

[Key Facts]

- The IEA projects \$26 trillion of energy infrastructure investment globally between 2007 and 2030.
- The new administration in Washington is talking of getting carbon emissions back to 1990 levels by 2020.
- In 2007 \$390 billion was invested globally in upstream.

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As pressure mounts on the world's governments to provide solutions to the global recession, the security of energy sources falls lower on the list of crucial concerns. But, argues the [International Energy Agency's Fatih Birol](#), this could have disastrous consequences long after the economic troubles have waned.



Cause for concern

A sharp decline in global economic activity ought, on paper, to be the optimum moment to address carbon dioxide-generated climate change and drive the development of environmentally friendly technologies, including renewables.

Unfortunately the oil price collapse has made many of these alternative projects uneconomical. Besides, says International Energy Agency (IEA) chief economist Fatih Birol, governments believe they now have priorities more urgent than climate, energy efficiency and the security of energy sources. He admits that he is becoming a worried man.

'The international financial and global warming crises have

very bad implications for everyone,' says Birol, 'but there is one key difference between them. While the financial crisis is real enough now, in a year or two it will have gone away and everyone expects that the global economy will rebound and economic growth will return. But in the case of the climate crisis, it is not going to go away. Indeed I am afraid that once it starts, it will be almost irreversible. It will also be increasingly expensive and difficult to hold off or slow down the slide. Therefore it is very important to make governments understand that they must act decisively and urgently.'

In the wake of last November's publication of the IEA's latest *World Energy Outlook*, Birol has travelled the world's capital cities, becoming deeply concerned that climate and energy efficiency

initiatives – which six months before had been key topics – have been pushed right down the agenda. ‘This is particularly disturbing when you consider that this December in Copenhagen we have the 15th Climate Change Conference,’ he says. ‘This is perhaps the most crucial international meeting ever, where all nations will come together and try to reach an international agreement, post-Kyoto, on climate change and the reduction of greenhouse gases.’

Birol says he is particularly concerned that as a result of the credit squeeze, many commercial energy projects, including R&D into renewables and energy-efficient transport are being postponed or delayed. ‘With these alternative energy projects in particular, when the price of oil is down to about \$40 to \$50, they are not competitive against fossil fuels, including coal,’ he stresses.

Birol avers that in normal times he would stick to his view that market instruments alone should be the way all big energy challenges are addressed. But these are not normal times, neither in terms of carbon dioxide emissions nor energy security, the latter instanced, he says, by the gas row between Russia and Ukraine that severely disrupted transhipped gas deliveries to the rest of Europe.

‘I think there is a need for governments to take the lead in certain areas and provide the right regulatory framework and lead for private industry. That is a call to governments at this important time in our energy history. From the angle of climate change and energy investments – especially those that will provide the most sustainable energy future – the financial crisis is bad news. So it is up to governments to decide whether to continue to take a short-term view or to provide support for the investments that are good for energy security and climate change in the long term. They need to pull themselves together before the crucial Copenhagen meeting.’

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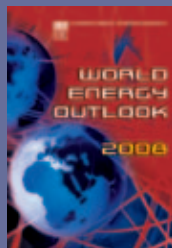
Birol maintains that the worldwide recession, and the stimulus packages it has engendered, can offer significant opportunities in the energy field. The IEA projects \$26trn of energy infrastructure investment globally between 2007 and 2030, of which the power sector would account for 52%.

‘We have looked at the additional investments that can be made in terms of wind energy, hydropower, geothermal and indeed electrification in countries where there is no access to electricity. All such projects can clearly provide lots of new employment opportunities. Because many of these projects also need a lot of manufacturing, they will bring new orders and help boost employment.’

‘But at the same time we also have to be fair and say that unfortunately almost all the low-carbon technology investments are capital intensive, so there is definitely a need to have some financial support from governments.’

Birol believes that if significant economies such as China, the US and Europe take the lead in their domestic markets, the spill-over effects will make other countries’ environmental investments easier and lower in cost, because technologies will

[Energy analysis and projections]



Are world oil and gas supplies under threat? How could a new international accord on stabilising greenhouse-gas emissions affect global energy markets? *World Energy Outlook 2008* answers these and other burning questions.

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[The bare truths]

In future, OECD countries will no longer drive energy demand says Fatih Birol in the IEA’s *World Energy Outlook*. Indeed shrinking demand will be a long-term trend for the developed economies. Developing countries alone will see expanding oil demand up to 2030, with China accounting for some 43% of this growth, and India and the Middle East about 20% each.

Birol explains that the IEA conducted its first detailed analysis of the rate of production decline in the world’s top 800 oil fields on and offshore. Whereas in 2007 the IEA, working on assumptions, predicted a decline of 3.7%, Birol admits that the actual analysis of accurate data the following year showed the rate of decline had leapt to 6.7% despite boosted investment. He has defended the radical revision on the basis that this was the first time anyone had sought to collect reserve depletion data on this scale.

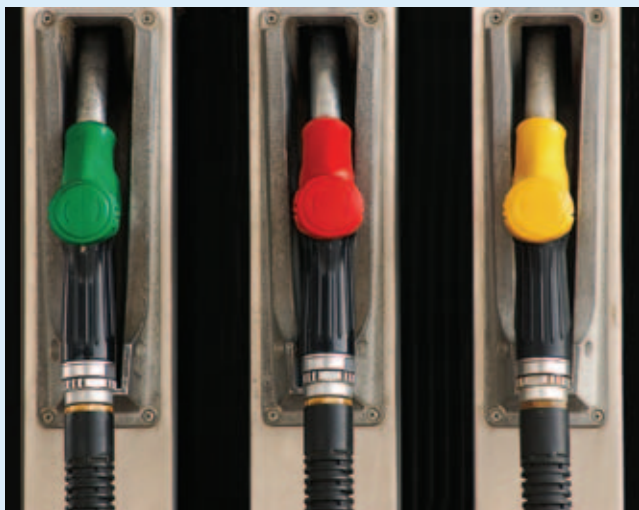
The upshot of the calculations, coupled with projections of new reserves, is that for the first time the IEA predicts that oil production will plateau in about 2020. Birol says that about 45 million barrels of new oil will have to be discovered and produced each day in the next 22 years, simply to meet albeit tapering world demand.

[The awkward truths]

The IEA was once consistently emollient towards concerns that energy was running out. Given that many governments have based key policies such as transport on IEA assessments, the change in the organisation’s predictions is likely to prove significant.

With oil production set to peaking in little more than a decade, non-conventional oil will play a greater role, says Birol, who predicts that tar sands could account for seven million barrels a day or 7–8% of total production, by 2030. The IEA estimates recoverable oil sands reserves at 175 billion barrels, of which 35 billion can be mined and 140 billion produced in situ.

But Birol accepts that there is a higher environmental price to pay for tar sand mining, which is generally only accepted as viable when oil is \$80 a barrel. Although the oil price remained depressed into the new year, Birol believes that as developing as opposed to OECD demand picks up, non-conventional oil and high lifting-cost ultradeep offshore fields will again become economic.



The global recession has pushed environmental concerns down the agenda.

already have been developed. ‘In this context, if I have to single out one country, it is the United States,’ says Birol. ‘President Obama has said that he will put a lot of emphasis on renewable energy and energy efficiency. This will definitely be good news for other countries because it will bring down the cost of renewables and carbon efficiency technology.’

The other encouraging development, says Birol, is the December 2008 agreement by EU leaders on a strategy paper committing member countries to reduce carbon emissions by 20% by 2020. ‘This is all very encouraging but of course we now need to see the policy being implemented. After long discussions the agreement was unanimous among 27 member countries, this deal was good news.’

The new administration in Washington is meanwhile talking about getting carbon emissions back to 1990 levels by 2020. ‘India has just designed a national climate action plan and the Chinese have begun similar work,’ explains Birol. ‘So the ambition is there but those good intentions now need to be put into practice.’

Funding is needed for more than climate change mitigation. Despite the volatile oil price, E&P requires a continuing high spend. Birol points out that in 2007 \$390 billion was invested globally in upstream, the highest relative spend for some years and treble the 2000 figure. But according to IEA calculations, the E&P investment ought to have been nearer to \$450 billion in order to sustain oil and gas production at present levels.

One problem for Birol and his economic forecasting team has been the sheer speed of changing circumstances, notably many organisations have markedly revised their oil demand forecasts downwards in recent months. Oil demand is now expected to drop in 2009 for the second consecutive year, the first time this has happened since 1982. Consumption dropped by 400,000 barrels a day in 2008 and is slated to decline a further 120,000bpd this year. Because of the global slowdown, the IEA has slashed its oil demand forecast by one million to 84.4 million barrels a day. ●

[The party’s not over yet]

At present rates of consumption, there are 40 years of oil and natural gas liquids (NGLs) in reserve, or up to 1.3 trillion barrels of oil equivalent. The figure is virtually double that of 1980. It is not, however, entirely comprised of new fields. Birol’s team points out that many reserves, especially in the Middle East, have been revised upwards, partly due to enhanced recovery techniques.

Natural gas liquids (NGL) production is expected to have almost doubled between 2007 and 2030 from 10.5 million barrels a day to just less than 20 million. However within this increase, Opec NGL output is slated to triple to more than 13 million bpd, largely to supply local markets and feed new LNG projects. Four fifths of the new Opec NGL production comes from the Middle East.

The annual volume of new oil discovered each year since 2000 has also been greater than in the 1990s, due in part to better technology but also to increased E&P activity. But production has outstripped new discoveries all along. This is despite Brazil’s offshore pre-salt pays, indicating the largest new fields discovered in the western hemisphere in 30 years.

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[Post-2012 climate scenarios]

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With extensive data, detailed projections and in-depth analysis, *WEO-2008* provides invaluable insights into the prospects for the global energy market and what they mean for climate change.

www.worldenergyoutlook.org

[Dr Fatih Birol]

Dr Fatih Birol is chief economist of the Paris-based IEA. He is organiser and director of the *World Energy Outlook* series, the IEA’s flagship publication. Birol worked for six years in the secretariat of the Organization of Petroleum Exporting Countries in Vienna, before joining the IEA in 1995. He received the *Chevalier dans l’ordre des Palmes Academiques* from the French Government and the Golden Honour medal from the Austrian Republic in recognition of his work on global energy issues. The *World Energy Outlook 2008* was released on 12 November 2008.