

**Keynote Address by Nobuo Tanaka**  
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Ladies and gentlemen, good morning. It is a great pleasure to be here with you; and I thank the Energy Institute, and in particular, President Elect James Smith, for this opportunity to speak to you today.

In the next thirty minutes or so, I would like to share with you some of the IEA's insights on the current oil market, and the outlook for the medium and longer term. But I want to put this within the context of the investment challenge that the industry now faces, and say a little about the potential impact of the current economic and financial crisis.

By 'challenge' here, I mean two things:

- first, ensuring adequate investment on the supply side in the medium to long term to meet demand and production decline; and
- second, ensuring the investment needed – on both the supply and demand sides – for a sustainable energy future by addressing climate change.

Needless to say, when looking at this challenge, we now face the significant complication of the current financial crisis. Indeed, recent global events may be overshadowing our focus on longer term concerns about ensuring the investment needed for safe, secure and sustainable supplies of energy. But my key message to you today is clear: despite the current financial crisis, it remains important for us to maintain a focus on the medium to longer term outlook. We may be seeing weaker demand and lower prices now. But the medium to longer term picture clearly indicates continued energy demand growth alongside supply side challenges, together with the compelling need to address climate change. When at the World Economic Forum in Davos recently, I noticed a clear contrast of views between the financial and energy sectors. The energy sector appeared much more optimistic while the financial sector more pessimistic. This view was reinforced when I attend the CERAAweek conference in Houston only last week.

Thus, to keep this optimism we must keep our focus on investment. It is governments' and industry's responsibility to maintain investment in the energy sector. And we must view the financial crisis as an opportunity more than a challenge to move toward a cleaner, more secure energy future, by ensuring that sound energy investment strategies are at the heart of every economic stimulus package. The IEA is calling this the 'clean energy new deal'.

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Let me begin with a comment on the financial and economic crisis, and its impact on the energy sector. It is already clear that investment in energy-supply infrastructure is being affected in three main ways:

- Firstly, oil and gas companies are finding it much harder than in the past to obtain credit for both ongoing operations and to raise fresh capital for new projects, because of tighter credit markets.
- Secondly, falling demand for energy caused by the economic slowdown has reduced the need for suppliers to invest in new capacity; and
- Finally, the slump in energy prices resulting from weak demand has greatly reduced the cash generation capability of oil companies and simultaneously made new investments generally less profitable.

We can also presume that this may begin to have an impact on the *second* part of the investment challenge on both the supply and demand sides – namely, responding to climate change. We may begin to see less investment in energy efficiency and low-carbon technologies because nuclear and renewables in particular can be more capital intensive.

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Turning to the market outlook, let me start with demand and, in particular, the short term outlook.

We have clearly entered a sustained period of falling demand for oil, something we have not seen globally for a quarter of a century.

In this context, some query whether demand has now peaked. In the IEA's view, we cannot yet say this for the non-OECD regions (and therefore for demand as a whole). However, for the OECD region it may well be true to think of 2005 as the peak.

So what has driven this shift in global demand growth?

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Initially, the rapid rise in prices to \$147/bbl in the first half of 2008 reduced demand – particularly in countries without price subsidies or strong consumer tax systems that can insulate consumers from the full impact of higher prices.

Subsequently, the slowdown of the global economy, rising unemployment and lower international trade have also begun to cut into demand for oil.

The impact of a deteriorating economy, and indeed outright recession in several key consuming countries, accelerated into the fourth quarter of last year – as shown in this graph with the year on year figures for the fourth quarter.

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As a result, 2009 demand is now forecast at 84.7mb/d. This is 3.0mb/d below our initial estimate of 87.7mb/d, made last July .

This reduction to our forecast is driven, to a large extent, by the weaker economic environment. As shown in the graph, there is a direct link between the downward revision of the IMF's forecasts for global GDP growth and our own oil demand estimates. So we may be in more challenging times right now, but this points to the fact that *economic growth* remains the key driver of oil demand, over the short and medium term, and possibly also the long term if appropriate measures are not taken (with regard to climate change).

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Our current estimate for global oil product demand in 2009 is 84.7 mb/d. This represents a year on year decline of 1.0 mb/d.

The key issue of importance here is that the OECD regions are leading this drop in demand, with a decline of 1.5 mb/d in 2009. In contrast, non-OECD growth remains positive – for now, at around 0.5mb/d for 2009.

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But while that may be the outlook for 2009, the medium term looks different, with a steady recovery in demand expected from 2010. Though growth through 2013 will be lower compared to the prior decade, it will nonetheless average 1.0mb/d per annum.

And while the OECD leads the decline in demand, it is the non-OECD regions that will lead the medium term demand growth: 80% of the medium term growth will come from the Asia-Pacific region and from the Middle East. This will be driven not only by what is expected to be strong economic performance, but also by the continuation of subsidy regimes, even if these begin to be scaled back.

However, it is important to once again stress that this is based on current IMF projections and, were there to be further downward adjustments to these, we would necessarily reduce our own forecasts.

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Looking to the longer term, our 'reference' or 'business as usual' scenario in the WEO-2008 indicates that the growth in global primary demand for oil (excluding biofuels) will rise by 1% per year on average to 2030, rising from 85 million barrels per day in 2007 to 106 mb/d in 2030.

All of the projected increase in world oil demand comes from non-OECD countries: over four-fifths of this increase comes from China, India and the Middle East (with the Middle East moving to become a consumption centre).

OECD oil demand will fall slightly, due mostly to declining demand for non-transport oil. In all, this means that the non-OECD demand share of oil will surpass that of the OECD in around 2015.

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Turning to the supply side of the market, we are starting to see the impacts of the lower oil price and slowing economic activity.

2009 non-OPEC supply is now expected to grow by an additional 400,000 b/d less than originally forecast, due to lower growth from Canada, Brazil and Russia, as delays to projects and spending reductions start to kick in.

But it is important to recognise here that this remaining growth of 400,000 b/d includes:

- 335,000 b/d from biofuels, and
- an assumption of a “normalised level” of disruption – meaning a lower level of disruption than that witnessed in 2008.
- So if we remove these two sources of year-on-year growth, non-OPEC crude oil production will in fact decline in 2009 relative to 2008. The factors that lie behind this shift require close attention.

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While underground factors such as decline rates and resource depletion have played a role, above ground factors generally seem to have had a greater part in undermining supply growth potential in recent years.

Unplanned stoppages - such as last year’s hurricanes and outages affecting Azerbaijan, a worsening climate in terms of access to reserves, and ageing infrastructure have all acted to interrupt baseload production and to defer new projects. Bottlenecks in labour, raw materials and construction capacity have seen costs soar, contributing to the rise in crude prices as projects have been further delayed.

Some of these cost related pressures may now recede, but many other barriers to investment remain today in a lower price environment. Indeed lower prices themselves, and the credit crisis, could severely strain upstream investment, meaning that it will remain difficult to expand supply capacity fast enough when demand recovers. Thus we have one part of the ‘investment challenge’.

So what has the impact of these issues been on our forecasts so far?

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It is too early to be definitive about the medium to long term impact on supply of decisions made now to defer new investments.

Companies are still formulating budgets in response to the new economic realities. And it will take time to assess which projects will still proceed and which will be delayed. That is something we will focus on in the next MTOMR, due for release in the middle of this year.

But a rough calculation shows that our own existing 2009 forecast has been scaled back by around 1.0mb/d, over and above changes to baseline 2008 output.

As we shall see, this may have a significant impact on expected spare capacity in 2013, even though this essential buffer from market shocks is expected to increase in the short term. In that regard, before looking at the longer term market implications, let me briefly summarise the implications for the medium-term market outlook, including for spare capacity.

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OPEC spare capacity now appears to stand at 3.5 mb/d in 2013, as compared with the 1 mb/d seen in July last year.

But, as already highlighted, this figure does not yet fully reflect the impact of lower prices and the credit squeeze on investment. It also assumes that OPEC does not slip further on key capacity expansions.

As such, it is possible that spare capacity could be lower than the new projection suggests. And even if not, the longer term trend remains unchanged – we must keep in mind that 3% spare capacity is tight by any measure.

Again this shows us that the oil market is ‘pausing for breath’ rather than in a permanent reversion to lower prices. And we must not let this pause for breath deter us from the investment challenge we face.

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This investment challenge does not only relate to the possibility of a supply crunch in the medium term. Looking to the longer term, this graph points to significant decline in crude oil production at existing fields, highlighting that the supply side investment challenge is not only about meeting demand growth. In fact, the gross additions needed to meet existing production levels to 2030 will far exceed the net additions needed to meet demand growth.

To keep the current level of production, gross additions of 45 mb/d, or four times (the current production of) Saudi Arabia will be required. [6 times to meet production decline + demand.] By 2030, two-thirds of world production will come from new fields awaiting development today or yet to be found. And the shares of natural gas liquids and non-conventional oil (mainly from oil sands) in total oil production will rise substantially, as will costs with it. So not only demand growth, but decline in production at existing fields, and associated increases in production costs, will be a key driver of investment needs moving forward.

On business as usual trends, huge inflows of capital will be needed to 2030 to expand supply capacity to meet demand and to replace existing and future supply facilities that will be retired. In fact, cumulative investment in energy supply infrastructure amounts to \$26.3 trillion (in year-2007 dollars) from 2007 to 2030. Oil & gas account for half of this, with oil accounting for 24% or \$6.3 trillion. 63% of the total will be needed in non-OECD countries – highlighting that investment challenge is a global issue.

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Indeed, a structural shift to more costly sources of oil for the future seems to be well entrenched. Companies are being forced to explore in deeper waters and more hostile environments. These are generally far from existing infrastructure and require the use of innovative, but capital-intensive, new technologies.

While existing production largely remains possible economically at today's prices, future supplies from outside OPEC could require prices of \$60, \$80 or \$100/bbl.

Herein lies the dilemma for IOCs and NOCs alike. The need to conserve cash - or indeed meet payments to shareholders - is forcing projects, both upstream and downstream, to be cancelled.

Some easing in the rampant cost inflation during 2004-2008 is now evident. And indeed in the short term, given cyclical trends, the costs of raw materials and equipment will likely fall.

But for the medium and longer term, the structural drive behind higher costs will probably prevail, suggesting that prices are likely to move higher after the current hiatus caused by the weaker global economy.

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Another aspect to all of this, as I mentioned at the outset, is the climate change imperative that we now face. Alongside much needed investment in traditional energy supply sources, we must also address climate change and the growing need for low-carbon technologies. In a business as usual scenario, global CO<sub>2</sub> emissions from energy will jump by 45% between 2006 and 2030 to 40.6 gigatonnes (growth rate of 1.6% pa).

This trajectory puts the world on track for a global temperature increase of around 6 degrees. This is clearly unsustainable; economically, socially and environmentally. Energy investment decisions taken now must address these concerns. We cannot afford to miss this opportunity.

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To reach a safe CO<sub>2</sub> stabilisation level of 550 – better still – 450 ppm will require a transformation of the energy sector. This graph shows the trajectories for energy-related CO<sub>2</sub> emissions to 2030, assuming 3.3% global GDP growth to 2030. We must reduce emissions from a projected 40.6 Gt in 2030 (in RS) – to 33 Gt in the 550 ppm scenario and 26 Gt in the 450 scenario. Measures in three areas will be particularly vital:

- Energy efficiency: 54% in the 450ppm scenario.
- CCS (particularly in the 450 ppm scenario).
- Change to the energy mix through the use of RE and nuclear power.

Such an emissions trajectory will require the widespread deployment of low-carbon technologies, both existing and new. And for this, we need 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 energy efficient energy-related capital stock. For example, the 450 Policy Scenario requires further power plant investments of \$3.6 trillion and efficiency investments of 5.7 trillion over 2010 to 2030, in addition to that in the reference scenario. In total, these additional investments amount to 0.55% of world GDP on average per year. We have a huge business opportunity and yet, in the current economic climate, there is a real danger that we will miss this chance to move toward a cleaner energy future.

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Let me note here that these two parts of the investment equation – traditional supply side investment and support for low carbon technologies – are not incompatible. Rather, both are needed. Even in our lowest CO<sub>2</sub> emissions scenario from the 2008 WEO, oil demand in 2030 will still be slightly higher than in 2007. In fact, in our 450 ppm Scenario, OPEC production will 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.

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Ladies and gentlemen, in concluding: 2008 and 2009 will see the first consecutive global demand declines since the early-1980s, as a result of the widespread economic slow-down. But growth, albeit weaker, should resume from 2010, driven by transport and petrochemical demand, largely in Asia and the Middle East. Supply was already proving inelastic during the 2004-2008 phase of rising prices. But weak demand, low prices and the credit squeeze could now curb investment, a risk we cannot afford to take when we look to the medium to long term picture.

In fact, the investment challenge we face in the energy sector is twofold:

- first, to ensure adequate investment on the supply side, in the medium to long term, to meet both growing demand *and* production decline; but
- second, to ensure adequate investment on both the supply and demand sides to encourage a sustainable energy future for all – in terms of addressing climate change. To avoid "abrupt and irreversible" climate change, we need a major decarbonisation of the world's energy system, which requires investment for emissions reductions in all regions. But let me emphasise here that this will not spell an end to conventional fuels – far from it.

While the current global financial and economic problems are nothing short of critical and will make this investment challenge all the more difficult, we must keep our eyes fixed on the medium to longer term picture at the same time that we now seek to address current economic conditions. In short, the current crisis should be viewed as an opportunity, rather than a challenge, to ensure investment in cleaner, more secure energy future – a clean energy new deal should be placed at the heart of economic stimulus packages everywhere.

Thank you.