

**15<sup>th</sup> Regional JODI Training Workshop**

11-13 April 2017, Tunis, Tunisia

# The Extended JODI-Oil Questionnaire & JODI-Oil Manual 2nd Edition


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International  
Energy Agency



# Outline

- 
- Introduction
  - Definitions
    - Products
    - Flows
  - Common reporting mistakes
  - Feedback from participants (interactive for each flow / product definition)

# Introduction – the short JODI questionnaire

Country: \_\_\_\_\_  
 Month: \_\_\_\_\_

A simple format (42 data points)

Unit: \_\_\_\_\_

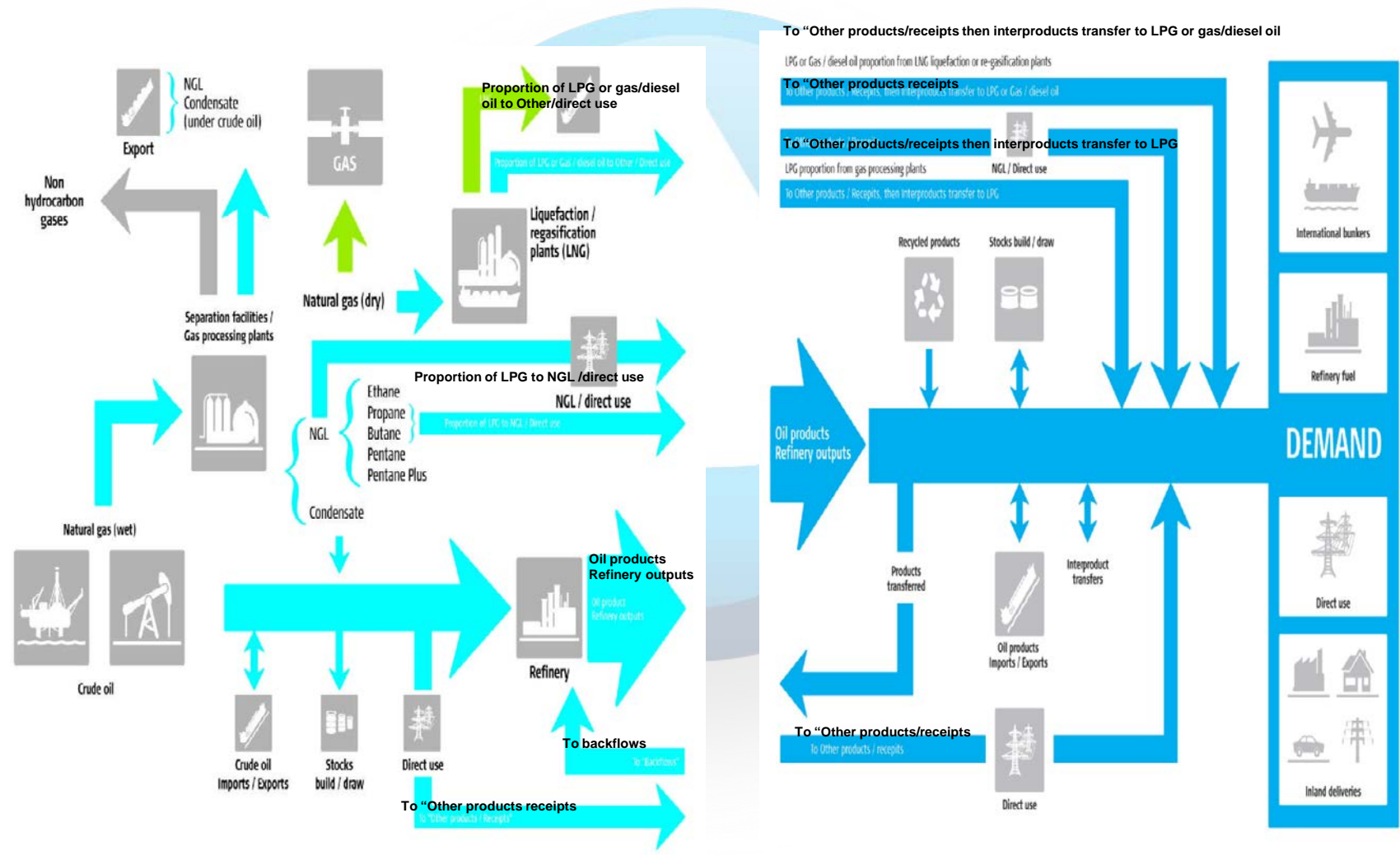
Month -2		Crude Oil
Production		
Imports		
Exports		
Stocks	Closing Change	
Refinery Intake		

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

Choice of units left to organisations

Simple definitions

# A comprehensive oil balance



# The extended JODI oil questionnaire

Country \_\_\_\_\_

Month \_\_\_\_\_

Unit : \_\_\_\_\_

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

- Harmonization of definitions to the extent possible
- Umbrella definitions for partner organizations
- Manual for reference downloadable from the JODI website

<https://www.jodidata.org/capacity-building/jodi-manuals.aspx>

# The extended JODI oil questionnaire

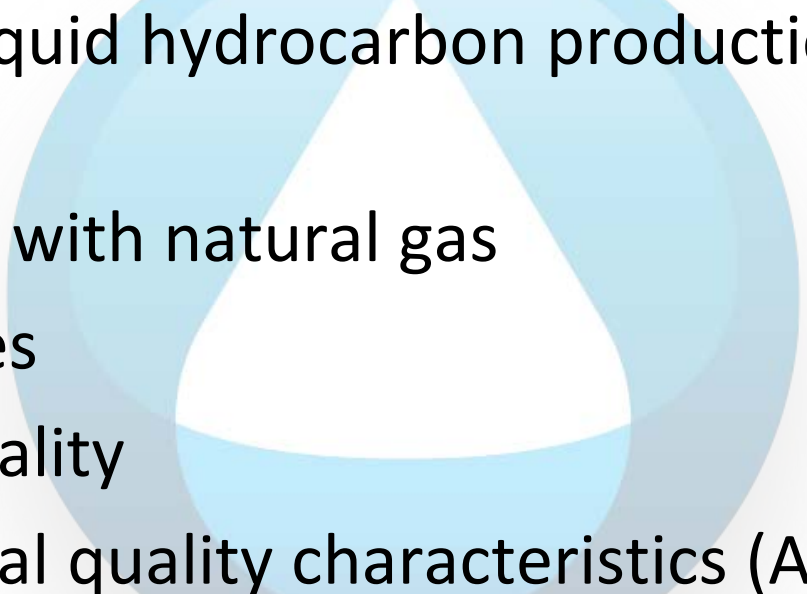
Country \_\_\_\_\_

Month \_\_\_\_\_

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= Refinery Intake					= Demand									
Closing stocks					Closing stocks									

# Definitions: Products/columns – crude oil

- 
- Wellhead liquid hydrocarbon production excl. impurities
  - Association with natural gas
  - Condensates
  - Conventionality
  - Fundamental quality characteristics (API & sulfur)

# The extended JODI oil questionnaire

Country \_\_\_\_\_

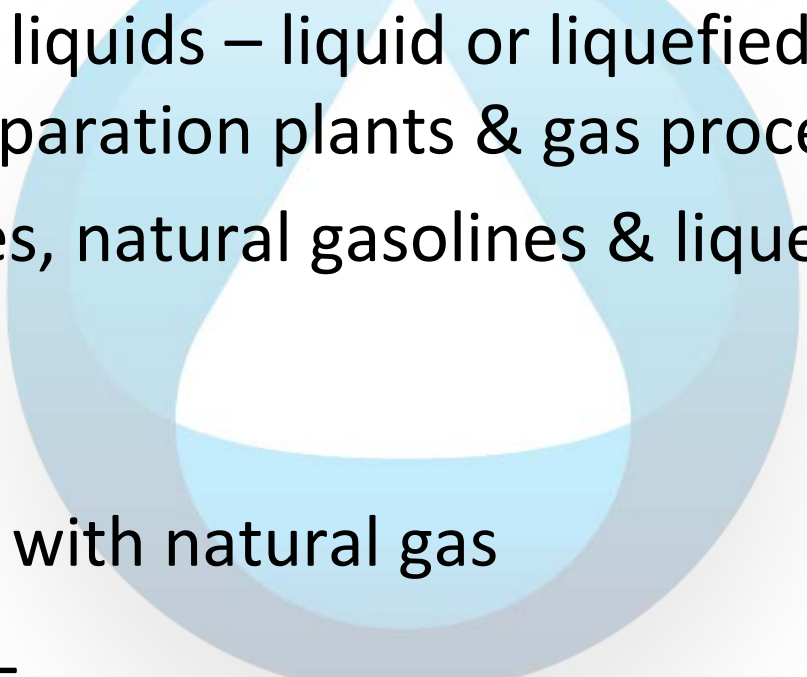
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Closing stocks					Closing stocks									



# Definitions: Products/columns – NGLs

- 
- Natural gas liquids – liquid or liquefied hydrocarbons from gas separation plants & gas processing facilities
  - Condensates, natural gasolines & liquefied petroleum gases
  - Ethane
  - Association with natural gas
  - LNG vs. NGL

# The extended JODI oil questionnaire

Country \_\_\_\_\_

Month \_\_\_\_\_

Unit : \_\_\_\_\_

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Closing stocks					Closing stocks									

# Definitions: Products/columns – Other primary

- All input from other commodities & refinery feedstocks
- Refinery feedstocks (hydrocarbons from refinery/petrochemical industry for further blending)
- Additives/oxygenates (oxygenates, biofuels,...)
- Other hydrocarbons (gas-to-liquids, coal to liquids, hydrogen,...)

# The extended JODI oil questionnaire

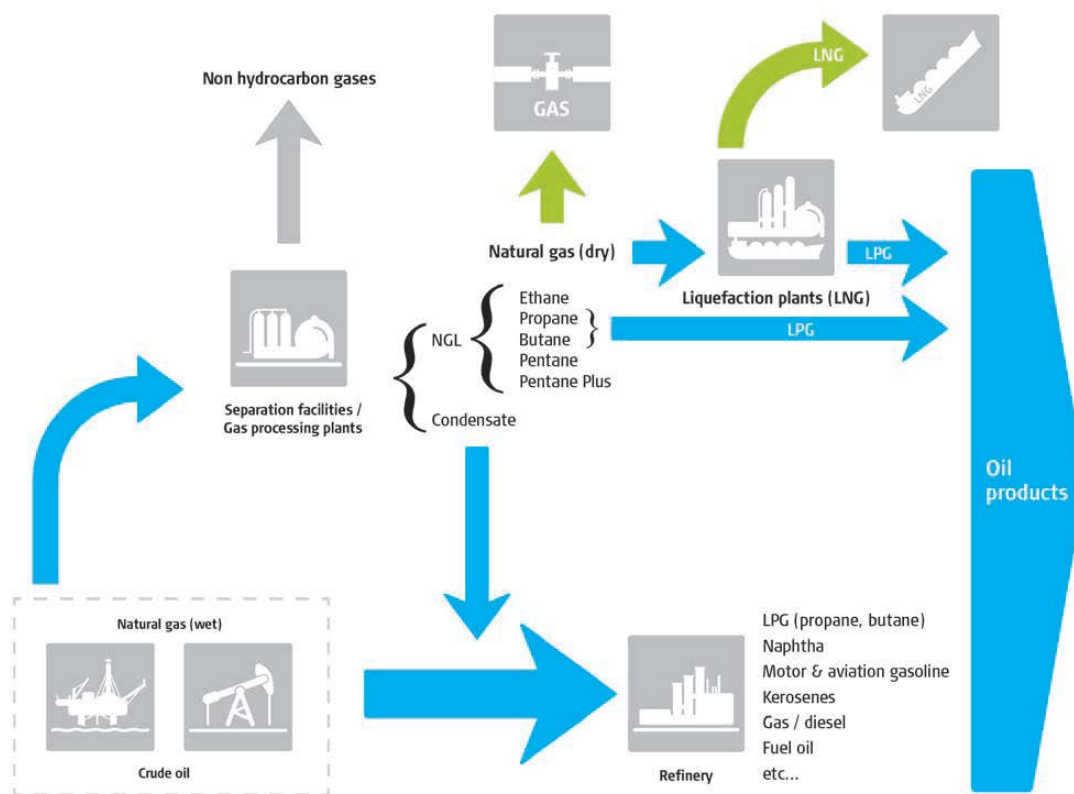
Country \_\_\_\_\_

Month \_\_\_\_\_

Unit : \_\_\_\_\_

	Crude Oil	NGL	Other	Total (1)+(2)+(3)		LPG	Petroleum Products							
							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)
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# Definitions: Products/columns – LPG



- Propane ( $C_3H_8$ ), butane ( $C_4H_{10}$ ) or a mixture of these two hydrocarbons
- Gas plant volumes

# The extended JODI oil questionnaire

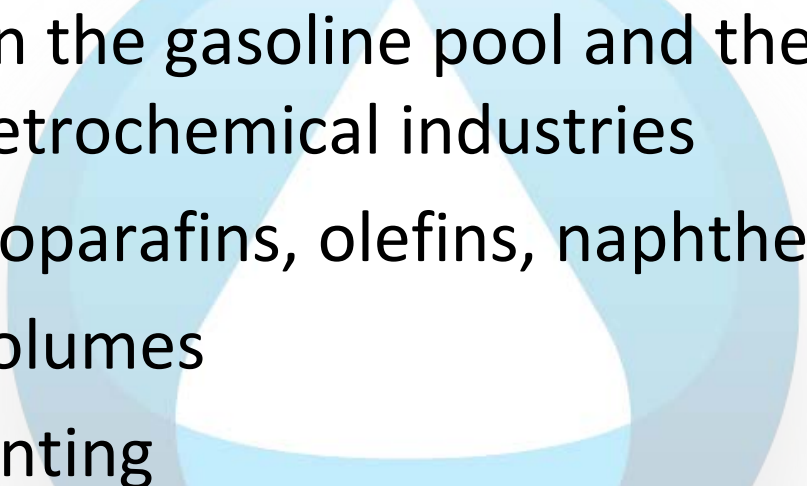
Country \_\_\_\_\_

Month \_\_\_\_\_

Unit : \_\_\_\_\_

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# Definitions: Products/columns – Naphtha

- 
- Feedstock in the gasoline pool and the chemical/petrochemical industries
  - Paraffins, isoparaffins, olefins, naphthenes & aromatics
  - Gas plant volumes
  - Double-counting

# The extended JODI oil questionnaire

Country \_\_\_\_\_

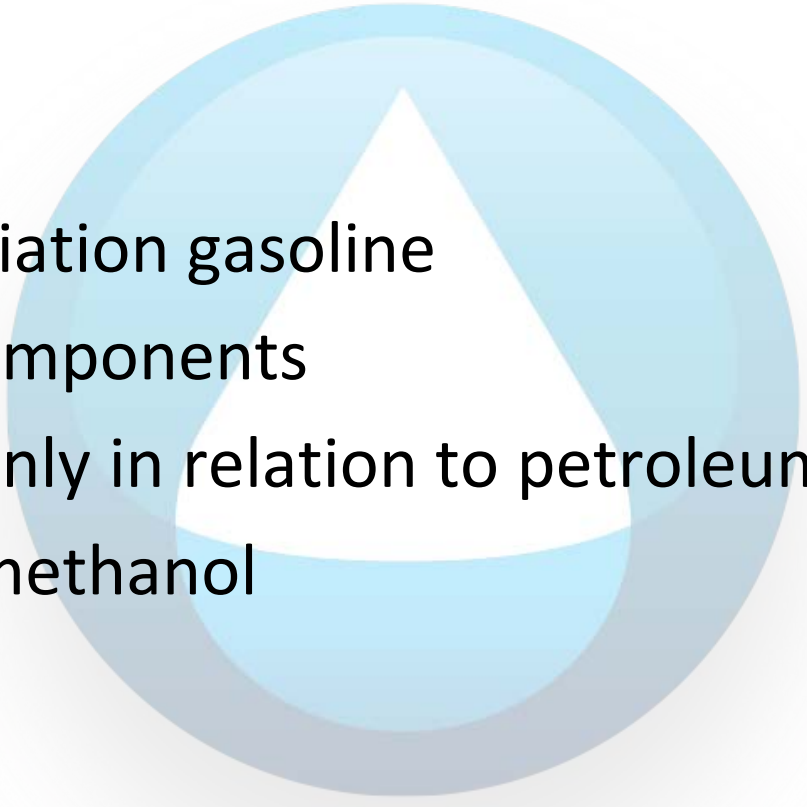
Month \_\_\_\_\_

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# Definitions: Products/columns – Gasoline

- 
- Motor & aviation gasoline
  - Blending components
  - Biofuels – only in relation to petroleum products
  - Ethanol & methanol

# The extended JODI oil questionnaire

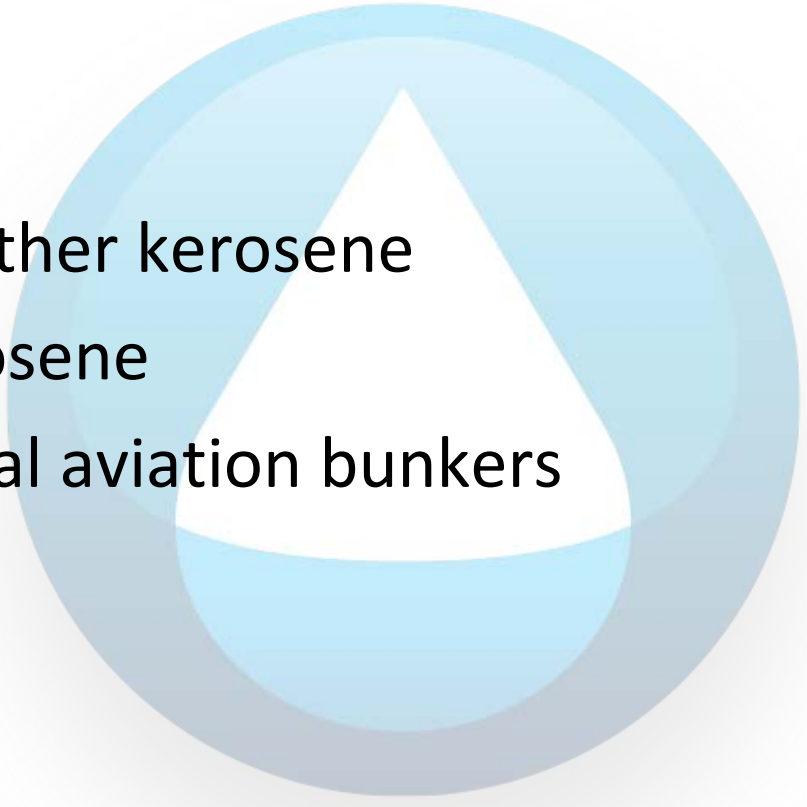
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# Definitions: Products/columns – Kerosenes

- 
- Jet fuel & other kerosene
  - Bio jet/kerosene
  - International aviation bunkers

# The extended JODI oil questionnaire

Country \_\_\_\_\_

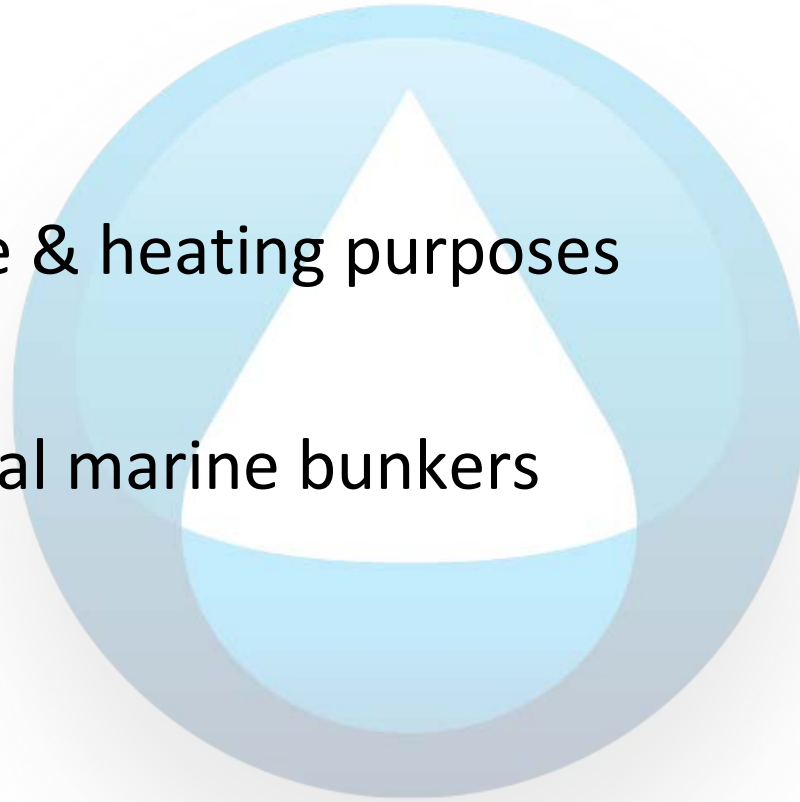
Month \_\_\_\_\_

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Closing stocks					Closing stocks									

# Definitions: Products/columns – Gas diesel oil

- Automotive & heating purposes
- Biodiesel
- International marine bunkers



# The extended JODI oil questionnaire

Country \_\_\_\_\_

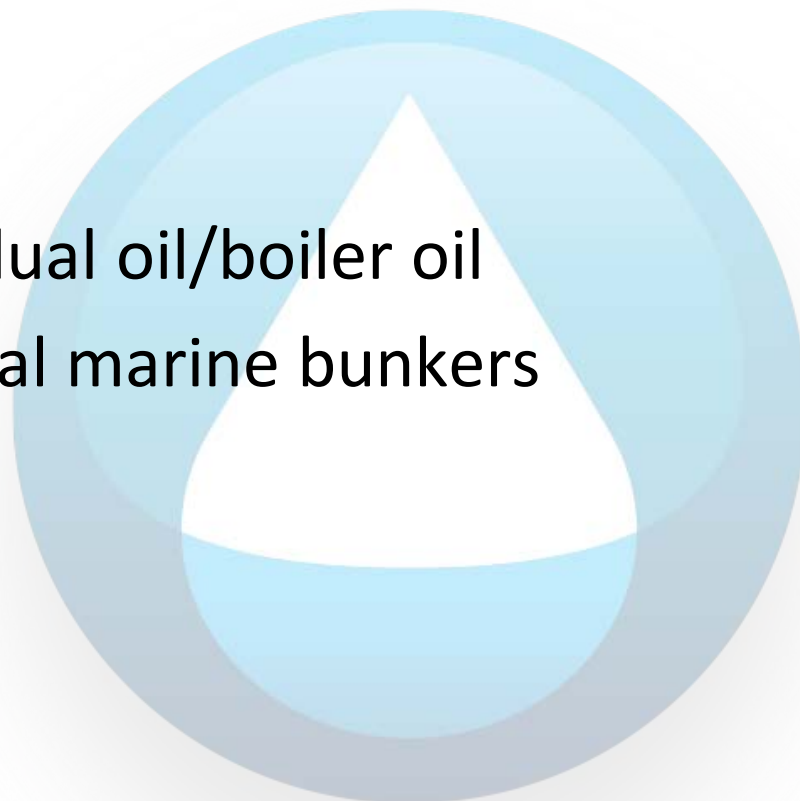
Month \_\_\_\_\_

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Closing stocks					Closing stocks									

# Definitions: Products/columns – Residual fuel oil

- Heavy residual oil/boiler oil
- International marine bunkers



# The extended JODI oil questionnaire

Country \_\_\_\_\_

Month \_\_\_\_\_

Unit : \_\_\_\_\_

	Crude Oil	NGL	Other	Total (1)+(2)+(3)		Petroleum Products							Other Products	Total Products (5)+(6)+(7) +(8)+(10) +(11)+(12)
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Closing stocks					Closing stocks									



# Definitions: Products/columns – Other products

- Refinery gas
- Ethane
- Gasoline type Jet fuel
- Petroleum coke
- Lubricants
- White spirit & SBP
- Bitumen
- Paraffin waxes
- Other: chemicals and organic chemicals (propylene, benzene, toluene, xylene)
- Demand includes direct use of crude & NGLs

# The extended JODI oil questionnaire

Country \_\_\_\_\_

Month \_\_\_\_\_

Unit : \_\_\_\_\_

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# The extended JODI oil questionnaire

Country \_\_\_\_\_

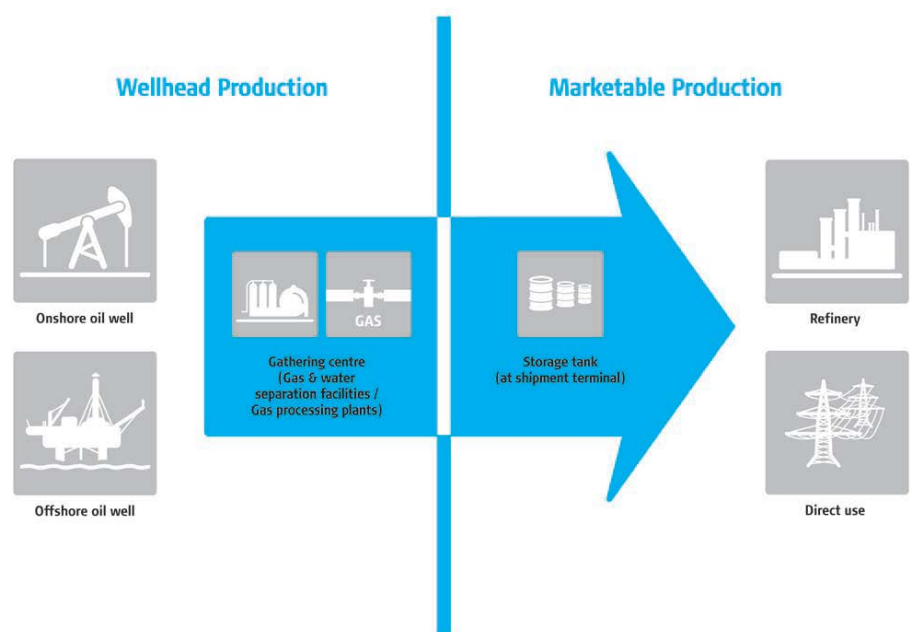
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# Definitions: Flows/rows – Production

- Marketable production after removal of impurities
- Crude oil, NGL & other (additives, from other commodities)



# The extended JODI oil questionnaire

Country \_\_\_\_\_

Month \_\_\_\_\_

Unit : \_\_\_\_\_

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Closing stocks					Closing stocks									

# Definitions: Flows/rows – From other sources

- Input of additives, biofuels & other hydrocarbons that are produced from non-oil sources
- Liquid biofuels

# The extended JODI oil questionnaire

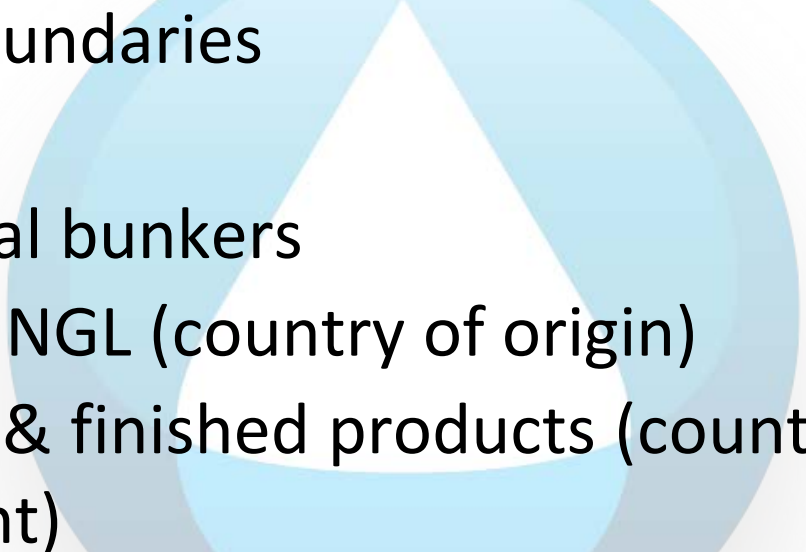
Country \_\_\_\_\_

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# Definitions: Flows/rows – Imports/Exports

- 
- National boundaries
  - Transit
  - International bunkers
  - Crude oil & NGL (country of origin)
  - Feedstocks & finished products (country of last consignment)



# The extended JODI oil questionnaire

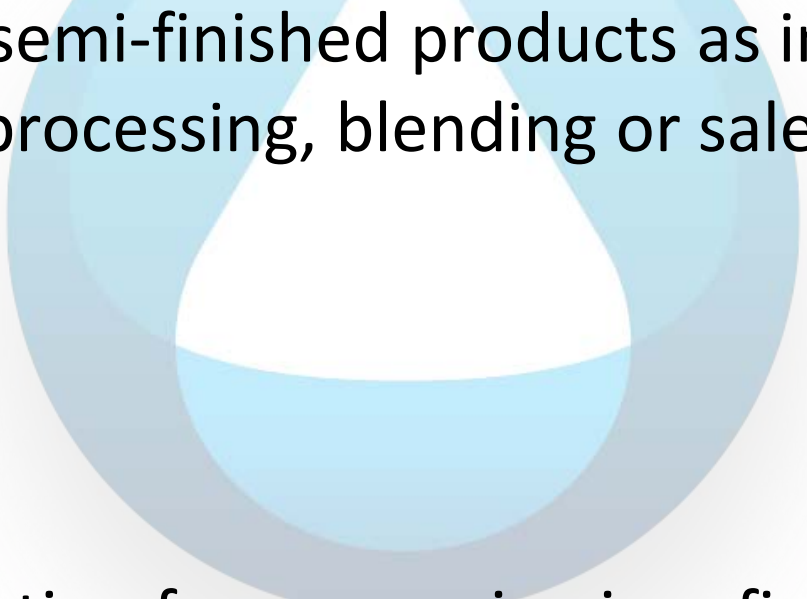
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# Definitions: Flows/rows – Product transferred & backflows from petrochemical industry

- 
- Finished & semi-finished products as input to refineries (processing, blending or sale)
  - Naphtha
  - Ethane
  - Propane
  - Gas oil
  - Re-classification for processing in refinery (products)

# The extended JODI oil questionnaire

Country \_\_\_\_\_

Month \_\_\_\_\_

Unit : \_\_\_\_\_

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Closing stocks					Closing stocks									

# Definitions: Flows/rows – Direct use

- 
- Crude & NGL used directly without being processed
  - Electricity generation
  - Petrochemical industry
  - Receipts

# The extended JODI oil questionnaire

Country \_\_\_\_\_

Month \_\_\_\_\_

Unit : \_\_\_\_\_

	Crude Oil	NGL	Other	Total (1)+(2)+(3)		Petroleum Products								
						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					+ Refinery Output									
+ From Other sources					+ Receipts									
+ Imports					+ Imports									
- Exports					- Exports									
+ Products Transferred /Backflows					- Products Transferred									
- Direct Use					+ Interproduct Transfers									
- Stock Change					- Stock Change									
- Statistical Difference	0	0	0	0	- Statistical Difference	0	0	0	0	0	0	0	0	0
= Refinery Intake					= Demand									
Closing stocks					Closing stocks									

# Definitions: Flows/rows – Stocks & change

- 
- Primary stocks
  - National territory
  - Commercial & government holding
  - Stock build vs/ draw

# The extended JODI oil questionnaire

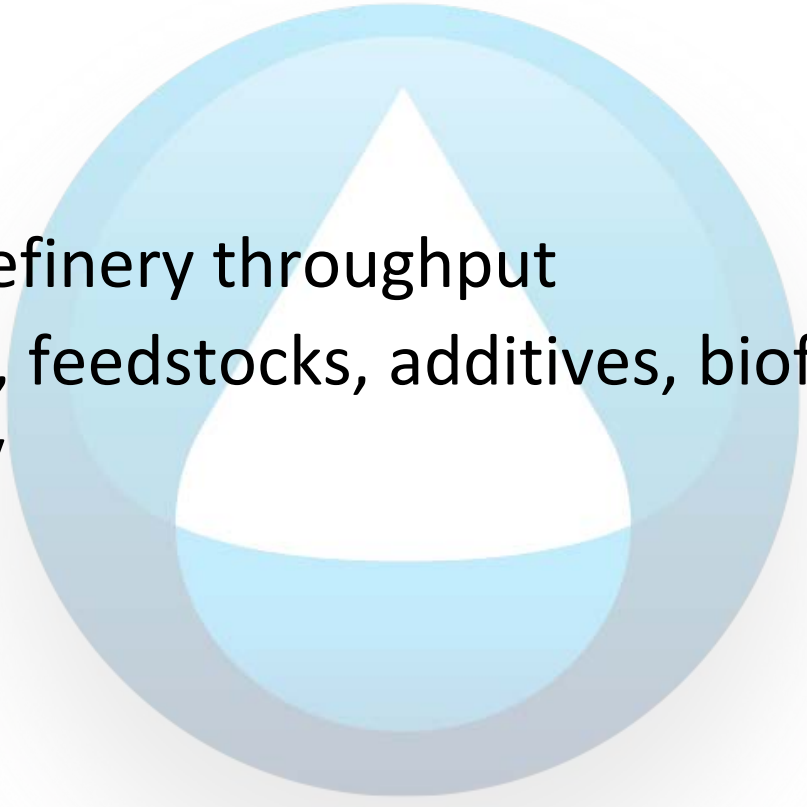
Country \_\_\_\_\_

Month \_\_\_\_\_

Unit : \_\_\_\_\_

	Crude Oil	NGL	Other	Total (1)+(2)+(3)		Petroleum Products								
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- Direct Use					+ Interproduct Transfers									
- Stock Change					- Stock Change									
- Statistical Difference	0	0	0	0	- Statistical Difference	0	0	0	0	0	0	0	0	0
- Refinery Intake					= Demand									
Closing stocks					Closing stocks									

# Definitions: Flows/rows – Refinery intake

- 
- Observed refinery throughput
  - Crude, NGL, feedstocks, additives, biofuels entering the refinery



# The extended JODI oil questionnaire

Country \_\_\_\_\_

Month \_\_\_\_\_

Unit : \_\_\_\_\_

	Crude Oil	NGL	Other	Total (1)+(2)+(3)		Petroleum Products								
						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)
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- Stock Change					- Stock Change									
- Statistical Difference	0	0	0	0	- Statistical Difference	0	0	0	0	0	0	0	0	0
= Refinery Intake					= Demand									
Closing stocks					Closing stocks									

# Definitions: Flows/rows – Statistical difference

- Difference between observed supply flows & calculated refinery intake
- Primary supply  
$$\text{Stat. difference} = \text{Production} + \text{From other sources} + \text{imports} - \text{exports} + \text{product transferred/backflows} - \text{direct use} - \text{stock change} - \text{refinery intake}$$

# The extended JODI oil questionnaire

Country \_\_\_\_\_

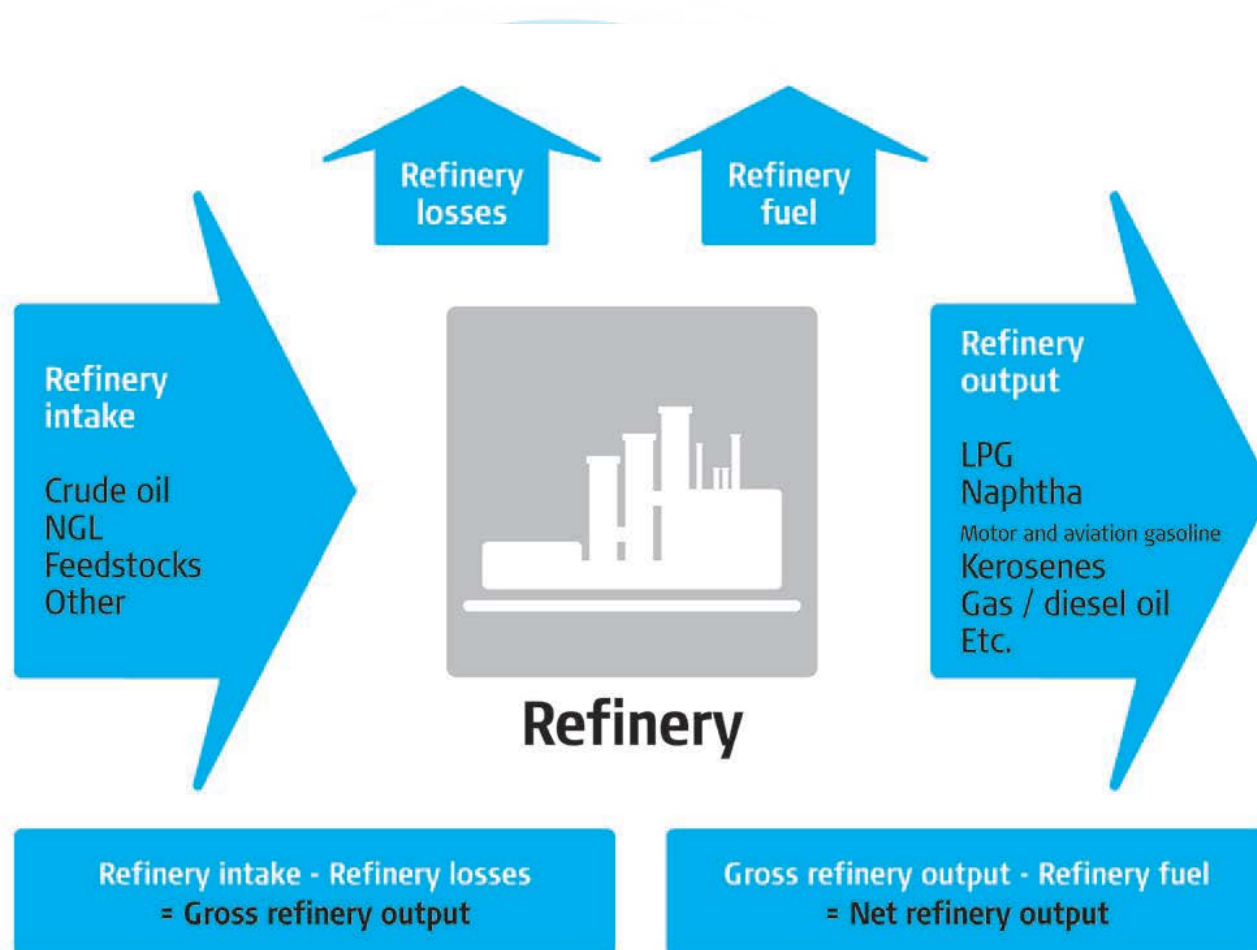
Month \_\_\_\_\_

Unit : \_\_\_\_\_

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						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)
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- Stock Change					- Stock Change									
- Statistical Difference	0	0	0	0	- Statistical Difference	0	0	0	0	0	0	0	0	0
= Refinery Intake					= Demand									
Closing stocks					Closing stocks									

# Definitions: Flows/rows – Refinery output

- Gross output (refinery fuel)



# The extended JODI oil questionnaire

Country \_\_\_\_\_

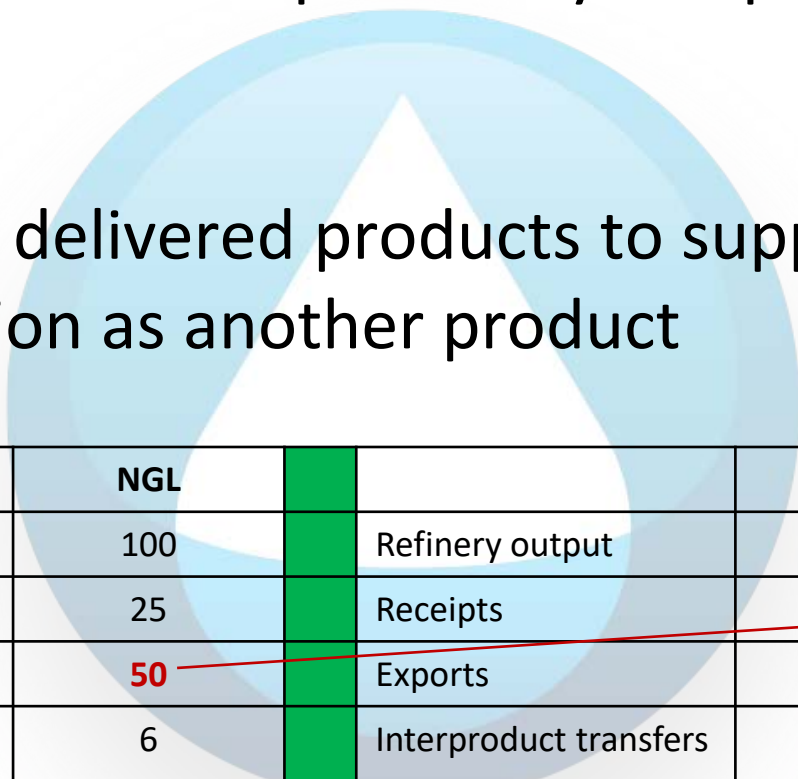
Month \_\_\_\_\_

Unit : \_\_\_\_\_

	Crude Oil	NGL	Other	Total (1)+(2)+(3)		Petroleum Products								
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- Statistical Difference	0	0	0	0	- Statistical Difference	0	0	0	0	0	0	0	0	0
= Refinery Intake					= Demand									
Closing stocks					Closing stocks									

# Definitions: Flows/rows – Receipts

- Primary product receipts & recycled products
  - Crude
  - NGL
- Returned of delivered products to supply without reclassification as another product



	NGL			LPG	Other oil products
Production	100		Refinery output	10	
Imports	25		Receipts		>50
Direct use	50		Exports	5	↓
Stock Change	6		Interproduct transfers	50 ←	-50
Statistical Difference	4		Stock Change	2	
Refinery Intake	65		Statistical Difference	-2	0
Closing Stocks			Demand	55	

# The extended JODI oil questionnaire

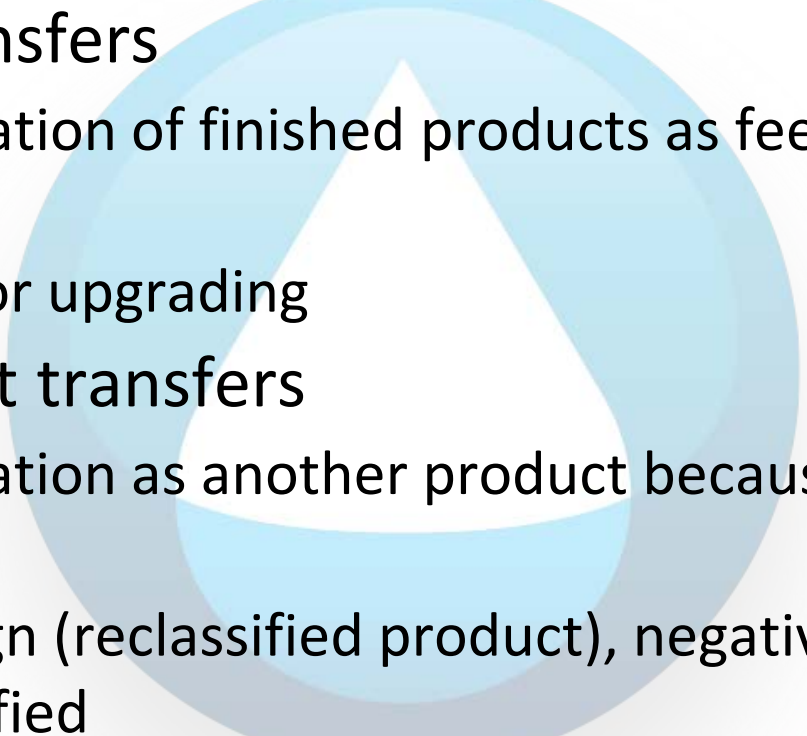
Country \_\_\_\_\_

Month \_\_\_\_\_

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- Stock Change					- Stock Change									
- Statistical Difference	0	0	0	0	- Statistical Difference	0	0	0	0	0	0	0	0	0
= Refinery Intake					= Demand									
Closing stocks					Closing stocks									

# Definitions: Flows/rows – Product transfers & interproduct transfers

- 
- Product transfers
    - Reclassification of finished products as feedstock to refineries
    - Naphtha for upgrading
  - Interproduct transfers
    - Reclassification as another product because of spec or blending
    - Positive sign (reclassified product), negative sign product to be reclassified



# The extended JODI oil questionnaire

Country \_\_\_\_\_

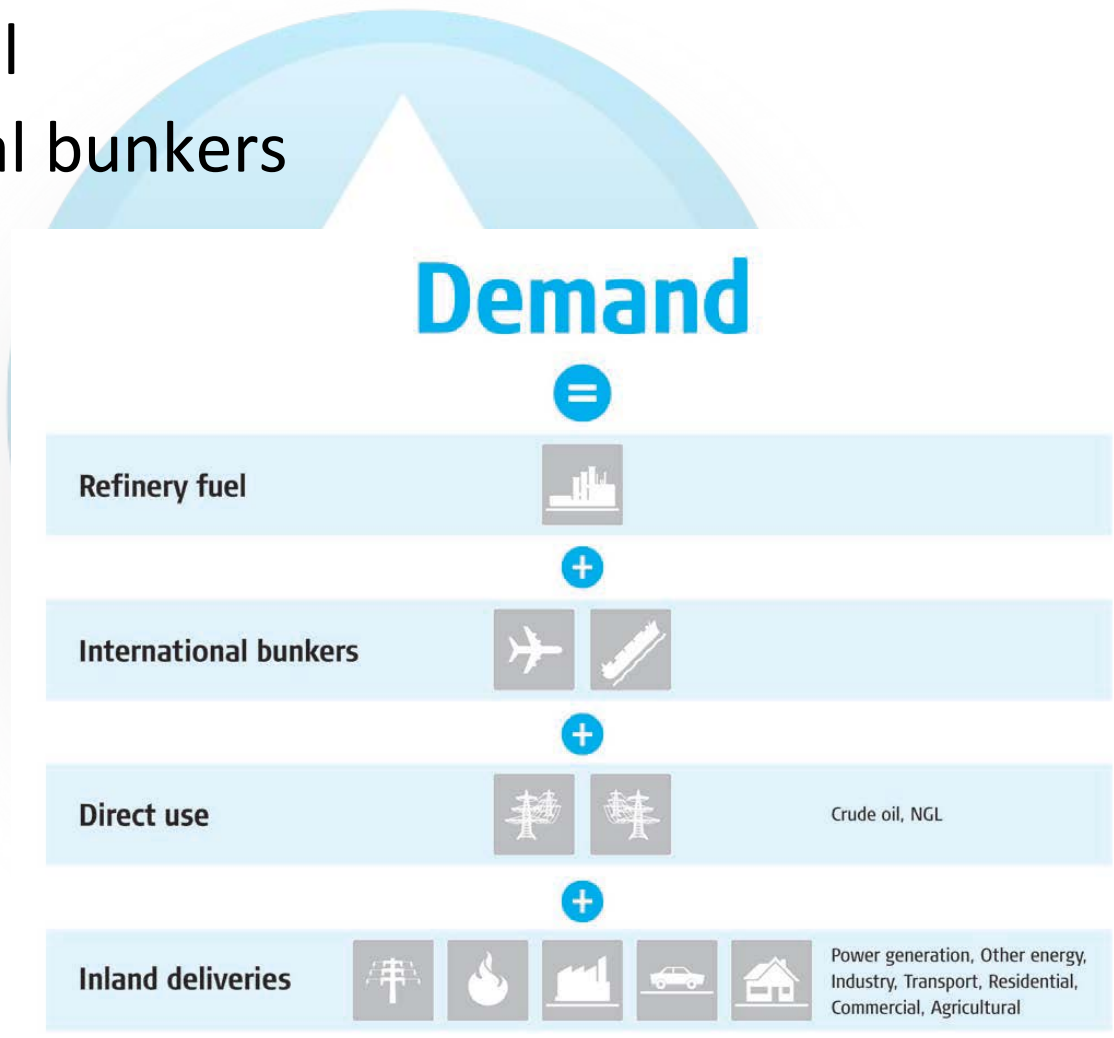
Month \_\_\_\_\_

Unit : \_\_\_\_\_

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= Refinery Intake					= Demand									
Closing stocks					Closing stocks									

# Definitions: Flows/rows – demand

- Deliveries to inland market
- Refinery fuel
- International bunkers
- Direct use



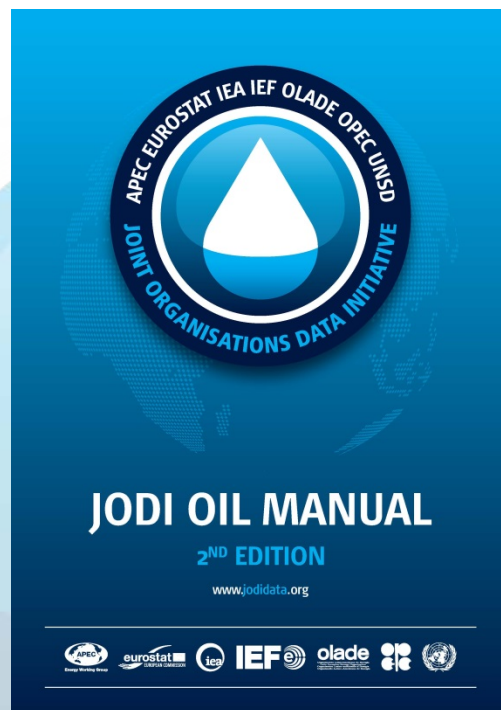
# Definitions: Flows/rows – Statistical difference

- Difference between observed supply flows & calculated demand
  - Secondary supply
- Stat. difference = Refinery output + receipts + imports – exports - product transferred + interproduct transfers – stock change – demand

# Common reporting mistakes

- Large statistical difference
- Negative volumes; for which flows is it possible?
- Sum of interproduct transfers not 0
- Production (foreign companies)
- Refinery output (double-counting of semi-finished products)
- Demand (bunkers, direct use, refinery fuel, gas separation plant products)
- Kerosenes versus jet fuel

# Thank you



For more information at  
[www.jodidata.org](http://www.jodidata.org)



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