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INTERVIEW on the *World Energy Outlook 2015*

Fatih Birol, Executive Director of the IEA:

The mechanism of adjustment in the oil market is rarely a smooth one

- *We should not index our concerns about energy security to changes in the oil price*
- *In the Low Oil Price Scenario, there is increasing reliance on the Middle East to provide the world's oil*
- *A price of around \$60-70/b should be enough to keep U.S. tight oil production stable to 2020*
- *Production projections for Iraq: 4.4 million b/d in 2020 and 7.9 million b/d in 2040*
- *A big financing challenge: the world is moving towards more capital-intensive technologies*
- *The IEA has no choice but to modernize*



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Pétrole et Gaz Arabes (PGA): *The central scenario of the **World Energy Outlook 2015**, published in November 2015, remains the **New Policies Scenario**. In the NPS the IEA takes into account policies and measures adopted as at mid-2015 but also some policy intents. Politicians are never short of intents and of statements. Is it really a good idea to incorporate them under the framework of this scenario [all the questions below will make reference to the NPS - Editor's note]?*

Fatih Birol: The New Policies Scenario (NPS) takes only a cautious view on the extent to which today's policy commitments and plans are realised in practice, based on a case-by-case assessment of the many institutional, political and economic obstacles that exist, as well as, in some instances, a lack of detail in announced intentions and about how they will be implemented. So this scenario is not just a reflection of policy ambitions, but also of policy realities.

PGA: *One of the key messages of the WEO 2015 is that it is not the time to relax in terms of **energy security**. Are you very concerned about the possible negative **impact of low oil prices** in this regard?*

F. B.: I think it would be a major mistake to index our concerns about energy security to changes in the oil price. Low prices bring benefits to consumers, but they can also sow the seeds of future energy security problems if there is a major shortfall in investment. In the case of oil and gas, we are looking at the possibility of a second successive year of decline in upstream spending in 2016, something that we have not seen since the 1980s. This is the way that the market rebalances, but there is always the possibility of an over-correction. The mechanism of adjustment in the oil market is rarely a smooth one.

Even a prolonged period of lower prices would also raise questions about future energy security. In this year's World Energy Outlook, we have introduced a Low Oil-Price Scenario, in which the oil price trajectory stays in the \$50-60 per barrel range until the 2020s. As higher-cost producers get squeezed out of the production mix in this scenario, so there is increasing reliance on the Middle East to provide the world's oil and increased reliance on a few strategic chokepoints, such as the Straits of Hormuz, to bring this oil to consumers.

PGA: *The IEA estimates that the fall in revenues for producing countries and the boost to global demand growth make a prolonged period of **low oil prices** progressively less likely. Could you elaborate on these arguments?*

F. B.: Over the longer term, higher oil demand at low oil prices can only be met through rapid development of lower cost resources across the Middle East. To refer again to our Low Oil Price Scenario, without this increase in output, which pushes OPEC's share in oil production above 50% (levels last seen in the early 1970s) the price would have to rise earlier to balance the market. The strains that the low price outcome would put on the fiscal balances of key producers make a Low Oil Price Scenario look increasingly unlikely the further it is extended out into the future.

As far as producers' revenues and financial flows are concerned, the consequent risks to their fiscal balances are substantial. Some producing countries, but by no means all, have accumulated a large financial buffer that allows them to withstand a period of low oil prices, but the depth of this ability varies widely between countries, and all would be affected over the longer term by the impact of lower revenues on their social programmes and other domestic priorities. Prices in the \$60-80/b range are well below the estimates of "fiscal breakeven" for all but a handful of smaller exporters. A prolonged period of low oil prices therefore implies an intensely difficult process of meeting the aspirations of a growing population while scaling back public spending. In practice, this assumption looks more and more precarious the longer the period of low prices persists. This is why we assume in the New Policies Scenario that, once the market starts to rebalance and non-OPEC production growth stalls, OPEC countries revert to a more traditional strategy that prioritises revenue maximisation.

PGA: *In the NPS China's net oil imports are in 2040 nearly five times those of the U.S. The Chinese authorities must be very upset about this trend, which could have serious geopolitical consequences for their country. Could you comment on this issue?*

F. B.: In 2015, Chinese monthly crude oil imports have already occasionally surpassed those into the United States, but with part of the imported cargoes destined for storage fill, rather than refinery use, it may still be some time before China is established firmly as the biggest crude oil importer. But the trend is unmistakable and by the early 2030s, in our projections, China is set to exceed the historical record import level of the United States (just over 10 million b/d in 2005) and continues to increase its reliance on the international crude oil market thereafter.

Would this be bad news? We think that there are ways to mitigate the risks. China has been actively building its oil storage capacity and continuously filling it. Chinese companies are actively engaged in markets around the globe. The strong policy focus on efficiency and alternative fuels helps to take the edge off oil demand growth. International cooperation also has a role to play – at the IEA, as part of our growing association with China, we are also working on a range of oil security issues.

PGA: *It seems that with oil prices of \$60-70 per barrel U.S. shale/tight oil production would remain more or less stable. The cost reduction over the past few years is very impressive, isn't it?*

F. B. : Yes, the cost reductions have been remarkable. We estimate that, indeed, a price of around \$60-\$70/b should be enough to keep tight oil production stable to 2020. But prices today are well below that range, so – if we continue to see \$50/b – then tight oil production is set to fall back. Can we expect to see further efficiency gains? Certainly, yes, but in our view

the main improvements have already been achieved in most of the plays. And, in the future, operators will also be moving to less productive areas as the so-called 'sweet spots' are depleted. So you may see costs creeping higher again as a result.

PGA: *U.S. tight oil production would reach a plateau of little more than 5 million b/d in the early 2020s before starting to decline, according to the WEO 2015. Don't you underestimate the ability of U.S. producers of shale/tight oil to surprise us as it has been the case since the last decade?*

F. B.: Yes, with tight oil – as with any fuel or technology – there could be a breakthrough that will bring down costs further. Also, the size of the resource may be higher than currently understood – or the sweet spots may be larger and more productive. We wouldn't rule this out. But, based on our current knowledge of these variables, as well as the prices in the New Policies Scenario, then U.S. tight oil plateaus at just above 5 million b/d before falling back.

PGA: *Iraq's oil production could reach 8 million barrels per day in 2040 and Iran's output 5.4 million b/d. Could you develop these projections?*

F. B.: Iraq and Iran are critically important countries for the oil market outlook. Both countries have similar resource potential (remaining recoverable resources in Iraq are estimated at 210 billion barrels and 205 billion barrels in Iran) and current production levels are, arguably, well below the levels implied by the quality of the underlying resource base. Yet efforts to realise this potential have consistently been plagued by uncertainties above the ground, which introduce an undeniable level of uncertainty into any projections of future output.

Iraq's production performance over the last year has been robust, breaking oil output and export records, despite the overall deterioration in the security situation. However, the decline in oil revenues in 2015 is reinforcing concerns about the fragility of key national institutions and affects the pace of further growth. The size and the low-cost nature of Iraq's resources give strong grounds for optimism over the longer term, but institutional, security and financial hurdles continue to dampen our projections, which are revised downwards to 4.4 million b/d in 2020, although increasing steadily thereafter, to reach 7.9 million b/d in 2040.

In Iran, crude oil production capacity is estimated at between 3.4 million b/d and 3.6 million b/d, but the sanctions imposed on Iran in relation to its nuclear programme, together with under-investment, reduced Iran's crude output to 2.8 million b/d in 2014, supplemented by an increasing volume of NGLs. With the sanctions agreement reached in July 2015, a pathway is open (albeit a complex and multi-stage one) towards lifting the most important oil-related sanctions.

As and when these sanctions are lifted, output growth will come first from bringing production back towards the existing capacity limit and from marketing of a large volume of oil held in floating storage. Development of Iranian oil production may not be easy even if sanctions are removed. Output growth is initially likely from bringing production back towards the existing capacity limit and from marketing oil in floating storage. Ultimately large-scale investment will be required to raise the country's production to the 5.4 million b/d seen in the NPS in 2040.

PGA: *Global fossil-fuel subsidies amounted to \$490 billion in 2014. The reduction over 2013 is very small even if the Agency estimates they could have reached \$610 billion without reforms enacted since 2009. Do you think that the IEA's recommendations on fossil-fuel subsidies will be followed more seriously in the near future? And could they be increased or reestablished in case of a significant rise in oil prices?*

F. B. : Fossil fuel subsidies incentivise wasteful use of energy, hinder investments in low-carbon technologies and energy-efficient equipment, and often fail to bring much benefit to those who are really in need. Reforms to phase out fossil fuel subsidies provide consumers with incentives to save energy and aid the commercialization of renewable energy and other clean technologies, as well as provide governments with fiscal space to allocate the saved financial resources to social welfare such as health and education.

A number of countries have recently taken steps towards reducing or phasing out fossil-fuel subsidies such as India, Indonesia and Malaysia. The global value of subsidies that lower end-user prices for fossil energy amounted to \$493 billion in 2014, while the number was \$390 billion in 2009. But without the reforms adopted since 2009, the value of fossil-fuel subsidies would have been almost one-quarter higher (\$117 billion), putting the level of these subsidies at \$610 billion in 2014.

PGA: *According to the WEO low oil prices would have a greater negative impact on energy savings than on the **deployment of renewable energies**. But there is a big if: if policymakers remain steadfast in supporting these energies, including subsidies [their cost in 2014 was estimated by the IEA at \$112 billion plus \$23 billion for biofuels]. Is this a realistic assumption?*

F. B.: The support policies to renewables have been growing and strengthening over the past years, and this is likely to continue to be the case in future years. For example, further deployment of renewables technologies is a key pillar of many INDCs [intended nationally determined contributions], and this is likely to continue to be the case even if oil prices were to remain low for a longer period of time. Moreover, the link between low oil prices and renewables-based power-generating technologies is – at best – an indirect one, transmitted via the effect on natural gas prices, and then onto wholesale electricity prices. An eventual decrease of the wholesale prices can make some of these subsidy schemes more costly (depending on their design), however – unless and until this forces a change in policy – the incentives to invest in renewables remain.

PGA: *World energy sector investment would total \$68 trillion from 2015 to 2040 in the NPS. How would this impressive amount be financed?*

F. B.: The amount is huge, and the investment and financing challenges vary by country and by sector. Of total investment, 37% is in oil and gas supply, 29% is in power supply. A large part, almost one-third, goes to improve end-use efficiency. One of the big financing challenges is that the world is moving towards more capital-intensive technologies, that require higher upfront spending, although this is compensated by lower operational expenditure because of lower fuel costs. This is the case of wind and solar power, also for more efficient equipment.

PGA: *There is a lot of talk about renewable energies and the fight against climate change but we note in the WEO 2015 two sobering projections: only a few countries will put a*

significant price on carbon; and in 2040 the share of non-hydro renewable energies that would be competitive without any subsidy support would not exceed a third. It is somewhat surprising, isn't it?

The number of countries introducing a price of carbon is limited in the New Policies Scenario as this is consistent with the policies currently in place and under consideration. The geographical coverage of carbon pricing is much wider in our 450 Scenario. Today, we estimate that 16% of non-hydro renewables-based generation is competitive without subsidy. This share doubles by 2040, but many other technologies, while still requiring some support, are much closer to full competitiveness than today. Higher and more widespread CO₂ pricing would certainly increase this share, as well as faster cost reductions.

PGA: *You became the IEA's Executive Director on 1 September 2015. What are your key priorities for the Agency?*

F. B.: The energy landscape has fundamentally changed from when the IEA was founded in 1974. New players are increasingly dominating global energy demand. New technologies are redefining how we view energy production and distribution. And new challenges are shifting priorities while creating opportunities. In the face of these changes, the IEA has no choice but to modernise.

My vision for this modernisation rests on three pillars. The first involves opening our doors further to emerging economies, so that we can become a truly international energy agency. On this point, I was thrilled that Mexico recently announced its intention to formally join the IEA, and that China, Indonesia and Thailand have decided to activate their status as Association countries. But we can and will do more to create organic ties with the emerging energy powers of the 21st century.

The second pillar involves evolving our mandate on energy security. The IEA can play a more active role in coordinating global gas security issues. The European Commission does very good work looking at the European level. But global LNG trade is growing, bringing with it both added flexibility and global dimensions to gas supply security. So we are exploring potential options by which the IEA can help enhance global gas supply security.

The third pillar of our modernisation strategy is making the IEA an international hub for clean energy technology and energy efficiency. The IEA is the preeminent global energy authority – a reputation that is well-deserved when you consider traditional fuels. But now we must now make room for other fuels and technologies as the energy mix continues to broaden. We will do this by making better use of the IEA's Technology Collaboration Programmes, a network of some 6,000 energy technology experts from almost 50 countries, working on some 40 separate technologies. And we will also scale up the IEA's work on energy efficiency. In fact I would like to see this agency become a "central bank" of energy efficiency; not one that provides financing, but rather a global resource for member and partner countries. We will provide guidance and advice to build better policies and business models that can generate the massive increase in energy efficiency investments that is needed for a clean energy future.

I am pleased to report that at our recent IEA Ministerial meeting in Paris I shared this vision of a modernised IEA with ministers, and the response was extremely positive. We now have the support we need to take forward this modernisation.

Fatih Birol, Executive Director

Fatih Birol took office as the new Executive Director of the International Energy Agency (IEA) on 1 September 2015, ushering in a new era for the global energy authority.

Well known and respected internationally for his work in the energy field, Dr. Birol joined the IEA in 1995. Most recently prior to his elevation to Executive Director, he held the positions of Chief Economist and Director of Global Energy Economics, with responsibilities that included directing the flagship [World Energy Outlook](#) publication. He is also the founder and chair of the [IEA Energy Business Council](#), which provides a forum to enhance co-operation between decision-makers in the highest levels of government and industry. Dr. Birol's selection as IEA Executive Director marked one of the rare occasions that the head of an international organisation has been selected from within its ranks.

Earlier in his career, Dr. Birol served in the Secretariat of the Organization of the Petroleum Exporting Countries (OPEC), an experience which gives him a unique perspective on the producer-consumer relationship. He has also been a member of the UN Secretary-General's [High-Level Group on Sustainable Energy for All](#) and was named by *Forbes* magazine among the most influential people on the world's energy scene. He is the recipient of numerous awards from governments from all parts of the world.

A Turkish citizen, Dr. Birol was born in Ankara in 1958. After initially studying power engineering at the University of Istanbul, he went on to receive a MSc and PhD in energy economics from the Technical University of Vienna and a Doctorate honoris causa from Imperial College London. He is an honorary lifetime member of Galatasaray Football Club.

Dr. Birol is the seventh Executive Director to lead the IEA, which was founded in 1974. He succeeded former Dutch Minister Maria van der Hoeven.

Source : IEA website.

***World Energy Outlook 2015 (November 2015); www.iea.org;
www.worldenergyoutlook.org***