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– Irina Mironova

Questions abound on the new World Energy Outlook recently released by the IEA. Irina Mironova offers expert insight in addressing questions and implications of the report. [Read More](#)



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Energy News Blog

World Energy Outlook – 2015: Answers for Students and Some Questions in Return

– Irina Mironova

Global energy is constantly changing. Demand is driven by economic development, demographic growth as well as efficiency of energy use. Supply, in its turn, is affected by the development of technology, which drives down costs and makes new groups of sources available and economically viable. As a result, we witness changes in global energy production, consumption, and trade. A way to understand this change in global energy is by building forecasts. The Energy Outlook therefore is a tool for decision-making.

Each year, multiple energy outlooks are published; most often, they are geared towards the long-term (20-25 years). The following is a list of the most prominent:

- [The International Energy Agency \(IEA\)](#)
- [The Organization of the Petroleum Exporting Countries \(OPEC\)](#)
- [The U.S. Energy Information Administration \(U.S. EIA\)](#)
- [The Energy Research Institute of the Russian Academy of Sciences \(ERIRAS\)](#)
- [The World Energy Council \(WEC\)](#)
- International energy companies (e.g., [BP](#), [ExxonMobil](#), [Shell](#), [ENI](#), [Statoil](#))

The outlooks are normally built on the organisation's specific model assumptions as well as historical databases. Each outlook contains quantitative projections of energy consumption, supply, and carbon emissions, as well as qualitative descriptions of technology development.

The text below takes a closer look at the World Energy Outlook (WEO) by the IEA. The main task of this text is to provide a guide for the IEA's WEO and associated publications and to answer some questions, which arose throughout the ENERPO seminars.

The roots of the World Energy Outlook prepared by the IEA

The International Energy Agency was created in 1974 in response to the oil crisis of 1973; it is an autonomous intergovernmental organisation within the OECD. The IEA acts as an energy policy advisor. The objectives are rooted in the notion of security of supply and include the creation of systems for coping with oil supply disruptions, promotion of

rational energy policies, operating information system on the international oil market, improvement of supply and demand structure, and the integration of energy and environmental policies.

The first World Energy Outlook by the IEA was published in 1993 (the 1994 WEO is the second and the earliest document available at the IEA website) and clearly follows these objectives. The World Energy Outlook started as a three-year project in 1993-1996, focusing on analysis of regions as well as sectors of energy use. A new start was given in 1998 with Fatih Birol leading the project. He has remained in charge since and became IEA's Executive Director in September 2015. Since 1998, the WEO has developed to incorporate a wider set of issues into the analysis, as well as study the prospects of the energy system.



"Fatih Birol" : Friends of Europe, Licensed under CC BY-SA 2.0

Issues and trends

Past **thematic chapters, insights and special reports** have focused on the following issues, although this list is not exhaustive:

- Sub-Saharan Africa (2008); Africa energy outlook (2014)
- Middle East and North Africa insights (2005)
- Chapters on China and India (2007); Southeast Asia energy outlook (2013)
- Energy subsidies and getting the prices right (1999); Fossil fuel subsidies (2010)
- Biofuels and their potential impact for the transport sector (2006)



- The role of gas in the fuel mix ('the Golden Age of Gas?' – 2011, 'Golden rules' - 2012)
- Are conditions right for a nuclear revival? (2006); Nuclear power – retreat, revival, or renaissance? (2014)
- Energy poverty (2010)
- Redrawing the energy-climate map (2013)
- Investment (2003); World energy investment outlook (2014).

The following special topics were studied and published in 2015 either within the WEO-2015 or in parallel:

- [Special Report on Energy and Climate Change](#)
- [Special Briefing for COP21](#)
- [Southeast Asia Energy Outlook 2015](#)
- [India Energy Outlook 2015](#)

Many questions are analysed within the Outlook. These range from the perspectives of low oil price, competitiveness of renewables and energy efficiency and associated policies, to the potential for unconventional gas development in North America and beyond.

Scenarios

WEO uses a *scenario approach* – whereby it switches from simply showing the 'Business as usual' to incorporating policies and looking at the possible impact that these policies have on the development of energy systems, the economy and the environment. In 2005, the World Alternative Policy Scenario and the Deferred Investment Scenario were introduced. The Alternative Policy scenario was a milestone, because it demonstrated that policies have a significant impact. Subsequently, the 2006 issue stated that "*the Reference Scenario trends are not set in stone*".



"Air .pollution 1". Licensed under Public Domain via Commons

The Alternative Policy Scenario of that year analysed how the global energy market could evolve, if countries adopted all of the energy security and CO2 emissions policies that were under consideration.

The 2009 edition introduced the 450 Scenario, which shows what changes need to take place in order for the global energy system to meet climate mitigation objectives. The IEA defines this as, "To avoid the most severe weather and sea-level rise and limit the temperature increase to about 2 degrees Celsius, the greenhouse-gas concentration needs to be stabilised at around 450 ppm CO2-equivalent but the year 2100." The 450 Scenario assesses the implications for the energy sector in achieving this level.

The latest 2015 issue includes projections for the three core scenarios, which are differentiated primarily by their underlying assumptions about the evolution of energy-related government policies. These three core scenarios include the **Current Policies Scenario** (only those policies which have already been put into implementation), the **New Policies Scenario** (this scenario accounts for other relevant intentions that have been announced, even when the precise implementing measures have yet to be fully defined), the **450 Scenario** outlined above. For a description of specific measures within each of the scenarios, see WEO 2015 pp. 662-672. The basis of these scenarios remain consistent year-to-year and account for factual new developments that either were introduced into implementation phase, or were announced since the time of publishing of the previous Outlook. The special scenario studied within WEO-2015 is the **Low Oil Price Scenario**, which ultimately concluded, that "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".

What about the oil price projections? Are they right or wrong?

To answer this question, I will simply quote the Outlooks of couple of decades back. In 1994, the Executive Director of the International Energy Agency Helga Steeg wrote in the preface to the World Energy Outlook: "It is important that possible future energy developments, and their environmental consequences, be taken into account to the greatest extent possible in the process of formulating energy policy and making investment decisions". In 1995, Robert Priddle wrote: "It is the issues which arise that matter more than the specific numbers".

I leave it up to the reader to decide whether these are just excuses to explain why the oil price (or any other number in the outlook) was guessed wrong.



What the WEO (and any other outlook) discusses is not the actual predictions of the factual price developments, but rather the **balance prices**, which reflect the balance of the fundamental factors of supply and demand. Equilibrium price is the point at which oil production (both conventional and unconventional, 'cheap' and 'expensive') satisfies demand. In other words, it is the price reflecting the intersection of the supply and demand curves. Most oil (more than 4 billion tons) can be obtained even at prices below 90 USD/bbl. This includes conventional oil and NGL, as well as US shale and tight oil plays and Canadian tar sands. However, "this four billion tons is clearly insufficient to cover the growing future demand for oil, forcing a move towards deposits that are more difficult and expensive to extract, in particular those that are found in ultra-deep-water offshore fields, and high viscosity oil", according to the calculations made at the ERIRAS (Global and Russian Energy Outlook 2014, p. 45).

What if the factual price does not correspond to the balance price, calculated by institutions such as the IEA? This happens. The study by the ERIRAS (which calculates prospects for the balance price but not a factual future price) has shown that the correlation coefficient between equilibrium prices and factual oil prices has been at 0,918 during (i.e. high, or well-correlated) the period of 2000 to 2010. This means that during this period, the price has largely (but not always) reflected the balance between demand at the cost of recovery of oil used to cover that demand.

My second question to the reader is if the factual oil price does not correlate to the balance price at 100%, is that sufficient reason to stop studying balance prices altogether?

Why read the 700 pages (every year)?

Policies can make a difference. The WEO ultimately is a tool that can influence policies. Therefore, the WEO team makes a difference.

The most important role that these outlooks play is informing market players in making decisions. The energy industry operates on a long-term bases because of the longevity of energy equipment. Consequently, the level of consumption that we have today, as well as the specifics of the supply mix are a result of decisions made a couple of decades ago. One single target of all outlooks is to demonstrate the impact of today's choices on tomorrow's energy landscape.

Another reason to read the IEA's Outlook is to see where the 'most authoritative source in energy analysis' wants to bring the global energy system, and what policy choices are chosen to meet those ends. Why does it differ each year? It happens precisely because of the changing nature of the energy system. The policy choices are rooted in today's energy landscape and not yesterday's.

An energy outlook is a tool for decision-making. When making your decisions, remember: the outlook is not designed to tell you the exact price of oil tomorrow or help you make decisions on whether to speculate on the paper oil market. Rather, if you're an energy company, it helps in making decisions on whether to invest in new projects. For a ministry of energy or a ministry of social and economic development it helps formulate strategies for fossil fuel subsidies. For students of energy it may guide you in your choice of research if you want your expertise to be in high demand in 10-15 years from now. Of course, it's up to you how to best utilize this tool.



"Danish Wind Turbines". Licensed under CC SA 1.0 via Commons



The Week in Review

Turkey: Geopolitical Risks for the Oil Market

Since the Russian jet fighter has been shot down by Turkey, crude oil prices increased by 3%. Turkey still remains dependent on oil and gas imports, which represent more than 90% of its fossil fuel demand, while Russia is the main supplier to the region. Bosphorus and Dardanelles waterways are under Turkish control. This represents about 2 out of 7 million barrels per day of Russian crude oil flows. Finally, projects under discussion such as the Turkish stream will inevitably be affected by mounting tensions between Russia and Turkey.

[*Spencer Jakab, 2015. How Turkey-Russia Tension Affects Oil. The Wall street journal, 24 November 2015.*](#)

The Arctic: Another Company Leaves

Statoil, the Norwegian major, follows Shell's decision in September 2015 to leave its exploration project in the North Alaskan Chukchi Sea. The state-owned company returned 16 of its exploration leases and 50 shareholder leases. With this decision, Statoil also follows a year-long trend of energy companies stepwise abandon exploration projects in the whole Arctic region. Statoil remains a big player in the Barents Sea. In 2016, Statoil is expected to be a big bidder for new leases in the Barents Sea.

[*Richard Milne, 2015. Statoil abandons Alaska oil. Financial Times, 17 November 2015.*](#)

Russia: West Siberian Oil Fields on Sale

Russia will sell some of its West Siberian oil field next year and expects a return of USD 1 bln. The field of Erginskoye will be sold first with estimated reserves of 103 million tons (755 million barrels). The field was not put on auction yet because of the policies to protect reserves in West Siberia from depletion. Erginskoye would unlikely be eligible for tax breaks for its remote location, because of the already existent infrastructure in the region. The last time an oilfield was sold in Russia, was Bashnefts owned Trebs and Titovs field in 2010.

[*Olesya Astakhova; Writing by Vladimir Soldatkin; Editing by Mark Potter, 2015. Russia to put last large West Siberia oilfield up for sale, 17 November 2015*](#)

Nuclear Power in Argentina: Two Plants Financed by Beijing

China will finance and build two nuclear power plants in Argentina with a total investment of USD 15 bln, which will cover over 85% of the project. The deal illustrates two trends, which are characteristic for Chinese energy-related policies. First, the growing role of China's own nuclear technology and its increasing presence in nuclear power sectors outside China. The most significant example is China's involvement in the construction of the UK new generation power plant within a French-led consortium. The second trend is increasing large-scale investment in South America by Chinese companies despite South America's slow economic growth. Argentina is likely to become more open to foreign investment after the upcoming presidential elections in November 2015.

[*Jamil Anderlini and John-Paul Rathbone, 2015. China to build two nuclear plants in Argentina in \\$15bn deal. Financial Times, 17 November 2015.*](#)



Iran-Pakistan-China: “Peace-Pipeline”

The managing director of the National Iranian Gas Company announced that Iran could use the gas pipeline intended to supply Pakistan (Peace Pipeline), to supply China instead. The problem is that Pakistan has not started to construct its part of the pipeline yet, while at the same time China and Pakistan signed an agreement for construction of cross-Pakistani pipeline from Gwadar port (80 km away from Iran-Pakistan border) to Navvabshahr city. This pipeline could be stretched from Navvabshahr towards Chinese border. By announcing to refuse from the initial Peace Pipeline plan in favour of connecting to Gwadar – Navvabshahr pipeline, Iran has two objectives: either pressing Pakistan to respect its obligations within the Peace Pipeline project, or switch to China as a more reliable buyer of natural gas.

[*Natural Gas Europe, 2015. Iran eyes exporting natural gas to China. Natural Gas Europe, 14 November 2015.*](#)

Shell’s Deepwater Drilling in the Gulf of Mexico

After Shell recent decision to abandon its Arctic exploration project, the company now wants to conduct deepwater drilling in the Gulf of Mexico. The project would become the fourth ultra deep-water production facility in the world. The decision is surprising – this is a resumption of a project frozen by Shell back in 2010, when oil prices were high. The project is revived at times, when oil prices are low due to an oil glut on global markets. Oil prices should be up to USD 60-80 per barrel to make extraction economically viable, according to analysts. The project appears to be reasonable for Shell as it plans to cut investment costs by separating the exploration into three different phases. The company aims to gain experience in deep-water exploration. It might well take ten years from discovery of oil until oil makes it to the market. The project is a long-term investment and might come online when oil prices returned to a higher level.

[*Collin Eaton, 2015. Shell vessel heads to deep Gulf waters amid region’s uncertainty. FuelFix.com, 13 November 2015.*](#)

Japan: Giving Up on Oil

Japanese refineries engage in mergers operation – Idemitsu Kosan and Showa Shell, Japan’s second and fifth-largest refiners, agreed to merge in November; JX Holdings and Tonen General, largest and third-largest refiners, are negotiating their merger as well. The mergers will put about 85% of Japanese refinery capacity in hands of two companies. The rationale behind these tie-ups is that Japan’s transport sector transforms (increased use of hybrid electric vehicles leads to lower demand for gasoline). In addition to the decreasing gasoline demand, petrol prices are the lowest level in the country since 2010. Japanese refiners have been shrinking their capacity to meet this shift, and Japan’s government has been pushing companies to consolidate, but mergers will not take away the need for capacity cuts.

[*Leo Lewis, 2015. Japan falls out of love with petrol. Financial Times. 19 November 2015.*](#)

OECD to Constrain Financing for Coal Technology

After a month of discussions, members of the Organization of Economic Cooperation and Development (OECD) concluded a deal to restrict subsidies for exports of coal technologies used in their coal-fired power plants. The member states’ decision to end export credits for coal plant technology will take effect from January 2017, with a review to follow in 2019. While the US has already restricted coal technology exports, the new agreement by the OECD will force countries like Japan and South Korea to limit theirs for the first time too. Overall, the deal can be considered a multilateral effort to address climate change.

[*Barbara Lewis, Valerie Volcovici, 2015. OECD agrees deal to restrict financing for coal technology. EurAktiv.com with Reuters. 18 November 2015.*](#)



European Commission Updated List of Key Energy Infrastructure Projects

On November 18, The European Commission has updated the list of key energy infrastructure projects known as projects of common interest (PCIs) which should help to integrate Europe's energy markets, diversify sources, deliver climate objectives and form key building blocks of the EU's Energy Union. The list includes 108 electricity, 77 gas, 7 oil and 3 smart grids projects. To accelerate the development of the European energy infrastructure, 5.35 billion Euros were allocated for the period of 2014-2020. Southern Gas Corridor, which envisages the transportation of gas from the Caspian region to the European markets and faced challenges by EU regulations recently, is also in the updated PCI list.

[European Commission, 2015. Commission unveils key energy infrastructure projects to integrate Europe's energy markets and diversify sources. 18 November 2015.](#)

LPG and Propylene Terminal at the Russian-Chinese Border Delayed

Joint venture Manzhouli Far East Gas has postponed the launch of a liquefied petroleum gas (LPG) and propylene terminal at the Russian-Chinese border until June 2016. This is due to the end of the construction season in Manzhouli in November 30, 2015, which will be opened again in April. Also, more time is required to get all licenses and permits from China since there are strict requirements for acceptance, handling and transportation of dangerous chemicals. LPG and petrochemical products supplied via the terminal will be an alternative for supply from the US and Gulf countries. Companies such as Sibur, Rosneft and Irkutsk Oil Company have expressed interest in using the terminal for LPG exports.

[Damir Khalmetov, 2015. Far East Gas Delays LPG terminal in Manzhouli till June 2016. Reuters Africa. 20 November 2015.](#)

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