

PLENARY SESSIONS 2

Natural Gas: Challenges in short run, Rising star in future



SM.Hossein Adeli, Ph.D.
Secretary General
Gas Exporting Countries Forum

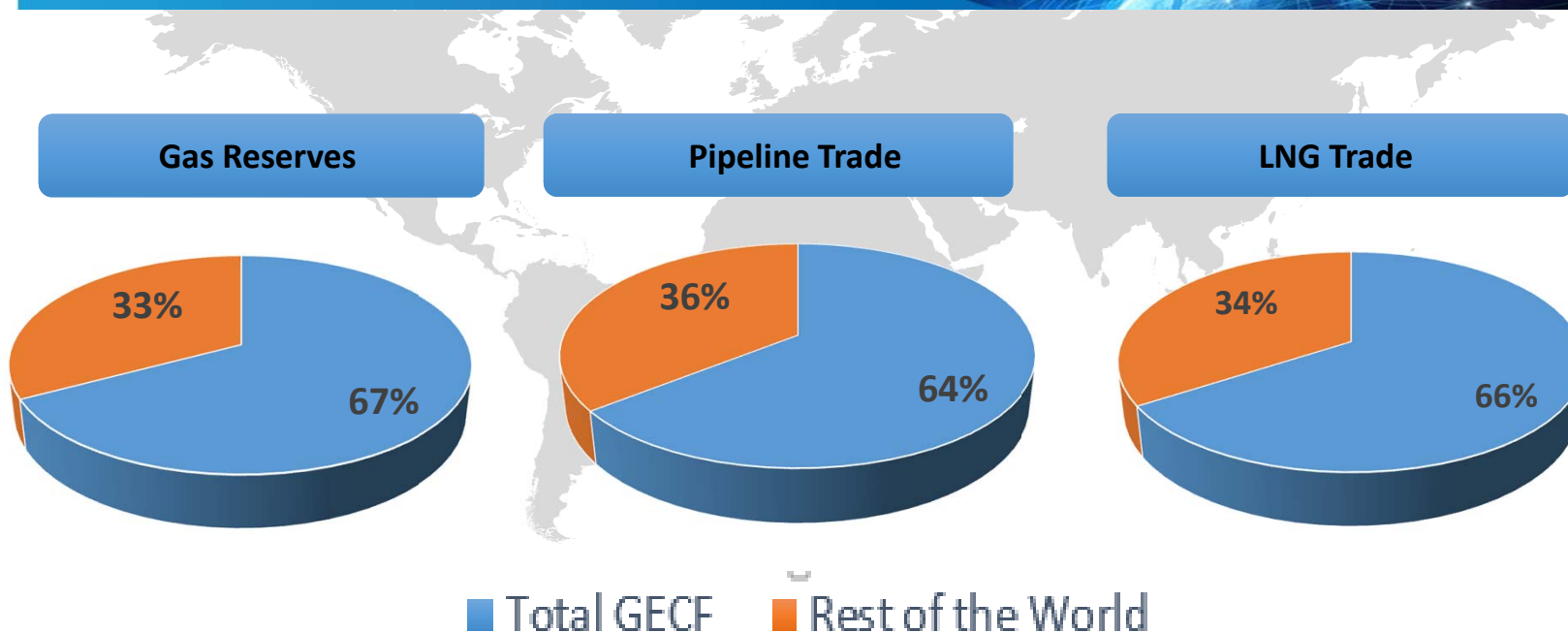
15TH INTERNATIONAL ENERGY FORUM MINISTERIAL

Algiers, 26-28 September 2016

International Conference Center of Algiers

We are the GECF

GECF: the Reliable source of supply for the reliable source of energy - Natural Gas



■ Total GECF ■ Rest of the World

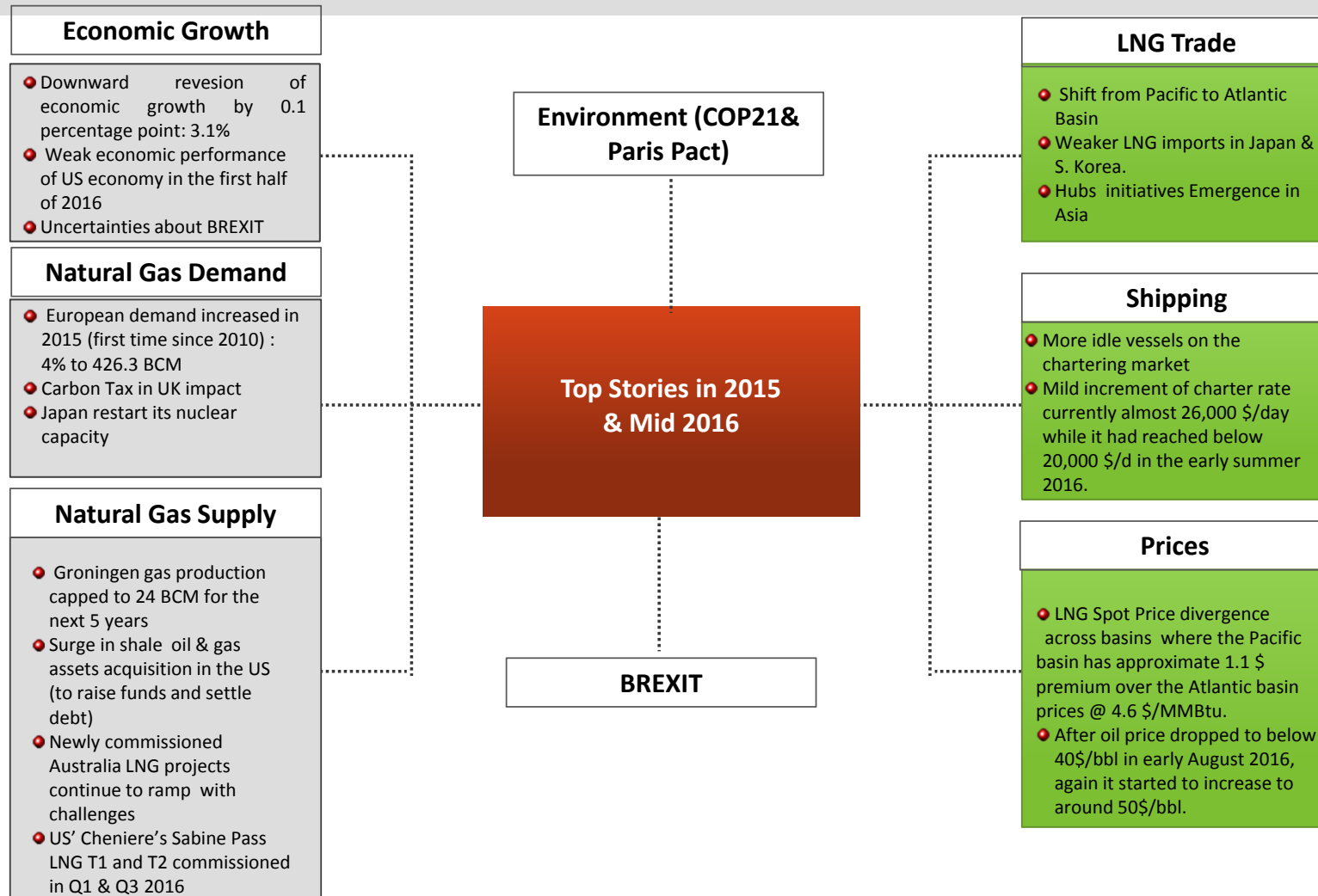
Observers (7):

-  Azerbaijan
-  Iraq
-  Kazakhstan
-  The Netherlands
-  Norway
-  Oman
-  Peru

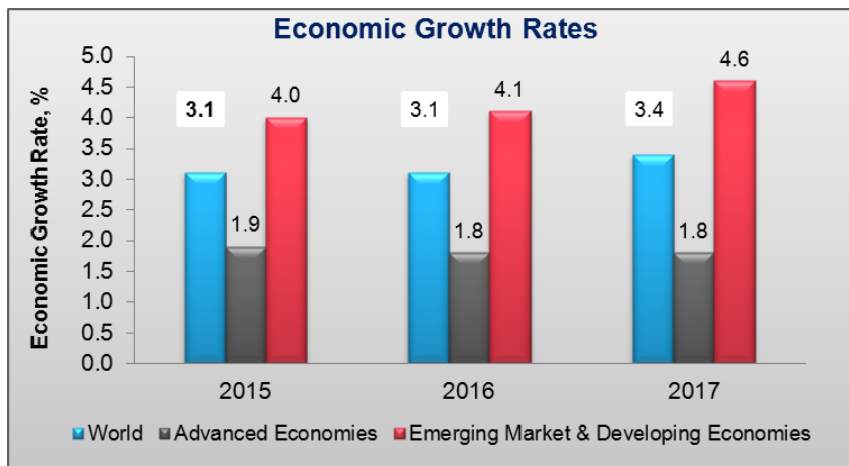
Members (12):

-  Algeria
-  Bolivia
-  Egypt
-  Equatorial Guinea
-  Iran
-  Libya
-  Nigeria
-  Qatar
-  Russia
-  Trinidad and Tobago
-  United Arab Emirates
-  Venezuela

Top Stories of 2015 & Mid-2016



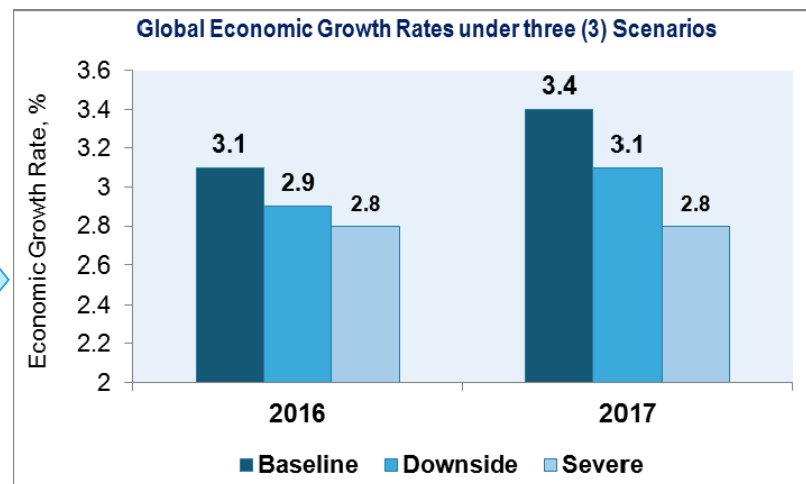
Economic Growth (%): Less Optimism, More Actions Needed



- ❑ Global economic growth revised down by 0.1% each for 2016 and 2017 to 3.1 % and 3.4% respectively (IMF July).
- ❑ Brexit and its impact along with weak performance of US economy in 1st half of 2016 majorly caused the revision of Advanced Economies growth rate down to 1.8% in 2016 (-0.1%) and 1.8% (-0.2%) in 2017 (IMF July).
- ❑ No revisions in the Emerging Market & Developing Economies at 4.1% and 4.6 % growth rate in 2016 and 2017.

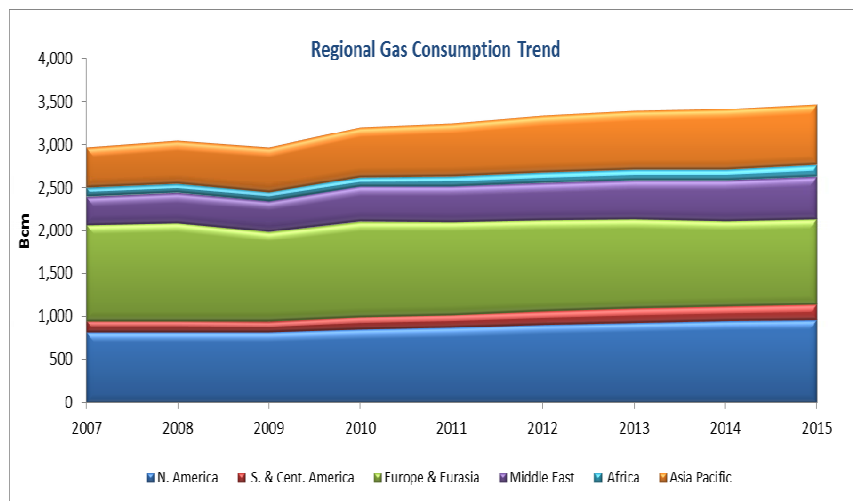
Consequences:

- Slowdown of global economy.
- Weak recovery of financial and commodity markets, specially oil and gas markets.
- Could Result poor investment in oil and gas projects in supply side and less consumption in the demand side.

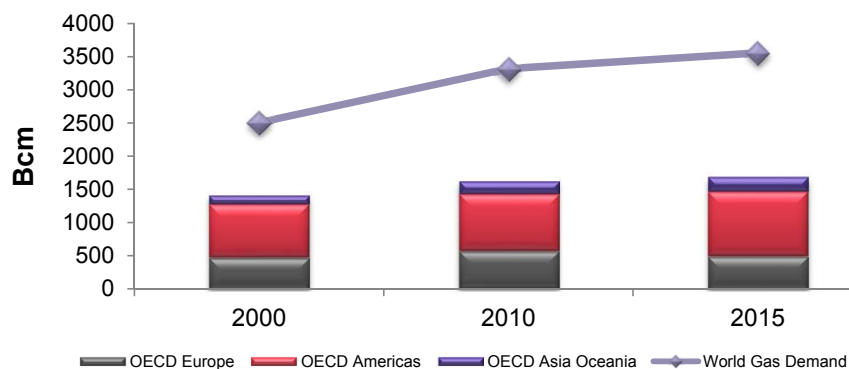


Source: IMF-July 2016

Natural Gas Demand: A Moderate Expansion coupled with Uncertainties



- ❑ Global natural gas consumption has been growing at an average y-o-y growth of 2.6% since after the 2009 the financial crisis reaching ~ 3.56 Tcm in 2015
- ❑ Global average growth of 1.7% in 2015 is almost the same with the last 5-yr average growth of 1.6%, but much higher than the 2014 (+0.5%)
- ❑ Based on the observable trend in 2016, growth is expected to be in excess of 1% to average ~3.6 Tcm in 2017
 - *Competitive prices, environmental concerns to drive consumption growth (US, China, Middle East, etc)*



Source IEA, 2016

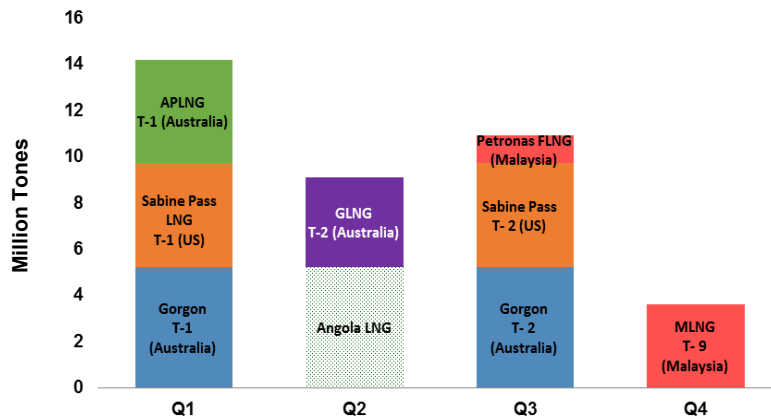
- ❑ OECD accounted for 46% of total consumption in 2015, although the avg growth of 1.5% is below the global avg. (+1.7%)
 - *Driven by the growth in US (+3%) to 778 Bcm and EU (+4.6%) to 406 Bcm, as competitive prices and weather induced demand boost consumption in power generation sectors*
- ❑ Amongst the highest consumers out side of OECD, Iran and China had the highest growth at +6.2% and +4.7% consuming 191.2 Bcm and 197.3 Bcm respectively

Data: IEA 2016, BP Statistical Review June 2016

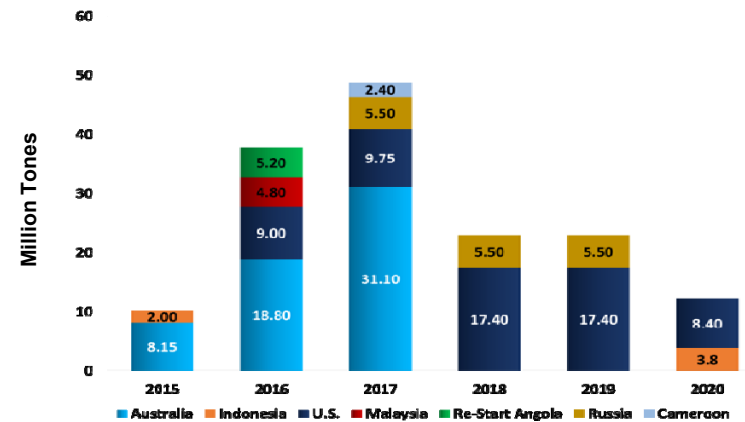
Natural gas consumption would continue to expand due to its environmental premium and competitiveness that led coal consumption to decline by 1.8% to 3,840 Mtoe in 2015 compared to decade average growth of 2.1% and expected to surpass its 24% (3,135 Mtoe) share in the primary energy mix despite push for more renewables.

New LNG Capacities: 2016 and Beyond: More Competition & More Challenges

LNG Projects/Capacities to be Commissioned during 2016



New LNG Capacity 2015-2020



Total Capacity 37.8 mtpa

- ☐ Australia 18.8 mtpa
- ☐ U.S 9 mtpa
- ☐ Malaysia 4.8 mtpa
- ☐ Angola 5.2 mtpa (re-start)

In the window 2016-2020:

More than 140 mtpa of new capacity are expected to come online.

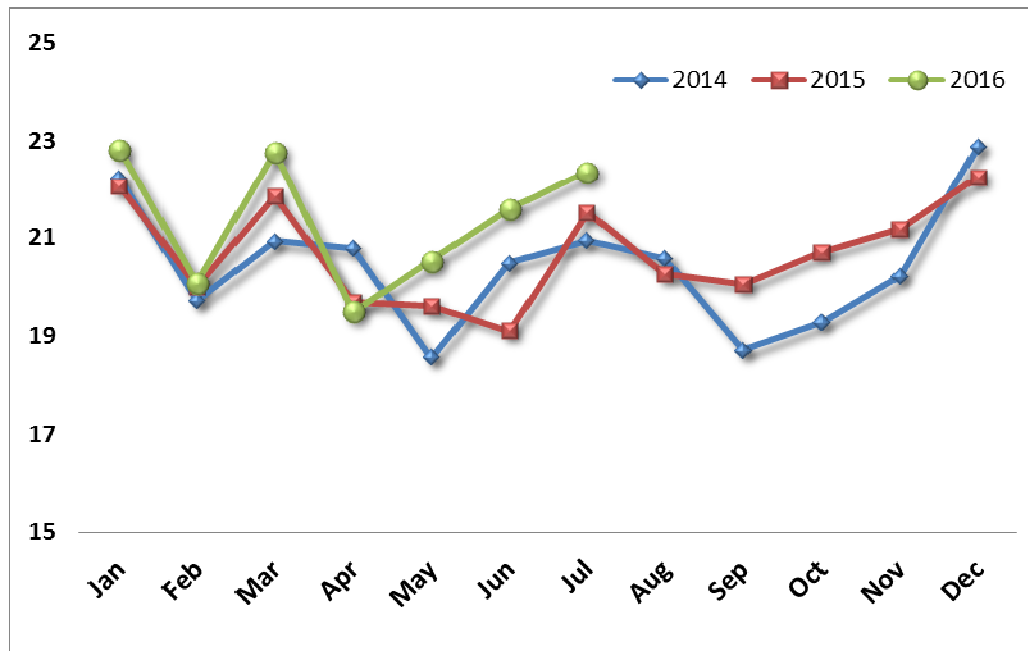
Source: Projects Updates

Source: Projects Updates

Global LNG Trade Trend in 2016

Global LNG Trade

Million Tones

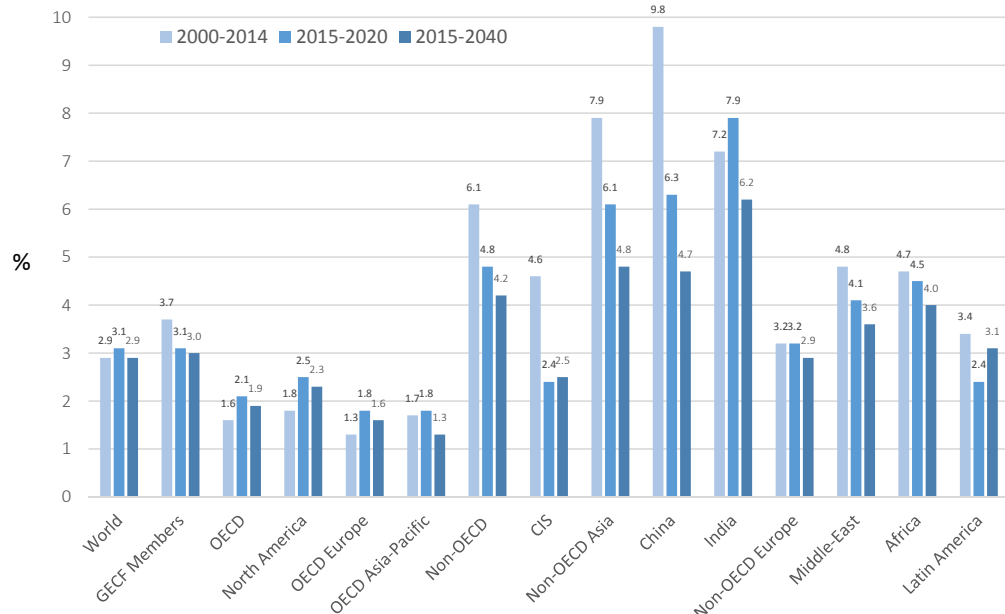


During 2016 imports have reached 127.26 Million tons which is 4% or nearly 5 million tons more compared with the LNG imported during 1H2015.

- There are positive signal for LNG trade and the potential capacity of some of the markets to absorb and balance LNG supply.
- With incremental volumes expected from Australia and the U.S., buyers are seeing optimizing and taking advance of the low prices and current market conditions to procure more cargoes

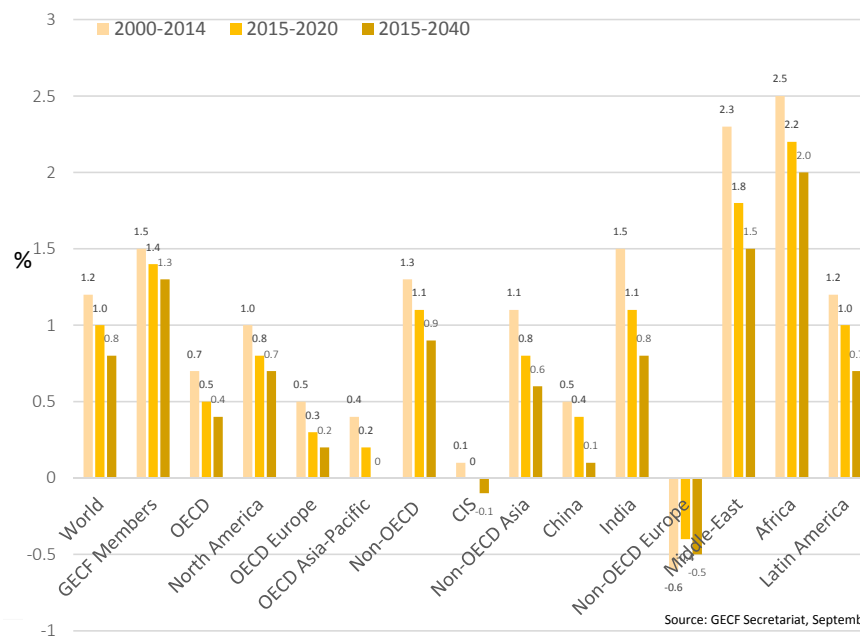
Macroeconomic Outlook & Energy Demand Drivers

Real GDP medium- to long- term growth, %



Source: GEFC Secretariat, September 2016

Population growth rates by major region, %

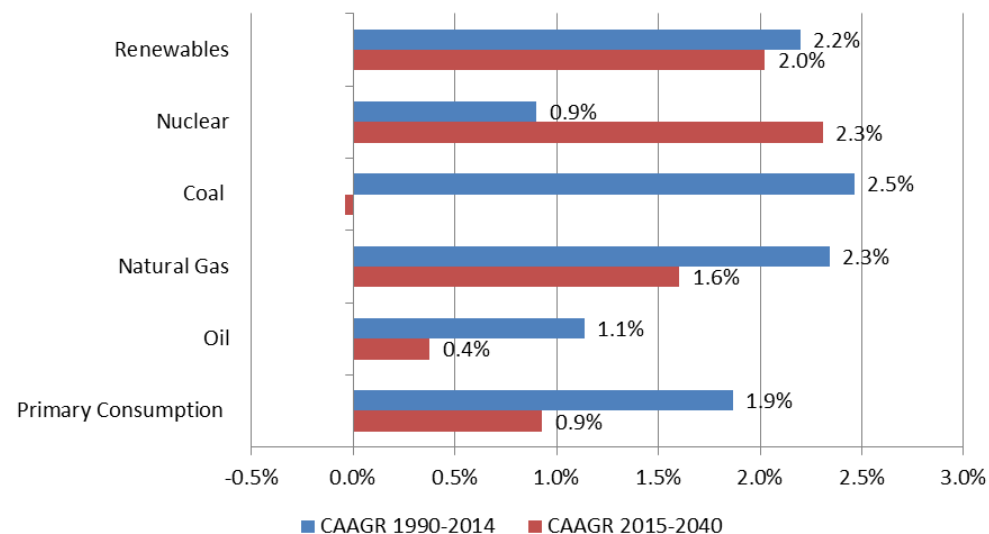
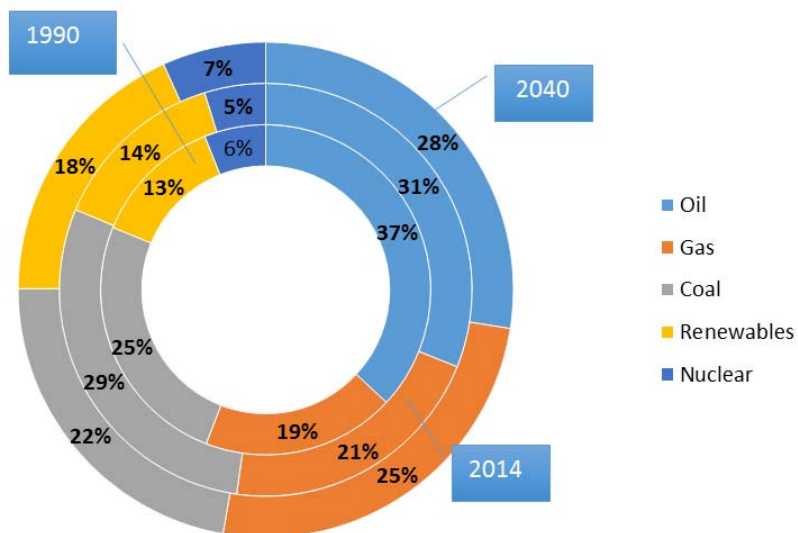


Source: GEFC Secretariat, September 2016

Medium – Long Term Economic Outlook & Income Drivers

- Global GDP to grow 2.1 times (2.9-3.1% annually at sustainable pace) in the Outlook to 2040
- China and India defining the shape and future direction of the global economy
- Brexit will slowdown the EU economy in short and medium term
- Golden age of natural gas in North America: Stable economic growth
- Population will rise by 1.7 billion additional energy users
- Urbanization is underway (54% to 64%) although at a slower pace
- **De-coupling of economic growth and energy consumption**

Primary Energy Demand by Fuel

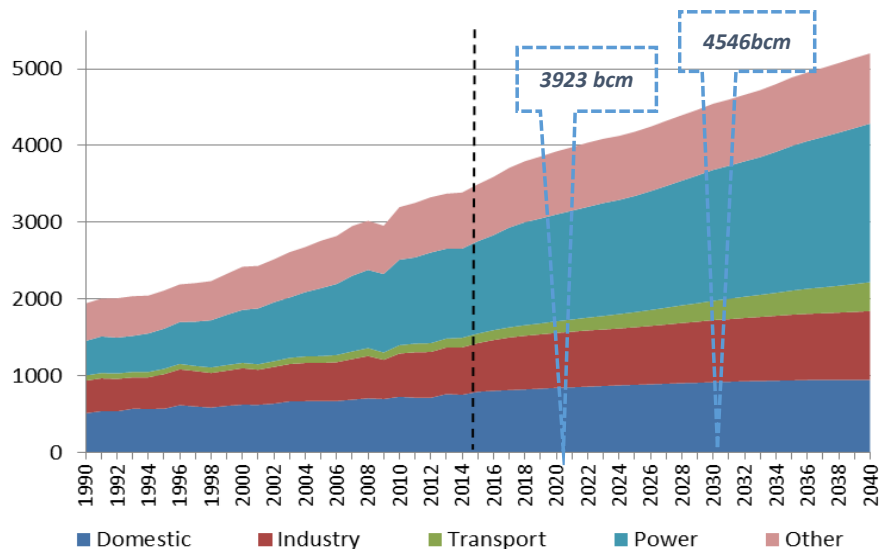


Source: GECF Secretariat, September 2016

- Fossil fuels will remain important element for satisfaction of energy demand.
- Fossil fuels will make up 75% of world energy mix by 2040.
- Gas is the fastest growing fossil fuel by 1.6% percent over outlook period and gains the most increment in market share between all energy types.
- Under GECF Secretariat Reference Case scenario, gas share of global energy demand increases from 21% in 2014 to 25% in 2040.

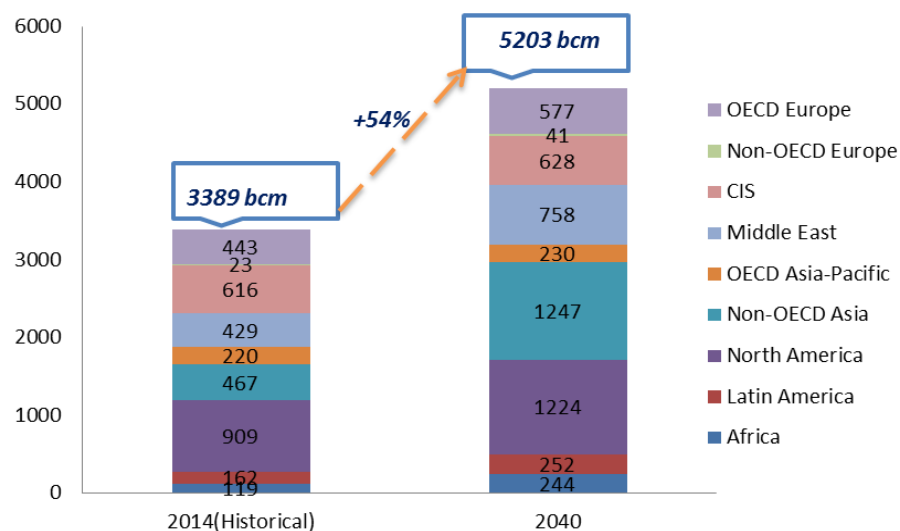
Primary Energy Demand by Sector and Regions

Primary gas demand forecast (bcm)



Source: GECF Secretariat, September 2016

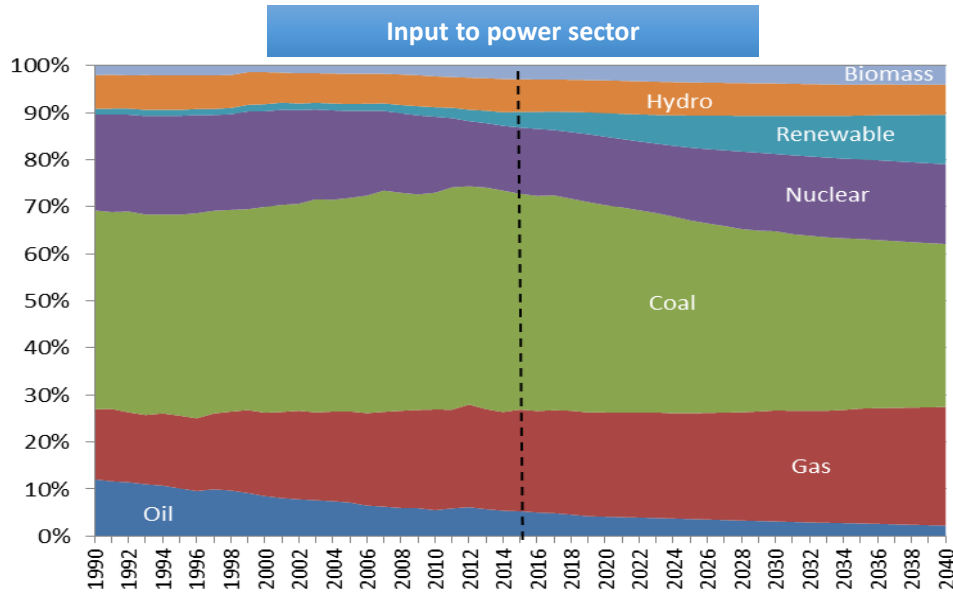
Gas demand by sector (bcm)



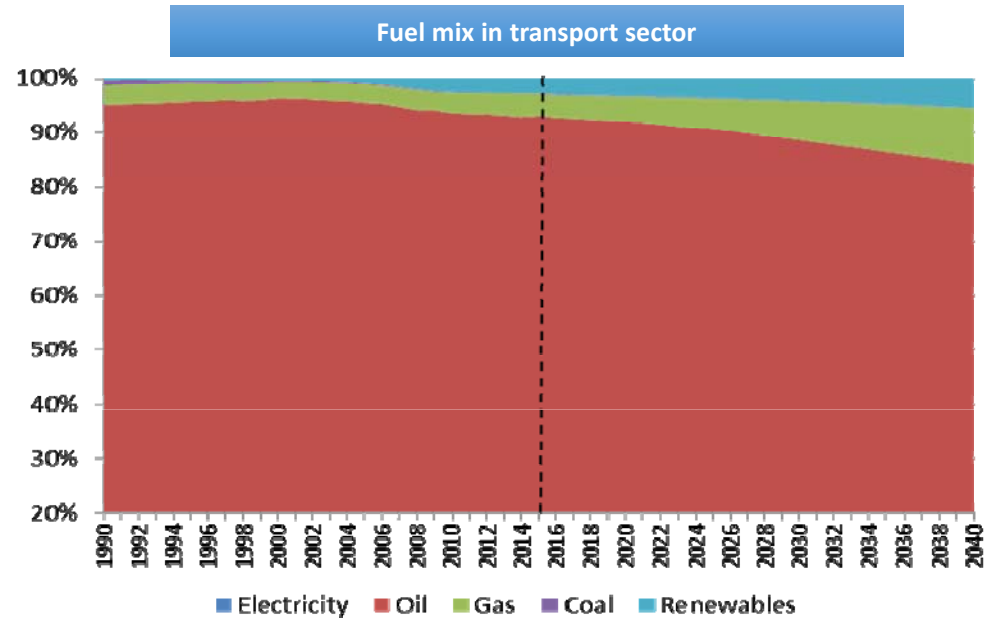
Source: GECF Secretariat, September 2016

- Gas demand increases by more than half over next 25 years exceeds 5000 bcm consumption in 2037 .
- Gas increases its penetration across all regions with utmost gain in North America, OECD Europe, non-OECD Asia and Africa.
- In terms of volume, non-OECD Asia accounts for 43% of total additional gas demand over 2015-2040, with China and India together contribute to over 30% of the increase.
- Four countries of China, US, Iran, and India with over 900 bcm additional gas demand over 2015-2040 contribute to more than half of increase in global gas demand.
- Power sector is the prime driver of gas demand under the impulsion of rise in electricity needs.

Demand by Power and Transport



Source: GECF Secretariat, September 2016

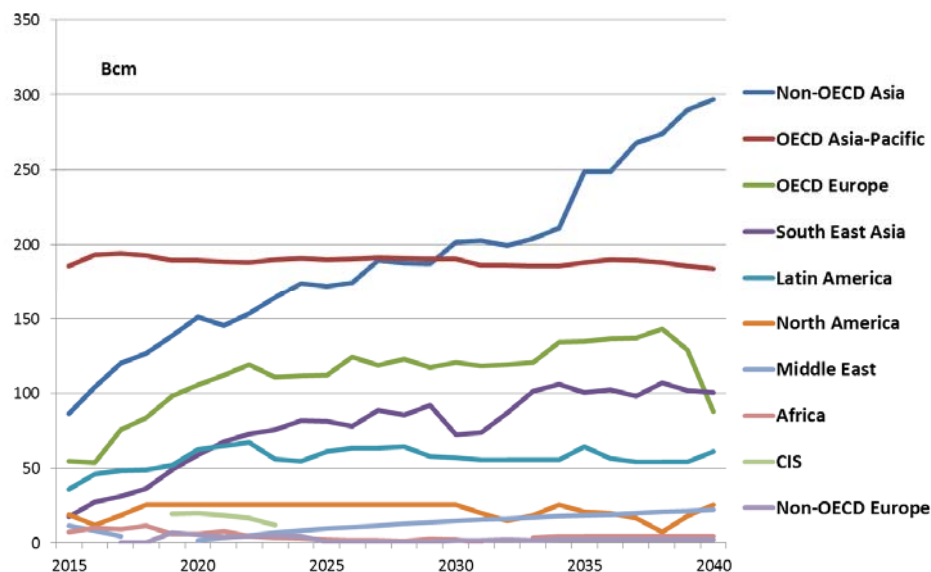


Source: GECF Secretariat, September 2016

- Gas use in the power sector grow by 2.2% per year, faster than global gas demand growth of 1.6%.
- Power sector's share of global gas demand increases from 34% in 2014 to 40% by 2040.
- By 2040, the share of coal in power sector declines to 35% from 47% today mainly due to stronger environmental regulations.
- Renewable is expected to be fastest growing fuel in power sector with 5.1% annually derived by falling in costs.
- Renewable share in global power increases to 15% by 2040.
- Demand for gas in transport is set to grow faster than any other final sectors with 4.6% per annum.

New players in LNG trade

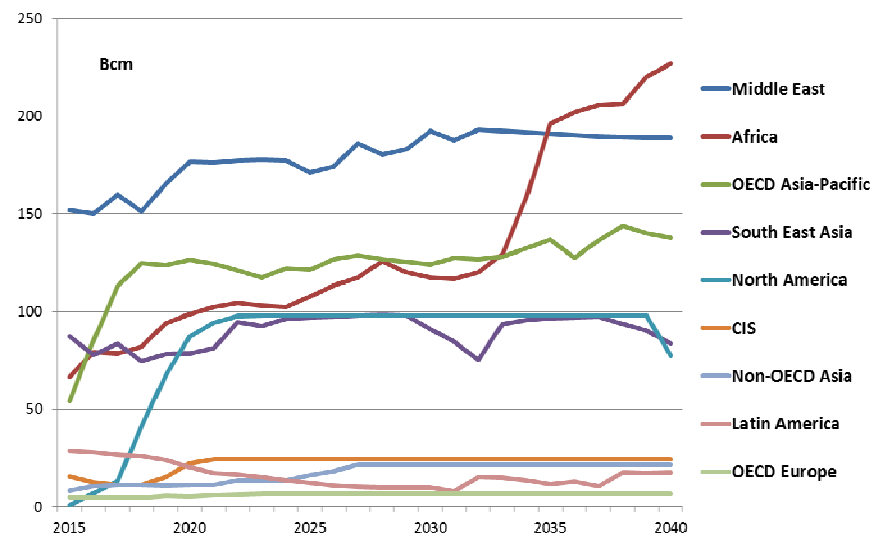
LNG importers



Source: GECF Secretariat, September 2016

- Non - OECD Asia will outpace OECD Asia LNG imports by around 2030 as it is expected to grow by almost 5% on average per year and will be the main LNG importing region provided that enough regasification capacity is implemented as announced.
- OECD Asia - Pacific will remain an important LNG importer and will maintain in second position. In Europe, LNG will grow but will remain a residual market.
- While Latin America import needs will be highly dependent on the development of domestic resources including shale gas.

LNG exporters

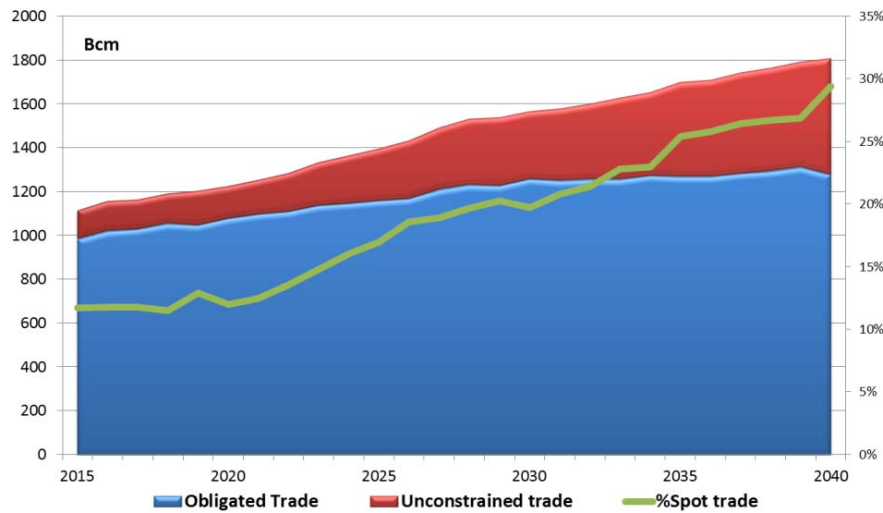


Source: GECF Secretariat, September 2016

- The Middle East will remain the main LNG exporter throughout the outlook period by 2040, but will be challenged by other existing players like in OECD Pacific or may be by other new players in Africa which has a big potential either in offshore or unconventional gas.
- The CIS will also emerge as new important LNG player but with moderate appetite, while North America LNG exports will be constrained by market uncertainties in terms of its price attractiveness and global gas demand growth needs

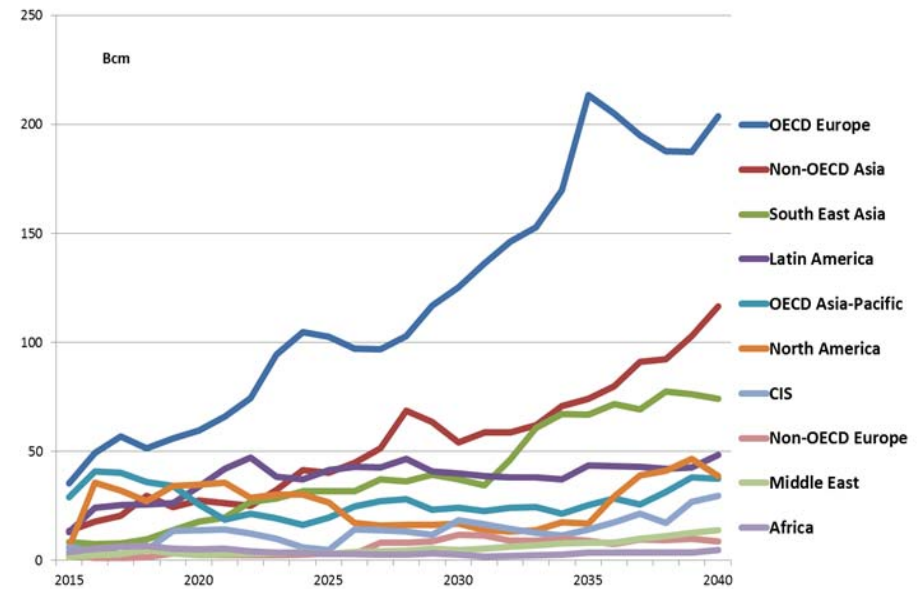
International contracted vs. spot gas trade

Total international gas trade Contracted vs. Spot



Source: GECF Secretariat, July 2016

International gas-to-gas trade by importing region



- GECF Secretariat considers that the current contracted volume level will be maintained and grow at a relatively moderate level, thanks to the new long term deals between Russia and China, as well as other pipeline export projects and LNG deals.
- Therefore the unconstrained international gas trade that can be contracted either through spot or potentially through other long term deals, will grow significantly at about 5% growth pace per year, and from a 10-15% share of total gas trade, it will represent around 30% by the end of the outlook period in 2040.

The way forward

- Serious attention to climate change commitments
- Commitment to a balanced energy mix.
- The world will remain around 75% dependent on fossil fuel in 2040
- Therefore Gas as the cleanest fossil fuel is indeed an effective couple for renewables
- Together they can establish a solid foundation for transition to low carbon economy.



GECF

**Thank You
for Your Attention**