The Oil Drum: Europe
DISCUSSIONS ABOUT ENERGY AND OUR FUTURE

Daddy, will the lights be on at Christmas?

Posted by Euan Mearns on December 20, 2007 - 11:30am in The Oil Drum: Europe
Topic: Supply/Production
Tags: aleksandr ananenkov, berr, european gas, gas exports, gas imports, gazprom, iea, norwegian gas, npd, russian gas, vladimir milov [list all tags]

... or is Europe running low on natural gas?

OECD Europe gas imports may grow by 295 BCM per annum by 2020. In the same time period, global LNG production is set to grow by 350 BCM per annum. So we Europeans should be OK, so long as the USA, Japan, China, South Korea, India and Taiwan are not planning to expand their LNG imports as well.

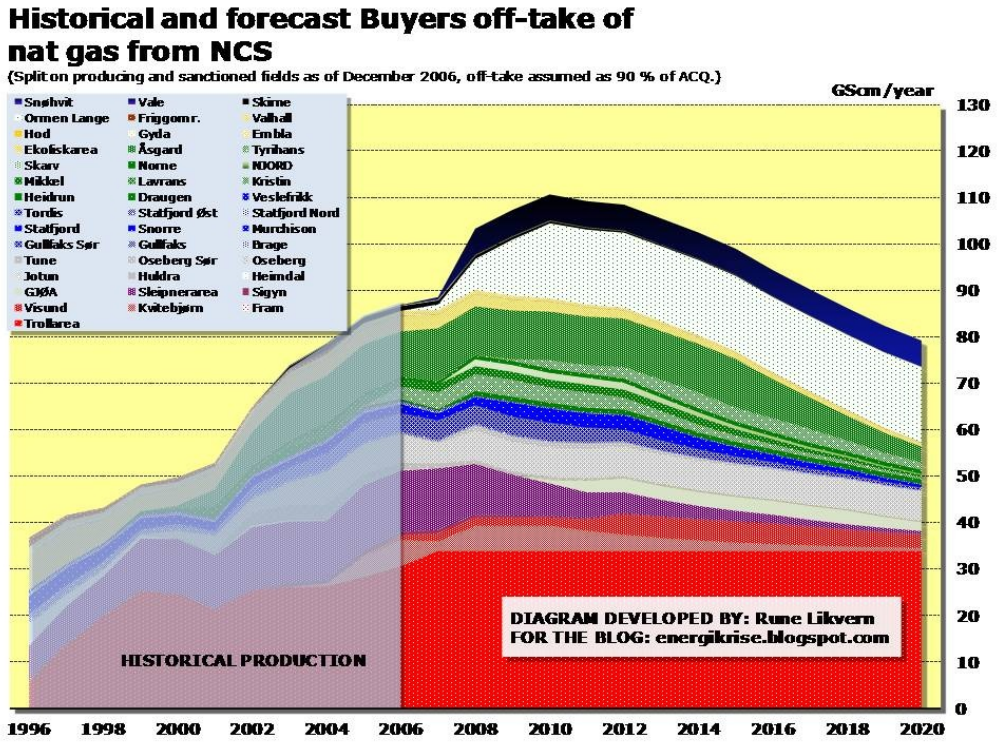
*Edinburgh, the capital of Scotland, at Christmas. A **wondrous** site. And none of our politicians or the general public ever **wonder** where the energy comes from and how we will pay for it. Cutting CO2 emissions is a priority for all parties. Eliminating nuclear power is also high on the agenda. Confused? Our politicians certainly are. Visit **Edinburgh** while you can, it's one of Europe's finest cities.*

This is a follow up to the post I had on **European Gas** last week. In the **comments** nrgyman2000 posted his forecast for Norwegian gas production that was somewhat more pessimistic than the assumptions I had made. The UK department of BERR also sent me some more reports with interesting data on Global LNG liquefaction and regasification capacity. SamuM posted a lengthy **comment** on Russian gas with 10 charts that is recommended reading. This post aims to pull this new information together and concludes that European gas and energy

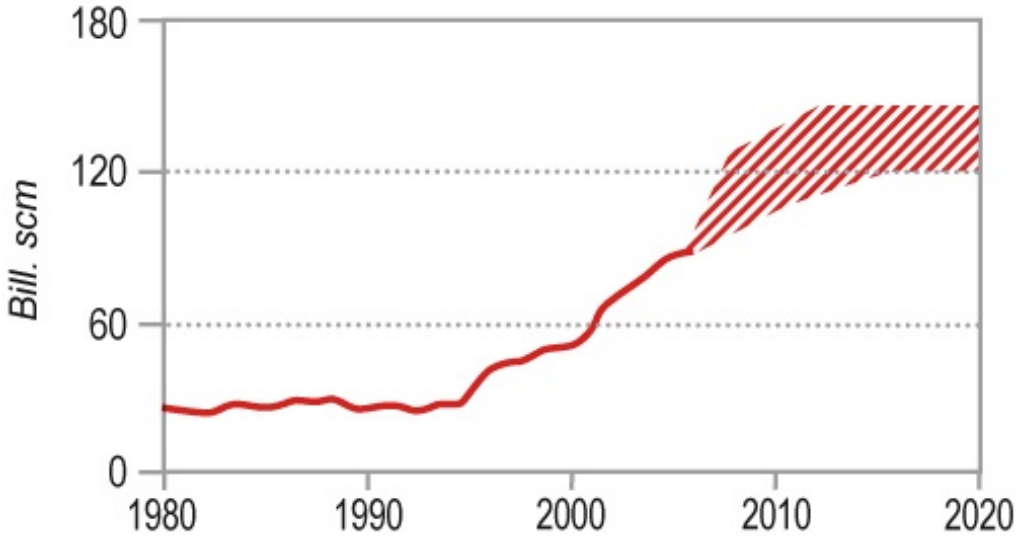
security is in a perilous situation.

Norwegian gas supplies

nrgyman2000 posted this forecast for Norwegian gas production to 2020. This forecast looks realistic and is based on official reserves estimates for Norwegian gas fields and estimated decline rates. In essence the giant Troll (in red) and Ormen Lange Fields (in white) show no decline in the forecast period since they are producing well within capacity and are facilities constrained. Other gas fields and associated gas from oil fields decline as reserves become exhausted.



I sent this to the **Norwegian Petroleum Directorate** (NPD) and invited comment. As always the NPD were very obliging and sent me **this link** to this figure saying that this was the only official gas forecast from Norway for the last five years.



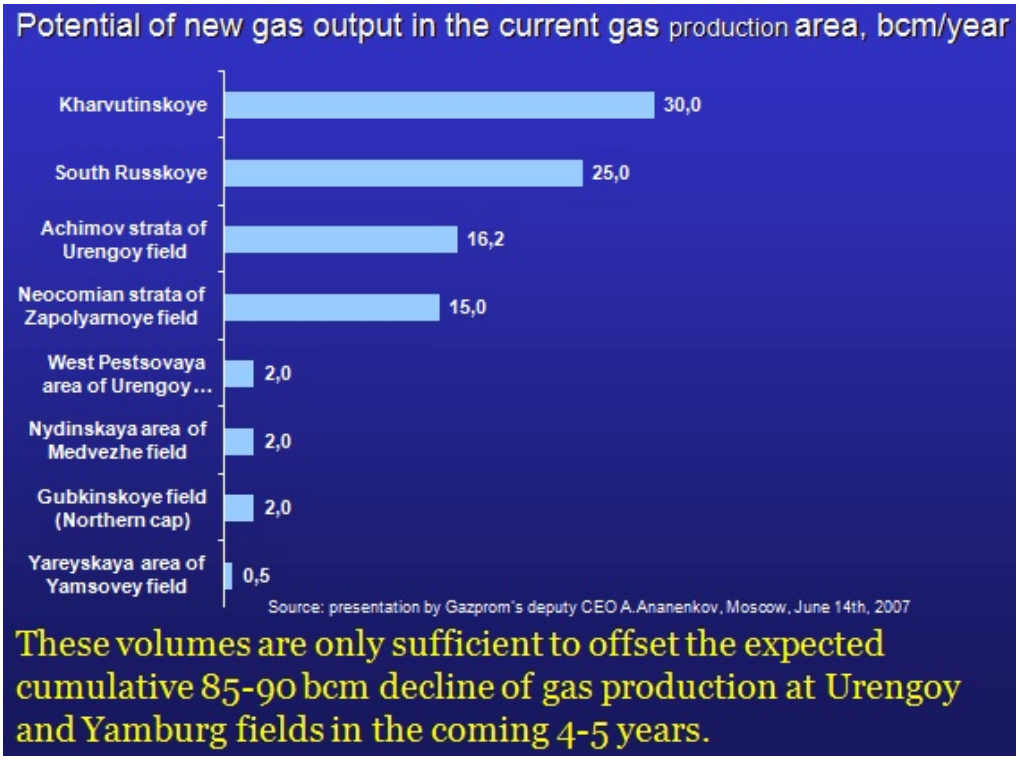
I need to point out that Norway does hold large gas reserves and could produce higher volumes but this is a political issue. The Norwegian government recently **refused an application** to

expand gas production in the Troll Field by 20 BCM per annum - in the interest of maximising oil recovery from that field. A future expansion of Troll may well take place and new field discoveries and developments may further boost Norwegian production beyond the volumes forecast by nrgyman2000.

But in the absence of any firm commitments on behalf of Norway in this regard, Europe should be planning for reduced gas imports from Norway from 2010. Given the energy predicament that Europe finds itself in, it would be helpful if the Norwegian government provided some clearer guidance as to their future gas export potential and intention. It would be a sensible strategy for Norway to impose energy rationing upon Europe and in so doing instill best practice in energy consumption, lay the ground work for sustainable energy use and lower the vast amounts of CO_2 that Norway exports to the rest of the world every year.

Russian gas exports

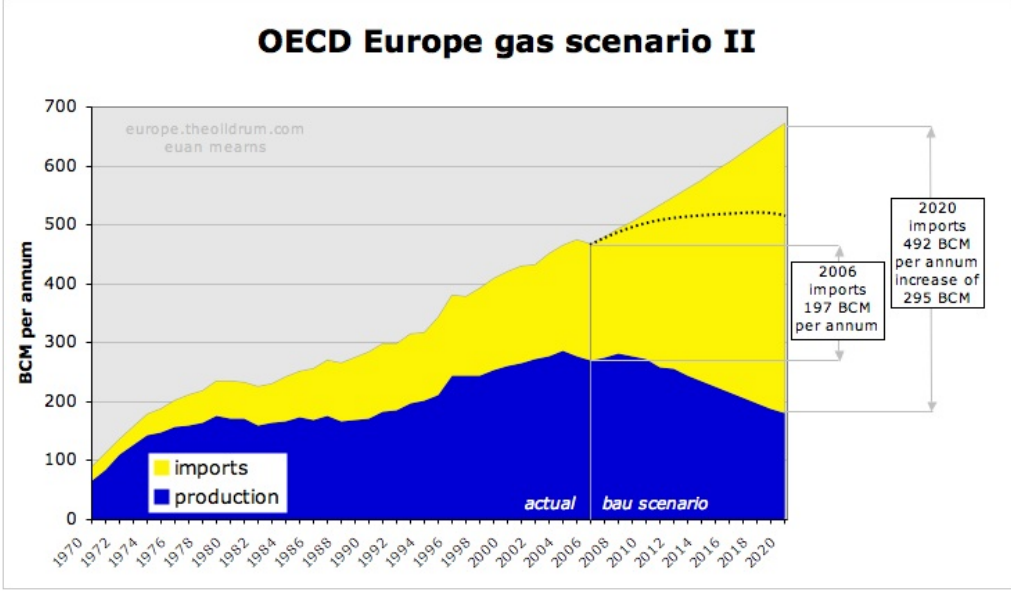
In an excellent comment, **SamuM** posted this chart attributed to Aleksandr Ananenkov, Deputy CEO of Gazprom. The chart seems to come from **this presentation** by Vladimir Milov in Budapest in September 2007, on the Nabucco pipeline proposal. I've uploaded this presentation on the TOD server and it can be downloaded **here**.



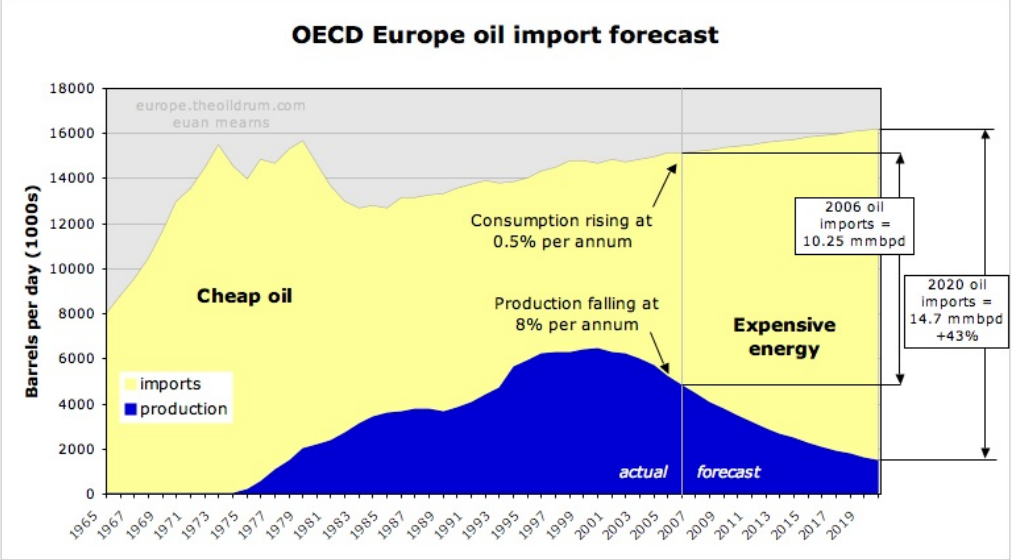
This chart tends to confirm the contention I made in my European Gas post, which was that new field development in Russia would be sufficient to offset declines in the years ahead, but no more.

A revised view of OECD Europe's gas import growth

Taking into account the information posted by SamuM reinforces my view that Russia will maintain but will struggle to increase gas exports to OECD Europe in the years ahead. And taking into account the Norwegian gas forecast of nrgyman2000 suggests that Europe's indigenous production may be lower than I previously assumed. The revised forecast shows an increase in OECD gas imports of 295 BCM per annum to 2020 if consumption follows historic trends. Where will this gas come from?



For good measure I have made a similar chart for OECD Europe oil imports. Anyone wondering why world oil prices have gone up and are still rising need look no further than this chart. Where next for the oil price?



Liquefied natural gas - LNG

The UK government department for **Business Enterprise and Regulatory Reform (BERR)** have sent me reports on gas amounting to thousands of pages in recent weeks. More on that when I post on UK gas early in 2008. However, two tables from **this report** (large pdf) by **Global Insight** caught my eye. I have often heard that global LNG import capacity far exceeds export capacity and these tables seem to verify this contention.

The first of these tables (Exhibit 3) details how the global LNG trade is expected to develop in the period to 2025. Focus on *Case A* which is an optimistic scenario. At present there is 250 BCM liquefaction capacity (400-150) and 510 BCM regasification capacity (800-290). Note that liquefaction capacity equates to export capacity and regasification equates to import capacity. So, globally there is double the import capacity than export capacity for LNG.

The LNG market globally now to 2025 and the implications for the UK

Exhibit 3 Scenarios B and C as compared with A conceptually.

Snapshot Year	Case A	Case B	Case C
2010	• Global liquefaction capacity increases by 150 bcm to over 400 bcm/yr • Regasification capacity increases by almost 290 bcm to over 800 bcm/yr (57 bcm/yr each year) • Centre of gravity shifts from Asia towards Atlantic basin	• Potential for 33 bcm supply reduction via project slippage • None of the importers named on the relevant LT contracts are European • 20 bcm of 'spare' LNG exists: assumed 6 to Japan, Korea and 4 to US • India & China cut LNG demand by 7 bcm ➔ if full 33 bcm slippage realised, 7 bcm to be found from pipeline (P/L) gas or by demand elasticity for US and Europe together	• *N / A: only deliberate slippage in Qatar could have any plausible impact, deemed to be unlikely in the 2007-2010 period*
2015	• Further 150 bcm added to global liquefaction capacity – Africa and the Middle East main sources • Regasification capacity additions slip to 145, but utilisation globally is only 51%	• Potential 42 bcm slippage • All named importers are Atlantic Basin (Spain & France worst affected) • 32 bcm 'spare' exists ➔If full 42 bcm realised, leaves 10 bcm to be found from P/L or elasticity in US, Europe	• Potential 58 bcm slippage • Only 14 bcm spare unless major investment response by Australia • If full 58 bcm realised, scale of Atlantic problem ~ 44 bcm to be found, including from pipeline & longer term voluntary demand reduction unless investment by Australia
2020	• Liquefaction additions halved, but global capacity exceeds 600 bcm with near 90% utilisation) • Regasification capacity exceeds 1,000 bcm/yr, but annual additions slip to 10 bcm	• Potential of 44 bcm slippage • Spare 52 bcm ➔ no problem	• Potential 44 bcm slippage • Only 27 bcm spare unless major investment response by Australia • If full 44 bcm realised, ~ 17 to be found (less of a problem than 2015, with more time to achieve pipeline increases and longer term voluntary demand reductions)
2025	• Global liquefaction reaches 650 bcm/yr, split 30% each for Africa, Asia and Middle East • Global regasification capacity of 1,060 bcm, 51% located in Atlantic Basin	• Potential 21 bcm slippage • Spare 50 bcm ➔ no problem	• Potential 15 bcm slippage • Spare 28 bcm ➔ no problem

By 2020, the timeframe for most forecasts, liquefaction capacity is forecast to grow to 600 BCM per annum and regasification capacity will grow to 1000 BCM per annum. The imbalance is redressed slightly but import capacity will still exceed export capacity by a factor of 1.7. It seems like there will be many disappointed importers and in a competitive LNG market the stage looks set for gas prices to escalate.

The other highly significant feature of these data is that they give an indication of how the international gas market will grow in the years ahead. Global Insight appear to forecast growth of 350 BCM per annum. Comparing this with the forecast growth in OECD Europe imports of 295 BCM per annum shows that Europe alone will likely have the appetite to consume most of the new global LNG supply in the period to 2020. What about the USA, Japan, China, India, South Korea, and Taiwan?

This discrepancy is so large I wrote to BERR inviting comment but have not received a satisfactory response as to how 350 BCM new global LNG export capacity is to be shared around the OECD and India and China?

Looking at the strategies of the International Oil Companies (IOC's) there is a similar picture (Exhibit 10). At present they have built 83 BCM of liquefaction capacity and 269 BCM of

regasification capacity. I find this quite extraordinary that companies will happily invest in import infrastructure for non-existent product. The UK gas strategy will rely heavily upon LNG imports and there is a headlong rush to build import facilities.

Exhibit 10 Selected Companies in the Regasification and Liquefaction Capacity Market

Operator	Total Number Liquefaction Projects Involved In	Total Capacity owned by company in LNG Liquefaction Projects (O/UC/P)* bcm/yr	Total Number Regasification Projects Involved In	Total Capacity owned by company in LNG Regasification Projects (O/UC/P)* bcm/yr
Shell	19	18	5	13
Total**	11	11	4	20
ExxonMobil	11	10	3	29
BP	12	8	2	14
BG	12	7	3	23
Petronas	7	7		
Sonatrach	7	7		
Chevron	7	6	1	7
ConoccoPhillips	7	6	1	unspecified
Union Fenonsa	2	2		
Suez	1	1		
Enagas			5	43
Gaz de France			5	37
Union Fenonsa			4	36
Suez (Fluxys including)			3	20
Excelerate			2	9
Petronas			2	9
4Gas			3	9

(*) These projects are operating, under construction or planned
(**) The capacity of the planned project has not been specified
Note: O = operating, UC = under construction and P = planned

Is it just me, or does anyone else sense the presence of an elephant?

Conclusion

Daddy, will the lights be on at Christmas? Most probably yes in the UK, though it is worth noting that with cold weather across continental Europe, **UK gas spot prices** have been running about double this year compared to last. With governments intent on pursuing market regulation of the energy sector we must wait for prices to get so high that this kills demand (the elderly freezing to death) and inflation kills our debt laden economy.

Next year I'd quite like to see the UK government commission studies on foreign gas supplies that goes beyond building import facilities and assuming the gas will be there to fill them. I'd also like to see the Norwegian government publish a clear statement of intent on their future gas production potential and strategy. It is no longer satisfactory to have national governments cite IEA reports that are built upon the incredible efforts of the United States Geological Survey.