

# JODI Gas Questionnaire and JODI Gas Manual

**Agnieszka KOSCIELNIAK**  
Statistician, Energy Statistics Section, UNSD

# Outline

---

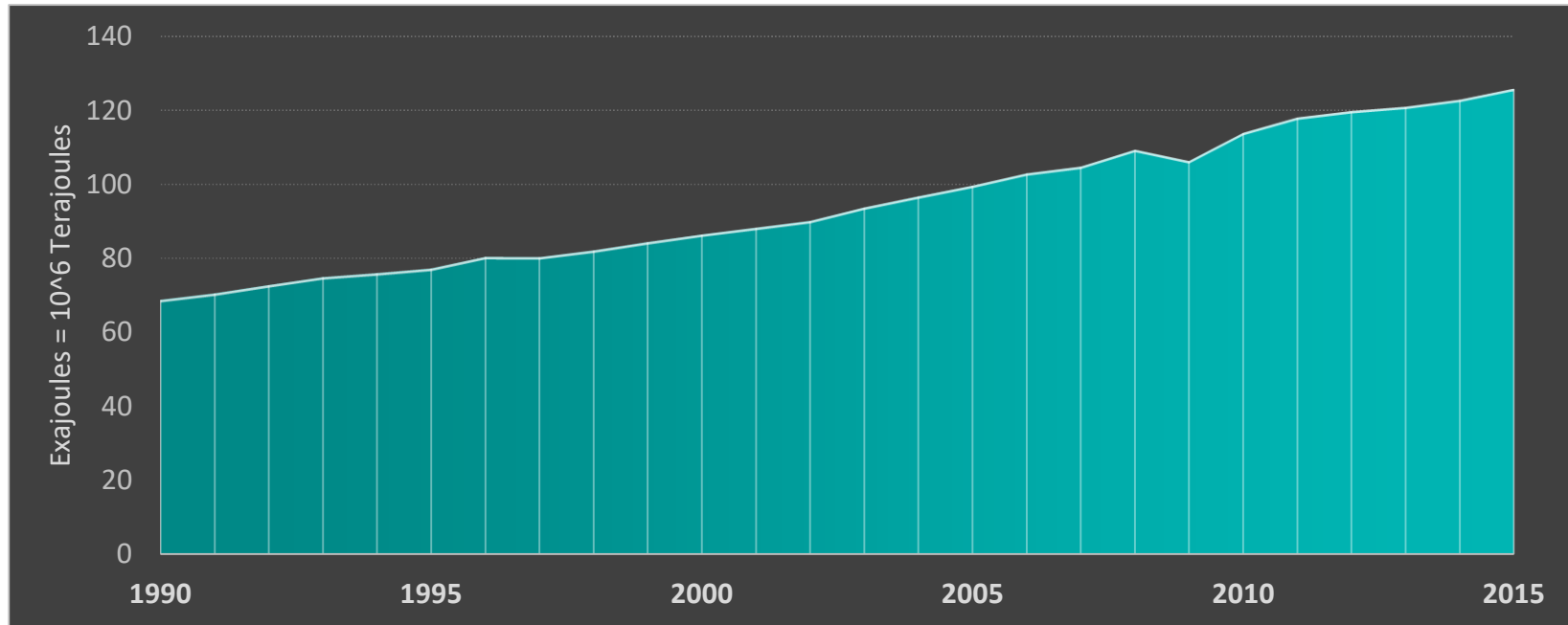
- Natural gas data
- JODI Gas monthly data collection
- Readings



**JODI Gas**

Natural gas data

# World natural gas demand



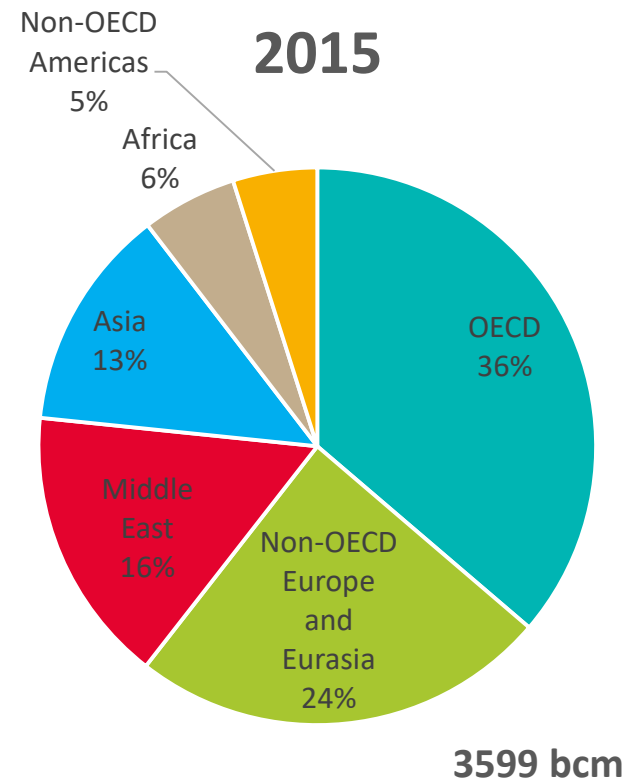
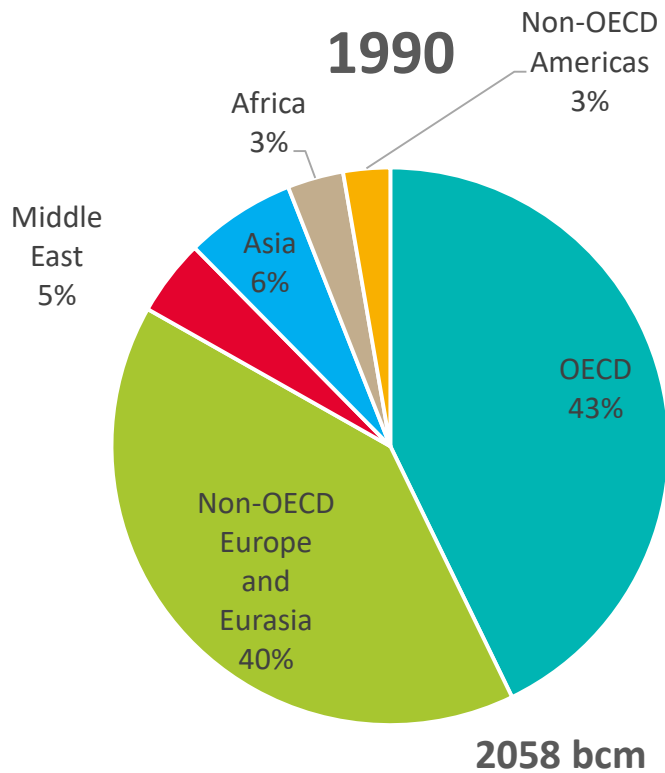
World gas demand steadily increased over last 25 years and is expected to further rise over next two decades.

# Natural gas perspective

- The cleanest (or less polluting) fossil fuel, plentiful and dynamic fuel
- Recent increase in trade (LNG), and price volatility



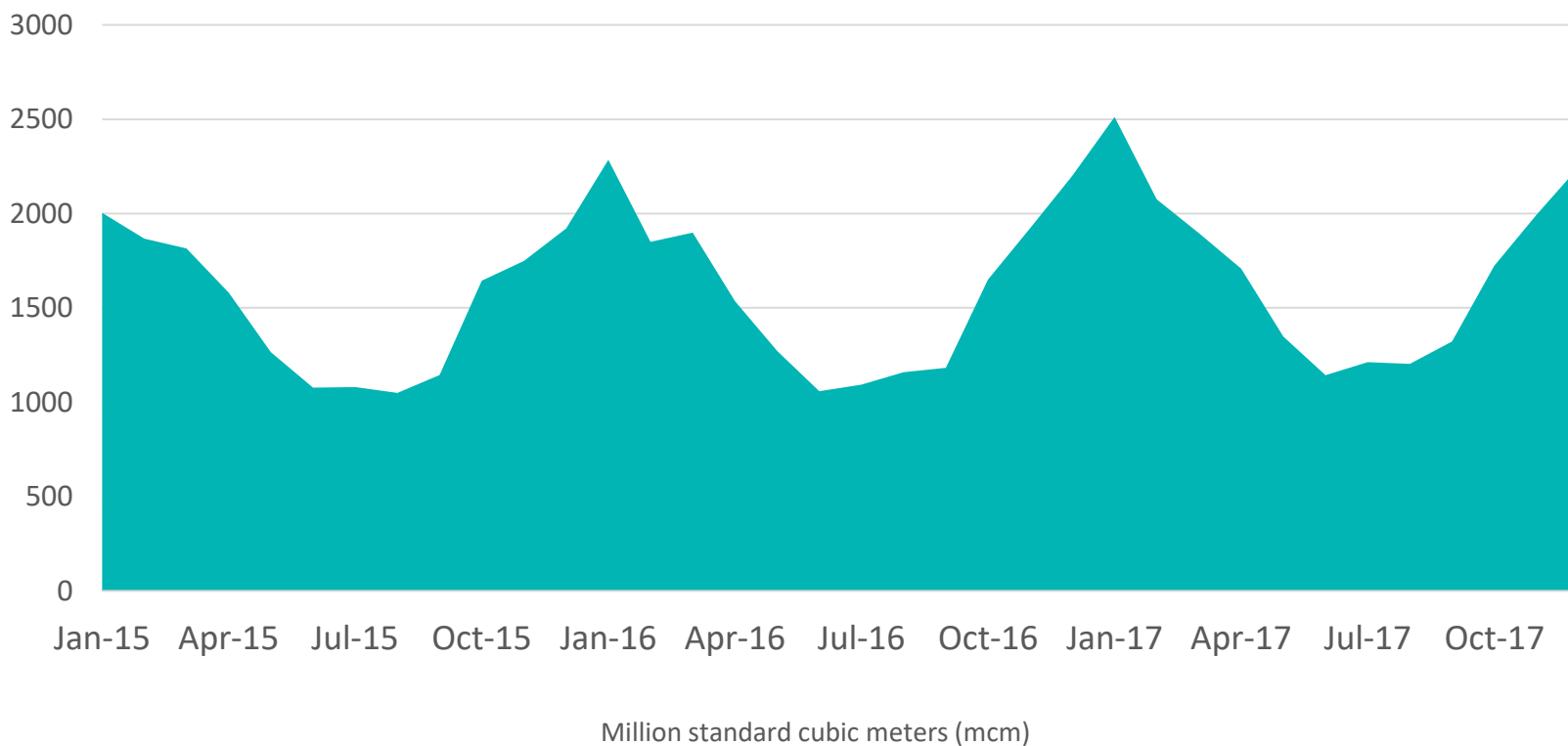
# Natural gas production by region



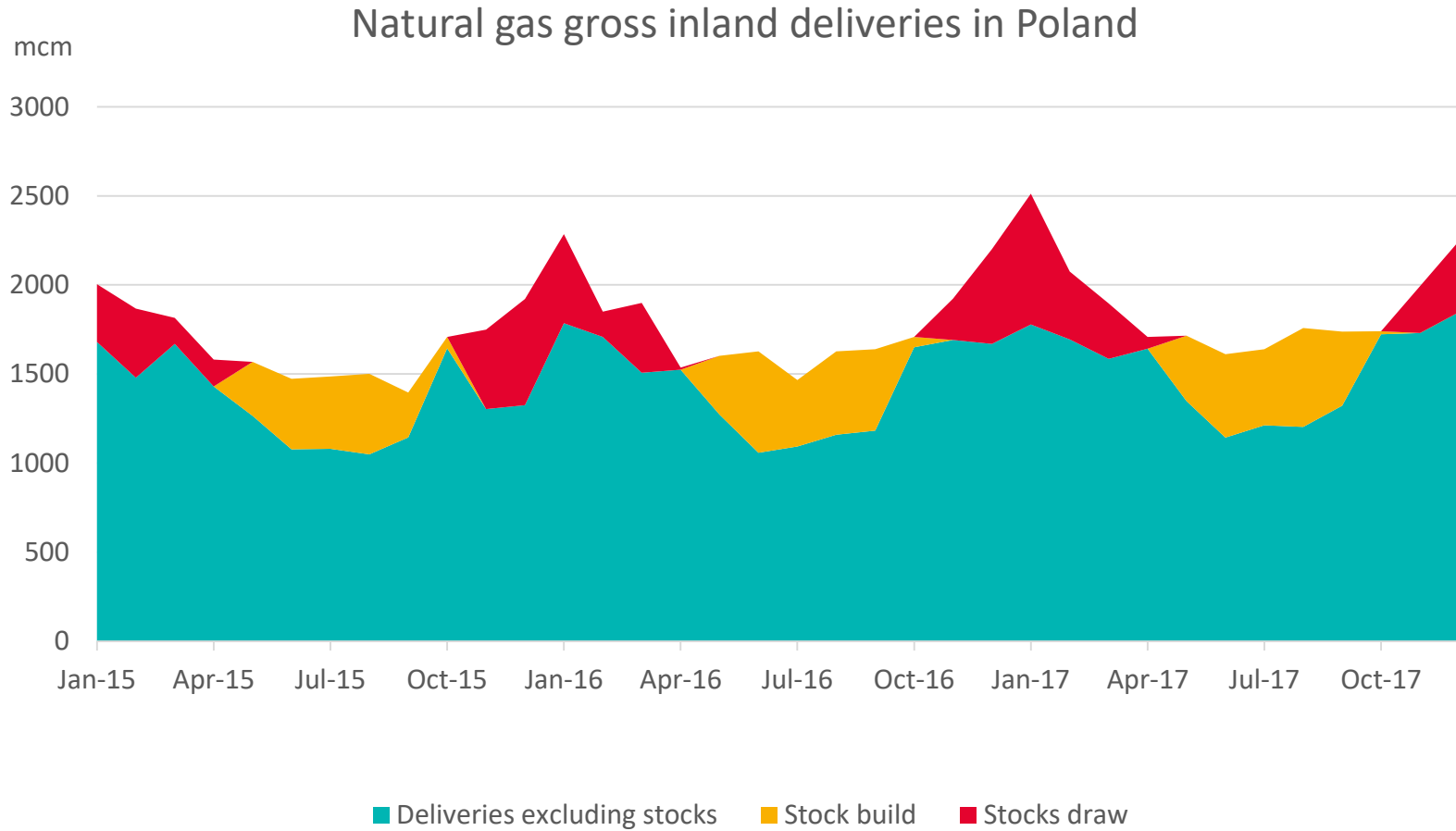
Middle East production of natural gas increased more than 6 times from 1990.

# Importance of monthly gas data

Natural gas gross inland deliveries in Poland



# Importance of monthly gas data







# JODI Gas

Monthly 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”*

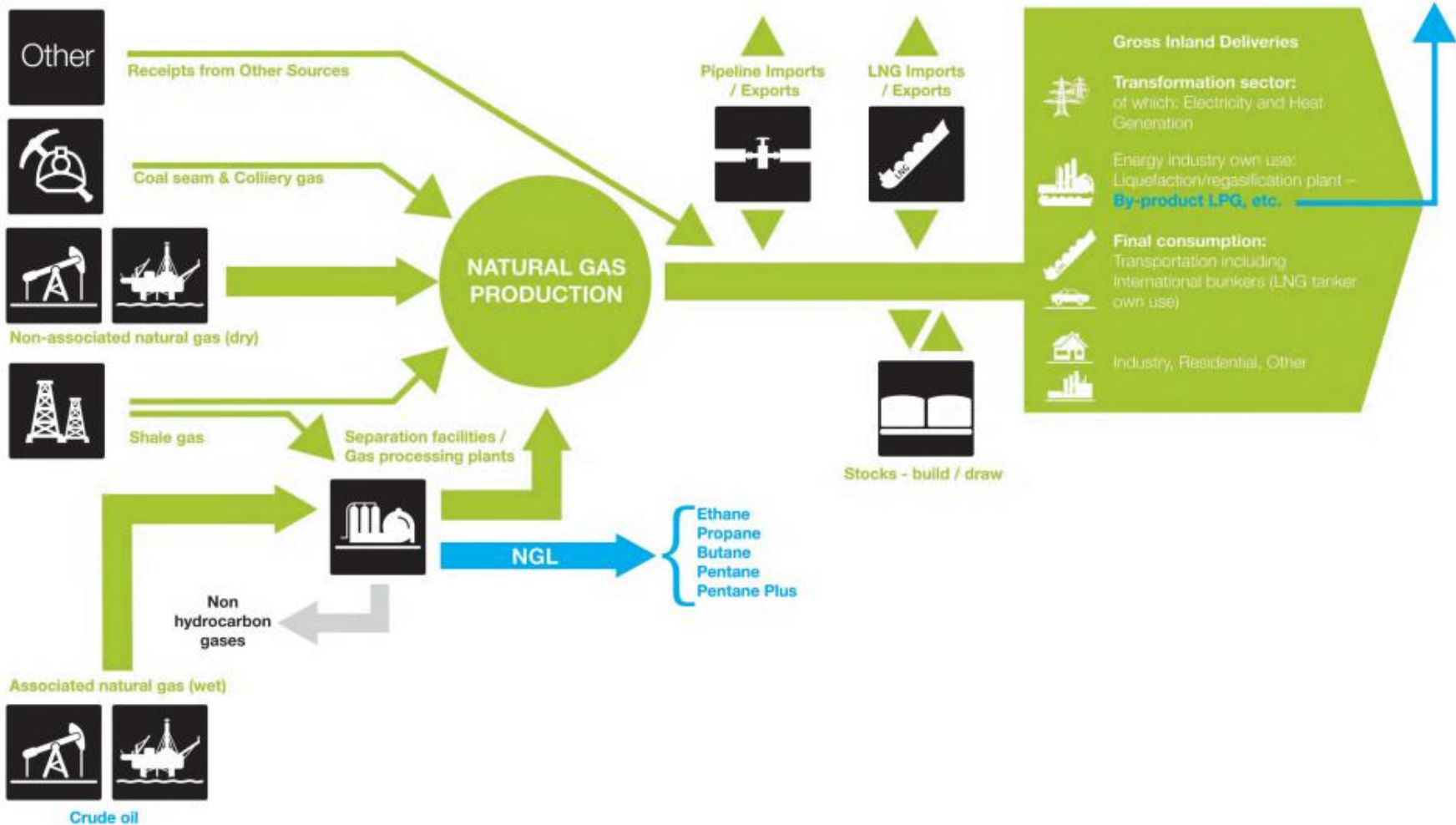
# What is Natural Gas?

---

- Natural gas can be mainly found natural 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



# Flows



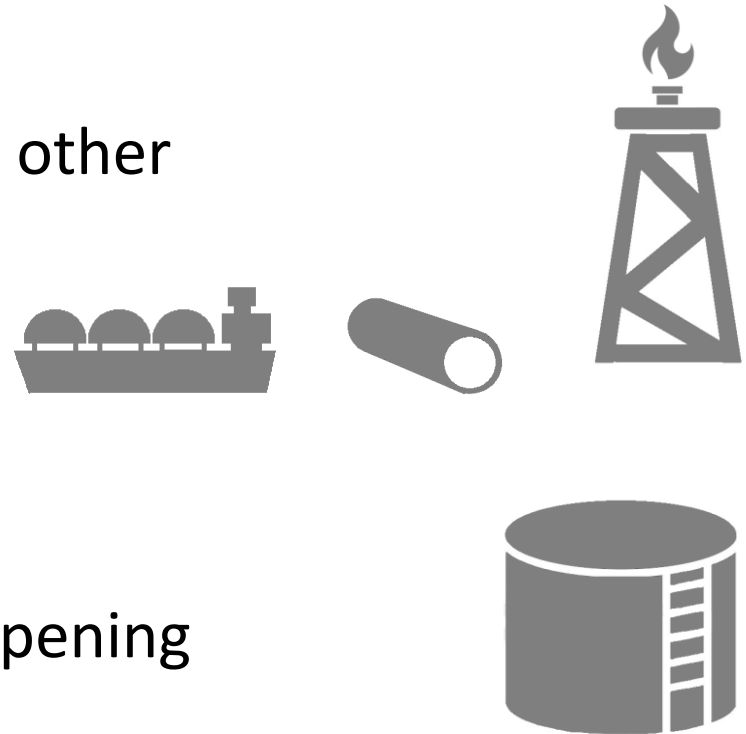
# Supply - Main flows

- 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 <sup>3</sup> (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)			
<b>Gross Inland Deliveries Observed</b>			
<i>of which: Electricity and Heat Generation</i>			
Closing stocks			

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

m <sup>3</sup> /metric ton	LNG
Conversion factor	

# Production

---

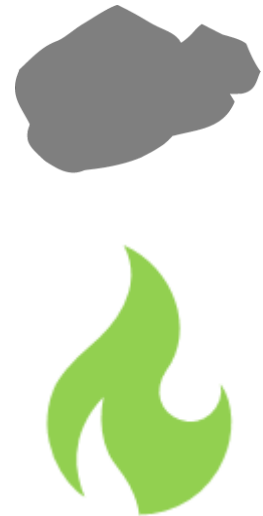
- Refers to dry, marketable production within national boundaries including offshore.
- Quantities reinjected, flared and vented *in situ* are excluded.
- NGLs and impurities such as Sulphur are excluded.
- Included quantities used within the natural gas industry.
- Manufactured gases and biogas should be excluded!



# Receipts from Other Sources

---

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





# Import and Exports

---

## *Import and Exports:*

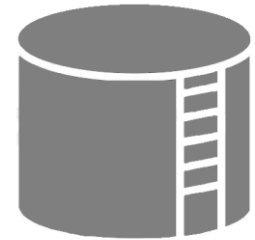
- All goods entering or leaving national territory
- Includes both pipeline and LNG tanker trade
- Goods-in-transit *should* be excluded (difficult to determine in complex pipeline systems)
- Includes re-imports and re-exports
- International bunkers should be excluded
- When LNG is imported, re-gasified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



# Stocks

---

- Reported on a national territory basis
- Exclude gas reserves (unextracted 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 an energy industry's own use.
- ***Observed!***



# Electricity and heat generation

---

- Deliveries for electricity and heat generation
- Both main activity plants and autoproducers
- Includes own use of the pipeline network



# Metadata

---

- Though definitions exists, 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 m<sup>3</sup>, standard conditions
  - Energy units: 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 countries are asked to report in both main units)



# JODI Gas

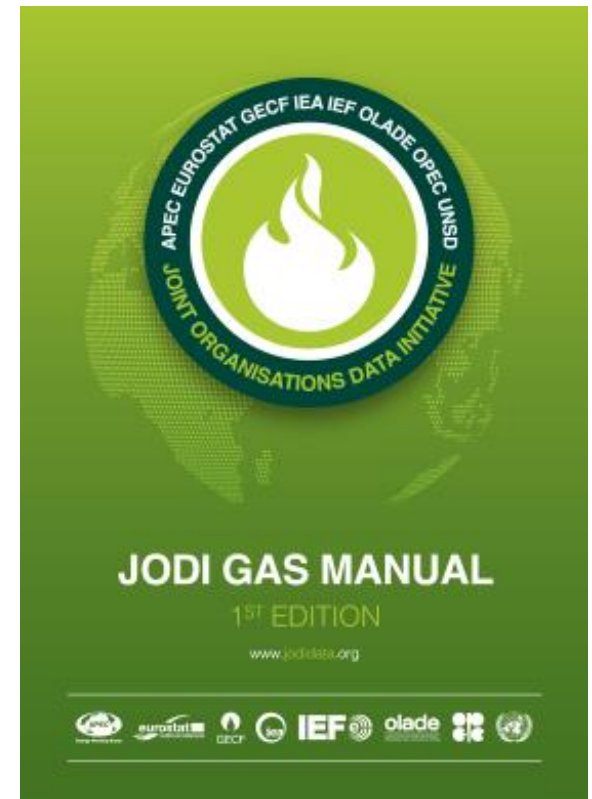
## Readings

# JODI Gas Manual

The JODI Gas Manual was prepared to provide:

- **Guidance** on the 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

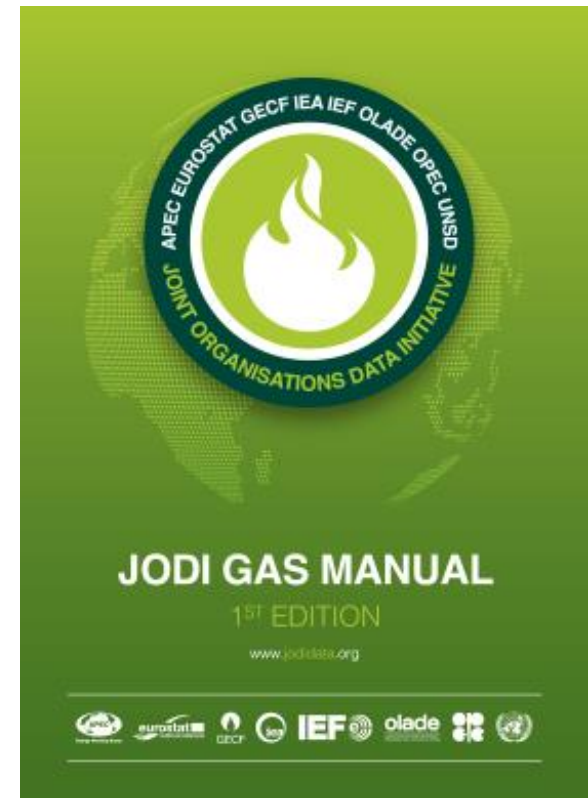
It is meant to be of use to both compilers and users of monthly gas data.





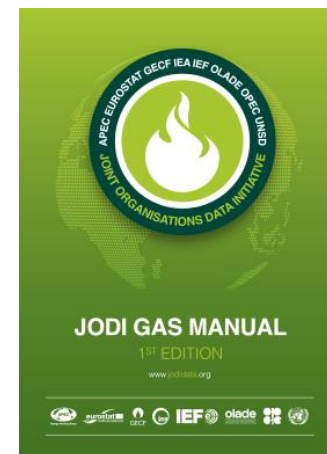
# Preparation Process

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



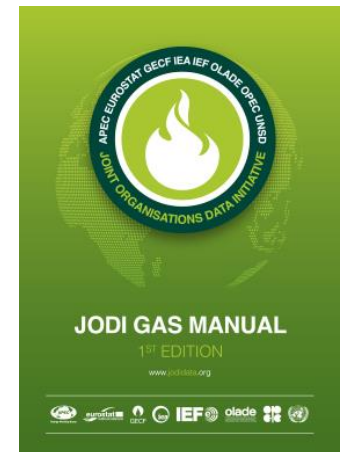
# Data Collection/Compilation

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



# Country 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

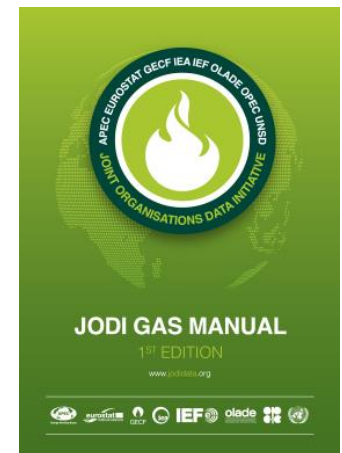


# Data Quality

## Assess accuracy of the data

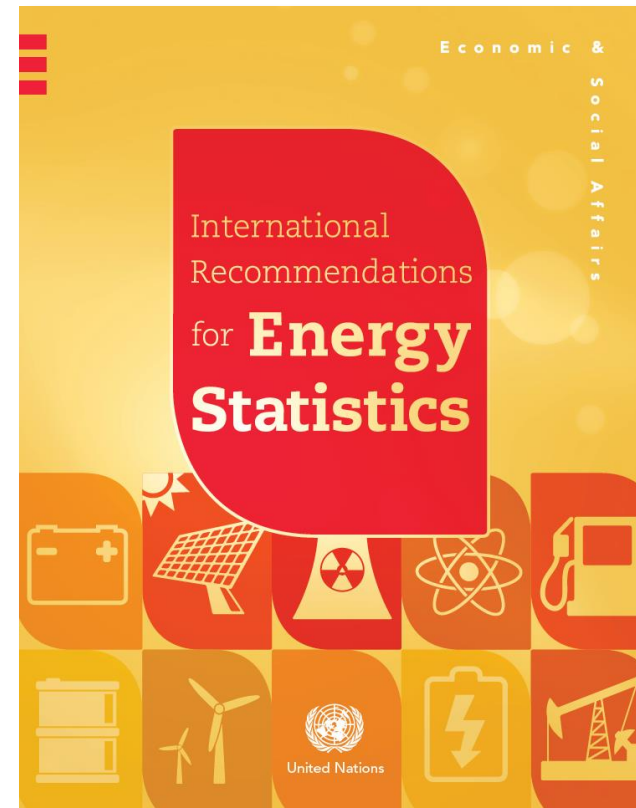
- balance check
- stocks check
- calorific value check
- time series check

## 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



<https://unstats.un.org/unsd/energy/ires/>

# Next Steps

---

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

# Conclusion

---

Data quality improvement should never stop!



[www.jodidata.org](http://www.jodidata.org)





# Annex 1: Conversion between Standard and Normal Conditions

**Table A2.5: Conversion equivalents between Standard cubic metres (m<sup>3</sup>) and Normal cubic metres (m<sup>3</sup>)**

	To	Standard m <sup>3</sup>	Normal m <sup>3</sup>
From:			
Standard m <sup>3</sup>		1	0.948
Normal m <sup>3</sup>		1.055	1

Note: Standard cubic metre (m<sup>3</sup>) refers to standard measurement conditions at 15°C and 760 mm Hg.  
Normal cubic metre (m<sup>3</sup>) refers to normal measurement conditions at 0°C and 760 mm Hg.

# Annex 2: Conversion between LNG and Natural Gas Units

**Table A2.6: Conversion equivalents between LNG and Natural Gas units**

From	To:	Metric Tons of LNG	m <sup>3</sup> of LNG	Standard m <sup>3</sup> (a)
Metric Tons of LNG		1	2.2	1360
m <sup>3</sup> of LNG		0.45	1	615
Standard m <sup>3</sup>		$7.35 \times 10^{-4}$	$1.626 \times 10^{-3}$	1

(a) 1 Standard m<sup>3</sup> = 40 MJ.