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New Energy Realities – WEO Calls for Global Energy Revolution Despite Economic Crisis

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"We cannot let the financial and economic crisis delay the policy action that is urgently needed to ensure secure energy supplies and to curtail rising emissions of greenhouse gases. We must usher in a global energy revolution by improving energy efficiency and increasing the deployment of low-carbon energy," said Nobuo Tanaka, Executive Director of the International Energy Agency (IEA) today in London at the launch of the *World Energy Outlook (WEO) 2008* – the latest edition of the annual IEA flagship publication. The *WEO-2008* provides invaluable analysis to help policy makers around the world assess and address the challenges posed by worsening oil supply prospects, higher energy prices and rising emissions of greenhouse gases.

In the *WEO-2008* Reference Scenario, which assumes no new government policies, world primary energy demand grows by 1.6% per year on average between 2006 and 2030 – an increase of 45%. This is slower than projected last year, mainly due to the impact of the economic slowdown, prospects for higher energy prices and some new policy initiatives. Demand for oil rises from 85 million barrels per day now to 106 mb/d in 2030 – 10 mb/d less than projected last year. Demand for coal rises more than any other fuel in absolute terms, accounting for over a third of the increase in energy use. Modern renewables grow most rapidly, overtaking gas to become the second-largest source of electricity soon after 2010. China and India account for over half of incremental energy demand to 2030 while the Middle East emerges as a major new demand centre. The share of the world's energy consumed in cities grows from two-thirds to almost three-quarters in 2030. Almost all of the increase in fossil-energy production occurs in non-OECD countries. These trends call for energy-supply investment of $26.3 trillion to 2030, or over $1 trillion/year. Yet the credit squeeze could delay spending, potentially setting up a supply-crunch that could choke economic recovery.

"Current trends in energy supply and consumption are patently unsustainable – environmentally, economically and socially – they can and must be altered", said Nobuo Tanaka. "Rising imports of oil and gas into OECD regions and developing Asia, together with the growing concentration of production in a small number of countries, would increase our susceptibility to supply disruptions and sharp price hikes. At the same time, greenhouse-gas emissions would be driven up inexorably, putting the world on track for an eventual global temperature increase of up to 6°C."

In addition to providing a comprehensive update of long-term energy projections to 2030, *WEO-2008* takes a detailed look at the prospects for oil and gas production. Oil will remain the world's main source of energy for many years to come, even under the most optimistic of assumptions about the development of alternative technology. But the sources of oil, the cost of producing it and the prices that consumers will have to pay for it are extremely uncertain. "One thing is certain", stated Mr. Tanaka, "while market

imbalances will feed volatility, the era of cheap oil is over".

"A sea change is underway in the upstream oil and gas industry with international oil companies facing dwindling opportunities to increase their reserves and production. In contrast, national companies are projected to account for about 80% of the increase of both oil and gas production to 2030", said Mr. Tanaka. But it is far from certain that these companies will be willing to make this investment themselves or to attract sufficient capital to keep up the necessary pace of investment. Upstream investment has been rising rapidly in the last few years, but much of the increase is due to surging costs. Expanding production in the lowest-cost countries – most of them in OPEC – will be central to meeting the world's oil needs at reasonable cost.

The prospect of accelerating declines in production at individual oilfields is adding to these uncertainties. The findings of an unprecedented field-by-field analysis of the historical production trends of 800 oilfields indicate that decline rates are likely to rise significantly in the long term, from an average of 6.7% today to 8.6% in 2030. "Despite all the attention that is given to demand growth, decline rates are actually a far more important determinant of investment needs. Even if oil demand was to remain flat to 2030, 45 mb/d of gross capacity – roughly four times the current capacity of Saudi Arabia – would need to be built by 2030 just to offset the effect of oilfield decline", Mr. Tanaka added.

WEO-2008 also analyses policy options for tackling climate change after 2012, when a new global agreement – to be negotiated at the UN Conference of the Parties in Copenhagen next year – is due to take effect. This analysis assumes a hybrid policy approach, comprising a plausible combination of cap-and-trade systems, sectoral agreements and national measures. On current trends, energy-related CO2 emissions are set to increase by 45% between 2006 and 2030, reaching 41 Gt. Three-quarters of the increase arises in China, India and the Middle East, and 97% in non-OECD countries as a whole.

Stabilising greenhouse gas concentration at 550 ppm of CO2-equivalent, which would limit the temperature increase to about 3° C, would require emissions to rise to no more than 33 Gt in 2030 and to fall in the longer term. The share of low-carbon energy – hydropower, nuclear, biomass, other renewables and fossil-fuel power plants equipped with carbon capture and storage (CCS) – in the world primary energy mix would need to expand from 19% in 2006 to 26% in 2030. This would call for $4.1 trillion more investment in energy-related infrastructure and equipment than in the Reference Scenario – equal to 0.2% of annual world GDP. Most of the increase is on the demand side, with $17 per person per year spent worldwide on more efficient cars, appliances and buildings. On the other hand, improved energy efficiency would deliver fuel-cost savings of over $7 trillion.

The scale of the challenge in limiting greenhouse gas concentration to 450 ppm of CO2-eq, which would involve a temperature rise of about 2°C, is much greater. World energy-related CO2 emissions would need to drop sharply from 2020 onwards, reaching less than 26 Gt in 2030. "We would need concerted action from all major emitters. Our analysis shows that OECD countries alone cannot put the world onto a 450-ppm trajectory, even if they were to reduce their emissions to zero", Mr. Tanaka warned. Achieving such an outcome would require even faster growth in the use of low-carbon energy – to account for 36% of global primary energy mix by 2030.

In this case, global energy investment needs are $9.3 trillion (0.6% of annual world GDP) higher; fuel savings total $5.8 trillion.

WEO-2008 demonstrates that measures to curb CO2 emissions will also improve energy security by reducing global fossil-fuel energy use. But the world's major oil producers should not be alarmed. "Even in the 450 Policy Scenario, OPEC production will need to be 12 mb/d higher in 2030 than today." Mr. Tanaka noted. "It is clear that the energy sector will have to play the central role in tackling climate change. The analysis set out in this Outlook will provide a solid basis for all countries seeking to negotiate a new global climate deal in Copenhagen."

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