


The development of a petroleum industry in Cyprus

Learnings from previous experiences

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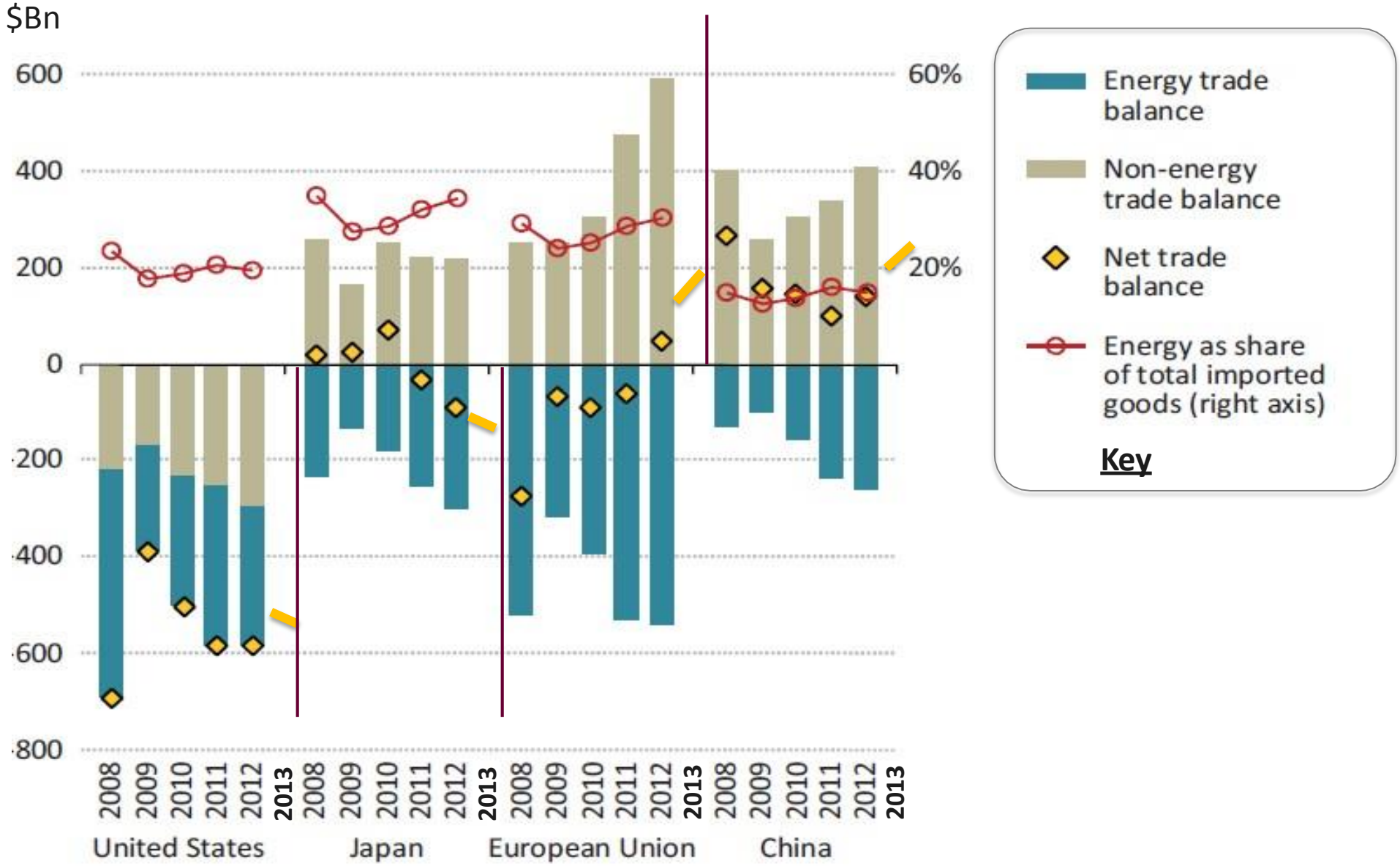
Third Hyperion Lecture at the University of Cyprus
29 September 2015

IFP Training

- **Global petroleum context**
  - Contribution of the Oil & Gas
  - Petroleum supply, today and tomorrow
  - Strategies of the main players
- **Needs and challenges**
  - Differences between oil and gas
  - Petroleum game and the different activities
  - Skill's issue
- **Learnings**
  - The Dutch disease
  - The Oil curse
  - The Norwegian example
  - The French paradox

What is the global petroleum context?

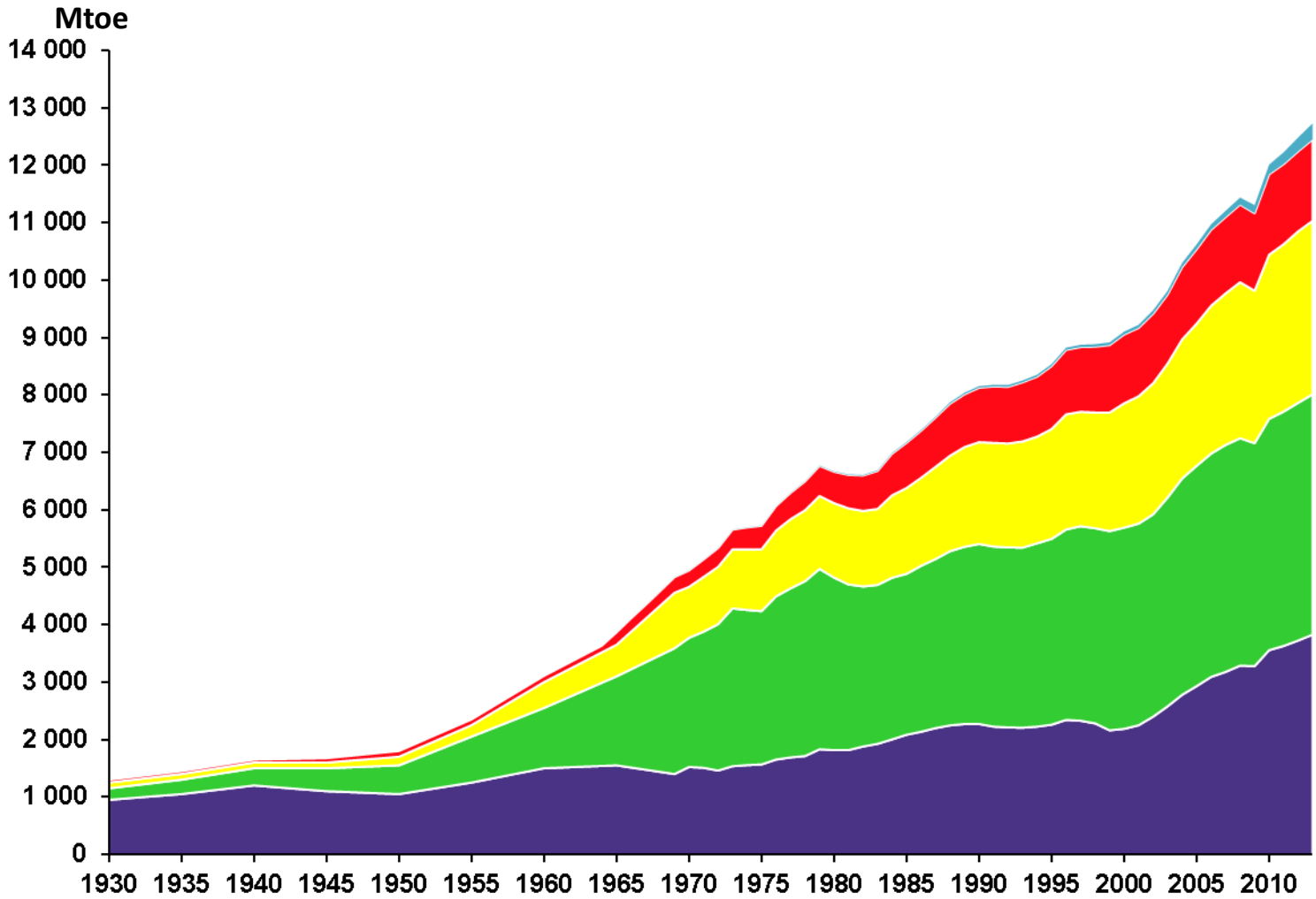
Energy & trade in 2008-2013



Source : IEA, 2013

World commercial primary energy consumption

Total: 12,9 Gt



Renewables 2%
0.3 Gt
Nuclear & hydro 11%
1.4 Gt

Gas 24%
3.1 Gt

Oil 33%
4.2 Gt

Coal 30%
3.9 Gt

Source : BP Statistical Review

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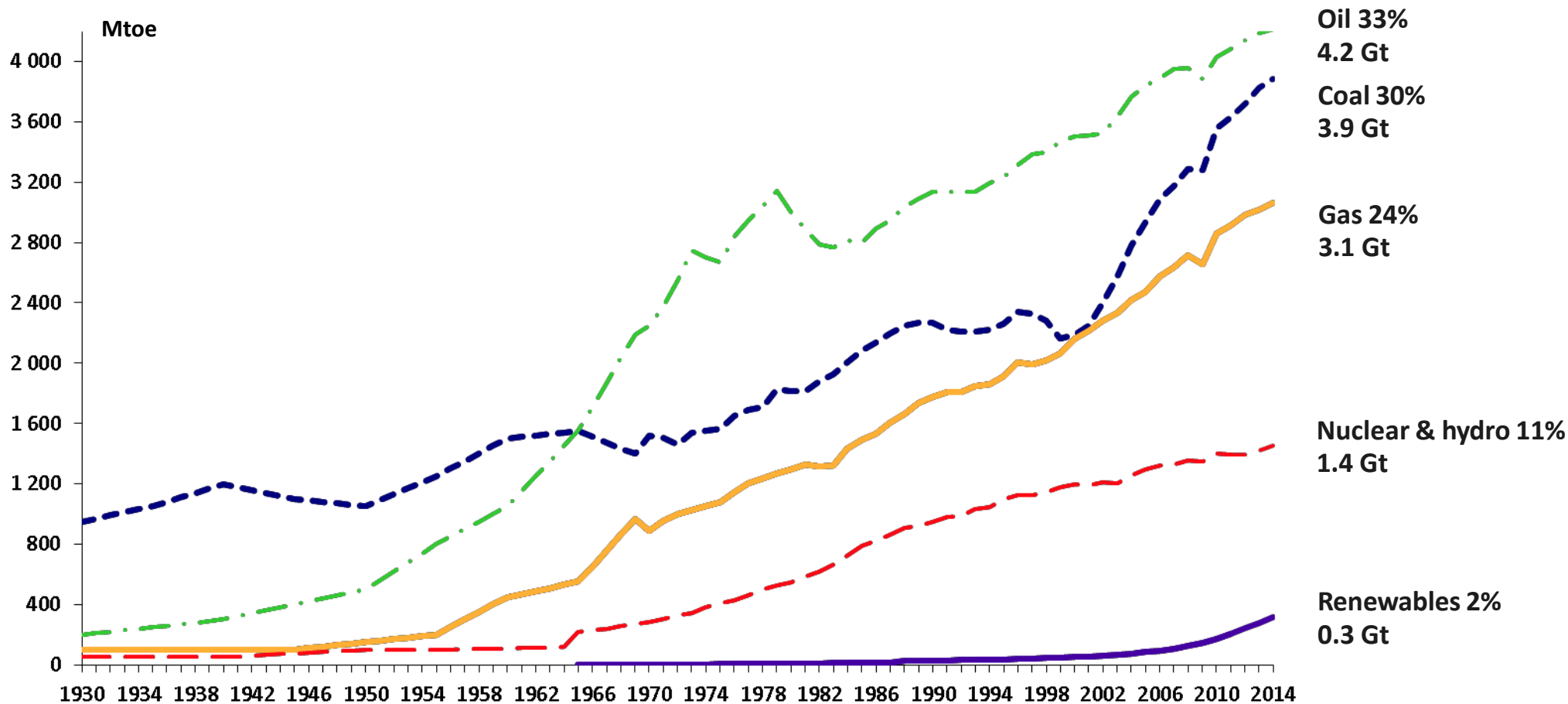
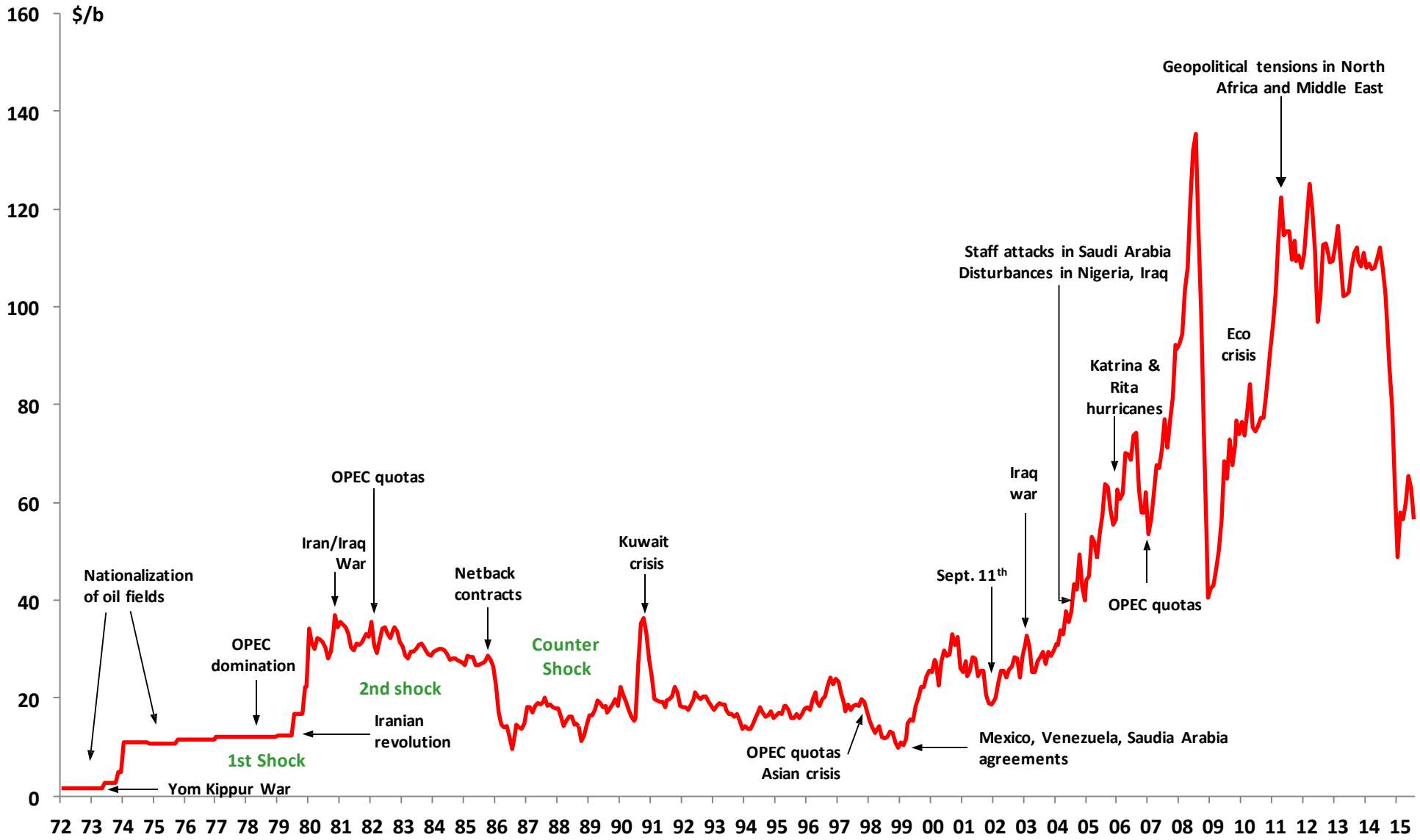
Total: 12,9 Gt



Source : BP Statistical Review

Crude oil price



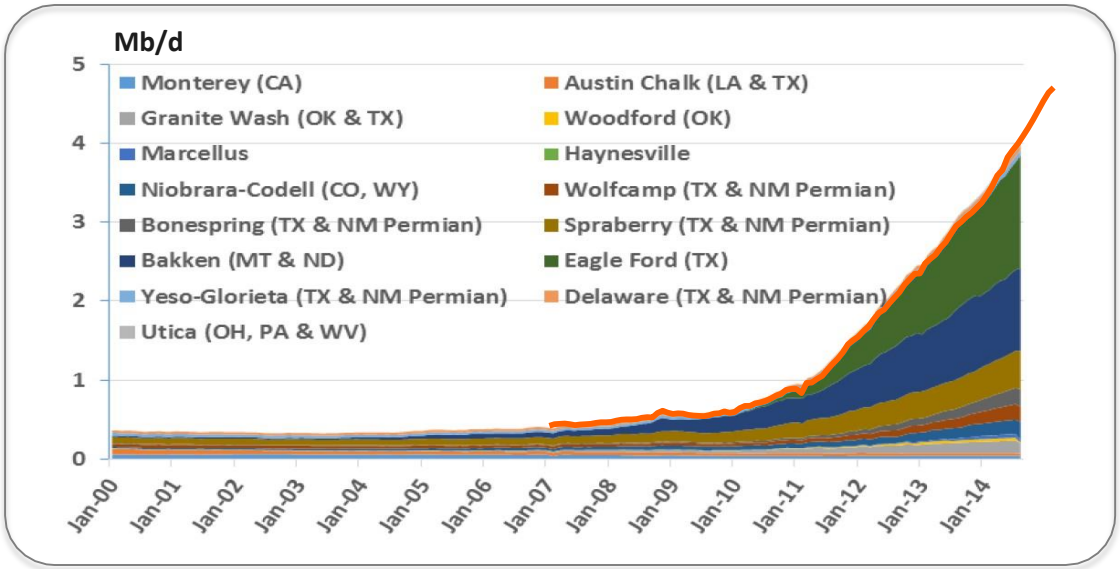
Source : Platt's

The US Shale contribution – 2015

Production in LTO basin

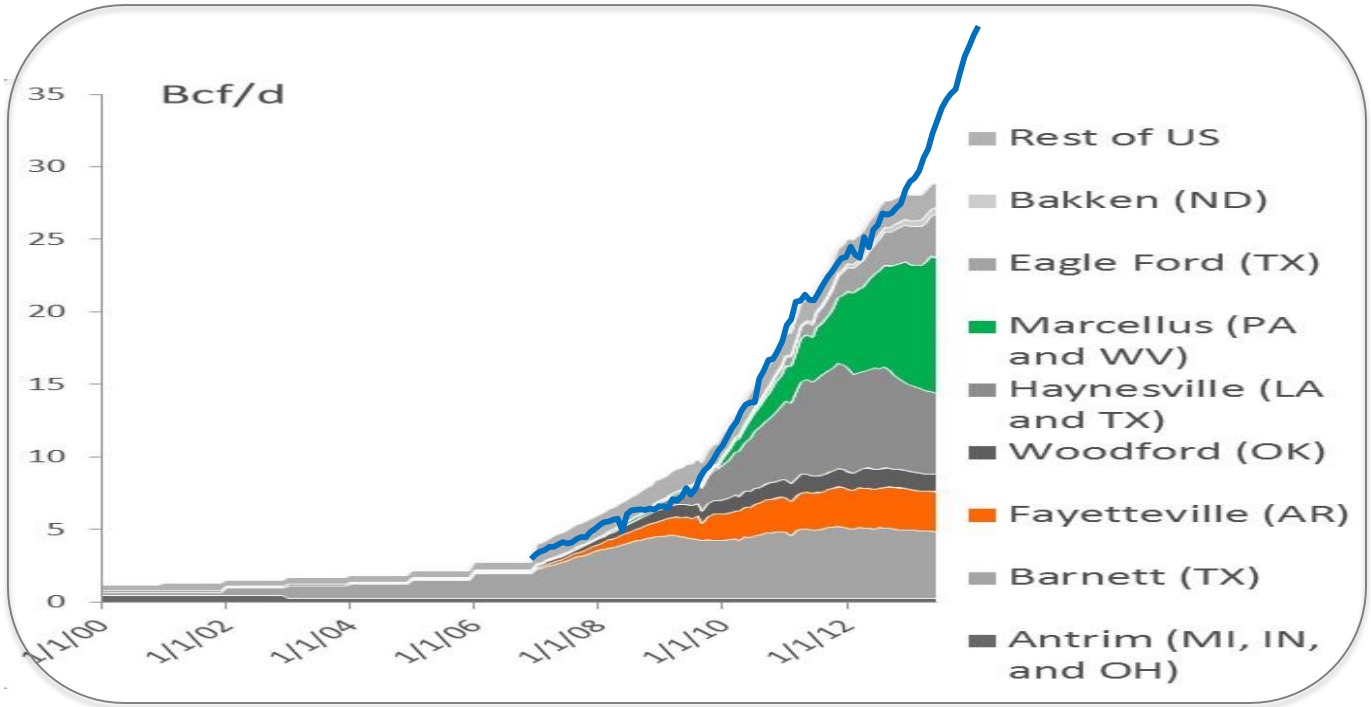
(Light Tight Oil)

2012:	2,3 Mbd
End 2013:	3,2 Mbd
March 2015:	5 Mbd



Shale gas basin

2013:	276 BM3
2015:	400 BM3
	(7,3 Mboed)



Source: EIA March 2015

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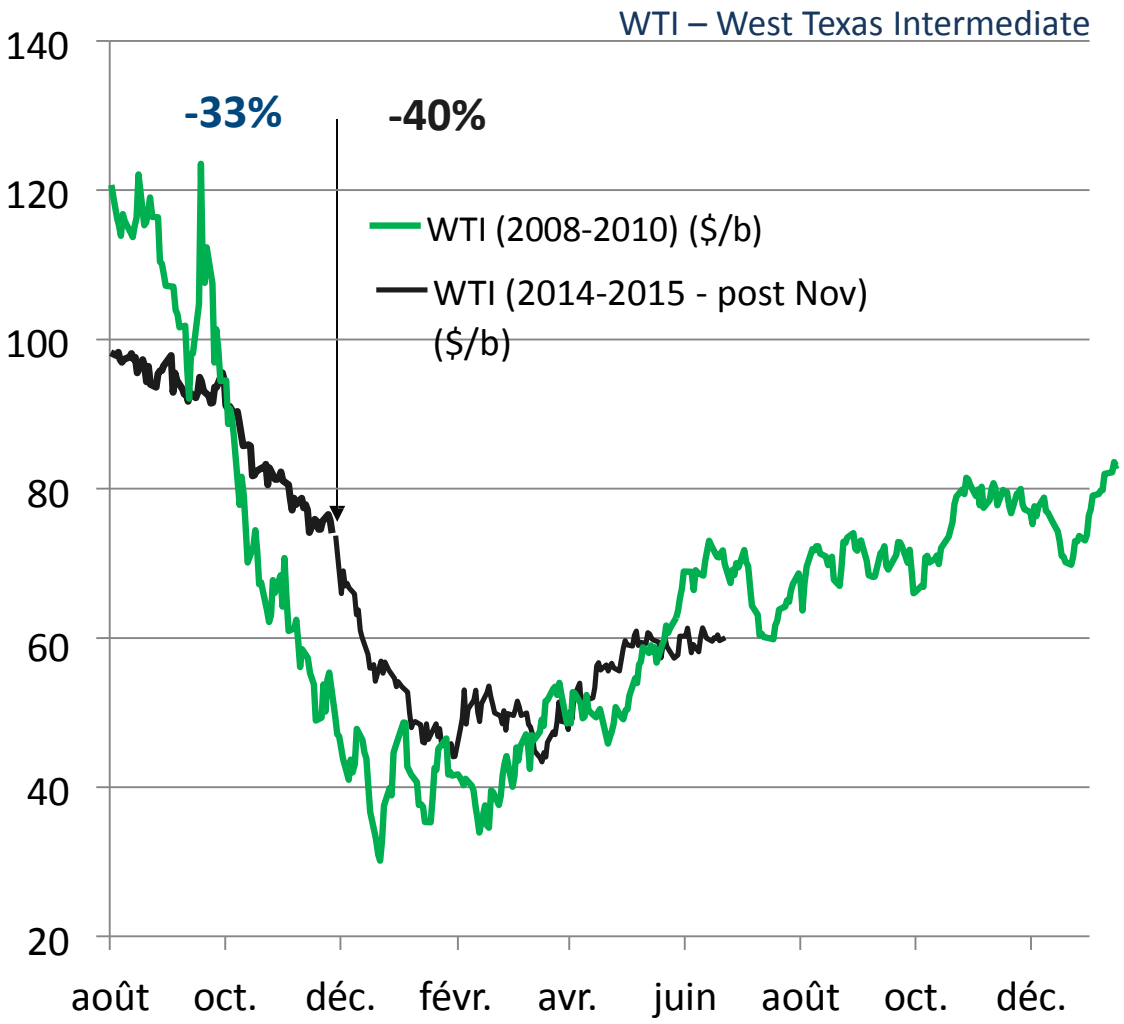
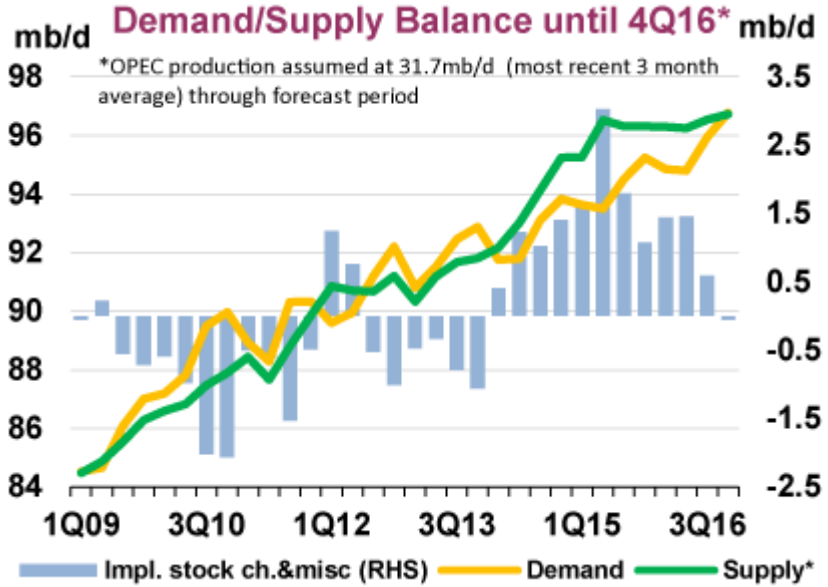
Unexpected oil price collapse – 2015





In Mbd	2014	2015	2016
Demand	+0,7	+1,6	+1,4
Supply NOPEC	+2,4	+1,1	-0,2

US$ increase

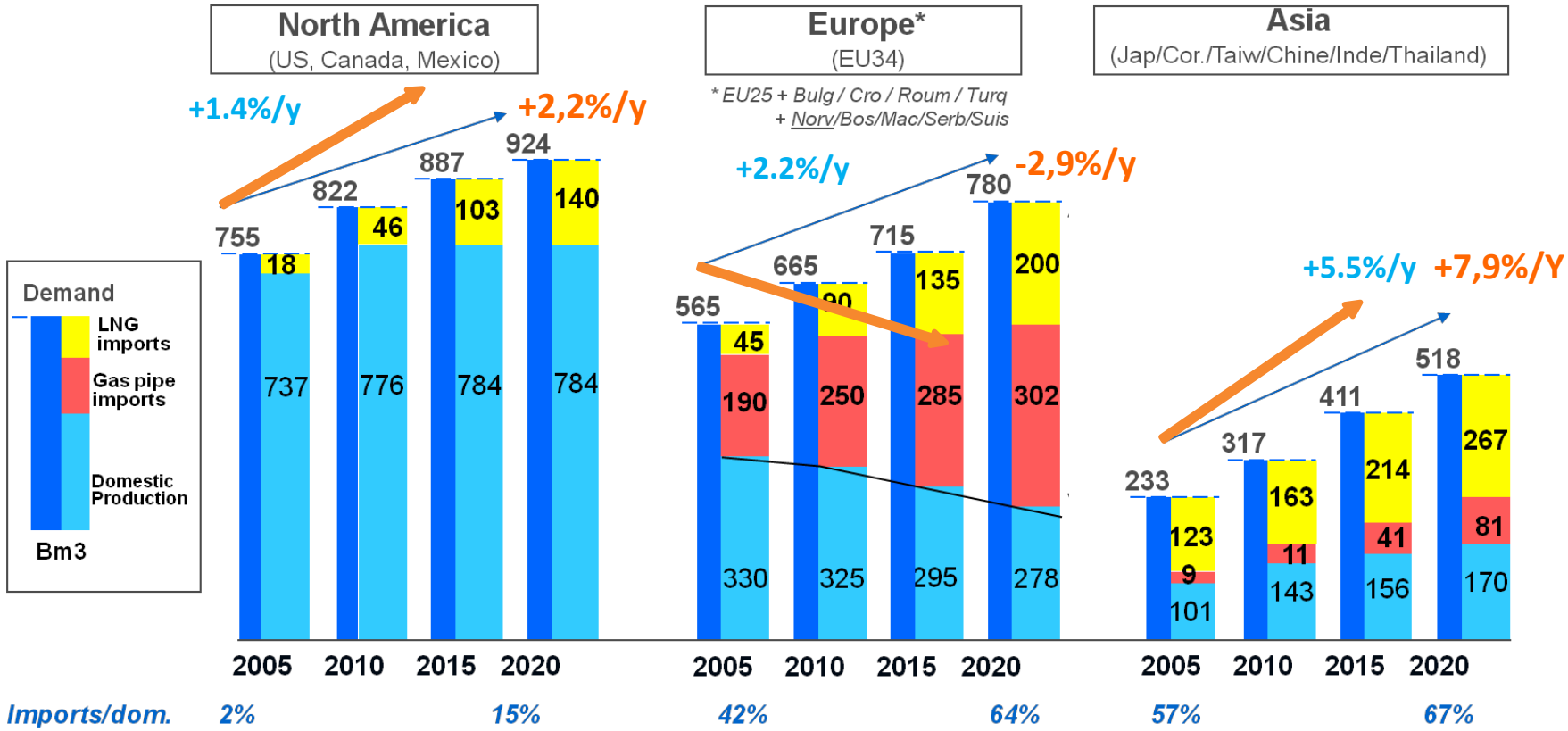
"It is not the role of Saudi Arabia, or certain other OPEC Nations to subsidize higher cost producers by ceding market share",

Feb 2015, Ali al-Naimi, KSA Oil Minister

Source : IEA, OMR Sept 2015, DOE march 2015

Gas offer/supply - Once upon a time… as seen in 2008

Versus 2014



2008 expectation for 2015

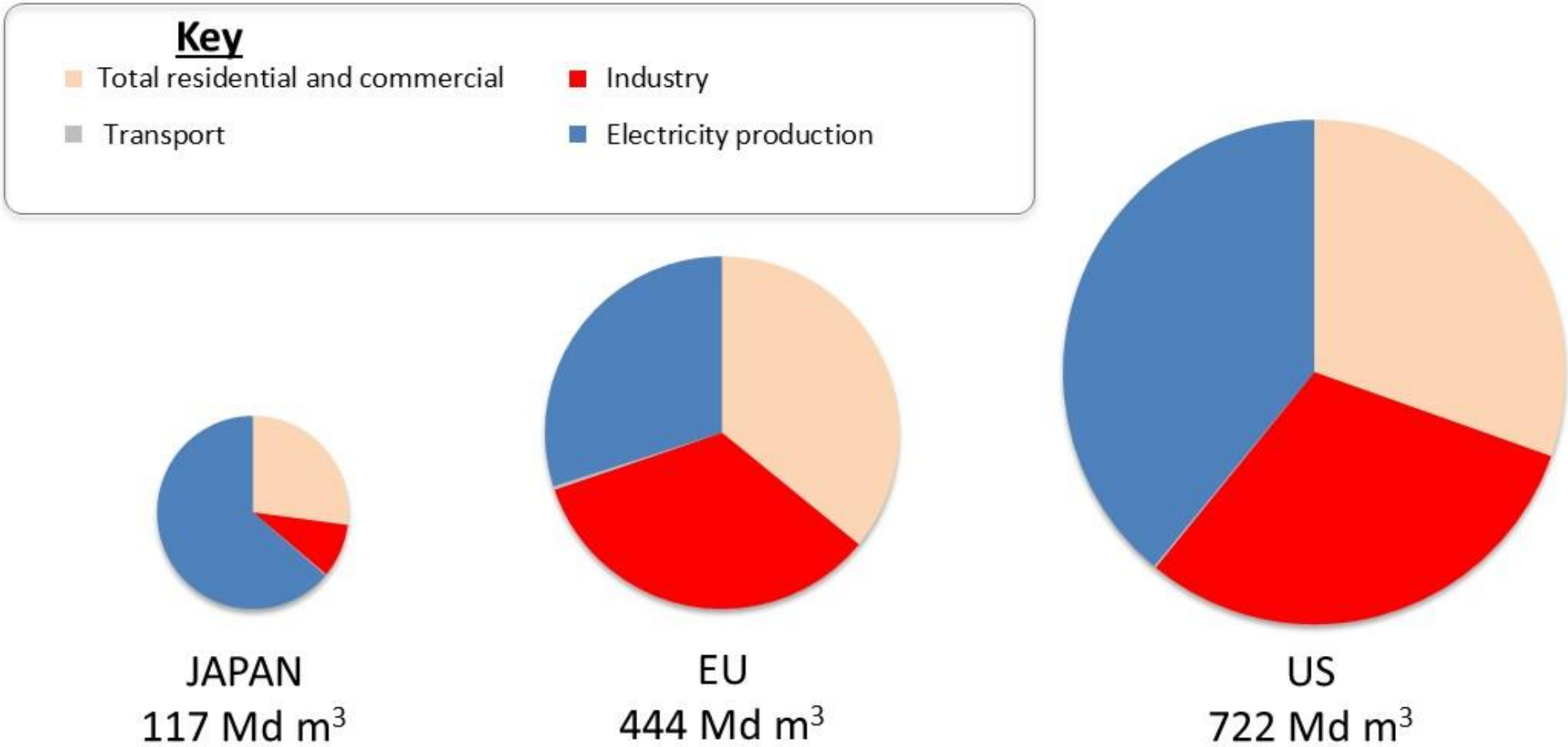
- **North A:** LNG **x 6**
- **EU 34:** LNG **x 3**
- **LNG Atlantic > LNG Asia 6**

Reality in 2014 (since 2005)…

North America:	Cons +167 Bm³	Prod +198 Bm³
EU:	Cons -114 Bm³	Prod -82 Bm³
Asia 6:	Cons +231 Bm³	Prod +104 Bm³
RoW:	Cons + 333 Bm³	Prod +451Bm³

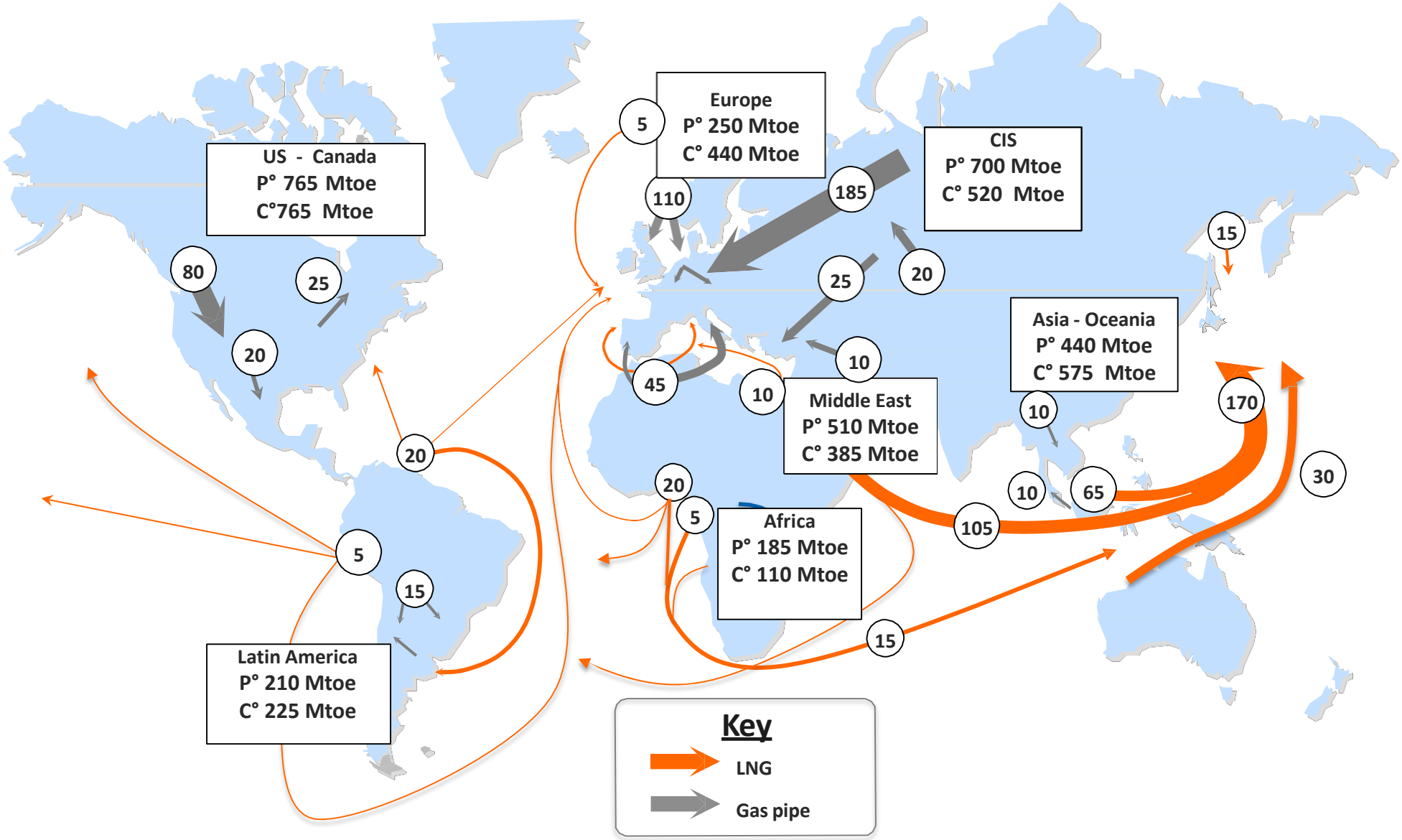
Source: IEA - World Energy Outlook 2008, BP stats 2015

Gas uses



Source : G.Charon, Ed Technip, 2014

Gas markets in 2013 – “Atlantis market”?



Source: IFP Training 2014

Focus on Levant Basin

Gas resources:

3400 Gm³ (USG)

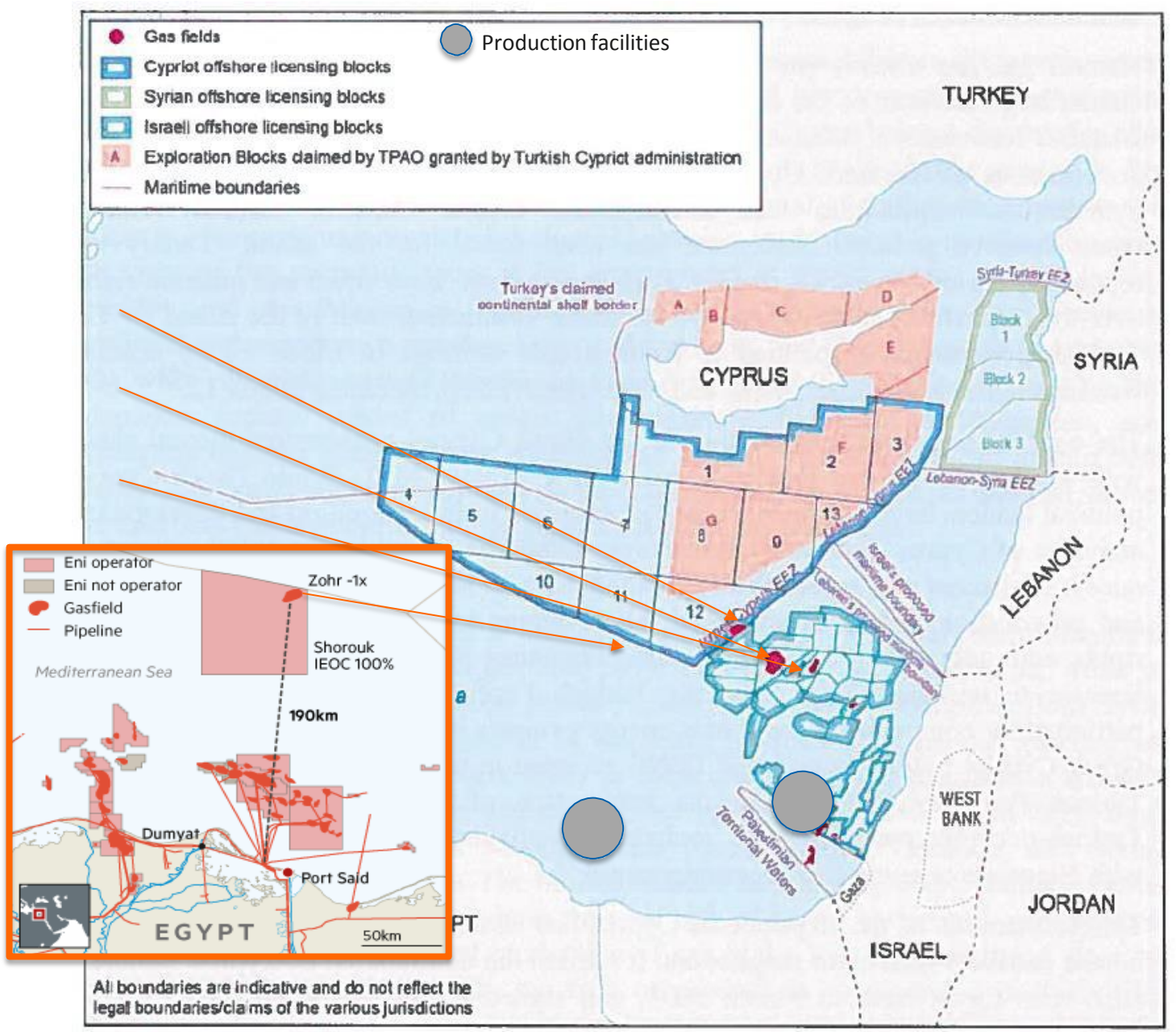
Reserves:

Aphrodite (Cyprus): 127 Gm3

Leviathan (Israel): 620 Gm³

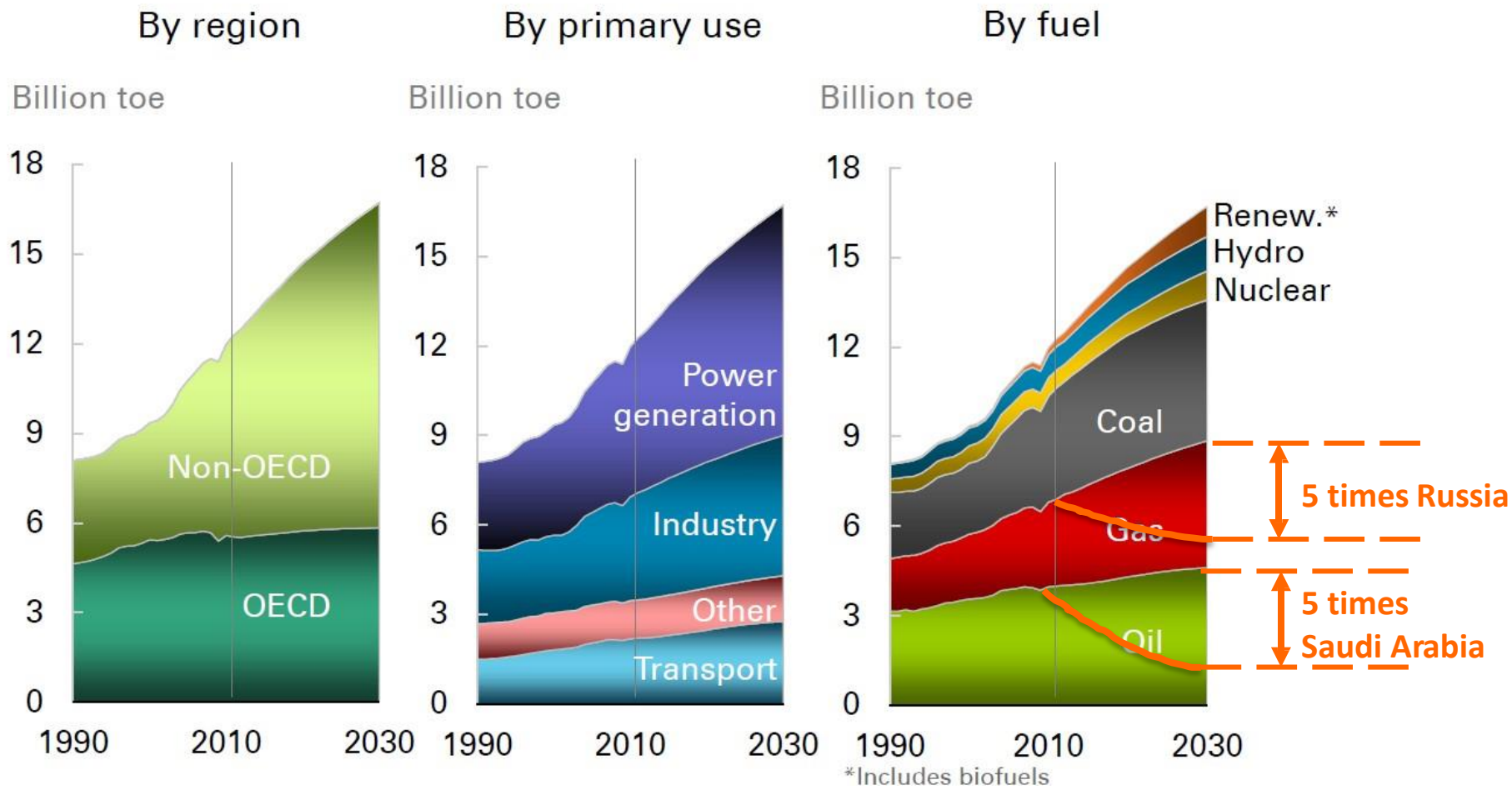
Tamar: 303 Gm³ (in production)

Zohr (Egypt):
Potential of 850 Gm3?



Source: IFP Training 2014, AFP

Energy needs

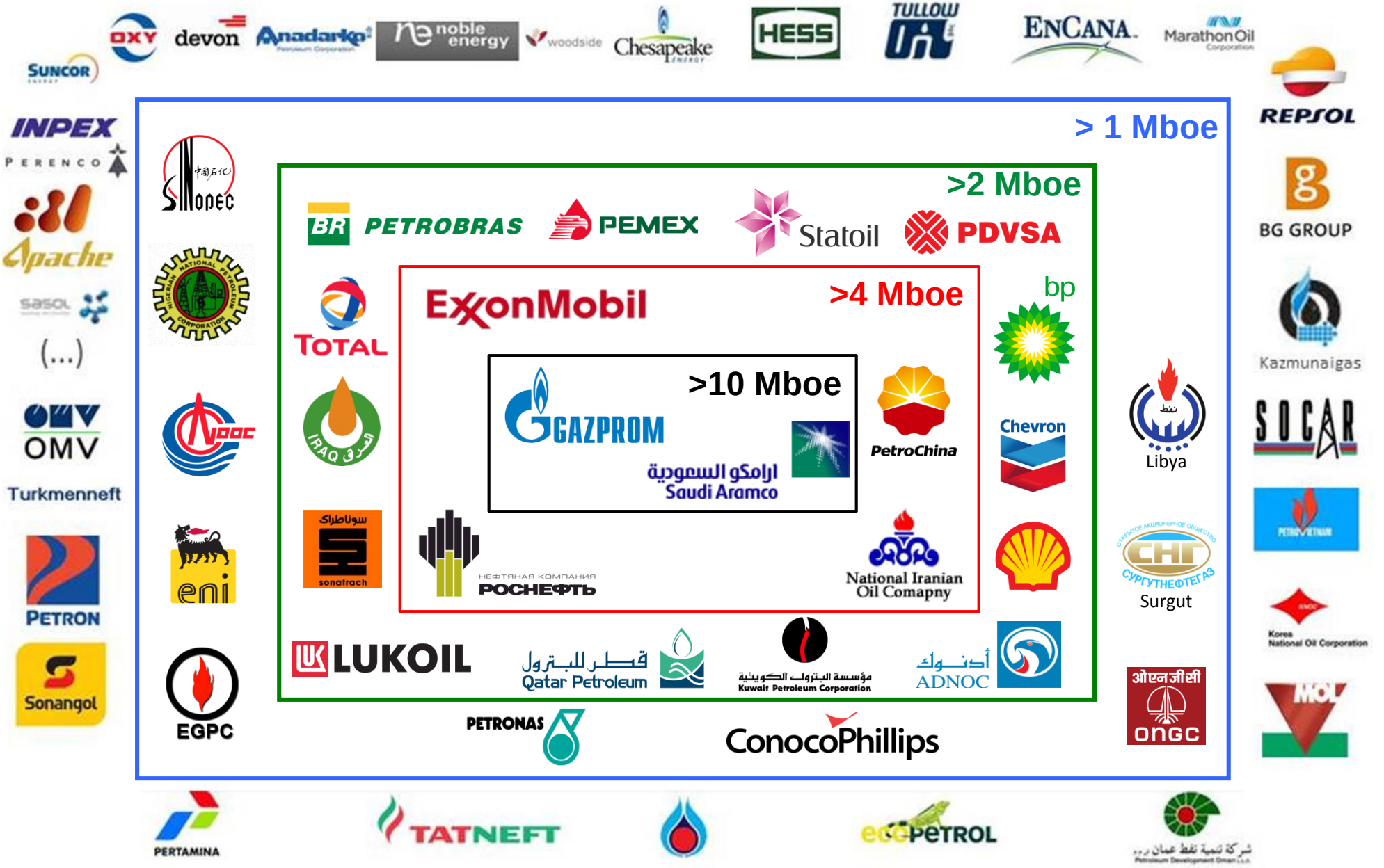


- **Fight against depletion**
- **Develop conventional hydrocarbons**
- **Develop unconventional resources**

Average depletion rate ~3 to 4%
(from 3% per year to 5% per year)

Source: BP Stats 2013

Main hydrocarbon producers



Black swan scenario is not probable…

… but possible

2002-2014 paradigm

- Oil & gas are rare, demand will continue, price will increase
- Countries increase fiscal terms on production
- Production costs increase (expensive projects)
- Inflation on O&Services
- Dependency increase from OPEC
- Oil exports and oil prices allow to feed the oil demand in exporting countries

BLACK SWAN scenario

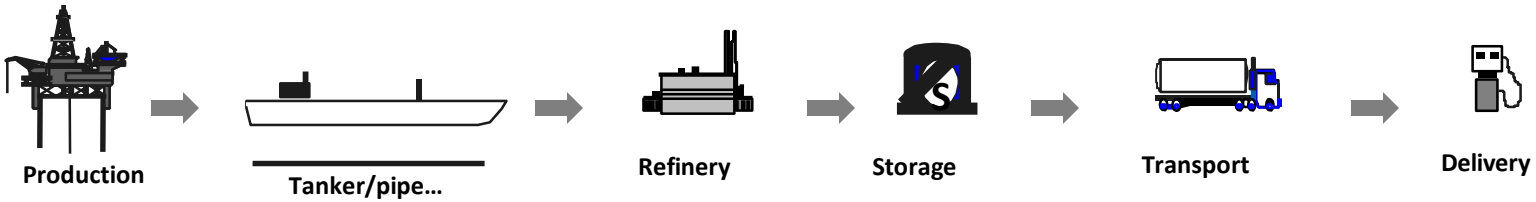
- Peak demand at the horizon
- Peak demand before peak oil
- Small independent players travel abroad and spread Shale revolution
- Producers compete and decrease fiscal term to attract investments
- O&G exporters need cash, increase local tax on petroleum products and cut investments
- O&G price is driven back by marginal costs (which are decreasing)

Who is ready to be disruptive?

What does is take to develop such an industry in a new country?

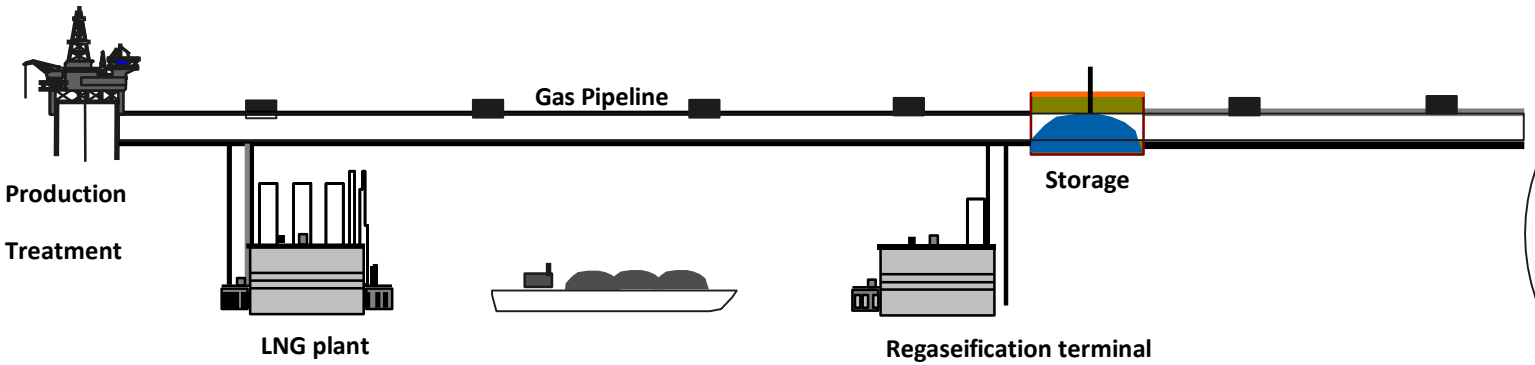
OIL IS LIQUID !

- **Easy to handle through interruptible and flexible chain**



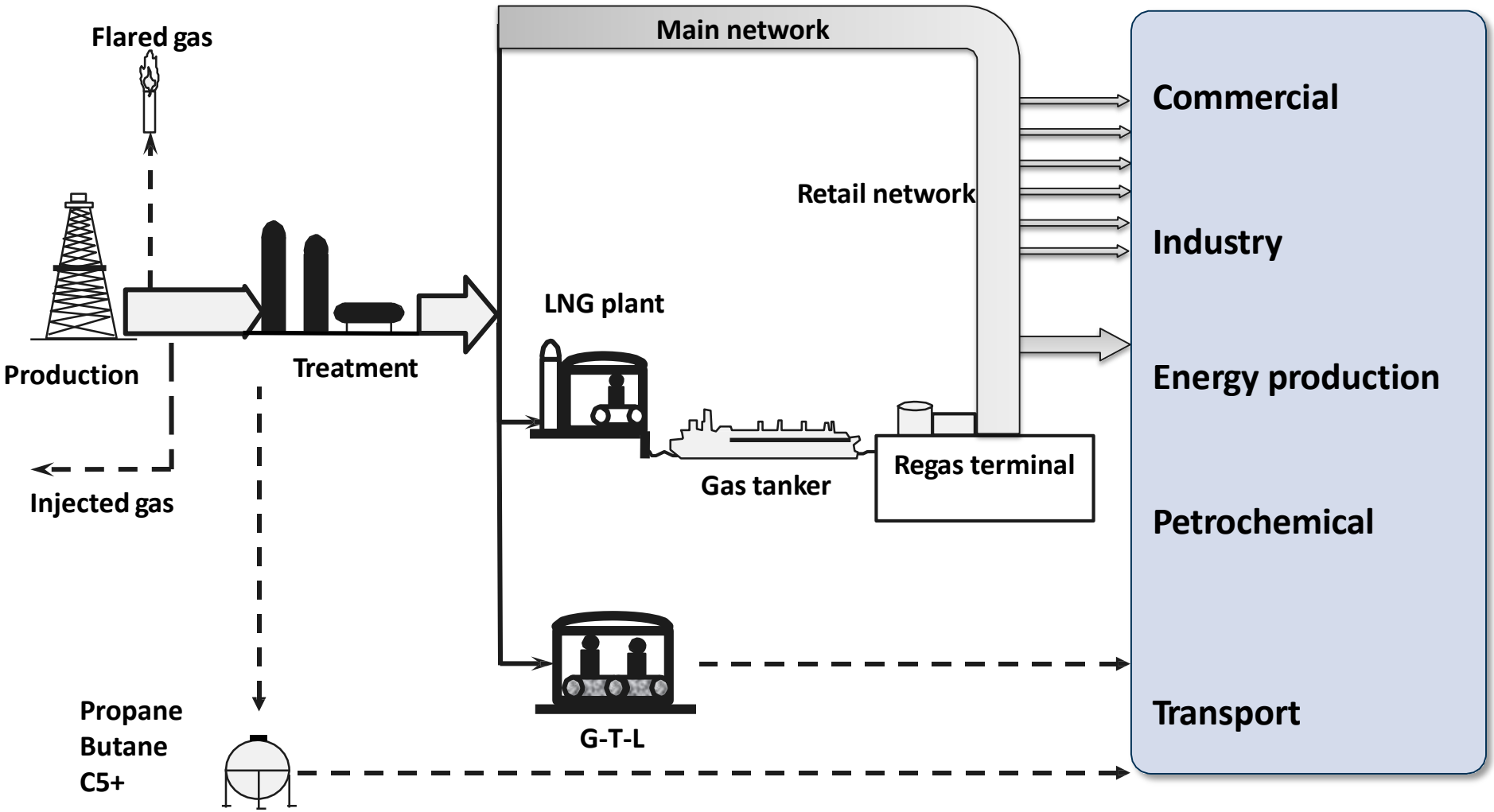
GAS IS « GASEOUS » !

- **Difficult to handle and requires practically non interruptible and rigid chain**

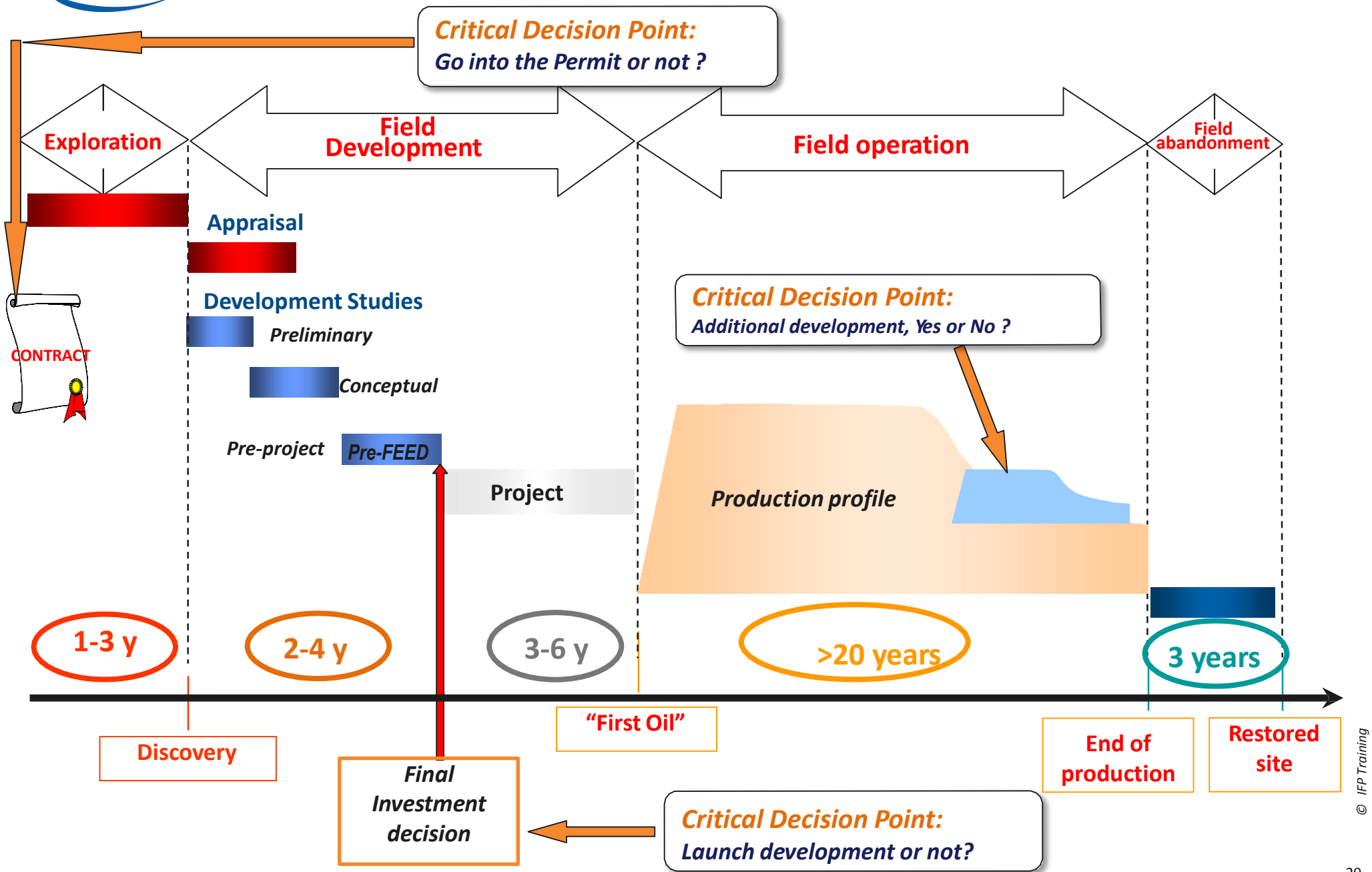


Gas gives 1000 times less energy than oil per cubic meter!

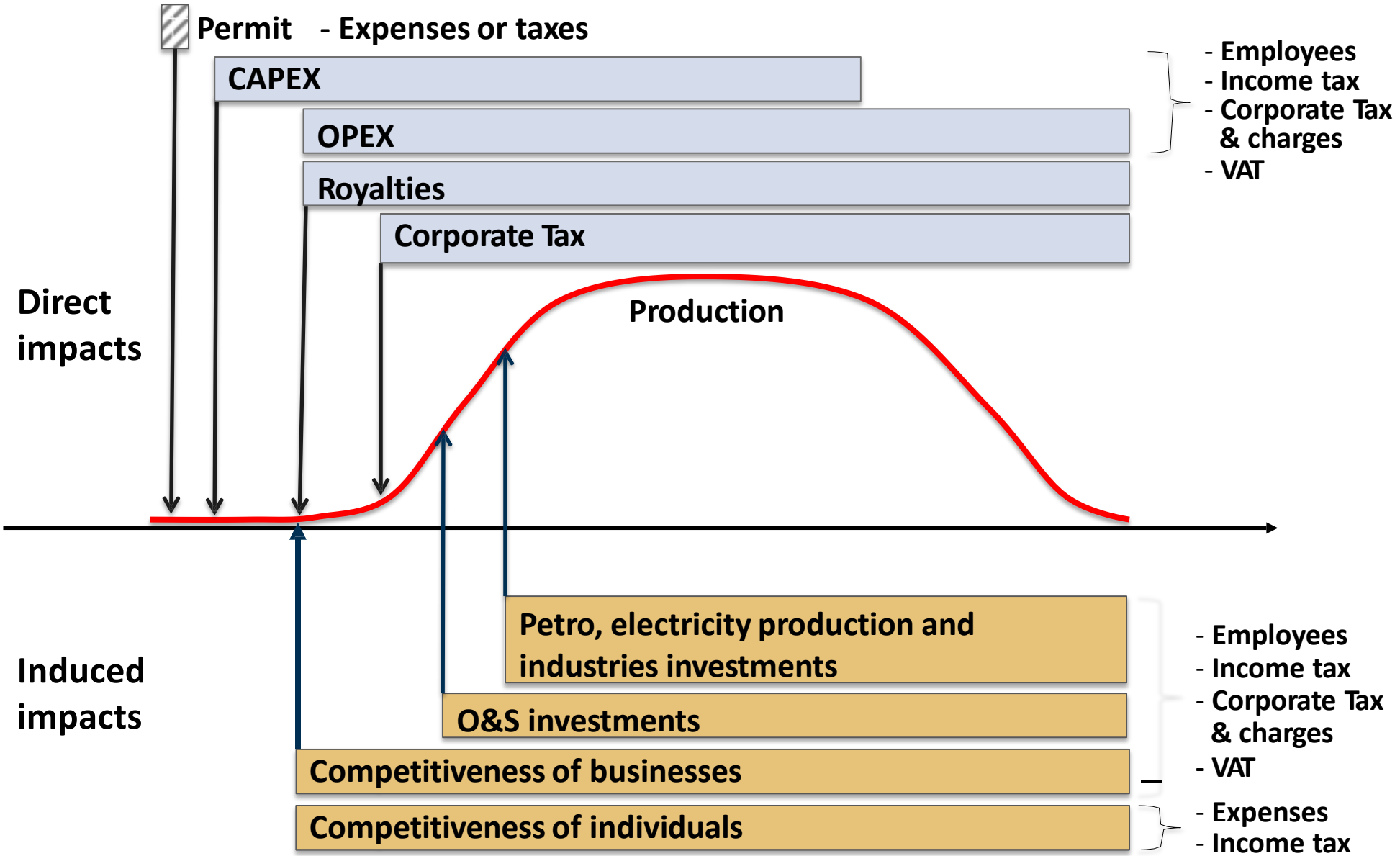
Gas commercialization



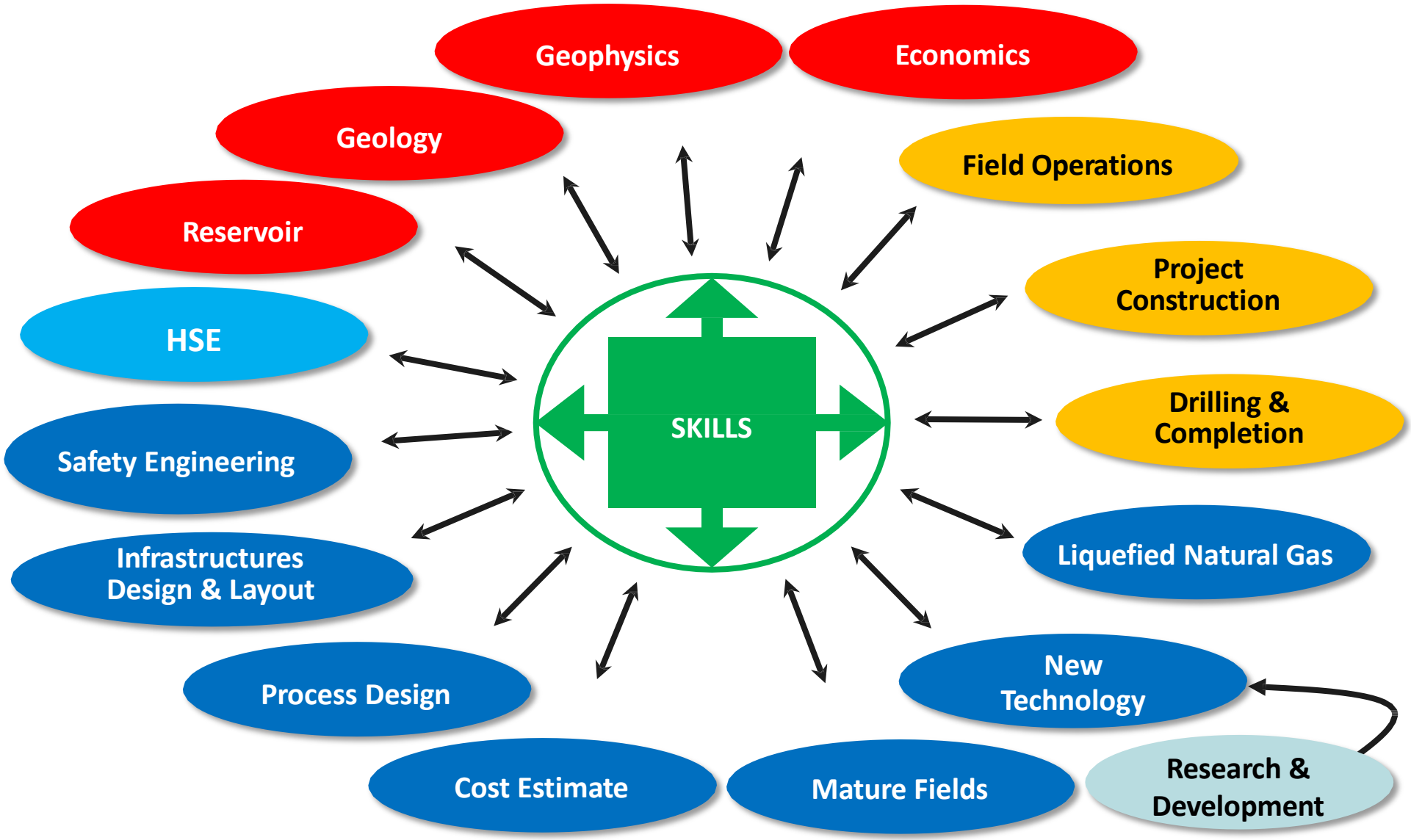
Critical decision points along the “conventional” E&P chain



Oil & gas - Contribution

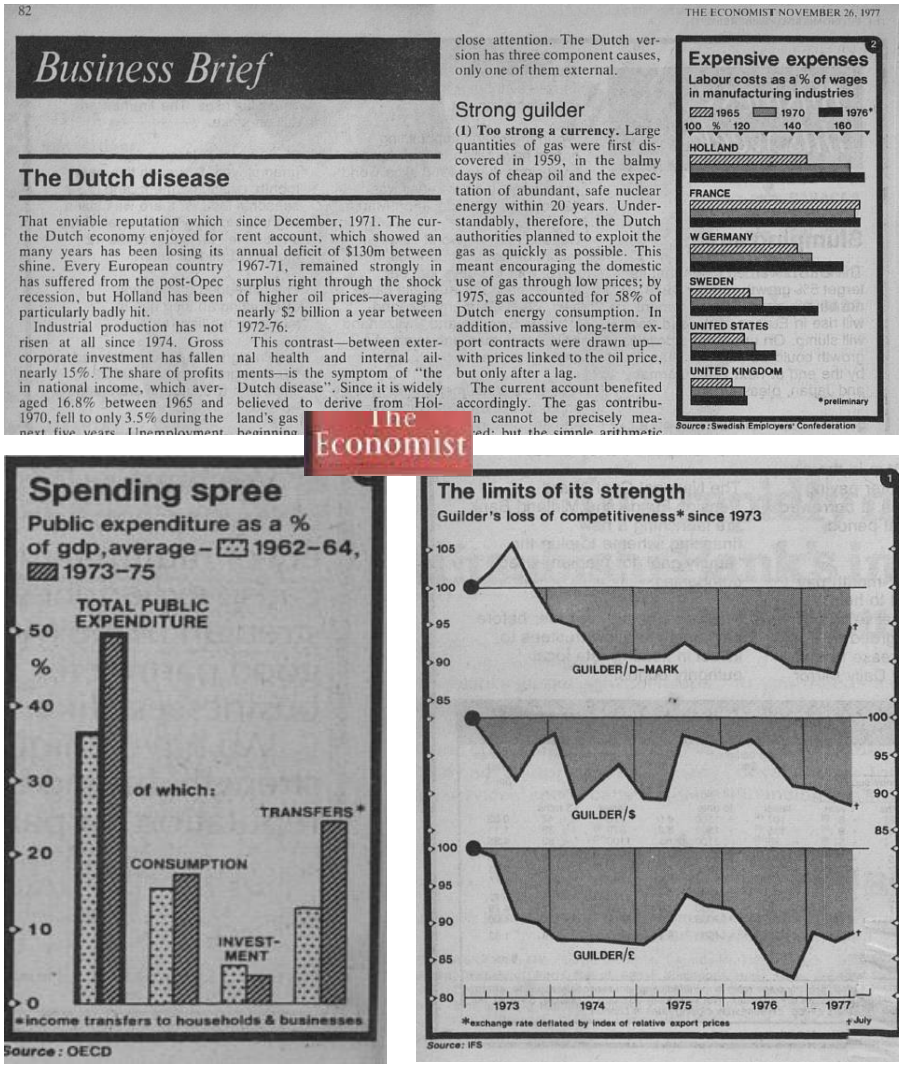


Skills



What lessons can be learned from previous experiences?

Dutch disease



82 THE ECONOMIST NOVEMBER 26, 1977

Business Brief

The Dutch disease

That enviable reputation which the Dutch economy enjoyed for many years has been losing its shine. Every European country has suffered from the post-Opec recession, but Holland has been particularly badly hit.

Industrial production has not risen at all since 1974. Gross corporate investment has fallen nearly 15%. The share of profits in national income, which averaged 16.8% between 1965 and 1970, fell to only 3.5% during the next five years. Unemployment since December, 1971. The current account, which showed an annual deficit of $130m between 1967-71, remained strongly in surplus right through the shock of higher oil prices—averaging nearly $2 billion a year between 1972-76.

This contrast—between external health and internal ailments—is the symptom of "the Dutch disease". Since it is widely believed to derive from Holland's gas [illegible] beginning close attention. The Dutch version has three component causes, only one of them external.

Strong guilder

(1) Too strong a currency. Large quantities of gas were first discovered in 1959, in the balmy days of cheap oil and the expectation of abundant, safe nuclear energy within 20 years. Understandably, therefore, the Dutch authorities planned to exploit the gas as quickly as possible. This meant encouraging the domestic use of gas through low prices; by 1975, gas accounted for 58% of Dutch energy consumption. In addition, massive long-term export contracts were drawn up—with prices linked to the oil price, but only after a lag.

The current account benefited accordingly. The gas contribu- [illegible] cannot be precisely mea- [illegible] but the simple arithmetic

Expensive expenses

Labour costs as a % of wages in manufacturing industries

1965 1970 1976*

100 % 120 140 160

HOLLAND

FRANCE

W GERMANY

SWEDEN

UNITED STATES

UNITED KINGDOM

*preliminary

Source: Swedish Employers' Confederation

The Economist

Spending spree

Public expenditure as a % of gdp, average – 1962–64, 1973–75

TOTAL PUBLIC EXPENDITURE

50 % 40 30 20 10 0

of which:

CONSUMPTION

INVEST-MENT

TRANSFERS*

*income transfers to households & businesses

Source: OECD

The limits of its strength

Guilder's loss of competitiveness* since 1973

105 100 95 90 85

GUILDER/D-MARK

100 95 90 85

GUILDER/$

100 95 90 85 80

GUILDER/£

1973 1974 1975 1976 1977

*exchange rate deflated by index of relative export prices

†July

Source: IFS

Groningen gas facilities

O&G money resulted in an inflated currency that harmed exports, provoked inflation and led to unemployment and inequality

Source: The Economist, 1977, upstreamonline

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Risks

- Inflation
- Corruption
- Bad governance
- Easy money for “popular” solution
- Short term strategy
- Pollution

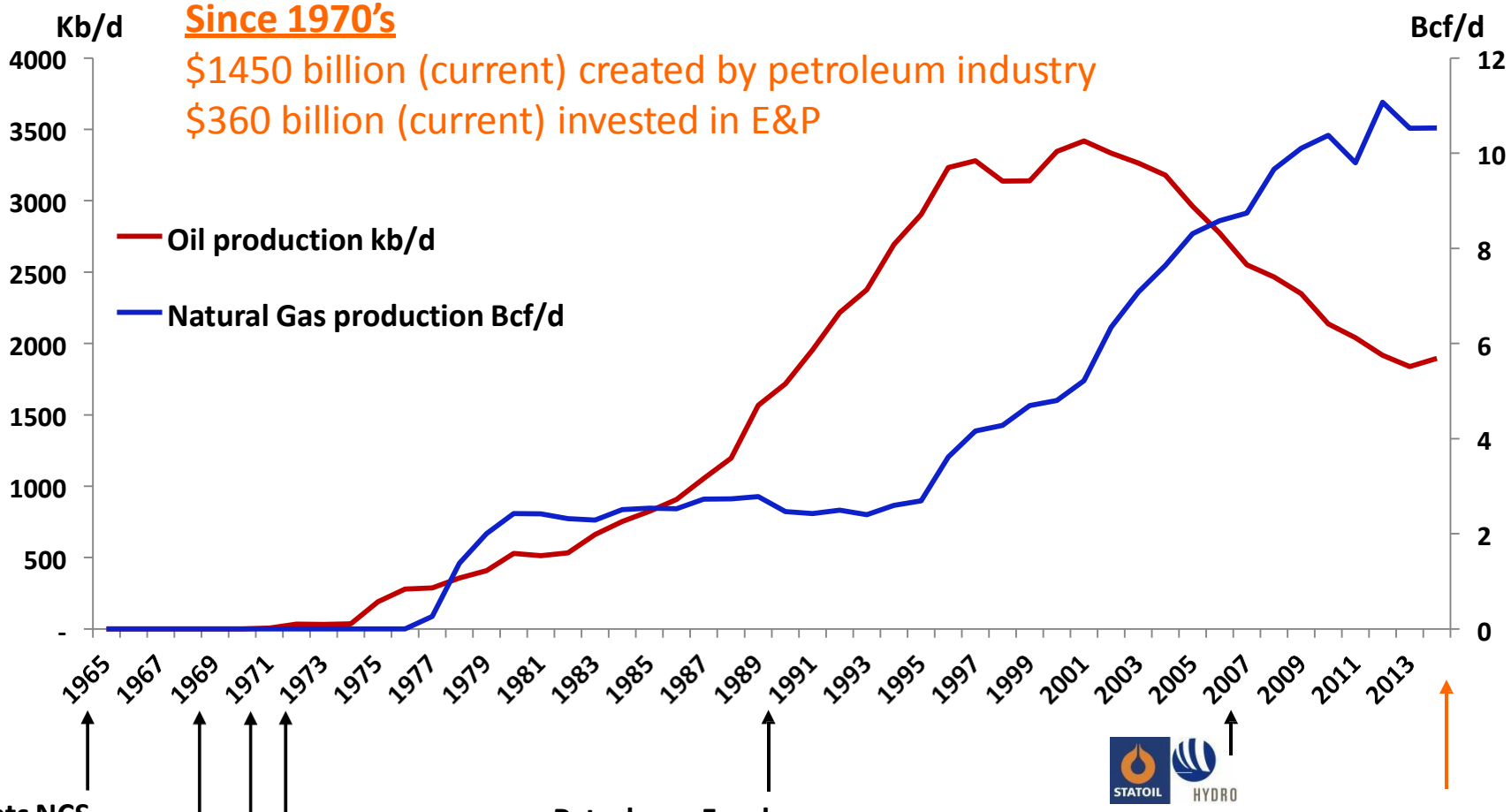
Opportunities

- Finance budget
- Finance education, R&D in energy…
- Finance infrastructures
- Cheaper energy supports competitivity
- Build long term strategy

- Statistical research found that countries that exported raw materials, minerals, agricultural products and fuels tended to grow less than more industrialized countries (J. Sachs and A. Warner, 1995)

- This conclusion is not shared by all. There are as many cases of oil revenues being used by autocracies in detriment of the population as cases of oil revenues used in favor of democratic societies (Norway, UK, US, etc.)

Norway's petroleum/development success



Since 1970's

$1450 billion (current) created by petroleum industry

$360 billion (current) invested in E&P

Today

1st in Human Development Index

"Oil fund": Bn$ 857, Sept 2014

Petroleum exports: 50% of export earnings

Statoil: $47Bn market capitalisation

Petroleum sector: 25% of GDP, 80 000 employees

French O&G industry at glance

20-30's Concession in Middle East (San Remo treaty)

40's National gas distribution network development

50's Intensification of oil exploration in Africa, especially the Sahara. Development of Lacq

60's Start of offshore exploration and production in West Africa, Gabon and the North Sea. Development of liquefied gas transport technologies

70's Development of innovative technologies for oil and gas production in the difficult conditions of the North Sea

80's Development of energy saving technologies and environmentally friendly products, particularly for downstream operations

90's Development of technologies for deep offshore and discoveries of giant fields

2000's Development of technologies for LNG, floating LNG, etc.

IFP Energies nouvelles

Axens
IFP Group Technologies
EURECAT

Provider of technologies, catalysts, adsorbents and services to the refining, petrochemical, gas and alternative fuels industries.

IFP Energies nouvelles

BeicipFranlab

Provider of oil and gas consulting and software solutions

IFP Training
RSI

Training and simulation

IFP SCHOOL

Other stakes

CGGVERITAS
geogreen
Technip
HEURTEY PETROCHEM
PROSERNAT

Excellence is our DNA…

IFP Energies nouvelles is among the top 10 national patent filers and recognized as one of the world's 100 most innovative organizations

Yves Chauvin, Engineer and Research Director at IFPEN from 1960 to 1995, winner of the Nobel Prize in Chemistry in 2005

IFP Energies nouvelles

Numerous CEO/Vice president are **IFP School Graduates**

Axens, CNPC, EDF, Gaselys, ExxonMobil France, Perenco, Petronas, Technip, etc.

IFP School

IFP Training

Hundreds of executives are **IFP School** Graduates or/and **IFP Training** trainees

IFP at the origin of several world leaders in:

- **Flexible risers**
- **Petroleum hydrotreating & hydroconversion,**
- **FCC gasoline desulfurization**
- **Catalytic reforming**
- **Claus and Tail Gas Treatment**
- **Oil & gas training, etc.**