



# Linkage between Annual and Monthly Data

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15<sup>th</sup> Regional JODI Training Workshop – 11-13 April 2017, Tunis

- The IEA data collection system
- Reasons for collecting monthly data
- Challenges for collecting monthly data/JODI
- Mapping JODI and AFREC questionnaires

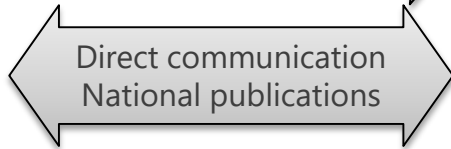
- Monthly (OECD/Supply): MOS (M-2), JODI (M-1), emergency
- Annual: Y-2 (World/Supply and demand)  
Y-1 (OECD/supply preliminary) & Non-OECD production estimates

## Annual data (Y-2)

56 countries including all OECD



87 countries



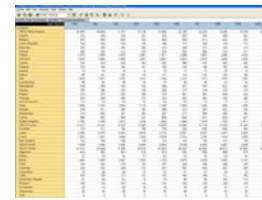
Rest



Ministries and Statistical Agencies



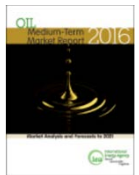
**World Oil supply and demand**



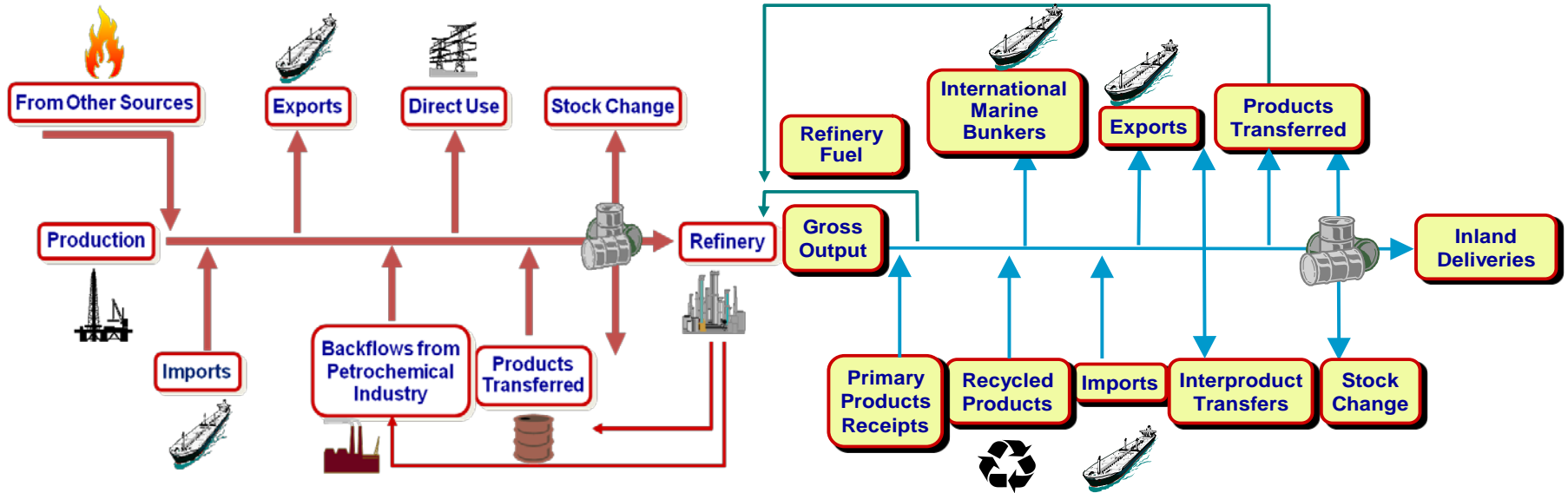
April 2016: OECD 2014  
July 2016: World 2014  
OECD 2015p



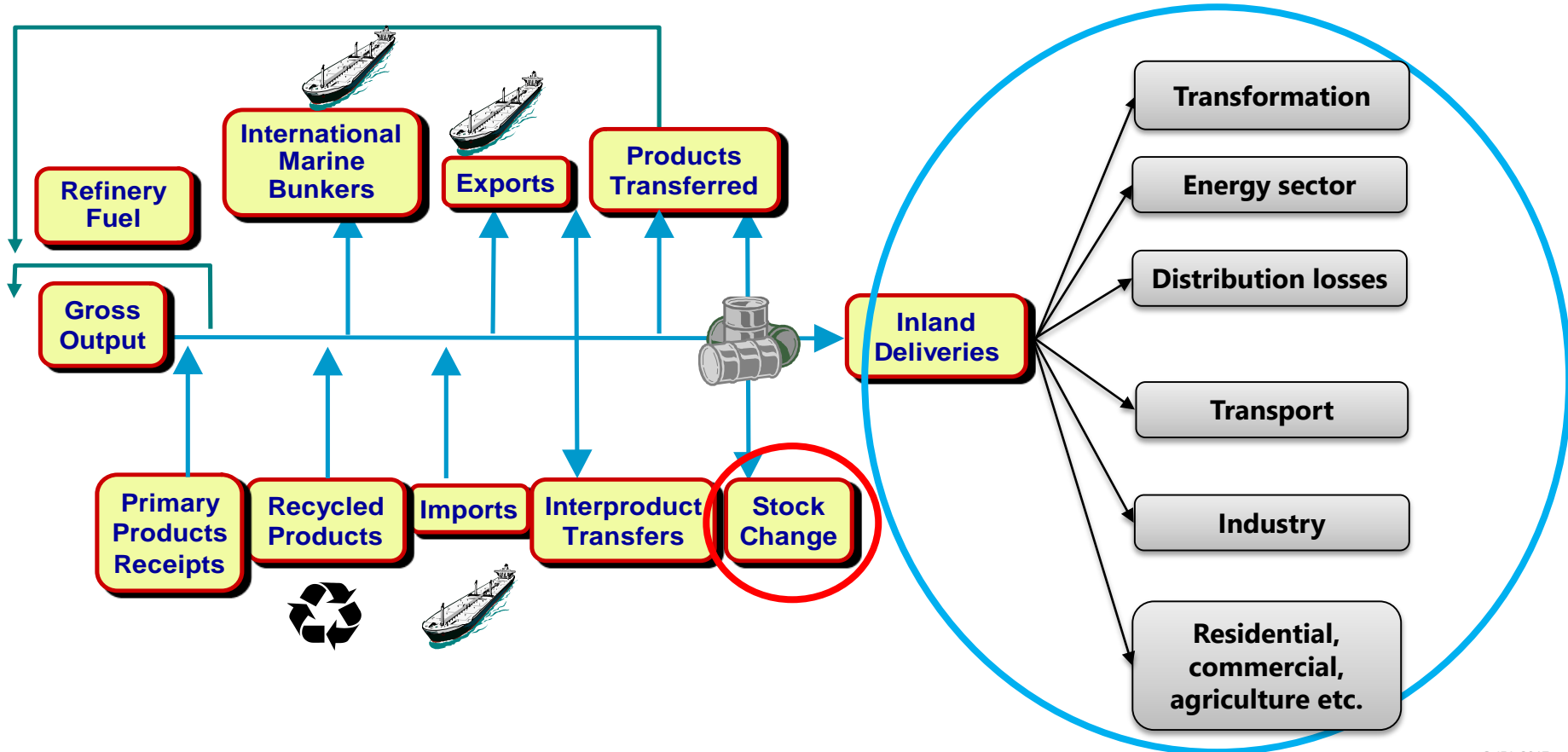
**Oil Information (July) and many other publications**



# Annual and Monthly oil statistics

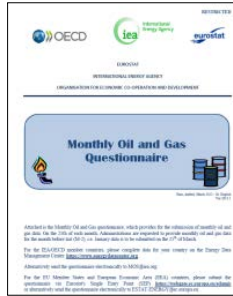


# Annual and Monthly oil statistics



# The IEA monthly oil data system

- MOS



M-2

OECD countries

Large amount of data

- JODI

					Petroleum Products									
	Crude Oil	NGL	Other	Total (1)+(2)+(3)	LPG	Naphtha	Gasoline	Total Kerosene	<i>Of which: Jet Kerosene</i>	Gas/ Diesel Oil	Fuel Oil	Other Products	Total Products (5)+(6)+(7)+(8)+(10)+(11)+(12)+(13)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	
= Production	0	0	0	0	= Refinery Output	0	0	0	0	0	0	0	0	
- From Other sources	0	0	0	0	= Receipts	0	0	0	0	0	0	0	0	
= Imports	0	0	0	0	= Imports	0	0	0	0	0	0	0	0	
- Exports	0	0	0	0	= Exports	0	0	0	0	0	0	0	0	
= Products Transferred / Backflows	0	0	0	0	= Products Transferred	0	0	0	0	0	0	0	0	
- Direct Use	0	0	0	0	= Interproduct Transfers	0	0	0	0	0	0	0	0	
= Stock Change	0	0	0	0	= Stock Change	0	0	0	0	0	0	0	0	
= Statistical Difference	0	0	0	0	= Statistical Difference	0	0	0	0	0	0	0	0	
= Refinery Intake	0	0	0	0	= Demand	0	0	0	0	0	0	0	0	
Closing stocks	0	0	0	0	Closing stocks	0	0	0	0	0	0	0	0	

M-1

Broad geographic scope

Limited amount of data

- Emergency data collection (IEA countries)

- QuE – Standard Modules: Data requirements depend on the nature of the oil supply disruption -> flexible questionnaire designed to facilitate this

# Why collecting monthly oil data?

- Oil market analysis
- World-wide data dissemination
- Emergency purposes (supply disruptions)



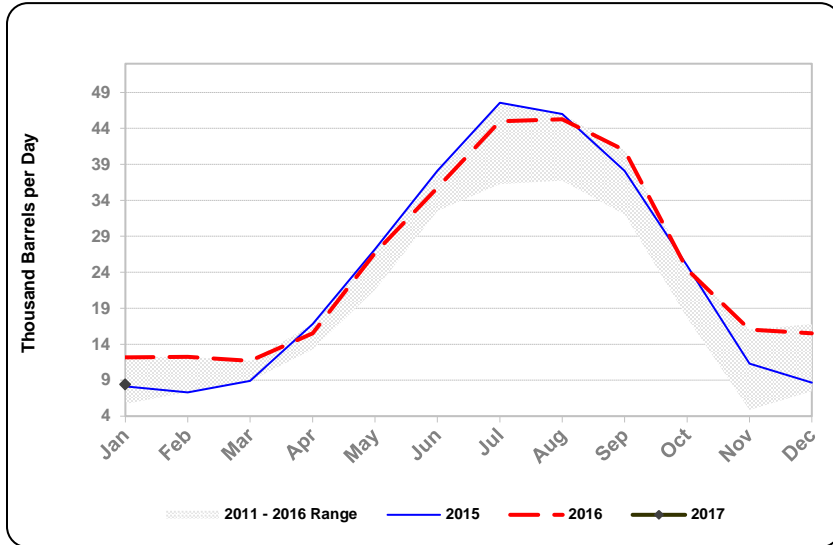
- Data analysis
  - Short-term
  - Trend indications
  - Seasonality
  - Impact of events (planned or unplanned)
- Energy security purposes
  - Recent/quick assessment of markets
  - Size of a supply disruption
  - Ad-hoc assessment
- Data validation
  - Preliminary source of information
  - Basis for comparison with annual data



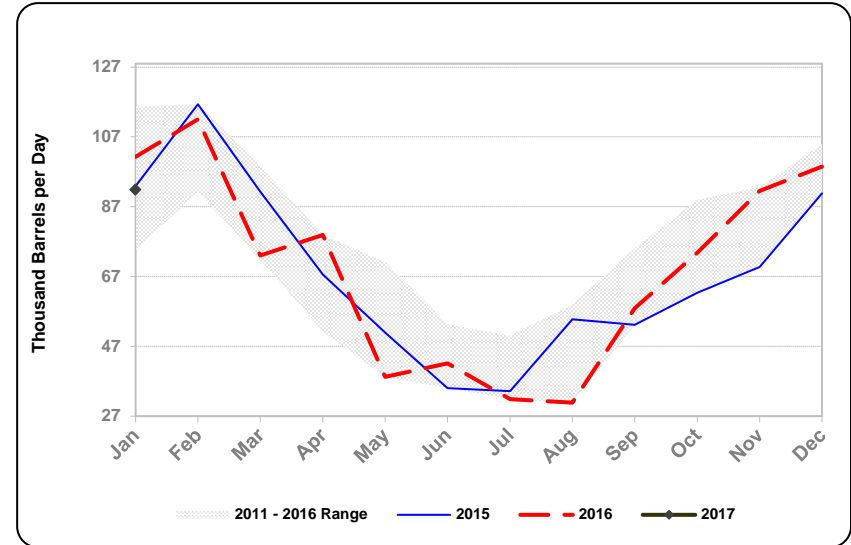
# Why collecting monthly oil data?

- Seasonality

## Greece – Jet Kerosene



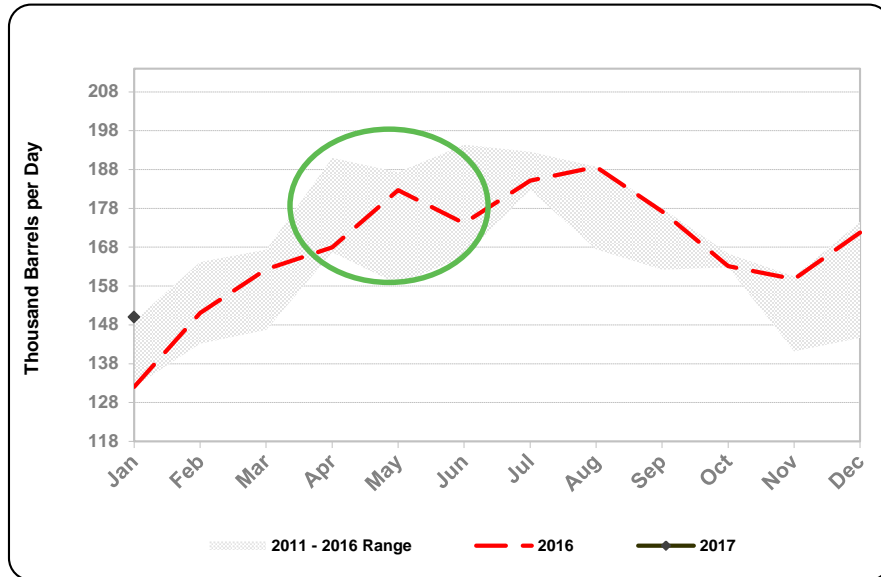
## UK – Other Kerosene



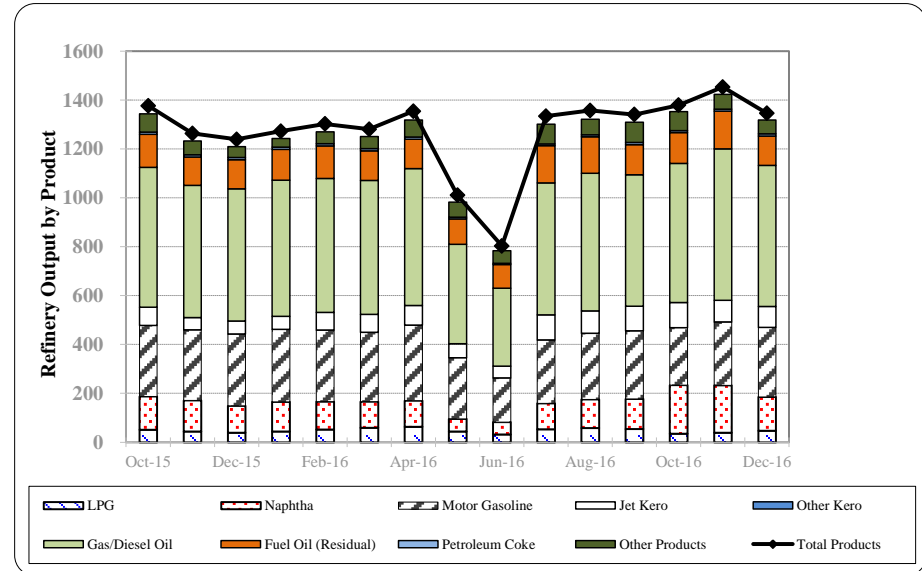
# Why collecting monthly oil data?

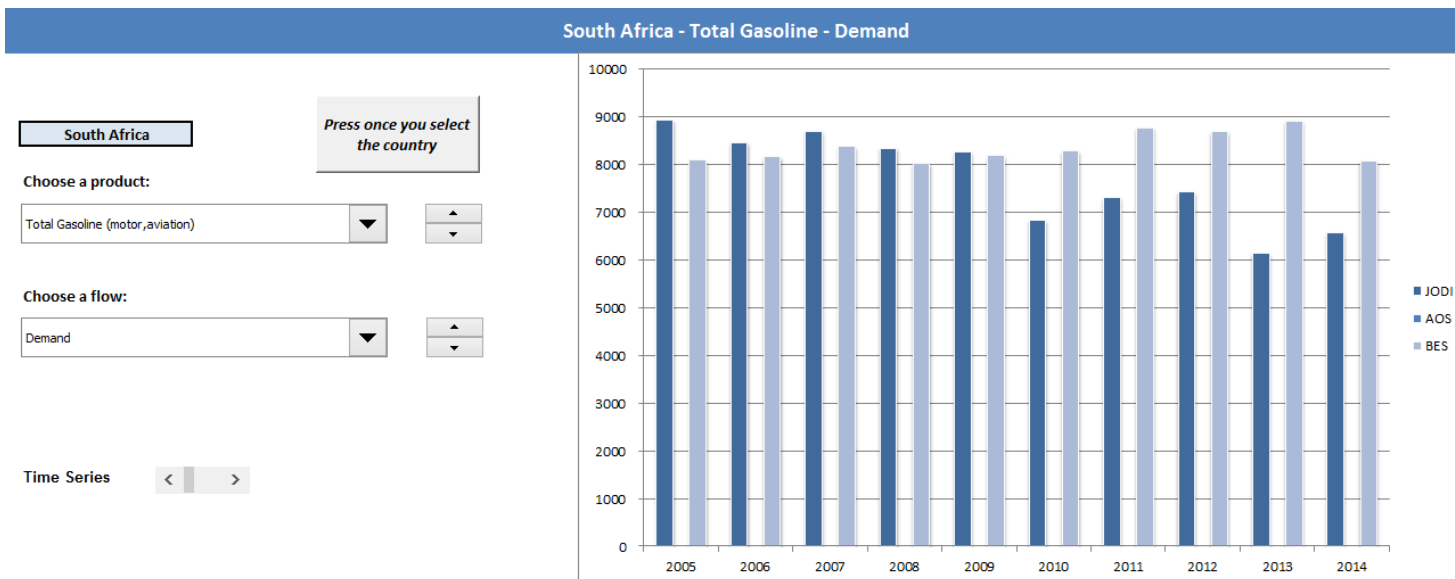
- Short-term data / unplanned events
  - Example: France 2016 - Impact of strike on petroleum markets / oil industry

### Gasoline demand



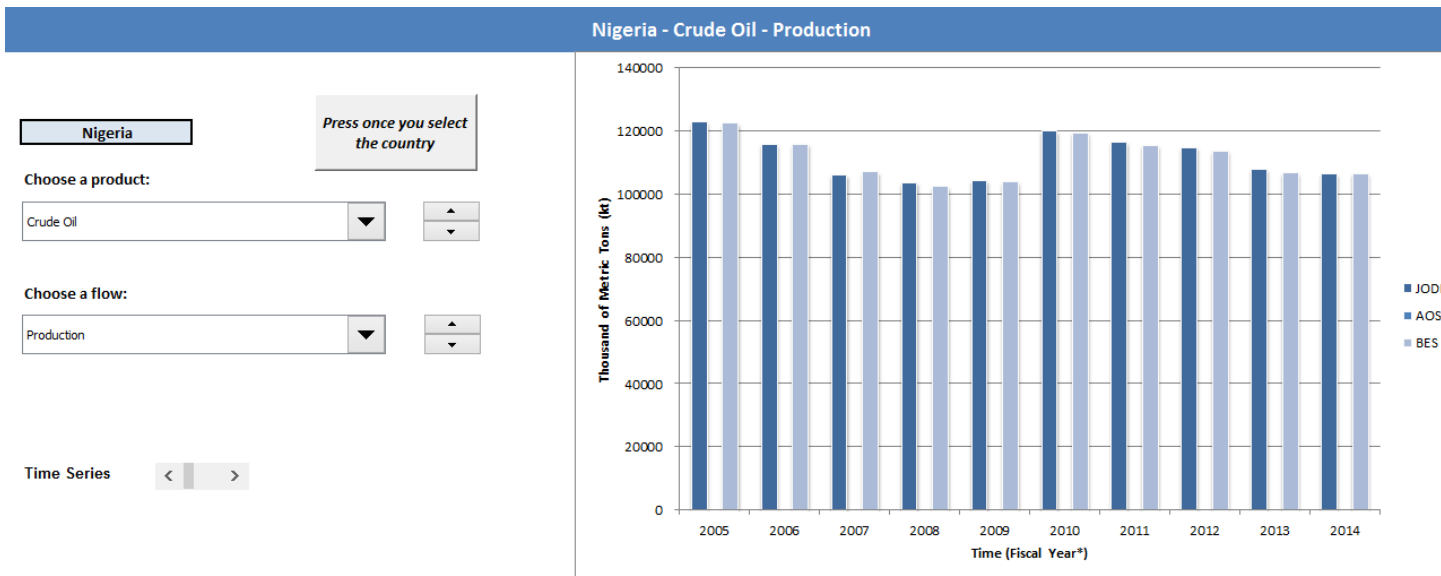
### Refinery outputs





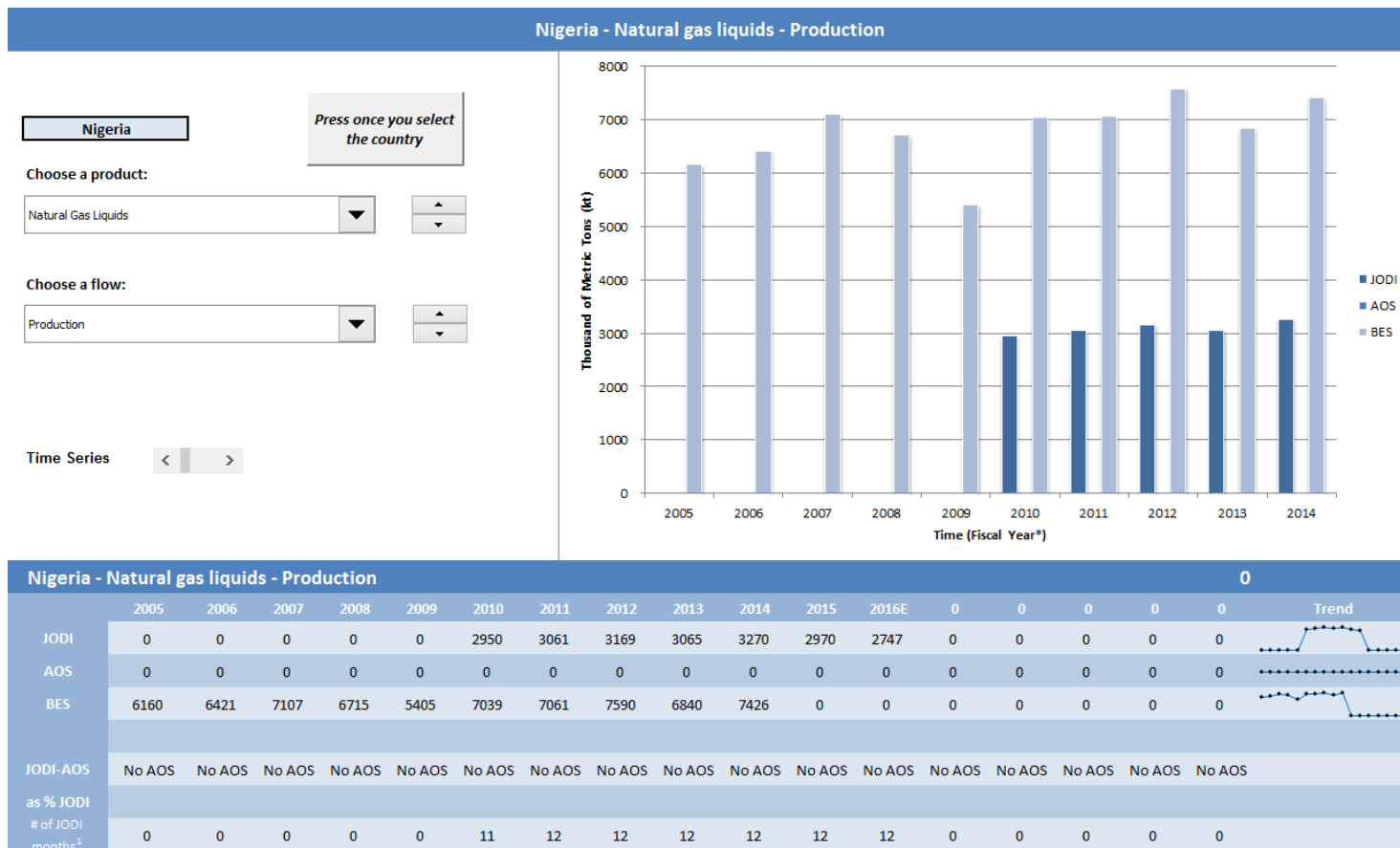
South Africa - Total Gasoline - Demand																		0	Trend
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016E	0	0	0	0	0	0	
JODI	8946	8473	8708	8353	8276	6830	7309	7431	6157	6582	6101	0	0	0	0	0	0	0	
AOS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
BES	8093	8169	8380	8030	8198	8292	8779	8701	8921	8082	0	0	0	0	0	0	0	0	
JODI-AOS	No AOS	No AOS	No AOS	No AOS	No AOS	No AOS	No AOS	No AOS	No AOS	No AOS	No AOS	No AOS	No AOS	No AOS	No AOS	No AOS	No AOS	No AOS	
as % JODI																			
# of JODI months <sup>1</sup>	12	12	12	12	12	12	12	12	12	12	10	0	0	0	0	0	0	0	

1. Number of months per year in which JODI Maxi data are present



Nigeria - Crude Oil - Production																	0	
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016E	0	0	0	0	0	Trend
JODI	122840	115845	106105	103739	104371	120083	116557	114863	107975	106533	103887	88901	0	0	0	0	0	
AOS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
BES	122488	115893	107067	102499	104046	119472	115499	113704	106732	106472	0	0	0	0	0	0	0	
JODI-AOS	No AOS	No AOS	No AOS	No AOS	No AOS	No AOS	No AOS	No AOS	No AOS	No AOS	No AOS	No AOS	No AOS	No AOS	No AOS	No AOS	No AOS	
as % JODI																		
# of JODI months <sup>1</sup>	12	12	12	12	12	12	12	12	12	12	12	12	0	0	0	0	0	

1. Number of months per year in which JODI Maxi data are present



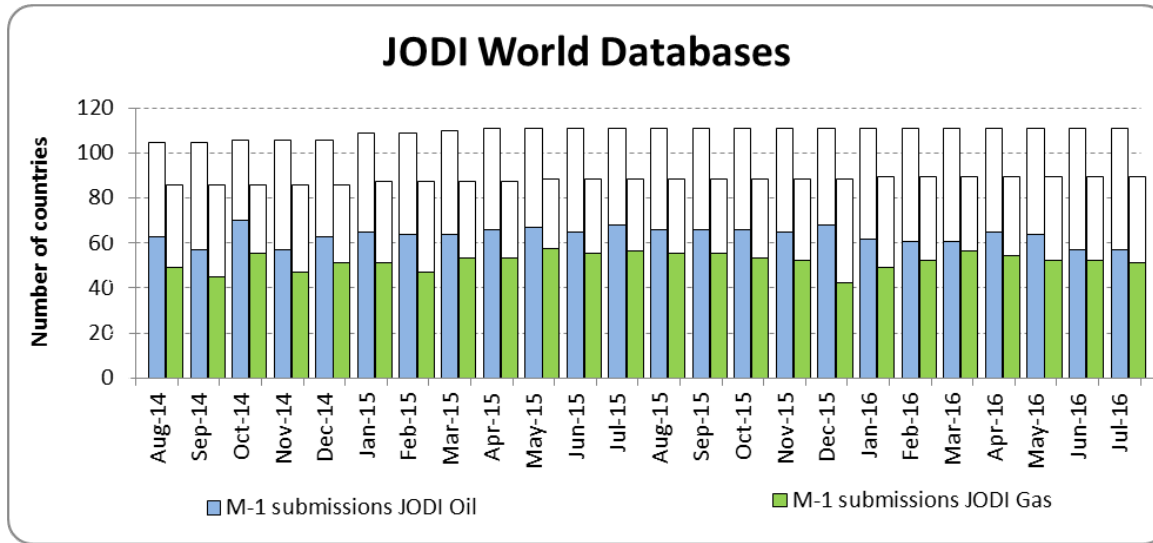
1. Number of months per year in which JODI Maxi data are present

- Extensive coverage
  - JODI Oil
    - 110+ countries
    - Around 90% of global supply and demand
  - JODI Gas
    - 80+ countries
    - Around 80 % of global supply and demand
- Official data
  - Data published is as submitted (after data quality exchanges)
  - No estimation for missing information (at organizational level)
- Centralized/harmonized dissemination
  - Published time table of updates
  - Beyond 20/20 and CSV format

**JODI are Short-term data**

- Timeliness and Sustainability
- Completeness and Confidentiality
- Timeliness vs. Data Quality vs. Completeness

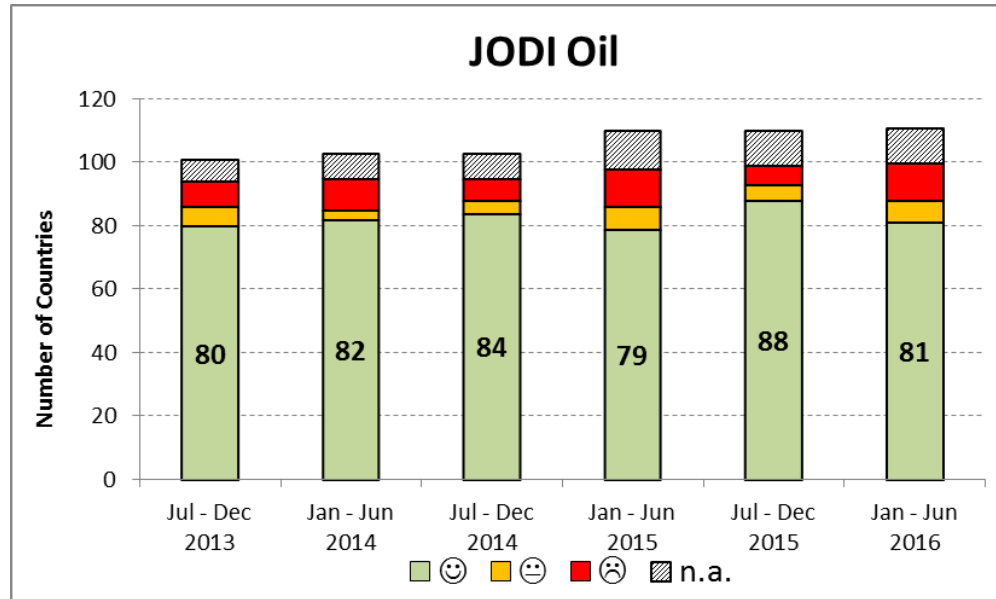
- Challenging M-1 deadline
  - 25<sup>th</sup> of the month following reference month
  - Multiple departments/agencies involved in collection
  - Time needed for checking and processing



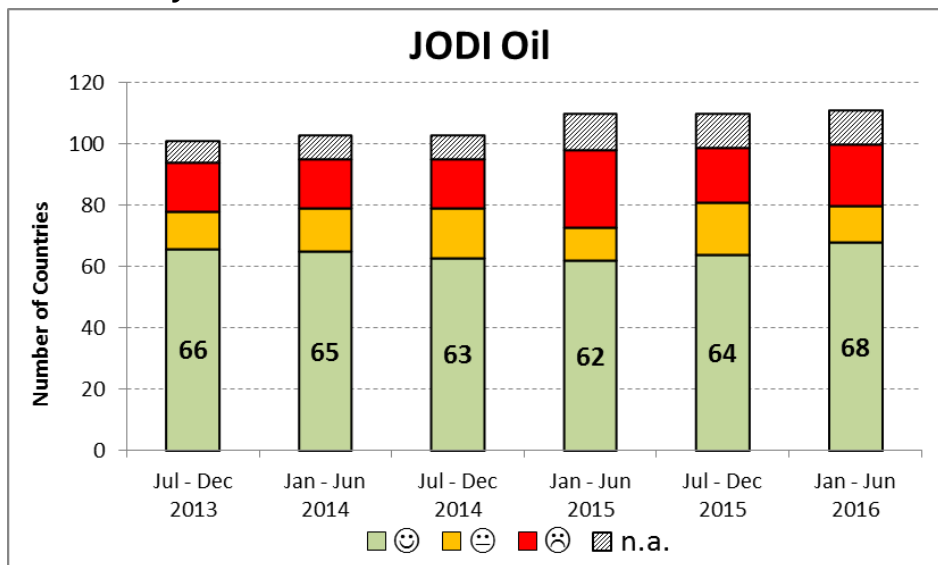
**Difficult for all countries to meet the monthly deadline**



- To be of most use JODI needs regular monthly reporting
  - Some countries miss certain months
  - Some countries submit later (quarterly or annually)



- Availability of monthly data in countries
- Submission of revisions with more complete data
- Issues of confidentiality
  - Legislative issues/authorisation
  - Perceived as commercially sensitive information



- Ensuring the validity of the data
  - Continuous checking of data: balance, outliers etc.
  - Comparison with external data when available
  - Internal consistency checks for complete submissions
  - Problems detected are discussed with administrations
- Trade-off: Timeliness vs. Quality vs. Completeness
  - Availability of complete early data
  - Revisions to first released information
  - JODI data are short-term data

- Human resources
  - Training and capacity building
  - Staff movements
  - Workload and priorities
- Other
  - Technical facilities
  - Stable and regular communication channels
  - Coordination with other administrative units
  - Visibility of outcomes

**Ensure appropriate level of resources**

- Data Characteristics

## JODI

- Short term preliminary data
- Monthly M-1
- Key data Supply Side
- Seasonality analysis

## Annual data

- Final annual data
- Annual Y-2
- Supply and Demand
- Higher level of detail

- JODI

- Early key data for over 90 countries
- Provide basis for early analysis of markets
- Sum of 12 months not (necessarily) comparable to annual data

## AFREC Oil questionnaire

### Oil Questionnaire

2016

Thousand metric tonnes (kt)

Thousand metric tonnes	Crude Oil & Other Non Crude			Petroleum Products								
	Crude Oil (1)	Other Non Crude (2)	Total (1) + (2)	LPG (3)	Gasoline (4)	Jet Kerosene (5)	Other Kerosene (6)	Gas / Diesel Oil (7)	High Sulphur (8)	Low Sulphur Fuel (9)	Other Products (10)	Total (3) -> (10)
Production			0									0
From Other Sources - Coal			0									0
From Other Sources - Gas			0									0
Imports			0									0
Exports (-)			0									0
International Marine Bunkers (-)												0
International Aviation Bunkers (-)												0
Stock Changes (+ draw, - build)			0									0
<b>Total Supply</b>	0	0	0	0	0	0	0	0	0	0	0	0
<b>Statistical Difference</b>	0	0	0	0	0	0	0	0	0	0	0	0
Transfers			0									0
Refinery: Input			0									0
Output												0
Refinery Fuel												0
Losses (observed)			0									0
<b>Transformation (excluding refineries)</b>	0	0	0	0	0	0	0	0	0	0	0	0
Input to Electricity Production			0									0
Input to Other Transformation P			0									0
Energy Sector Own Use			0									0
<b>Distribution Losses</b>			0									0
<b>Final Consumption</b>	0	0	0	0	0	0	0	0	0	0	0	0
Industry			0									0
Transport												0
Households												0
Com. & Public			0									0
Agriculture/Forestry			0									0
Other (Non-Specified)			0									0
Non-Energy Use			0									0

## AFREC Oil questionnaire

### Oil Questionnaire

2016

Thousand metric tonnes (kt)

Thousand metric tonnes	Crude Oil & Other Non Crude			Petroleum Products								
	Crude Oil (1)	Other Non Crude (2)	Total (1)+(2)	LPG (3)	Gasoline (4)	Jet Kerosene (5)	Other Kerosene (6)	Gas / Diesel Oil (7)	High Sulphur (8)	Low Sulphur Fuel (9)	Other Products (10)	Total (3)->(10)
Production			0									0
From Other Sources - Coal			0									0
From Other Sources - Gas			0									0
Imports			0									0
Exports (-)			0									0
International Marine Bunkers (-)												0
International Aviation Bunkers (-)												0
Stock Changes (+ draw, - build)			0									0
<b>Total Supply</b>	0	0	0	0	0	0	0	0	0	0	0	0
<b>Statistical Difference</b>	0	0	0	0	0	0	0	0	0	0	0	0
Transfers			0									0
Refinery: Input			0									0
Output												0
Refinery Fuel												0
Losses (observed)			0									0
<b>Transformation (excluding refineries)</b>	0	0	0	0	0	0	0	0	0	0	0	0
Input to Electricity Production			0									0
Input to Other Transformation P			0									0
<b>Energy Sector Own Use</b>			0									0
<b>Distribution Losses</b>			0									0
<b>Final Consumption</b>	0	0	0	0	0	0	0	0	0	0	0	0
Industry			0									0
Transport												0
Households												0
Com. & Public			0									0
Agriculture/Forestry			0									0
Other (Non-Specified)			0									0
Non-Energy Use			0									0

# Annual and Monthly Data



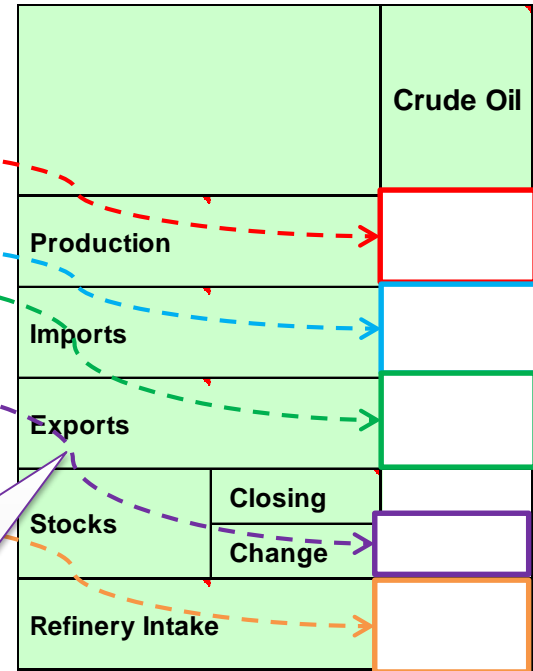
## JODI questionnaire


		Crude Oil		Petroleum Products					
				LPG	Gasoline	Kerosene	Gas/Diesel Oil	Fuel Oil	Total Oil
Production			Refinery Output						
Imports			Imports						
Exports			Exports						
Stocks	Closing		Stocks	Closing					
	Change			Change					
Refinery Intake			Demand						



**Thousand metric tonnes**

	Crude Oil (1)
Production	
From Other Sources - Coal	
From Other Sources - Gas	
Imports	
Exports (-)	
International Marine Bunkers (-)	
International Aviation Bunkers (-)	
Stock Changes (+ draw, - build)	
<b>Total Supply</b>	0
<b>Statistical Difference</b>	0
Transfers	
Refinery: Input	
Output	
Refinery Fuel	
Losses (observed)	



 AFREC Stock Changes = Opening – Closing  
 JODI Stock Changes = Closing – Opening

# AFREC oil questionnaire – JODI Oil

Thousand metric tonnes	Petroleum Products		
	Gasoline (4)	Jet Kerosene (5)	Other Kerosene (6)
Production			
From Other Sources - Coal			
From Other Sources - Gas			
Imports			
Exports (-)			
International Marine Bunkers (-)			
International Aviation Bunkers (-)			
Stock Changes (+ draw, - build)			
<b>Total Supply</b>	0	0	0
<b>Statistical Difference</b>	0	0	0
Transfers			
Refinery: Input			
Output			
Refinery Fuel			
Losses (observed)			

		Gasoline	Kerosene
Refinery Output			
Imports			
Exports			
Stocks	Closing		
	Change		
Demand			



AFREC Stock Changes = Opening – Closing  
 JODI Stock Changes = Closing – Opening

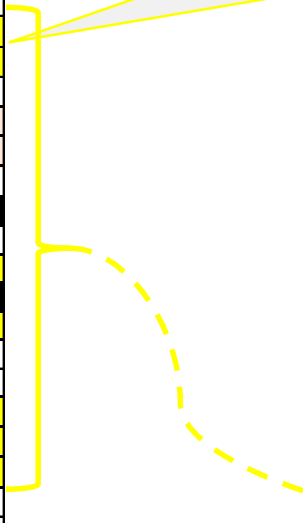
# AFREC oil questionnaire – JODI Oil

Thousand metric tonnes	Petroleum Products		
	Gasoline (4)	Jet Kerosene (5)	Other Kerosene (6)
Production			
From Other Sources - Coal			
From Other Sources - Gas			
Imports			
Exports (-)			
International Marine Bunkers (-)			
International Aviation Bunkers (-)			
Stock Changes (+ draw, - build)			
<b>Total Supply</b>			
<b>Statistical Difference</b>			
Transfers			
Refinery: Input			
Output			
Refinery Fuel			
Losses (observed)			
<b>Transformation (excluding refinery)</b>			
Input to Electricity Production			
Input to Other Transformation			
<b>Energy Sector Own Use</b>			
<b>Distribution Losses</b>			
<b>Final Consumption</b>			
Industry			
Transport			
Households			
Com. & Public			
Agriculture/Forestry			
Other (Non-Specified)			
Non-Energy Use			



International Bunkers consumption is included in Demand (no negative sign when added to Demand)

		Gasoline	Kerosene
Refinery Output			
Imports			
Exports			
Stocks	Closing		
	Change		
Demand			



# Annual and Monthly Data



## Maxi JODI questionnaire

						Petroleum Products								
	Crude Oil	NGL	Other	Total (1)+(2)+(3)		LPG	Naphtha	Gasoline	Total Kerosene	<i>Of which: Jet Kerosene</i>	Gas/ Diesel Oil	Fuel Oil	Other Products	Total Products (5)+(6)+(7)+(8) +(10)+(11) +(12)
	(1)	(2)	(3)	(4)		(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
+ Production	0	0	0	0	+ Refinery Output	0	0	0	0	0	0	0	0	0
+ From Other sources			0	0	+ Receipts	0	0	0	0	0	0	0	0	0
+ Imports	0	0	0	0	+ Imports	0	0	0	0	0	0	0	0	0
- Exports	0	0	0	0	- Exports	0	0	0	0	0	0	0	0	0
Products Transferred + /Backflows			0	0	- Products Transferred	0	0	0	0	0	0	0	0	0
- Direct Use	0	0	0	0	+ Interproduct Transfers	0	0	0	0	0	0	0	0	0
- Stock Change	0	0	0	0	- Stock Change	0	0	0	0	0	0	0	0	0
- Statistical Difference	0	0	0	0	- Statistical Difference	0	0	0	0	0	0	0	0	0
= Refinery Intake	0	0	0	0	= Demand	0	0	0	0	0	0	0	0	0
Closing stocks	0	0	0	0	Closing stocks	0	0	0	0	0	0	0	0	0

## AFREC Gas questionnaire

Million cubic meters (Mm<sup>3</sup>)

Production	
Imports	
Exports (-)	
Stock Changes (+ draw, - build)	
<b>Total Supply</b>	<b>0</b>
Statistical Difference	<b>0</b>
<b>Transformation</b>	<b>0</b>
Input to Electricity Production	
Input to Gas To Liquids Plants	
Input to Other Transformation Processes	
<b>Energy Sector Own Use</b>	
<b>Distribution Losses</b>	
<b>Total Final Consumption</b>	<b>0</b>
Industry	
Transport	
Households	
Com. & Public	
Agriculture/Forestry	
Other (Non Specified)	
Non-Energy Use	
<b>Default Gross Calorific Value (kJ/m<sup>3</sup>)</b>	<b>39170</b>

Additional Data (only for importing / exporting countries)

	Total	of which	
		LNG	Piped Gas
Imports	0		
Exports	0		

## JODI Gas questionnaire

	Natural Gas million m <sup>3</sup> (at 15°C, 760 mm hg)	Natural Gas Terajoules	Natural Gas 1000 tonnes
	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)	0	0	
Statistical Difference (Calculated)	0	0	
<b>Gross Inland Deliveries (Observed)</b>			
<i>of which: Electricity and Heat Generation</i>			
<b>Closing stocks</b>			

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

m <sup>3</sup> /tonne	LNG
Conversion factor	

# AFREC gas questionnaire – JODI Gas

Million cubic meters (Mm<sup>3</sup>)

Production	
Imports	
Exports (-)	
Stock Changes (+ draw, - build)	
<b>Total Supply</b>	
Statistical Difference	
<b>Transformation</b>	
Input to Electricity Production	
Input to Gas To Liquids Plants	
Input to Other Transformation Processes	
<b>Energy Sector Own Use</b>	
<b>Distribution Losses</b>	
<b>Total Final Consumption</b>	
<b>Default Gross Calorific Value (kJ/m<sup>3</sup>)</b>	<b>39170</b>

Additional Data (only for importing / exporting countries)

	Total	of which	
		LNG	Piped Gas
Imports	0		
Exports	0		

	Natural Gas million m <sup>3</sup> (at 15°C, 760 mm hg)
	A
Production	
Receipts from Other Sources	
Imports	
LNG	
Pipeline	
Exports	
LNG	
Pipeline	
Stock Change	
Gross Inland Deliveries (Calculated)	0
Statistical Difference (Calculated)	0
<b>Gross Inland Deliveries (Observed)</b>	
of which: Electricity and Heat Generation	
<b>Closing stocks</b>	

AFREC Stock Changes = Opening – Closing  
 JODI Stock Changes = Closing – Opening

