Joint IEA-IEF-OPEC Report

On the

Sixth Symposium on Energy Outlooks

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Contents

1. Introduction

Below follows a summary of the issues discussed at the Sixth IEA-IEF-OPEC Symposium on Energy Outlooks on which key substantive details are highlighted in the main text of this summary record. Full presentations and IEF Dialogue Insights are retrievable on the IEF website at www.ief.org.

The International Energy Agency (IEA) and the Organization of the Petroleum Exporting Countries (OPEC) each year publish energy market outlooks based on the rigorous analysis of available statistical data, market fundamentals, macroeconomic developments, policy trends and assumptions. In addition, on the occasion of the biennial International Energy Forum (IEF) Ministerial meetings, both organisations present focussed findings that they derive from their analysis and outlooks.

The Sixth Symposium is part of a wider trilateral work programme undertaken by the IEA, IEF and OPEC that was endorsed by Energy Ministers at the 12th IEF Ministerial Meeting held in Cancún, Mexico 29-31 March 2010, as referenced in Attachment Two of the Cancún Declaration. In addition to the Joint IEA-IEF-OPEC Symposia on Energy Outlooks, the joint collaboration involves High-Level Workshops on Physical and Financial Energy Market Interactions and Gas and Coal Market Outlooks.

In their communiqué concluding the 1st G20 Energy Ministers Meeting in Istanbul, Turkey on 2 October 2015, Ministers welcomed the joint work of the IEA, IEF and OPEC to further understand energy outlooks and the interaction between physical and financial markets and encouraged the IEA, IEF and OPEC to continue their fruitful collaboration on market transparency.

As part of this on-going, shared effort to enhance dialogue among related market actors, the IEA, IEF and OPEC jointly hosted the Sixth Symposium on Energy Outlooks at

the IEF Secretariat in Riyadh on 16 February 2016. The Symposium gathered more than 100 experts from industry, government and academia. Participants considered the findings of the comparative analysis of the IEA and OPEC outlooks based on the IEF-Duke University Introductory Paper prior to the Symposium's convening, including the progress made in understanding differences in historical baseline data during two preceding expert meetings on non-OECD supply and demand baselines. Experts exchanged views on data collection methods with a view to ease baseline discrepancies, and agreed that the comparison of IEA and OPEC outlooks will become more meaningful overtime when differences in historical baseline data are accounted for. Participants commended the improved comparison across geographical groups. Following presentations by the IEA and OPEC on short-, medium-, and long-term outlooks, senior experts presented their perspectives on future market trends in view of on recent market and policy developments. The Symposium devoted special attention to the impacts of a low oil price environment on supply and demand stability and growth. Sessions were governed by the Chatham House Rule to ensure a constructive, open discussion.

2. Key Findings from the Sixth IEA-IEF-OPEC Symposium on Energy Outlooks and Highlights from Recent IEA and OPEC Outlooks

In the opening session, the IEF recalled the rationale behind the annual Joint IEA-IEF-OPEC Symposium on Energy Outlooks. This is rooted in the shared interest of producers and consumers in market transparency. Improving collective understanding of energy market dynamics reduces investment uncertainties and risks of future market imbalances for both producers and consumers. The IEF highlighted the patterns observed in the short-term revisions to liquid supply and demand projections that both IEA and OPEC had made over the past four years and reflected upon the scenarios that are most relevant to the producer-consumer dialogue (The IEA's Current- and New Policy Scenario and OPEC's Reference Case). Participants were reminded of the progress made over the past five Symposia, including related technical meetings, as well

as of the opportunities to deepen understanding, and further advance the comparability of the IEA and OPEC energy outlooks.

Discussions on historical demand and supply data quality in non-OECD regions, the comparability of IEA and OPEC data across geographical regions and sectors, and the understanding of historical baseline discrepancies underlying projection time frames continue in technical meetings among IEA, IEF and OPEC experts. Differences in fuel type definitions and classification methods and in the formulation of IEA and OPEC outlook scenarios result in varied assessments that are difficult to compare. Efforts towards further clarifying issues on methodologies and assumptions applied by both parties would facilitate a deeper understanding of the market and serve to improve decision-making in policy, investment and trade.

Differences in demand and supply baseline data for IEA and OPEC outlook projections are attributable to varied data assessments of non-OECD nations. These contributed in part to the difference in short-, and longer-term demand forecasts. Long-term liquid demand projections vary in accordance with distinct methods and assumptions. Symposium participants however observed that the OPEC Reference Case and IEA New Policy Scenario differ only by about 1 million barrels per day in 2040. On the supply side, IEA and OPEC both showed a slowdown in non-OPEC supply growth and an increase in OPEC supplies in the short-term. More contrasting views were expressed on non-OPEC liquids supply growth rates in long term outlooks, notably in relation to liquids supplies from the Americas.

2.1 Short-term Outlooks

Short-term outlooks reviewed last year's energy market developments and provided market projections for the year ahead based on the latest monthly assessments. Projections took into account global and regional GDP growth forecasts, manufacturing-,

and other key macroeconomic indicators including oil price trends in relation to currency indexes and stock-levels. Economic growth forecasts had been slightly revised upwards for 2016, and demand growth data of the IEA and OPEC assessments converged on 1.2 mb/d in their assessments for 2016. A slowdown in demand growth of 0.6 mb/d and 0.4 mb/d respectively compared to 2015. Both organisations observed a moderated growth rate in non-OPEC supply in 2015 and projected contraction in 2016 by 0.6, and 0.7 mb/d respectively. The lion's share of this decline in non-OPEC production was attributed to US output. On the demand side, world oil demand would continue to grow strongest in non-OECD countries despite a slowdown in 2016 due to changing macroeconomic conditions. Changes in demand patterns in OECD economies accounted for weaker demand growth but surprises to the upside were not ruled out. Both organisations noted the large build in inventories that exceeded five-year averages in the OECD, but expected supply and demand to balance markets by the second half of 2016.

2.2 Medium-term Outlooks

Symposium participants' discussion of the medium-term energy market outlooks drew attention to changes in the policy and market environment and the direction of future energy demand and supply patterns. The ability of US unconventional production to balance supplies in relation to the recent drop in oil prices was also touched upon.

The IEA drew attention to the impact of recent country pledges to reduce emissions, cost reductions in renewable-, and other energy technologies. Potential levelling of emissions in the 2020s would remain dependent on policy implementation including but not limited to technology deployment and implementation of more stringent energy efficiency standards. However, lower fossil fuel prices may slow deployment of renewable energy sources according to participants. World electricity demand is expected to grow and the reliance of emerging economies on abundant and cheap coal

remains largely unaltered. Yet emissions from the power sector may plateau by 2020 due to policy and technology advances, according to IEA assessments. The impact of lower oil prices for medium-term demand and supply were also discussed. OPEC highlighted the positive impact low oil prices had on medium-term oil demand. This was an upward revision on last year's assessments. OPEC also drew attention to the fact that projected medium-term refining capacity expansion was still set to be larger than required by 2020 demand projections. On the supply side, producer and consumer perspectives converged on a slow-down in non-OPEC oil supply growth. They also noted the many new variables at play, including but not limited to, the pace of new energy technology deployment and developments in the transport sector that currently add to the underlying uncertainties of outlook projections.

2.3 Long-term Outlooks

In the longer-term energy market outlook, the IEA drew attention to the fact that beyond 2020, further policy measures and technological innovation will be needed to foster more sustainable energy market functioning. Gas increases fastest of all fossil fuels in the world energy mix of both the IEA and OPEC long-term energy outlooks to 2040. It may account for up to three quarters of imports in developing Asia. Renewable energy deployment, competition from coal, and low prices may however create hurdles for gas to access new market segments especially in Asian growth economies.

Consumer perspectives were confident that innovation would continue to stimulate low carbon technologies and further increase efficiency gains. Reliance on increasingly more complex and remote geological structures, however, may off-set these gains in the oil and gas sector. Still the share of fossil fuels shall continue to amount to around 80% of world primary energy demand by 2040 according to the long-term projections of the IEA's and OPEC's main scenarios. At least half of this share in the energy mix comprises oil and gas, whereby OPEC projects that gas will supplant oil to account for 27.9% of

world primary energy demand by 2040.

Discussants also considered the implications of oil prices remaining low for longer. On the one hand, it was suggested that this might limit investment and non-OPEC supply growth, increase reliance on Middle Eastern oil, and risk a sudden market rebound. On the other hand, some participants felt that low oil prices would stimulate demand and enable market reform, but could also slow down renewable policies, energy efficiency gains and emission reductions.

Participants observed that current forward prices do not support the long run cost for investment in many new projects. They noted that high-cost oil, currently supplied on short-run marginal cost, will contract and that markets will eventually tighten. Views, however, differed on the timing and rates at which this would occur, in particular in relation to the relatively untested nature of US unconventional oil production. Discussions also touched on the ability of producers to increase productivity, and the impact that credit and financial markets have on investment in high-cost production. There was general consensus that low cost producers would increase their market share. However, experts held different views on the impact that these changes would have for high-cost producers in the longer term. There was agreement on the need for continued dialogue and greater data transparency in this area.

3. Views on Short-, Medium- and Long-term Energy Outlooks from Industry and Academia

In the second session, senior industry experts provided their perspective on energy outlooks. They discussed how present market dynamics reflect cyclical or more permanent changes in energy market functioning. Conversations centred on the factors contributing to the current period of lower-, and more volatile oil prices, as well as the policy and market developments that would shape new balances over short-, and longer

term projection periods. On the demand side, participants referred to a rebound in oil demand supported by low oil prices, but also highlighted changing patterns in energy demand and changing macroeconomic conditions as key factors affecting overall demand. In the medium-, and longer term, however the prevailing view was that oil and gas demand would remain robust, especially in Asian growth markets. With respect to the supply side, participants mentioned that financial market support for maintaining output had eroded and that investment incentives for major new projects are limited by current market signals. Experts noted that markets would eventually tighten in response to supply side adjustments. Views differed on the timing and pace at which this would occur. There was consensus that low cost producers would increase their market share, but experts held different views on the impact that subsequent price and policy changes might have over the longer-term.

Finally, experts discussed the implications of current market developments for global gas supply and demand. Though markets are likely to remain well supplied in the medium term, participants agreed that policy and industry engagement remain important to capitalise on gas requirements in relation to climate change, the integration of renewables and urban pollution in growth economies.

4. Perspectives on the impacts of a low oil price environment on supply and demand stability and growth

The third session addressed the impact of a low oil price environment on market stability and supply and demand growth. Experts gave their perspectives on the consequences of low prices for investment and macroeconomic performance. The potential for reform by governments and cost reductions and productivity gains in the energy industry were also debated.

In respect of the supply side, participants agreed that many projects would still come

on-stream in the short-, to medium-term as a consequence of investment decisions made earlier. They also observed that alongside cash flow requirements and credit conditions that have also stimulated output, many of the hedges that enabled high-cost producers to maintain supply have diminished. The aggregate net impact of current investment deferrals, project cancellations and shutdowns on production, indicate that a supply side response is building and markets may recover in the years ahead. The new dynamics created by unconventional energy technologies, the availability of more geographically dispersed production centres, and more integrated market structures on both the supply and demand side, point at a more competitive energy market environment. Though discussants appeared to generally agree that markets are adjusting, views differed over the factors that would accelerate or delay a realignment of the global oil supply and demand balance.

Alongside the cyclical aspects of current excess supplies, large inventory builds and muted demand recovery dynamics in light of economic growth prospects, Symposium participants focused on the potential of structural changes in oil supply, production and trade patterns. Discussants noted that both the deployment of new technologies and changing production incentives are likely to increase uncertainty on the short-term. Though this may delay investment and lead to more market volatility, fundamentals will balance markets over the longer term.

Participants agreed that current uncertainties do call for continued dialogue amongst producer and consumer countries and market stakeholders.

5. Conclusions

The IEA-IEF-OPEC Symposia on Energy Outlooks provide a unique opportunity to share perspectives on energy market developments and deepen collective understanding of future energy outlooks. Discussions at the Sixth IEA-IEF-OPEC Symposium enabled senior

government stakeholders and industry experts to compare various assumptions and exchange views on their energy supply and demand projections. The Symposium offered a timely and unique opportunity to advance further the producer-consumer dialogue now energy markets are at a critical juncture. Though current market developments may delay investment and fuel further market volatility in the short-term, long-term market fundamentals remain largely unchanged. These are expected to balance markets in line with the evolving policy requirements of producer and consumer countries. New variables in energy technologies as well as changing producer-, and consumer preferences, point at the importance of dialogue and energy data transparency to improve understanding and help address stakeholder concerns.