

"Energy Security in New Market Realities"

**Address by Nobuo Tanaka, Executive Director, International
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Ladies and gentlemen, good morning. I wish to thank the DOE's Strategic Petroleum Reserve for giving me this opportunity to talk to you all today. And I'd like to thank them also for organising this event. I am pleased to see that we have here not only IEA countries, and that the US has reached out again - to the European Commission and to countries that are not members of the IEA. For our future preparedness for supply disruptions and for ensuring energy security more broadly, this kind of wider dialogue is indeed important.

I have been asked to talk today about "Energy Security in New Market Realities" - an interesting and timely topic. In addressing this issue, I will focus on the findings on oil in our most recent *World Energy Outlook*, released last November. Second, I will focus on the consequences of tight oil markets for emergency preparedness, and illustrate the usefulness of having public stocks, like in SPR of the US, to deal with supply disruptions.

But before I turn to these two areas, let me put all of this in context - by briefly telling you about the IEA and also by giving you an overview of the IEA's projections on energy prospects in the coming decades.

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The IEA acts as energy policy advisor to 28 Member Countries in their effort to ensure reliable, affordable and clean energy for their citizens. It was founded by members of the OECD during the oil crisis of 1973-74.

Founded during the oil crisis of the early 70s, the IEA's initial role was to coordinate measures in times of oil supply emergencies. But as energy markets have changed, so has the IEA: its mandate has now broadened to cover the 'three Es' of balanced energy policy making - energy security, economic development and environmental protection.

At the same time, our very notion of 'energy security' is also expanding - while in the past we may have looked only at responses to oil supply disruptions, we now consider gas security, the reliability of renewable energy sources and ensuring stable electricity markets. Energy security is also increasingly seen as being linked to the issue of addressing climate change.

As such, the IEA's mandate goes beyond its traditional work on energy security - in terms of oil emergency policy in particular - and yet at the same time, this remains at the very heart of the Agency's work and vision and is what I wish to focus on today. Notably having oil emergency stocks available and to be able to bring them quickly to the market in times of need, has proven very important.

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As I mentioned at the outset, energy security - including oil security - must be considered within the wider context of prospects for the global energy market. This is particularly important to highlight at the current time because while oil markets today may look more relaxed, our analysis shows that this will change again in a couple of years and into the long term. It is very easy in a time of financial crisis like this to focus only on the near term. But for energy policy - and notably energy security - we must take such a longer term perspective.

This graph shows world primary energy demand to 2030 in our 'Reference' or the 'business as usual' scenario. It shows that demand will grow by 45% from 2006 to 2030; with an average annual growth rate of 1.6% [1.8% WEO-07].

Non-OECD countries account for 87% of global energy demand growth between 2006 and 2030. (China has the greatest growth). Fossil fuels will account for around 80% of the overall increase in energy demand between now and 2030. Coal, an increasingly important part of the energy mix, becomes the second most important energy source after oil.

This all points to the fact that our current energy trends are unsustainable - socially, environmentally AND economically. Not only does this scenario put us on track for an unsustainable level of atmospheric CO₂ emissions in the long term. Rising demand will also see higher imports and a greater reliance on OPEC. This is likely to heighten concerns about energy security. So the IEA is urging all governments to encourage a shift to cleaner and more efficient technologies

that can curb the growth in carbon emissions while also contributing to enhanced energy security.

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On the supply side, the overwhelming bulk of the increase in fossil-energy production is expected to come from non-OECD countries. This is broadly in line with trends seen since 1980.

In the case of oil and gas, the share of non-OECD countries in incremental production growth is even higher than in the past, as the main conventional producing basins in OECD countries - notably onshore North America and the North Sea - are already in decline.

In most of the resource-rich non-OECD countries, oil and gas production is carried out by national companies. So, their share of world production - and their importance in the upstream industry generally - will inevitably grow significantly.

These trends could also intensify concerns about our vulnerability to a price shock resulting from a supply disruption. This is particularly so given that a growing share of oil imports is expected to come from the Middle East and transit vulnerable maritime routes, including the straits of Hormuz in the Arabian Gulf. I will come back to this particular issue in a moment.

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Given the focus of this conference on oil supply security, let's now focus in on the key aspects of WEO 2008 with regard to oil.

This slide shows you the incremental change in oil demand in key countries and regions. Global primary demand for oil (excl biofuels) rises by 1% per year on average, 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 the increase comes from China, India & Middle East alone. Meanwhile, OECD oil demand falls slightly, due largely to declining demand for oil outside the transport sector.

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As just mentioned, in the WEO reference scenario, oil demand is projected to grow by 1% per year on average to 2030 (1.3% to 2015; 0.8% 2016 to 2030). This is principally driven by growth in the transport sector, which accounts for 75% of the incremental oil demand in the world between 2007-2030. Also of significance is that some 62% of the increase in demand during the period 2007-2030 comes from China and India. In absolute terms, their demand grows by 13.3 mb/d. In 1980, non-OECD accounted for 35% of world oil demand, today for 43%. We project that it may surpass OECD demand in 2015, reaching 58% in 2030.

This and the previous slide highlight that in pursuing energy security into the future, we must seek to work collectively - including with countries beyond the IEA's membership. We at the IEA realise this and have been increasing our dialogue on energy security with non-Member countries in recent years. For example, we invite non-Member countries to our regular Emergency Response Exercises, and had wide and fruitful non-member participation in our last exercise in June 2008. In addition, we are now planning to hold an exercise specifically for Thailand in May, and we are not beginning to plan similar exercises for China and also for India.

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So now let's look at production.

In the business as usual scenario, world oil production is projected to rise from 82 mb/d in 2007 to 104 mb/d in 2030.

The bulk of the global increase in output is expected to come from OPEC countries, mainly in the Middle East. Their collective share rises from 44% in 2007 to 51% in 2030 [CLICK TO REVEAL LINE]. Their reserves are large enough (and development costs low enough) for output to grow faster than this, but investment by these countries is assumed to be constrained by several factors, including conservative depletion policies and geopolitics.

Saudi Arabia remains the world's largest producer throughout the projection period, its output climbing from 10.2 mb/d in 2007 to 15.6 mb/d in 2030.

Non-OPEC conventional oil production is already at a plateau and is projected to start to decline by around the middle of the next decade, accelerating through to the end of the projection period. On the other hand, non-conventional non-OPEC output (mainly Canadian oil sands) grows strongly, outweighing the fall in conventional output.

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Then there is the question of whether there is enough oil in the ground to produce this projected amount and satisfy demand. You may very well know that many people doubt that there is. Our own studies and those of other institutes appear to indicate that indeed there is more oil out there:

- First, there will likely be more conventional oil that we do not yet know about.
- Second, current fields may be depleted further with new technologies.
- Third, new fields are yet to be found in remote areas: the arctic and the deep sea in particular.
- And fourth, we have the unconventional oils, be it heavy oil, oil sands, gas liquids and the like.

If we add this all up we might end up with 5 trillion (5000 billion) barrels of oil. And there might be more, if we also include oil shale or methane hydrate.

But one thing is certain: all these new findings and technologies are not cheap. Extraction at lower prices can only be found in OPEC countries nowadays. For additional oil beyond that we should be prepared to pay high prices.

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If the oil is out there, it is not to say that the oil will reach markets in time to satisfy demand. In last year's WEO, we conducted a first of its kind analysis of 800 oilfields. Based on this analysis, we were able to create this graph on future supply. You will note that production from current producing fields will decline from 75 mb/d now to around 35 mb/d in 2030 (dark blue). Demand in 2030 will be around 105 mb/d, so we have to fill a gap of around 75 mb/d in less than 25 years. Or said otherwise: the gap that has to be filled is as big as the current production of 75 mb/d.

The slide shows it can be done by means of fields already found, waiting to start production (*light blue*), by more natural gas liquids, which come along with natural gas production (*yellow*), by non conventional oil (*green*), and by new technologies, producing more from existing fields (*brown*). Having done all that, we still have a gap in *red* fields that still have to be found. As said: we have no doubt the oil is there.

The question is -- will countries and companies invest enough and in time to find those fields and start them producing? In this regard, I must of course mention the 'new market reality' of the current financial crisis. We are clearly living in usual and uncertain economic times that few would have anticipated 18 months ago. Weak demand, low prices and credit squeeze could now curb investment and reduce global supply.

The current postponement of investment is not a good signal. It may not be a big problem initially with demand contracting. But production from current fields is going down by 3.5 mb/d per year. So when the global economy begins to grow again and investments have been postponed, we might soon end up again in a situation with a very tight market, just as we have seen in recent years. I would also add that our forecasts still show that growth, albeit weaker, should resume from 2010, driven by transport and petrochemical demand, mostly in Asia and the Middle East.

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After this gloomy picture of oil supply in the near and more distant future, let's now turn to oil security specifically.

You are all well aware that the IEA was created in 1974 on the back of an oil supply disruption. The IEA mechanisms to deal with supply disruptions have been relevant over all these 35 years. Relations with producing countries have improved considerably; a political embargo as experienced in the seventies is less likely now. Although for natural gas, Europe experienced something like that last month.

If there were to be a supply disruption not related to geo-political conflicts, OPEC might very likely increase production quickly with its spare capacity, to give relief to the market. That's why OPEC's spare capacity has become an important indicator for market tightness.

Over recent years, OPEC spare capacity has been very low. In light of projected weaker demand in 2009-10, we are expecting to see this creep up to stand at around 3.5 mb/d in 2013 [as compared with the 1 mb/d seen in July last year]. But this easing in the market could prove short lived, particularly if upstream investment elsewhere is adversely affected by low prices and the credit crunch. 3% spare capacity is tight by any measure. And if a serious supply disruption occurs, the market will continue to look to the IEA, where strategic reserves can give relief.

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OPEC spare capacity at around 2 to 3 mb/d, would indicate that a serious supply disruption from Nigeria, Iraq or Iran would mean that all spare capacity would be out of the system, if OPEC decided to increase production by the amount of that disruption.

So it is exactly for that reason that market analysts always get nervous when bad news is reported in one of these countries.

And it is why the IEA is closely monitoring these countries. Not only do those countries include an imminent risk to oil supplies, but also the long transit routes from the Middle East to consuming countries come with vulnerability, as the next slide shows.

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For oil from the Middle East to reach its markets, it has to go through important chokepoints -- through the Strait of Hormuz and for Asia also through the Straits of Malacca.

The amount of oil flowing through the Strait of Hormuz will increase from 17 mb/d in 2006 to 24 mb/d in 2030, rising from 21% of global oil demand to 23%.

A significant portion of that will go through the Malacca Straits: 18 mb/d or 16.7% of global demand in 2030. The Malacca Straits are well known for their security risks, be it geopolitical, piracy or just the risks associated with many ships crossing paths in narrow passageways.

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So IEA countries have to be prepared for major supply disruptions, as should other key consuming states.

In response, the IEA has put in place swift decision procedures and disruption simulation exercises. You will hear more of that this afternoon. But most important and visible for the oil market are the stocks that are ready to be pledged to the market in times of emergencies. The graph shows you how stocks have developed over time. Industry stocks have been a constant factor, but public stocks have almost doubled and stand now at 1.5 billion barrels; that is an enormous amount. They are held with agencies like the US SPR. Some 20 out of the 28 IEA countries now do have an agency like that. Public stocks are a very visible and reassuring part of the emergency preparedness of our countries.

These are just the stocks in IEA countries. Other countries like China, India and Thailand are building stocks too. You will hear more about that tomorrow. The IEA is currently discussing with those countries whether those stocks can be used in coordination during an emergency. That would increase the impact of our actions in the future, and this is important as I have said because part of the 'new market reality' is that those countries are becoming more important oil consumers.

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This slide shows the breakdown of IEA stocks by region, by public versus industry stocks and by crude oil stocks versus products. As it shows, stocks are well spread around the globe. Having said that, there are hardly any products stocks in the public reserves in the US or IEA Pacific region. This can be explained by the European stockholding system, where the stocks of countries have to reflect their domestic consumption. Outside Europe, countries have prepared themselves mostly for a crude oil disruption coming from producing countries. So having crude oil enables them to run their refineries with the crude oil from their storages.

The limitation of this, however, is that it has vulnerability if the disruption occurs closer to home, as we saw in 2005 and 2008 during the hurricane season. Not only was crude oil production lost in the Gulf of Mexico, but so was refinery capacity. So the SPR's crude had difficulty finding its way to the market. And

of course consumers are not able to use crude oil. So with domestic refineries shut down because of the hurricanes, imports of refined products were essential. In the case of 2005, a good portion of these came from the release of products in Europe.

This raises the question of whether the US SPR should also hold some product stocks. I know you are studying this and we from the IEA support that very much.

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This final graph shows what we can do with the public stocks. You likely know that the IEA requirement is to have 90 days of net imports of oil. This means that if all imports came to a halt, we could survive for 3 months.

But it is very unlikely that all imports would stop. So in fact, the period we can sustain is much longer. If you just look at the 1.5 billion barrels of public stocks, what can we do? [CLICK] well, a supply disruption like Katrina, where the IEA brought 2 mb/d to the market: with the public stocks only -- we can do that for 24 months. [CLICK] a bigger disruption of 4 mb/d - like Iraq's invasion of Kuwait and about the size of the current production of Iran -- we can deal with for 1 year. I would say this is a comfortable cushion.

So for oil supply disruptions IEA countries are very well prepared. This is less true for disruptions of gas supply, such as the recent dispute between Russia and the Ukraine. We and our member countries consider this something that should be further addressed, so the Agency is looking into emergency policies for natural gas. Gas stocks can be a comfortable cushion to compensate for disruptions. But such stocks are expensive - more expensive than oil stocks in fact. So we are also considering a range of other options, and these will be presented to IEA Ministers at our next Ministerial conference, to be held in October.

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Finally, we should also continue to recognise that part of our new market reality is that energy security and climate change must be addressed together. We must treat them as two sides of the same coin. But let me add on this point that even in our lowest CO₂ emissions scenario from the 2008 WEO, oil demand in

2030 will still be slightly higher than in 2007 - so the industry need not be alarmed that it does not have a future. In fact, in the 450 Scenario, OPEC production will increase from the 2007 amount of 36 mb/d by another 12 mb/d to 48 mb/d in 2030.

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Let me wrap up with a few final observations. The current financial crisis may be leading many of us to focus only on the short term and on the 'relaxed' nature of the market at present. But this may be short-lived. According to our WEO and Medium Term Oil Market projections, oil demand in developing countries is still on the rise. This is not sustainable environmentally, socially or economically (even if we stabilise GHG emissions at 450 parts per million, demand will reach 90 mb/d in 2030).

At the same time, while there is enough oil in the ground to satisfy this demand, a big question mark is looming about whether countries and companies will invest enough to produce that oil in time.

What is clear is that current financial crisis is delaying projects or bringing them to a halt. We are investigating by how much and hope to have a better idea by about May this year. But it is certainly bad news for oil supply security in the long term and in the IEA's view, investment in future production remains just as vital today. So the 'new' or current reality of an easing market should not deter our focus on investment for the medium to long term future.

For us at the IEA and our member countries, with supplies at risk, the IEA should stand ready to bring additional oil to the market during emergencies. Having stocks for that is of utmost importance. And we should also be prepared for disruptions in product supplies.

Another part of the 'new market reality' well into the future is the growing importance of non-IEA consumer countries. In this regard, we must continue to work with key non-member consuming countries to enhance energy security and emergency preparedness.

Ladies and gentlemen, I know that during this meeting you will be discussing some of the issues I've raised today in much detail and hopefully bringing new ideas to light. I wish you very fruitful discussions on this important topic and a successful conference.