

JODI Gas questionnaire and JODI Gas manual

*17th APEC workshop on energy statistics/
Joint APEC-JODI regional training workshop*

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Edito Barcelona

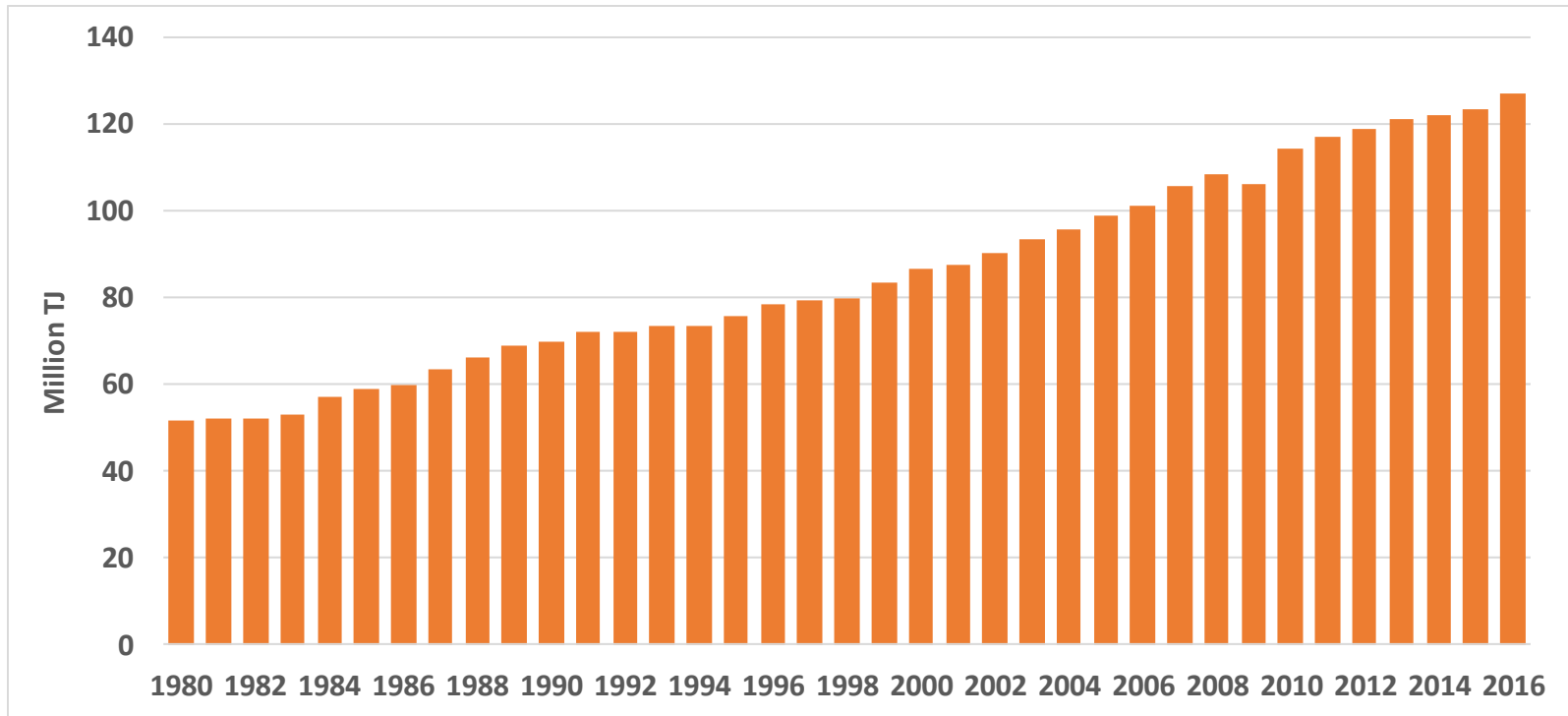


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1. Natural gas data
 2. JODI Gas monthly data collection
 3. References
 4. Major differences with annual gas questionnaire



Natural gas data

World natural gas demand



Source: IEA 2018.

World gas demand steadily increasing and is expected to further rise over the next two decades

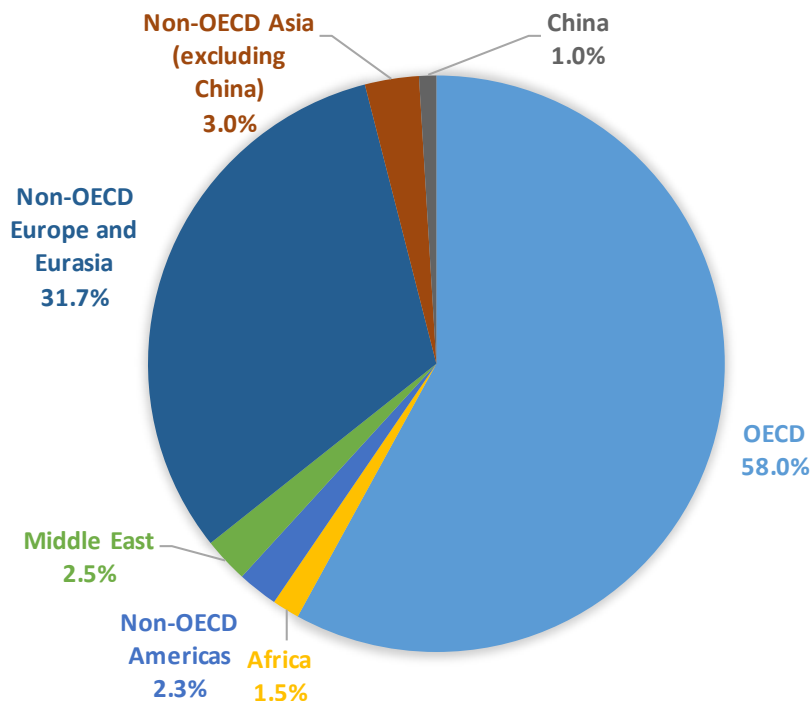
Natural gas perspective

1. The cleanest (or least polluting) fossil fuel, plentiful and dynamic fuel
2. Recent increase in trade (LNG) and price volatility

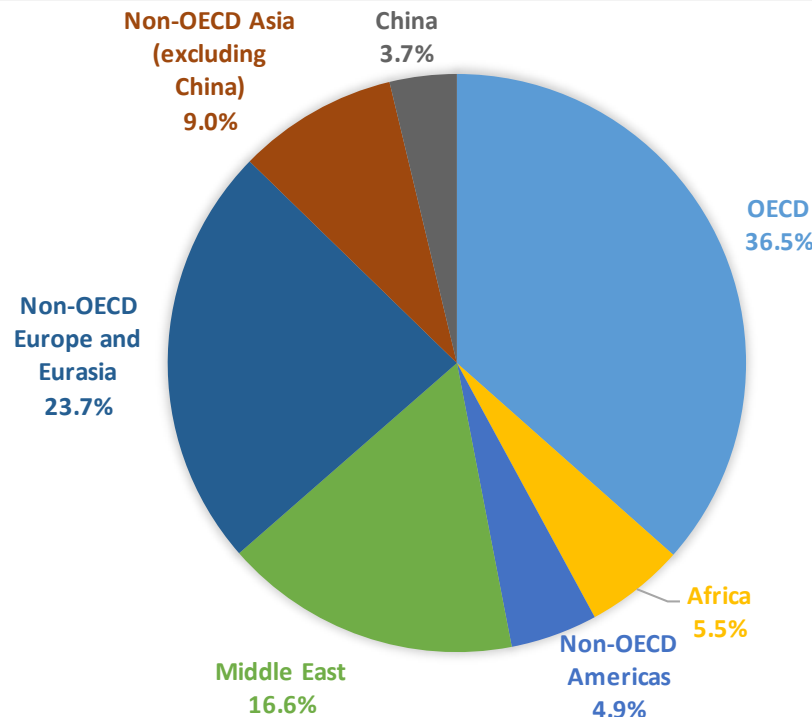


Natural gas production by region

1980



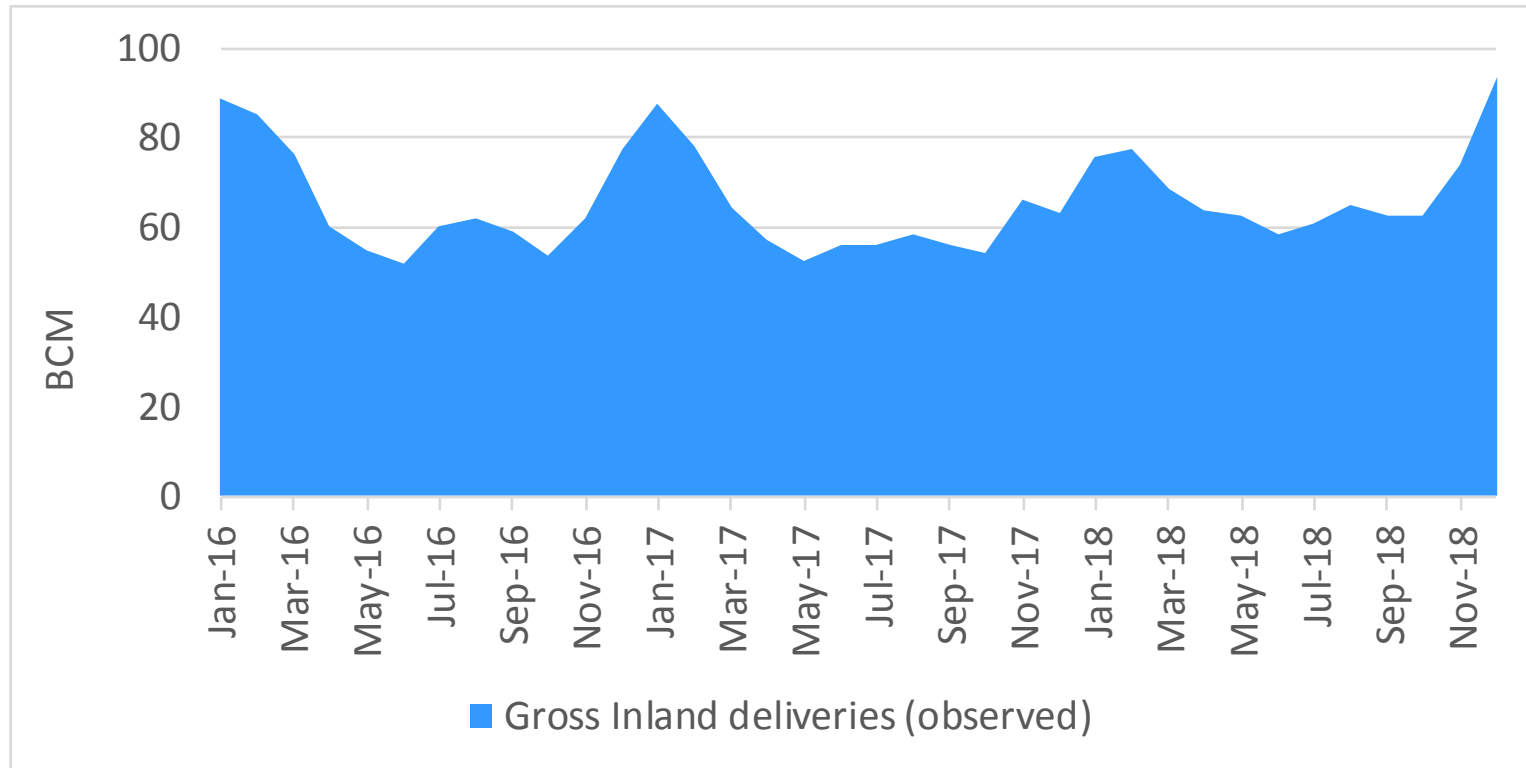
2016



OECD production increased just 1.5 times while Middle East increased 16 times.

Importance of monthly gas data

Gross inland delivery of natural gas in the USA

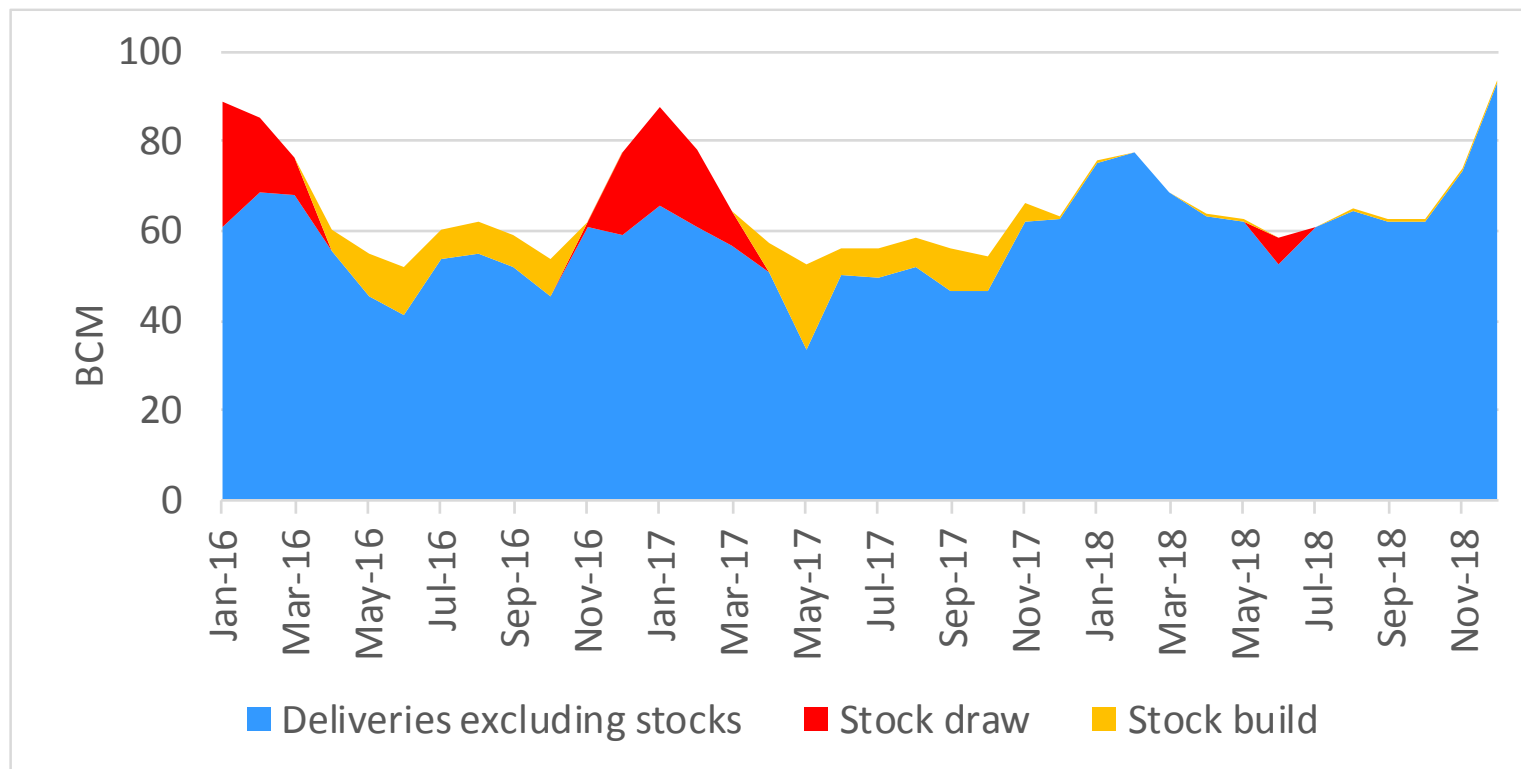


Source: APEC Monthly Gas data, June 2019.

Gross inland deliveries in the USA showing seasonal demand trends

Importance of monthly gas data

Gross inland delivery of natural gas in the USA



Source: APEC Monthly Gas data, June 2019.

Stocks are drawn during peak months to meet demand while stocks are built during months of lower demand



Monthly gas data collection

What is natural gas?

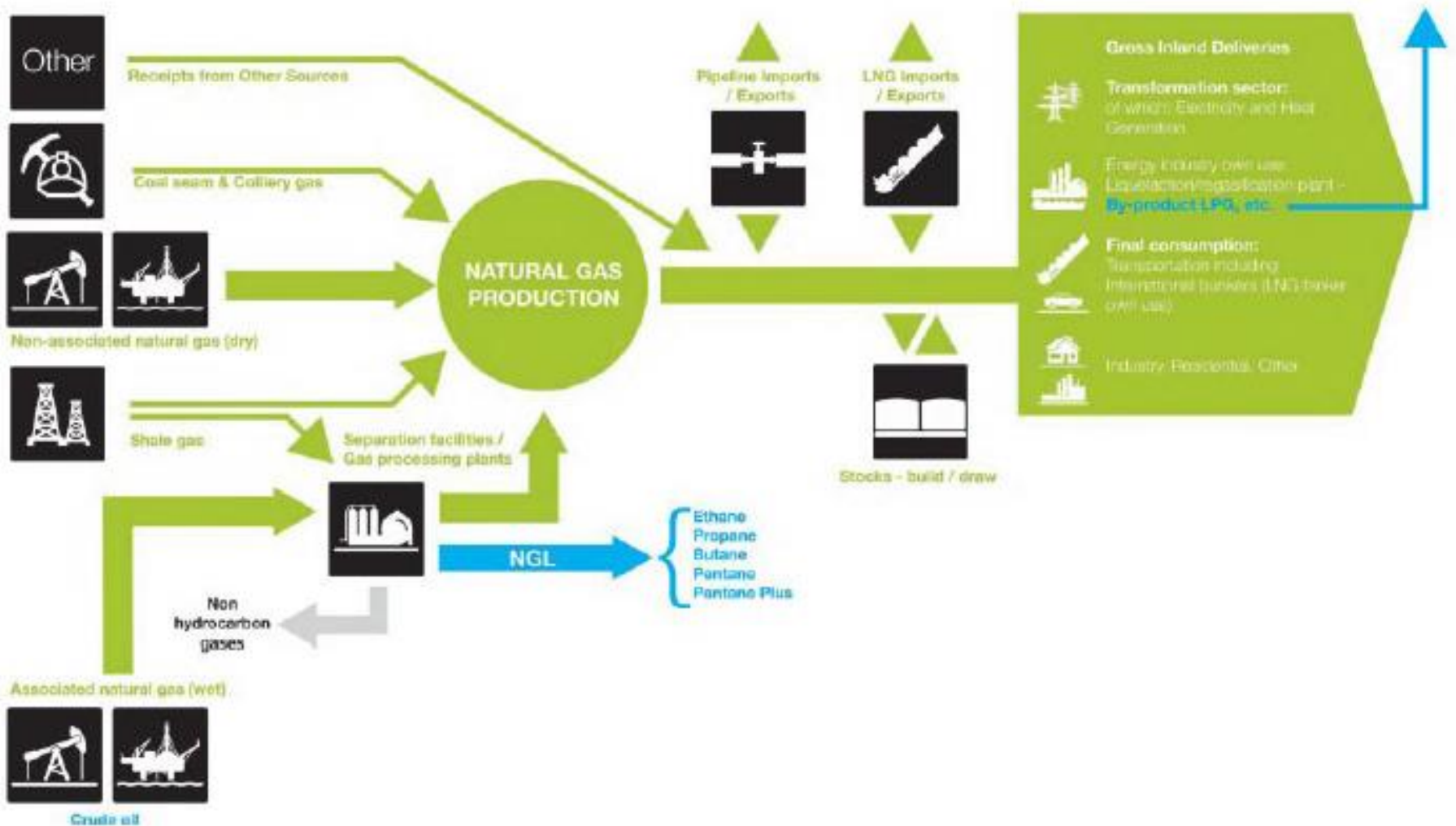
"... mixture of gaseous hydrocarbons, primarily methane, but generally also including ethane, propane and higher hydrocarbons... and some "non-combustible gases"

What is natural gas?

- Natural gas can be mainly found naturally in underground reservoirs that can be distinguished as:
 - Associated gas (from fields producing both liquid and gaseous hydrocarbons), or
 - Non-associated gas (from fields producing only gaseous hydrocarbons)

But includes also colliery gas, coal seam gas, dissolved gas, shale gas

Natural gas flows



Supply – Main flows

- Production
 - (+receipts/production from other sources)
- Imports and exports
 - Pipelines and LNG
- Stock changes (closing minus opening stocks)
- Gross inland deliveries observed



The JODI Gas questionnaire

	Natural Gas in million m ³ (at 15°C, 760 mm hg)	Natural Gas in Terajoules	Natural Gas (LNG) in 1000 metric tons
	A	B	C
Production			
Receipts from Other Sources			
Imports			
<i>LNG</i>			
<i>Pipeline</i>			
Exports			
<i>LNG</i>			
<i>Pipeline</i>			
Stock Change			
Gross Inland Deliveries (Calculated)			
Statistical Difference (Calculated)			
Gross Inland Deliveries Observed			
<i>of which: Electricity and Heat Generation</i>			
Closing stocks			

Mass to volume conversion factor of LNG (if you have specific figure)

m ³ /metric ton	LNG
Conversion factor	

APEC monthly gas questionnaire (1)

Member Economy:						
Month:						
Year:						
	Natural Gas Million m³ (at 15°C, 760 mm Hg)	Natural Gas TJ (Gross Calor. Value)	of which:LNG 1000 ton	of which:LNG TJ (Gross Calor. Value)	of which: pipeline Million m³ (at 15°C, 760 mm Hg)	of which: pipeline TJ (Gross Calor. Value)
Indigenous Production						
Imports						
Exports						
Stock Changes (+ or -)						
Gross Inland deliveries (calculated)		0				0
Statistical Difference		0				0
Gross Inland deliveries (observed)						
of which: Power Generation						
of which: Own use and losses of the natural gas industry						
Total Stocks on National Territory- Opening						
Total Stocks on National Territory- Closing						
AVERAGE GROSS CALORIFIC VALUES:	Unit: KJ/cubic m					
	Natural Gas					
Indigenous Production	#DIV/0!					
Imports	#DIV/0!					
Exports	#DIV/0!					
Average	#DIV/0!					
CONVERSION FACTOR OF LNG(MASS TO VOLUM)	Unit: cubic m/ton					
	LNG					
CONVERSION FACTOR						

No "receipts from other sources"; LNG reported in tons and TJ only.

APEC monthly gas questionnaire (2)

Source of Import		
	LNG 1000ton	Pipeline Million m ³
Australia		
Brunei Darussalam		
Canada		
Chile		
China		
Hong Kong, China		
Indonesia		
Japan		
Korea		
Malaysia		
Mexico		
New Zealand		
Papua New Guinea		
Peru		
Philippines		
Russia		
Singapore		
Chinese Taipei		
Thailand		
USA		
Vietnam		
Rest of the World		
Total		

Destination of Export		
	LNG 1000ton	Pipeline Million m ³
Australia		
Brunei Darussalam		
Canada		
Chile		
China		
Hong Kong, China		
Indonesia		
Japan		
Korea		
Malaysia		
Mexico		
New Zealand		
Papua New Guinea		
Peru		
Philippines		
Russia		
Singapore		
Chinese Taipei		
Thailand		
USA		
Vietnam		
Rest of the World		
Total		

Production

- Refers to dry, marketable production within national boundaries including offshore
- Quantities reinjected, flared, and vented *in situ* are excluded
- NGLs and impurities such as Sulphur are excluded.

- Included quantities used within the natural gas industry
- Manufactured gases and biogas should be excluded



Receipts from other sources

- Accounts for gases accounted for elsewhere blended into natural gas
- Pure biogases and manufactured gases are excluded

Imports and exports

- All goods entering or leaving national territory
- Includes both pipeline and LNG tanker trade
- Goods-in-transit *should* be excluded (difficult to determine in complex pipeline systems)
- Includes re-imports and re-exports
- International bunkers should be excluded
- When LNG is imported, re-gasified and exported, the country should report the quantities as imports and exports



stocks

- Reported on a national territory basis
- Exclude gas reserves (un-extracted gas)
- Exclude cushion gas
- Pipeline gas and line pack are not included

- Stock change = closing stock levels – opening stock levels



Gross inland deliveries observed

- Deliveries to the inland market
- Includes losses in distribution, international marine bunkers and energy industry's own use
- **Observed!**



Electricity and heat generation

- Deliveries for electricity and heat generation
- Both main activity plants and auto-producers
- Included own use of the pipeline network



Metadata

- Although definitions exist, exceptions may still arise
- This may cause differences in reporting, but should be clearly indicated in country notes
- Examples:
 - Inclusion of natural gas in transit via pipeline in trade
 - “Receipts from other sources” included with production
 - Only main activity producers (or electricity-only plants) included in deliveries to “electricity and heat generation”

Measurement units

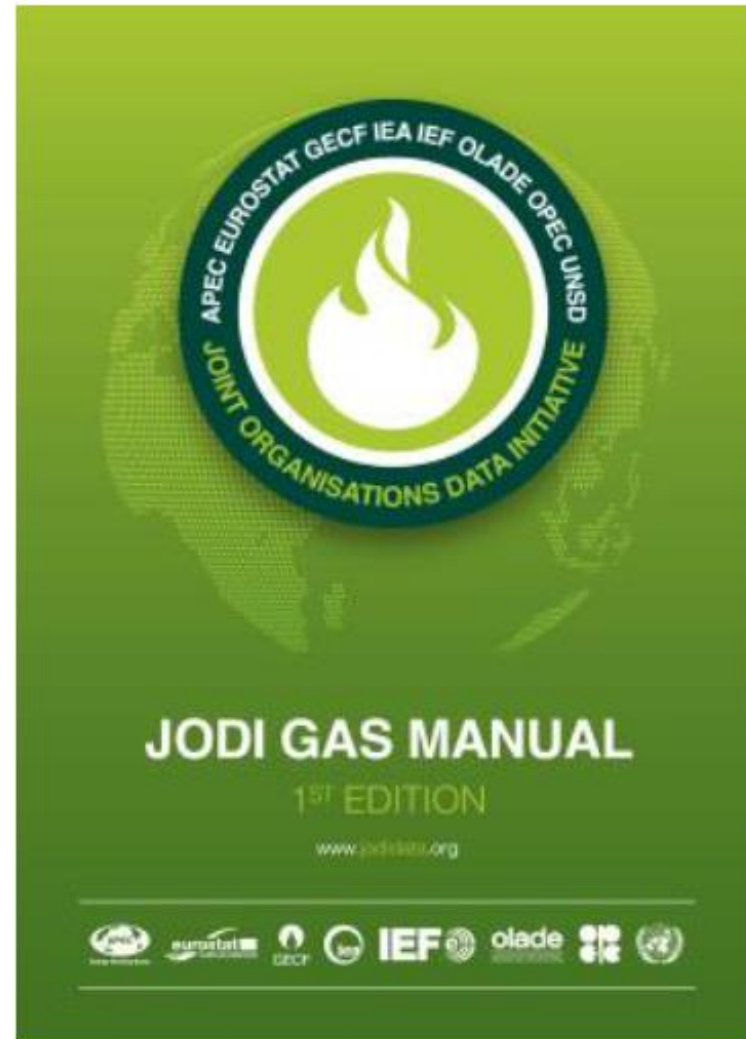
- Units to be used in reporting
 - Volumetric units: million m³, standard conditions
 - Energy units: Terajoules (TJ), **gross basis**
 - Mass units: tons (LNG trade only)
- Conversion between energy units and volumetric/mass units may depend on flow
- Calorific value needed if only one unit is reported (but member economies are asked to report in both main units)



References

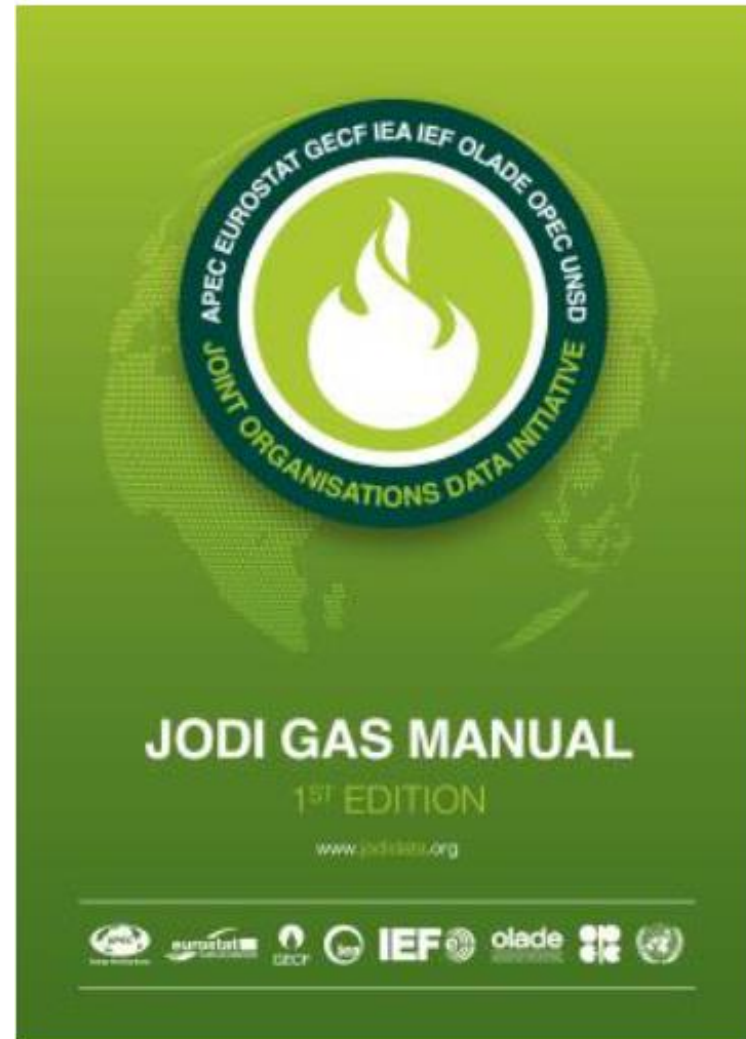
JODI Gas manual

- The JODI Gas manual was prepared to provide:
 - **Guidance** on reporting of the JODI Gas questionnaire
 - **Reference** for concepts and definitions
 - **Examples** of data collection validation methods
 - Examples of country practices in the collection of JODI Gas data
- It is meant to be of use to both compilers and users of monthly gas data



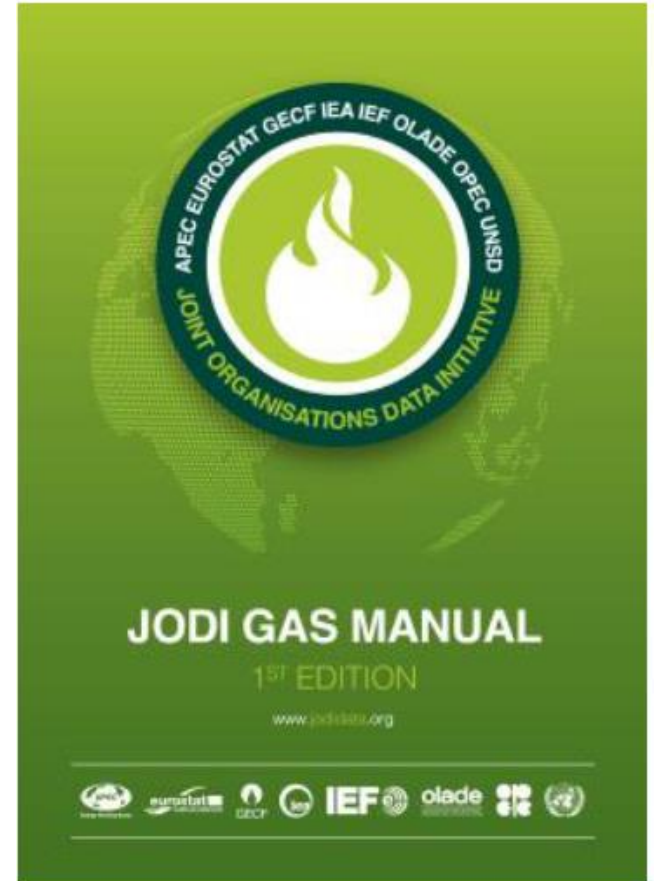
Preparation process

- The JODI Gas manual was drafted by UNSD in close cooperation with JODI partner organizations
- It is the result of a number of technical discussion and rounds of consultation with JODI organizations
- The manual was published in 2013



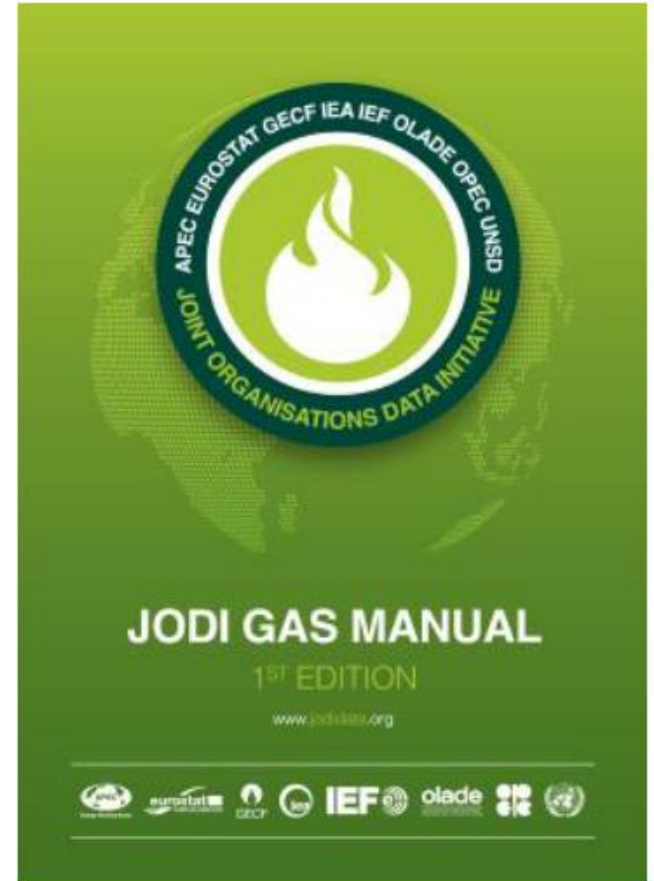
Data collection/compilation

- Guidance on data sources and data collection methods (production data from extraction companies, trade data from customs office, etc.)
- Discussion of treatment of missing data and confidential data
- Brief discussion of benchmarking, the reconciling of monthly and annual data (publishing time lag make this less relevant for JODI)



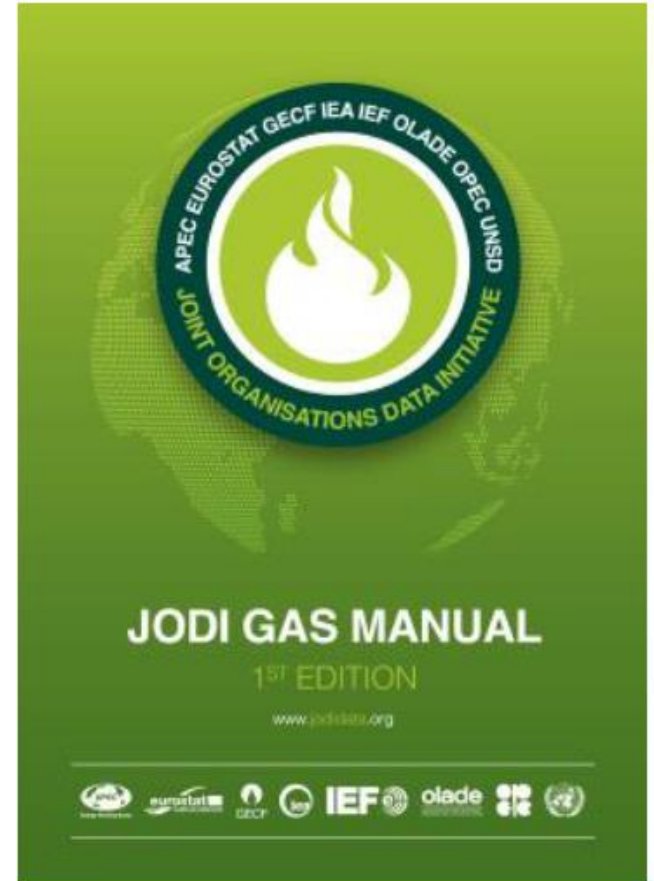
Country/economy practices

- Representative cross-section
 - Azerbaijan
 - Brazil
 - Thailand
 - United Kingdom
- Not an explicit compilation guide, should not be seen as best practices; more an opportunity to learn from each other



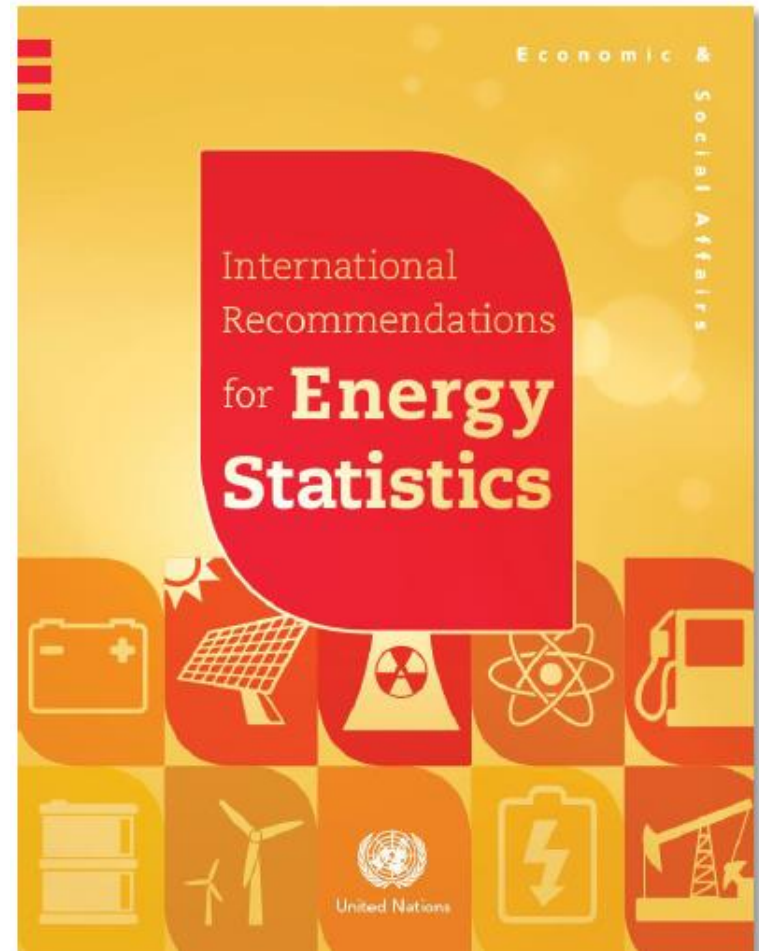
Data quality

- Assess accuracy of the data
 - Balance check
 - Stocks check
 - Calorific value check
 - Time series check
- Common reporting errors



International recommendations (IRES)

- All definitions of flows and products are consistent with IRES
- If you need a specific information you can always refer to IRES



Next steps

- With agreed definitions, the reporting burden on countries is reduced and the transparency of the JODI Gas data should increase
- Better, more transparent data was a pre-requisite to launching the JODI Gas World database at the IEF ministerial in Moscow in May 2014
- More trainings, continuous improvement



Major differences with annual gas questionnaire

Major differences with annual questionnaire

- Calorific value
 - **Annual** questionnaire requires **net** calorific values while JODI Gas requires gross calorific values
- Gross inland deliveries observed
 - JODI questionnaire = transformation + own use + final consumption + ***international bunkers***
 - Annual questionnaire = transformation + own use + final consumption

Conclusion

Data quality improvement should never stop!



www.jodidata.org

