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'Meeting the Investment Challenge'

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Your Excellency José Maria Botelho de Vasconcelos, Your Excellency Chakib Khelil, Your Excellency Gholamhossein Nozari, Your Excellency Abdalla Salem El-Badri and other distinguished guests, ladies and gentlemen, it is an honour for me to take part in this important seminar and I thank OPEC for this opportunity to participate.

May I take this opportunity to congratulate His Excellency El-Badri on his re-election as OPEC Secretary-General. I very much look forward to our further collaboration and long-term friendship.

Using this important occasion, I would like to share with you the IEA's view on the world energy markets and especially the need for continuous and substantial investment in the short, medium and longer term.

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Clearly, much has changed since July last year. Prices are 70% lower, largely due to a financial crisis that has spiraled into a full-scale economic downturn, affecting all areas of the world.

Forecasters everywhere have been slow to acknowledge the speed and severity of the downturn. We have had to regularly downgrade our demand forecasts for 2008 and 2009 as major institutions have revised down their economic growth expectations. The near 4% economic growth for 2009 expected as recently as August has been scaled back to 0.5% or less.

OECD demand in particular has been hit, although non-OECD demand is also facing a slow-down.

Globally, demand in 2009 is now expected to be around 3mb/d less than in earlier projections. The two year contraction in demand is the first since the early-1980s. The expected fall in 2009 is the steepest since the mid-1970s. More downward revisions cannot be ruled out if economic indicators weaken further.

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Our Medium Term Oil Market Report last December shows that while we expect slower demand growth through 2013 compared to the prior decade, steady recovery after 2008-2009 could allow growth to average 1.0mb/d annually to 2013.

Regarding spare capacity in OPEC countries, this has already risen in 2009. While capacity is expected to decline again as demand growth recovers, we estimate that it will stand at 3.5 mb/d in 2013, as compared with the 1 mb/d predicted in our July outlook last year.

But it is unlikely that this figure fully reflects the impact of lower prices and the credit squeeze on upstream investment and on efforts to sustain output at mature oilfields. As such, it is quite possible that spare capacity could be considerably lower than the December projection suggests once demand growth resumes.

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Indeed, even a rough calculation shows that our own 2009 forecast has been scaled back by over 1.0mb/d, over and above changes to baseline 2008 output. This may have a significant impact on expected spare capacity in 2013.

If insufficient companies possess the will and financial ability to invest during the downcycle this may lead to a further shortage of capacity and another spike in prices several years later when the economy is on the road to recovery and when service capacity begins to tighten again.

To evaluate the medium to long term impact of current investment decisions, we need more time to see how companies' final budgets stack up and to make project by project assessments. We will focus on this issue in the IEA's next Medium Term Oil Market Report, due for release in the middle of this year.

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But the challenge does not only relate to investment to demand growth.

In fact, this graph highlights that - because of declining production in mature fields - the gross additions needed to sustain existing production to 2030 will far exceed the net additions needed to meet demand growth.

Just to keep the current level of production steady gross additions of 45 mb/d, or five times the current production of Saudi Arabia will be required. This is seven times the current production of Saudi Arabia is needed to meet production decline + growing demand.

And by 2030, two-thirds of world production will come from new fields that are either awaiting development today or are yet to be found. This will require significant investment,

and it suggests that the current dip in prices may not be long-lived, even though prices will always be prone to swings in the economic cycle.

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But oil is not the only sector needing investment.

Total world primary energy demand will grow by 45% from 2006 to 2030; with an average annual growth rate of 1.6% in the 'business as usual' scenario.

To meet this demand and replace existing and future supply facilities that will be retired, huge inflows of capital are needed. In fact, cumulative investment in energy supply infrastructure amounts to \$26.3 trillion (in year-2007 dollars) from 2007 to 2030.

Electricity generation represents half of this figure. Oil & gas account for almost all of the remaining.

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This energy demand growth will obviously have huge implications for climate change.

In our *World Energy Outlook 2008* (WEO-2008) business as usual scenario shown here, global CO₂ emissions from energy will jump by 45% between 2006 and 2030 to 40.6 gigatonnes (growth rate of 1.6% pa).

This trajectory of a 45% growth in emissions puts the world on track for a global temperature increase of around 6 degrees. This is clearly unsustainable; economically, socially and environmentally.

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In light of this grave CO₂ challenge, the WEO-2008 sets out two alternative energy policy scenarios to take the world to a lower emissions future: first of 550 ppm, and second of 450 ppm of CO₂ in the atmosphere.

This graph shows the trajectories for energy-related CO₂ emissions to 2030 in the different scenarios, assuming 3.3% global GDP growth to 2030. It shows that we must reduce emissions from a projected 40.6 Gt in 2030 – to reach 33 Gt in the 550 ppm scenario with a temperature rise of 3°C, and to 26 Gt in the 450 ppm scenario with a temperature rise of around 2°C, which would eventually mean a 50% reduction of current levels of CO₂ by 2050.

This will require a 'revolution' in the energy sector. In particular, measures in three areas are vital:

- Energy efficiency: 54% in the 450ppm scenario.

- Change to the energy mix through the use of RE and nuclear power.
- CCS (particularly in the 450 ppm scenario) after 2020. This is particularly so in China, as well as in all countries with a heavy reliance on coal.

The power sector needs huge investment to reduce CO₂ emissions by two-thirds. For the 450 scenario, we have to build every year :

- 18 000 wind turbines (of average size of 3MW each)
- 30 GW of other renewables (biomass+solar+geothermal + ocean + tidal), i.e. the equivalent of 300 solar plants of 100 MW each.
- 50 hydro plants (of around 1000 MW capacity)
- 30 coal and gas plants integrated with CCS technology
- 20 nuclear power plants (of around 1000 MW capacity each)

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And the widespread deployment of low-carbon technologies, both existing and new will require yet more investment.

I mentioned before that in a business as usual scenario, investment of \$26.3 trillion is needed in energy infrastructure just to meet growing demand and production decline.

Well, in our two low emissions scenarios, significant additional investment is needed in power plants and in more efficient energy-related capital stock. This additional investment amounts to \$9 trillion (0.6% of world GDP on average per year).

In addition, the price of carbon in the 450 ppm scenario would be around \$180/t-CO₂ by 2030 (= around \$ 80 /barrel).

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Let me note here that the investment in both fossil fuels and lower carbon technologies are not incompatible. Both forms of investment are needed if we are to achieve real but sustainable economic growth.

Even in the lowest carbon scenario of 450 ppm - the most ambitious energy revolution scenario - oil demand in 2030 will still be slightly higher than in 2007 – reaching 94.6 mb/d in 2020 and then declining to just under 90 mb/d in 2030.

We also project that OPEC production may increase from the 36 mb/d of 2007 (by another 12 mb/d) to 48 mb/d in 2030.

So the industry need not be alarmed that it does not have a future. But to have this future, it is essential to invest.

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Our medium to long term projections highlight the need for continued investment on the supply side, both to:

- meet demand, and
- in the case of the oil sector, to address production decline

This may be difficult in current climate: in the short term, weak demand, low prices and the credit squeeze appear to be curbing investment. But the medium/longer term picture clearly indicates that more investment is needed.

Alongside this investment challenge, to avoid "abrupt and irreversible" climate change, we need an energy revolution. This requires emissions reductions in all regions, as well as further investment so that use of low carbon technologies is further enhanced.

But let me emphasise here that this will not spell an end to conventional fuels – far from it.

The current global financial problems are nothing short of critical and will make this investment challenge all the more difficult.

But it is the IEA's view that we must keep our eyes fixed on the medium to longer term picture at the same time as we address current economic problems.

The current crisis should be viewed as an opportunity – for both consumer and producer countries - to ensure investment in a cleaner, more secure energy future – a clean energy new deal can – and must - be placed at the heart of economic stimulus packages globally.

The IEA would welcome, perhaps through a joint workshop, greater collaboration with OPEC in relation to exploring the risks to investments in the current climate. OPEC and the IEA are both strategically placed to make a difference.

The IEA has been invited to host the secretariat to the soon-to-be created International Partnership for Energy Efficiency Cooperation. Energy efficiency is another area where producer and consumer countries need to work together.

On another front – climate change - OPEC is an active participant in the IEA Greenhouse Gases Implementing Agreement, and I warmly welcome OPEC's valuable involvement there.

Producer and consumer countries can – and must – work together to overcome the difficult challenges in the energy sector.

Thank you.