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**GLOBAL ENERGY SECURITY THROUGH DIALOGUE** 

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56 Haymarket, London SW1Y 4RN, UK • Tel: +44 (20) 7389 9650 • Fax: +44 (20) 7389 9644 • Email: publisher@world-petroleum.net

Editor David Buchan OBE

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## ENERGY'S GLOBAL GATHERING

BY HANI HUSSEIN OIL MINISTER, KUWAIT AND HOST, IEF13



uwait takes pride in hosting the 13th International Energy Forum and the 5th International Energy Business Form in Kuwait. It is an important global event on which producers and consumers are pinning great expectations for closer understanding and cooperation. Its importance stems from the fact that it comes just after the IEF Charter was signed in Saudi Arabia last year, and comes at a time in which the global energy

markets are witnessing major developments which could have long-term impact on energy markets.

This event will bring together decision makers, international organisations and CEOs of energy companies as well as industry experts from around the world to engage in effective dialogue with the objective of ensuring market stability, reliable energy supplies and addressing future energy challenges.

Ministers and CEOs will discuss future industry challenges and the necessary investment to meet the global future energy demand and focus on ways of improving safety of facilities along the energy chain without hampering investment.

Since the 12th IEF Ministerial at Cancun, in March 2010, much has changed across the globe, but many challenges still remain to be addressed. Among them are the difficulty of securing and sustaining investment throughout the energy supply chain, the challenge of addressing the persistent price volatility in energy markets, energy poverty in the developing world, and the mitigation of climate change.

Discussion in the 5th IEBF and the 13th IEF Ministerial, which are structured in six sessions, will focus on vital issues such as: meeting future energy demand through investing in an uncertain future, mitigating volatility, achieving environmental and social sustainability with lower emissions and energy access for all, and the global energy dialogue. In addition, CEOs of energy companies will engage in a discussion on ways and means to enhance NOC-IOC cooperation by developing guidelines for successful partnerships.

We consider this forum as a valuable opportunity to strengthen the role of the State of Kuwait on the international energy scene, and explore the means to strengthen industry partnership and cooperation.

We have devoted substantial resources and exerted great efforts to make this forum a success, and we wish a pleasant stay for all.

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## THE GLOBAL ENERGY DIALOGUE

he number of top ministerial and official contributors to this publication is a tribute to the value governments and international organisations place on the importance of the IEF as a forum to discuss today's key energy issues – supply and demand trends, security of supply and demand, energy markets and oil price stability, and investments for the future.

As Aldo Flores-Quiroga of the IEF says, the IEF is a neutral facilitator of dialogue between energy consumers and producers, whose relationship has sometimes been tense in past decades. This value of the IEF as an impartial forum for discussion of sensitive issues is emphasised by many ministers. Among them, Ali Al-Naimi of Saudi Arabia stresses the broad balance between the IEF's energy consuming and producing country members means that its dialogue is designed to serve all and be dominated by none. This usefulness of the IEF as an arena for discussion, especially at a time of increasing tightness in the world oil market, gets a strong echo from Daniel Poneman of the US.

Running through this publication and indeed all IEF discussions are the two overarching themes, as singled out by **Ben Knapen of the Netherlands** and **Charles Hendry of the UK**, of price volatility on energy markets, and investment trends to meet future supply and balance challenges. Consumers and producers will inevitably differ over prices, but diversity is the essence of the IEF dialogue. **Natig Aliyev of Azerbaijan**, a new IEF country member, adds to this diversity by warning, as a strongly emerging energy producer, that "unreasonably high prices" could hurt producer interests by depressing demand. But **Phil Heatley of New Zealand** is strongly critical of subsidised prices for fossil fuels as leading to waste and inefficiency.

Both producers and consumers deplore price volatility as disruptive of investment plans and undermining of energy efficiency. However, the IEF and its two main sister organisations – OPEC and the IEA – clearly maintain their basic faith in market forces to set prices, provided these market forces can work in greater transparency. **Said Nachet of IEF** lays out the IEF's extensive work programme. This includes the JODI oil data transparency initiative, which is praised by **Maria van der Hoeven of the IEA**, and research into financial speculation on oil markets, which is welcomed by **Abdalla El-Badri of OPEC**.

Investment issues loom large for energy producers of both oil and gas. Hani Hussein of Kuwait, host country for IEF13, stresses producers' concerns about security of demand for their energy, a concern echoed by Youcef Yousfi of Algeria, the major gas exporter. IEF producers have a range of attitudes to foreign investment in their energy sectors, but Martin Ferguson of Australia puts 'the welcome mat' out for foreign investment in his own country's energy production. Eelco Hoekstra of Vopak reminds of the importance of investment right along the energy supply chain, including storage and transport of oil and gas which are traded ever more widely across the world. A final perspective comes from two 'historians' of the IEF, Bassam Fattouh and Coby van der Linde. They chart the organisation's growing achievements over 20 years, but note that the forum remains one more of dialogue than of decision for the IEF's sovereign governments.

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## THE CHALLENGE OF ENERGY INTERDEPENDENCE AND THE GLOBAL ENERGY DIALOGUE

BY ALDO FLORES-QUIROGA SECRETARY GENERAL, INTERNATIONAL ENERGY FORUM

s the International Energy Forum (IEF) enters its third decade, its value as neutral facilitator of the global energy dialogue will continue to rise. For the world of energy is one of interdependence, and the multiple links connecting producers, consumers, and transit States, at every stage of the international energy supply chain, will in all likelihood deepen and expand. In every market for every energy source, from fossil fuels to wind, from exploration to power generation, passing through the myriad processes involved in transport, distribution, and delivery of energy products and services, nations will have to adapt to an increasingly complex environment. It will make little difference whether they are developed or less developed, industrialised or agricultural, rich in resources or not. Their fortunes will be intertwined. Their ability to understand their interdependence, as much as their willingness to work together to overcome their joint challenges, will be fundamental to the promotion of their energy security.

This will be true even if market forces play the main role in pushing them towards a new reality, sending signals for resource allocation, or motivating the development of financial instruments to hedge against or to exploit price fluctuations. While markets mediate between the interests of consumers and producers, not all countries will be able to respond fast and effectively to sudden disruptions of supply or demand, even if they can count upon more flexible energy sectors. And setting policies to "get the prices right", creating novel regulations, or reforming the institutions that govern their national energy systems, are unlikely to produce the desired longterm results in and of themselves.

The reason is straightforward. The greater complexity that comes with greater interdependence has added a layer of uncertainty to the behaviour of energy markets. For instance, it is more difficult nowadays to interpret the messages conveyed by oil price movements due to their considerable volatility. Significant analytical resources have been devoted to understand the process of oil price formation, but analysts still disagree as to its main determinants. Some have found financial markets to play a minimal role in oil price behaviour; others observe that their role is not so small, and that it is justified by expectations of a tight balance between supply and demand; and yet others viewing the same dataset from a different angle see them playing a significant role through speculation, disrupting what otherwise would be an orderly market process.

When such disparities prevail in the interpretation of fundamental energy developments, supplementary mechanisms are required to increase the "signal-tonoise" ratio of energy prices and other indicators, so they perform their function of guiding resource allocation appropriately. Improving data quality on production, consumption, policies, and investment plans, among others, is a must, as it is to increase data availability. Yet better communication between key market players, in order to understand each other's concerns and motives, is also necessary to sustain market transactions over time. Markets cease to work well when this type of information is scarce and trust is low.

The IEF is uniquely positioned to make a difference in this regard because it facilitates a closer engagement of producers, consumers, and transit States to: (1) reduce asymmetries in information and understanding, (2) create a sense of shared goals and concerns, (3) temper overwrought or unfounded expectations about supply and demand conditions, (4) forestall the rise of tensions that come from sudden market disruptions or misperceived intentions, and (5) open new opportunities for global energy cooperation.

For the 13<sup>th</sup> International Energy Forum and the 5th International Energy Business Forum the stage is set for a closer engagement and rich exchange of views to advance in all these areas. The programme encourages discussion not only on oil price formation, but also on other technological, economic, political, and social developments that are shaping energy policies and the global energy mix. Three of these deserve special attention. First, how to meet future energy demand, which today is growing at a speed that promises greater prosperity and has the potential to take millions of people out of poverty, but also poses significant environmental concerns. Second, how to mitigate oil price volatility, which makes investment planning and government budgeting more difficult. Third, how to promote the security of both energy demand and energy supply.

Within this set of challenges ample space exists to explore the myriad and even astonishing energy developments that have taken place in a very short period, which are likely to affect energy trends in the foreseeable future: the inclusion of shale gas and tight oil in the global energy mix, the implications of the accidents of the Deepwater Horizon platform and the Fukushima nuclear power plant for safety, security and the environment; the deployment of clean energy technologies, including the variety of renewable sources of energy and carbon capture and storage, to mention a few.

A well-informed discussion requires a strong grounding on facts. To provide that grounding, the Joint Organisations Data Initiative (JODI), now in its 10th year, will figure in this ministerial meeting. But to deliver more and better results, it will require the sustained commitment of all member countries.

I am confident that Ministers, CEOs, and the heads of the International Organisations participating in this two-day meeting, generously hosted by the government of Kuwait, will leave with a better understanding of their own challenges and a better idea of who their potential partners for energy cooperation are. This will help them to craft strategies and policies that improve their energy security in the short, medium, and long term.

My confidence derives from the spirit that lies behind the creation of the IEF. For if there is a single promise the IEF embodies, it is that global energy security can be enhanced with the support of "a neutral facilitator of an informal, open, informed, and continuing global dialogue among its membership of energy producing and energy consuming States, including transit States." It is a promise that deserves to be taken seriously, as it is through dialogue that trust is built. And it is with trust that cooperative bonds between nations can be created and sustained.

In a world where the distribution of energy sources is uneven and unforeseen events disrupt energy markets repeatedly, countries must be able to count upon a dialogue platform that helps them achieve a clear sense of their interdependence. Only then can they appreciate the degree to which their energy security follows from their own choices as much as those of others.

This is a prerequisite for any cooperative solution to their shared energy challenges. A judicious mix of markets, state policy and international dialogue will go a long way in helping governments provide the energy their peoples want: accessible, affordable, reliable, flexible, environmentally-friendly. The IEF can be their strategic partner and ally as they seek to satisfy this need.

Welcome to the IEF.



13<sup>TH</sup> INTERNATIONAL ENERGY FORUM 9



## **KUWAIT: AN 'ACTIVE AND RESPONSIBLE' PRODUCER AND PARTNER**

BY HANI HUSSEIN OIL MINISTER, KUWAIT AND HOST, IEF13

ountries are becoming increasingly interdependent in energy matters; producers and consumers share many things in common. The main energy challenges facing the industry remain the same; the need for sustained levels of investment throughout the energy chain, the challenge of addressing persistent volatility in energy markets, reducing energy poverty in the developing world, and the challenge of mitigating climate change.

Since the IEF Charter was signed, the political upheaval in some parts of the Middle East and North Africa region, the Fukushima tragedy in Japan and more recently the geopolitical tensions in the Gulf and the eurozone debt crisis have added to energy market and price volatility.

Energy prices, and more specifically oil prices, are key inputs of public and private investment decisions and the lack of predictability may adversely affect economic growth. IEF efforts to enhance understanding regarding the root cause of high volatility and to improve market functioning are commendable.

Though prices may need to moderate from recent levels, one must recognise that future prices will have to be sufficiently strong to attract large capital investments into high-cost producing areas such as Canadian oil sands and shale. Hence, prices need to be set at a level sufficiently high to support ongoing development of conventional and unconventional energy sources as well as encouraging continued improvement in energy efficiency.

Energy security is a complex and broad-based issue which is fundamentally linked to the world's prosperity and welfare. The global energy dialogue – under the umbrella of the IEF – is the optimal manner to foster mutual trust among producers and consumers and to bring transparency to the oil markets, thereby ensuring global energy security.

The IEF Charter marks a new era of international energy cooperation, signaling reinforced political commitment to an informal, open and ongoing dialogue within the neutral framework of the IEF. We do value the IEF, as a global forum to tackle issues of common interest to all parties involved in energy.

Throughout the recent economic crisis, international co-ordination and collaborative dialogue between energy producers and consumers contributed to the early recovery of the world economy. The emphasis should be on ensuring reliable and secure supplies of energy at reasonable prices. Effective and continuous engagement between producers and consumers can assist in facilitating transparent frameworks of investment, promoting diversity, efficiency and flexibility within the energy sector, as well as reducing market volatility, improving emergency preparedness and oil data sharing for better understanding of market price behaviour and undertaking appropriate regulatory responses.

Kuwait is an active and responsible producer in the world and is fully committed towards the development of its crude oil production capacity. Kuwait's total oil production has reached 3 million barrels per day (mb/d), in the second half of 2011.

Hence, Kuwait is pursuing its plans to achieve sustainable crude oil capacity of 3.5 mb/d by 2015, and then 4 mb/d by 2020 onwards. Furthermore, KPC has initiated an expansion plan encompassing both the upstream and the downstream, which include plans to upgrade Kuwait's production, export infrastructure and its tanker fleet, as well as expanding exploration and building downstream facilities, both domestically and abroad.

Moreover, Kuwait needs to acquire leading know-how and technology to ensure that production targets are achieved to promote better Kuwaiti competencies. In implementing these plans, the technical assistance of international oil companies will be needed in the field of enhanced oil recovery, and to develop heavy crude oil in Kuwait.

Kuwait is also seeking to cultivate downstream interests in markets with high potential demand growth, the Asian market in particular, specifically China and Vietnam. Despite being a major oil exporter, Kuwait has recently become a net importer of natural gas, leading the country to focus more on natural gas exploration and development for domestic consumption.

Kuwait increasingly requires supplies of natural gas for the generation of electricity, water desalination, and petrochemicals, as well as for enhanced oil recovery (EOR) to boost oil production.

We believe that producer-consumer energy dialogue is needed to enhance the understanding of the energy markets, the linkages with financial markets and the uncertainties of global energy policy.

In this regard, the IEF efforts and activities have been fruitful. The joint projects and the various workshops on market outlooks as well as the regulatory tasks have provided more insight and closer understanding of the various factors affecting the energy industry and markets.

The Secretariat, in co-operation with the IEA and OPEC,

has acted as a platform to help improve understanding of the linkages between physical and financial markets, working with the IEA and OPEC within the context of the trilateral cooperation initiative announced in the Cancun Declaration and with other parties as appropriate. The first joint IEA/IEF/OPEC Workshop on physical and financial markets linkage was held on 22 November 2010 in London, with participation from governments, industry, banks, regulators, multilateral institutions and academia.

However, the producer-consumer dialogue should set a precise, comprehensive and action-oriented agenda for the IEF. Enhancing the energy cooperation between producing and consuming countries will result in securing greater diversity, competitiveness and transparency in all aspects of the supply chain. This partnership is the key element for keeping the supply-demand balance on a clear and sustainable path.

Accurate energy data is essential for making appropriate investment and policy decisions. Reflecting the strong interest expressed by ministers, continuous measures to extend JODI to other sources of energy are important for understanding the world energy mix. We support the Secretariat's implementation in co-operation with JODI partners for the extension of JODI to natural gas.

We are proud of the achievements that have been reached so far under the umbrella of the IEF. Recognising the increasing importance of the role of natural gas in the world energy mix and the need for a global and sustained dialogue between the natural gas stakeholders, the IEF has established in cooperation with the International Gas Union (IGU), an IEF-IGU Ministerial Gas Forum for selected Ministers and leaders from the gas industry.

The 1st IEF NOC-IOC Forum, in Kuwait in March 2009, was recognised by industry leaders as an important step forward in promoting global energy dialogue and enhancing global energy security. Highlighting successful examples of long-term cooperation between NOCs and IOCs, participants underlined that regular contacts between NOC and IOC leaders provide a useful platform for industry to discuss the changing business environment and its impact on stakeholder relationships.

Recognising the importance of innovation and technology in addressing future energy and climate needs, as an oil producer, we support international cooperation in energy technologies. IEF and the Global CCS Institute jointly organised a series of symposia on carbon capture and storage in response to a call-for-action from member nation ministers. Furthermore, we believe that producers and consumers must dedicate more resources to investigate the most effective means to alleviate energy poverty and review the role of different stakeholders and support IEF efforts in this respect.

As globalisation continues, trade will expand, and technological advancements will drive productivity gains even as the world's population grows. Fossil fuels will continue to play a dominant role in the world's energy mix, and will remain the principal energy source in the next 50 years or more.

Underinvestment or delays in investment could lead to shortfalls in the incremental capacity required to meet demand. The IEF conference in Kuwait is a further step in producers' and consumers' cooperation to create the right environment for continued investments in energy and in paving the way towards market stability and energy security.

IEF countries must dedicate much of their efforts, in such important forums as the 13<sup>th</sup> IEF ministerial meeting, to align interests for the achievement of more efficient and clean consumption of fossil fuels, developing other sources of energy efficiently as well as making the markets more transparent without undermining the goals of economic growth and prosperity.

IEF13 will certainly be a crucial step to move forward towards becoming a more result-oriented forum – through collaboration with relevant multilateral organisations and research institutions, hiring highly-qualified staff, conducting credible analysis and providing reliable and timely data to achieve greater energy market transparency and stability.

In addition, the Joint Organisations Data Initiative should be expanded to other fuels in the energy mix, as well as capacity expansion plans (upstream and downstream), and should be promoted in different media outlets.

We hope that IEF13 in the State of Kuwait will bring together different viewpoints and decision makers among producers and consumers towards better understanding of the functioning of oil markets and the relationships between the physical and financial energy markets. In addition, enhancing visibility on future energy outlooks should assist in the maintenance of investment as well as the stability of energy markets.

Furthermore, mitigating energy market volatility and uncertainty remains of crucial importance to energy market stability and energy investment, which will contribute to the smooth recovery of the world economy.



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## FOCUS ON THE OVERARCHING THEMES OF INVESTMENT AND PRICE VOLATILITY

BY BEN KNAPEN, MINISTER FOR EUROPEAN AFFAIRS AND INTERNATIONAL COOPERATION, THE NETHERLANDS AND CO-HOST, IEF13

rom the very beginning the Dutch government has strongly supported producer-consumer dialogue in the International Energy Forum. The Netherlands has actively participated in various IEF organs and by hosting the IEF Ministerial in 2004. The main reason for this support for the dialogue has not changed over the years. Since our country is a large gas producer within Europe and has a major petrochemical industry as well, energy is an important factor in the Dutch economy. Consequently, energy policy has played an important role in government policy. Cooperation in the producer-consumer dialogue helps stabilise energy markets which is in the interest of producers and consumers alike and vital for the global economy and people's welfare.

Over the years we have seen a number of recurring themes. To my mind investments and volatility are the most important and most frequently recurring issues, and I would like to focus on them here. Let me start with investments.

In 2003 the International Energy Agency's annual World Energy Outlook focused on investments. The reason was that in its projections the pace of new investments was lagging behind what was deemed necessary for supply to meet the growing demand. In response to similar concerns we subsequently chose investments as the overarching theme of the IEF Ministerial in Amsterdam in 2004. Oil and investments in the natural gas value chain were addressed, as was the need to invest in renewable energy. When we look at today's situation, investment in energy is still is a very topical issue. It is predicted that energy demand will increase substantially, particularly in the Middle East, Asia and Latin America. Economic growth is only possible when energy supply is secured. Moreover, millions and millions of people still need to gain access to energy and, for example, be connected to electricity grids.

The recent period of rapid demand growth, in emerging economies in particular, has further challenged the pace of investment in energy production. While new and often more complex resources need to be explored and developed, they tend to be situated further away from markets. Energy companies and governments alike are tested, technologically and economically, in bringing these investments about. New technologies have to be developed in order to be able to produce more oil and gas, while at the same time reducing the environmental footprint. According to IEA's *World Energy Outlook*, the total investment in energy amounts to US\$38 trillion, of which about US\$20 trillion should be investment in exploration and production. This is a tremendous challenge. However, while increased demand for oil and gas is challenging the pace of investment that companies and governments are able to generate, future demand uncertainties as a result of energy efficiency gains and expected fuel switching to renewables requires a critical view of various demand projections. I am therefore strongly in favour of the initiative to compare IEA and OPEC projections in order to get a clearer picture of global energy supply and demand and regional differences.

I would now like to turn to the second issue: volatility. Although every market experiences some instability, oil price volatility in particular has been very marked over the last few years. Of course, 2008 was the most remarkable year in which the oil price increased to US\$147 per barrel and then collapsed to a price of less than US\$40 at the end of the year. Since 2008 volatility has not been that strong, but nevertheless persists. Since volatility does not strengthen the confidence of investors, it is of the utmost importance that we try to moderate it. We greatly value the efforts of IEA, IEF and OPEC to create greater transparency and understanding of the factors that influence the price of oil. One topical issue is the connection between physical and financial markets. For many industries, financial instruments are an indispensable way of mitigating price risks. Airlines and other companies, for example, are relatively vulnerable to oil price volatility, and can use these instruments to control risks. So it is good that these types of financial hedging instruments can be used to benefit the companies mentioned and limit price movements. However, these instruments can also be used for speculation, which may distort the market balance. A good way of improving energy market performance could be to boost market transparency and ensure that producers and consumers are open about their supply and demand projections. And improving market performance is exactly what the global economy needs.

In recent years the International Energy Forum has grown in its role as neutral facilitator of the dialogue between producer and consumer countries. By stimulating discussions and cooperation with international organisations like IEA and OPEC, and relevant experts on the above mentioned issues, the IEF has contributed to a better understanding of the functioning of oil and other energy markets. Furthermore, the IEF secretariat has facilitated discussions on IOC-NOC cooperation, which is vital if we are to meet future challenges in energy.

These are important steps toward better understanding of, and greater stability within, the market. This will lay the groundwork for investment and further technological development. And, ultimately, access to energy for all.



## MEETING FUTURE DEMAND: ALGERIA'S CONTRIBUTION

BY YOUCEF YOUSFI MINISTER OF ENERGY AND MINES, ALGERIA AND CO-HOST, IEF13

he 13th Ministerial meeting of the International Energy Forum is taking place in "The International Year of Sustainable Energy for All". This International Year, decided by the United Nations General Assembly, reflects a universal aspiration for access to modern, affordable and sustainable energy services for all, as well as the desire of all countries, including mine, to achieve the Millennium Development Goals.

The various forecasts for world energy demand by the year 2035, based on a "business as usual" scenario, show consensus on a considerable increase of more than 50 per cent, due to the dynamism of the non-industrialised countries and their needs in terms of development, mobility, urbanisation and the general improvement in the living standards of an increasing population.

It is also acknowledged that fossil energies will remain predominant in the total energy balance with an overall share of more than 80 per cent. Gas, as a fossil energy with low carbon content, will probably witness the highest growth rate. The global demand for liquids, which include oil, biofuels and other products, is likely to reach about 103 million barrels a day (mb/d) by the year 2030, compared to 87 mb/d in 2010.

Power generation, the main sector through which the energy mix can be widely diversified, accounts for more than 57 per cent of the growth in future demand for primary energy.

"Energy for all" should imply additional demand from the more than one billion people who live mainly in the countries of the South, and are today deprived from modern energy services. It should also mean developing all forms of energies, including renewable energies, which are available and economically viable.

Worldwide energy resources are abundant. Apart from the important resources of OPEC countries, estimates of economically viable energy reserves, notably oil and gas, are all the time revised upward, thanks to the intensification of exploration efforts and to technological progress. The North Sea, which was considered as a mature zone, has surprised us with a re-evaluation to more than 3 billion barrels of oil reserves for a single field in Norway. Similar findings should not be ruled out in other regions.

By the year 2030, supply increase will come mainly from OPEC. Additional supply from non- OPEC countries will certainly come from biofuels, tar sands, the deep offshore and shale oils.

Overall, offshore potential is important. Moreover, stimulation technology has succeeded in turning non-

conventional hydrocarbons resources into a substantial share in supply, and this is expected to increase further.

However, resource availability and consequently supply should in no case curb the efforts undertaken by several countries to rein in demand through energy efficiency. This remains, according to experts who met at the recent IEF Symposium on this topic and whose opinion I share, "the quickest, the cheapest and the cleanest solution," to contribute to meeting the challenge of future increases in demand. It is also imperative to exploit and use energy resources in a way that would ensure the preservation of the environment.

The development of the energy resources identified above requires the mobilisation of considerable investments, which can be achieved only in a favourable climate characterised by an effective and predictable long-term demand.

Algeria, one the most important African countries in terms of hydrocarbon reserves, produces the equivalent of 4 mb/d, 60 per cent of which contribute to the supply of the international market.

As a pioneer in the natural gas liquefaction industry, Algeria ranks fifth among natural gas exporters. The country has an important domestic pipeline transport network estimated at more than 18,000 km, which links production fields to processing and liquefaction units and/or loading ports. Export capacities via gas pipeline represent a total of 52 billion cubic metres a year (bcm/ yr), with the first deliveries of Medgas that took place last year, and other projects such as the Galsi project which will enhance these capacities.

Another important project, the Trans-Sahara Gas Pipeline (TSGP), which would link Nigeria to the Algerian coast via Niger, would allow the supply of gas to Europe. This role will be enhanced by two liquefaction units under construction with a combined capacity of 12.5 bcm/yr, bringing the total LNG capacity to nearly 37 bcm/yr in the medium term.

The country's economic development creates strong demand for energy, in view of the quasi-total electrification of the country and the gas penetration rate which has reached nearly 50 per cent, in addition to the increasing needs of the industrial and transport sectors. The domestic economic and social imperatives, the preservation of the role conferred on the hydrocarbon sector in ensuring a stable income to the country and its contribution to the overall effort to preserve the environment, require an adjustment of our energy policy. This implies in the first place an adaptation of our energy production policy. Indeed Algeria has 1.6 million square kilometres of largely under-explored sedimentary basins, including 100,000 square kilometres of unexplored offshore subsurface.

The Algerian subsoil bears non-conventional gas resources associated with clays and source rocks of the Silurian and the Frasnian periods that contain good organic wealth. Algeria has realised the importance of its national non-conventional gas resources and has launched several initiatives aimed at evaluating its potential, described by experts as being important. Indeed preliminary evaluation of the non-conventional gas potential show that it is at least comparable to the most important deposits of the US.

This evaluation work continues in association with companies which possess the necessary expertise and are willing to participate in this new exploration experience. The adaptation of the legal and fiscal framework to economic and technological conditions for the development of this type of reserves is ongoing.

Likewise, exploration efforts will be enhanced as part of an investment plan of about US\$70 bn over the next five years which will be allocated to hydrocarbons, of which two thirds will be devoted to oil and gas upstream.

But beyond hydrocarbons, the country enjoys one the highest sunshine irradiation rates in the world, estimated at about 2,700 kWh/m2/year. It has therefore decided

to exploit this potential and an ambitious programme was adopted in this direction by the government for the introduction of renewable energies and particularly solar. The aim is to install power production capacity based on renewable energies of 22,000 MW between 2011 and 2030, including 12,000 MW for the supply of the domestic market and 10,000 MW for export.

Once this programme is completed, 40 per cent of electricity will be generated from renewable energies. The first hybrid solar/gas power station, with a capacity of 150 MW, was commissioned in 2011 in Hassi R'mel.

Concurrently with this programme, energy efficiency is also to contribute to reining in consumption growth of exhaustible hydrocarbon resources with the reduction of the harmful effects on the environment. A series of measures and actions, which have been already initiated or under implementation, will translate into significant energy savings.

I would like to point out that all the ongoing actions, planned or under study, which are designed in the first place to enhance the national energy base to meet the country's needs, constitute also a contribution by Algeria to securing the supply of the world economy.

However, it seems important to me here to underline that energy security implies also securing future demand with an adequate return on investments. The need for a favourable environment for the realisation of the necessary huge investments requires also market stability with rewarding price levels in the interest of all.

Today, dialogue between producers and consumers is therefore more necessary than ever to increase energy market transparency and stability. The various players must coordinate their efforts to reduce price volatility, particularly by enhancing energy data transparency and reliability and providing the necessary conditions likely to encourage investments.

Algeria, which is celebrating the 50th anniversary of its independence this year, has embarked on a new phase of adaptation of its energy policy based on clear objectives, while taking into account the development of the international energy environment. It will pursue its economic and social development programme, while maintaining its historic role as a reliable energy supplier.



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## THE IEF – SERVING ALL, DOMINATED BY NONE

BY ALI AL-NAIMI MINISTER OF PETROLEUM AND MINERAL RESOURCES, SAUDI ARABIA

he world's precious natural resources are key to human progress. They contribute towards alleviating poverty, stimulating economic growth and creating opportunities for people around the world to improve their lives.

Energy issues will, therefore, always form a fundamental aspect of geopolitical relations. This is why the aims and objectives of the International Energy Forum remain as important today as they did when the organisation was first conceived more than 20 years ago.

The 88 country members, accounting for around 90 per cent of global oil and gas supply and demand, is testament to this – but let us be under no illusions. It is easy to meet and to speak; it is much more challenging to meet the fundamental aims and objectives of the IEF, without continuous collaboration. It may be worth reminding ourselves as we meet here in Kuwait, about some of these goals.

A central IEF ambition is to foster greater mutual understanding and awareness of common energy interests among members, through the sharing of information, the exchange of views and the acceptance and promotion of clear principles.

It is clear that hydrocarbons will continue to be the major source fuelling the world's economy for many decades, with petroleum accounting for much of that energy. Stability and predictability in oil markets helps.

It is indisputable that energy interests are shared interests, and that in our interconnected world, all countries can be impacted by events in other parts of the world.

The 24-hour news media has a role to play, but it is incumbent on leaders, and on nations, to understand situations for themselves and to act in an appropriate, and measured, fashion. The IEF has an important role to play when it comes to engendering better understanding.

Another stated aim of the IEF is to promote a better grasp of the benefits of stable and transparent energy markets for the health of the world economy, the security of energy supply and demand, and the expansion of global trade and investment in energy resources and technology.

For its part, Saudi Arabia's position in the world oil market is based on its commitment to maintaining spare capacity for the sake of market stability. The Kingdom's policy in this regard is clear and has been consistent: moderation in all decisions that concern the global petroleum market.

Improving the lives of citizens should be a fundamental priority for all nations and it is clear that increased trade and

investment, and stable energy markets, contribute towards that goal. The IEF can, and does, play an important role, but it is just as clear that more effort and work is required.

The IEF also aims to identify and promote principles and guidelines that enhance energy market transparency, stability and sustainability. Reliable and transparent information is vital in reducing volatility in oil markets. It is the IEF's mission to encourage all members to provide such information in order to improve understanding and reduce instability.

The Joint Organisations Data Initiative (JODI) aims to help achieve a degree of market stability by providing timely, accurate and transparent oil market data. That the initiative has started is a positive, but it clearly has some way to go before we can be satisfied that the collection and dissemination of sound data is being done in a timely manner. Some countries struggle to meet the demands of JODI, but it is important that they work towards doing so to ensure the future success of the initiative.

Of course, no system will ever be perfect; it is a vast and dynamic industry, and there are so many competing interests, but more can be done. The IEF, and JODI, presents an opportunity for increasing the dialogue and enhancing the transparency.

One ultimate purpose of the JODI initiative is to reduce instability in markets. Price volatility is in noone's interest, apart, perhaps, from the speculators, who make their money whether markets rise or fall. But as the recent financial crisis reminds us yet again, it was the lack of openness and transparency which helped create, and indeed exacerbate the problems, and this is something we are striving to avoid in the energy sector.

The organisation seeks to narrow the differences among energy producing, consuming and transit member states on global energy issues and promote a fuller understanding of their interdependency. It is an honourable, if sometimes challenging, target and one closely linked to another IEF goal, that of building confidence and trust. This meeting in Kuwait is another opportunity to build confidence and trust.

The International Energy Forum is precisely what it says: international. It is the sum of its parts, not steered or controlled by one country or group of interests. In that sense, the IEF is unique in the world of energy and energy policy. The IEF's mission is in the interest of all governments, countries and people. Openness, trust, stability and understanding – these are the ultimate aims to which Saudi Arabia is committed.



## WORKING ON SUPPLY AND DEMAND TO IMPROVE ENERGY SECURITY

BY DANIEL B. PONEMAN DEPUTY SECRETARY OF ENERGY, UNITED STATES OF AMERICA

he United States is delighted to participate in the 13th IEF Ministerial. We thank our Kuwaiti hosts for their hospitality and the IEF Secretariat, under the very able leadership of Aldo Flores Quiroga, for all the hard preparatory work that enables us to gather together.

As both a significant energy consumer and a leading energy producer, the United States values the dialogue that is the International Energy Forum's core reason for being. The IEF provides the venue through which nations of diverse interests and points of view talk about some of the most critical energy issues of our day. The United States appreciates the commitment of the IEF's participants to enhancing transparency and dialogue for the benefit of all nations.

Oil and gas resources are, and will continue to be, important to America and to the world. The United States is committed to promoting open and stable rules of the road and to ensuring that energy markets operate efficiently. Stable and transparent energy markets are important to the health of the world economy, the security of energy supply and demand, and the expansion of global trade and investment in energy resources and technology.

The IEF, which now involves nearly 90 countries, provides an excellent venue – not only for structured, formal discussion of top priority issues, but also for informal dialogue among producers and consumers. These conversations allow us to identify and advance shared interests and to gain greater understanding of our differences. Common interests include enhancing oil market transparency, reducing oil market volatility (including through improved reporting under the Joint Organisations Data Initiative), and encouraging investment across the energy value chain.

We believe that, by strengthening the informal energy producer-consumer dialogue and hearing from international and national oil companies, the Forum can fill an important niche in our global energy arena.

The discussion fostered by the IEF, and the data that it publishes in coordination with its JODI partners, can increase transparency and the flow of vital information in the oil market. Given today's global economic and geopolitical risks, this is more important than ever. Markets are best able to balance past trends with future needs through transparent dialogue. Reduced uncertainty means reduced risk for everyone in the value chain -- which helps the market avoid volatile trading patterns. Investors and upstream developers can project demand most effectively and make informed judgments about the profitability of future exploration and production. Infrastructure and transportation systems can be sized and located properly to link production and consumption requirements. And end-users can make sound judgments about which fuels to use, from whom to procure them, and how much those fuels will cost in the period ahead.

The United States recognises the continuing importance of safe, responsible oil production to America and to the world. The United States is producing more oil today than at any time in the last eight years, thanks to the application of new technology that allows the development of tight oil deposits. In 2010, the United States imported less than 50 per cent of its oil requirements for the first time in more than a decade.

At the same time, our citizens are grappling with high fuel prices, which bite particularly hard in this time of fragile economic recovery. Every family and every business bears this burden. That is one reason why the United States has proposed landmark vehicle fuel efficiency standards so that our cars will average nearly 55 miles per gallon by the middle of the next decade. While there are no short-term "silver bullets" to bring down excessive gasoline prices, the United States will continue to take every possible step to enhance energy security and to protect consumers against rising gas prices in the long term.

To that end, President Obama is committed to an all-ofthe-above strategy that expands production of American energy resources, including oil and natural gas; increases energy efficiency to save families and businesses money at the pump and in buildings nationwide; and develops cleaner, alternative fuels to reduce our dependence on oil. Additionally, the United States is working in areas such as permitting, easing delivery bottlenecks, and assuring transparency so all consumers and traders can better understand what's going on in the oil markets. We know that many of our fellow members of the IEF share the same concerns for their energy consumers.

The United States supports the IEF's ability to enhance available data on oil production and consumption. The United States is pleased to be a part of the Joint Organisations Data Initiative (JODI), which involves reporting of major oil production and consumption data by more than 90 countries through six international agencies. JODI Oil is intended to provide an accurate, timely and comprehensive database on oil market data and can promote greater transparency in international oil markets. We support recent JODI initiatives to create similar natural gas and energy investment databases.

The latest assessment of JODI Oil shows continued improvement. Transparency can be improved further as JODI expands its oil and natural gas coverage and increases training to assure optimal data collection and sharing.

The United States supports the IEF's work to convene market analysts from different organisations to compare respective energy market outlooks, and we are grateful for the inclusion of the US Energy Information Administration. As we learned from consumer and producer dialogue and actions following the Libya disruption last spring, market outlooks help inform producer-consumer discussions and help improve the formation of energy policies. In the United States, the Energy Information Administration produces monthly and annual outlooks for energy markets precisely because we think outlooks help make energy markets more transparent, improve the dialogue, and provide a framework for understanding actual market data as it is gathered.

The IEF plays a critical role at a critical time. Markets are tight and prices are high. While increases in oil price volatility

have caused concern over investment returns and capital expenditure deferrals, significant investment is still needed to compensate for declines in oil and gas production in existing fields and to meet growing demand. Improved cooperation between national and international oil companies could assure technology advances optimise resource development – particularly in the current, volatile market environment.

The United States supports the efforts of IEF's Business Forum to enhance these important partnerships and to inform governments on actions they can take to foster constructive alliances between national oil companies (NOCs) and international oil companies (IOCs).

From our own engagement with oil company leaders, including through the National Petroleum Council (NPC), we know that key challenges include reducing costs, improving efficiency and increasing output. To address these issues, joint technological development among NOCs, IOCs, service companies, universities and research institutes and maintaining R&D funding are needed. As appropriate, the Forum can encourage greater cooperation between international and national oil companies on advanced technology and techniques.

In conclusion, the United States supports an IEF that provides a neutral arena for producers and consumers to discuss areas of mutual concern. The IEF is most useful when promoting a common understanding of energy market transparency, stability, and sustainability. We are grateful for the leadership of the Kingdom of Saudi Arabia, which not only catalysed the formation of the IEF, but also serves as the IEF Secretariat's home.

Together we can build confidence and trust through improved information sharing among Members. The Forum can help reconcile competing views and positions on the global oil market, and promote responsiveness to members' concerns. The United States supports that vision and looks forward to working with all members committed to realising the vision of a stable, secure, and transparent oil market.



HIGHER EFFICIENCY STANDARDS MITIGATE RISING FUEL PRICES



## OPEC'S PERSPECTIVE ON THE PRODUCER-CONSUMER DIALOGUE

BY ABDALLA SALEM EL-BADRI, SECRETARY GENERAL, ORGANISATION OF PETROLEUM EXPORTING COUNTRIES

oday, with the global energy system expected to grow significantly in the coming decades, the importance of advancing the understanding between producers and consumers has never been so crucial. The focus must be on understanding the needs of each stakeholder and viewing the entire energy market holistically. It is essential that we continually evolve our relationships; better appreciate each other's viewpoints; are realistic in our targets and goals; and are more pragmatic in our discussions.

The importance of this can be viewed in the constant flux the energy markets have found themselves in since the last International Energy Forum (IEF) ministerial in Cancun in 2010. There has been a continuation, indeed a spread, of the financial and economic turmoil that has gripped the world since 2008; dramatic changes in some countries of North Africa and the Middle East; the Macondo blowout in the US Gulf of Mexico; and the Japanese earthquake, tsunami and nuclear disaster.

These developments have all had significant implications for energy markets. There has been much volatility for the markets to digest. However, from an oil perspective, markets have adjusted rapidly, when and where necessary, and in terms of both volume and quality. Consequently, there has been no shortage of oil anywhere in the world.



That is not to say we can all sit back and relax. Change

seems to be the only constant for global energy and oil markets. And with many challenges remaining, such as addressing persistent energy market volatility, investments and future market uncertainties, climate change mitigation, a shortfall in human resources and providing a lasting reduction in energy poverty; there are many issues and priorities for all stakeholders in the producer-consumer dialogue to discuss, and act on.

To better understand these challenges, it is important to look at them in the context of future energy growth. Energy demand is expected to increase by more than 50 per cent over the period 2010-to-2035 (Figure 1), according to the Reference Case of OPEC's latest *World Oil Outlook* (WOO) published at the end of last year. This figure underscores the ever-expanding role of energy across the world; it is, and will continue to be, the heartbeat of our social and economic development.

Looking at shares, fossil fuels, currently accounting for 87 per cent of the world's energy supply, will still contribute 82 per cent of the global total by 2035. For most of the period to 2035, oil will remain the energy type with the largest share, although its overall share will fall from 34 per cent to 28 per cent. Coal's overall share remains similar to today, at around 29 per cent, whereas gas sees its share increase from 23 per cent to 25 per cent.

In terms of non-fossil fuels, renewable energy will grow fast, but since this starts from a low base its share is still only 3 per cent by 2035. Hydropower increases a little to 3 per cent by 2035. Nuclear power also witnesses some expansion, to 6 per cent in 2035, although prospects for nuclear have clearly been affected by events in Fukushima.

> For the oil industry, in terms of volumes, in OPEC's WOO Reference Case, demand increases by close to 23 million barrels a day (mb/d) over the period 2010-2035, reaching almost 110 mb/d by 2035, with fully 80 per cent of the increase in global demand in developing Asia.

> From a supply perspective, what is clear is that there are plenty of resources to meet these growth patterns. For oil, conventional and non-conventional resources are evidently plentiful for the foreseeable future. As in the past, technological advances will continue to extend the reach of the industry, reduce costs and unlock additional resources. This can be viewed in recent deep offshore advancements,

for example, in Brazil, as well as movements in shale gas and shale oil, although these are still in the early stages of development.

Nevertheless, both conventional and non-conventional resources require significant investment to turn them into future supply. For example, in OPEC's WOO, over the period 2010-2035, upstream investment requirements in the oil industry amount to over US\$3 trillion (2010 dollars), and this excludes investments in pipelines and other infrastructure.

OPEC's commitment to sufficient and secure crude oil supplies is underscored in its Member Countries investments for the five-year period 2011-2015, which shows around 132 upstream projects on the table. This could translate into an investment figure of close to US\$300 billion (bn) should all projects be realised. Taking into account all OPEC liquids, the net increase is estimated to be close to 7 mb/d above 2011 levels, although these investment decisions and timings will be influenced by an array of factors, such as the global economic situation and policy developments.

This represents a huge level of investment and clearly demonstrates the seriousness the organisation attaches to the need for adequate production capacity to be in place, not only to meet actual demand, but also to offer sufficient spare capacity.

It is important to stress, however, that the pace of future energy demand growth, and in turn investments, is affected by many uncertainties, such as the possibility for higher or lower economic growth rates, technology developments, particularly in transportation, and policies. For example, OPEC's WOO 2011shows that demand for OPEC crude by 2025 could be as low as 31 mb/d or as high as 38 mb/d. These feasible scenarios point to an uncertainty range in the billions of dollars. Such uncertainties constitute a great challenge for all stakeholders.

Of particular concern to producing countries are the policies of a number of consuming countries. Obviously, every country has the sovereign right to set its own policies, but it is essential that these provide a clear picture as to their impact on future oil consumption levels and overall energy supply and demand patterns. They need to be feasible, predictable and sustainable. And they should not discriminate against oil.

For example, there is the issue of biofuels. While biofuels are expected to play a greater role in the future, supported by direct and indirect government subsidies, it is not at levels once assumed. For first-generation biofuels, much concern has recently been expressed over the competition between food and fuel. There have also been reports on their possible negative impact on biodiversity, their potential to make scarce water resources, even scarcer, and, in most cases, their relatively high greenhouse gas emissions, when land use change effects are fully taken into account. Second-generation biofuels can overcome some of these concerns, but they are still far from being available for commercial use.

What is clear is that if there is no confidence in there being additional demand for oil, there is little incentive to invest. Why waste precious financial resources on unneeded capacity? On the other hand, if investments are not made in a timely and adequate manner, then future consumer needs might not be met. The supply and demand balance is essential to the overall health of the industry. Oversupply or a supply shortfall is detrimental to both producers and consumers.

It is important to appreciate and better understand the two sides of energy security: security of supply and security of demand. Both are essential elements of what



all stakeholders in the producer-consumer dialogue strive for: market stability.

A further factor related to market stability is of course prices. How oil prices may evolve in the future is a critical question for the world economy, for the oil industry and, in particular for those producing countries whose economies are still highly dependent on oil export revenues.

Over the past few years, oil prices have witnessed much volatility, and led many to ask whether price behaviour is being influenced by excessive speculation. In fact, this has been part of the recent collaborative work between OPEC, the IEF and the International Energy Agency (IEA), with the most recent workshop on the interactions between physical and financial energy markets taking place in Vienna at the end of last year.

What is evident is that speculative activities remain an issue in the current market. This can be viewed in the respective sizes of the paper and physical markets. Since 2005, there has been a sharp increase in the number of open interest futures and options contracts. At times it has surpassed three million contracts per day, equivalent to 3 bn b/d. This is 35 times the size of actual world oil demand.

Moreover, build-ups in large speculative positions on the crude futures markets have been a key factor behind the increased crude oil price volatility. For example, Figure 2 highlights the relationship between WTI prices and the speculative activity of the net long positions of money managers. A curb in speculative activities is needed.

It should also be noted that when prices rise the impacts are even more pronounced at the consumer end, where the effect of consuming country taxation is greatly felt. Group of Seven countries earn far more revenues from taxes on the sale of oil derivatives sold at the pump than OPEC Member Countries make from the sale of their crude oil. While OPEC has played its role by ensuring the market remains well supplied in crude, it is of course helpful if consuming countries that have a high level of taxation on oil products consider revising down these levels, at least when prices reach certain levels, to alleviate the impact on consumers.

Of course, there are other major challenges for the industry's stakeholders, as well as for world leaders, in the years ahead.

Many of the world's population continue to lack access to clean and safe modern energy services. It is a vital requirement in the often protracted struggle for socio-economic development, sometimes from a state of extreme poverty. Today, 1.4 bn people have no access to electricity and some 2.7 bn rely on biomass for their basic needs. It is essential everyone has access to reliable and sustainable modern energy services. Thus, energy poverty needs the urgent and critical attention of world leaders. The Rio+20 summit later this year is a great opportunity in this regard.

There is also the environmental challenge. It is important for our industry to continuously strive to improve its environmental footprint, both in production and use, operational efficiencies and recovery rates, and in the push for the development and use of cleaner fossil fuel technologies, such as carbon capture and storage. It should be recalled, however, that the petroleum industry has a long history of successfully reducing its environmental footprint, for example, in drilling, gas flaring and plant emissions. And the automotive industry, as well as the refining industry, has a good track record in continuously reducing the pollutant emissions of vehicles.

We also need to monitor developments in the United Nations (UN) climate change negotiations. It is essential that these multilateral negotiations reach an agreement that is comprehensive, balanced, fair and equitable; one that respects all the principles and provisions of the United Nations Framework Climate Change Convention and its Kyoto Protocol.

The industry should also not forget the human resource. With strong competition from other sectors for skilled staff and many in our industry approaching retirement, there is a need to address the difficulties in finding and hiring labour at the global level. This means concerted efforts to restore this essential capacity, by facilitating education and training in energy disciplines, and making the industry an attractive career choice.

Looking ahead, there is evidently much for the producers and consumers to talk about and cooperate on. The focus should be on finding common ground, looking for shared solutions, where and when appropriate, developing an environment that is conducive to reaching constructive end results, and having input from each and every stakeholder. The IEF's informal producer-consumer dialogue is an essential ingredient in this as we look to advance market stability, improve transparency and provide greater predictability.

At OPEC, we believe in continuing to develop existing and new avenues of cooperation with innovative thinking, collaboration and swift action on key issues, many of which are complex, broad and inter-related. Our shared objective must be a stable and sustainable energy future in an increasingly interdependent world.



## SECURITY THROUGH SHARING OF DATA, ANALYSIS AND VIEWS

BY MARIA VAN DER HOEVEN EXECUTIVE DIRECTOR, INTERNATIONAL ENERGY AGENCY

he IEA is a long-time supporter of the producerconsumer dialogue, and it goes without saying that the agency remains committed to playing its full part. Challenges, nevertheless, remain in the energy sector, and one of the significant benefits of such dialogue is that it enables us to tackle these issues together.

The producer-consumer dialogue is currently taking place in a very specific economic context. Given the turbulence brought on by the global economic crisis, and particularly the state of play in the eurozone, the focus in many capitals is unavoidably on short-term economic uncertainties. Over the medium to long term, however, there is one thing that we can be sure about: global economic growth and rising population will push energy demand higher. In our latest *World Energy Outlook 2011*, we see global energy demand rising by over one-third between 2010 and 2035.

Moreover, the direction and orientation of energy markets will be increasingly determined by the "emerging" rather than the "industrialised" world. Emerging economies are expected to account for more than 90 per cent of the growth in global energy demand.

One reason for higher energy consumption in many parts of the world is government subsidies to fossil fuels. We estimate that the value of these subsidies in 2010 amounted to over US\$400 billion, a significant economic liability. In 2009, the Group of 20 (G20) agreed to phase out subsidies that "encourage wasteful consumption, reduce our energy

security, impede investment in clean energy sources undermine and efforts to deal with the threat of climate change." Faster progress with this phaseout can bring benefits such as improving energy efficiency and reducing strain on domestic budgets - to energy-importing and energy-exporting countries alike.

#### THE CHANGING ENERGY MIX

Indeed the age of fossil fuels is far from over, but there are some important shifts taking place in the energy mix. Renewables and natural gas are set to experience the largest growth. Oil remains the largest fuel in the global energy mix, but gas will all but catch up with coal by 2035, and is the only fossil fuel to see an increasing share in the mix.

The growth in oil demand to 2035 comes entirely from the transport sector in non-OECD countries, where vehicle ownership grows dramatically. We expect that, by 2020, more cars will be built and sold in non-OECD countries than in the OECD – making fuel efficiency and other transport policies in these non-OECD countries key to global oil demand. Oil imports to the United States, currently the world's biggest importer, drop as efficiency gains reduce demand and new supplies such as light tight oil are developed. However, increasing reliance on oil imports elsewhere can heighten concerns about the cost of imports and supply security.

On the supply side, we do not expect an increase in conventional crude oil production over the next two and a half decades: the rise in global demand is likely to be met by natural gas liquids and by non-conventional oil (Figure 1). But the investment challenge in this area is still immense. Output from currently producing conventional fields will decline by 47 million barrels per day by 2035. Making up for this decline will require new production capacity equal to twice the current total oil production of all OPEC countries in the Middle East – and this is just



#### IN THE NEW POLICIES SCENARIO

to keep crude oil supply at current levels. Meanwhile the contributions of natural gas liquids and unconventional oil will expand to supply one-quarter of the market by 2035.

The world relies heavily on oil supply from the Middle East and North Africa to meet the increase in demand over the coming decades. The projected increase in production from this region is equal to around 90 per cent of the global increase in oil demand. The World Energy Outlook 2011 therefore analyses the implications of a shortfall in investment in the Middle East and North Africa in the period to 2015. Such a shortfall could result from increased political risk or a change in government spending priorities, and we found that it would have significant consequences for supply and prices. If investment falls one-third below the US\$100 billion that we think will be necessary each year, falling output from producers in the Middle East and North Africa would lead to a significant near-term rise in price, to as much as US\$150 dollars per barrel in today's money. This would likely be accompanied by a significant increase in price volatility.

That situation would clearly not be in the interests of oil consumers, but nor would it help Middle East and North African producers. We estimate that while these countries would gain in the short term from a higher price, they would lose out over the longer term as part of their market share would be taken by producers outside the region.

#### COMMON INTEREST IN SUSTAINABILITY

Another point of mutual interest among consumers and producers is the need to work toward sustainability. The international community agreed at Copenhagen and at Cancun the goal to limit the rise in average global temperatures to 2° Celsius. Our conclusion in the *World Energy Outlook* is that the door to achieve this objective is closing. The power plants, factories and other energy-using infrastructure in place today already uses up a significant share of the emissions that we can "afford" if we are to meet the 2 degree target. Without a major shift towards lowcarbon technologies and greater efficiency, by 2017 we will be totally "locked-in", with existing infrastructure emitting to the limit. This means that, in order to limit warming to 2°C, all additional energy-related infrastructure built from that point forward would have to be zero-carbon (Figure 2).

This is a major global challenge, and that is why the IEA is urging faster movement in the direction of a more efficient, low-carbon energy economy. Our projections show that achieving the 2°C goal would without question have an impact on demand for oil and gas. But moving to a sustainable energy future in 2035 does not mean a future without fossil fuels – even in the 450 ppm Scenario, which plots a pathway to the 2°C goal, oil demand in 2035 is only marginally below today's levels, and gas demand is actually higher.

Energy security, investment, price volatility, sustainability, and climate change – as well as the critical issue of modern energy access – are all key issues for both producers and consumers, and they set an ambitious agenda for all of us.

The producer-consumer dialogue provides a unique forum in which to discuss, analyse and address these common challenges in a collaborative and joint manner. Its successes are worth noting.

As Dutch Minister of Economic Affairs in 2008, I participated in the landmark Jeddah Energy Meeting, where the Saudi Government and the IEF played a key role. Along with major producer and consumer governments, and other organisations including the IEA, we all helped to stabilise oil markets and to chart a way forward for better managing our shared challenges in the future.

The priorities which were highlighted then remain valid today. Those include:

- Adequate investment both upstream and downstream;
- Better market data and transparency;

• Collaboration between the IEA, IEF and OPEC staff to produce more consistent market data and analysis;

• Cooperation within the business sector on investment, technology and human resources;

- Access to energy for the world's poor;
- and improvements in energy efficiency.

It is notable how effectively the IEF has built these priorities into its work programme in the less than four years since then.

#### THREE PRIORITIES FOR FUTURE FOCUS

Three particularly important workstreams include JODI, work with business, and of course the facilitation of joint oil market analysis with OPEC.

We are celebrating in Kuwait the 10th anniversary of the Joint Organisations Data Initiative (2001-2011). From the start, the IEA has been a keen supporter of JODI. The 2011 World JODI Conference in Beijing highlighted the growing appetite for JODI data. But it also underscored the need to do more to establish JODI as a benchmark for oil statistics and as a key achievement of the producerconsumer dialogue. This is imperative, as more transparency on oil market data has long been seen as a prerequisite for reducing volatility in oil markets. Increasing use of the data by business and industry customers is an encouraging sign of JODI's growing reputation. Therefore, all organisations and countries involved in JODI must work hard to further improve data quality to deliver what markets need.

The current IEF Ministerial Meeting in Kuwait gives us a key opportunity to do what needs to be done.

Extending JODI to gas and to upstream capacity data is now under way. These will be serious challenges for the coming years, but we are encouraged that the recent memorandum of understanding between the IEF and the Gas Exporting Countries Forum (GECF) will allow us to widen yet further the family of international organisations engaged in this important work.

Second, it is notable how effectively the Business Forum has pursued its agenda, not only through the International Energy Business Forum (IEBF), which now regularly opens the biennial Ministerial – but also through the NOC-IOC Forum and working groups. There, we have taken a hard look at the practical issues of technology, human resources, and international cooperation. Mobilising adequate investment by both government and private sector in energy infrastructure and in future energy supplies will be key to between the physical and financial markets for oil, and the variations in our short-, medium- and long-term energy outlooks. Discussing and comparing in depth the analysis of our *World Energy Outlook 2011* and that of the OPEC *World Oil Outlook* among an expert audience is a practical manifestation of the communication which underpins the producer-consumer dialogue.

The last two years have also seen work commissioned from our three organisations by the G20, the latest being a study on the role of the Price Reporting Agencies in the oil markets. These initiatives can all be traced back to the Jeddah Energy Meeting in June 2008, as well as subsequent meetings at London and Cancun which looked to strengthen the Forum, leading eventually to its new Charter. Negotiating the new Charter required hard and detailed work, and those who made it a success are to be commended. The fact that 86 countries signed the Charter at the Special Ministerial in Riyadh in February last year was a fitting reward.

In the past ten years, much progress has been made through the producer-consumer dialogue. I am confident that through continued close consultation and cooperation, we can make even more progress – and I can assure you that the IEA will remain a committed and integral part of that process.

maintaining stable energy markets and developing sustainable energy systems.

Finally, it is important to note the joint work on oil markets and energy forecasting between the IEA and our colleagues in the IEF and OPEC. Oil price volatility and market risks are issues which affect both investment decisions and supply security. Better understanding of the uncertainties inherent to both are in the mutual of producers interest and consumers. Recent workshops in Vienna in 2011, and Riyadh in January 2012, allowed us to jointly discuss the relationship





## PUTTING THE STRESS ON INVESTMENT, EFFICIENCY AND DIALOGUE

BY CHARLES HENDRY ENERGY MINISTER, UNITED KINGDOM

he UK is a very strong supporter of the International Energy Forum. We believe it has a crucial role to play in delivering the stable energy markets necessary for the future wellbeing of both producer and consumer countries. I welcome the work done over recent years to ensure the continuing critical relevance of the IEF and I am grateful for this opportunity to set out my views on the challenges facing us, what the IEF has already achieved, and where we might look to achieve more in the future.

#### **CHALLENGES**

Secure and affordable oil and gas supplies are vital for the world economy and, even as we act to reduce greenhouse gas emissions, will continue to be so for decades to come. Maintaining these supplies requires well functioning global energy markets that provide the signals about future supply and demand necessary to support long term investment decisions in production infrastructure. To create such markets we need strong producer-consumer dialogue and accurate market data.

The last year has been an eventful one, with events in Libya and the consequences of the tragic Japanese earthquake having significant implications for energy markets, helping



CONSTRUCTION AS WELL AS EXTRACTION CONTINUES IN THE NORTH SEA

drive the price of oil above US\$100 a barrel early in 2011 and maintaining it at that level since. This is despite the subdued state of the global economy and good cooperation between consumers and producers to ensure that energy markets have remained properly supplied.

Although the impact of recent events has been mitigated to some extent, with, for example, rapidly-returning Libyan production, a great deal of uncertainty remains over both supply and demand.

The IEF will therefore have an ever more important role to play in improving transparency in the market, and facilitating the effective producer consumer dialogue necessary to deliver the stable markets required by both producer and consumer countries.

#### ACHIEVEMENTS OF THE IEF

I very much welcome the progress that has been made in the Forum's various work streams since the last Ministerial, and look forward to the reports that are to be made when we meet in Kuwait.

While JODI is already playing a valued role, the work being done by members and partner organisations to improve the quality and range of the data is particularly constructive. The actions set out in the report made to the

> G20 last year and the steps taken since then to develop and publicise the website, deliver timely national contributions and provide training for national officials, as well as to promote the use of the database, are all very welcome. The planned extension of JODI to the gas and oil and gas investment plans this year will also provide invaluable information to the market.

> The initiatives the Forum is undertaking in coordination with OPEC, the IEA and others, in particular the analysis of the links between physical and financial markets and the work being done to improve energy forecasting have been highly successful. I also welcome the work being done to promote the use of Carbon Capture and Storage, help tackle global energy poverty and publicise best practice in NOC-IOC cooperation. We will need to build on all this work to ensure that we capture the benefits that have been identified.

> Finally I would commend the work the IEF has carried out for the G20. That the G20,

and other multilateral bodies are increasingly looking to the IEF to deliver important objectives is testament to the excellent work of the Forum and Secretariat. I hope that we will be able to build on this in the future, continuing to advance IEF objectives through cooperation with international organisations.

#### FUTURE FOR THE IEF

While it will of course be important to deliver against existing workstreams, I believe the IEF should also look to other areas that will become increasingly important in years to come. I would like to highlight three areas in particular:

Firstly, investment. Changing patterns of demand and production, especially the growth in demand in Asia, the need to reduce carbon emissions and the development of new and unconventional energy sources will require huge investment in the hydrocarbons industry and energy infrastructure. Indeed the IEA estimates we need US\$38 trillion of new investment in energy infrastructure by 2035. That is over twice the GDP of the EU, and an increase of over US\$5 trillion on the IEA's previous estimate of only a year ago.

The IEF needs to be prepared to be at the centre of international efforts – alongside governments, industry

and financial organisations – to ensure that conditions are in place to allow this essential investment to be delivered. Transparency over expected trends in production, demand, investment and regulation will be a key factor. This underlines the importance of JODI and its continuing development.

Secondly, in addition to oil and gas, we must also consider how we can drive forward energy efficiency and low carbon technologies as part of the global future energy mix. I welcome in particular the renewable energy ambitions of many producer countries. There is enormous potential for expansion of renewable energy sources in many countries, especially those lavishly supplied with renewable energy resources such as solar or wind. As well as reducing carbon emissions, the development of renewable energy sources will release to the global market hydrocarbons that would otherwise potentially have been consumed in the domestic market.

Finally, I would like to endorse the suggestions Noé van Hulst made on the future development of the Forum in his "Last Waltz" speech to the IEF in December. I was particularly struck by his suggestion that open and frank discussion of energy issues between members could be encouraged by holding some sessions under Chatham House rules. I believe that the IEF already facilitates an exceptionally open and honest dialogue between producer and consumer countries, but we should continue to seek ways to improve and advance this.

#### CONCLUSION

Meeting the global energy demand poses many difficult questions, and it is impossible for any single country to answer them alone. International cooperation of the sort facilitated by the IEF is in all our interests, and I hope we will be able to develop our dialogue still further in the future.

I would like to thank Kuwait for their excellent work as Chair of the Executive Board over the past two years, and for hosting the 2012 Ministerial along with co-hosts Algeria and the Netherlands. As a co-host for the 2014 Ministerial the UK is greatly looking forward to working with the hosts Russia, and fellow co-host Iraq, to delivering an equally successful agenda.



THE UK WELCOMES IEF STUDIES OF CARBON CAPTURE AND STORAGE



## AUSTRALIA WELCOMES FOREIGN INVESTORS TO HELP MEET FUTURE ENERGY DEMAND

BY MARTIN FERGUSON MINISTER FOR RESOURCES AND ENERGY, AUSTRALIA

s a major energy user and supplier in the Asia-Pacific region, Australia is acutely aware that our economic prosperity, and the prosperity of all energy consumers and producers, will be greatly affected by the ability to bring on necessary investment in a timely manner. This will consequently affect our ability to overcome future global energy security challenges. In the decades ahead, the continued development of open and transparent energy trade and investment frameworks will be critical in delivering investment to achieve cleaner, reliable, adequate and competitively priced energy.

A key requirement to ensure global energy security is the delivery of appropriately sized and timed investments in energy infrastructure to meet rising future global energy demand. The 13th IEF Ministerial Meeting in Kuwait brings together the world's largest energy producers and consumers, and provides the opportunity to discuss the continued importance of energy security.

The last decade has seen strong economic growth in non-OECD economies and a rapid increase in demand for energy – particularly oil and coal. This demand is set to continue. Growth in natural gas consumption is also expected to remain strong in both advanced and emerging economies, underpinned by improving economic conditions, a desire to diversify supply and an aspiration to reduce greenhouse gas emissions.

Investment in energy infrastructure is critical to meet rising demand, replace ageing assets and support the development and deployment of new technologies to reduce emissions and increase energy efficiency and productivity.

In its 2011 *World Energy Outlook*, the International Energy Agency estimates that global investment in energy supply infrastructure of US\$38 trillion (2010 dollars) is required over the period 2011 to 2035. To meet our domestic energy demand, Australia will need investment of around AU\$240 billion over the next two decades in our generation, distribution and transmission infrastructure. Such energy investment will be strongly influenced by the global investment environment and by the appetite of foreign investors to commit to energy projects.

Australia is currently experiencing record investment in our energy sector, including AU\$175 billion in capital expenditure committed to LNG projects alone since 2007. In this context, Australia is a major beneficiary of foreign investment – especially in the energy and resources sectors – and we very much welcome foreign companies who want to invest in Australia. We are committed to open and transparent trade and investment frameworks to underpin global resources and energy markets, and Australia will continue to work with our trade and investment partners to facilitate cross-border trade and investment on a transparent basis.

All governments have an important role to play in supporting energy investment by providing an appropriate policy environment to attract the capital required to deliver necessary energy infrastructure investment. This requires confidence from the private sector with regard to policy settings that will attract necessary investment in long lived capital intensive energy projects. This also includes the need for global certainty over carbon policy.

Australia is taking action to reduce greenhouse gas emissions. From 1 July 2012 we will have a carbon price in operation that will provide an important investment signal and encourage investment in lower-emissions energy technologies.

Investment in technology is critical to reduce emissions. While the use of fossil fuels will remain central to the global energy mix for the foreseeable future, cleaner energy alternatives will increasingly assist in meeting energy demand as they become more competitive and cost effective. The Australian government is establishing the AU\$10 billion Clean Energy Finance Corporation and the AU\$3.2 billion Australian Renewable Energy Agency to support the commercialisation and deployment of renewable energy, energy efficiency and low-emission technologies.

Our global future energy security must also look to energy diversification and investment to increase energy efficiency and productivity. There is a wide range of policies we can explore that support and encourage investment across a spectrum of energy technologies in order to promote energy efficiency, integrate more sources of renewable energy, reduce emissions and diversify supply according to individual national circumstances.

The Australian government also recognises the importance of investment to assist industry overcome capacity constraints in the energy supply chain, and Australia is proceeding with large investments in transport infrastructure to ensure supply capacity can increase to meet demand in coming years, which will help maintain Australia's position as a reliable supplier to our trading partners.

The coming years will offer many opportunities and pose some challenges for the energy sector. Forums such as the 13th IEF Ministerial Meeting provide an opportunity to share lessons to help overcome the challenges and allow us to grab the opportunities that exist to help maintain and increase prosperity.



## APPLYING THE LESSONS OF THE GLOBAL CRISIS TO THE ENERGY SECTOR

BY NATIG ALIYEV MINISTER OF INDUSTRY AND ENERGY, AZERBAIJAN

he world we live in constantly faces the necessity for solution of energy problems since energy is the main factor for stability and development of the world economy. These problems may be divided into two groups. The first group may include current problems that arise as the result of geopolitical and economic situations, which in turn leads to:

- Rapid change of global oil production
- and demand for energy resources;
- Change of volumes of energy resources
- in the total consumption balance;
- Volatility of global prices for energy resources;

• Complication of relations between producers and consumers.

On the basis of the following considerations I would assess the situation which arises prior to the Ministerial meeting to be held within the framework of the 13th International Energy Forum as complicated enough.

First, attempts to eliminate global economic and financial crises have turned out to be unsuccessful so far. Economic conditions in certain countries of the European Union negatively impact on the global economy. This causes instability in the financial markets and volatility in the rate of major currencies.

Second, developments in political events in various regions of the world, especially in North Africa and the Middle East which influence volumes of global oil production and market prices, also creates serious concern.

Third, the tragic events at the Fukushima nuclear power plant have negatively influenced public opinion about the use of nuclear energy.

The second group of energy problems is more global, critical and important for mankind. It is inevitable that there will have to be a reduction in hydrocarbon use in the foreseeable future, especially oil; growth of energy efficiency and the necessity to save on hydrocarbons; development of effective alternative energy sources; reduction of emissions of  $CO_2$  and other hazardous products into atmosphere.

Given the development of the global economy, there will be steady growth of demand for energy resources, especially hydrocarbons. This will certainly require implementation of big investment energy projects as well as establishment of a rational balance between oil production volumes and prices at the global market. Therefore, it is necessary to reach consensus between producers and consumers of energy resources on the basis of fair and transparent relations. The policy of unreasonably high prices for oil will only restrain development of global economy and lead developed countries to increase prices for industrial products, the latest technologies, high efficiency equipment, and to implement programmes to save energy, to develop alternative energy and to reduce dependence on import of oil and oil products. This will bring a reduction of oil demand, investments and decline of oil production. Therefore, it is very important for producers and consumers of energy resources to ensure predictability and reliability in supply and consumption.

In this respect, I would stress that lessons we learned from the global crisis should be thoroughly analysed, since there are certain questions that remained without unambiguous answer. Thus, the main task of the ministerial meeting and the whole International Energy Forum is to discuss and share opinions about the current condition and problems of development of the fuel-energy complex and minimisation of possible risks in future.

Over US\$45 billion was invested into the oil industry in our country during 1994-2010. The size of investments will double in coming years. Azerbaijan increased annual oil and gas production up to 50 million tons and 26 billion cubic metres (bcm), respectively, owing to successful implementation of upstream megaprojects such as the development of the Azeri-Chirag-Gunashli oil block, where recoverable reserves reach over 925 million tons of oil, and the Shah Deniz gas condensate field where recoverable reserves reach 1.2 trillion cubic metres of natural gas. Azerbaijan plans to stabilise oil supply at the rate of 1 million barrels per day (mb/d). Gas export is to be increased gradually up to 30-40 bcm per year.

I also would like to note the growing role of natural gas and LNG. Azerbaijan is involved in a number of mega-projects relating to the production of natural gas and its delivery to the European market. There are plans to considerably enlarge the Baku-Tbilisi-Erzurum gas pipeline, increasing its carrying capacity up to 50 bcm, as well as to lay a new Trans-Anadolu gas pipeline towards Europe through Turkey. We are also considering a project for supply of natural gas to the coast of Georgia, construction of a terminal for gas liquefaction and its sale of the liquefied gas to the Black Sea basin countries.

In my opinion, all of these measures will promote strengthening of energy security and stable economic development of countries. It is an ultimate goal of those involved in international energy policy.



## A BALANCED APPROACH TO MEETING FUTURE ENERGY DEMAND

BY PHIL HEATLEY MINISTER OF ENERGY AND RESOURCES, NEW ZEALAND

ew Zealand is a small, dynamic country located at some distance from international markets, but we are confronted by the same challenges of energy security and climate change as the rest of the world.

The best means of meeting these challenges is to ensure energy markets are effective and efficient and that the cost of greenhouse gas emissions is factored in. This approach will encourage efficient energy use, the development of resources where it is economic to do so and the minimisation of environmental impacts of energy supply and use.

New Zealand has sought to apply these principles both domestically and, via its participation in various international organisations, on the world stage.

#### DOMESTIC EFFORTS

Our domestic energy policy is articulated in the New Zealand Energy Strategy 2011-2021. The goal is for New Zealand to make the most of its energy potential through the environmentally responsible development and efficient use of the country's diverse energy resources. The strategy focuses on four priorities to achieve this goal – diverse resource development, environmental responsibility, efficient use of energy, and secure and affordable energy.

Diverse resource development includes the development of both renewable and non-renewable energy sources. The government has a target for 90 per cent of electricity generation to be from renewable sources by 2025, providing this does not affect security of supply. In 2010, renewables contributed to 74 per cent of electricity generation.

Commercial enterprises will ultimately be best placed to identify the lowest-cost generation mix, with the government's role limited to ensuring that there are no undue barriers to invest in generation of any type and that the environmental effects are priced in wherever possible. New Zealand's emissions trading scheme is the primary economic motivator for generators to move to a loweremissions future.

The government is also keen to make New Zealand a highly attractive global destination for petroleum exploration and production investment. Most of New Zealand's territory is yet to be explored, and the potential for further development of petroleum resources is significant.

New Zealand is already seen as a stable and proinvestment environment. An important step to further attract investors is to ensure regulatory settings are worldclass. We are in the process of reviewing our regulatory settings to ensure our upstream regulatory settings meet this objective.

A new approach to the allocation of petroleum exploration permits has now been implemented. The new approach is based on the regular (annual), predictable, managed tenders of exploration blocks ("block offers"), which have previously been carried out on a more ad hoc basis. This approach draws more closely on publicly available seismic information and is better suited to foster competitive work programme bids from suitable investors.

We have had some success in attracting new capable and experienced operators such as US-based Anadarko to the Canterbury and Taranaki basins, Petrobras of Brazil to the Raukumara Basin, and US-based Apache to the east coast of the North Island. In addition, operators with an existing presence in New Zealand have been expanding into new basins such as Austrian-based OMV and Shell in the Great South Basin.

The New Zealand emissions trading scheme is the primary means to reduce emissions in the energy sector, and all other sectors of the economy. The government has set a target for a 50 per cent reduction in New Zealand's greenhouse gas emissions from 1990 levels by 2050. New Zealand is willing to commit to reducing greenhouse gas emissions by between 10 per cent and 20 per cent below 1990 levels by 2020, if there is a comprehensive global agreement and certain conditions are met.

Energy efficiency measures help reduce costs, make houses more comfortable and reduce greenhouse gas emissions. The government has invested over NZ\$180 million since July 2009 in an energy efficiency programme to retrofit homes with new insulation and/or clean heating. More than 150,000 homes have benefited from the scheme so far.

Secure and affordable energy is best achieved through competitive markets. Competition in energy supply provides choice to consumers, places downward pressure on prices and incentivises efficient investment.

Where competition in energy supply is not possible due to natural monopolies, particularly electricity networks and gas pipelines, targeted regulation is applied. Elsewhere, competition between market players is encouraged and fostered, with Government retaining a general oversight role. This includes an understanding of the overall resilience of New Zealand's networks and other infrastructure. Recent under-investment in the national electricity grid is now being addressed and Transpower, the national transmission line owner and operator, is planning and undertaking significant investment, including projects such as the upgrade of the inter-island link and a major new line into Auckland.

New Zealand is a founding member of the International Energy Agency. One of the obligations of membership is that New Zealand must hold 90 days of oil reserve supply.

#### INTERNATIONAL EFFORTS

Reducing fossil fuel subsidies is one area which offers immediate benefits in terms of mitigating energy demand, reducing carbon dioxide emissions and providing some relief for stretched public budgets.

At the Copenhagen climate summit in 2009, developed countries agreed to US\$30 billion in funding during 2010-2012 to combat climate change. That same year, more than US\$400 bn was spent globally on subsidies for fossil fuels, a key source of emissions contributing to global warming.

In other words, at the same time as countries were mobilising resources to address climate change, they were spending more than 10 times that amount on subsidising production and consumption of carbon. Even now, as countries are beginning to put in place mechanisms to price carbon, many are still subsidising carbon. Isn't the polluter supposed to pay, rather than be paid?

Production subsidies, such as subsidies for coal production, inhibit innovation and the development of cleaner technologies, and they reduce incentives to produce and use fossil fuels more efficiently. This occurs amid growing global concern about energy security.

Consumption subsidies which intend to lower the price of fossil fuels are no better. For example, subsidies for transport fuels are seldom effective in assisting the people they are designed to help. The essential energy needs of vulnerable groups must be met. But there are better ways to do this than through universal fossil fuel consumption subsidies which most often benefit richer people more, because they use more fossil fuels.

Fortunately, the world is beginning to grasp the incoherence of fossil fuel subsidies. In 2009 and again in 2010, G20 and APEC leaders signalled their political commitment to reform and elimination of inefficient fossil fuel subsidies. This is important and welcome leadership from the world's largest economies.

To support these reform initiatives, a group of non-G20 countries has emerged including Costa Rica, Denmark, Ethiopia, Finland, New Zealand, Norway, Sweden and Switzerland. Known as the Friends of Fossil Fuel Subsidy Reform, this group is encouraging G20 and APEC countries to implement their political commitments as soon as possible, and for others to follow their example. The global climate will be a clear winner. IEA research indicates that removing subsidies could reduce global carbon dioxide emissions by up to 5.8 per cent by 2035.

In addition, reducing fossil fuel subsidies would free up funding for other purposes, for example to help mitigate and adapt to the effects of climate change. According to the 2010 Report of the UN Secretary-General's Highlevel Advisory Group on Climate Change Financing, redirection of the money spent on fossil fuel subsidies could potentially finance up to US\$8 bn dollars a year of mitigation and adaptation activities.

There would also be good news on the energy security front. Universal phase-out of fossil fuel subsidies by 2020 would cut global primary energy demand in 2035 by 5 per cent. A cut in demand of this magnitude would help reduce the risk of future oil shocks and smooth out energy price volatility.

The reform of fossil fuel subsidies deserves to be much higher up the agendas of both climate change policy and general economic reform processes. Successful phasing-out of subsidies should start immediately, with the elimination of subsidies that are obviously inefficient and cause the most damage to state budgets and the climate. Transition measures to support subsidies phase-out may need to be implemented in parallel.

We welcome the OECD's establishment of an inventory of support to fossil fuels in OECD countries. The OECD inventory increases transparency of the scope and range of support to fossil fuels and its publication on a regular basis will benefit international efforts to reform fossil fuel subsidies and support green growth.

As a small island nation unconnected to international energy infrastructure, New Zealand's strategy for meeting future energy demand focuses on the balanced development of all of our resources, and ensuring that domestic energy markets operate efficiently to incentivise investment. This market-based approach extends to New Zealand's efforts in the global context to encourage the reduction of inefficient fossil fuel subsidies that encourage greenhouse gas emissions and discourage the development of new energy resources and technologies.

Ensuring that global energy markets operate efficiently while taking account of environmental effects is, in our view, the most effective way to ensure global energy security of supply and the reduction of environmental harm.



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## MAKING OIL MARKETS MORE TRANSPARENT AND PREDICTABLE

BY SAID NACHET ENERGY DIRECTOR, INTERNATIONAL ENERGY FORUM

n March 2010, the 12th Ministerial meeting of the International Energy Forum in Cancun welcomed the positive approach and constructive efforts of the Secretariats of the IEF, the International Energy Agency (IEA), and the Organisation of the Petroleum Exporting Countries (OPEC) to identify specific areas of cooperation to better understand energy market functioning, and to share insights and exchange views about energy market trends and outlooks. The joint IEA/IEF/OPEC programme is now well on track and has already delivered useful and tangible results<sup>1</sup>.

#### SHARED ANALYSIS OF ENERGY MARKET TRENDS AND OUTLOOK

The IEA, IEF and OPEC held two Symposiums on Energy Outlooks in Riyadh on 24 January 2011 and from 23-24 January 2012.

The IEA/IEF/OPEC Symposiums on Energy Outlooks provided a diversity of well-informed views from knowledgeable experts. Participants discussed energy market trends and associated drivers that influence these trends such as environmental policies, economic conditions and technological developments.

The meetings identified the main similarities and differences between the IEA's and OPEC's outlooks and discussed the reasons behind these differences, such as those related to definitions, data sources and uses or presentation of the results. The differences in historical baseline figures were also discussed.

The two Symposiums recommended moving towards harmonising 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 strengthening of, and improvements to, the JODI (originally standing for the Joint Oil Data Initiative, and now the Joint Organisations Data Initiative). Moreover, the symposiums recommended exploring the possibility of further joint technical meetings on certain technical areas of interest.

#### PHYSICAL AND FINANCIAL LINKAGES AND ENERGY MARKET REGULATION

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" were convened in London on 22 and 23 November, 2010. The two events provided rich and diverse views from distinguished experts with different backgrounds and affiliations.

The Workshop noted the increasing interaction of the physical and financial energy markets. It 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 Forum recognised that regulations have important effects on market functioning and participants' behaviour and emphasised the need for appropriate regulation, with adequate international coordination.

The second Joint IEA/IEF/OPEC Workshop on the "Interactions between Physical and Financial Energy Markets" was convened in Vienna on November 29 2011. 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 financialisation 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.

The workshop acknowledged that transparency in the financial market layer surrounding oil trading should mimic the enhancement of the international cooperation on physical market data transparency. Participants noted that data gaps in both financial and physical markets contribute to price volatility. They called for more data to enable a more complete and timely picture of activities in both financial and physical markets. In this connection, the workshop commended the international efforts to increase market data transparency, such as the JODI process, and stressed the need to make further significant progress in this area.

The participants stressed the importance of continued efforts to improve the producer consumer dialogue to enhance stability in the oil market and increase transparency through comprehensive, timely and reliable data, for the benefit of all.

#### JODI RELATED ACTIVITIES

The objective of the Joint Organisations Data Initiative – itself a concrete achievement of the energy producerconsumer 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.

JODI is enjoying increasing interest from market players, and is internationally recognised for its contribution to oil market stability. To this end, JODI partner organisations continued their efforts in training statisticians in charge of JODI data compilation and submission in participating countries/economies, with training sessions in Colombia in July 2010 and in South Africa and Indonesia in December 2010.

Participants in the 8th International JODI Oil Conference held in Beijing (10-11 October 2011) reviewed progress made since the 7th International JODI Oil Conference in Quito (June 2009) and discussed the quality of additional data points collected through the extended JODI Oil questionnaire. They also discussed the findings of the 3rd JODI Oil Data User Survey which reveals that the initiative is increasingly benefiting from users' inputs, comments and suggestions. The conference highlighted the importance of stock levels as key market indicators and called on participating countries to contribute further to market transparency through submission of a complete set of data as well as all relevant qualitative information (metadata).

JODI organisations also developed new tools and practices, both at country and organisations level, to regularly check JODI data and streamline data submission. Given the increasing interest in JODI data from market analysts, the organisations worked on enhancing interaction with data users, and upgraded JODI related platforms such as the JODI website and JODI database.

Responding to market analysts' request for more data on market flows to be provided through JODI World Oil Database, JODI organisations worked on an extended version and have been testing it with their member countries participating in the Initiative. The results of the reporting by participating countries were assessed by an independent consultant to measure the reliability and integrity of the JODI-Oil database with additional data points collected through the extended JODI-Oil format. The assessment shows that submission of additional data required in the extended questionnaire is challenging for many participating countries. The full implementation of the extended format - or "maxi-JODI" - sets an aggressive agenda for many participating countries to address a number of gaps and inconsistencies that affects the completeness and accuracy of reported data.

While JODI partner organisations are aware of such challenges, they agreed to release the extended questionnaire to the public in the hope that this will help to improve the quality of data submission, through interaction with market analysts and JODI-Oil data users.

Responding to IEF Ministers' call to start collecting monthly gas data through a mechanism similar to JODI-Oil, JODI partner organisations initiated a collection exercise with their gas member countries submitting relevant gas data such as supply, demand and trade on a monthly basis. Today, more than 44 countries are participating in this exercise, and the IEF Secretariat intends to launch JODI-Gas at the Second Gas Data Transparency Workshop to be hosted by Qatar in May 2012. They also invited other relevant organisations such as the Gas Exporting Countries Forum (GECF) to join this collective effort towards more transparent gas markets.

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 in 2012.

## WIDER ENERGY BRIEF AT THE REQUEST OF THE G20

At the request of the Group of 20, the IEF has closely cooperated with other organisations to prepare and submit reports in two areas<sup>2</sup>.

First, the G20 Seoul Summit Leaders' Declaration<sup>3</sup> 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 four organisations first of all commissioned two consultants to write a report, and then, on the basis of this report and of comments and clarifications from the price reporting agencies, submitted their final report to G20 finance ministers in October 2011. Further to this report, the G20 at the Cannes summit on 3-4 November 2011 declared that "recognising the role of Price Reporting Agencies for the proper functioning of oil markets", it was asking "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."

Second, the G20 asked the IEF, among other bodies, to take a look at gas and coal price volatility. Specifically,
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 G20 Cannes summit subsequently declared that it "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 [G20 leaders] 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."

#### WEB-BASED FACILITY

At their 12th Ministerial meeting in Cancun, Energy Ministers called for "the IEF Secretariat to catalogue regulatory efforts in major energy derivatives markets, bearing in mind that the role of the IEF in reducing market volatility should continue to be non-regulatory, leaving direct market oversight responsibility to states."<sup>4</sup>

To ensure further dissemination of energy market relevant information through one single platform, the IEF, in cooperation with the IEA and OPEC, has developed a web-based facility to access, including through links, publicly available energy outlooks and associated studies and also energy market legal and regulatory texts and related studies.

An electronic forum dedicated to the subject of market functioning and behaviour, where experts, researchers, multilateral organisations members and others, can exchange views, post-research findings and share publications is now in place.

#### CONCLUSION

• The implementation of the IEA/IEF/OPEC joint programme, which started immediately after the 12th IEF Ministerial as requested by Energy Ministers, has delivered concrete and tangibles results;

• Looking ahead, IEA, IEF and OPEC will continue to cooperate on the areas listed in their joint programme;

• The joint Symposium on Energy Outlooks is now established as an annual venue for experts from IEA, IEF, OPEC, industry, academia and others to share insights and exchange views about energy market trends and short-, medium- and long-term energy outlooks;

• Further events covering the interlinkages between the physical and financial energy markets, as well as energy market regulation will be held in the future;

• The ongoing work on the Joint Organizations Data Initiative will continue towards an improvement of data disseminated through the JODI World Oil Database, the development of monthly gas data collection and annual investment data in cooperation with other relevant organisations such as the Gas Exporting Countries Forum (GECF).

1. All relevant documents (agendas, background papers, reports, etc.) are available on the IEF website www.ief.org.

2. The report is available at www.g20.org

3. "We also request 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 G20 SEOUL SUMMIT LEADERS' DECLARATION, November 11 – 12, 2010.

4. Cancun Declaration, March 2010.



THE IEF BRINGS TOGETHER MINISTERS AND REPRESENTATIVES OF INTERNATIONAL ORGANISATIONS IN CANCUN, MEXICO IN 2010



# **NEW DIMENSIONS, NEW CHALLENGES**

BY BASSAM FATTOUH, OXFORD INSTITUTE FOR ENERGY STUDIES AND COBY VAN DER LINDE, CLINGENDAEL INTERNATIONAL ENERGY PROGRAMME

s ministers, heads of international organisations and CEOs gather in Kuwait for the International Energy Forum and the parallel International Energy Business Forum, it is clear that the producer-consumer dialogue, now in its third decade, has acquired new dimensions and is facing new challenges. New dimensions, because membership of the IEF has widened far beyond those of its founding pillars of OPEC and the IEA. At present, the IEF member countries account for more than 90 per cent of global oil and gas consumption and production. New challenges, because expansion of membership increases diversity of interests and makes it no easier to bring a concerted approach to coping with demand strains from fast-growing emerging economies and supply shocks in producing countries, most recently in Libya.

The main achievement of the IEF, since it first met in Paris in July 1991, is its success in overcoming the tension that marked producer-consumer relations in the 1970s and 1980s and in increasing the awareness of energy interdependence. The dialogue has also succeeded in bringing closer the two main consumer and producer organisations: OPEC and the IEA. Moreover, the IEF's new Charter, adopted in Riyadh in February 2011, calls for further cooperation.

A visible and concrete example of success in the producerconsumer dialogue is the establishment of the Joint

Organisations Data Initiative (JODI). The IEF Secretariat has consistently promoted JODI as representing "the single most important collaborative effort to address the issue of market data transparency." The promotion of greater transparency in energy markets has been a recurring key message in most international gatherings and is considered crucial to achieving more predictability in both supply and demand. There are still critical problems in providing timely and reliable data on all IEF member states. Yet JODI remains the most comprehensive attempt to collect such data. JODI has also has raised awareness of the technical difficulties in improving the reliability and timeliness of energy data. This has led the Secretariat and its partners to play a more active role in improving data collection methods in different countries through providing advice, organising workshops and conducting training sessions.

The IEF has also achieved a certain degree of institutionalisation, which has helped to give the dialogue more structure. This, however, has not induced any shift towards creating a global energy organisation with binding global energy governance, nor has it affected the informality of the dialogue, to which all parties remain strongly attached.

The intensity of the dialogue has been driven largely by key market events. Of these events, oil price instability has been the most important. It is interesting to note, though, that while the parties' main concerns are about



the level and volatility of the oil price, neither consumers nor producers have an interest in managing the price level. There is an implicit agreement that the determination of the oil price should be left to market forces.

Historically, producers and consumers have had very divergent interests: producers tend to favour higher prices while consumers favour lower prices. In a rising market, producers lose interest in policing the upper boundary and, when prices fall, consumers lose interest in policing the lower boundary. There is also a clear power asymmetry in the short term. While producers have options in both falling and rising markets, consumers are much more constrained in their policies in the short term. In the long term, however, the balance of power tends to shift in favour of consumers who can pursue oil substitution policies, implement efficiency measures, raise taxes on petroleum products, and encourage the development of alternative energy sources which have the effect of reducing long-term oil demand and the share of oil in the energy mix.

Thus, an important role for the consumer-producer dialogue is to bridge the gap between the long-term and short-term interests of consumers and producers in order to create a more predictable and stable oil market. Recently, there has been a realisation that too low or too high oil prices serve none of the groups and that "oil prices should be at levels that are acceptable to producers and consumers to ensure global economic growth, particularly in developing countries" without any indication of what these levels should be.

Does the failure to bargain about price levels or to manage the price level within bounds mean that the producer-consumer dialogue has failed? The answer is no. Since both sides agree that the oil price should be set by market forces, the producer-consumer dialogue has aimed at improving the functioning of the market by promoting better understanding of the links between the financial and physical layers of the oil market and whether regulation is needed to improve market transparency. The IEF has also been showing a willingness to engage with the issue of stabilising short- and long-term expectations through better mutual understanding of oil market conditions and communicating to the market. In the Cancun Ministerial Declaration in Mexico in March 2010, producers and consumers noted for the first time the importance of stabilising expectations, recommending that the IEF should "disseminate key information related to marginal cost, investment levels,

and alternative energy sources that could help stabilise short and long-term expectations" and "act as the forum through which a better mutual understanding of views is communicated to the market".

The supply disruption caused by the first Gulf War in 1990-1991 proved to be decisive for the producer-consumer dialogue, as it increased the awareness of common interests among parties and revealed the usefulness of coordinating actions in key areas such as the use of stocks and spare capacity. Disruptions, however, did not feature prominently in the dialogue during most of the 1990s. The availability of large spare capacity and the willingness of OPEC to fill the gap in the case of physical disruptions meant that concerns about disruptions received little priority in the policy agendas of consuming countries. The rapid rise in demand in the mid-2000s and the various supply shocks in producing countries such as Iraq, Venezuela, Nigeria and recently Libya brought back to the fore the issue of spare capacity and its role in dampening price volatility. Despite its rise in importance on the policy agenda, producers and consumers shied away from the issue for a long time. It was not until the Jeddah meeting in 2008 that specific calls were made for the expansion of spare capacity, with the acknowledgement that maintaining spare capacity is the responsibility of consumers as well as producers and consumers and extending to the entire supply chain, not just upstream players.

However, there are complex issues surrounding spare capacity: Does spare capacity constitute a public good? If it does, should all parties share the cost of maintaining spare capacity? If spare capacity is to be held in producing countries, can consuming countries find acceptable mechanisms to compensate producing countries? In such a system, who makes the decision to release the supply from existing capacity? These issues have not been addressed by the dialogue. As a result, policies on whether to maintain spare capacity and at what levels are solely set by individual governments with no coordination even between producing countries.

Rather than focusing on geopolitically-induced disruptions, the dialogue has shifted towards potential disruptions caused by the lack of investment in the oil supply chain. The investment issue has been a recurring theme in most Ministerial meetings. One of the important achievements of the dialogue in this area has been the increasing awareness that investment in the entire oil and gas chain is a shared responsibility between producers and consumers. Nevertheless, the fact remains that the decision to develop reserves in producing countries is mainly in the hand of their governments and the NOCs, and none of the producers wish to relinquish this sovereign decision either through discussion or agreements between producing countries or between producing and consuming countries. As a result of the wave of mergers in the 1990s, many investments in upstream and in refining are now in the hands of privately-owned oil companies in various consuming countries where governments' influence is mainly in the area of regulation. Recognising this asymmetry, the producer-consumer dialogue has never attempted to coordinate investment plans. Instead, it has explored ways to remove impediments to investment in the oil sector.

The basic message of the dialogue has been the importance of adequate investment, aided by "favourable energy, fiscal, investment and environmental relations" which "are needed for freer and expanded trade in oil and gas and for sustainable world economic growth". The IEF agenda has broadened to discuss specific measures that can induce investment in the energy sector, such as reducing long-term uncertainty through public information on investment plans, energy security and climate change policies and their potential impact on demand, enhancing the cooperation between NOCs, IOCs and Service Companies, and broadening cooperation and exchanges

in the fields of human capital and technology advancement and many other measures.

In the last decade both sides in the dialogue have tended to avoid such confrontational topics as green taxes and the financing of spare capacity, and have focused more on themes that can bring them closer together. There is a long-run risk of the key issues that lie at the heart of consumers' and producers' concerns becoming marginalised, leading to a loss of interest in the dialogue. Furthermore, while the dialogue in the 2000s has resulted in greater understanding of the nature of the investment problem and appreciation of the individual sides' point of view, concrete initiatives and proposals to alleviate the investment

problem have remained limited. The Libyan disruption in 2011 put serious strains on consumer-producer and producer-producer relations. OPEC members were not able to reach a consensus on increasing output in response to the Libya's output loss while the IEA's release of strategic stocks was not part of a coordinated effort between key producers and consumers. Consequently, the signals sent to the market were weak and confusing and created the perception that producer-consumer relations cannot be relied upon to smooth the oil market's adjustment to disruptions, unlike the supply disruption of the first Gulf War which proved to be the turning point for producerconsumer cooperation.

The dialogue has already reached many milestones. Consumers and producers have overcome some of their past myths, fears and suspicions and have become more aware of a number of common challenges related to energy markets. The institutional structure supporting the dialogue continues to strengthen; the structure and quality of the dialogue have also improved over the years. Nevertheless, many challenges remain. The way in which producers and consumers express their interests, to what extent they are willing to engage in issues that lie at the heart of their energy concerns, and whether they succeed in relating these energy issues to the wider context of political, economic and social security and the climate change challenge will define the future path of the dialogue.



THE IEF IS EXTENDING ITS OIL DATA TRANSPARENCY WORK INTO OTHER ENERGY AREAS

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# **BUILDING BRIDGES IN THE ENERGY LOGISTICS VALUE CHAIN**

INTERVIEW WITH EELCO HOEKSTRA CHAIRMAN OF THE EXECUTIVE BOARD AND CEO, ROYAL VOPAK

#### Given the context of IEF's focus on promoting cooperation between energy producers and consumers, how does Vopak see its role in the energy supply chain?

The world of energy is more dynamic than ever before. Energy producers and consumers are forming new alliances, gas and oil flows are finding their way around the world through ever more complex networks, and emerging markets are shaping global markets. Meanwhile, there is growing interest in new forms of energy, and in diversification and in sustainable energy production. And through it all, supply and demand are continually fluctuating. In this situation, independent service providers have a unique role to play.

The global economy is changing and the structural geographical imbalance in the production and consumption of oil products, chemicals and natural gas is increasing – at both the regional and global level. At the same time, the demand for energy is growing, especially in non-OECD countries in Asia, the Middle East, Africa and Latin America. This thirst for energy is triggered by expanding populations, rising gross national products, and increased mobility. In particular, the demand for fossil fuels has risen significantly, while the need for chemicals and vegetable oils to support industrial production in these regions has also increased.

#### **INCREASING DEMAND**

These developments have clearly led to an increased demand for the physical transport of products and, as a result, for the efficient and secure storage and transshipment of these products. Concurrently, many emerging countries are becoming big energy users; they are relying on imports to supplement their local resources in order to meet their growing demand. This creates a need for more transport to move the energy from producers to consumers, and for reliable storage solutions, with sufficient tankage, to meet the needs of consuming countries. Producing countries, for their part, need a solid infrastructure that will enable them to facilitate their production in the most efficient manner. In general, sufficient tankage is essential for markets to operate efficiently, and a reliable infrastructure is needed to connect the logistics networks of producers, handlers and consumers.

#### AN INDEPENDENT ALTERNATIVE

Producing and consuming parties therefore have a choice – either to build their own terminals or to utilise

independent storage and transhipment specialists. The prerequisites for storage are being present in the right logistic location; having a strong and clear focus on safety, security and sustainability; and delivering reliable and efficient services. The overall benefit of independent storage facilities is that they alleviate the pressure on a party's logistic systems. They can also lower costs, as they can generate economies and efficiencies of scale: after all, storage used solely by one party is always more expensive than creating economies of scale through usage by multiple parties. Given this fact, storage providers such as Vopak, with their expertise and global presence, can contribute to the improved reliability and efficiency of regional and global supply chains, optimising volumes and guaranteeing environmental health and safety.

#### **KNOWLEDGE OF THE MARKET**

Vopak's success as an independent service provider depends on its ability to respond to changes in the energy market. This requires a deep understanding of both global and local markets. Each terminal needs to be aligned with a region's long-term trends and requirements, and understanding these factors is essential in order to be able to secure the right location at the right moment.

For this reason, we invest substantially in business development globally, and continuously monitor and anticipate future changes in product flows. Our teams continually seek out and evaluate appropriate sites for storage and transhipment in strategically situated ports. At the same time, we also engage in intensive discussions with key parties, to understand their markets and take heed of their queries.

Independent service providers occupy quite a unique position in the link between producers and consumers of energy. For us, it is about building bridges: our role is to make that connection possible.

Our business is also to create a connection between global and local levels. We invest a great deal at a global level; and we remain very active at the local level in the countries in which we operate. For example, in many of our locations, we have local joint-venture partners, where most of our employees originate from the local area. In our view, once a good location has been secured, it is imperative to make a sustainable long-term investment and create permanency for all parties involved. Here, we add value by offering host countries a high-quality infrastructure, thus increasing the country's options for energy flows. From a macroeconomic viewpoint, our aim is to remove as many barriers as possible and to maximise the range of options. With greater choices, the more liquidity there is in the market, thus more value created and better efficiency between supply and demand. Efficiency, however, requires a regulatory environment which is open to market parties and ensures that there are no trade barriers, whether in relation to financial, transport or customs matters.

## Energy security is a major theme of the IEF dialogue – what part does Vopak see storage playing in energy security?

Oil, gas and chemicals are the lifeblood of economies today, and security of supply is more urgent than ever. How countries deal with energy security varies from region to region, and traditionally, the interests of producing and consuming countries differ – security of demand versus security of supply respectively. Yet, both governments and companies in these arenas are definitely attaching greater importance to the subject.

A clear example relating to security of supply is, of course, the IEA measure requiring each IEA member to hold oil stocks equivalent to at least 90 days (of net imports), and to maintain emergency measures for responding collectively to sudden disruptions in oil supply. For a country to be able to import and export sufficient energy products, its government needs a solid logistics and terminal infrastructure. This is precisely where independent service providers come in. In this respect, Vopak, for example is building a strategic storage facility at Eemshaven in the Netherlands.

On another point, the IEA predicts that by 2035 the world will require approximately one-third more energy than it does at present. This means that governments should adopt a multi-product approach and investigate different energy sources. In other words, it is vital to diversify one's energy portfolio as much as possible. The recently opened Gate terminal in Rotterdam, the first LNG terminal in the Netherlands, will not only reduce the country's dependence on particular sources of energy, but will also provide companies with an additional option besides pipeline gas.

Diversification of supply is certainly a positive step towards ensuring energy security. In our view, it is essential for countries to utilise various energy sources, and that – in due course – consuming, transit and producing countries will cooperate on matters of energy production and consumption.

### Is the mix in Vopak's energy storage changing – for example, from oil to biofuels and LNG?

With the growing demand for energy globally, traditional energy resources still remain strong. While oil remains important, we see a relatively stronger growth in renewables and natural gas. The demand for the latter is attributable to its clear advantages over other fossil fuels. Firstly, it is the cleanest fossil fuel. It also costs less to transport over long distances than pipeline gas (a significant a factor, given the growing geographic imbalance between the demand and supply of natural gas). Lastly, LNG offers greater diversification of supply than pipeline gas.

In 2011, Vopak not only entered the natural gas market with the opening of Gate terminal in the Netherlands, but also acquired the Altamira LNG Terminal in Mexico. Given the growth in oil products and renewables, Vopak energy storage will continue to be representative of the above noted energy segments, including LNG.

On the whole, our primary business model remains unchanged, and we will continue to add value in our current role by performing a specialist niche activity as an independent provider of conditioned storage facilities for bulk liquids. Importantly, Vopak does not own products and ownership remains at all times with our customers.

#### THE LOGISTICS CONTRIBUTION

It is important for us to be involved in the global dialogue with large oil companies (both IOCs and NOCs) as we are well-positioned to address their logistic and commercial needs. The industry realises that logistics issues are important to the overall discussion, and an efficient supply-on-demand system supports their business model. Vopak is honoured that we have the opportunity to contribute to the International Energy Forum and to exchange ideas with other participants on how logistics can be used most efficiently and effectively in the coming years. Vopak welcomes and supports the Joint Organisations Data Initiative (JODI). It will ensure a single set of data on the oil market, and help to promote transparency and clarity for all parties across the sector.



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# ENERGY SUSTAINABILITY

he United Nations General Assembly has declared 2012 to be the "International Year of Sustainable Energy for All". This is designed to galvanise the international community into fresh action to provide access to basic energy for the 1.3 billion people around the world who lack electricity and clean cooking facilities. The issues of energy access and energy poverty therefore naturally figure again on the agenda of this year's IEF meetings.

The higher political profile given to energy poverty is in no small part due to the analytic work of **Fatih Birol of the IEA**, who has, for several years now, been hammering away in IEA publications at the problem, its causes and remedies. The IEA economist charts the success of China, and modest progress in India, in spreading electrification. But he says that on present policies the absolute number of people without access to modern energy will be unchanged in 2030 and in sub-Saharan Africa the number will actually increase. Yet the goal is not out of reach. Spending US\$48bn a year would achieve the UN's goal of sustainable energy for all by 2030 – a large amount, but only 3 per cent of expected global energy infrastructure over the period.

Playing their part in the global effort are the development agencies, including OPEC's own OPEC Fund for International Development (OFID) which, along with the IEA, has raised the profile of energy poverty and access at IEF meetings. **Suleiman Al-Herbish of OFID** explains what his organisation has done to promote energy solutions and to fund programmes for energy schemes, including renewable energy. However, he notes that energy policy matters as much as energy programmes, and that "governments of developing countries are in the driving seat, as they alone can implement the reforms necessary to attract investors". **Mohamed Bin Dhaen Al-Hamli of the UAE** explains why his country, a prominent member of OPEC, has decided to develop renewable energy, not only out of an obligation to help mitigate climate change, but also for the practical reason of " releasing more hydrocarbons for export, while reducing our carbon footprint at the same time."

A strong call for green energy technology to be used in the fight against energy poverty comes from **Kandeh Yumkella of UNIDO**, the United Nations Industrial Development Organisation. UNIDO has launched a Green Industry Initiative, designed to accelerate green economic growth in manufacturing and to use decentralised renewable electricity to leapfrog the lack of fixed power grids in many developing countries in the same way that mobile telephony could leapfrog over inadequate fixed telephone networks. **Vjay Iyer of the World Bank** drives home the same point about the contribution of renewable energy to solving energy poverty. He focuses particularly on the World Bank is doing to help Africa exploit its vast renewable potential, and says "it is time to respond" to the UN appeal for action.



# **ACHIEVING ENERGY** FOR ALL WILL NOT COST THE EARTH

**BY FATIH BIROL** CHIEF ECONOMIST. INTERNATIONAL ENERGY AGENCY

aking energy supply secure and curbing energy's contribution to climate change are often referred to as the two over-riding challenges faced by the energy sector on the road to a sustainable future. Yet there is another key strategic challenge for the energy sector, one that also requires immediate and focused attention by governments and the international community. It is the alarming fact that today billions of people lack access to the most basic energy services, electricity and clean cooking facilities, and, worse, this situation is set to change very little over the next 20 years, actually deteriorating in some respects.

For more than a decade, the IEA's World Energy Outlook (WEO) has relentlessly focused attention on modern energy access, providing the international community with quantitative, objective analysis. Our latest estimate is that currently 1.3 billion people do not have access to electricity, around 20 per cent of the global population, and that almost 2.7 bn people rely on the traditional use of biomass for cooking, around 40 per cent of the global population (Figure 1). More than 95 per cent of these people are in

either sub-Saharan Africa or developing Asia and 84 per cent live in rural areas. Based on the continuation of current levels of investment in modern energy access, the absolute numbers of people without access to modern energy in 2030 will be scarcely changed (though the proportion of the global population so deprived will have fallen). In sub-Saharan Africa, the numbers without modern energy access will have actually increased. Neither the policies adopted today nor the continuation of a business-as-usual approach will do nearly enough to achieve universal access to modern energy services by 2030.

Despite these sobering statistics, some countries have made notable progress in recent years in improving access to electricity and reducing the number of people relying on the traditional use of biomass for cooking. China has been a great success story, with 500 million people in rural areas gaining access to electricity since 1990 and universal electrification expected to be achieved by 2015. In India, the most recent data show that expenditure on electricity was reported by 67 per cent of the rural population and 94 per cent of the urban population in 2009, up from 56 per



cent and 93 per cent respectively when surveyed in 2006. In Vietnam, the electrification rate has increased in the last 35 years from below 5 per cent to 98 per cent. Angola and Congo have also both seen the share of the population with access to modern energy services expand considerably in the last five years, mainly in urban areas.

It is crucial that we build on these success stories as access to modern forms of energy is essential for the provision of clean water, sanitation and healthcare, and provides great benefits to development through the provision of reliable and efficient lighting, heating, cooking, mechanical power, transport and telecommunication services. The international community has long been aware of the close correlation between income levels and access to modern energy: not surprisingly, countries with a large proportion of the population living on an income of less than US\$2 per day tend to have low electrification rates and a high proportion of the population relying on traditional biomass. As incomes increase, access to electricity rises at a faster rate than access to modern cooking fuels, largely because governments give higher priority to electrification, though access to both electricity and clean cooking facilities is essential to success in eradicating the worst effects of poverty and putting poor communities on the path to development.

Fortunately international concern about the issue of energy access is growing. The United Nations General Assembly has declared 2012 to be the "International Year of Sustainable Energy for All" and the UN Secretary General has launched his Sustainable Energy for All initiative which includes the target of ensuring universal access to modern energy services by 2030. To illustrate what would actually be required to achieve this target, the IEA's recent, "Energy for All: Financing Access for the Poor," includes a special Energy for All Case. The results demonstrate that tackling the problem will not cost the earth: US\$48 billion is needed each year to meet the goal by 2030. While this is certainly a large amount, it represents just 3 per cent of expected global energy infrastructure over the period. It is also encouraging to see that the importance of modern energy access is being recognised increasingly by many organisations that provide development funding.



We estimate that capital investment of US\$9.1 billion was undertaken globally in 2009 to provide 20 million people with access to electricity and 7 million people with advanced biomass cookstoves. This is believed to be the highest level of investment ever devoted to energy access.

As well as making a major contribution to social and economic development, universal access, if realised, would have a significant impact on the health of those currently cooking with biomass as fuel in basic, inefficient and highly-polluting traditional stoves. Based on World Health Organisation projections, in the absence of further action the number of people who die prematurely each year from the indoor use of biomass could increase to over 1.5 million by 2030. The adoption of clean cooking facilities could be expected to prevent the majority of these deaths. In addition to avoiding exposure to smoke inhalation, modern energy services can also help improve health in other ways, such as refrigeration (improving food quality and storing medicines) and modern forms of communication (supporting health education, training and awareness).

For anyone concerned that bringing electricity to 1.3 billion people, and clean cooking facilities to 2.7 billion people, would further dent our chances of meeting ambitious climate goals or of enhancing energy security, our analysis has some reassuring news. It shows that achieving the goal by 2030 would only increase global electricity generation by 2.5 per cent, demand for fossil fuels by 0.8 per cent and carbon dioxide emissions by 0.7 per cent (Figure 2). The small size of these increases relative to the New Policies Scenario – the central scenario of the *World Energy Outlook 2011* – is linked to the low level of energy per-capita consumed by the people gaining access to modern energy, and to the relatively high proportion of renewable solutions adopted, particularly in rural and peri-urban households.

So how do we translate the scenario numbers from our Energy for All Case from paper into practice? A good place to start would be to look at the many countries that have already proven that the barriers to achieving modern energy access are surmountable. From their experiences and based on the IEA's work on energy access financing, there are four key areas where action is needed:

• Adopt a clear and consistent statement that modern energy access is a political priority and that policies and funding will be reoriented accordingly. National governments need to adopt a specific, staged energy access target, allocate funds to its achievement and define their strategy, implementing measures and the monitoring arrangements to be adopted, with provision for regular public reporting.

• Draw on all sources and forms of investment finance to reflect the varying risks and returns of the particular solutions adapted to the differing circumstances of those without access to modern energy. To realise the considerable potential for stepping up the proportional involvement of the private sector, national governments need to adopt strong governance and regulatory frameworks and invest in internal capacity building. Multilateral and bilateral institutions need to use their funds, where possible, to leverage greater private sector involvement and encourage the development of replicable business models.

• Concentrate an important part of multilateral and bilateral direct funding on those difficult areas of access which do not initially offer an adequate commercial return. Provision of end-user finance is required to overcome the barrier of the initial capital cost of gaining access to modern energy services. Operating through local banks and microfinance arrangements, directly or through guarantees, can support the creation of local networks and the necessary capacity in energy sector activity.

• Energy access programmes and projects need to make provision for the collection of robust, regular and comprehensive data to quantify the outstanding challenge and monitor progress towards its elimination. In many ways, providing energy access is an objective well suited to development frameworks such as output-based financing, but accurate data needs to be collected to measure progress.

In too many countries today, children cannot do their homework because they have no light. Food cannot be kept because there is no electricity. In short, modern society cannot function. This situation is totally unacceptable, both morally and economically. With 2012 being named as the "International Year of Sustainable Energy for All", all of the important players – including governments, industry, the private sector and financial institutions – have a responsibility to play their part in building further momentum on this crucial issue as it is only through strong, co-ordinated action on a global scale that it will be overcome.

I hope that we can make real progress this year, but regardless of the outcome, the IEA through its *World Energy Outlook* will continue to push to have energy poverty treated as a central issue in the international energy policy debate.





# Here for good

Can a bank really stand for something? Can it balance its ambition with its conscience? To do what it must. Not what it can. As not everything in life that counts can be counted. Can it not only look at the profit it makes but how it makes that profit? And stand beside people, not above them. Where every solution depends on each person. Simply by doing good, can a bank in fact be great? In the many places we call home, our purpose remains the same. To be here for people. Here for progress. Here for the long run. Here for good.



# MAKING SUSTAINABLE ENERGY AVAILABLE FOR ALL

BY KANDEH K. YUMKELLA, DIRECTOR-GENERAL, UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION

nergy powers human progress, from job generation to economic competitiveness, from strengthening security to empowering women, energy is the great integrator: it cuts across all sectors and lies at the heart of all countries' core interests. Now more than ever, the world needs to ensure that the benefits of modern energy are available to all and that energy is provided as cleanly and efficiently as possible. This is a matter of equity, first and foremost, but it is also an issue of urgent practical importance – this is the impetus for the UN Secretary-General's new Sustainable Energy for All Initiative.

This initiative is launched in a time of great economic uncertainty, great inequity, rapid urbanisation, and high youth unemployment. It is also a time where there is emerging consensus on the need to act cohesively towards global issues such as sustainable development. We are not, however, starting from 'scratch'. New technologies ranging from improved photovoltaic cells, to advanced metering, to electric vehicles and smart grids give us a strong foundation from which to move forward. How we capture these opportunities for wealth and job creation, for education and local manufacturing will be the key to unlock any real revolution.

Three linked objectives underpin the goal of achieving Sustainable Energy for All by 2030:

• Ensuring universal access to modern energy services

- access to electricity and to modern fuels and
- technologies for cooking, heating, and productive uses;
- Doubling the rate of improvement in energy efficiency;
- Doubling the share of renewable

energy in the global energy mix.

These three objectives are mutually reinforcing. Increasingly affordable renewable energy technologies are bringing modern energy services to rural communities where extension of the conventional electric power grid would be prohibitively expensive and impractical. More efficient devices for lighting and other applications require less energy and thus reduce the amount of power needed to support them. Increased efficiency in the production and use of electricity relieve strained power grids, allowing them to stretch farther and reach more households and businesses. And finally, the alternative – unconstrained expansion of today's conventional fossil fuel-based energy systems – would lock in a long-term infrastructure commitment to an unsustainable emissions path for the world's climate. The Secretary-General has formed a High-Level Group to design an Action Agenda and provide ongoing momentum to the goal of providing Sustainable Energy for All. This will require catalysng action from a broad array of stakeholders to help meet its stated objectives by 2030. The Secretary-General, in the run-up to the 2012 United Nations Conference on Sustainable Development Rio+20 summit later this year, described the Initiative as follows:

"At Rio+20 we will ask all stakeholders to make a global commitment to achieving Sustainable Energy for All by the year 2030. Reaching this goal will require action by all countries and all sectors to shape the policy and investment decisions needed for a brighter energy future. Industrialised countries must accelerate the transition to low-emission technologies. Developing countries, many of them growing rapidly and at large scale, have the opportunity to leapfrog conventional energy options and move directly to cleaner energy alternatives that will enhance economic and social development."

The Action Agenda aims to establish clear actions and commitments over time to:

- establish firm political commitment
- create stable policy and regulatory frameworks
- finance the transformation
- strengthen local capacity and forge global partnerships
- ensure accountability and transparent reporting
- strengthen the analytical foundation
- disseminate information

Within the UN system we are working closely via UN-Energy (*www.un-energy.org*). UN-Energy is fostering new partnerships, better communication, and facilitating effective action on the ground.

#### A LEAPFROGGING REVOLUTION

Looking beyond the energy sector, and in the run-up to the 2012 United Nations Conference on Sustainable Development (Rio+20), a consensus is growing around the fact that in a resource and carbon constrained world, a transition to a "Green Economy" is required for sustainable development. However, such a shift cannot be done at the expense of the developmental priorities of developing countries, and any definition of the Green Economy will need to provide diverse opportunities for both economic development and poverty alleviation.

In response to these challenges, UNIDO launched a Green Industry Initiative, which aims at accelerating the green growth of the manufacturing and related sectors. It provides the international community and national governments with a platform for fostering the positive role of industry in achieving sustainable development. Greening industrial development is thus an integral pillar of the Green Economy concept, as it provides a framework for developing countries to green their industrialisation process and to promote businesses that provide environmental goods and services. A holistic framing of the global energy issue is required to underpin this work.

While these issues resonate in both developed and developing economies, the impact on the Least Developed Countries is something to which we are acutely aware. Even there, good precedent for national actions exists in places such as Rwanda and Ethiopia. These countries are putting together sophisticated national plans to address sustainable energy issues for the entire economy.

For a model of transformative change that has reached every corner of the world, we can look to the mobile phone and the ICT sector. This precedent is now influencing the possibilities for smart grids, even in the most remote corners of the world. In the future, "smart and just grids" for developing countries could serve the same purpose as smart grids in industrialised countries, even though they are likely to follow a different pathway and timeframe. Constraints such as a lack of good governance, limited investment capital, largely inadequate infrastructure and a gap in well-trained power sector personnel are likely stifling innovative practices that could already be occurring organically. The massive electricity infrastructure requirements to reach universal access offer a unique opportunity to learn from the nexus between ICT and energy systems and move forward without necessarily repeating all previous development stages.

The UN General Assembly named 2012 as the International Year of Sustainable Energy for All – thus placing energy at the heart of the multilateral process. It is an enormous opportunity to share models that work, are scalable, and can help fill gaps in existing funding or capacity. It is also a chance to ensure that the political momentum currently focused on this area is maintained. Emerging Partnerships such as the Norwegian Energy+, and the UN-Energy/Global Sustainable Electricity Partnership offer conduits for multi-stakeholder engagement and dialogue – as well as real action.

We must do considerably more than scratch the surface for an issue that deeply impacts all of our lives. This means commitments from many different stakeholders and ways to track progress. To begin, go to *http://www.sustainableenergyforall.org* and join us!



FLEXIBLE RENEWABLE ENERGY CAN SUPPLEMENT FIXED POWER GRIDS



# OFID: MEETING THE CHALLENGES OF ENERGY POVERTY

BY SULEIMAN J. AL-HERBISH, DIRECTOR GENERAL, OPEC FUND FOR INTERNATIONAL DEVELOPMENT

hroughout history energy access has driven economic development. Inexpensive energy has been the great enabler of economic growth and significant improvements in productivity. A quick glance around the world at the differing levels of modern energy access provides clear evidence for this view. For developing countries to reach a higher standard of economic existence, it is vital that they experience an increased use of modern energy services. This is a stance shared by OFID and a number of development institutions and organisations including the United Nations.

In recent years a growing international consensus has formed about the need to provide modern energy to the poor in order to reach global development goals. The increased consensus on the importance of this issue has created an environment in which we can now act as never before. Together, we can take the necessary steps to build a truly global solution to the challenge of energy access and give the world's poor a chance to better their lives.

The alleviation of energy poverty is a priority area for OFID. It has been a strategic component of our operations since the 2007 Riyadh Declaration at the 3rd OPEC Summit, which recognised that "energy is essential for poverty eradication and sustainable development." The Riyadh Declaration pledged that Member Countries would "continue to align the programmes of their aid institutions, including those of OFID, with the objective of achieving sustainable development and the eradication of energy poverty in the developing countries, and study ways and means of enhancing this endeavour, in association with the energy industry and other financial institutions."

OFID has worked closely with the IEF and other partners to ensure that energy poverty is understood as a challenge and duly confronted. The 1st IEF Symposium on Energy Poverty noted that "access to modern energy services is one of the cornerstones to reducing poverty and a key element in achieving the Millennium Development Goals". The same conclusions were echoed in the concluding statement at the 12th IEF Ministerial Meeting in 2010, which declared "that reducing energy poverty should be added as the 9th Millennium Development Goal". It also 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.

In November 2011, the 2nd IEF Symposium on Energy Poverty was organised in partnership with OFID.

A key conclusion of this event mirrored what the above concluding statement had previously called for, namely that "while some energy companies are already contributing to alleviate energy poverty, all energy companies are encouraged to join this cause actively as a core element of their social responsibility." OFID is in full agreement with this message and called for further support from the energy industry at the World Petroleum Congress in Doha, in December 2011.

Meanwhile, international momentum has also grown, culminating in September 2011 in the launch of the United Nations Initiative "Sustainable Energy for All". OFID is part of the Secretary-General's High Level Group which is developing an "Action Agenda" to be submitted to the Rio+20 Global Summit in June. The first priority of this initiative is to achieve universal energy access by 2030. This goal is alongside two other goals, namely a doubling of renewables in the global energy mix and a two-fold increase in the rate of improvement in energy efficiency worldwide. The challenges, however, are enormous – but not insurmountable.

#### **RAISING FUNDS AND AWARENESS**

First and foremost is the question of financing. At least US\$48 billion will be required every year until 2030 to make modern energy available to all. This is no small feat and will demand the cooperation of all stakeholders – from developed to developing countries, from the private sector to the public sector, from aid institutions to NGOs. OFID is working in many ways to enhance its contribution. We have expanded our partnership with the Coordination Group of Arab National and Regional Institutions. And, we have signed memoranda of understanding with international bodies including the World Bank, IFAD and regional development banks such as BADEA, ADB, CAF and others, in order to combine our skills and resources to best work against energy poverty.

The financial support that OFID and others provide is a critical element in this effort, but it is also essential to raise the profile of energy poverty on the global stage. OFID has been working with other institutions to bring this issue forward in many international fora in order to establish improved energy access as a priority for policymakers.

OFID has demonstrated the importance of better access to modern energy services at conferences and international seminars. In 2008, OFID organised in Abuja, Nigeria, an international workshop on Energy Poverty in Africa, which gathered experts from all over the world to address the problem of energy access. We have also promoted the issue at other events organised by international bodies such as the Organisation of Arab Petroleum Exporting Countries and the Arab Forum for Environment and Development. In many cases, we were amongst the leaders in promoting this noble cause, and we remain actively engaged in the debate.

We participated in the 33rd international conference of the IAEE in Rio de Janeiro in 2010, with a presentation highlighting OFID's position and vision regarding the fight against energy poverty. In line with our human capacity building strategy, we are currently sponsoring the attendance of many students from partner countries at IAEE events. In June 2011 we participated in the Vienna Energy Forum and highlighted the important role that the private sector and public-private partnerships can play in improving access to finance for energy.

#### DIVERSIFIED FUEL MIX FOR TAILORED SOLUTIONS

In the search for solutions, it is crucial to consider local conditions. This was a major conclusion of last November's 4th High Level Forum on Aid Effectiveness in Busan. When generic solutions are implemented without a proper understanding of the local culture, economic resources or specific restrictions, they do not deliver the required results. The first criterion, therefore, should be the welfare and productive needs of the communities in relation to their resources. Where natural endowments and geography permit, renewable solutions are appropriate, but the contribution of fossil fuels should not be undervalued. Natural gas, LPG and diesel fuels are important elements of energy supply in developing countries. It will take many years before renewable solutions can provide cost-effective productive power to all locations.

In terms of energy supply, the world is now effectively in the middle of a transition period whose length is still unknown. As a global community, we need to take the utmost care to ensure that the development of new energy technologies does not hinder our efforts to provide energy to the poor and take advantage of progress already achieved.

Brazil and South Africa demonstrate genuine success in the fight against energy poverty. Brazil uses one of the world's largest river systems to produce more than 80 per cent of its electricity needs through hydroelectric power and now has an overall electrification rate of about 98 per cent. South Africa is well on the way to reaching a 100 per cent electrification rate by 2020, by using its massive coal reserves to generate power. These examples demonstrate how the most successful countries in the combat against energy poverty have strategies based on their local resources and take full advantage of them.

At OFID we have adopted a pragmatic approach to these challenges and are open to all technological solutions. The OFID private sector facility is set to part-finance an innovative, large-scale wind project in Pakistan which will provide 100 megawatts to the national grid. We examine each case on an individual basis and only then make a decision on how to proceed. Generalities will not suffice for energy planning. The more specific information that can be obtained, the better the assessment of the problem can be and the greater the likelihood of an effective solution.

#### AFFORDABILITY AS IMPORTANT AS ACCESS

In trying to help build energy infrastructure, the human element can sometimes be forgotten. At OFID we are aware of practical problems, such as the limited ability of poor people to pay for energy services. For instance, we are supporting the AMRET micro-finance institution in Cambodia, which will assist entrepreneurs to finance the upfront costs of energy equipment. Such projects give OFID a better understanding of the challenges. We seek not only technological but also innovative financial solutions to increase access to energy. We hope our progress up the learning curve will become faster as we deploy our new energy facility, the Energy Grants Window, which will help small-scale projects provide decentralised energy services in rural areas and give us insight into a wider range of projects.

With the right commitments from donor and beneficiary countries, with clear individual energy plans for each country, and with accountability in clear and quantifiable targets, the proper conditions will be in place to encourage investment and ensure universal access to modern energy services by 2030. However, it must be noted that the governments of developing countries are in the driving seat, as they alone can implement the reforms necessary to attract investors. Stable environments must be in place before any progress can be made. As mentioned above we have already been working with our partner countries and are hoping to develop a bigger pipeline of bankable energy projects with them.

#### **BUILDING CAPACITY**

In combating energy poverty we should not forget the most important issue of all: fighting energy poverty is fighting poverty itself. Studies of successful energy projects emphasise that viable economic activities played a crucial role. There will be a higher probability of success, if economic activities are identified and targeted to ensure the long-term sustainability of projects. If we can ensure that better energy access makes a significant difference to the living standards of the community, then we will not only enable people to pay for the energy services provided, but also give them the means to generate demand for other goods and services.

Developing countries, especially in Africa, have been asking for assistance with capacity building, from training administrators to helping create effective tax systems. The domestic economy can make a bigger contribution to financing energy utilities and new investment, once tariff collection is improved and the amount of waste is reduced. Better governance would directly boost energy access by raising the amount of available funds, not only to build projects but also to maintain them.

While the international community gets behind the UN's Sustainable Energy for All campaign, OFID is already making an impact on the ground. In 2011, energy initiatives accounted for 25 per cent of all the activities of our different financing windows. These included public sector projects to finance electricity generation in Bangladesh and Nicaragua and the provision of funds to help extend the national grid in rural parts of Ethiopia, the Gambia and Kenya. Most of these projects are going to be implemented in close cooperation with the national governments.

In June 2011, OFID's Ministerial Council endorsed a US\$1 billion resource replenishment, a sum that will substantially augment our existing capacity to combat energy poverty. These increased resources will be further leveraged by our cooperation with sister institutions and other international organisations. The strength of these strategic partnerships will allow us to strive together in confidence towards providing universal access to modern energy services by 2030.



OFID IS EXTENDING ITS FUNDING INTO RENEWABLE ENERGY



# MITIGATING CLIMATE CHANGE: THE ROLE OF PRODUCING COUNTRIES

BY MOHAMED BIN DHAEN AL HAMLI MINISTER OF ENERGY, UNITED ARAB EMIRATES

s energy producers and consumers meet for the 13th IEF, it is incumbent upon us all to dwell on our joint responsibility to protect the future of our planet for coming generations. We need to lay the foundations for the economic and social development of our respective countries, without destroying our planet in the process. Our children need employment and security, but in an enjoyable world in a safe environment.

However, it is clear that sustainability and environmentally friendly development have to go hand in hand. Climate change is an undeniable fact and we all have a role to play in mitigating its effects. For its part, the UAE has not shirked this responsibility; in recent years it has announced a wide range of climate-friendly initiatives.

The exceptionally fast pace of our economic development over the last few years has given the UAE a unique perspective as we have become both major energy producers and growing energy consumers. Our national annual peak demand for electricity is set to more than double by 2020 and we have an increasing demand for other forms of energy.

Our growing population and fast-moving industrial development have forced us to choose between whether we want to continue burning fossil fuels, or find complementary energy solutions for use at home. We realised that by widening our domestic fuel mix, we could release more hydrocarbons for export, while reducing our carbon footprint at the same time.

Two years ago, we took a major step in complementing our traditional energy portfolio when the Emirates Nuclear Energy Corporation awarded a major contract for the construction of four new 1,400 megawatt nuclear power stations. The UAE firmly believes that nuclear power represents an important clean energy source that should be developed, along with other clean fuels. We have been able to embark on an important civilian nuclear energy programme in close collaboration with the International Atomic Energy Agency in Vienna. The nuclear plants have been designed in accordance with the latest cutting-edge technology and safety was given paramount importance in the design as well in all other operational issues, including the safe storage of radioactive waste. The first plant will be commissioned in 2017 and the objective is for nuclear energy to eventually account for 25 per cent of the UAE's power requirements.

We believe that the best way of securing a sustainable economic future in a carbon-constrained world is to develop a balanced portfolio of clean energy sources in which nuclear, renewable energy, oil and natural gas all have a role to play. The UAE's geographic location enables us to utilise renewable energies, particularly solar energy, to the maximum, and the emirate of Abu Dhabi has recently set a target of generating 7 per cent of its energy needs from renewable sources.

Already, Masdar Power is developing the 100MW Shams One Concentrated Solar Power plant in the Western Region of Abu Dhabi, which when complete, will be the largest such unit in the world. Masdar is also developing a 30MW wind farm and a Photovoltaic array on Sir Bani Yas Island.

In addition to measures to improve its energy mix at home, the UAE is seeking to promote a sustainable future in the world as a whole.

Masdar is at the heart of a multi-billion dollar initiative to create a global cooperative platform for open engagement in the search for solutions to some of mankind's most pressing energy and development problems. Masdar's research arm, the Masdar Institute, has teamed up with the Massachusetts Institute of Technology to launch a range of research programmes focused on the development of advanced alternative energy, environmental technologies and sustainability.

Masdar is building in Abu Dhabi the world's first low-carbon city built on sustainable principles. Among the first tenants will be the Masdar Institute, which will eventually host 600-800 Master and PhD students and 200 faculty members.

The other important tenant at Masdar City will be the International Renewable Energy Agency (IRENA), now headquartered in Abu Dhabi. By promoting renewable energy and helping develop new technologies, IRENA has the potential for making a tangible contribution to the mitigation of climate change. To date, 156 nations are either members or signatories to the IRENA convention and I would strongly encourage those countries that are not members to sign up for this important initiative.

The objective of the UAE's energy policy is not just to reduce carbon emissions at home, but also to play a leading role in the development of innovative new technologies that can effectively contribute to substantial reduction of global warming.

The UAE seeks partners in the implementation of this vision. I invite attendees at the International Energy Forum and the International Energy Business Forum to contact my office for ways of partnering with UAE institutions. Together, we can work for a better future.



# CALL FOR ACTION ON SUSTAINABLE ENERGY ACCESS DEMANDS RESPONSE

S. VIJAY IYER DIRECTOR OF SUSTAINABLE ENERGY, WORLD BANK

n thousands of villages and hamlets across Africa and South and East Asia, the only light after sunset is from a kerosene lamp, a candle or a cooking fire. It should disturb us that such a basic requirement of modern life as electricity is still a dream for 1.3 billion people. It is evidence of a failure for which there is no plausible excuse. We have the technology and the financing. In most cases, the potential customers are ready and willing to pay for service.

This energy access crisis is finally getting the attention it deserves. At the World Energy Future Summit in Abu Dhabi in January, discussion focused on the Sustainable Energy for All Initiative launched by the UN Secretary-General last September. This initiative calls for a global collaboration among governments, civil society and the private sector to deliver on three overall goals by 2030: universal access to electricity and clean cooking fuels, doubling the share of the world's energy supplied by renewable sources from 15 to 30 per cent, and doubling the rate of gain in energy efficiency.

#### AMBITIOUS BUT ACHIEVABLE GOALS

These are ambitious goals. Some suggest that they are too ambitious, that expanding access to electricity and clean cooking fuels, while also simultaneously scaling up renewable energy is taking on too much at once.

This argument is mistaken for two reasons. One, it falsely suggests that there is a contradiction between access and clean energy. Second, it overlooks the fact that climate change has now imposed a requirement to shift to cleaner energy; there is no either/or choice.

The International Energy Agency's (IEA) 2011 *World Energy Outlook* (WEO) concluded that the world is in danger of locking itself into an unsustainable future unless major changes are made by the energy sector to limit the global temperature increase to 2°C above the pre-industrial level.

The IEA laid out three scenarios for the future. Two of them, the 'Current Policies' scenario – that is, business-asusual – and the 'New Policies' one, that is, governments cautiously implement commitments already made – do not get us where we need to be by 2035. Only one of them does, the third, the so-called '450 Scenario', which sets out an energy path consistent with a 50 per cent chance of holding global temperature rise to  $2^{\circ}$ C.

The '450 Scenario' is the one farthest from our current course. The *World Energy Outlook* underlines this with its finding that in 2010, global emissions did not decline but

grew by 5.3 per cent, a record. The New Policies scenario, what the WEO calls its 'central' scenario — the most likely one, presumably — would see fossil fuels dropping from the current 81 per of the energy mix to 75 per cent in 2035, while renewables would rise from 13 to 18 per cent.

Compare this scenario's outcome with the UN Secretary General's target under the Sustainable Energy for All initiative. It is for 30 per cent renewable energy, to be delivered not in 2035, but five years earlier, in 2030.

As for the Sustainable Energy for All initiative goal of achieving universal energy access by 2030, the *World Energy Outlook* is less than reassuring. It estimates that the cost of achieving universal access to modern energy services by 2030 is US\$1 trillion, or US\$48 billion a year. That is five times the US\$9.1 billion spent on expanding access in 2009.

At the same time, however, other trends augur well for the prospects of the Sustainable Energy goals. Falling costs of renewable energy coinciding with high fossil fuel prices suggest that both expanded access and cleaner energy can be pursued at once. And improving energy efficiency – reducing losses in transmission and distribution, switching to more efficient appliances, and conserving energy – makes modern energy more affordable.

How to build this synergy? It depends on a mutuallyreinforcing circle of policy incentives and financing to encourage new clean energy technologies and systems, along with energy efficiency measures that help make the new technologies effective and affordable.

This shift is evident in the changing mix of World Bank Group financing for energy development, which has been on a growth trend since 2007, with US\$41 billion committed. Even as the Bank seeks to expand access to modern energy services by the poor, it has also increased its emphasis on renewable energy and energy efficiency improvement.

The World Bank Group's renewable energy portfolio increased from a total of US\$3.1 billion between fiscal year 2008-09 to US\$4.9 billion in 2010-11. Given the simultaneous expansion of the overall energy portfolio during the same period, the renewable energy proportion rose from 20 to 23 per cent.

This is aligned with growing evidence that countries investing in renewable energy and energy efficiency will emerge as winners. Their investments can help expand access, and in the case of manufacturing of renewable energy technologies, also create jobs that lay the foundation for sustained prosperity.

#### VAST RENEWABLE ENERGY POTENTIAL IN AFRICA

Expanding access – while a critical goal in those countries where it is low – is not the only force driving investments in renewable energy. Ethiopia, for example, is developing its vast hydro potential to meet booming demand from its own cities and industries, and to export hydroelectricity to neighbouring Kenya.

Africa's economically feasible hydropower potential is estimated at 45 gigawatts, nearly one-tenth of the world's total. Less than 10 per cent of this potential is being used at present. The countries of the Gulf of Guinea share 8 per cent of the world's proven natural gas reserves. The geothermal potential in the Rift Valley, which covers over a dozen countries from Ethiopia to Mozambique, can provide enough power to electrify 150 million homes.

Developing renewable energy calls for large-scale projects. Over 60 per cent of Africa's hydropower potential is in the Democratic Republic of Congo (DRC) and Ethiopia. But alone, these countries cannot afford the billions needed to unlock it.

Some 20 other countries are simply too small to generate power at a reasonable cost. Regional power pools are the essential framework needed to deliver access to millions while also replacing thermal power with hydro and natural gas at the needed scale. This would power up Africa for a new era of economic growth and development.

Work is underway to realise this vision. The DRC and its neighbours plan a sustainable end to chronic electricity deficits by investing in Inga 3, a 3,500-megawatt power plant at DRC's Inga complex. After that, the Grand Inga Dam, with 39,000 megawatts of capacity, may become a reality. The World Bank is strongly supporting African countries in their efforts to realise this potential.

In Morocco, the Ouarzazate Concentrated Solar Power Project – for which the World Bank approved a major financing package in November – aims to produce 500 megawatts. It will deliver power and jobs for Moroccans, while producing long-term revenue by exporting clean energy to Europe.

These countries are joining middle-income countries making a strategic choice for renewable energy. Developing and middle-income countries led by China, Brazil and India, attracted financial new investment in renewable energy totaling US\$72 billion in 2010, outpacing developed countries in which new financial investment in renewables was just over US\$70 billion. Africa had the largest percentage increase in renewable energy investment among the developing regions, excluding the big three economies, reaching US\$3.6 billion, a 380 per cent increase over the US\$750 million invested in 2009.

While private sector engagement on this front is reassuring, it needs to be supported by policy incentives for renewable energy and energy efficiency. These need to be tailored to local conditions and the nature of energy resource endowments. Again, the World Bank Group is complementing its lending with financial instruments and incentives to leverage private sector financing for renewable energy.

One programme in which the World Bank and International Finance Corporation have partnered effectively with local private sector players is Lighting Africa, which builds markets for household lighting across the continent. In rural Kenya, Lighting Africa is supporting Zonga Mble na Solar (Stay ahead with solar), a campaign targeting 13.5 million people, both households and small businesses, which shows how by switching from kerosene to solar lighting, rural people can improve their health, and increase their savings. Households that typically spend about 10 per cent of their income on kerosene can now benefit from better lighting and more productive time in their homes, schools and businesses.

There is compelling evidence that efforts like this succeed. A good example is how the World Bank worked in partnership with Vietnam to expand access and do it sustainably. In 1993, only 14 per cent of Vietnam's rural population had access to electricity. Today that proportion has shot up to 95 per cent. A third of the power comes from hydro, 40 per cent from natural gas, and just 19 per cent from coal – a proportion in decline. Although annual carbon emissions have grown from 0.4 to 1.3 kg per capita, this is not due to household electricity, which accounts for just 20 per cent of power usage. The World Bank supported this sustained rural electrification drive with technical assistance and zero-interest IDA credits.

With sustained commitment and partnership among governments, the private sector and civil society, international organisations such as the World Bank can help countries replicate Vietnam's example. And with the Sustainable Energy for All Initiative, the UN Secretary-General has launched an unprecedented appeal for action. It is time to respond.



# 22<sup>nd</sup> World Energy Congress 2013 Daegu Korea

October 13-17, 2013

# THE NOC-IOC RELATIONSHIP

ompanies count in the IEF dialogue. And they get their chance to air their concerns in the business forum accompanying the ministerial meetings. Steering the business discussions and channelling business input into the ministerial forum is the Industry Advisory Committee (IAC). This body is very much under industry 'ownership' with company executives chairing it. This reflects the reality that much of the success of the IEF dialogue turns on its work in improving cooperation between the world's NOCs and IOCs.

As **Stuart Brooks of Chevron** and **Adeeb Al-Aama of Saudi Aramco**, respectively chair and alternate chair of the IAC, explain, the Committee is well placed to act as a 'radar screen'. It enables the industry to spot emerging issues of concern, and to put these issues in front of government policy-makers. In a diverse industry, there are naturally nuanced views on the essence of NOC-IOC relationship. **Christophe de Margerie of Total** takes a broad view, seeing joint NOC-IOC ventures as potentially not only long-lasting industrial partnerships but also sometimes extending into the fields of health, education or culture. For **Rex Tillerson of ExxonMobil**, the soundest foundation for IOC-NOC partnerships is mutual acceptance of partners' respective strengths and responsibilities. He extends this to include the role of responsible governments to pursue market-based policies, based on the rule of law and sanctity of contracts. **John Watson of Chevron** sees the pursuit of affordable energy supplies as the best way of aligning interests across the industry.

Farouq Al-Zanki of Kuwait Petroleum Corporation suggests that some pressures may be pushing IOCS and NOCs apart. The former are driven more by demands of capital markets and their international investors, while the latter are primarily pressed by socio-economic and political demands at home. But Kuwait has still struck win-win cooperation deals with IOCs. Sudhir Vasudeva of India's ONGC says his company's partnership with IOCs has been "most satisfactory". India values cooperation, given that it has 17 per cent of the world's population but only 0.6 per cent of oil reserves and 0.8 per cent of gas reserves.

**Peter Voser of Royal Dutch Shell** see opportunities for IOC-NOC cooperation to focus on gas – in particular, the exploitation of sour or tight gas reservoirs common in the Middle East; the satisfaction of fast-growing demand for LNG; and in the capturing of gas whose association with oil can make its extraction hard to manage. **Jakob Thomasen of Maersk Oil** explains his company's innovative use of gas, burned with pure oxygen to produce clean power, pure water and CO<sub>2</sub> for enhancing oil recovery.

Looking to secure future human resources to sustain the industry, **Pierce Riemer of the World Petroleum Council** urges greater efforts to attract young people into the industry.

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# THE IAC: A POOLING OF EXPERTISE AND EXPERIENCE

BY STUART BROOKS, IAC CHAIR, CHEVRON AND ADEEB AL-AAMA, IAC ALTERNATE CHAIR, SAUDI ARAMCO

he Industry Advisory Committee (IAC) of the International Energy Forum, with a membership of representatives from over 40 National and International Oil & Gas and Service Companies, is unique in bringing together, at a working level, so many organisations, spanning the whole breadth of our global industry. This unparalleled range of operational and international experience, is ideally designed to formulate policy input, both for the International Energy Business Forum and through this, for the IEF. With 87 countries now signed up to the new Charter, these are key institutions for helping to promote producer-consumer dialogue and deliver the wider understanding and data, which is so important for the effective functioning of the global energy market. In carrying out this work, we should seek to build on the success of providing greater opportunity for close engagement between CEOs and Ministers. This will ensure that full advantage is taken of the opportunities provided by the back to back – and increasingly integrated - meetings of the IEBF and IEF.

Despite all the demands on time and resources, it is testimony to the importance Member Companies attach to the work of the IAC, that so many of us are able to get together for the twice yearly Committee meetings. Until 2011, the Committee had been chaired by the head of the IEF Secretariat, but in order to ensure that the grouping reflected the interests, concerns and proposals of industry members in a more visibly direct manner, the new IEF Charter, directed that henceforth, the Committee should be chaired by representatives from member companies. I was honoured to have been elected to this position and delighted that Adeeb Al-Aama of Saudi Aramco, was elected as Alternate Chair – thus ensuring a combination of national and international oil and gas company representatives, which is fully aligned with the inclusiveness of the IAC.

Each year, we plan to hold one meeting in an IEF member country and the other in the Riyadh headquarters of the Secretariat. We aim to make discussion as informal and inter-active as possible to take full advantage of the collective expertise, experience and ideas of the membership. We are also looking to extend and enhance the activities of the Committee through additional email and teleconference exchanges.

We can draw on work being undertaken by some of our Member Companies on key topics and could also include in our papers the findings of research carried out by independent and academic organisations. The firsthand experience and global knowledge spread of our own companies can then be combined with external analysis and data collection to provide the CEOs and Chairmen of the IEBF and the Ministers of the IEF with the best available information to help guide their recommendations and decisions.

Both overarching themes of the 5th IEBF, "Energy Investment: Future Uncertain" and "NOC-IOC Cooperation Guidelines for Long-Term Partnerships", are well aligned with the core work of IAC members, and the latter topic is particularly well suited to our work as it mirrors the dynamic and purpose of our committee meetings. And in turn, we anticipate that the findings and proposals of the CEOs and senior executives taking part in the IEBF will feed back into our work to mutual benefit.

Although the chosen IEBF topics will provide the main focus for our work, the wide-ranging membership of the IAC means that it is also well placed to act as a radar screen, identifying issues which we judge are likely to assume future importance and, as appropriate, alerting senior decision makers to these. This process will also serve to increase knowledge within our own Member Companies, helping to promote the wider understanding, which is key to the long-term stability and effectiveness of our Industry. And it is in this spirit, that we also look forward to sustaining the mutually beneficial cooperation with the International Gas Union.

Industry ownership of the IAC, in accord with the IEF Charter Directive is a positive development. However, we remain grateful to the Secretariat for the excellent work they do, not only on the content and organisation of our committee meetings, but also in keeping us all closely informed of the wider activities of the IEF. We should like to take this opportunity to thank Noé van Hulst, whose term of office as head of the Secretariat ended earlier this year, for the outstanding work he has done in so successfully keeping the IEF at the forefront of the international energy agenda. The Committee looks forward to an equally close and positive relationship with the new Secretary General, Aldo Flores-Quiroga.

The IAC is determined to allocate our collective attention and resources to support the work of the Secretariat and to promote within our companies and more widely, the central roles of the IEF and IEBF in helping our industry to understand and respond successfully to future challenges, complexities and opportunities.

# LONG-LASTING PARTNERSHIPS

BY CHRISTOPHE DE MARGERIE CHAIRMAN AND CEO, TOTAL



ecure and affordable energy supplies and well balanced energy markets remain essential vectors in the global economy. The industry has to operate in a context of long-term transition periods, addressing three intertwined issues: meeting growing energy demand, developing a more

diversified energy mix and developing acceptability and sustainability.

These contemporary challenges impose a vision and tremendous research and development as well as investment efforts. Hydrocarbon producers are particularly concerned as oil and gas remain the two most important energy sources for the foreseeable future. Open dialogues between consumers and producers on the one hand and between NOCs and IOCs on the other are very fruitful means in addressing output and market issues. The IEF is living proof of that. Key actors, whether national or international, private or state-held, are faced with largely common challenges. Investments needed in the upstream oil and gas sector need to be sufficiently large to meet demand and to offset the accelerating decline of producing fields. The real constraint is not geology, it is our ability to bring additional resources into production.

Upstream projects tend to become more and more technologically innovative, relying upon advanced knowhow, with a growing share of non conventional: ultra-deep offshore, gas shales, oil sands. Environmental and safety rules have rightly become more stringent, and companies are not entitled to fail in these matters anywhere in the world.

What do IOCs need to implement their mission? They need first to get access to hydrocarbon resources and to benefit from a stable and reasonably attractive investment framework. Once interests are aligned, IOCs must work in such a way that the producing countries where they operate find a genuine interest in developing their hydrocarbon resources.

Traditional business ventures between an NOC and an IOC tend to be replaced by a long-lasting partnership with a broader scope covering training of human resources, technology transfer, environmental management, local industrial and business development. It often extends to the fields of health, education or culture. This demonstrates the genuine interest of most IOCs for the country where they operate, and their willingness to behave as local actors deeply rooted in the society. Total offers many examples in various countries all over the world

of a sincere dedication to local development. Upstream projects are capital-intensive, their implementation takes time and they involve a large financial exposure. Their life extends over several decades. It really matters that the stakeholders concerned feel comfortable with such projects, and can reconcile the needs of producing countries with consumer expectations.

# NOVEL SOLUTIONS FOR MAKING POWER

#### BY JAKOB THOMASEN CHIEF EXECUTIVE OFFICER, MAERSK OIL



he future looks bright for the oil and gas industry as world energy consumption keeps growing. The IEA expects oil demand to rise to 125 million barrels per day in 2020 from today's 106 million barrels. But the reality is also that global oil production is declining fast; this

year it will drop 6 per cent. In addition, we find ourselves in an increasingly crowded market of a variety of national and international players. We all compete for a smaller number of opportunities to explore for and develop oil and gas in more challenging areas under increasingly challenging operational environments. So we need to revive our commitment to technology and human innovation.

The starting point must be to work closer together. It is only through trusting partnerships – with our peers, with the service industry and with governments – that we can meet world demand for energy. Partnerships will allow us to explore previously impossible regions and develop the technology to access oil and gas thought to be inaccessible or non-commercial.

At Maersk Oil, we have just launched our new TriGen technology together with our partners, Siemens and Clean Energy Systems. TriGen is a good example of what could be the next generation of oil and gas development.

TriGen is a power generator the size of a shipping container which burns gas with pure oxygen to produce clean power, pure water and 'reservoir ready' carbon dioxide. The gas can come from stranded fields, finally unlocking their resources. The high purity  $CO_2$  is captured, making the power generation emission-free, and can be transported to oil and gas fields for Enhanced Oil or Gas Recovery. TriGen has the potential to commercialise hydrocarbon resources which have so far remained undeveloped and boost recovery in mature fields, while supplying local populations with clean water and power.

TriGen is a real step-out for a purely upstream company like Maersk Oil. It is a unique product which, for the first

time, joins oil and gas production with power generation in one integrated project. It involves innovative partnerships that share knowledge and technology, and will require close collaboration with NOCs and other resource holders as well as players in the power and water sectors. The prize is significant but no company can solve future challenges alone.

# THE AFFORDABLE ENERGY CHALLENGE

BY JOHN S. WATSON, CHAIRMAN AND CEO, CHEVRON CORPORATION



ince the International Energy Forum last gathered, some dramatic events in the Middle East, Asia, and elsewhere have added to the challenges of energy ministers and of the energy industry. That is just the nature of the energy economy: the whole enterprise is so central to the life

of the world that almost every year brings a critical new development, whether a political crisis, a major discovery, or a potentially game-changing technology.

For all of the unexpected turns, however, there are certain constants that we can set our sights by. We know that demand for energy of every kind will continue to rise with population and economic development. And we know what will make such development and progress possible: affordable energy. I view this as the great objective that keeps us moving forward on all the right fronts. If we stay focused on delivering affordable energy to a world of seven billion people, we will achieve many other important goals along the way – from growth and job creation to the success of new energy sources.

Progress will also depend mainly on the very same energy sources - the ones we draw from the earth. Their share of the global energy portfolio will not diminish in the foreseeable future, even under the most hopeful projections for renewable and alternative fuels that have yet to reach commercial scale. Worldwide demand will grow by some 45 per cent just in the next 20 years. For the industry's part, this will require large, long-term investments in the exploration and development of oil and gas reserves. And prudent public policy will follow a balanced approach that sustains such investment, allowing access to resources while holding energy producers to high standards. One of the worst mistakes we could make is to take the affordability of energy for granted, discouraging production until one day we are confronted with scarcity and all the economic troubles that would bring.

At the same time, we have to understand that as vital

as fossil fuels remain, even they will not be enough in the long term. Every element of the portfolio is crucial to the overall picture. Oil, gas, coal, nuclear, all the various renewables in development – in the end, we will need them all, along with technologies that reduce the amount of energy needed at the point of use. Efficiency, after all, is the cheapest source of energy we have, yielding gains at no cost whatever to the environment.

At the strategic level, there is agreement on these broad goals among the nations represented at the IEF. There is agreement as well that technological innovation is our best ally on every energy front – preserving affordability against the enormous pressures of rising demand. This consensus extends across the industry, and is shaping the policies of many governments – all to the good.

In the end, we can get everything else right, but still go nowhere unless we have affordable supplies of the energy that makes things run, economies grow and improve lives. As this biennial conference recognises, energy producers and government regulators can achieve this objective only together – committed to shared progress, and moving forward as partners in a common enterprise.

# THE ROLE OF NATURAL GAS

BY PETER VOSER CEO, ROYAL DUTCH SHELL



he world faces the long-term prospect of a surging demand for energy. Growing population and prosperity in developing countries will require a massive expansion in energy sources. National oil companies (NOCs) and international oil companies (IOCs) can address

this challenge by forging value-driven partnerships that look beyond short-term economic and political volatility. These partnerships can drive rapid progress towards a secure and sustainable global energy system. And a key part of that system will be based on natural gas.

Thanks to technical advances in the production of tight gas, shale gas and coal-bed methane, total worldwide recoverable gas resources are now estimated to be equal to 250 years of current gas production. The International Energy Agency's new gas scenario forecasts that, between 2008 and 2035, primary natural gas demand could increase by 60 per cent globally. We at Shell see three major opportunities for NOCs and IOCs to increase the global gas supply by exploiting tight gas, LNG and associated gas.

Shell estimates that three-quarters of the nonassociated gas in the Middle East is sour or found in tight reservoirs – or both. These are technically challenging resources to develop safely and profitably. They push the boundaries of innovation. We at Shell know first-hand how the development of tightgas resources transformed the energy outlook for North America. Now is a perfect opportunity for IOCs and NOCs to work together to replicate this success in other parts of the world.

LNG demand is growing in line with the gas import needs of the Middle East and Europe as well as of China, India and a clutch of other Asian countries. In response, global LNG supplies will continue to expand. Moreover, LNG is fast becoming a truly global commodity, supply matching demand as they shift around the world. With an integrated IOC's access to a global customer base, more gas-resource holders will obtain the full value of their resources in the international marketplace.

Because associated gas is tied to oil production, its supply is difficult to manage. A producer nation can find itself with more gas than it needs. Sometimes, for a lack of alternative, the gas is flared. But there is real economic and environmental value in capturing associated gas instead of flaring it. A good example is the Gbaran-Ubie project, executed by the operating company of our joint venture with the Nigerian National Petroleum Corporation. The project captures associated gas and converts most of it into LNG for export. The remainder is used to fuel power plants, bringing electricity for the first time to many people. The project also strengthened the capabilities of many Nigerian businesses.

The technical capabilities of NOCs are first-rate; their people are immensely skilled; and they are fast expanding their international reach. But IOCs bring complementary capabilities to projects that can propel the growth of the global gas market. By extending and accelerating the natural gas revolution, NOC-IOC partnerships have a chance to make an immediate impact in the world's quest for more and cleaner energy. And they would generate significant economic growth for resource-holder nations and their people.

# NOC-IOC VENTURES CAN BE WIN-WIN

BY FAROUQ H. AL-ZANKI CEO, KUWAIT PETROLEUM CORPORATION



he relationship between NOCs and IOCs is critical in facilitating or hindering investment for one very simple reason: Close to 90 per cent of the world's oil and gas reserves are owned by governments, and any IOC investment in the upstream sector is bound to involve close interaction with an NOC or a government agency.

Most international oil and gas companies have invested vast human and financial resources to build a capability to understand and manage below-ground opportunities and risks.

In the 1970s and early 80s, the competitive environment in the industry was characterised by limited opportunities and abundant financial resources, largely because significant parts of the world were closed to direct foreign investment and because of high oil prices.

In the early 1990s, as most governments started to open up, new opportunities became available to the IOCs at a time when the available financial resources were scarcer because of relatively low oil prices. Today, the industry has entered a phase where it has have access to abundant financial resources for a very large number of diverse opportunities.

The global energy business is driven by access to management skills, capital, markets, technology, and innovation. Investment in the global upstream is determined by the balance between opportunity and risk.

When NOCs and IOCs see how their interests are aligned and understood, how each side benefits from the other side, projects acquire a new momentum and investments can take place.

Companies compete for opportunities and improved terms; governments compete for foreign investment, markets and enhanced value from their alliances with IOCs, while NOCs compete for budgets, autonomy, and access to above-ground resources such as management skills and technology.

Both IOCs and governments face new priorities and challenges; the former are primarily driven by the demands of capital markets and the investment communities, with the latter are primarily driven by socio-economic and political demands. Furthermore, IOCs are aware that they are in competition, and are forced by the market to improve their competitive positions; governments need to make the most of their competitive potential.

#### **KPC EXPERIENCE**

In its search for a win-win, and effective cooperation with the industry, Kuwait is using Enhanced Technical Service Agreements (ETSAs), which were developed as a new model, to define the relations with IOCs. These agreements should provide the technical knowledge, the know-how, the expertise and the reservoir management KPC needs.

In February 2010, Shell signed an Enhanced Technical Service Agreement (ETSA) to provide technical as well as management assistance for the development of nonassociated gas. Such relationship will be extended include the development of heavy crude.

NOCs as well as IOCs need to align respective interests in many respects, through cooperation, dialogue and partnership built on the clear synergies all along the value chain, at all levels. This is the most promising avenue to enhance global energy security.



# MAXIMISING INDIA'S ENERGY POTENTIAL

INTERVIEW WITH SUDHIR VASUDEVA CHAIRMAN AND MANAGING DIRECTOR, ONGC

### What is the energy scenario in India, especially with regard to hydrocarbons, and what challenges do you foresee?

While the present global economic distress has not spared India, driven by fundamentals, the country's GDP growth rate is still expected to exceed 7 per cent. As a result, the oil and gas industry is also expected to continue its role in fuelling this growth.

India is currently the 4th largest consumer of primary energy, after China, the USA and Russia. It is also the 4th largest consumer of oil and the 12th largest consumer of gas, and its consumption rate is still growing rapidly. With the economy projected to grow at a steady rate in the range of 7-9 per cent in the near term, per capita energy consumption is bound to increase, and so will the demand for energy.

India will require all forms of energy in the desired quantity and quality to sustain growth. However, for a country with 17 per cent of the world's population, 0.6 per cent of its oil reserves and 0.8 per cent of its natural gas, the task of matching energy requirements with economic growth is a daunting one.

Total hydrocarbon resources in India, inclusive of deepwater, are estimated at around 28 billion tonnes of oil and oil-equivalent of gas (O+OEG), of which,

as of 1 April 2011, initial in-place resources of 10.11 billion tonnes and ultimate reserves of 3.79 billion tonnes have been established. However, converting prognosticated resources into proven reserves, and bringing them to production through intensive exploration and innovative production methods, is a major challenge for the Indian upstream sector.

#### As India's leading exploration and production (E&P) company, what steps is ONGC taking toward strengthening the country's long-term energy security?

The development or growth of any nation, especially of a developing country, is directly related to its energy consumption. ONGC, being the leading energy contributor of India has been playing a pivotal role in ensuring the growth of our nation. Oil and gas together comprise over 45 per cent of India's primary energy basket. Of the total oil consumption, India's indigenous contribution in terms of oil production is about 25 per cent, whereas about 75 per cent is imported. And in the case of gas, the present scenario is precisely the reverse; about 75 per cent is indigenously sourced and about 25 per cent is imported. ONGC produces about 60 per cent of the total indigenous oil and gas at present. It is a matter of pride for us that our pioneers have shaped the energy landscape of the nation by discovering 6 out of the 7 producing basins of India. Through its 370odd discoveries to date, ONGC has established about 2.4 billion tonnes of hydrocarbon reserves, of which 1.506 billion tonnes has already been produced and has contributed toward the growth of our nation.

In order to secure further energy assurance for the country, ONGC, through its wholly-owned subsidiary ONGC Videsh Limited (OVL), has forayed abroad to acquire equity oil and is presently operating 33 E&P projects in 15 countries. Today, ONGC and OVL combined source about 1.27 million barrels of oil and oil equivalent gas daily for 1.2 billion Indians. In addition, ONGC has extended its core competency to explore new sources of energy in the form of coal bed methane



ONGC PRODUCES 60 PER CENT OF INDIA'S OIL AND GAS

(CBM), underground coal gasification (UCG), shale gas and gas hydrates, and has also ventured into new and renewable sources of energy.

#### Global natural gas reserves are of the order of 187 tcf and it has a low carbon footprint as well; how is India placed with regard to utilising this eco-friendly fuel?

Dependence on oil needs to be drastically reduced by utilising gas wherever possible. For this reason, gas infrastructure in India needs to be developed expeditiously.

India is seeking to supplement domestic natural gas supply through other options such as cross-border gas pipelines and LNG to enhance the availability of natural gas. However, India would have to develop commensurate supply and distribution infrastructure as well to utilise imported gas. The pipeline network in India is currently one of the least extensive amongst gas consuming countries; however a national gas grid is being implemented in phases to open up new markets for this eco-friendly fuel.

Unconventional sources such as coal bed methane, underground coal gasification, gas hydrates, shale gas, etc, have huge potential. The Indian upstream industry is keen to monetise these resources; however it will require substantial investment, technology infusion and innovation, as well as an enabling policy framework.

After the shale gas revolution in the USA, India too is keen to monetise its shale gas resources. Rough estimates have pegged the reserves of gas in shale deposits across the country at 63 trillion cubic feet (tcf), which is much higher than the reserves of conventional gas available in India. ONGC discovered shale gas in Damodar Valley in January 2011 and has drilled 4 wells as an R&D effort. ONGC has identified the Gondwana, Krishna Godavari, Cauvery, Cambay and Indo-Gangetic basins as a potential shale gas province and is awaiting a National Shale Gas Policy, which is likely to be announced this year, to prioritise its efforts toward shale gas exploration.

In addition, India is endowed with substantial coal reserves that can be monetised using coal bed methane and underground coal gasification. Then we have methane gas hydrates in the KG and Mahanadi basins, the Kerala-Konkan basin and offshore Andaman. The total prognosticated gas resource from gas hydrates in the country is placed at 1894 tcm. So there are substantial upsides to the domestic gas scenario and we at ONGC are active on all fronts, i.e. CBM, UCG, and shale gas, as well as in gas hydrates.

#### ONGC has a number of joint ventures in India and some abroad. What has been ONGC's experience of cooperation with IOCs, given that IOC-NOC cooperation is a major topic for IEF activities?

The experience has been most satisfactory. Whether an NOC or an IOC, we are business entities and work together



ONGC HAS VENTURED INTO NEW AND RENEWABLE SOURCES OF ENERGY

to achieve common goals under a wellestablished commercial framework. Working together enables the use of complementary skills and competencies. While IOCs invariably possess better technology and management practices, NOCs have access to reserves, local business acumen, better understanding of local regulatory frameworks and a social charter focused on community development around operational areas. Together, this combination has delivered on its promise and we remain extremely sanguine about this relationship in monetising global oil and gas reserves, prevailing especially under the regime of 'exigent hydrocarbons' and unconventional hydrocarbons that needs a healthy infusion of cutting-edge technology as well as capital.



# UNDERSTANDING ROLES AND RESPONSIBILITIES TO SPUR INVESTMENT AND INNOVATION

BY REX W. TILLERSON CHAIRMAN AND CEO, EXXON MOBIL CORPORATION

nergy is the lifeblood of the global economy, and an enabler of economic, social and environmental progress in every developed and developing nation. Given the central role energy plays, it is imperative that world leaders recognise and address the challenges we face in continuing to develop sufficient, reliable, responsible and affordable energy in the decades ahead.

We will need government and industry, international oil companies and national oil companies, entrepreneurs and investors to work together as never before. We all have something to contribute to the effort to unlock new supplies of energy, increase energy efficiency, and reduce the environmental impacts associated with energy use.

The best way to achieve our shared aspirations is to understand our respective strengths and roles in economic growth and energy production. Government and industry each have core responsibilities. By comprehending and capitalising on them, we can build markets that attract long-term investment, foster open competition, and develop the innovative technologies and partnerships that maximise value for all.

The scale of the challenges ahead – driven by population growth and expanding economies – makes clear the need for understanding and cooperation. The world recently noted a significant global milestone when the global population surpassed 7 billion people. By the year 2040, experts project that the global population will grow by close to 25 per cent – reaching nearly 8.7 billion people. Not only will populations grow, but so will the global economy, which is set to more than double in size between now and then.

Taken together, these two trends – the continued growth in the world's population and the associated expansion of economic output – will mean that global energy demand will be more than 30 per cent higher in the year 2040 than today.

In the years and decades ahead, the world will need to invest in and develop all economically competitive sources of energy if we are to meet projected demand.

#### NEED FOR OIL AND GAS

The most important sources in the foreseeable future will continue to be oil and natural gas. In the decades ahead, they will provide nearly 60 per cent of the energy used in the global economy. But we will see a continued evolution in energy use. By the year 2040, oil will remain the most widely used fuel, but we expect natural gas will grow fast enough to overtake coal for the number two position. In fact, demand for natural gas will rise by more than 60 per cent over the next 30 years.

The single biggest driver of demand over the next three decades will be the need for energy to generate power – a sign in itself of increased global prosperity as more consumers and businesses have access to a secure and reliable electricity supply. By 2040, the fuels used to generate electricity will account for more than 40 per cent of global energy consumption. Natural gas has already proven itself to be a safe, reliable, affordable, and efficient means of power generation, and it will continue to grow in importance in this sector.

A second major part of this evolutionary change will be where that oil and natural gas will come from. Although the majority of oil and natural gas will continue to come from conventional sources, in the years ahead, a growing share will come from unconventional sources, such as shale, tight sands, deepwater, and oil sands.

High-impact technologies have made these unconventional sources not just economical, but environmentally responsible. This development of unconventional sources is a reminder that innovative thinking, advanced technologies, and partnerships will be the key to meeting the challenges of the future.

#### ROLES AND RESPONSIBILITIES: INDUSTRY

Both industry and government have core responsibilities that when fulfilled help encourage and expedite the investment and innovation we need. For industry, we have a responsibility to develop and deliver new supplies of energy in a safe, secure, and environmentally responsible way. As part of this responsibility, we must engage in effective risk management. We must engage in long-term planning, undeterred by the ups and downs of business cycles. We must invest with discipline and ingenuity. And we must focus relentlessly on our operational integrity and best practices – to protect our employees and the communities where we operate.

Our track record as an industry shows that not only can we fulfill these responsibilities, but we can do so in a manner that generates new economic opportunities for host nations and maximises value for consumers and shareholders.

One of the most effective ways we do this is by building international partnerships that leverage our strengths. For instance, over the years, National Oil Companies have demonstrated a wide range of capabilities as strong partners in energy development, including secure access to resources, detailed experience operating in specific environments, and a firsthand understanding of the local and national governments' regulations and requirements. These strengths are augmented by the educational and cultural leadership that NOCs bring to their people as they pass on new skills and create new employment opportunities.

Our industry is further strengthened by the contributions of International Oil Companies. IOCs have an unparalleled breadth and depth of experience taking on energy challenges around the world, across a wide range of conditions, developing new approaches and best practices that can be brought to new partnerships and new countries.

We invest in large-scale capital projects, develop new technologies, and use our global perspective to maximise value along the entire energy value chain. IOCs have pioneered exploration and production in some of the world's most remote, most difficult environments. And we have done so by maintaining a steadfast commitment to innovation and technological advancement to make what was previously thought impossible, possible. Further improving our operational expertise and developing and implementing best practices is a must in our business. Without continuous improvement, we can lose our competitive edge – and our ability to create higher value – and face the prospect of falling behind.

As we look at the energy needs in the decades ahead, it will take our entire industry combining these strengths to meet growing energy demand. We will need access and knowledge, technology and expertise, project excellence and operational integrity, to deliver reliable and affordable energy to the billions of people who need it.

#### ROLES AND RESPONSIBILITIES: GOVERNMENT

The energy and economic challenges the world will face in the decades to come require a business and policy climate that enables investment, innovation, and international cooperation. Here is where sound policies are critical. In other words, industry has an important role in the future of energy – but so do governments.

When governments fulfill their roles effectively, the results can be extraordinary – bringing enormous benefits in terms of investment, social and economic growth, and job creation. These benefits go beyond promises of a better future for citizens. They put in place the essential elements to deliver that better future – with increased education and improved healthcare.

Our industry especially respects the role that only government can play in determining the rules and framework to enable and stimulate competition. Because we are a global industry, we can see which principles work and why they should underpin energy policymaking.

Simply put, history proves that energy policies that are efficient and market-based are the best path to economic growth and technological progress. By promoting the rule of law and the sanctity of contracts, government helps attract, increase, and sustain capital flows so that they are directed to their highest and most efficient use.

Governments and their leaders must make clear and set high standards of ethical conduct for all participants – industry, government employees and their citizens. Government also has a responsibility to provide a stable and fair legal, tax, and regulatory framework. Uncertainty undermines the long-range thinking, investment decisions, and mutually beneficial partnerships that allow our industry to excel. Our industry thinks in terms of decades, not years. To do so successfully, we need the confidence that the rules of the game will not be changed or altered haphazardly.

Government has a role that industry cannot replicate or replace. Only governments can open – and keep open – the doors to international trade and cooperation between nations. The more energy policies promote free trade and the free flow of goods, services, and expertise, the more they can help maximise the value of energy resources for all.

Finally, energy developments are most effective when there is a level playing field for all participants. By allowing people, ideas, and industry to come together in innovative, competitive ways for long-term projects, citizens and consumers benefit from the fairness and transparency of free markets.

If we meet our roles and responsibilities together, government and the energy industry – along with citizens and consumers at large – can lay the foundation for sustained economic growth – by providing reliable, affordable energy in a safe, secure, and environmentally responsible way.

For millions of people, this will mean new jobs and new opportunities in the years ahead. For governments, sound, long-term policies will mean increased revenues and greater prosperity. And for the billions yet to be born, an energy industry able to operate in a climate of investment and mutual cooperation will mean a brighter future and a better life for all.



# **RE-ENERGISING THE INDUSTRY WITH NEW IDEAS AND YOUNGER TALENT**

BY PIERCE RIEMER DIRECTOR GENERAL, WORLD PETROLEUM COUNCIL

any would agree that three critical challenges for the oil and gas sector going forward are innovation in technology, the environment and geo-politics. Key to finding solutions for each of those challenges are strategic alliances and closer cooperation among governments, industry and other relevant stakeholders. This is even more important in times of political or financial crisis.

Economic growth and liberalisation of markets throughout the world have spurred significant demand for oil and gas over the last decade. In the past year, however, the global financial crisis has resulted in a steep worldwide recession which, along with unpredictable energy prices, has significantly impacted the oil and gas sector.

The effect has not been the same on all companies. Particularly small and mid-market capitalisation companies have been hurt by the reduced availability of capital and tougher credit terms that have followed the world financial crisis. Although the recession has resulted in a slowing down in oil and gas activity, in some parts of the world overall there is little change, and the long term fundamentals for future demand from the sector remain positive. Progressive companies now have the opportunity to position themselves to benefit from future growth.

As we are coming out of the global economic crisis new opportunities open up for international oil companies (IOCs) to partner with national oil companies (NOCs) on a long-term, sustainable basis. Those NOCs that have been affected most by lower prices and the economic recession may now welcome the IOCs' technological and operational expertise and access to capital. The downturn can therefore be a good time to focus on forming and strengthening strategic alliances, particularly with NOCs.

Although cooperation between IOCs and NOCs is not without its challenges, the potential rewards of enhanced cooperation are significant for both parties and indeed, there are many examples of successful partnerships. The World Petroleum Council (WPC) can facilitate the building of important bridges for the two sides to find ways to work together. Strategic alliances enable businesses to gain competitive advantage through access to a partner's resources, including markets, technologies, capital and people. Teaming up with others adds complementary resources and capabilities, enabling participants to grow and expand more quickly and efficiently. Many fastgrowth technology companies use strategic alliances to benefit from more-established channels of distribution, marketing, or brand reputation of bigger, better-known players. Companies might also consider cooperating with other firms by outsourcing the cost of non-core functions, freeing them to focus on key areas.

Technology will be a key to the future and in particular as we head into an unconventional future. Conventional reserves of oil and gas that are easy to access and inexpensive to produce are largely gone. Accordingly, industry is exploring in ever more challenging new frontiers where large oil and gas discoveries are being made. The development of such new discoveries will require deployment of cutting edge technologies. Some examples include the huge presalt discoveries offshore Brazil, at water depths of 2,000m to 3,000m, total reservoir depth of approximately 5,000m to 6,000m, located over 300 km from the shore. Other very challenging environments include Lower Tertiary of the Gulf of Mexico, also in ultra-deep waters, the deep gasbearing reservoirs of Siberia and the sedimentary basins of the Arctic Circle.

Enhanced oil recovery is still one of the more promising areas to increase, in the fairly short term, the reserves and production of existing fields. The development of new technologies are significantly increasing recovery factors and prolonging the life of mature oil and gas fields. In particular the "Reverse Resources" strategy of utilising  $CO_2$  both technically and financially in mature fields is creating a lot of interest.

Unconventional oil and gas resources, such as the oil sands of Canada and Venezuela, and the gas-bearing Barnett shale of Texas, are quickly becoming technically feasible and economically very attractive. Advanced technologies, particularly in the completion of gas-bearing shale, steam assisted gravity drainage of heavy oils and minimisation of the environmental impact of oil sands mining and processing are key to the further development of these resources. With all these activities we see close cooperation between IOCs and NOCs. So the future for the oil and gas industry is looking quite bright.

However, we will need a dedicated and experienced workforce to deliver these increases in our energy supply. Aggressive cost-cutting should try to avoid making wholesale cuts in the workforce, as the workforce in the oil and gas sector is rapidly ageing and talent is increasingly scarce. Forward-thinking companies should consider moving in the opposite direction – taking advantage of the downturn to strengthen their workforce in key parts of the world and forming strategic alliances with educational and academic institutions.

Addressing the youth and involving young people in the design of our future energy solutions is therefore one of the key issues for the 66 member countries of the World Petroleum Council (WPC).

In many countries the number of young people joining the industry or even graduating in related areas has been steadily decreasing. Therefore, the global petroleum industry is now on the edge of a demographic cliff with an ageing workforce shortly to retire, while not enough young people are finding the industry attractive enough to join. This growing skills gap may impede the industry's very ability to operate, especially with respect to major exploration and production projects. This challenge is particularly significant in the context of the world's rapidly growing demands for energy and calls for greater adherence to responsible social and environmental practices.

#### **CRAFTING THE FUTURE**

It is in response to this challenge, that the World Petroleum Council created its Youth Committee, with young representatives from its member countries, to bring a higher profile to the issue of the serious shortage of talented young employees and form an alliance with young people themselves in order to find possible solutions to our challenges. We feel that it is important that young people are at the forefront of resolving this issue, as they are the ones who will inherit this industry, and should be involved in crafting its future.

The WPC Youth Committee is intended to promote a realistic image of the petroleum industry among the youth, together with its challenges and opportunities. It is also initiating the creation of a collaborative and global forum for young people to be heard and new ideas to be championed. This is done both at our triennial World Petroleum Congress and at the WPC Youth Forums.

Many of our Youth Committee members bring their experience from the global level to the national level. With the support of their National Committees they build local networks, and promote closer interaction between young people and those involved at all levels of the petroleum industry in their country.

Thanks to social media and tools like Facebook, Twitter and LinkedIn, young people that join the National Youth Committees can tie into a local network of the country to communicate with each other, find job information or special education programmes in the leading national oil and gas companies and together launch new initiatives, in a way that was never before available to older generations.

We hope that through the National Youth Committees our young members and senior people will find common ground and be inspired to work together on finding new strategies for the future of the oil and gas sector. This will allow them to pursue the common goal of creating a more sustainable petroleum industry and making the world a safer, more just, cleaner, and better place to live.

In order to deliver energy to all, we need an injection of youth energy. You can do so through three key factors: the sharing of knowledge, choosing and adapting technological solutions and by challenging conventional wisdom and thinking outside the box.

One of the greatest challenges we face as an industry is to enhance our reputation and credibility with our many stakeholders. We represent a major part of the solution in meeting the world's future energy demand. We must respond to this challenge in a way that is economically viable, environmentally sound and socially responsible. In order to maximise our contribution to this debate, we need to build trusting relationships with our stakeholders. We also must level the playing field within our industry, so that all companies recognise and respond to pressing global issues in a clear and consistent manner.

Organisations like the IEF and WPC play a significant role by providing a forum for stakeholder dialogue. In fact, our recent Congresses in Madrid and Doha were designed to do just that. The Doha Congress concluded that there are still ample reserves and resources of oil and gas to be developed, both in mature basins and new frontiers. We have more than enough petroleum to meet demand for many decades for the benefit of all mankind. However, in order to earn a societal licence to operate and to be profitable, the industry must invest responsibly and ensure the sustainability of the environment for the next generations. In addition, communities that are impacted by oil and gas activities must enjoy a fair share of the benefits associated with that development.

Companies that adopt corporate social responsibility as part of their core business strategy and adhere to principles of transparency, business ethics and respect for human rights will gain the licence to prosper and be profitable for the long term. This IEF forum provides an excellent opportunity for networking among those key stakeholders and for expanding and strengthening international links in this region along with the global energy sector, and we welcome being part of it.

# All this in our pipeline

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