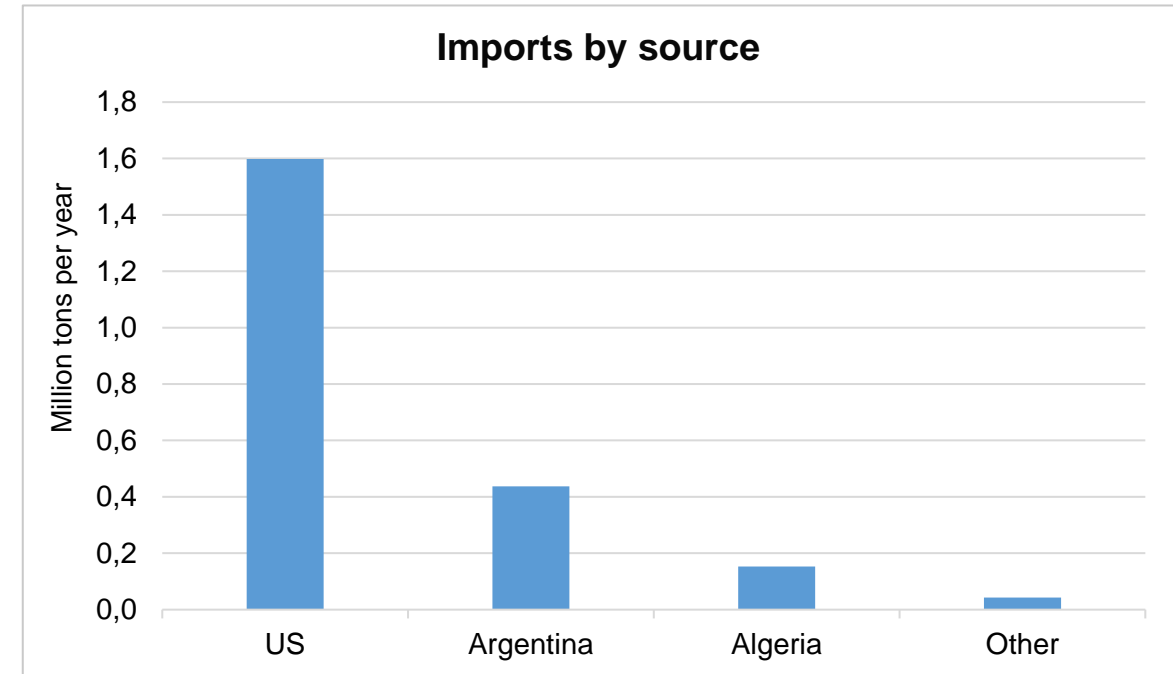
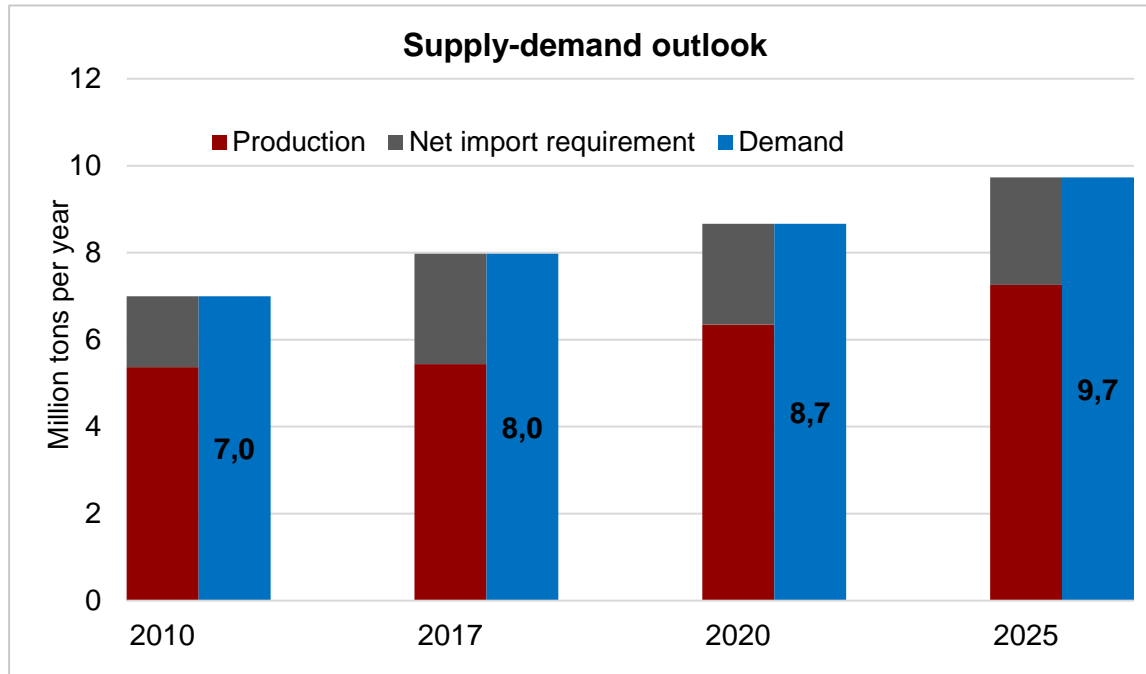
# BRAZIL – MARKET SNAPSHOT



<b>Population (2016)</b>	<b>~209 million</b>
<b>Area (land)</b>	<b>8.4 million sq km</b>
<b>GDP growth (1Q 2017)</b>	<b>1%</b>
<b>LPG demand (2017E)</b>	<b>7.9 million tons</b>
<b>P13 sales (2016)</b>	<b>5.4 million tons</b>
<b>LPG demand per capita</b>	<b>38 kg</b>
<b>LPG production (2017E)</b>	<b>5.4 million tons</b>
<b>Imports (2017E)</b>	<b>2.5 million tons</b>

Source: CIA World Factbook, Trading Economics, IHS Markit, SRM Research

# BRAZIL – LPG SUPPLY-DEMAND BALANCE



Source: IHS Markit, Accenture, Sindigas

- Growth potential in the large residential/commercial segment remains, but depends on population growth and further phasing out of firewood as a cooking fuel
- On the supply side, LPG recovery from gas plants will grow as crude oil production (along with associated gas) increases
- Brazil will continue to import LPG, particularly propane, for the foreseeable future

# BRAZIL – INFRASTRUCTURE AND ASSETS

2016



Suape and Santos terminals together receive over 90% of LPG imports

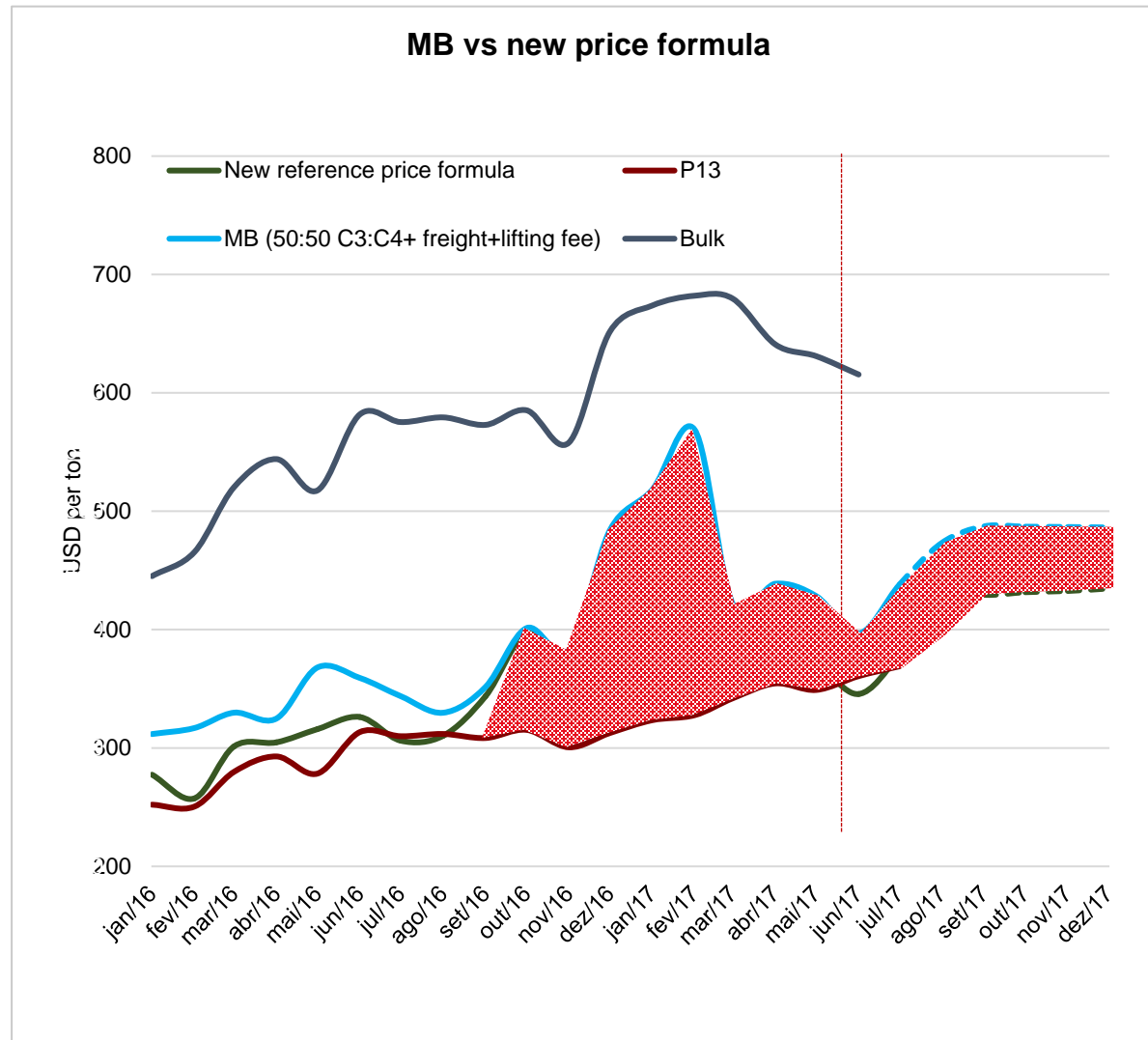
## Waterway terminal capacity in Brazil

Terminal	No. of tanks	Capacity (tons)
1 Barra do Riacho	3	24,120
2 Belem-Miramar	2	5,260
3 Ilha Redonda	7	18,530
4 Madre de Deus	6	29,040
5 Paranaguá	3	5,260
6 Santos-Alemoa	10	45,820
7 Suape	5	8,800
8 Itaqui-São Luis	2	4,300
9 Manaus-Solimões	n/a	10,820
10 Ilha Comprida	n/a	23,610
<b>Transpetro total capacity</b>		<b>175,560</b>

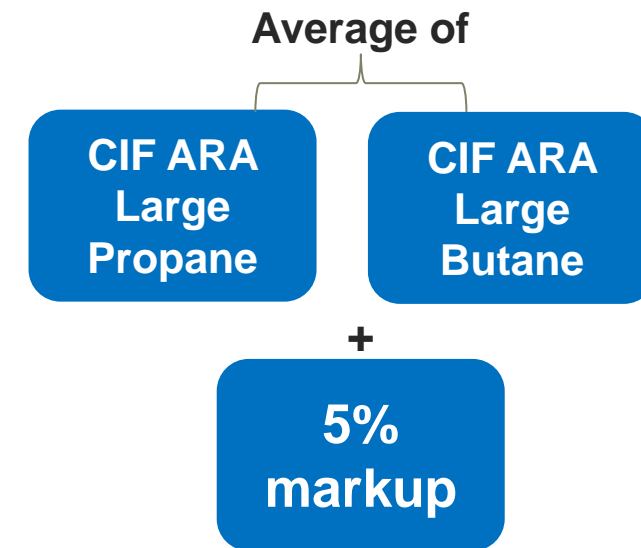
**Third party capacity** 5,200

**Brazil – total capacity** 180,760

# BRAZIL – LPG PRICES



## New reference price formula for P13 segment



- Petrobras now uses the average of CIF ARA Large propane and butane prices (plus a 5% markup) as a **reference** for wholesale LPG prices for 13 kg (and under) cylinders
- The new structure applies only to LPG in the residential segment and **will not seek parity with international prices**

# BRAZIL – SUMMARY OF FACTS

## Imports to continue in the range of 1 to 3 millions tons

- Not considering further cancellations\delay of upstream projects
- Not considering extra demand growth because of growing GDP
- Not considering potential of shift of LPG streams towards the petchem industry

## Infrastructure needs to be upgraded to cope with growing imports

- Only one port capable of receiving VLGCs – Suape, which has limited storage capacity
- Santos has sufficient storage capacity but has limited draft and suffers from frequent loading/unloading delays
- Growing gap between supply and demand in the Northeast
- Cabotage is a challenge due to insufficient storage capacities, high berth utilizations, draft restrictions, particularly in Mucuripe, Paranagua and Tergasul
- No options to transport LPG via rail

**Existing pricing model does not enable individual imports**

**Existing law restricts extraordinary development of the LPG market**

**Role\destiny of Petrobras as producer and Transpetro as logistics provider for the LPG industry is unclear**

# MARKET SNAPSHOT – INDIA AS BENCHMARK



**Brazil**

Population (2016)	~209 million
Area (land)	8.4 million sq km
GDP growth (1Q 2017)	1%
LPG demand (2017E)	7.9 million tons
P13 sales	5.4 million tons
LPG demand per capita	38 kg
LPG production (2017E)	5.4 million tons
Imports (2017E)	2.5 million tons



**India**

Population (2016)	1.26 billion
Area (land)	2.9 million sq km
GDP growth (1Q 2017)	6.1%
LPG demand (2017E)	22.3 million tons
Subsidized LPG sales	16.1 million tons
LPG demand per capita	18 kg
LPG production (2017E)	11.4 million tons
Imports (2017E)	10.9 million tons

Source: CIA World Factbook, Trading Economics, IHS Markit, SRM Research

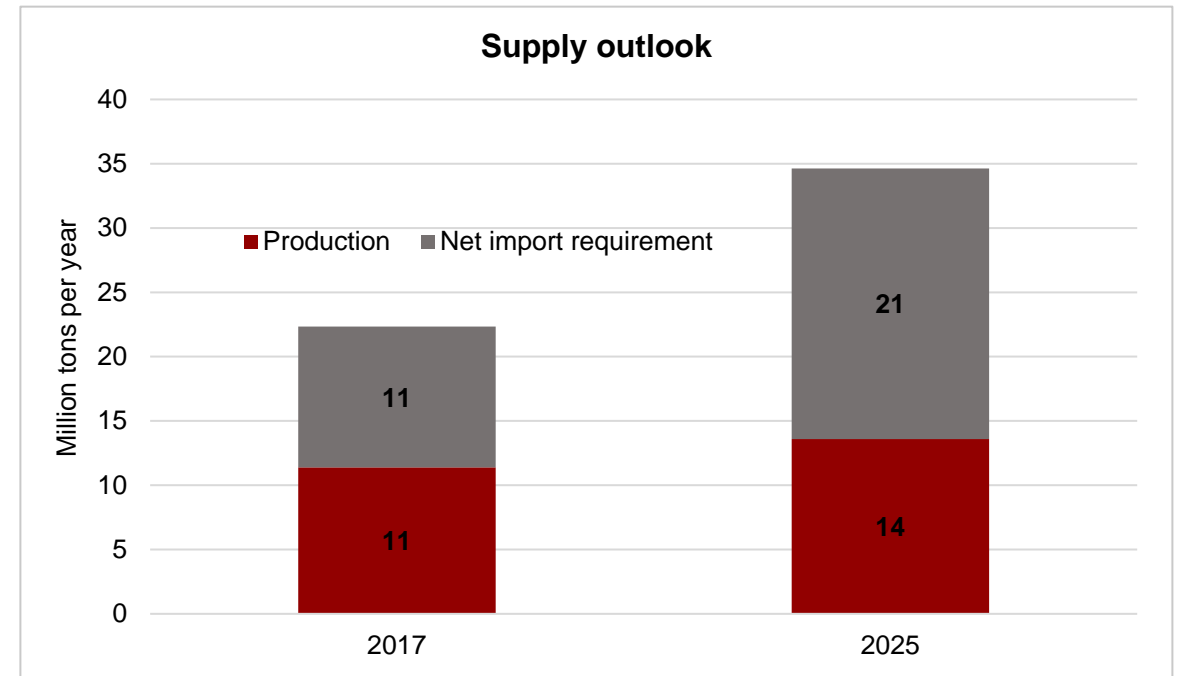
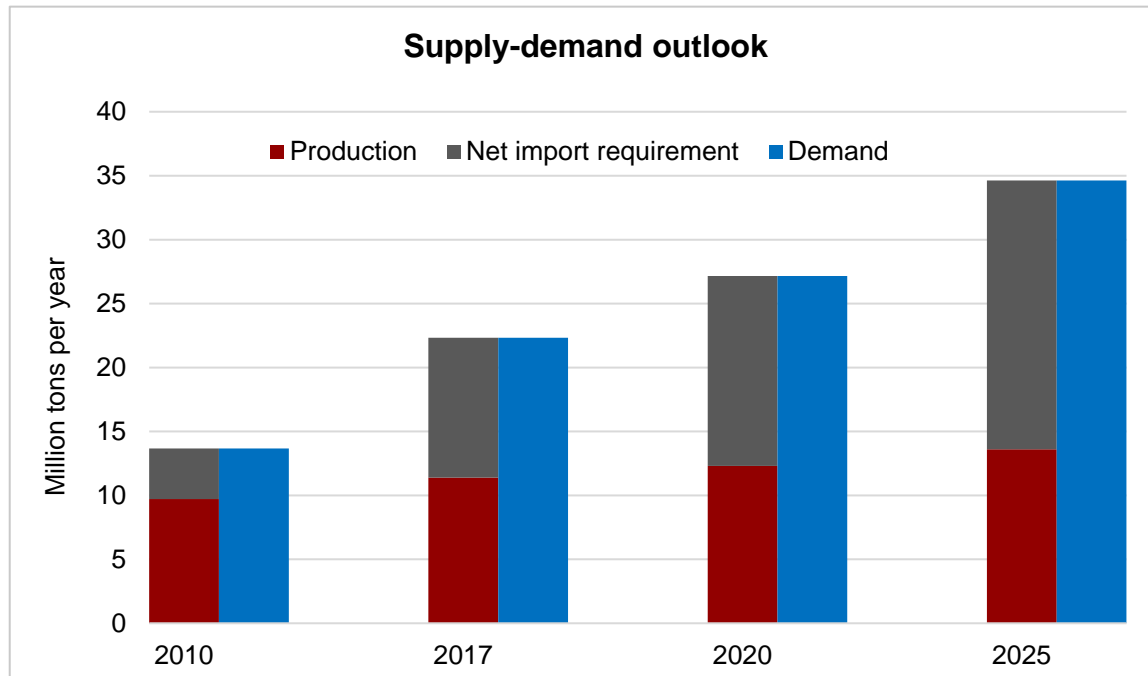
# BRAZIL AND INDIA – MARKET SHARES



**State-owned Petrobras accounts for 23% of the market**

**State-owned oil companies account for 97% of the market**

# INDIA – LPG SUPPLY-DEMAND BALANCE



Source: IHS Markit

- Although refinery capacity is poised for expansion, which will boost production, domestic demand will far outstrip production
- The government has implemented a subsidy reform program wherein separate prices for subsidized cylinders will be eliminated in favor of direct cash payments to low income households to be used in purchasing unsubsidized LPG
  - Subsidy reform caused LPG demand to decline in 2013, but the growth has since resumed, and is expected to continue going forward

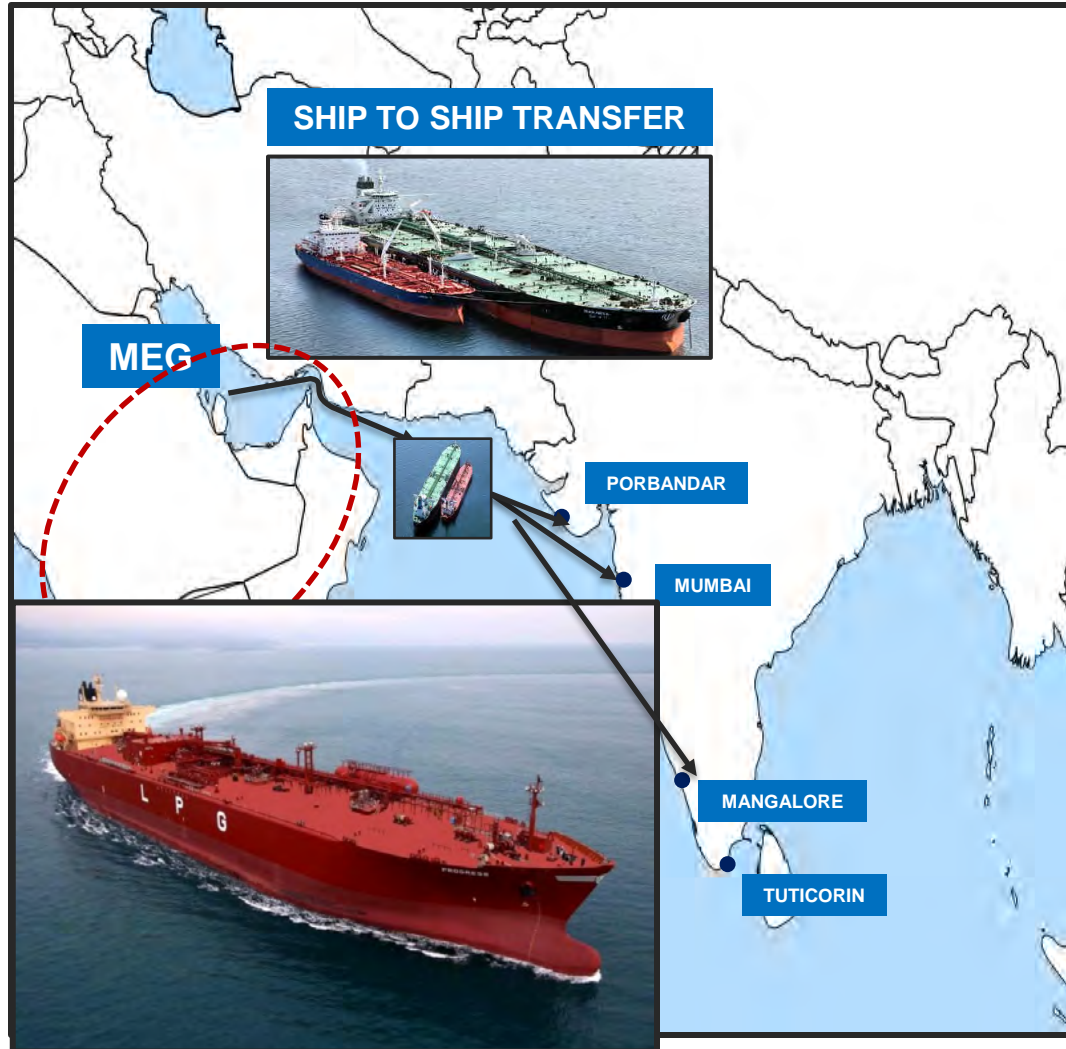


# INDIA – INFRASTRUCTURE



Terminal	Capacity (kt)	Imports (kt)	Turn rate
Haldia	30	1,837	61
Mangalore	25	1,534	61
JNPT	16	708	44
Ennore	30	1,170	39
Tuticorin	9	223	26
Mumbai	20	375	19
Vizag	68	1,141	17
Dahej	30	443	15
Sikka	60	856	14
Porbandar	8	53	6
Kandla	30	0	n/a
<b>Total</b>	<b>327</b>	<b>8,340</b>	<b>26</b>

# INDIA – TAILOR-MADE SUPPLY SYSTEM



## THE SOLUTION

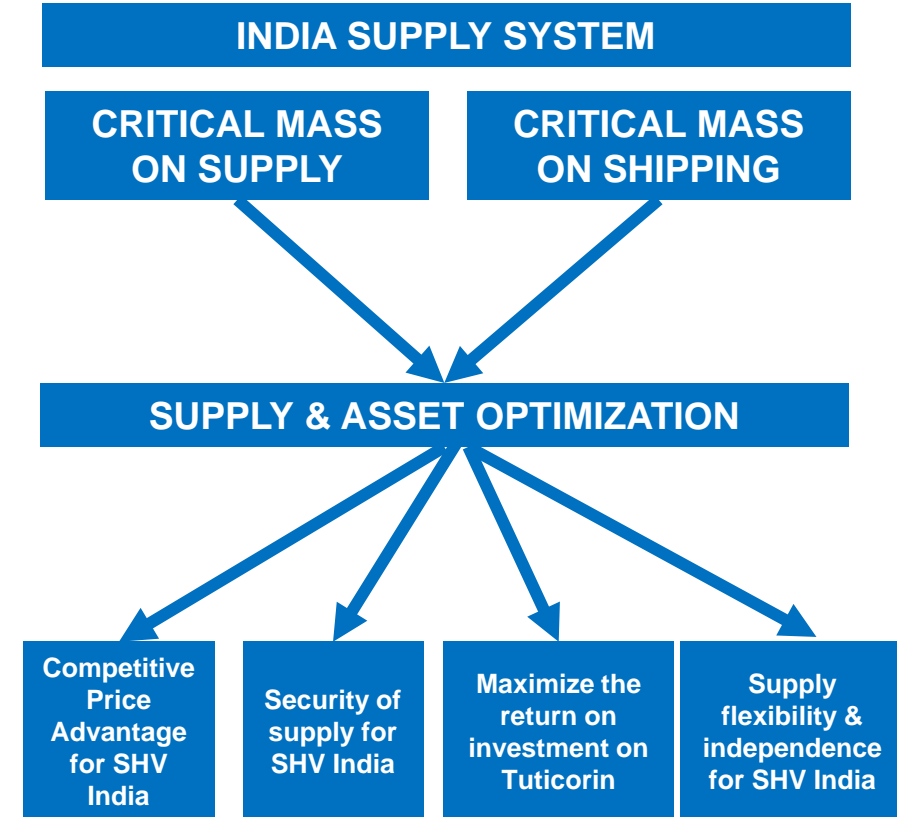
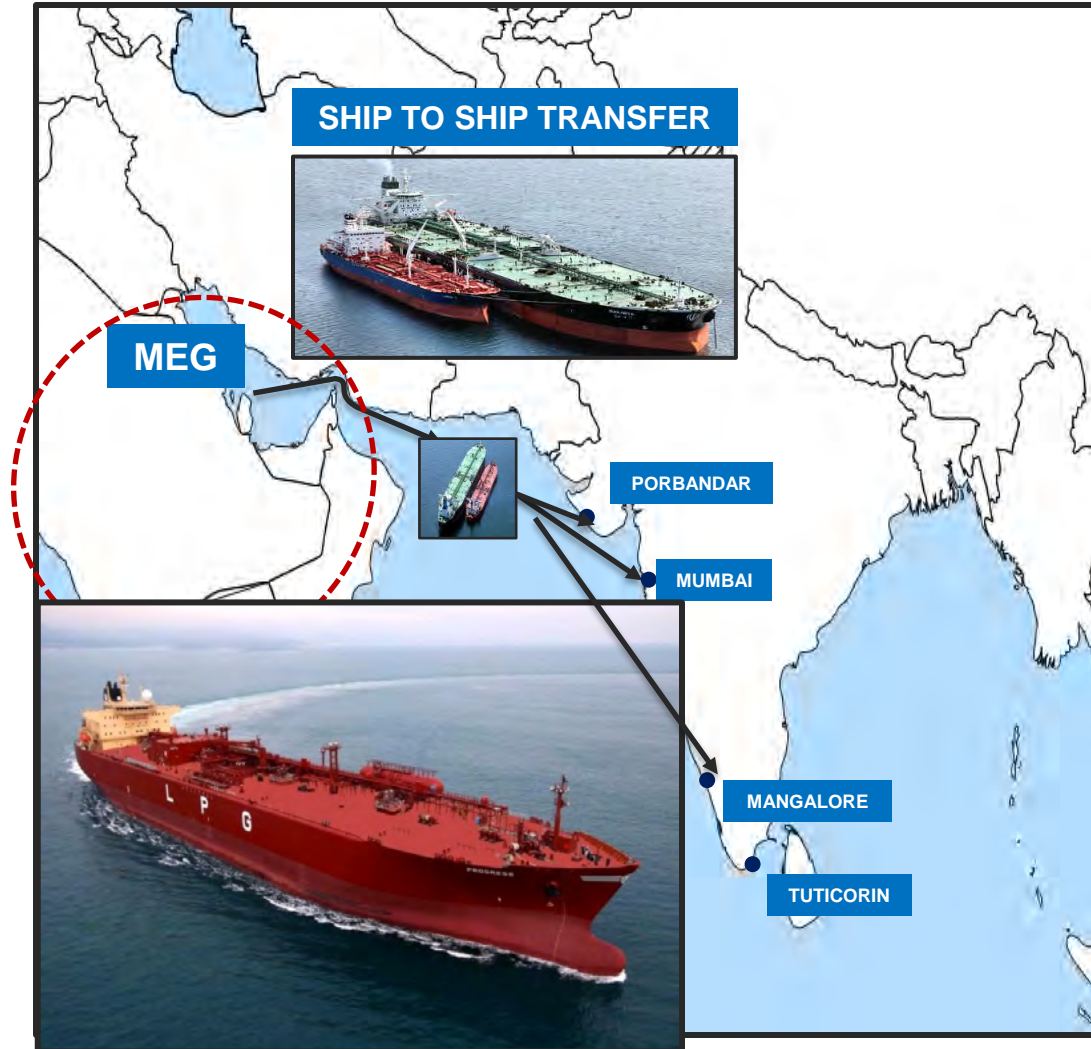
CREATE FLEXIBILITY FOR THE SUPPLY SYSTEM  
LOADING REQUIREMENTS

CREATE CRITICAL MASS TO OBTAIN SUPPLY FROM THE MIDDLE EAST

OPTIMIZE SALES VOLUME TO MINIMIZE SHIPPING COSTS

CONTRACT SELECTED THIRD PARTIES

# INDIA – TAILOR-MADE SUPPLY SYSTEM



# INDIAN LEARNINGS APPLICABLE FOR BRAZIL ?

## Pricing model

- Subsidy system changed from product to individual
- Market pricing is related to international prices
- Pricing strategies in place to cope with volatile pricing

## Procurement \ Infrastructure

- Imported cargoes are shared between various receivers
- Access to existing infrastructure is possible based on official pricing structure
- Legal framework for individual imports is existing
- Infrastructure programs (terminal investments) are ongoing

# CONSIDERATIONS

## Pricing model

- Review existing P13 (subsidized) pricing – consider Indian model
- Move the local market pricing to a pricing policy related to international prices
- Understand how to cope with future volatile pricing

## Procurement \ Infrastructure

- Review current volume appointment model
- Provide access at competitive terms to existing infrastructure
- Provide legal framework for individual import hubs and individual imports
- Consider joint imports to increase flexibility and decrease cost

## Petrobras \ Transpetro

- Define clear and specific rules for access to assets
- Clarify future positioning of Petrobras as producer\supplier after having left distribution market

Obrigado!

