



Improving the quality, timeliness and reliability of the JODI Database

Final Report

G20 Finance Ministers' meeting

15 April 2011, Washington, United States

I – Executive Summary

1. The objective of the Joint Oil Data Initiative (Jodi), now relabeled Joint Organisations Data Initiative, a concrete achievement of the energy producer-consumer dialogue, is to achieve a step change in provision of timely, **high quality and transparent oil market data** which is essential to the **stability of oil markets**.
2. The Initiative, which started as a basic monthly oil data collection exercise conducted by six international organisations (the Asia-Pacific Economic Co-operation (APEC), the European Union through Eurostat, the International Energy Agency (IEA), the Latin-American Energy Organisation (OLADE), the Organisation of Petroleum Exporting Countries (OPEC) and the United Nations through their Statistics Division) expanded its geographical coverage rapidly with **98 countries/economies participating today in the Initiative** and feeding monthly oil data to the JodiOil World Database.
3. The G20 Seoul Summit called “upon IEA, IEF and OPEC to produce a report on **specific steps in order to improve the quality, timeliness and reliability of the Jodi Database** (through defined timeframe and implementation strategy)”¹. An intermediate report was submitted to the February 2011 Finance Ministers’ meeting². This final report is to be presented to the 14-15 April 2011 Finance Ministers’ meeting in Washington.
4. JodiOil partner organisations are committed to the objectives of JodiOil and are sparing no effort to ensure sustained delivery of this visible accomplishment of the consumer-producer dialogue. Jodi is now enjoying increasing interest from market players, and internationally recognized for its contribution to oil market stability. Towards this end, Jodi partner organisations will:
 - a. **continue their efforts in training statisticians in charge of Jodi data compilation and submission in participating countries/economies;**

¹ “We recognize the importance of a well-functioning and transparent market in oil for world economic growth. We strongly support the Joint Oil Data Initiative (JODI) and ask the IEF, IEA and OPEC for a report suggesting specific steps in order to improve the quality, timeliness and reliability of the JODI Database. The report should include a proposed timeframe and implementation strategy, which will explore the ways to improve data availability on oil production, consumption, refining and stock levels, as appropriate. An intermediate report should be submitted to the February 2011 Finance Ministers’ meeting, with the final report submitted to the April 2011 Finance Ministers’ meeting.” *The G20 Summit Leaders’ Declaration, Seoul, November 11-12, 2010.*

² “We welcomed the interim report by the IEF, IEA and OPEC to improve the quality, timeliness and reliability of the Joint Organisation Data Initiative Oil (JODI oil) and call for further work on strategies to implement these recommendations to be detailed in their final report.” *Meeting of Finance Ministers and Central Bank Governors, Paris, February 18-19, 2011.*

- b. **develop new tools and practices**, both at country and organisations level, **to regularly check Jodi data and streamline data submission**;
 - c. enhance **interaction with data users**, in particular **market analysts**;
 - d. **upgrade Jodi related platforms** such as the Jodi website, Jodi database accessibility and usefulness;
 - e. **Conduct a new assessment of JodiOil data by an independent consultant** to check reliability of data submitted to JodiOil. Findings and recommendations will feed into the 8th International Jodi Conference in November 2011 and the 13th IEF Ministerial in Kuwait in 2012.
5. Jodi data collection is a collaborative initiative that involves oil industry, administrations of participating countries, JodiOil organisations and ultimately market data users, the latter providing valuable comments on monthly data released in the JodiOil World Database.
 6. Successful collection and dissemination of sound data in timely manner cannot be achieved without full participation of data providers; i.e. participating countries/economies. Unfortunately, the most recent data show that the performance of participating countries/economies is deteriorating. Where more transparency is needed, the actual performance is slipping. Therefore, JodiOil organisations urgently call on participating countries/economies to ensure that administrations and organisations in charge of energy data collection are **better equipped and staffed**; to implement **appropriate regulations** that ensure industry is fully engaged in the process of data submission with the required detail and format; to **address confidentiality issues** and reduce, if not eliminate, them.
 7. G20 countries can be helpful in further boosting the quality of the JodiOil Database through leading by example and setting a target of **3 smiley faces by the end of 2011**.

II – Achievements to date

Since the opening of the JodiOil Database to the public in November 2005, Partner organisations have been cooperating closely with all stakeholders to improve the reliability, timeliness and completeness of JodiOil data and **substantial progress has been made** on many aspects, covering the whole data collection and dissemination process, from primary data providers (industry and participating countries/economies) to data users (market players);

- A **JodiOil Manual** was released in 2006³ with the objective of helping data collectors and users *to understand the methodology and definitions used in the JodiOil questionnaire*.

³ The JODI Manual is available in English, Chinese, Spanish, Russian and French.

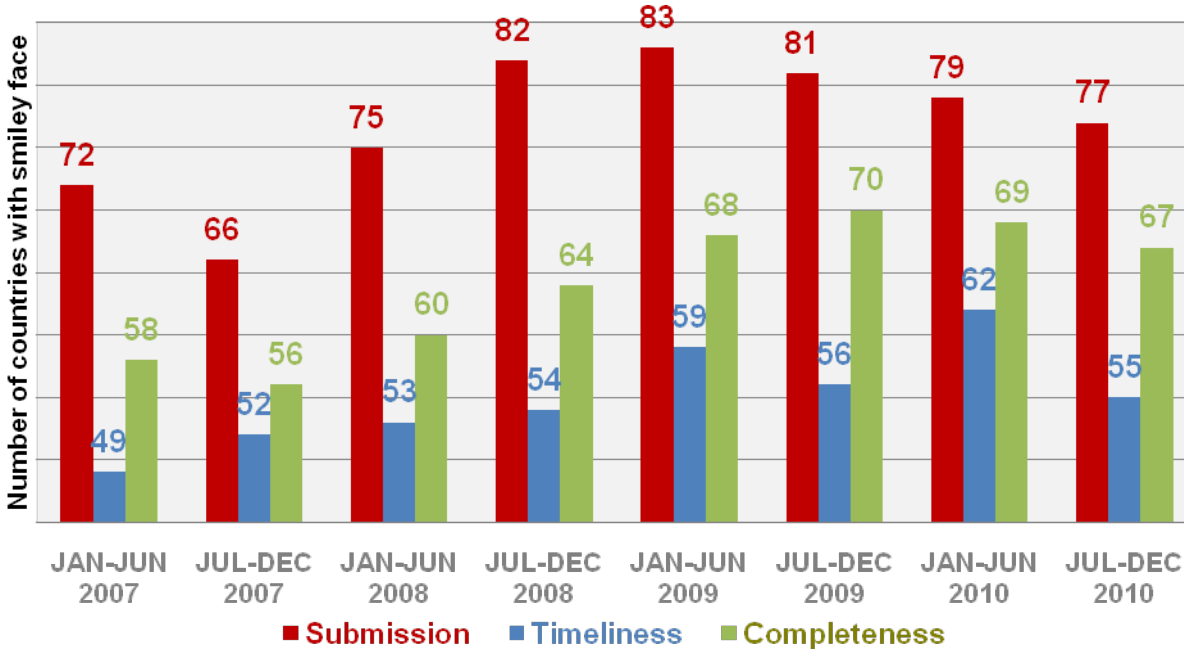
- Recognizing *the importance of interaction with primary Jodi data providers*, Jodi partner organisations also organise regular **regional Jodi training workshops** for participating countries/economies. Six regional training workshops have been delivered so far; for Latin-American countries in Caracas in August 2006; for Sub-Saharan African countries in Johannesburg in January 2007, for Middle Eastern and North African countries in Algiers in October 2007, for Asia Pacific countries/economies in Bangkok in September 2008, for Eastern and Central European countries in Ankara in November 2009 and Latin-American countries in Bogota in July 2010. Such training workshops offer a unique opportunity for participants to be updated on Jodi progress, *to share experiences and benefit from best practices in collecting data*.
- JodiOil organisations also offer **short-term internships** at the IEF headquarters in Riyadh for developing countries' officials in charge of oil statistics collection and dissemination. Participants are invited to complete their countries' JodiOil database and present their national oil data collection system, which helps partner organisations *to identify areas where improvement could be implemented to streamline data submission*.
- While the Initiative was called for by governments, launched and developed by Jodi organisations, the spread of its use among market analysts and other data users makes it now a **user-driven initiative**. The **user survey** conducted by JodiOil organisations reveals a strong interest from oil data users for *more data to be reported through JodiOil*.
- The Jodi ethos is also being conveyed to countries/economies that are not yet part of the initiative with the aim of increasing JodiOil geographical coverage. Jodi partner organisations are taking all opportunities to inform **non participating countries/economies**, at Ministerial and administrations level, about *the benefit of being part of this unique initiative*. Non participating countries/economies are invited to attend Jodi regional workshops to interact with participating countries/economies to gain firsthand knowledge of the Jodi cooperative work.
- Jodi partner organisations are also making use of all **possible channels of communication (relevant international conferences, press conferences, Jodi website, etc.)** to spread *the call for more data transparency and inform stakeholders about the role of Jodi*. **The Jodi website** (www.jodidata.org) **and regular newsletters** provide a continuous update on Jodi partner organisations' activities and progress of the Initiative.

III – Assessment of countries/economies participation in JodiOil

JodiOil aims at making a full set of critical oil data available in a timely manner to data users on a monthly basis. Currently, JodiOil organisations conduct a half-yearly data quality assessment which consists of three assessment criteria: **timeliness**, **completeness**, and **sustainability** of submission (see Annex 1).

The Initiative’s latest assessment of participation in JodiOil shows that, sustainability of submission of JodiOil data was assessed as good for 77 countries/economies out of 98 participating in JodiOil. 55 countries/economies achieved the same rating for timeliness and 67 countries/economies were successful in terms of completeness. Submission, timeliness and completeness have all improved since the 11th IEF Ministerial (Rome, April 2008), at 2.7%, 3.8%, and 11.7% respectively. However, the most recent performance shows a disappointing deterioration across the board.

Figure 1
 Assessment of participation (all countries/economies) in JodiOil



a) **Timeliness:** Due to the long chain of data collection, submission⁴ and validation at all stages, **timeliness of submission can be a challenging task when data are to be collected monthly.**

Despite such a challenge, timeliness improved over the last years, **with an average of over 59 countries/economies submitting the most up-to-date data in 2010, up from 54 in 2008.** However, the most recent assessment, covering July to December 2010,

⁴ From industry to national administrations, and from national administrations to organisations, and ultimately from organisations to the IEF and JodiOil World Database.

recorded considerable declines in timeliness from the previous assessment which had the highest rating of 62 countries.

- b) Completeness: Many reasons can explain incomplete data submission;** non availability of data required or non availability of data in the appropriate format, for example due to insufficient detail of statistics collected, confidentiality of data, hesitation on definitions of products and/or flow to be used, etc. Non availability of data can also result of inexistent or insufficient legal framework making reporting of energy data mandatory through well designed channels and instruments to ensure the compilation of high quality energy statistics.

Thanks to efforts of all stakeholders involved in JodiOil data collection, **completeness improved from 60 countries/economies submitting complete set of data in the first semester of 2008 to 67 countries/economies in the second semester of 2010. The highest rating was recorded in the assessment of the second semester in 2009 with 70 countries.**

- c) Sustainability (of submission):** Interruption in submission of monthly data to Jodi may result from a number of factors; turnover of staff in charge of Jodi data compilation, check and submission, non replacement of statisticians, absence of required IT equipments or their failure, etc.

It is worth noting that the quest of timely submission of data to Jodi can be, to some extent, at the expense of completeness, as some data may take longer to collect and process and can sometimes only be available after the submission deadline. Unexpected events such as strikes or supplies disruption can also lead to delays in data collection and submission by participating countries/economies.

Like timeliness and completeness, submission improved over the last three years with some 77 countries/economies showing a good rate of submission, compared to 75 countries/economies in the first semester 2008. However, **submission was assessed as good for 83 countries/economies during the first semester of 2009, which means that submission deteriorated significantly in first half of 2010 when compared to the first half of 2009.**

JodiOil extended Questionnaire

Following several assessments of JodiOil data use and interaction with market analysts which express strong need for *more data to be reported through JodiOil*, Jodi partner organisations worked on an **extended JodiOil questionnaire** which is presently being assessed by Jodi organisations and their member countries for possible implementation during the months ahead. Jodi organisations agreed to assess shortly the quality of the additional flows submitted by

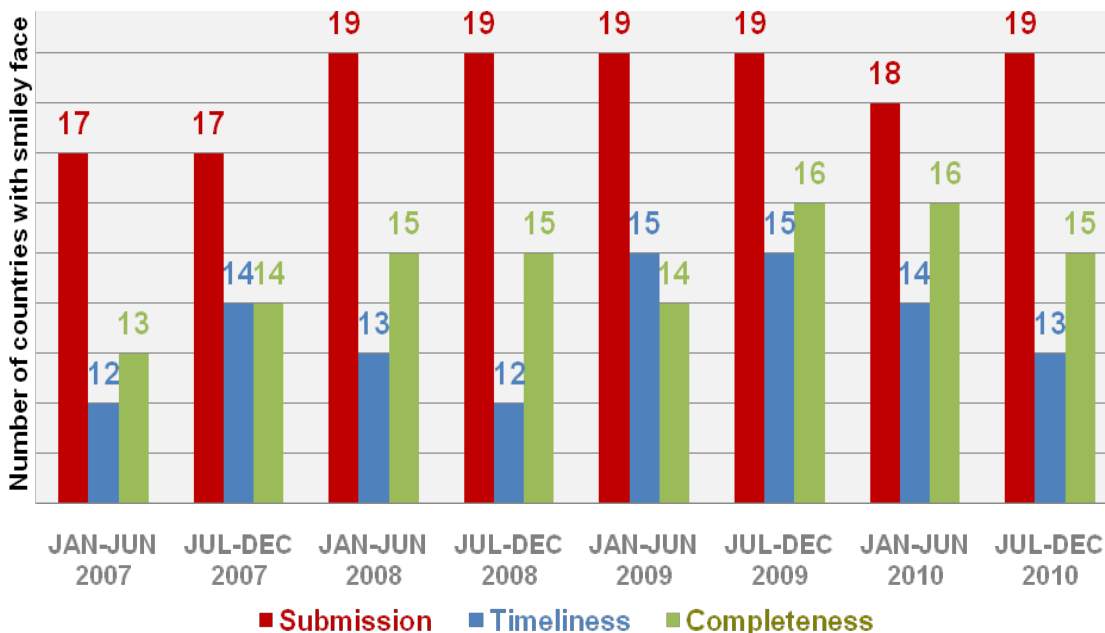
participating countries/economies through the extended questionnaire. Should such assessment prove to be satisfactory, Jodi organizations also agreed to release to public some of the additional data points by the next JodiOil Conference (November 2011).

A Focus on G20 Countries

19 countries among G20 countries achieved a “Good” evaluation for data submission, 13 countries achieved the same rating for timeliness and 15 countries earned a “Good” rating for completeness. While, nearly all these countries maintain sustainability of data submissions at satisfying level, there is a significant room for **improvement in timeliness for one third of G20 countries**. Although completeness of their data submissions has been improving, key data especially stock information has to be improved further to draw accurate and complete global supply/demand balance pictures (see Annex 2. Assessment of G20 countries’ participation in JodiOil: Why it is not smiley face?).

G20 countries may consider setting a target for themselves of **“three smiley faces” for all G20 countries by the end of 2011**.

Figure 2
Assessment of G20 countries’ participation in JodiOil



IV - Jodi Data quality improvement

Regular interaction between Jodi organisations and various stakeholders (participating countries/economies on the occasion of Jodi training programme, JodiOil data users through

direct contacts or on the occasion of regular user surveys, etc.) revealed that **there are many reasons behind data quality issues for some countries/economies**. Jodi organisations have already undertaken action to improve data quality and timeliness among which training statisticians from participating countries/economies, developing tools that shorten submission delays and check data, etc. Jodi partner organisations will continue to do so but participating countries/economies have a role to play as well in terms of ensuring that data collection and dissemination is given full attention and that administrations in charge of data collection are adequately equipped and staffed.

i- Addressing resources shortage in statistical divisions (both at countries and Jodi organisations level)

Participating countries/economies can only provide accurate and timely data if their administrations in charge of energy statistics have the adequate computing and communication tools as well as sufficient and well trained human resources.

Many national administrations in charge of gathering energy data face **budgetary constraints. This happens at a time when more resources are needed to collect energy related data due to the changes brought by market liberalisation in some countries or regions**. This leads to increasing difficulty in obtaining data given the **growing number of participants in energy industries** and the commercial sensitivities around the data disclosure in an ever more competitive market.

The high frequency of **staff turnover in many national administrations results in a loss of knowledge** to complete the questionnaire and impacts the timeliness of data submitted and its quality.

Availability of **adequate IT and computing equipment** can contribute significantly to the improvement of timeliness. Countries that are successful in timeliness often have an efficient database management system to overcome human resource limitations while some countries still rely mainly on fax to gather necessary information from nation-wide data sources.

The extension of JodiOil to provide market analysts with extended set of data (extended JodiOil questionnaire) is adding an extra burden on both participating countries/economies and Jodi organisations.

ii- Building statistical capacity, experience sharing and transfer

The success and utility of Jodi are defined by the quality of data received and processed. Frequent staff turnover and inadequate qualifications of staff in charge of data collection have a significant impact on data submitted to Jodi. To further improve the data submitted to Jodi, and to build statistical capacity among its participants, the Jodi organisations will continue to plan and implement the Jodi training programme in the form of regional training workshops and internships, and will develop an online tutorial system.

Regional training workshops offer statisticians and experts from participating countries/economies an opportunity to improve their knowledge of definitions, data quality assessment and oil data issues. The workshops also offer a platform for Jodi data providers to share their experiences and communicate best practices for oil data management. Jodi regional workshops include concrete exercises on how to fill JodiOil questionnaires and check data submitted by the industry. Participants also make extensive presentations on their own country's oil data collection structure as well as on issues identified that may require corrective actions by national administrations and/or Jodi organisations.

Jodi's training efforts continue with the IEF hosting regular **Jodi Internship** sessions at its Headquarters in Riyadh for officials from developing countries with direct responsibility for oil statistics. This classroom-based immersion course facilitates rapid assimilation of the historical knowledge base accumulated by the IEF and Jodi partner organisations.

To adapt to the extended JodiOil questionnaire, training material have been adjusted and updated. The Jodi organisations are currently working on the 2nd edition of JodiOil manual to incorporate explanations on reporting newly added products and flows.

Aside from updating the JodiOil manual and training materials, an **online tutorial** will be built to keep statisticians in participating countries/economies updated with the latest changes in Jodi reporting process and methodologies. The online tutorial will allow for on hand virtual Jodi training enabling the training newly appointed statisticians who previously would have been dependant on the regional training workshops. The online tutorial will be hosted under a Jodi webpage dedicated to statisticians in charge of data submission. The web page will gather all useful resources to improve data submission capacity including presentation in the past trainings, data quality assessment tools, and JodiOil manual.

iii- Extending countries/economies participation in JodiOil

25 out of the 86 IEF member countries⁵ are not participating in JodiOil. The IEF Secretariat will invite these 25 member countries to fully commit to the fundamental aim of the Forum and start participating in Jodi.

iv- Setting an appropriate regulatory framework

Jodi can only be successful if an energy data collection system is already in place. The existence of a strong **legal framework** is one of the most important prerequisites for establishing a sound national statistical system in general and a national system of energy statistics in particular. The legal framework is provided by the statistical and other applicable national laws and regulations which, to different degrees, specify the rights and responsibilities of entities that

⁵ Following the signing of its new IEF charter on 22 February 2011.

collect data, provide data, produce statistics or use statistical outputs. Improvement of data transparency requires supportive regulatory frameworks that favour transparency and facilitate industry participation in initiatives such as JodiOil. IEF will archive, when available, regulatory frameworks adopted by countries/economies participating in Jodi to serve as benchmarks for countries/economies where such regulatory frameworks are absent.

v- Addressing confidentiality issues

Some countries consider certain data to be confidential. While confidentiality can be understood when it impacts commercial activities, hampers market positions or for energy security reasons, it has the negative effect of not disclosing to market players existence of **significant part of the supply or demand** and therefore can contribute to market volatility.

vi- Providing factual information to support the numbers (metadata)

In addition to statistics submitted by data providers, **metadata (country notes) is an important element that supports data interpretation**. When a national administration has different definitions of products and flows from the Initiative's definitions these are recorded as metadata. Due to the voluntarily simplicity of the initial JodiOil questionnaire, there are apparent imbalances in data submission from some countries which have sophisticated and complex oil and gas industries. Such information has to be carefully stated as metadata. Metadata also can include outstanding developments in the oil industry when data shows sudden operational changes, facilities shutdowns, etc.

The extended questionnaire provides a more comprehensive set of data, allowing users to cross check data provided, but it also makes metadata even more important due to the detailed nature of the extended coverage.

vii- Conduct more regular data checks

After each monthly update of the JodiOil Database, Jodi organisations are conducting a data quality check which aims at detecting missing data and inconsistencies. Data checking methodologies used are based on data consistency checks which are suggested in the JodiOil manual. To further enhance the reliability of data, these **data checking procedures need to be revised regularly to match ongoing development of oil industry** in participating countries/economies.

viii- Third JodiOil Data Quality Assessment

A first assessment of JodiOil data was conducted prior to its release to public in 2005, through a comparison of JodiOil numbers with trustworthy comparable data and an analysis of the reliability and level of confidence. A second assessment of JodiOil data was conducted prior to the 7th International Jodi Conference, 4-5 June 2009, Quito, Ecuador.

The third round assessment will measure reliability of JodiOil database, including additional data points collected by the extended JodiOil format. This third assessment, a deliverable of the 8th JodiOil Conference to be held in China in November 2011, will be critical for organisations' decision to release additional data points collected through the JodiOil extended questionnaire.

ix- Enhanced interaction with users

Feedback from Jodi data users is crucial; a **dedicated Jodi mailbox** allows Jodi data users, market analysts in particular, to post their comments on Jodi data, which *provide a valuable indication on means to improve Jodi data quality, collection and submission*. User surveys are also conducted on the occasion of International Jodi Conferences but could be conducted more frequently. A discussion forum for JodiOil users is also under consideration.

V - Conclusion

The importance of exchanging data as a means to enhance global oil market transparency and hence energy security proved to be beneficial to energy producers and energy consumers alike. But it is worthwhile to be reminded that **Jodi success requires a strong and continuous commitment of all stakeholders**. Poor data quality leads to unsound assessments by market players and fuels uncertainty which is the main driver of oil market volatility.

As stated in the Cancun Declaration, “the steady improvement of Jodi, a concrete outcome of the producer-consumer dialogue, and the development of monthly gas data collection and annual investment data in cooperation with Jodi partner organisations is highly commendable. Indeed, the Jodi model is an effective one that can be further improved and enhanced to achieve greater market transparency“.

Jodi organisations are committed to the objectives of Jodi and are sparing no effort to make this visible accomplishment of the consumer-producer dialogue. Jodi is now enjoying increasing interest from market players, being internationally recognized in contributing to oil market stability.

Towards this end, Jodi partner organisations will:

- **Continue their efforts in training statisticians in charge of Jodi data compilation and submission in participating countries/economies;**
- Invite more countries to participate in this transparency initiative, **in particular IEF member countries that are not yet participating in JodiOil;**
- **Develop new tools and practices, both at country and organisations level, to check regularly Jodi data and streamline data submission;**

- **Conduct a 3rd data quality assessment** to measure reliability of JodiOil database ;
- Enhance **interaction with data users**, in particular **market analysts**;
- **Upgrade Jodi related platforms** such as Jodi website, JodiOil database accessibility and usefulness;

However, successful collection and dissemination of sound data in timely manner cannot be achieved without full participation of data providers; i.e. participating countries/economies. Therefore, Jodi organisations call on participating countries/economies:

- To ensure that that administrations and organisations in charge of energy data collection are **better equipped and staffed**;
- To implement an **appropriate regulation** that ensures that industry is fully engaged in the process of data submission with the required detail and format;
- To **address confidentiality issues** and reduce, if not eliminate, them.

G20 countries can be helpful in further boosting the quality of the JodiOil Database through leading by example and setting a target of **3 smiley faces by the end of 2011**.

Annex 1.

Timeliness: This criterion assess whether submissions were made by countries/organisations at the set deadline. Ratings are as follows over each six months of assessment period: "good" when 6 submissions received within two months after the end of the reference month; "fair" when 4 or 5 submissions received; "less reliable" when less than 4 submissions received. The data collection mechanism requires participating countries to submit a standard data table (questionnaire) every 25th of the month for the two most recent months (M-1 and M-2). At country level, national administrations in charge of oil statistics gather the required information from relevant stakeholders (companies in charge of oil production, oil refining, oil and oil products transportation and storage, etc.). The respective organisation compiles and checks the data, then sends it to the IEF. The IEF manages the JODI World Database. A timetable for submission is set for the whole year and posted on JODI website.

Completeness: The maximum number of data point for each country is determined based on structure of the oil industry in respective countries. "Good" when more than 90% of the data are given for production, trade, stock change/closing and demand; "Fair" when between 60% and 90% of the data are given;"Less reliable" when less than 60% of the data are given. Completeness measures the number of expected data points to be filled out of the maximum 42 points in the initial JODI questionnaire.

Sustainability: This criterion measures the number of the monthly JODI submissions within the six-month period covered by the assessment."Good" if the 6 questionnaires have been submitted; "Fair" if 4 or 5 questionnaires have been submitted; "Less reliable" when less than 4 questionnaires have been submitted.

Color codes: JODI organisations do not estimate data that has not been submitted by participating countries nor change data submitted by them as the data is officially sanctioned. Should there be any doubt about data quality received, organisations always check with source administrations. JODI organisations do however assess on a regular basis the comparability of data to different other sources or data:

- Comparability of JODI data with **other sources** including monthly data from national and secondary sources;
- Monthly JODI data is compared with **annual data** (when available) check whether the levels and trend over the years could be confirmed;
- When no other sources are available for comparison with the JODI data, **internal consistency** and **balance check** are carried out. Internal consistency checks include comparison between the sum of all reported products and reported Total Products figures. When both, closing and stock changes data are available, the consistency of the reported changes with the calculated figure is conducted.

To reflect results of data comparability assessments conducted by each JODI organisation, the JODI World Database has a unique feature to show the assessment results through a three-color reliability evaluation on every data point:

BLUE: indicates that results of the assessment show reasonable levels of comparability;

YELLOW: indicates that data has to be used with caution and the metadata should be consulted ;

WHITE: indicates that data has not been assessed.

Annex 2. Assessment of G20 Countries' participation in JodiOil: Why it is not smiley face?.

| | Sustainability | Timeliness | Completeness |
|--------------------|----------------|--|--|
| Argentina | ☺ | Four submissions didn't meet M-1 standard | ☺ |
| Australia | ☺ | Three submissions didn't meet M-1 standard | ☺ |
| Brazil | ☺ | No submissions met M-1 standard | ☺ |
| Canada | ☺ | ☺ | ☺ |
| China | ☺ | Three submissions didn't meet M-1 standard | No stock level |
| France | ☺ | ☺ | ☺ |
| Germany | ☺ | ☺ | ☺ |
| India | ☺ | ☺ | No stock change and level |
| Indonesia | ☺ | ☺ | 'No stock level of oil products for 4 months |
| Italy | ☺ | One submission did not meet M-1 standard | ☺ |
| Japan | ☺ | ☺ | ☺ |
| Mexico | ☺ | ☺ | ☺ |
| Russian Federation | ☺ | Two submissions didn't meet M-1 standard | <ul style="list-style-type: none"> • Only crude oil production and refinery outputs of oil products for M-1 • Total oil products data are available only on export • No kerosene data • Stock change and level data are only sporadically available. |
| Saudi Arabia | ☺ | ☺ | ☺ |
| South Africa | ☺ | ☺ | ☺ |
| Republic of Korea | ☺ | ☺ | ☺ |
| Turkey | ☺ | ☺ | ☺ |
| United Kingdom | ☺ | ☺ | ☺ |
| United States | ☺ | ☺ | ☺ |

Annex 3. Implementation plan schedule

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| Development of a webpage dedicated to participating countries | Spring 2011 |
| Assessment of additional data in extended JodiOil format | Fall 2011 |
| Release of additional data in extended JODI Oil format (based on assessment of data quality) | Fall 2011 |
| Implementation of pre-data update check | Spring 2011 |
| JodiOil Manual (Second Edition) | Summer 2011 |
| Improvement of country notes | Summer2011 |
| JodiOil Online Tutorial | Fall 2011 |
| Collection of regulatory frameworks on energy data collection | Fall 2011 |
| Conduct a third data user survey | October 2011 |
| Publish updated JODI performance of all countries and G20 countries | Fall 2011/Spring2012 |