INTERNATIONAL ENERGY FORUM

# Background paper

# by

# The Secretariat of the International Energy Forum

# for the

# 13th IEF Ministerial

## Kuwait, 13-14 March 2012

# 1. Introduction

Since the 12th IEF Ministerial (Cancun, March 2010) much has changed with economic, political and social fabrics all having been tested to varying but significant degrees across the globe. The global economy is still struggling to deal with debilitating financial turmoil. We have witnessed issues originating in the banking sector threaten the stability of national accounts to the extent that some national credit-ratings have been down-graded.

In addition to the issues affecting the broader economy the energy sector has also faced specific challenges of its own related to geopolitical events and the rise of political risks that fuelled market fears and increased volatility. The issue of energy market volatility is a perennial challenge affecting producers and consumers alike. Despite widespread agreement on the negative impact that volatility has on investment prospects and concerted efforts to improve market transparency there is still considerable room for improvement. This applies not only to the underlying data, but also to our collective understanding of cause and effect.

The tragedy of the earthquake and tsunami that hit Japan and the subsequent nuclear accident at the Fukushima plant raised many issues about the vulnerability of key infrastructure as well as our preparedness and ability to respond to events of such scale and severity. Accidents of this magnitude provide valuable insight as to where our priorities should lie. Nevertheless, policy decisions on future energy mix must not be taken lightly. The incident deserves careful analysis. Although the Macondo incident was of a very different nature and scale, it also has global repercussions and implications for the manner in which both government and industry approach regulation and working practices in this essential sector.

The seemingly diverse sectoral, regional and global events of the last two years have a common thread running through them - they all illustrate the extent to which we now live in an interdependent world and that we need stronger international cooperation to deal with global challenges . Recognition of this fact was one of the key drivers behind the signature of the IEF Charter at an extraordinary Ministerial meeting in Riyadh on 22 February 2011. The 88 Member States the International Energy Forum account for almost 90% of global supply and demand for oil and gas. The Charter provides the robust framework necessary to further their common interests in building a sustainable energy future and the IEF Secretariat looks forward to facilitating the dialogue in line with the needs and expectations of Member Countries.

Ministers at the 13th IEF Ministerial are invited to take stock of the results and recommendations from the IEF symposia and reports prepared in the period 2010-2012 and which are summarised in this paper[1].

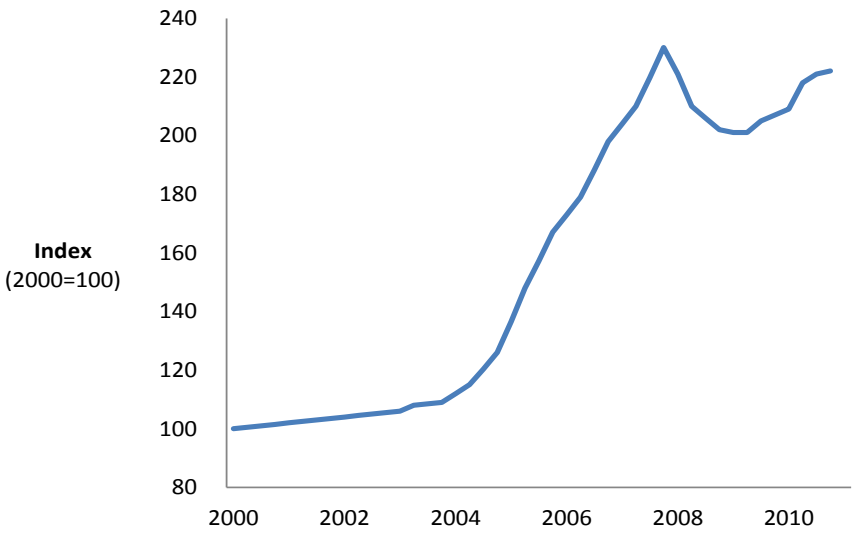
[1] Full reports and other documents relating to IEF events are available on the IEF website (www.ief.org)

## 2. Investment

The most recent estimates (IEA WEO 2011) indicate that the required cumulative investment to enable the replacement of reserves and production facilities as well as the expansion of production and transport capacity to meet projected energy demand over the period 2011-2035 amounts to $38 trillion, equal to $1.5 trillion per year on average. Out of this total, the oil sector needs $10.0 trillion, (26% of total investment) with 87 % of this amount to be directed to the upstream. The gas sector is expected to account for $9.5 trillion (25 %). Two-thirds of the total investment is needed in non-OECD countries where production and demand are expected to increase most. Over the same period, OPEC's estimate of upstream investment requirements for additional capacity amounts to $3 trillion. OPEC sees also substantial capital investments required to expand and provide maintenance to the global refining system; around $1.2 trillion over the period 2010-2035[2].

In addition, the oil and gas industry faces the prospect of undertaking long lead time mega-projects to meet future energy demand. These projects require massive commitments of capital with long payback periods. There is little room for error when dealing with projects on such a scale. The investment decisions for these projects will be affected by a range of factors, such as oil price, fiscal conditions, the evolution of costs and environmental regulation.

Figure 1. IHS CERA Capital costs index



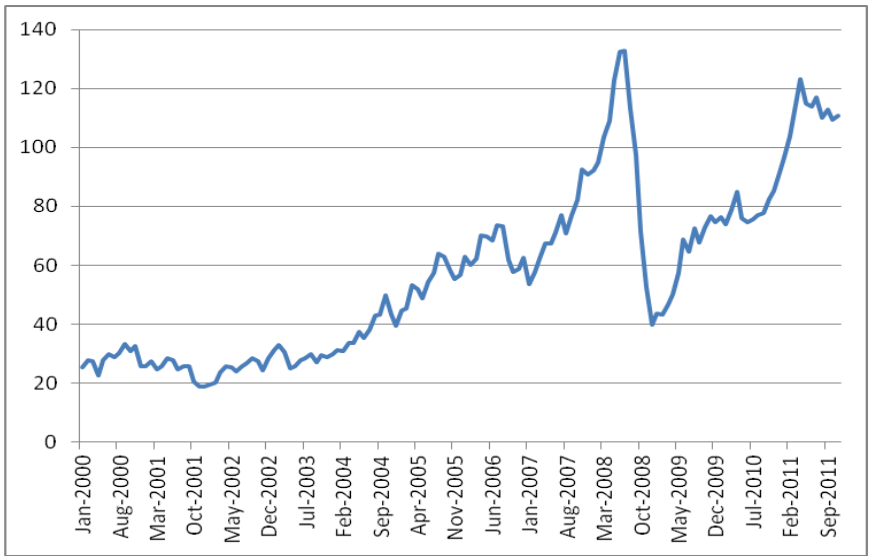

*Source: IHS CERA*

Over the last decade, the oil market witnessed great volatility and one of the most extreme price cycles in its history. Energy price volatility is a major problem for producers and consumers alike. Its danger lies in its ability to confuse the market signals required to ensure adequate investment to meet future energy demand. Extreme oil price volatility is a major challenger for investment. It makes it impossible for

[2] Reference Case

investors to plan and for governments everywhere to conduct any kind of sustainable energy policy.

Figure 2. Oil price movement January 2000-November 2011




*Source: EIA/DOE*

The persistent shortage of a skilled, qualified and experienced labour force deserves due attention, as supply and demand for energy discipline graduates has become unbalanced in recent years. In addition, anxieties over the availability of human resources to meet the industry's future growth have been enhanced by the economic downturn cycles. Many jobs have been lost, and alongside competition from other industry sectors, a fall in the global student enrolment in energy-related courses, and the approaching retirement of a sizeable section of the industry's workforce, concerns are growing over future human resource numbers. The industry should be made more attractive to prospective graduates — this includes making it easier for students to enrol in universities across national borders — and employees the world over. Today, further coordinated efforts should be undertaken by various players, namely IOCs, NOCs, service companies, academia and regulators, are needed to restore this essential capacity.

Given the potential scale of growth ahead, future energy demand must be satisfied by a balanced portfolio of solutions that draws on all viable energy sources. While the world will continue to rely on traditional fossil fuels in the forseeable future, the role of other sources of energy will play an increasingly important role in the mix over time. No one resource or technology can hope to meet the energy needs of the future. Instead we must build a balanced portfolio of sustainable resources, technologies and methodologies, which are likely to include energy efficiency, conventional and non-conventional oil and gas resources, cleaner coal technologies, nuclear and renewable energy.

The geographical structure of global energy demand is shifting with non-OECD countries expected to account for 90% of the projected incremental demand

(predominantly in Asia and the Middle East). The faster pace of growth in primary energy demand that has occurred in non-OECD countries over the last few years is set to continue with demand from the OECD region expected to plateau or decline.

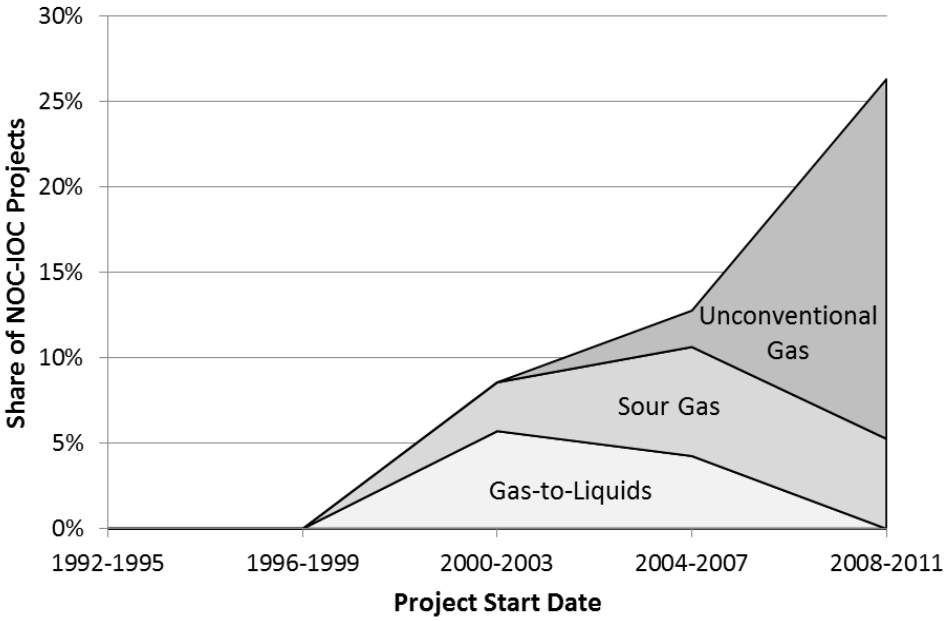
Given the growth of energy demand in Asia, **Asian Ministerial Energy Roundtables**, held every other year with IEF Secretariat as facilitator, provide a useful platfrom to discuss issues that are relevant to Asia and Middle East. A the **4th Asian Ministerial Energy Roundtable**[3] held in April 2011, Energy Ministers concured that adequate investment framework in both producing and consuming countries, is an important factor for promoting so much needed investment in the region.

## 2.1 NOC-IOC cooperation

The multidimensional and complex nature of the challenges faced by the industry (technological, economical, environmental and political) and the often global reach of their effects combine to make a strong case for collective study and response to common challenges. Long-term sustainability will to a great extent be dependent on the sector's ability to mitigate the effects and influence the development of above-ground factors over which it currently holds little control. Improved cooperation between NOCs and IOCs has been recognized for its potential to secure and better optimize investment in the oil and gas industry, help ensure its development, and by inference, improve global energy security.

[3] The 4th Asian Ministerial Energy Roundtable, Kuwait City, April 2011, Kuwait.

Figure 3.
Share of large NOC-IOC partnerships involving "gas frontiers," by project start date




*Source: Stanford University / PESD*

IEF Ministers have been frequent advocates of the notion that cooperation between NOCs and IOCs holds significant potential to address key challenges facing the industry as a whole. The IEF NOC-IOC Forum established in response and now provides a biennial platform for senior decision makers from National and International Oil Companies, service companies and experts, to discuss the key issues and common challenges facing the oil and gas industry, exchange views, and identify ways and means to enhance cooperation and partnership.

In related work, buiding on the findings of its series of NOC-IOC Fora[4] the IEF Secretariat, in cooperation with the companies of the IEF Industry Advisory Committee, has developed a set of general principles that may serve as a framework for successful cooperation among NOCs, IOCs and service companies.

[4] First IEF NOC-IOC Forum, April 2009, Kuwait City, Kuwait. Second IEF NOC-IOC Forum, April 2011, Paris, France.

Box 1. General guidelines for NOC-IOC successful cooperation

- Build long-term partnerships based on mutual trust and respect on agreed areas.
- Align the interests of all parties: i.e. host governments national companies and international companies;
- Facilitate whenever appropriate cross-investment throughout the whole value chain in host countries, partners' home countries and in third party countries;
- Establish long-term partnerships that are sustainable, under any economical situation;
- Favour as much as possible dialogue, re-negotiations or mediation to resolve conflicts or disputes;
- Build long-term cooperative programmes on joint R&D training, education, technology development, safety and best practices;
- Build long-term partnerships on environmental and operational safety issues.
- Undertake joint analysis and studies on producing and consuming countries' regulations, activities and policies.

The **NOC-IOC Fora** organised by the IEF were highlighted by participants as a useful platform to discuss the changing business environment and its impact on stakeholder relationships and exchange of views between NOC, IOC and service companies leaders. A third IEF NOC-IOC Forum is planned to take place in India in 2013, hosted by ONGC.

## 2.2 Imporved energy market transparency to gain market stability

In the aftermath of the 2008 financial crisis, IEF Ministers strengthened their call for improved transparency as a key element in efforts to enhance the functioning of the oil market and to facilitate price discovery. Transparency in the physical dimension of the market is important to understanding oil market dynamics and enhancing the price discovery function, but it is increasingly apparent that transparency in the financial layers surrounding the physical benchmarks also needs to improve.

Absence of data, data of poor quality and issues of timeliness are all potential contributing factors to volatility in oil markets as data forms the basis of analysis that supplements or provides the information upon which pricing and investment decisions are made. In the absence of informed analysis, decision-making becomes more of an art than a science and speculation in one form or another is inevitable. It is increasingly clear that oil prices are now formed by a complicated interplay of physical and financial factors and policy makers need to focus on measures that further improve transparency in both physical and financial markets and measures that improve adequate regulation of markets.

## 3.1 Joint Organisations Data Initiative

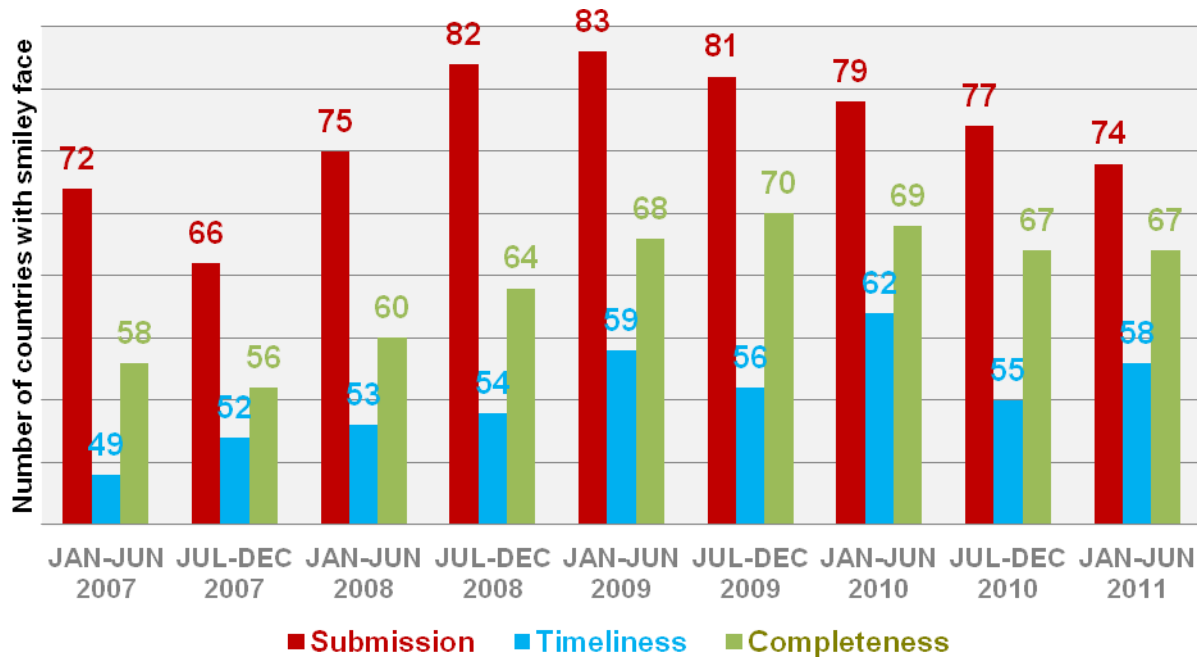
The Joint Oil Data Initiative (JODI), now labeled Joint Organisations Data Initiative, aims at achieving a step change in the provision of timely, high quality transparent statistics which are essential to the stability of energy markets.

*JODI-Oil*

The Oil component, JODI-Oil, coordinated by the IEF, which involves six other international organisations[5] celebrated its 10th Anniversary in 2011. The JODI-Oil, expanded its geographical coverage rapidly since inception in 2001 with increasing number of countries joining the Initiative and feeding monthly oil data to what becomes the JODI World Database. Today, almost 100 countries, representing over 90% of global oil production and consumption, are contributing data to JODI on a monthly basis, and the JODI World Database is now an internationally recognized oil database, as it enjoys increasing interest from countries, industry, analysts and other market players.

Unfortunately, it is necessary to note that the recent performance of some countries in JODI Oil is lagging behind and has considerable scope for improvement.

Figure 4. Participation in JODI (submission, timeliness, completeness)




An average of 67 countries over the last 6 months reported the most up-to-date figures (M-1) compared to 66 countries during the same period in the previous year. Countries which have regularly reported M-1 data include India, Russia, South Africa.

[5] 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 (UNSD).

The Initiative's latest participation assessment of data submission, timeliness and completeness illustrated progress on some fronts but also areas in which improvement is needed. In this assessment, 74 countries achieved a "Good" evaluation for data submission, 58 countries achieved the same rating for timeliness and 67 countries earned a "Good" rating for completeness.

Since the first half of 2007, submission, timeliness and completeness have all improved, at 2.8%, 18.4%, and 15.5% respectively. However, the most recent assessment, covering January to June 2011, recorded declines in both submission, timeliness and completeness compared to the same period in 2010.

The Initiative has been regularly applauded by IEF Ministers as a concrete achievement of the global producer-consumer energy dialogue, but successful collection and dissemination of sound data in a timely manner cannot be achieved without full participation of data providers; i.e. participating countries/economies. The concerted, co-ordinated and sustained effort of all stakeholders is essential to the future success of the initiative and its potential to deliver upon the expectations of Ministers and their governments.

Box 2. Full data transparency to achieve market stability

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, JODI organisations urgently call on participating countries/economies to:

ensure that administrations and organisations in charge of energy data collection are better equipped and staffed;

ensure that industry is fully engaged in the process of data submission with the required detail and format, through appropriate regulations when necessary;

address confidentiality issues and reduce, if not eliminate, them.

While JODI-Oil 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 JODI organisations revealed a strong request from oil data users for more data to be reported through JODI. Such request has also been reiterated in JODI-Oil international Conferences. In repsonse, JODI partner organisations worked on an **extended JODI questionnaire** which has been assessed by JODI organisations and their member countries and will be launched at the 13th IEF Ministerial in Kuwait.

*JODI-Gas*

Given the trend towards globalisation in the gas market, Energy Ministers have called for a progressive extension of JODI to natural gas and encouraged the IEF Secretariat to take the initiative to make this happen, in collaboration with other relevant international organisations. The **IEF-IGU Ministerial Gas** Fora held in Vienna in 2008 and Doha 2010 echoed and welcomed IEF Ministers call to extend JODI to natural gas.

The IEF Secretariat conducted a faisability study on the collection of monthly gas data through a mechansim similar to JODI-Oil and invited other relevant organisations such as the Gas Exporting Countries Forum (GECF) to join this collective effort towards more transparent gas markets.

The IEF and JODI partners organisations initiated a collection exercise with their gas members countries submitting relevant gas data such as supply, demand and trade on monthly basis. Today, some 44+ countries are participating in this exercise and the IEF Secretariat intends to launch JODI-Gas at the **Second Gas Data Transparency** to be hosted by Qatar in May 2012.

*JODI-Investment*

Calls for the extension of JODI to cover annual data on upstream and downstream capacities and expansion plans have been noted and work on extension to investment has been already initiated by JODI partner organisations (starting with oil), with preliminary findings on schedule for delivery by the end of 2012.

## 3.2 Energy Outlooks

Both the IEA and OPEC as well as other government, consultancy, banking and academic institution regularly publish energy and oil outlooks covering the short-, medium- and long-term. While energy outlooks are a very useful tool to guide investment decisions, to increase awareness about future energy patterns and their consequences on prices, environment, living styles, etc., widen differences between projections published by these institutions tend to contribute to energy markets volatility.

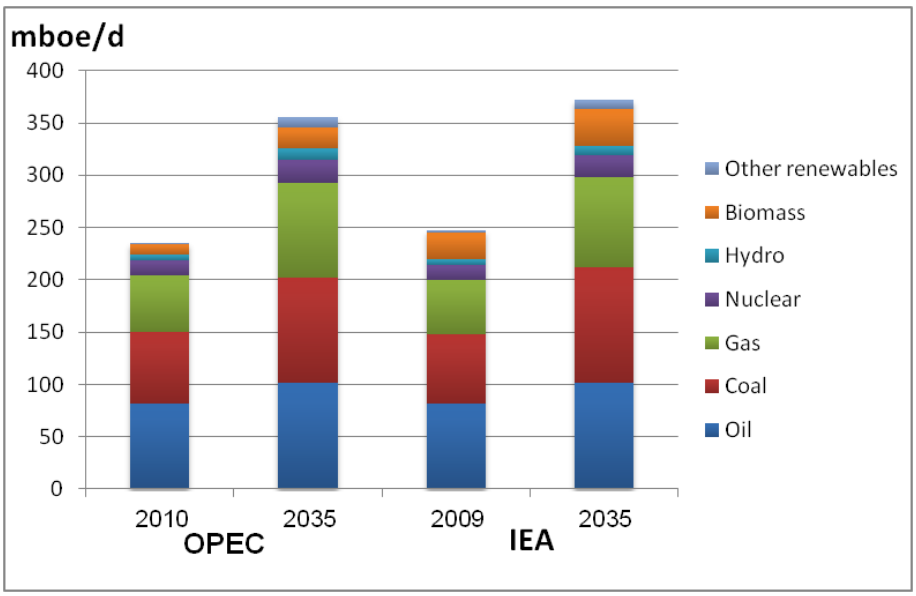
In order to address this issue, the IEA, IEF and OPEC agreed to establish a platform for sharing insights and exchanging views about energy market trends and short-, medium- and long-term energy outlooks, including analysis of market behaviour and discussion work on symposia on Energy Outlooks[6], held in 2011 and 2012 offer a useful understanding of the key drivers of the energy scene along with the associated uncertainties.

Under all scenarios global primary energy demand continues to grow, as economies expand, the global population grows and living standards across the world improve. There is a consensus that oil will continue to be the single largest constituent of primary energy demand throughout most of the projection period, and that oil resources, both conventional and non-conventional, are sufficient to meet future demand.
However, its share in the global energy mix will fall. There will be a wide range of sources of oil to satisfy demand. In particular, non-crude liquids supply, from both OPEC

[6] First IEA, IEF and OPEC Symposium on Energy Outlooks, January 2011, Riyadh, Saudi Arabia.
Second IEA, IEF and OPEC Symposium on Energy Outlooks, January 2012, Riyadh, Saudi Arabia.

and non-OPEC sources, such as non-conventional oil, condensate and NGLs and biofuels, more than doubled by 2035.

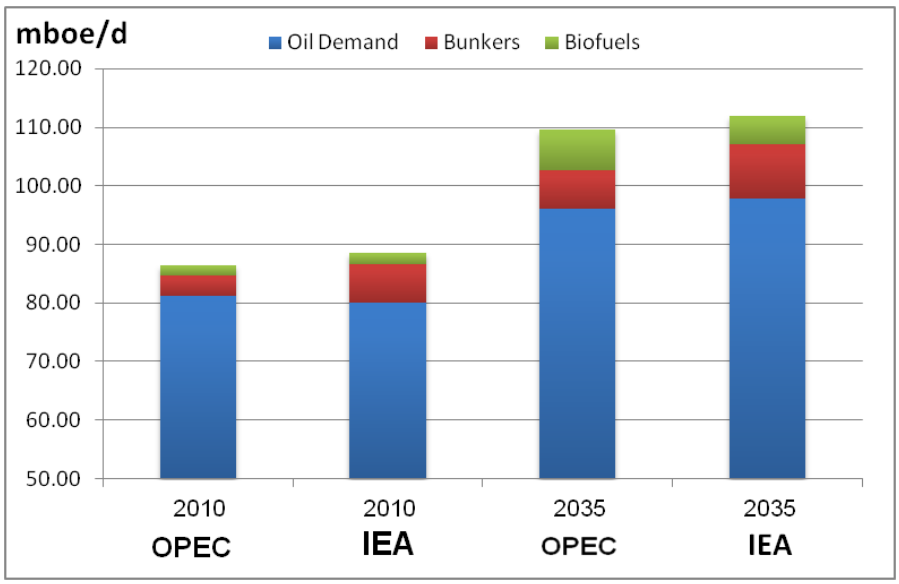
Figure 5. World primary energy demand




a. IEA Current Policies Scenario.

b. IEA biomass includes traditional and modern uses

Figure 6. World liquids demand.



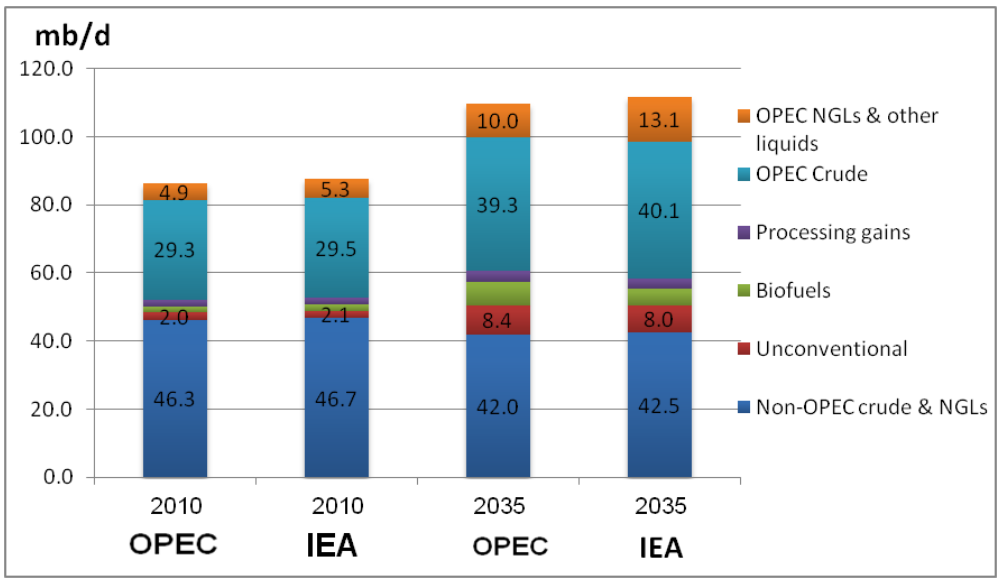

1. Includes biofuels (volumetric bases) and international marine and aviation fuel
2. IEA Current Policies Scenario

In this respect, experts from IEA, IEF, OPEC, other institutions, consultancy firms and industry noted the considerable uncertainties concerning how future demand will

evolve, in particular with regard to energy and environmental policies. Other key uncertainties relate to economic growth assumptions, patterns of car ownership growth and usage in developing countries and technological change, especially in the transportation sector. They identified the main convergences and differences between the IEA's and OPEC's outlooks and discussed the reasons behind these differences, such as those related to definitions, methodologies, and the presentation of results.

With this in mind, the experts recommended moving towards harmonizing definitions, where possible and appropriate, and the use of more disaggregated data, in a more timely manner, to enhance the outlooks. In addition, they highlighted the need for a better exchange of data and information through a strengthened and improved JODI. Moreover, they recommended exploring the possibility of further possible joint technical meetings and Symposiums on certain technical areas of interest.

Figure 7. World oil supply




1. Biofuels (volumetric basis)
2. IEA Current Policies Scenario
3. OPEC crude includes Venezuela extra-heavy

## 3.3 Physical and financial markets

Major fluctuations in energy prices in general and oil prices in particular have attracted heightened attention to the functioning of energy markets. The Jeddah and London Ministerial ad hoc energy meetings, held in June and December 2008, respectively, led to a collaborative effort aimed at exploring ways and means to enhance the process of producer-consumer dialogue and address the issue of extreme volatility in energy markets.

In this connection, and given the dual role that crude oil now plays as both a physical commodity and a financial asset, IEA, IEF and OPEC recognized the need to improve understanding of the interlinkages between the physical and financial markets for energy, and agreed to jointly hold workshops on energy market functioning and meetings of energy regulators[7].

The events noted the increasing interaction of the physical and financial energy markets. they recommended continuing the ongoing effort to better understand the functioning of each of these markets, as well as the linkages between the physical and financial markets.

The diversity of the opinion expressed in the events reflected, to a large extent, the differences of opinion between those attributing most of recent price movements to oil market physical fundamentals, acknowledging the role of financial market factors in amplifying short-term price movements; those who see speculative activity and the financialization of commodities as exacerbating price movements and leading to excessive volatility; and those that regard crude oil price formation consisting of a complex interaction of physical and financial factors, including speculation in the financial market activity. The discussion also reflected the diversity of views regarding the benefits, consequences and costs of various regulation proposals.

The events recognised that regulations have important effects on market functioning and participants' behaviour and emphasised the need for appropriate regulation, with adequate international coordination.

In this respect, they noted the ongoing effort on regulatory reform in the financial and derivatives markets and recognized the need to preserve the ability of physical traders to use these markets to facilitate trade and manage underlying price risk. It was also stressed again that international coordination of regulation is essential to avoid loopholes and unintended consequences.

The events also recommended the enhancement of the international cooperation on market data transparency, and commended the Joint Oil Data Initiative (JODI) efforts in this regard.

Overall, these events provided rich and diverse views from distinguished experts with different backgrounds and affiliations. The diversity of the opinion expressed in the event reflected, to a large extent, the differences of opinion between those attributing most of recent price movements to oil market physical fundamentals, acknowledging the role of financial market factors in amplifying short-term price movements; those who see speculative activity and the financialization of commodities as exacerbating price movements and leading to excessive volatility; and those that regard crude oil price formation consisting of a complex interaction of physical and financial factors, including speculation in the financial market activity.

[7] The first Joint IEA-IEF-OPEC Workshop on "Understanding the New Dynamic: How do the Physical and Financial Markets for Energy Interact" and the first Forum on "Energy Market Regulation: Clarity and Coordination" November 2010, London UK.
The second Joint IEA/IEF/OPEC Workshop on the "Interactions between Physical and Financial Energy Markets" November 2011, Vienna Austria.

The discussion also reflected the diversity of views regarding the benefits, consequences and costs of various regulation proposals.

In addition, the IEA, IEF and OPEC closely cooperated on activities related to the G-20 activity on fossil-fuel price volatility, and worked on the following areas:

### 3.3.1 Price Reporting Agencies (PRAs)

A very limited number of Price Reporting Agencies (Platt's mainly, based in New York, Argus, based in London, ICIS, specialized in gas, and APPI, based in Hong Kong) publish thousands of daily price assessments and provide benchmarks for every level of the physical oil market production and distribution chain.

The G-20 Seoul Summit Leaders' Declaration called on the IEF, IEA, OPEC and IOSCO to produce a joint report, by the April 2011 Finance Ministers' meeting, on how the oil spot market prices are assessed by oil price reporting agencies and how this affects the transparency and functioning of oil markets.

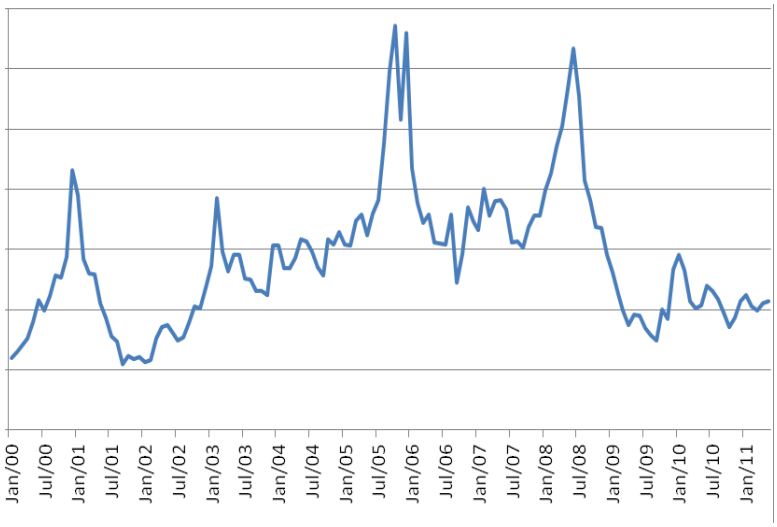
The IEF, IEA, OPEC and IOSCO summitted their reports on PRAs to the G20 Finance Ministers in October 2011. The report examined three inter-related areas: (1) the methodology used in identifying the oil price, (2) the reliability and transparency of price assessments and (3) the internal measures that PRAs implement to protect the integrity of the price assessment process.

Further to this report, the G20 Cannes Summit Final Declaration on 3-4 November 2011 "Recognizing the role of Price Reporting Agencies for the proper functioning of oil markets", asked IOSCO, in collaboration with the IEF, the IEA and OPEC, to prepare recommendations to improve their functioning and oversight to our Finance Ministers by mid-2012".

### 3.3.2 Coal and gas markets volatility

Similar to oil prices, there are signs that other fossil fuel prices have experienced strong volatility in the past few years. The annual volatility of gas contracts traded on the European gas exchanges averaged more than 70% in 2009 and 2010, a level higher than the volatility of oil prices during the same period. On the coal market, large swings in prices have also been observed: for instance, the average market price for imported coal in OECD Europe rose from $62 per ton in 2004 to $138 per ton in 2008 for steam coal, occasionally exceeding $200 per ton before returning to below $100 in 2009.

Figure 8. Monthly average gas prices at Henry Hub, USD/MMBTU




*Source: EIA/DOE*

The G20 Washington Summit Leaders' Declaration in April 15-16, 2011 requested "the IMF and IEF, as well as IEA, GECF and OPEC, to develop by October 2011 concrete recommendations to extend the G20's work on oil price volatility to gas and coal."

The IMF, IEF, IEA and OPEC prepared a report on the extension of the G20's work on oil price volatility to gas and coal to the G20 Finance Ministers in October 2011. The report examined five inter-related dimensions: (1) inter-linkages between gas, coal and oil, (2) gas and coal outlooks (3) gas and coal markets structure and functioning (4) gas and coal volatility and (5) transparency in gas and coal markets.

The report, noted that increasing gas globalization and trade and increased price volatility point to a need for more market information. In this respect, the report recommended that the G20 may wish to consider committing to full, complete and timely delivery of data to JODI-gas to increase transparency in the international markets for gas and improve the economic efficiency of the markets and reduce price volatility. However, extending this initiative to coal might be considered at a later stage as coal is the least globalized of the major energy sources.

The report also recommended extending the G20's work on oil price volatility to coal and gas. Given that the most important factor behind price volatility is low price elasticity policy actions to reduce volatility should be concentrated on that field.

Further to this report, the G20 Cannes Summit Final Declaration on 3-4 November 2011 "notes the new JODI-Gas database and commits to work on contributing to it on the basis of the same principles as the JODI-Oil database. They call for annual symposiums and communiqués on short, medium and long term outlook and forecasts for gas and coal. They also call for further work on gas and coal market transparency and ask the IEA, IEF and OPEC, to provide recommendations in this field by mid-2012".

## 4. Sustainability

### 4.1. Energy Poverty

At the 12th IEF, Ministers noted that "the fight against energy poverty has been unsuccessful so far, with 2.5 billion people still lacking access to modern fuels for cooking and heating and 1.5 billion people without access to electricity, a situation which inhibits social, human and economic development". Endorsing the conclusions of the first IEF Symposium on Energy Poverty, Ministers stated "that reducing energy poverty should be added as the 9th Millennium Development Goal", called on all relevant stakeholders (including the energy industry) to step up their efforts and encouraged the IEF Secretariat to maintain energy poverty high on its agenda and future programmes of work.

The UN has labelled 2012 as the "International Year of Universal Energy Access for All". Achieving universal energy access will require coordinated action especially by the government and private sectors. Collaboration between energy companies, development banks, local authorities and other stakeholders is a necessary step towards improving living conditions, promoting economic growth and creating business opportunities for local communities.

Recent estimates show that 1.3 billion people have no access to electricity, around 20% of the global population, and 2.7 billion people rely on the traditional use of biomass for cooking, around 40% of the global population. More than 95% of the people lacking access to modern energy services are either in Sub-Saharan Africa or developing Asia, and 84% live in rural areas. Existing projections suggest that, unless strong measures and long-term policy commitments are taken, the situation will persist and deteriorate in many regions of the world in the coming decades, particularly in Sub-Saharan Africa more than in developing Asia where some countries have made notable progress in recent years in improving access to modern energy services.

The IEF series of symposia on energy poverty[8] discussed how to address this crucial issue and investigated ways and means to help eradicate energy poverty. The main findings and key recommendations are summarized in a report[9] prepared ahead of the 13th IEF Ministerial in Kuwait.

[8] First IEF Symposium on Energy Poverty, Johannesburg, December 2009, South Africa. IEF-OFID joint Symposium on Energy Poverty, Vienna, November 2011, Austria.
[9] Report on IEF symposia on Energy Poverty, February 2012.

Box 3. Towards energy poverty eradication.

- Set a long term government commitment to eradicate energy poverty with clear prioritization of projects to be implemented.
- Improve data and information on poverty in order to facilitate the necessary decision analysis and project assessment.
- Address ability of the poor to pay for energy through appropriately designed mechanisms to finance installation and purchase costs to allow the poor to access energy in a reliable, affordable and sustainable way.
- Set realistic, measurable and achievable targets through concrete programmes with monitoring tools.
- Join efforts to mobilise required investment through all possible sources of funding (international funds, public-private partnerships, banking finance at multilateral, bilateral and local levels. Climate change related funds, etc.)
- Adapt solutions to local environment with site-specific solutions involving local communities in the choice, planning, development and maintenance of programmes in place.
- Build local management capacity to manage, operate and maintain projects by providing technical and management support and training.
- Consider all energy sources and technical solutions that are economically, socially and environmentally sustainable.
- Enhance international cooperation in mobilising funding and bringing assistance to poorer countries, capacity building, knowledge management and dissemination, in developing tools and indicators to measure progress, etc. Regional integration and trans-border projects can also produce tangible results in facilitating access to modern energy services to the poor.

## 4.2. Carbon Capture and Storage

Given the projected increase in long-term demand and the prevalence of fossil fuels in the future energy mix, there is an urgent need to improve the environmental sustainability of fossil fuel production and consumption by moving toward low carbon emission technologies. Carbon capture and storage (CCS) development and deployment offer a solution that can contribute, along with energy efficiency, to delivering a sustainable energy future.

CCS has the greatest potential within the oil and gas industry and in power production to significantly stem the emission of $CO_2$ into the atmosphere. Within the oil and gas industry, the most promising and safest CCS technology to date involves the capture of $CO_2$ from crude extraction, and then injects it into geological reservoirs. Within the power industry, CCS focuses on capturing $CO_2$ from combustion and subsequently storing it. Collectively, they present a major topic for information sharing and debate.

In September 2009 and June 2010, the IEF and the Global CCS Institute, jointly established a series of symposiums on CCS in response to a call-for-action from Energy Ministers. The primary objective was to share knowledge and to facilitate the development and commercial deployment of CCS technologies.

The main findings and key recommendations from IEF series of symposia on Carbon Capture and Storage[10] were summarized in a report[11] prepared ahead of the 13th IEF Ministerial in Kuwait.

Box 4. Deployment of Carbon Capture and Storage.

- To achieve confidence for commercial deployment, CCS needs to be demonstrated across a range of industries and storage types in both developing and developed countries.
- CCS stakeholders must better address public concerns and perceptions and educate and communicate more effectively on large scale CCS deployment.
- Reliable measuring, monitoring, and verification (MMV) schemes are required to verify the amount of $CO_2$ injected and to confidently predict and demonstrate that $CO_2$ will remain permanently sequestered.
- Regulatory issues, particularly those related to liability of storage, long term rights, liabilities and institutional structures need to be clarified.
- It is crucial to significantly reduce costs which are a serious barrier to large scale commercial deployment of CCS.
- Substantial additional financial incentives are required if we are to achieve commercial-scale CCS deployment.
- Addressing barriers to CCS deployment requires stronger joint and coordinated efforts and sustained commitment of all stakeholders.
- International cooperation, government-industry collaboration and cohesive policy direction are prerequisites to the acceleration of CCS deployment on a commercial scale.

## 4.3 Energy Efficiency

The availability of reliable, affordable and secure energy is fundamental to economic stability and development. Most credible projections indicate that energy demand will increase by around 40 per cent by 2035 compared to the current level. Developing countries will account for most of these increases, by virtue of higher population and economic growth.

Of all the energy options, the improvement of energy efficiency can provide the largest amount of energy in the future through many cost-effective opportunities while at the same time reducing greenhouse gas emissions. In addition, many energy efficiency measures can pay for themselves through reduced energy costs.
The IEF Ministers have affirmed that improving energy efficiency through action plans, sectoral approaches and sharing of best practices in energy production, transportation

[10] First IEF-Global CCS Institute joint Symposium on CCS, September 2009, Beijing, China.
Second IEF-Global CCS Institute joint Symposium on CCS, June 2010, Algiers, Algeria.
[11] Report on IEF symposia on Carbon Capture and Storage, February 2012.

and consumption is cost-effective and beneficial for both producing and consuming countries in enhancing energy market stability, environmental sustainability and economic development. The IEF Energy Efficiency Symposium in Developing Countries held in Jakarta on 21-22 June 2011 provided a platform to discuss policy approaches, to explore the potential for energy efficiency improvements in developing countries, and to review and discuss global best practices, the extent to which they can be adapted to meet the needs of developing countries and the most appropriate manner in which to disseminate them and deliver their full potential.

Box 5. Delivering energy efficiency in developing countries.

- The right policies and actions are essential to ensure that the numerous benefits of energy efficiency are achieved, and should be supported by proper regulatory framework, with an energy efficiency law and/or national programmes with official quantitative targets of energy efficiency improvements, to provide a long lasting context for the policies.
- Detailed statistics on energy demand (by sector, by user, etc.) are necessary to facilitate a proper assessment of consumption patterns and behaviour. It constitutes a prerequisite for determining sectoral priorities and actions.
- Despite its benefits, factors such as inadequate investment, high transaction costs, poor implementation of energy efficiency programs, lack of required institutions, political will and policy commitments, technology, subsidies and inadequate market signals have hindered market development and energy efficiency deployment. Governements need to work on removing these barriers.
- Tackling inefficient energy subsidies that encourage wasteful consumption is necessary. Reforms to reduce energy subsidies need to take into account economic, social and commercial sustainability, as well as environmental concerns. They can be introduced in a gradual and programmed manner, towards a sustainable, market-linked pricing policy accompanied by targeted subsidies for low-income households.
- Investing in more efficient technologies would accelerate energy efficiency improvement in the future. This will be especially important as even with efficiency gains, improved access to affordable energy will require strong growth in absolute energy requirements.
- Sharing best practices and policies among IEF members can help to achieve significant and rapid improvement of energy efficiency, through collaborative and cost effective schemes, thus lowering the stress on the supply chain, enhancing energy security for all and mitigating climate change effects.
- Initiating energy efficiency in developing countries requires supportive government policies backed by strong local institutions, a robust private sector, educated consumers and active financial institutions.
- To achieve their energy efficiency goals, developing countries need to elevate energy efficiency to a higher priority in their national energy policies by formulating national energy efficiency plans and targets for energy efficiency improvements.

## 5. Strenghtening the dialogue for enhanced energy security

At a time when uncertainties surrounding the energy sector are multiplying and increasing, energy dialogue and cooperation are more important than ever. Most of the issues discussed at the 13th IEF Ministerial are of a global nature and can only be addressed through open and frank dialogue in an international framework such as International Energy Forum.

### 5.1. The IEF Charter

The **IEF Charter** endorsed on 22 February 2011marks a new era of international energy cooperation built on greater mutual understanding and trust, with a significant reinforced political commitment to an informal and open global energy dialogue in the framework of the IEF among energy producing and energy consuming countries, including transit States. Now with 88 signatories, the IEF Charter creates a solid foundation for a productive dialogue that fosters greater mutual understanding between producing and consuming countries on key energy policy issues and, where possible, narrows the differences in views and helps build trust in policy intentions. With all the major energy producers and consumers united in this dialogue framework this fact sends a powerful positive signal to the energy world and energy markets that difficult issues can and will be tackled in a global context, whenever necessary.

### 5.2. IEA-IEF-OPEC joint programme

The tri-lateral IEA-IEF-OPEC cooperation programme, which was included in the Cancun Declaration, provided a valuable opportunity for the three organisaitons to join effort in addressing the issue of energy market volatility. The programme was fully implemented and two rounds of joint events on the linkages between physical and financial energy markets, including energy market regulation, on energy outlooks and on market data transparency have already been successfully delivered.

The IEF Secretariat produced two reports summarising existing views with regard to the interaction between physical and financial markets, in consultation with the IEA and OPEC Secretariats. These reports will help market players to better understand the complexities of the oil market and thus reduce undue market volatility.

On the energy outlooks, the IEF Secretariat produced two background papers in consultation with the IEA and OPEC Secretariats, these papers provided a comparison of the IEA's and OPEC's short- medium- and long-term energy outlooks and discussed technical issues related to overview of the short- medium and long-term outlooks, demand, stocks and supply. In addition, the three organizations jointly produced two reports summarising the discussions and the outcomes of the two Symposiums. These reports aim to improve the insight of market players into the key factors underlying the divergence in outlooks, suggest areas for harmonization of definitions and data reporting by different agencies.

A report on the IEA-IEF-OPEC cooperation programme and core findings will be made available to Ministers at the 13th IEF Ministerial[12].

[12] Report on IEA-IEF-OPEC joint programme of activities.