7th Regional JODI Training Workshop
8-10 October 2012, Rabat, Morocco

JODI World Database
Data Quality Assessment Files

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JODI World Database
Data Quality Assessment files

- Using data from the published JODI World Database:
  - Quick view of data presence for
    - Each data month
    - Each products/flow combination for each data month
  - Facilitate viewing/checking of data quality
  - See the effect of changes to data (revisions)
  - Data quality checks
  - Time Series view of data

Data Presence Evaluation – per data month

JODI Data Presence Evaluation

Country: Example Country

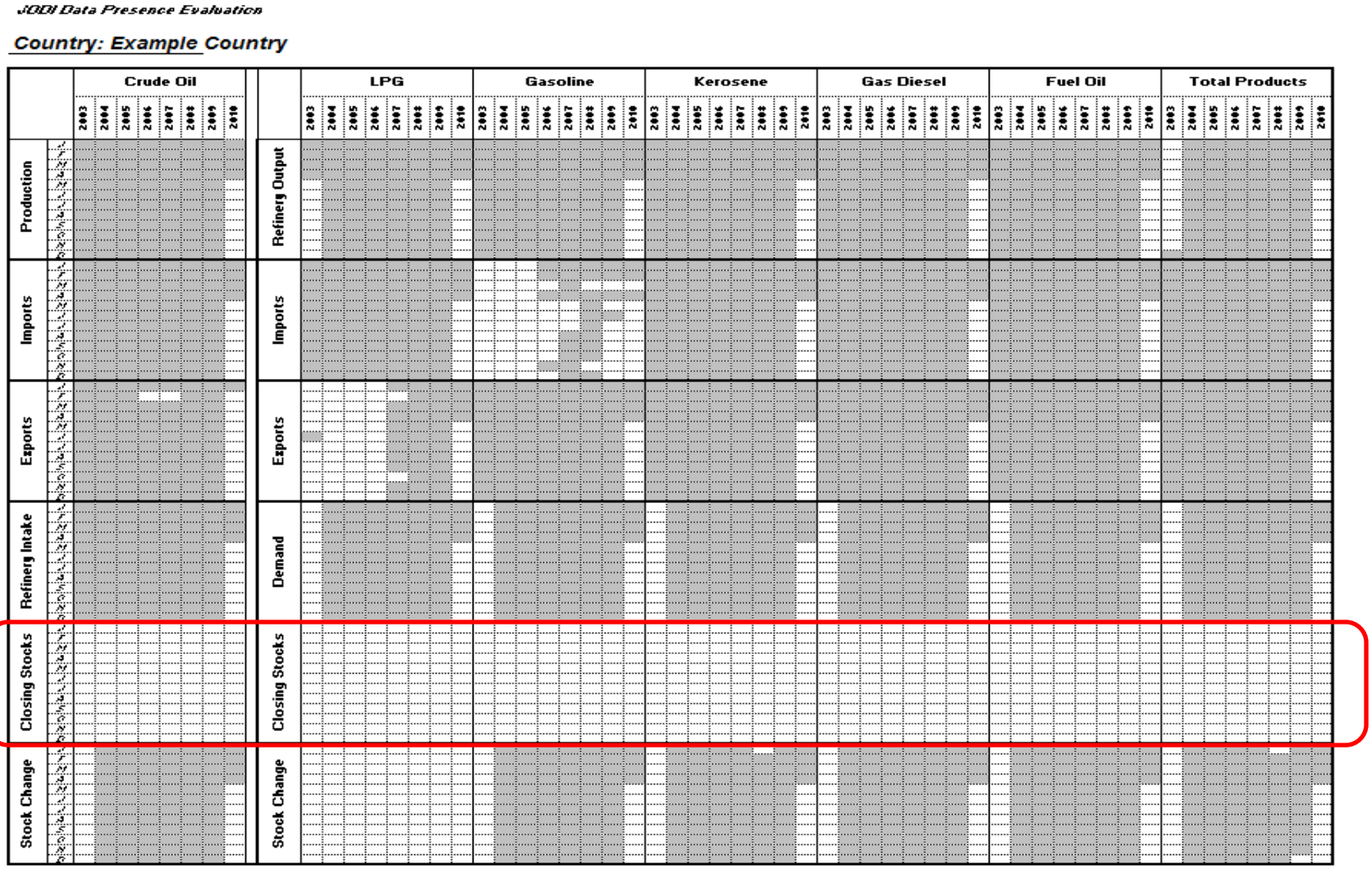
		Example Country							
		2003	2004	2005	2006	2007	2008	2009	2010
JODI Data Submission	J								
	F								
	M								
	A								
	M								
	J								
	J								
	A								
	S								
	O								
	N								
	D								

Reporting based on Inquiry load of JODI WDB information : Unit: Thousand Barrels (kbbl)

. *Data Present*

Missing Data

Detail Data Presence Evaluation
Product/Flow combination – per data month



Data Presence Evaluation – per data month

JODI Data Presence Evaluation

Country: Example Country 2

		Example Country 2							
		2003	2004	2005	2006	2007	2008	2009	2010
JODI Data Submission	J								
	F								
	M								
	A								
	M								
	J								
	J								
	A								
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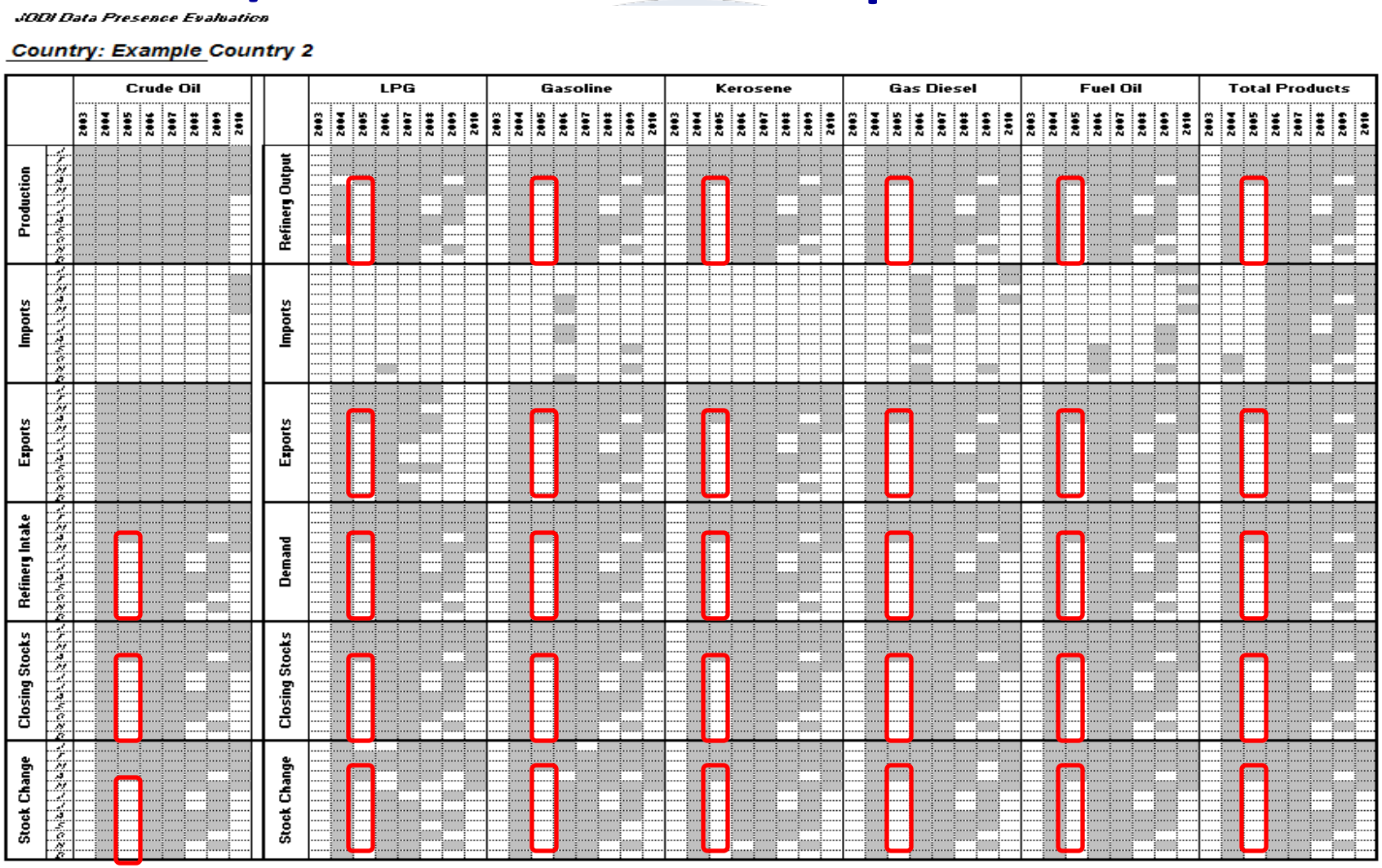
	D								

Reporting based on Inquiry load of JODI WDB information : Unit: Thousand Barrels (kbbl)

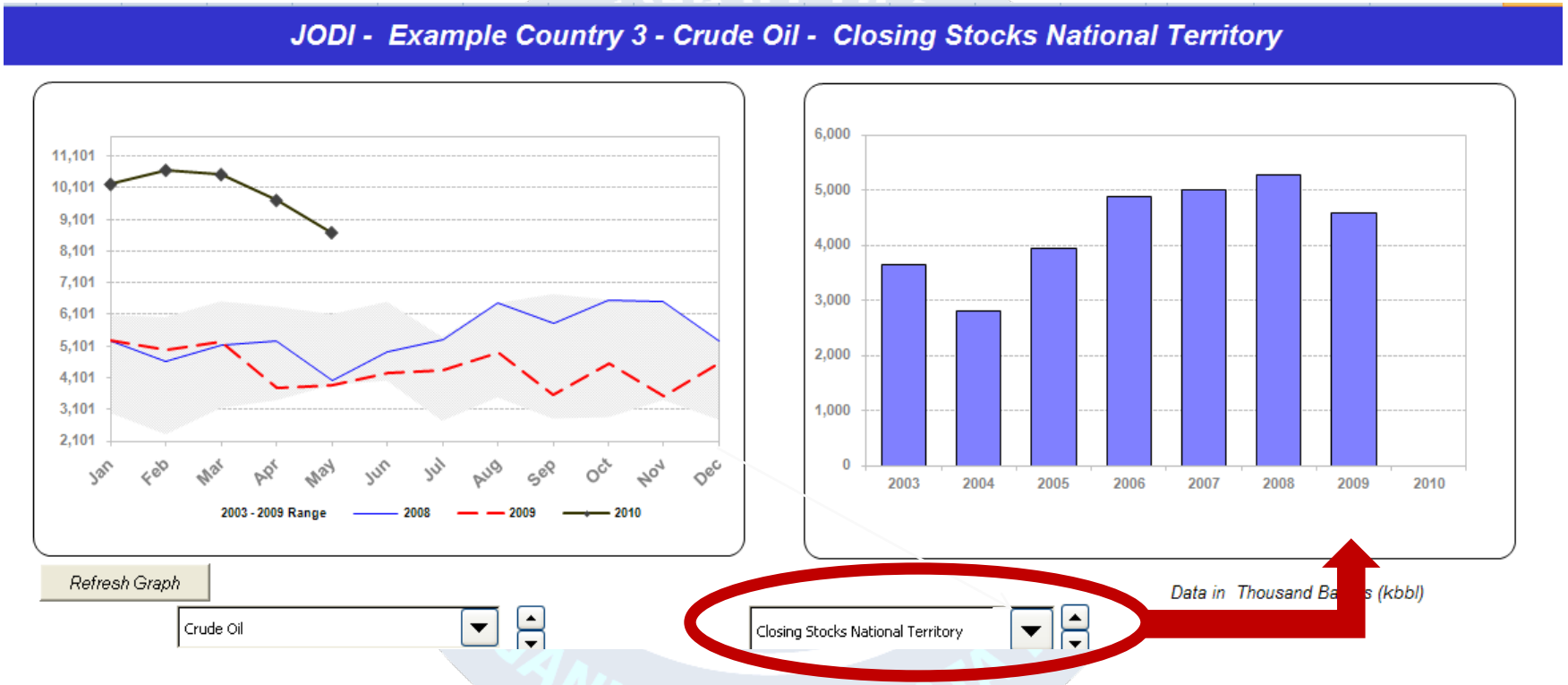
. *Data Present*

Missing Data

Detail Data Presence Evaluation
Product/Flow combination – per data month



Visual Checking of data quality: Monthly and Annual data view



Interactive **buttons** for selecting product and flow combination

Note that annual data is the sum of JODI monthly data for all flows except Closing stocks. Annual closing stock figures correspond to the **end of the year value.**

Visual Checking of data quality
Monthly and Annual data view - Tables

JODI - Example Country 3 - Crude Oil - Closing Stocks National Territory

JODI - Example Country 3 - Crude Oil - Closing Stocks National Territory

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2003	3,309	2,335	3,169	3,407	3,886	4,133	4,432	4,123	3,476	2,874	4,135	3,638
2004	4,407	4,234	3,423	3,867	4,274	4,138	2,758	3,501	2,830	3,304	3,414	2,802
2005	3,010	3,757	5,385	4,177	5,064	4,493	5,398	4,826	4,505	3,532	4,503	3,926
2006	4,643	4,174	3,746	3,840	4,028	4,025	4,112	5,277	6,745	6,235	5,158	4,868
2007	6,089	6,026	6,519	6,347	6,114	6,502	5,123	6,233	5,685	4,557	5,028	4,998
2008	5,240	4,616	5,121	5,240	4,032	4,937	5,311	6,461	5,830	6,567	6,495	5,264
2009	5,264	4,998	5,236	3,779	3,856	4,252	4,344	4,899	3,545	4,546	3,532	4,570
2010	10,217	10,665	10,531	9,705	8,676							

Growth Rate compared to same month previous year

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2004	33.2%	81.3%	8.0%	13.5%	10.0%	0.1%	-37.8%	-15.1%	-18.6%	15.0%	-17.4%	-23.0%
2005	-31.7%	-11.3%	57.3%	8.0%	18.5%	8.6%	95.7%	37.8%	59.2%	6.9%	31.9%	40.1%
2006	54.3%	11.1%	-30.4%	-8.1%	-20.5%	-10.4%	-23.8%	9.3%	49.7%	76.5%	14.5%	24.0%
2007	31.1%	44.4%	74.0%	65.3%	51.8%	61.5%	24.6%	18.1%	-15.7%	-26.9%	-2.5%	2.7%
2008	-13.9%	-23.4%	-21.4%	-17.4%	-34.1%	-24.1%	3.7%	3.7%	2.6%	44.1%	29.2%	5.3%
2009	8.5%	8.3%	2.2%	27.9%	4.4%	-13.9%	-18.2%	-24.2%	-39.2%	-30.8%	-45.6%	-13.2%
2010	94.1%	113.4%	101.1%	156.8%	125.0%							

JODI - Annual Totals

Crude Oil

Closing Stocks National Territory

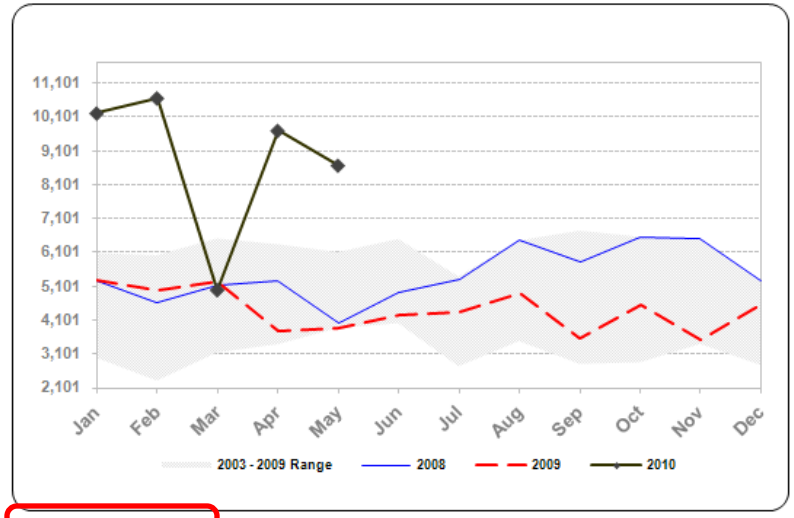
	(kbbl)	% Change
2003	3,638	
2004	2,802	-23.0%
2005	3,926	40.1%
2006	4,868	24.0%
2007	4,998	2.7%
2008	5,264	5.3%
2009	4,570	-13.2%
2010	0	-100.0%

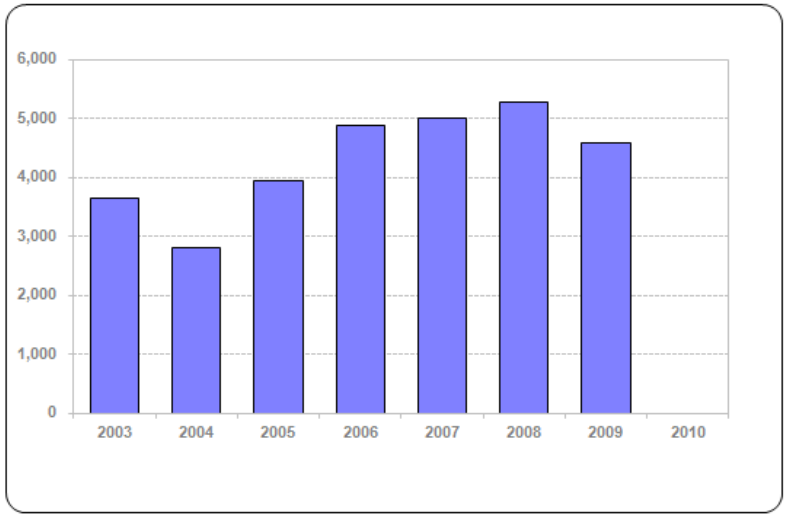
Below the graphs: tables with the values and year on year growth rates.
Remove the "#N/A" (not available) value so that it is not counted as a data point.

In this example, are we looking at a change in methodology of reporting of stocks?
If so, the Metadata in the IVT table should mention it.

Possibility to see the effect of changes to data

JODI - Example Country 3 - Crude Oil - Closing Stocks National Territory





Refresh Graph

Crude Oil

Closing Stocks National Territory

Data in Thousand Barrels (kbbl)

JODI - Example Country 3 - Crude Oil - Closing Stocks National Territory

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2003	3,309	2,335	3,169	3,407	3,886	4,133	4,432	4,123	3,476	2,874	4,135	3,638
2004	4,407	4,234	3,423	3,867	4,274	4,138	2,758	3,501	2,830	3,304	3,414	2,802
2005	3,010	3,757	5,385	4,177	5,064	4,493	5,398	4,826	4,505	3,532	4,503	3,926
2006	4,643	4,174	3,746	3,840	4,028	4,025	4,112	5,277	6,745	6,235	5,158	4,868
2007	6,089	6,026	6,519	6,347	6,114	6,502	5,123	6,233	5,685	4,557	5,028	4,998
2008	5,240	4,616	5,121	5,240	4,032	4,937	5,311	6,461	5,830	6,567	6,495	5,264
2009	5,264	4,998	5,236	3,779	3,856	4,252	4,344	4,899	3,545	4,546	3,532	4,570
2010	10,217	10,605	5,000	9,705	8,676							

JODI - Annual Totals
Crude Oil
Closing Stocks National Territory

	(kbbl)	% Change
2003	3,638	
2004	2,802	-23.0%
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2007	4,998	2.7%
2008	5,264	5.3%

You can modify a value in the table and refresh the graph.
This does not revise the source data
Revisions to JODI have to be submitted to your reporting organization in the JODI format

Time Series display of data

Country: Example Country 3
JODI Data in Unit: Kbbl

Crude Oil	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09	Jan-10	Feb-10	Mar-10	Apr-10	May-10
Indigenous Production	17,749	19,574	18,846	19,317	18,249	18,249	16,574	18,294	19,197	17,949	18,547	18,852	17,005	18,867	18,244	18,790
Imports	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Exports	1,068	2,083	1,315	2,223	2,702	2,078	1,237	3,083	5,396	2,422	1,977	3,454	2,022	2,057	2,336	1,945
Stock change	(266)	238	(1,458)	77	396	92	555	(1,354)	1,000	(1,014)	1,038	5,647	448	(135)	(826)	(1,029)
*Calculated Supply**	*16,947*	*17,253*	*18,989*	*17,017*	*15,151*	*16,079*	*14,782*	*16,565*	*12,801*	*16,541*	*15,532*	*9,751*	*14,535*	*16,945*	*16,734*	*17,874*
*Satistical difference**	*2,236*	*477*	*2,520*	*335*	*(1,350)*	*544*	*(1,418)*	*1,642*	*(1,711)*	*56*	*(1,158)*	*(6,997)*	*(1,063)*	*(279)*	*731*	*1,586*
Refinery Intake	**14,711**	**16,776**	**16,469**	**16,682**	**16,501**	**15,535**	**16,200**	**14,923**	**14,512**	**16,485**	**16,690**	**16,748**	**15,598**	**17,224**	**16,003**	**16,288**
Closing stocks	4,998	5,236	**3,779**	3,856	4,252	4,344	4,899	3,545	**4,546**	3,532	4,570	10,217	10,665	**10,531**	9,705	8,676

** Data not submitted in JODI*

Closing stocks <> CS previous month plus stockchange

Crude Oil

Conditional formatting to highlight when stock levels reported do not correspond to previous month level plus stock change reported.

Country: Example Country
JODI Data in Unit: Kbbl

Total Products	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09	Jan-10	Feb-10	Mar-10	Apr-10	May-10
Refinery Gross Output	17,694	19,258	20,077	19,113	18,695	18,329	18,448	16,970	16,806	19,011	19,340	20,379	19,166	21,063	20,545	22,207
Imports	826	277	162	346	906	133	420	415	477	327	2,479	316	586	909	866	2,083
Exports	3,755	3,765	4,472	3,301	3,196	2,891	2,188	2,251	2,572	4,002	2,842	3,889	4,634	5,535	4,160	3,217
Stock change	(4,929)	389	(3,118)	1,648	174	(2,038)	1,293	(489)	574	(2,352)	2,055	13,194	1,350	649	(956)	1,566
*Calculated Demand**	*19,694*	*15,381*	*18,885*	*14,510*	*16,231*	*17,609*	*15,387*	*15,623*	*14,137*	*17,688*	*16,922*	*3,612*	*13,768*	*15,788*	*18,207*	*19,507*
*Satistical difference**	*(5,516)*	*(13,288)*	*(9,646)*	*(14,985)*	*(14,503)*	*(13,233)*	*(15,000)*	*(12,331)*	*(15,221)*	*(9,725)*	*(12,153)*	*(16,687)*	*(4,379)*	*(5,767)*	*(2,930)*	*(1,845)*
Demand	**28,669**	**28,531**	**29,495**	**30,734**	**30,842**	**30,387**	**27,954**	**29,358**	**27,413**	**29,075**	**20,299**	**18,147**	**21,555**	**21,137**	**21,352**	
Closing stocks	22,154	19,036	20,684	**20,859**	18,821	**20,113**	19,624	**20,199**	17,847	19,902	33,096	34,446	**35,094**	34,138	35,704	

** Data not submitted in JODI*

Closing stocks <> CS previous month plus stockchange

Total Products

Interactive buttons for selecting products.

Data Quality Checks

- Balance Check
- Internal consistency checks
  - Stock changes
  - Fuel Balance
  - Other Products
- Refinery Yield Check

Data quality checks as outlined in the JODI Manual

Data Quality Checks – Balance check

- Balance Check for Secondary Products
  Calculated Supply versus Reported Demand :

  Calculated Supply = Refinery Output + Receipts + Imports – Exports – Product Transferred + Interproduct Transfer – Stock changes

- To what extent can they differ?

Data Quality Checks – Balance check

JODI - Example Country 3 - Data Quality Checks

1 Balance Check

Calculated Supply compared to reported Demand

		Liquefied Petroleum Gases							
		2003	2004	2005	2006	2007	2008	2009	2010
Calculated Supply	J	1,346	1,437	1,905	1,371	1,184	1,275	1,139	1,273
	F	1,114	1,887	1,144	982	1,153	1,027	839	888
	M	1,260	1,545	1,692	1,492	1,488	1,295	1,698	1,123
	A	2,355	2,013	1,505	1,982	1,692	1,497	1,338	1,537
	M	1,881	1,887	1,696	1,337	1,672	1,807	1,561	1,048
	J	1,443	1,453	1,767	2,117	1,479	1,603	1,689	0
	J	2,099	1,750	1,392	1,948	2,118	2,143	1,890	0
	A	1,612	1,324	1,894	1,310	1,751	1,219	1,626	0
	S	1,388	1,531	1,645	1,175	1,736	2,419	1,698	0
	O	613	1,696	887	1,377	1,261	1,595	1,939	0
	N	1,771	1,270	1,876	1,611	1,391	474	1,518	0
	D	1,496	1,755	1,377	1,651	1,426	537	1,197	0

Data in Kbbl

Calculated Supply vs. Demand different beyond level of comparability

15% *Level of comparability*

		Liquefied Petroleum Gases							
		2003	2004	2005	2006	2007	2008	2009	2010
Demand	J	1,297	1,474	2,158	1,559	1,354	1,337	1,261	402
	F	1,247	1,356	1,302	1,495	1,356	1,381	1,190	367
	M	1,501	1,557	1,603	1,747	1,530	1,649	1,505	456
	A	1,469	1,719	1,490	1,740	1,519	1,555	1,505	462
	M	1,597	1,779	1,677	1,906	1,842	1,690	1,596	509
	J	1,667	1,703	1,676	2,128	2,058	1,849	2,293	0
	J	1,899	1,879	1,980	2,112	1,981	2,032	2,380	0
	A	1,665	1,711	1,844	2,115	2,102	1,883	2,200	0
	S	1,704	1,433	1,761	1,836	1,659	1,700	1,807	0
	O	1,461	1,516	1,584	1,696	1,564	1,579	1,787	0
	N	1,304	1,477	1,600	1,616	1,411	1,008	1,521	0
	D	1,515	1,591	1,659	1,554	1,538	1,141	1,490	0

Liquefied Petroleum Gases

- Interactive product selection
- Modifiable level of comparability
- Highlight of values outside selected comparability levels

For this check, the acceptance level of comparability depends on the **country** and on the **product**

Data Quality Checks - Internal consistency

- Stock changes
  Reported stock changes compared to calculated stock changes

  Closing stock level of previous month
  + Reported stock change for current month

- Do they match?
- Do they go in the same direction?
  (Stock draw or stock build)

Internal Consistency – Stock change

JODI - Example Country 4 - Data Quality Checks

2 Internal Consistency check - Stock changes
Reported stock changes vs. changes in stock levels

		Motor Gasoline (incl. aviation gasoline)							
		2003	2004	2005	2006	2007	2008	2009	2010
Stock Change	J	-333	1,932	1,382	1,068	-16	452	588	176
	F	614	437	-873	579	764	-418	329	511
	M	890	1,410	-259	-888	1,496	768	375	-290
	A	83	-698	699	-876	-171	-388	-370	-401
	M	219	180	1,444	724	-1,276	-156	-316	0
	J	2,429	-1,318	-270	740	63	142	178	0
	J	-80	-35	-1,171	468	-735	647	-402	0
	A	-572	-2,142	-179	-1,111	-1,256	-2,143	376	0
	S	163	458	1,790	-2,128	-1,402	10	-1,349	0
	O	-846	935	766	301	4	-683	-1,581	0
	N	-603	769	-833	160	-136	852	-448	0
	D	-2,122	-1,897	-2,633	280	-299	-1,084	-1,874	0

Data in Thousand Barrels (kbbl)

Reported stock change = calculated stock change
Stock build vs. stock draw

		Motor Gasoline (incl. aviation gasoline)							
		2003	2004	2005	2006	2007	2008	2009	2010
Stock Level M-1 less Stock Level M-2	J		1,818	1,486	2,122	754	1,582	2,701	958
	F	614	436	-873	579	764	-418	329	511
	M	891	1,410	-259	-888	1,495	768	375	-290
	A	83	-697	699	-876	-171	-388	-369	-401
	M	219	180	1,444	724	-1,277	-156	-316	-5,408
	J	2,428	-1,318	-270	740	63	142	178	0
	J	-79	-35	-1,171	468	-735	647	-402	0
	A	-572	-2,143	-180	-1,111	-1,256	-2,143	376	0
	S	163	459	1,790	-2,128	-1,402	10	-1,349	0
	O	-846	935	766	301	4	-683	-1,581	0
	N	-604	768	-833	160	-136	853	-448	0
	D	-2,121	-1,897	-2,633	279	878	-1,085	2,304	0

Motor Gasoline (incl. aviation gasoline)

- Interactive product selection
- Highlight values where reported stock change is different than calculated stock change
- Color highlight of values indicating opposite stock level movements

If stock changes reported are correct, maybe closing stock levels of previous month need to be revised by the country

Data Quality Checks - Internal consistency

- Fuel Balance
  Reported Total Product figures should be greater than or equal to the sum of the elements

Total Products >= LPG
+ Naphtha
+ Gasoline
+ Total Kerosene
+ Gas Diesel Oil
+ Fuel Oil
+ Other Products

Of which Jet Kerosene should be less or equal to Total Kerosene

Internal Consistency – Fuel Balance

JODI - Example Country 5 - Data Quality Checks

3 Internal Consistency check - Fuel Balance

Sum of elements vs. reported Total Products

		LPG + Gasoline + Kerosene + Gas Diesel Oil + Fuel Oil							
		2003	2004	2005	2006	2007	2008	2009	2010
Refinery Output	J	6,323	6,414	6,205	6,544	6,769	6,554	6,177	5,723
	F	5,730	5,339	4,946	6,544	6,009	6,267	5,572	**5,056**
	M	6,338	6,208	5,733	5,897	6,655	6,658	**6,072**	2,349
	A	6,104	6,138	5,453	6,191	6,723	5,556	6,191	0
	M	5,693	**5,160**	5,472	3,407	6,404	5,279	5,352	0
	J	**4,901**	4,676	6,497	6,342	5,332	6,522	**5,563**	0
	J	5,598	5,679	6,128	6,968	6,128	**6,182**	6,460	0
	A	6,290	6,323	5,997	6,419	5,289	**6,040**	**6,340**	0
	S	5,568	6,464	6,022	6,283	4,567	**5,870**	5,802	0
	O	6,108	6,539	6,123	7,266	5,833	**6,149**	6,026	0
	N	5,876	5,980	6,115	6,363	5,887	**5,620**	**5,525**	0
	D	6,417	6,525	6,382	6,802	5,278	**5,864**	**5,551**	0

Data in Thousand Barrels (kbbl)

Sum of elements > Total Products

		Total Products							
		2003	2004	2005	2006	2007	2008	2009	2010
Refinery Output	J	6,323	6,445	6,247	6,582	6,787	6,597	6,202	5,723
	F	5,746	5,358	4,970	6,582	6,042	6,308	5,578	**5,039**
	M	6,369	6,209	5,768	5,898	6,696	6,711	**6,065**	2,371
	A	6,110	6,141	5,464	6,217	6,734	5,578	6,209	0
	M	5,700	**5,145**	5,495	3,450	6,445	5,328	5,388	0
	J	**4,894**	4,682	6,521	6,392	5,350	6,544	**5,533**	0
	J	5,632	5,700	6,133	7,007	6,148	**6,164**	6,468	0
	A	6,293	6,338	6,012	6,460	5,312	**6,019**	**6,316**	0
	S	5,578	6,475	6,065	6,331	4,575	**5,852**	5,814	0
	O	6,118	6,551	6,164	7,304	5,867	**6,110**	6,034	0
	N	5,898	5,996	6,156	6,407	5,920	**5,609**	**5,518**	0
	D	6,430	6,559	6,414	6,840	5,297	**5,860**	**5,525**	0

Refinery Output

- Interactive flow selection

Highlight values where reported Total Product value is less than the sum of the elements:

LPG
+ Naphtha
+ Gasoline
+ Total Kerosene
+ Gas Diesel Oil
+ Fuel Oil
+ Other Products

Submitting country should verify that data for each product and for total products are correct

Data Quality Checks - Internal consistency

- Other Products

  The original JODI did not include a column for Other Products, but these can be calculated based on the reported figure for the individual products

  Other Products = Total Products
  - LPG
  - Naphtha
  - Gasoline
  - Total Kerosene
  - Gas Diesel Oil
  - Fuel Oil

- Are calculated Other Products negative?
- Do calculated Other Products represent a reasonable percentage of Total Products?

Internal Consistency – Other Products

JODI - Example Country 6 - Data Quality Checks

4 Internal Consistency check - % Other Products
Total Products - (Sum of elements)

Refinery Output	Total - sum(LPG + Gasoline + Kerosene + Gas Diesel Oil + Fuel Oil)							
	2003	2004	2005	2006	2007	2008	2009	2010
J	5	9	55	68	115	67	0	134
F	15	46	0	89	100	101	0	157
M	98	121	0	108	131	114	0	132
A	98	83	26	123	123	110	0	161
M	125	65	115	119	121	-1,266	0	0
J	108	6	127	119	137	46	89	0
J	77	110	44	9	119	97	130	0
A	35	70	100	86	60	60	130	0
S	114	56	60	131	69	158	135	0
O	129	81	110	128	130	152	134	0
N	124	122	81	90	101	67	159	0
D	40	-538	63	97	114	104	182	0

Data in Thousand Barrels (kbbl)

Negative calculated Other Products
% Other Products > Acceptable percentage of 25%

Refinery Output	% of Total Products							
	2003	2004	2005	2006	2007	2008	2009	2010
J	71%	82%	26%	23%	29%	20%		8%
F	75%	22%		24%	25%	27%		40%
M	28%	23%		24%	24%	27%		31%
A	28%	20%	23%	24%	24%	26%		35%
M	26%	24%	23%	22%	22%	-248%		
J	24%	75%	26%	22%	24%	17%	31%	
J	26%	22%	21%	90%	23%	26%	33%	
A	32%	22%	22%	23%	24%	24%	33%	
S	27%	29%	22%	25%	21%	32%	35%	
O	25%	24%	23%	24%	26%	31%	8%	
N	24%	24%	18%	19%	22%	27%	42%	
D	30%	-116%	20%	23%	25%	29%	43%	

Refinery Output

- Interactive flow selection
- Modifiable acceptance level for Other Products percentage of Total Products
- Highlight values where calculated other products are negative
- Color highlight of values where percentage of Other Products as part of Total Products is above an acceptable range

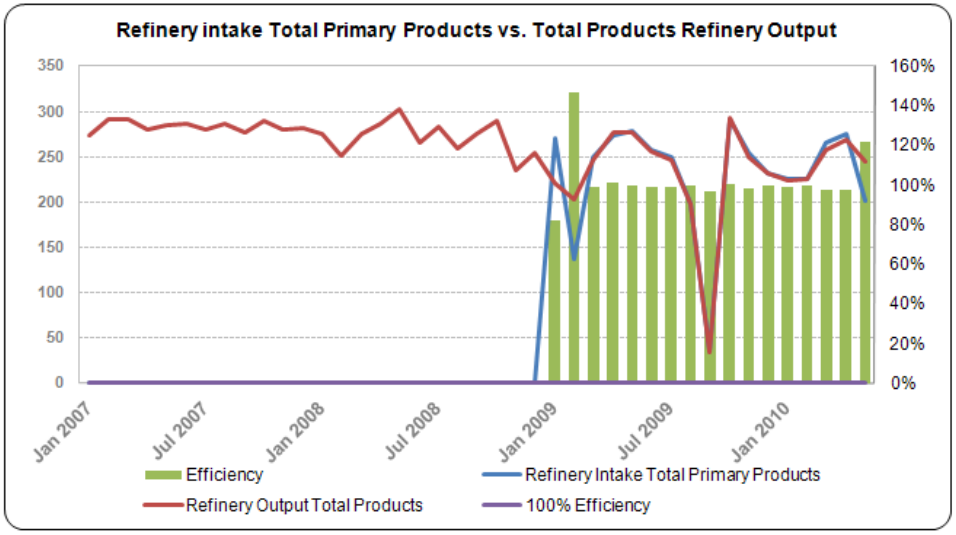
- *Submitting country should verify that data for each product and for total products are correct*
- *Acceptance level of comparability for this check depends on the country*

Data Quality Checks – Refinery Yield

- Refinery Yield
  - Refinery Yield is the refinery output of total products compared to the total refinery intake.
  - In the original JODI questionnaire only Crude Oil refinery intake was requested and therefore this check is not very meaningful.
  - This check is included in the JODI_DQA_B2020 file only as an attempt to spot potential changes in reporting methodology.
  - This check should give more meaningful results when evaluating data reported in the JODI Extended format.

Refinery Yield

JODI - Example Country 6 - Refinery Efficiency



Data in Thousand Metric Tons (kmt)

5% Acceptable level of refinery efficiency different than 100%

JODI - Example Country 6 - Refinery Efficiency		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2008	*Refinery Intake Total Primary Products*	0	0	0	0	0	0	0	0	0	0	0	0
	Refinery Output Total Products	275	251	276	287	303	266	283	259	276	289	235	255
	Efficiency												
2009	*Refinery Intake Total Primary Products*	270	138	250	274	278	258	250	199	36	291	254	232
	Refinery Output Total Products	221	203	247	277	277	256	247	198	35	293	250	232
	Efficiency	82%	147%	99%	101%	100%	99%	99%	99%	97%	101%	98%	100%
2010	*Refinery Intake Total Primary Products*	226	226	265	275	201	0	0	0	0	0	0	0
	Refinery Output Total Products	224	226	258	269	245	0	0	0	0	0	0	0
	Efficiency	99%	100%	97%	98%	122%							

- *Modifiable acceptance level of refinery yield from 100%*
- *Highlight values outside the acceptable range in red*
- *This example is for Extended JODI format with full data beginning in 2009*

Using the JODI Data Quality Assessment Files

- JODI_Extended_DQA_B2020.xls
  to be used with newly prepared IVT tables:
  World_primary.ivt and World_Secondary.ivt

- Excel security settings should allow for macros to run.
- Data pages to be filled in from different IVT tables *(next slide for details on each version).*

Source Data for JODI_Extended_DQA_B2020.xls

- Data page is **Full_B2020**
- Set the data on the JODI world IVT (world.ivt):
  - Display data for a maximum of 8 years
    (e.g. to view data up to 2010, select and hide columns corresponding to 2002 data)
  - Country dimension should be in the top left corner
  - Unit dimension should be in the top left corner to the right of country dimension
    (Note that barrels per day unit selection would not include stock level data.
    Use tons, barrels, or liters data)
  - Nest product and flow dimensions as rows
  - Select the full data set and perform a copy paste to the data page in excel **Full_B2020**

Source Data for JODI_Extended_DQA_B2020.xls

This is a correct setting of the view in Beyond 20/20

Beyond 20/20 Professional Browser - [Joint Oil Data Initiative (all data) (Read-only):1]

File Edit View Dimension Item Window Help

Country

Country: Argentina | Unit: Thousand Barrels (kbbl)

Product	BALANCE	Jan2003	Feb2003	Mar2003	Apr2003	May2003	Jun2003	Jul2003	Aug2003
Crude Oil	Production/Refinery output	(2) 21,038	(1) 19,131	(2) 21,291	(2) 20,764	(2) 21,481	(2) 20,596	(2) 21,109	(2) 21,064
	Refinery intake/Demand	(1) 16,233	(2) 14,347	(1) 16,005	(1) 15,837	(1) 16,182	(1) 16,088	(1) 16,288	(1) 16,356
	Imports	(1) 7	(3) 0	(3) 0	(2) 390	(2) 490	(2) 405	(1) 5	(3) 0
	Exports	(2) 6,546	(2) 6,564	(1) 5,383	(2) 6,586	(2) 7,238	(2) 7,297	(2) 6,864	(2) 8,437
	Closing stocks	(2) 3,309	(2) 2,335	(2) 3,169	(2) 3,407	(1) 3,886	(1) 4,133	(1) 4,432	(1) 4,123
	Stock change	(1) 47	(2) -973	(2) 833	(1) 238	(1) 480	(1) 247	(1) 300	(1) -309
Liquefied Petroleum Gases	Production/Refinery output	(1) 3,039	(1) 2,945	(1) 3,206	(1) 3,096	(1) 3,463	(2) 3,582	(2) 3,680	(2) 3,541
	Refinery intake/Demand	(2) 1,297	(2) 1,247	(1) 1,501	(1) 1,469	(1) 1,597	(1) 1,667	(1) 1,899	(1) 1,665
	Imports	(3) 0	(3) 0	(3) 0	(3) 0	(3) 0	(3) 0	(3) 0	(3) 0
	Exports	(1) 1,651	(1) 1,672	(1) 1,369	(1) 1,382	(1) 1,520	(2) 2,122	(1) 1,624	(1) 1,904
	Closing stocks	(2) 450	(1) 609	(2) 1,187	(1) 545	(1) 608	(1) 625	(1) 581	(1) 606
	Stock change	(1) 42	(1) 159	(2) 577	(2) -641	(1) 62	(1) 17	(1) -43	(1) 25
Motor Gasoline (incl. aviation gasoline)	Production/Refinery output	(2) 3,421	(1) 2,980	(1) 3,127	(1) 3,085	(1) 3,226	(1) 3,063	(2) 3,490	(2) 3,551
	Refinery intake/Demand	(1) 1,956	(2) 1,741	(2) 1,763	(2) 1,804	(2) 1,716	(2) 1,638	(2) 1,808	(2) 1,732
	Imports	(2) 2	(1) 2	(1) 2	(2) 2	(1) 12	(1) 2	(2) 2	(1) 2
	Exports	(2) 1,800	(1) 1,187	(2) 1,784	(1) 1,006	(2) 1,790	(1) 1,331	(1) 1,434	(2) 1,854
	Closing stocks	(2) 1,202	(1) 1,319	(1) 1,391	(1) 1,433	(1) 1,516	(1) 1,416	(2) 1,587	(2) 1,769
	Stock change	(2) -335	(1) 116	(1) 72	(1) 42	(1) 83	(1) -100	(1) 171	(1) 182
Kerosene (incl. jetkero/other kero)	Production/Refinery output	(2) 922	(1) 740	(1) 748	(2) 642	(2) 648	(1) 757	(1) 733	(1) 857
	Refinery intake/Demand	(2) 683	(2) 606	(2) 661	(2) 552	(2) 625	(1) 716	(1) 779	(1) 701
	Imports	(3) 0	(3) 0	(3) 0	(3) 0	(3) 0	(3) 0	(3) 0	(3) 0
	Exports	(2) 147	(1) 46	(1) 31	(2) 630	(1) 40	(1) 13	(1) 13	(1) 6
	Closing stocks	(1) 379	(2) 497	(2) 835	(1) 389	(1) 388	(1) 390	(1) 266	(1) 348
	Stock change	(1) -8	(2) 119	(2) 338	(2) -446	(1) -1	(1) 3	(2) -124	(1) 82
Gas/Diesel Oil	Production/Refinery output	(1) 6,429	(2) 5,629	(1) 6,441	(1) 6,329	(1) 6,553	(1) 6,226	(1) 6,651	(1) 6,412
	Refinery intake/Demand	(2) 5,194	(2) 5,227	(1) 6,079	(2) 5,662	(2) 5,784	(2) 5,402	(2) 5,536	(2) 5,502
	Imports	(1) 10	(1) 9	(1) 11	(1) 137	(1) 241	(1) 196	(1) 37	(1) 231
	Exports	(2) 942	(2) 813	(2) 949	(1) 630	(2) 699	(1) 499	(2) 1,072	(2) 1,085
	Closing stocks	(2) 1,609	(2) 1,571	(2) 1,046	(2) 1,402	(1) 2,085	(2) 2,213	(1) 2,176	(1) 1,770
	Stock change	(1) 265	(1) -38	(2) -525	(2) 356	(2) 683	(1) 128	(1) -37	(2) -407
Residual Fuel Oil	Production/Refinery output	(2) 1,013	(2) 1,154	(2) 963	(2) 989	(2) 944	(2) 955	(2) 935	(2) 1,028
	Refinery intake/Demand	(2) 462	(2) 488	(2) 475	(2) 527	(1) 680	(1) 883	(1) 784	(1) 779
	Imports	(1) 2	(3) 0	(3) 0	(3) 0	(3) 0	(3) 0	(3) 0	(3) 0
	Exports	(1) 603	(1) 739	(1) 681	(2) 149	(1) 457	(1) 400	(3) 0	(1) 363
	Closing stocks	(1) 1,047	(1) 973	(1) 727	(1) 897	(1) 1,064	(1) 745	(1) 901	(1) 840
	Stock change	(1) 207	(1) -74	(2) -246	(1) 170	(1) 168	(2) -319	(1) 156	(1) -61
Total Products	Production/Refinery output	(1) 20,313	(2) 16,428	(1) 18,060	(2) 17,708	(1) 18,601	(1) 18,047	(1) 18,805	(1) 18,874
	Refinery intake/Demand	(2) 20,898	(2) 20,251	(2) 22,650	(2) 21,705	(2) 22,463	(2) 22,284	(1) 23,471	(2) 22,486
	Imports	(1) 112	(1) 82	(1) 93	(1) 209	(1) 314	(1) 296	(1) 146	(1) 822
	Exports	(2) 6,941	(1) 5,350	(1) 6,270	(1) 4,650	(1) 5,902	(1) 6,109	(2) 6,429	(2) 6,600
	Closing stocks	(2) 17,548	(2) 17,051	(2) 18,040	(2) 17,891	(1) 20,872	(1) 20,478	(1) 21,174	(1) 20,599
	Stock change	(1) 266	(1) -497	(1) 990	(1) -150	(2) 2,981	(1) -394	(1) 696	(1) -575

Source Data for JODI_Extended_DQA_B2020.xls

- Data sources:
  - **World_primary. ivt**
  - **World_secondary.ivt**
- Data pages in excel file are:
  - **B2020_primary**
  - **B2020_secondary**
- Due to the high number of data points:
  - IVT file will have to be saved first as an excel file
  - Then perform an import or copy/paste values to the excel template

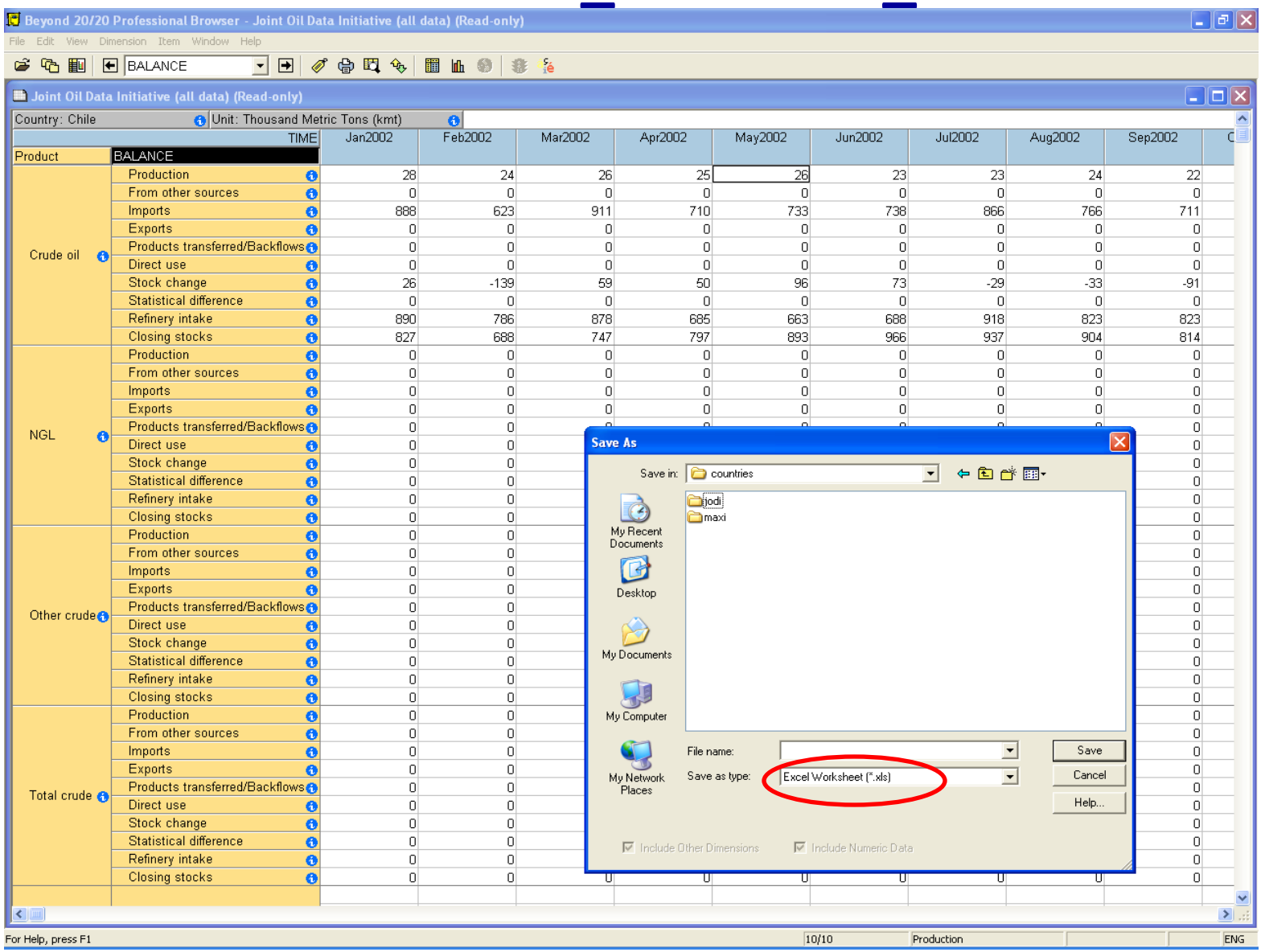
Source Data for JODI_Extended_DQA_B2020.xls

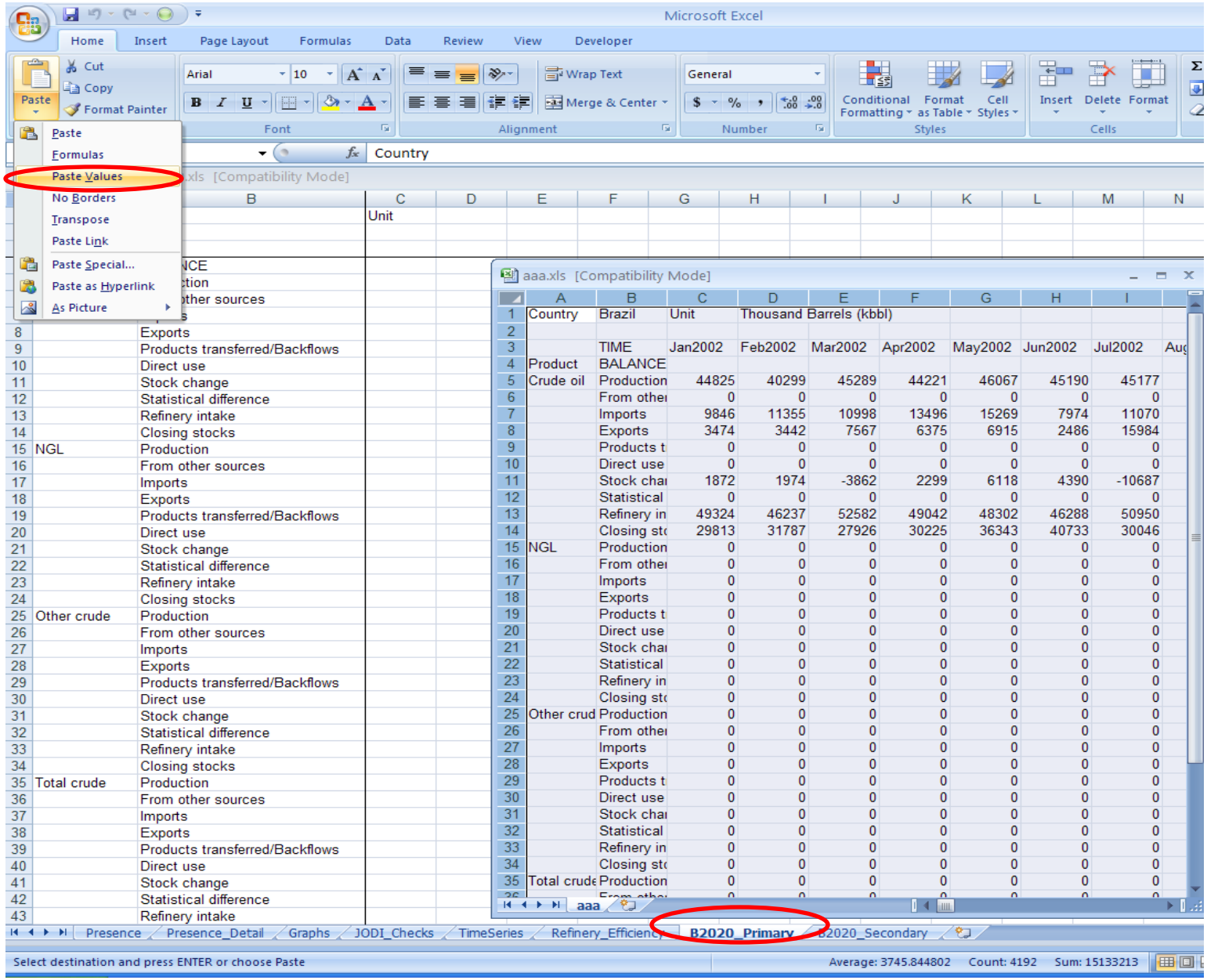
- Set the data on the IVT files :
  - Display data for a maximum of 9 years
    (e.g. to view data up to 2012, data should begin with January 2004, no modification needed to current file)
  - Country dimension should be on the top left
  - Unit dimension should be in the top left corner to the right of country dimension
    (Note that barrels per day unit selection would not include stock level data. Use tons, barrels, or liters data)
  - Put product and flow dimensions as rows
  - Save the view of both IVT files in excel in a temporary location

Source Data for JODI_Extended_DQA_B2020.xls

- From excel open the files saved in the step before
- Select the full page from the temporary excel file saved with world_primary data and paste values to the data page in excel **B2020_primary**
  (note that paste value eliminates footnotes attached to the data that increase the size of the file unnecessarily)
- Select the full page from the temporary excel file saved with world_secondary data and paste values to the data page in excel **B2020_secondary**

Source Data for JODI_Extended_B2020.xls




Microsoft Excel
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Conditional Formatting
Format as Table
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Unit
Thousand Barrels (kbbl)
Presence
Presence_Detail
Graphs
JODI_Checks
TimeSeries
Refinery_Efficienc
B2020_Primary
B2020_Secondary
Select destination and press ENTER or choose Paste
Average: 3745.844802
Count: 4192
Sum: 15133213

Classwork and Homework:

- Prepare the file for your country using the template provided and the corresponding IVT files
  - For the JODI_Extended_DQA_B2020.xls (using World_primary.ivt and World_secondary.ivt)

Identify the areas that present data quality issues.

Evaluate the need to resubmit data for the particular months.

Thank you

For more information at

www.jodidata.org