



## Energy Institute Oil Depletion Conference

Posted by [Chris Vernon](#) on November 10, 2006 - 6:02pm in [The Oil Drum: Europe](#)

Topic: [Supply/Production](#)

Tags: [dti](#), [gas](#), [oil](#), [peak oil](#), [united kingdom](#) [[list all tags](#)]

On Tuesday 7th November 2006 the [Energy Institute](#) (UK) held their annual oil depletion conference, **Oil Depletion - Dealing with the Issues**. The programme is available [here \(pdf\)](#).

The resource-limited peak in the global production of conventional oil looks to be very close. This peaking of readily available oil supply is likely to be disruptive and to have serious economic consequences. This one-day conference will examine the data and calculations that indicate the peak, and present some of the challenges to be faced. The meeting is of interest to all who have a professional need to understand near and medium term global energy supply. The meeting will conclude with a panel discussion on the implications of the peaking of oil supplies.

I'm only reporting on the first three speakers and Clare Durkin here, apologies to the others.

**[UPDATE 15Nov06]:** Euan has recently written a excellent report on the presentation from Dr Ken Chew, IHS Energy:

[IHS Data Suggest Kuwaiti and Global Proved Oil Reserves Significantly Lower Than BP Estimates](#)

The slides are now available (only until the end of Nov06) for download from [here](#).

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## Oil Peaking - The Fundamentals

### Dr Roger Bentley



*Roger Bentley*

I've been a fan of Bentley ever since I read his paper on the importance of understanding proved and probable reserve data and the economic view of oil supply ([discussed here](#)) so I was looking

Bentley opened with a chart of some 10 global oil production models ranging from Campbell and Deffeyes as the lower limit and Odell and the IEA at the top, the question has to be why are there such differences. Bentley's group has spent a lot of time looking at the databases, the modelling, how the calculations were done and what the assumptions were, a paper is due shortly. On the IEA model Bentley commented:

The reference case for the International Energy Agency is simply lets see what future demand will be and assume there will be enough supply to meet it.

This wouldn't be so bad if we didn't also hear from the Government that *"it's not our job to second guess the IEA"* (curiously this is exactly what Clare Durkin from the DTI would go on to say a couple of hours later that morning). Whilst the IEA is very good at demand side modelling they appear truly hopeless at supply side modelling.

Bentley describes three classes of modelling:

- Activity modelling like Skrebowski and CERA
- Resource modelling like Campbell and Deffeyes
- Economic modelling like Kemp (who we'll hear from later)

None are without shortcomings so the task for an organisation like the IEA should be to collate all these methodologies together, producing as a result a forecast with a greater degree of certainty than any we currently have.

Bentley went on to run through a few examples of countries that had peaked, stressing that considering production data or P1 (proved reserve) data is irrelevant. These two metrics don't tell you much, it's key to look at 2P (proved + probable) data. On proved data I quote:

If you want to know how much you've found don't use proved reserves, they are atrocious, data generally under reported in most places, clearly over reported in some places in the Middle East where there P2 numbers are lower than the 1P and recently over the last 10-15 years they just have not reported, they don't change at all. Proved reserves data tell you nothing.

The forthcoming paper on depletion modelling from Bentley's group is certainly one to look out for!

## **Peak Oil - The Emerging Reality**

### **Chris Skrebowski**



*Chris Skrebowski*

I expect most people are familiar with Skrebowski's peak oil modelling. Described by Bentley as "activity based modelling" he calls it the megaprojects database. His approach is to consider all new projects yielding over 40,000 barrels per day out to 2012, this represents the 'new oil' coming to market. From this new oil, the depletion from fields already in production is subtracted to give an annual net increase or decrease.

I am becoming more worried about this because the companies are increasing announcing projects on timescales that are in fact ludicrous. The average reported discovery to production of a big project is now running at 6-7 years, even in areas like the Gulf of Mexico, before the hurricanes and the shortages of steel and everything else it was running at 4 years for a straight forward project but suddenly companies are announcing they are going to have significant fields on in 2 or 3 years.

Skrebowski listed six things we would expect to see if we were running up to peak oil:

- Falling discovery
- Supply growth slowing
- Companies would have difficulties expanding their production
- An increasing number of countries to be in depletion
- Depletion to become more important than demand growth
- An increasing number of wells to be pumped

Going on to show how we are in fact seeing all this today.

An additional point to note, CERA's forecast was described as "uncomfortable" as they use a larger output from Russia than the Russian government go for, a larger output from OPEC than OPEC go for and they appear to have fields pumping years ahead of when they could possibly come in!

Skrebowski's conclusions are that oil supply will peak in 2010/2011 at around 92-94 million barrels/day, noting that internationally traded oil could peak sooner than the production peak due to producers own consumption growth.

My take on this is that it represents the best case scenario. There is very little of Skrebowski's personal opinion in this forecast, it is essentially the industry position. Sensitive analysis varying decline rates, new project volumes and timescales within reasonable bounds doesn't impact the peak greatly. I say best case as it catalogues the major planned activity (some with unrealistic timescales), yet leaves one question that has to be asked; although individually all these projects

## **Prospects for Production from the UKCS to 2035**

### **Prof Alex Kemp**



*Alex Kemp*

I was particularly interested in this presentation as I've been following the UK activity in the North Sea quite closely for the last few years.

Kemp started with a historic oil and gas production chart, clearly illustrating the peaks and rapid decline, he described the decline as "faster than expected" and due to unplanned shutdowns caused by infrastructure failure and not due to the resource. There may be a grain of truth in that however one has to ask why we are seeing higher than expected (expected by whom?) infrastructure failure rates? Logically unless it is reasonable to expect this failure rate to fall in the near term it is just as legitimate a driver for reduced production as depleted resources. Could it be that after 30 years out at sea much of the infrastructure is simply reaching the end of its operational life?

Kemp has undertaken economic modelling of the UKCS with a range of price, reserve and activity inputs to produce many potential scenarios. Kemp isn't a fan of "one line" forecasts believing the uncertainty is too great to be expressed as anything other than an ensemble.

Probable and possible fields are small, with an average size of just 14.5 mmbbl and a lifetime cost of \$15.30/boe. Net present values of these fields at a 10% discount rate and \$30/bbl price are low with approximately half being valued at less than £20m and less than 10% being valued at over £60m.

On oil production profiles Kemp produced a range of forecasts, all however contained a significant increase for 2007 over 2006 of some 300kbbbl/d. This seems wholly unfeasible to me as Buzzard is the only major new project, has a capacity of 200kbbbl/d and we can expect reduced production from the fields already in production of between 150 and 200kbbbl/d next year. All being well 2007 production will match 2006 production before rapid decline resumes there after.

**Clare Durkin**



*Clare Durkin*

Durkin is the head of the DTI Energy Markets group which makes her a key, perhaps the key civil servant when it comes to UK energy security. In fact she described herself as the SRO, the Senior Responsible Officer, for the security of energy supplies. Tough posting.

First up it should be noted that she spoke at the oil depletion conference last year where [she said](#):

We can expect that an investigation will be announced within the next few weeks aimed at allowing a more open discussion on the arrival of "peak oil," the point at which worldwide oil production begins to decline,

When asked about the whereabouts of the study she admitted it hasn't happened, she apologised for the "bum steer".

So what did she have to say this year?

She said her data came from the WEA, repeating the three letter acronym several times, even saying that some had been updated from the 2006 WEA release that had occurred earlier that morning. This is strange since it was the IEA (International Energy Agency) that had published their 2006 WEO (World Energy Outlook) report that morning. I don't think she meant the World Energy Assessment, perhaps she was nervous.

Early in her presentation she dismissed discussion of peak by saying:

We can debate at great length... when the peak will come, what's going to happen with the peak but the fact is there is still an awful lot out there and it may as well not be out there if we don't have any policies of getting it from out there to where it needs to get.

Backing up [Klare's point from Boston](#) Durkin stressed the difficulties of where the oil was going to come from however. She highlighted the "inexorable shift" away from the OECD and towards MENA (Middle East North Africa) and the "serious challenges" of releasing these reserves.

She highlighted the difference between trade for oil and gas - I think this is an important and often overlooked point when people suggest global gas peak is likely to occur after the global oil peak - recognising that oil trade is and has been for a long time far more global than the trade of gas. She was doubtful on the potential of interregional gas trading, whether the pipelines would be as free as hoped.

Not only is gas yet to be an effective global commodity, it's not even an effective regional commodity. Our region is western Russia, down to Italy up to us and really it's not flowing nicely as I watched hour by hour last winter.

Progress towards EU liberalisation is *disappointing*.

She mentioned the \$20 - 30 trillion investment required to bring the required oil and gas to market saying that it had to come from the private sector but required the right regulatory framework from government. Interestingly she went on to say how recently:

...things have gone the **wrong way** in lots of different areas of the world in terms of government involvement in companies and the balance between the public and the private sector. We've seen it in South America, Middle East, Russia.

Government energy policy? Consistency apparently. Durkin outlined the four key policy drivers government energy policy has been based on for last five years:

- Environment
- Security of Energy Supplies
- Competitive Markets
- Affordable Energy

Durkin said it was quite difficult to balance those four. Quite difficult? I would suggest Government have well and truly failed. We have increased CO2 emissions due to a shift from gas to coal, we have no consideration taken of peak oil nor a plan to keep the lights on as nuclear and coal are decommissioned and indigenous gas runs out, our regional market is not competitive as illustrated by last winters gas problems and fuel poverty is rising rather than falling. Sorry Clare.

As SRO for security of energy supplies I was unimpressed with what this english graduate, coal miners daughter had to say. She gave me no confidence that the UK energy issues were in safe, responsible hands and I actually came away felling less optimistic. The word of the day was *challenging*. I counted Durkin use the word **18 times** during her 24 minute presentation, and I may have missed a few! I suggest challenging is civil servant speak for "problem without solution" or simply that "we're in trouble".

Sadly Durkin only arrived some 20 minutes before her slot and vanished very quickly afterwards.

## Highlight

Perhaps the highlight of the day was finding myself sitting right behind Peter Jackson, a director with CERA and seeing him chortle, laugh and make jokes under his breath to his colleague as Bentley and Skrebowski said their pieces.

The UK energy awareness organisation [PowerSwitch](#) has a lively debate on the conference proceedings on their forum here: [PowerSwitch Forum](#)



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