3 Questions: World energy outlook

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Fatih Birol, chief economist of the Paris-based International Energy Agency, is the lead author of an eye-catching new report projecting that the United States will become the world's leading oil producer within a few decades. Birol, who also chairs the World Economic Forum's Energy Advisory Board, has been named by Forbes *magazine as one of the most influential people on the global energy scene. He is often called on to brief high-level political figures on energy issues — including briefings last year for President Barack Obama, among other leaders, on the implications of America's boom in natural gas.*

Birol will speak at MIT about the new report on Wednesday, Nov. 28 *[1].* MIT News *spoke with him in advance of this appearance to ask about the world's energy outlook.*

Q. The new report has attracted great press attention for its projection that the United States may soon become the world's leading oil producer. Can you discuss what you see as the greatest implications of this change, in terms of energy security, geopolitics and carbon emissions?

A. The most striking implications concern U.S. oil imports and international oil-trade patterns. The upward trend in production is partly responsible for a sharp fall in U.S. oil imports. By 2035, we project oil imports into the United States of only 3.4 million barrels a day, which implies a substantial (60 percent) reduction in oil-import bills. North America as a whole actually becomes a net oil exporter. In international oil markets, this accelerates the shift in trade patterns toward Asia, raising the geostrategic importance of trade routes between Middle East producers and Asian consumers.

But what should attract equal attention … is the essential role played by energy efficiency. I believe that energy efficiency has been an epic failure by policymakers in almost all countries. Its potential is huge but much of it remains untapped. Compared with today, savings from more rigorous vehicle fuel-economy standards could prompt a 30 percent fall in U.S. oil demand by 2035.

Q. The report highlights the importance of water supply as a potential limiting factor in producing some sources of energy. What do you see as the key policy issues or technology needs to help alleviate water constraints?

A. We expect water to become an increasingly important criterion for assessing the physical, economic and environmental viability of energy projects. This applies not only to locations where water is scarce under normal conditions, but even to relatively water-rich ones that might suffer droughts or heat waves. To most effectively manage constraints, policymakers should first encourage more efficient water use — for example, by valuing freshwater resources economically. This could encourage implementation of many technical options that already exist to reduce

freshwater use: more advanced cooling systems for powerplants and, broadly, technologies that involve reuse and recycling, or can use non-freshwater sources.

Policymakers should also develop evidence-based rules and regulations that adequately protect water in circumstances where risks from energy production are present. This applies to the development of shale gas, which may be stifled in some areas without public confidence that risks to water resources can be safely managed.

Q. The report seems to support the idea that Asia will become the leading energy user, and emissions source, in the coming years. What do you see as the realistic prospects for limiting carbon emissions as that trend continues?

A. With CO_2 emissions at a record high in 2011, meeting the 2-degrees-Celsius goal [for maximum average global temperature increase] will now be even harder and more expensive than last year. The target is not out of reach, but our analysis clearly demonstrates the need for urgent action. Energy-efficiency policies are essential to reduce emissions quickly. These policies not only reduce energy demand, but also increase economic growth by reducing energy expenditures and local air pollution, with significant benefits for public health — in particular in China and India.

Moreover, fossil-fuel subsidies, which remain intact in several Asian countries, are a major enemy in the fight against climate change. These totaled $523 billion globally in 2011, resulting in wasteful energy consumption and additional CO_2 emissions.

In terms of carbon pricing, we already see several positive signals: New Zealand has an emissions-trading scheme in place; Australia started with a fixed-price transition phase in July 2012 in order to introduce a full cap-and-trade scheme in 2015; Korea will start with an emissions-trading scheme in 2015; and in Japan there exist local emissions-trading schemes. Most importantly, China will introduce carbon-trading in seven pilot regions and cities in 2014, which is eventually intended to lead to a national carbon emission-trading scheme in 2016.

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