

Assessing the Commerciality of Mature UKCS Oilfields

By Mike Wood

Institute of Directors – 15th October, 2014

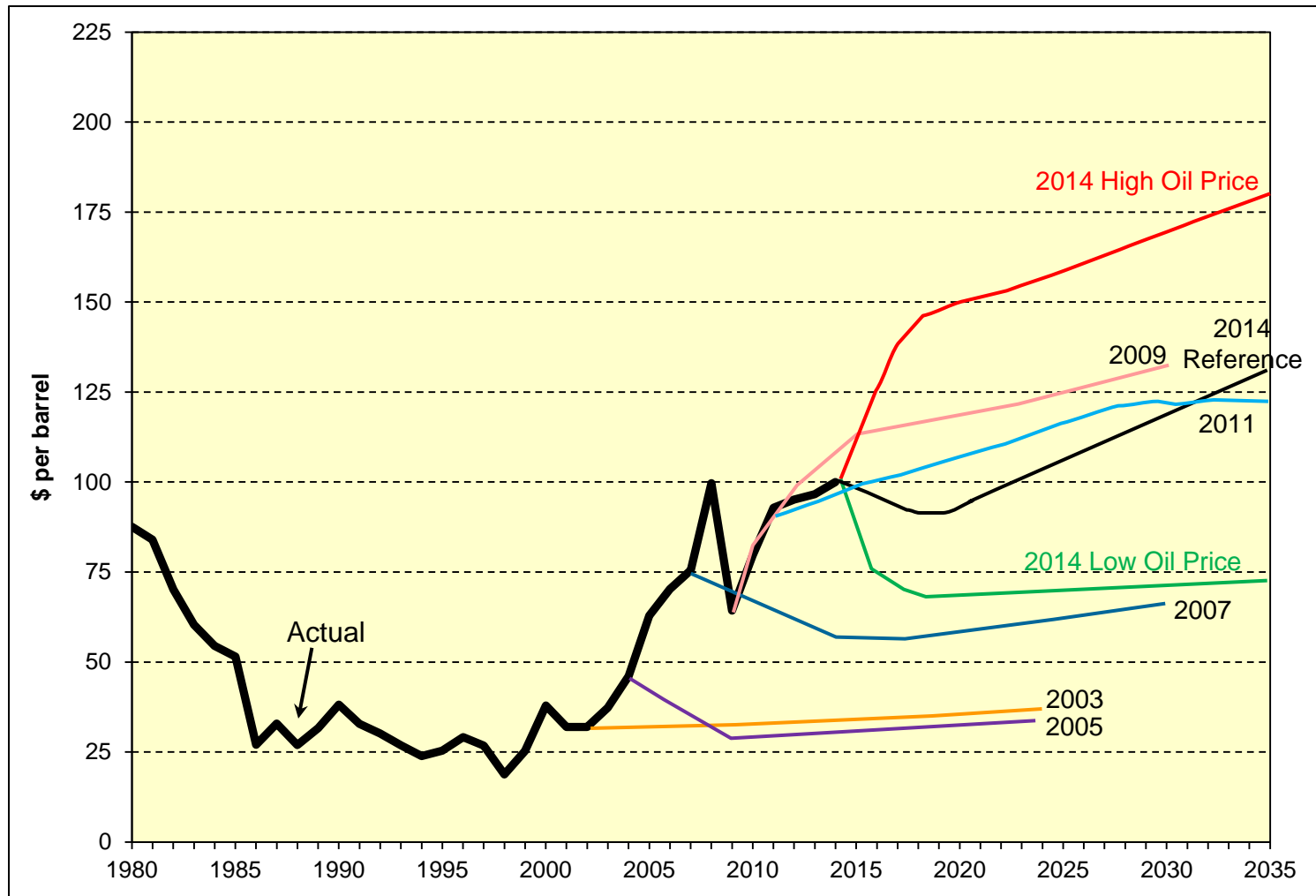
Background

- Another phase change appears to be approaching, with some “mid-life” operators (such as Apache) looking to exit their very mature North Sea assets, - which appear to be approaching non-commercial production.
- Opportunities for end-life “stripper well” operators ?
- These mature fields suffer from high downtime, high maintenance costs, declining production, and a substantial abandonment liability.
- Some fields now appear to be sub-commercial – but are in an “abandonment deferral mode”.
- Recent legislation has clarified the tax position regarding abandonment costs – this may accelerate abandonment.

UKNS - Other Considerations

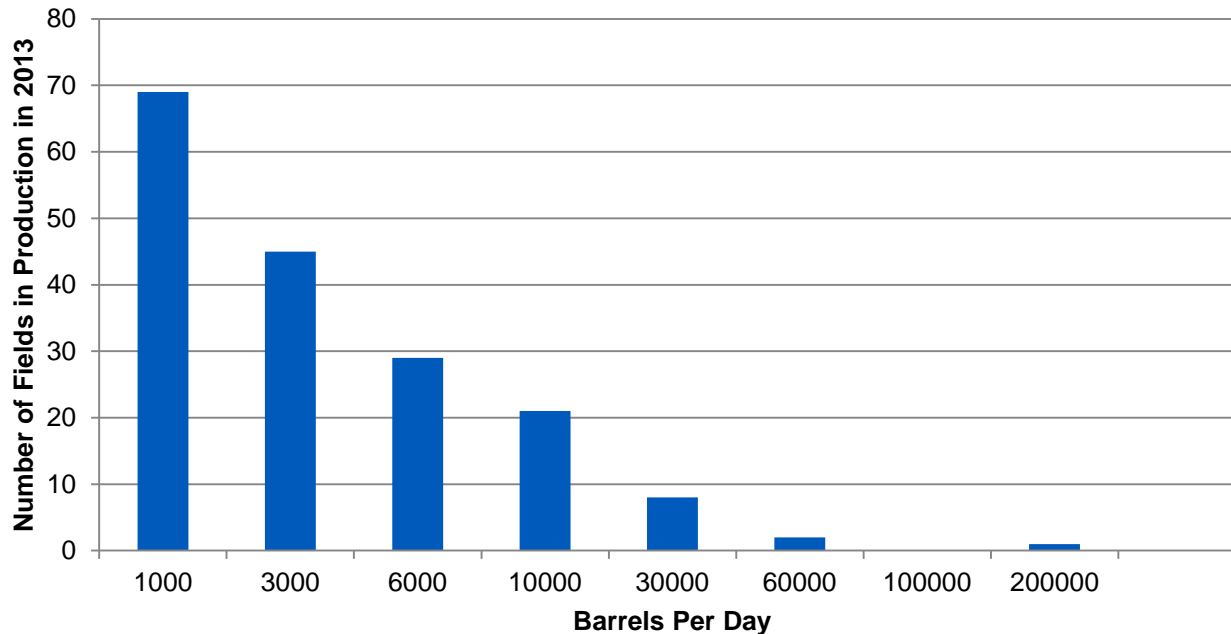
- Declining production, reducing production levels per employee, increasing costs, limits on bed space, impact of DECC improvement notices.
- Typically low Production Efficiency (PE) in mature fields (high downtime in production and export facilities), and with significant production losses arising from well downtime
- Capital / budget constraints limiting PE improvements.
- Ageing facilities, needing increasing remedial work, reliance on third party infrastructure for exports
- OPEX likely to increase rather than decrease.
- Increasing export infrastructure costs— change from tariff (\$ per Barrel) based to “shared OPEX”.

Oil Price : Actual and Forecasts



Data from EIA

Current UKNS Field Status



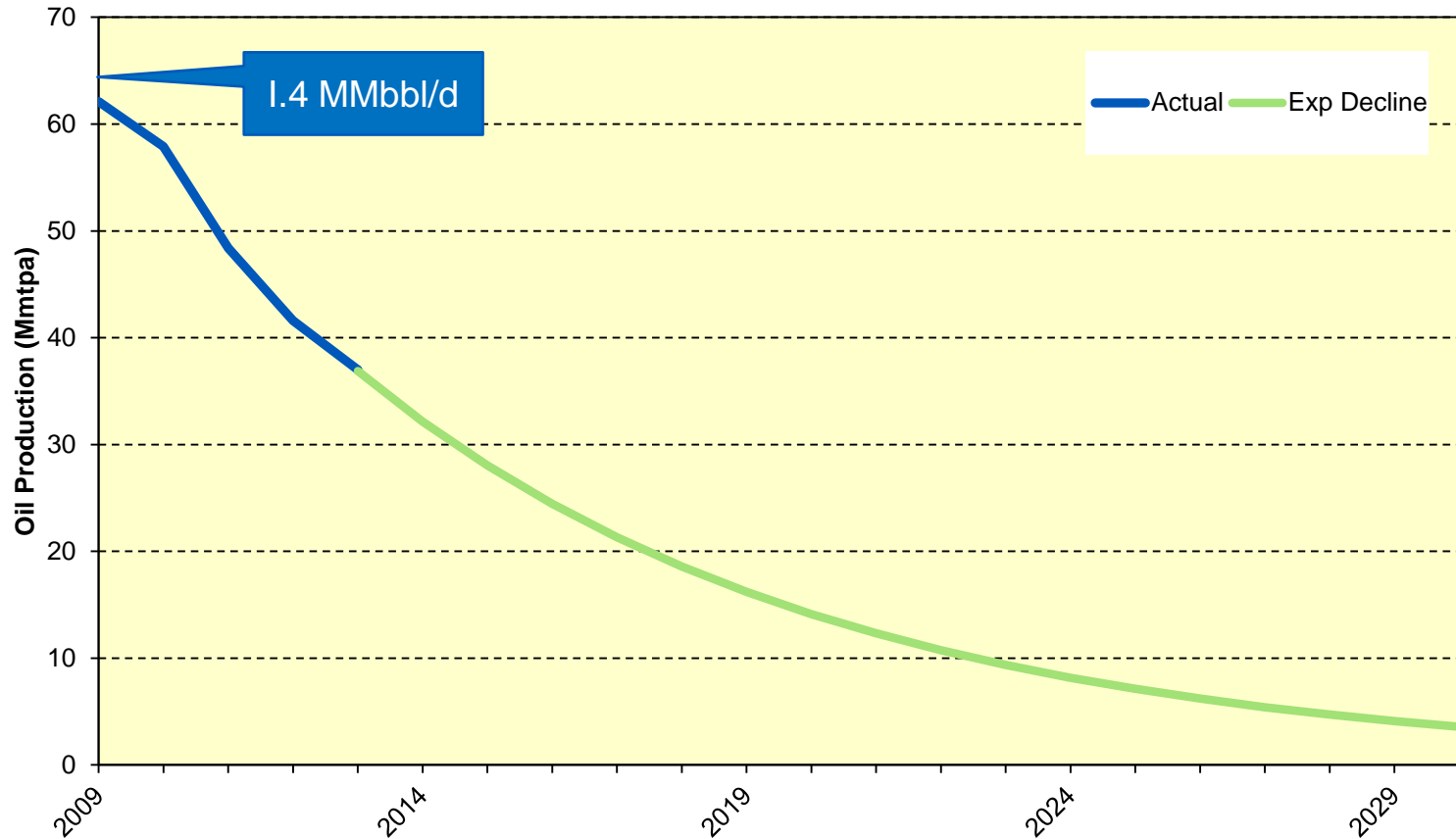
	2009	2010	2011	2012	2013
> 1000 bpd	141	141	123	104	106
> 0 bpd	186	188	187	175	175

- 73 fields out of 248 have ceased production
- 11 fields (net) out of 248 ceased production since 2009
- 69 fields producing less than 1000 bpd in 2013, up from 45 some 5 years ago

UKNS Abandonment

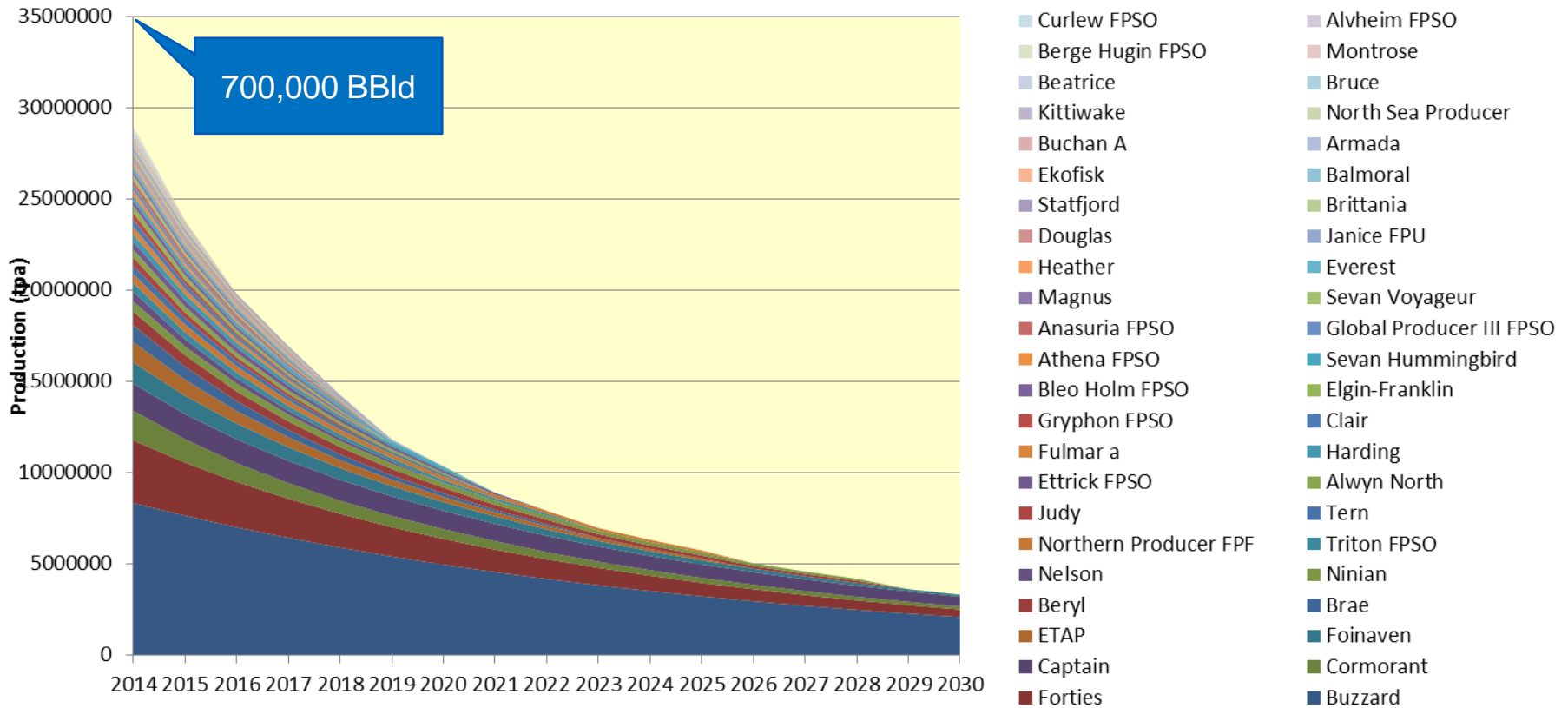
- 470 installations (DECC)
- 5,000 wells (DECC)
- Many fields are already beyond commercial life, but due to high costs and tax uncertainty, abandonment has been deferred
- Recent ruling has clarified the tax relief situation
 - Tax relief is guaranteed to Oil Companies, in the form of “Decommissioning Relief Deeds” – these provide certainty that abandonment costs can be offset against tax previously paid;
- Oil and Gas UK estimates total abandonment spend of \$ 60 Bn
- Potentially 10 to 20 fields per year, from 2015; equivalent to 3% to 5% of producing fields abandoned each year
- Expenditures of \$ 1 Bn to \$ 2 Bn per year

Production Decline Existing NS Oilfields



- Based on DECC 5 year historical, exponential decline on total production
- Effectively a 1P forecast

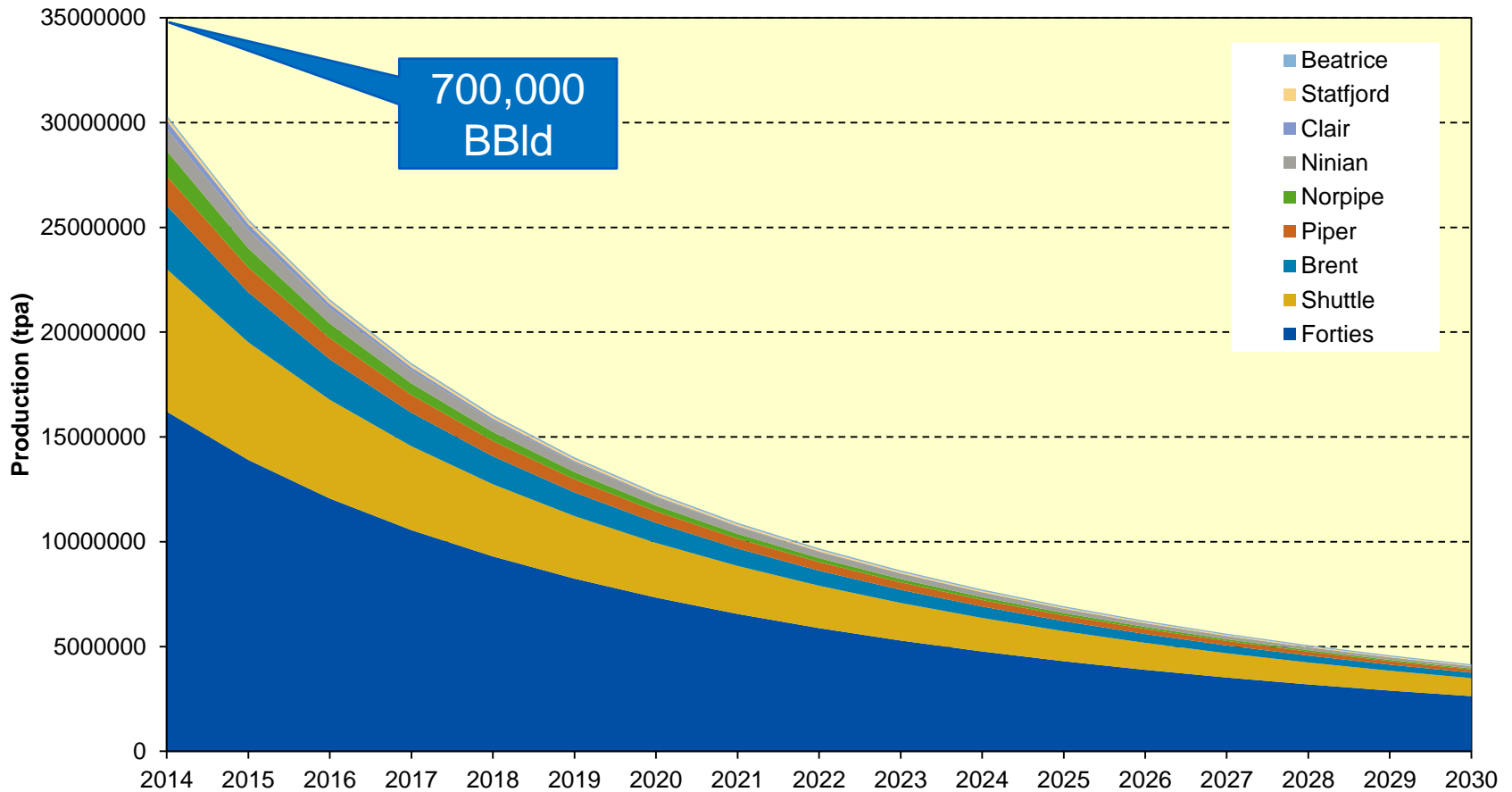
Production by Hub



- Proven only – no allowance for investments in discoveries
- Clear that not all hubs will survive

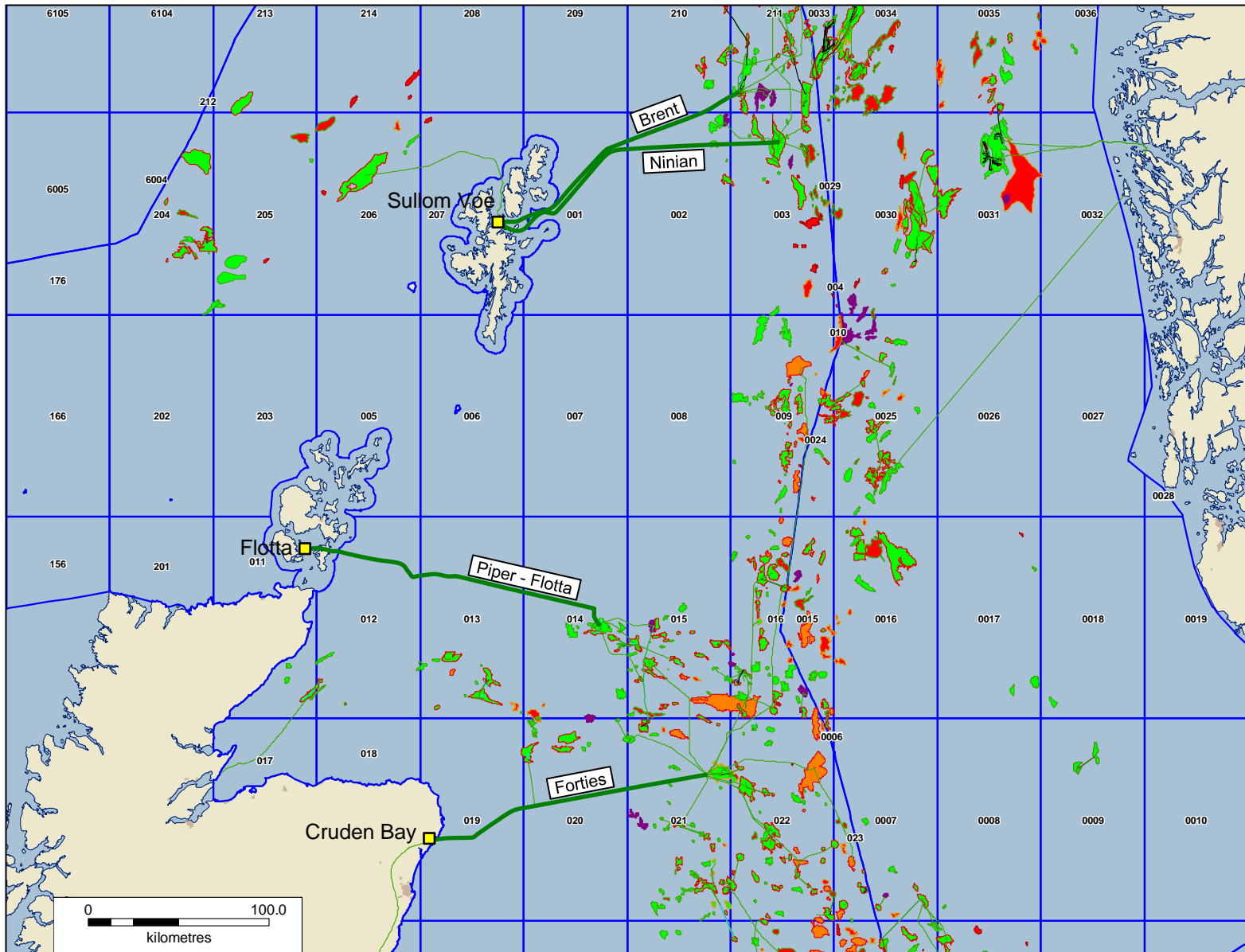
Using data from DECC

Production by Export Route

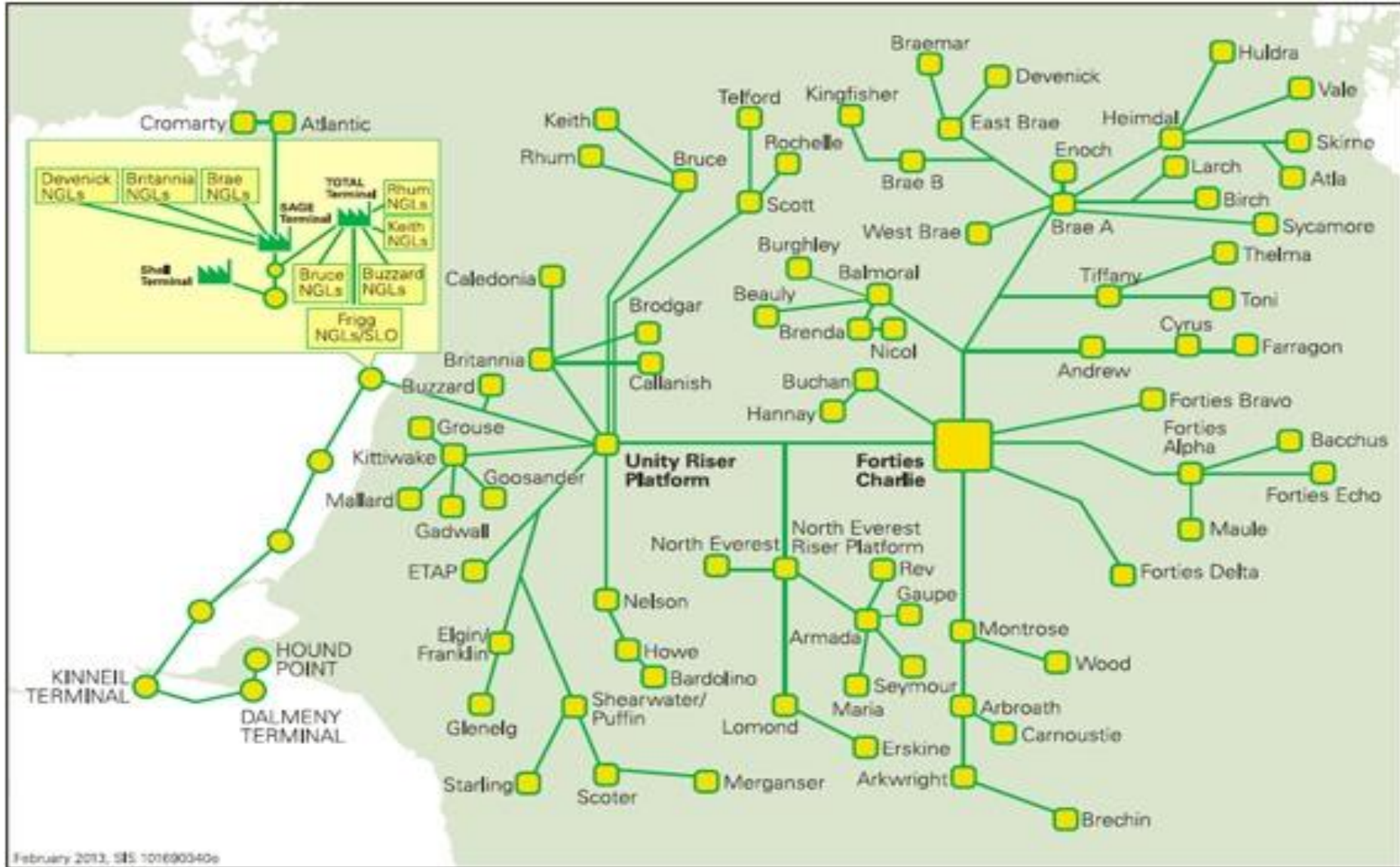


Using data from DECC

North Sea – Main Oil Infrastructure



Forties System

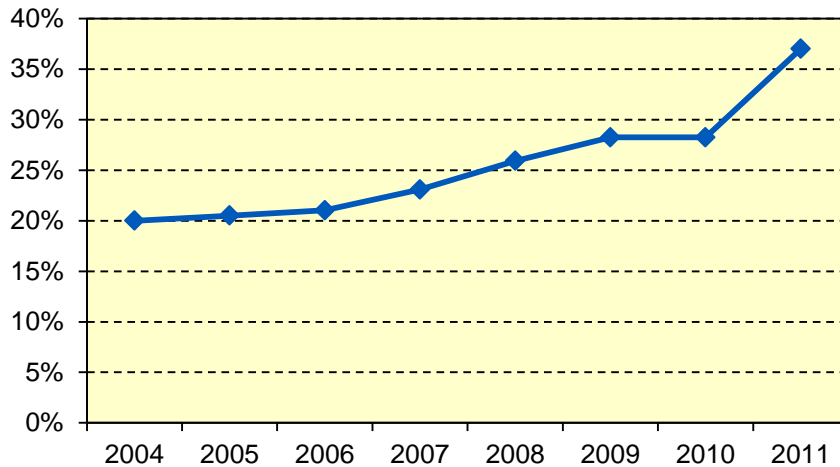


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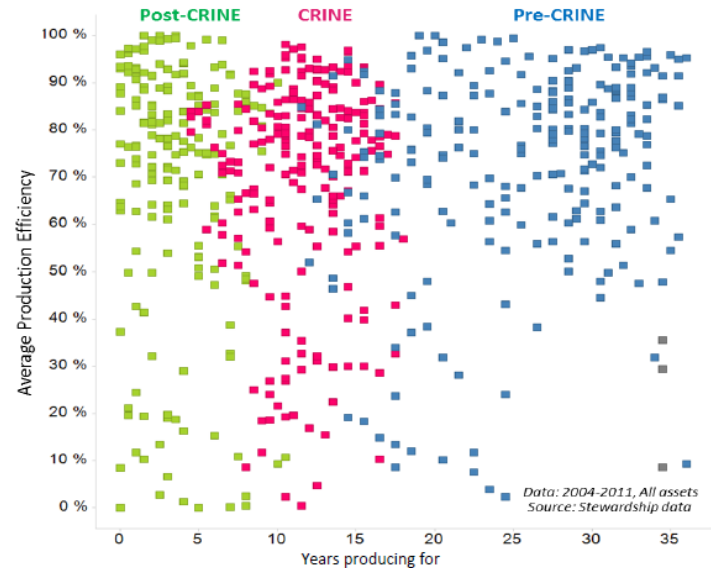
Production Efficiency

Average NS Lost Production



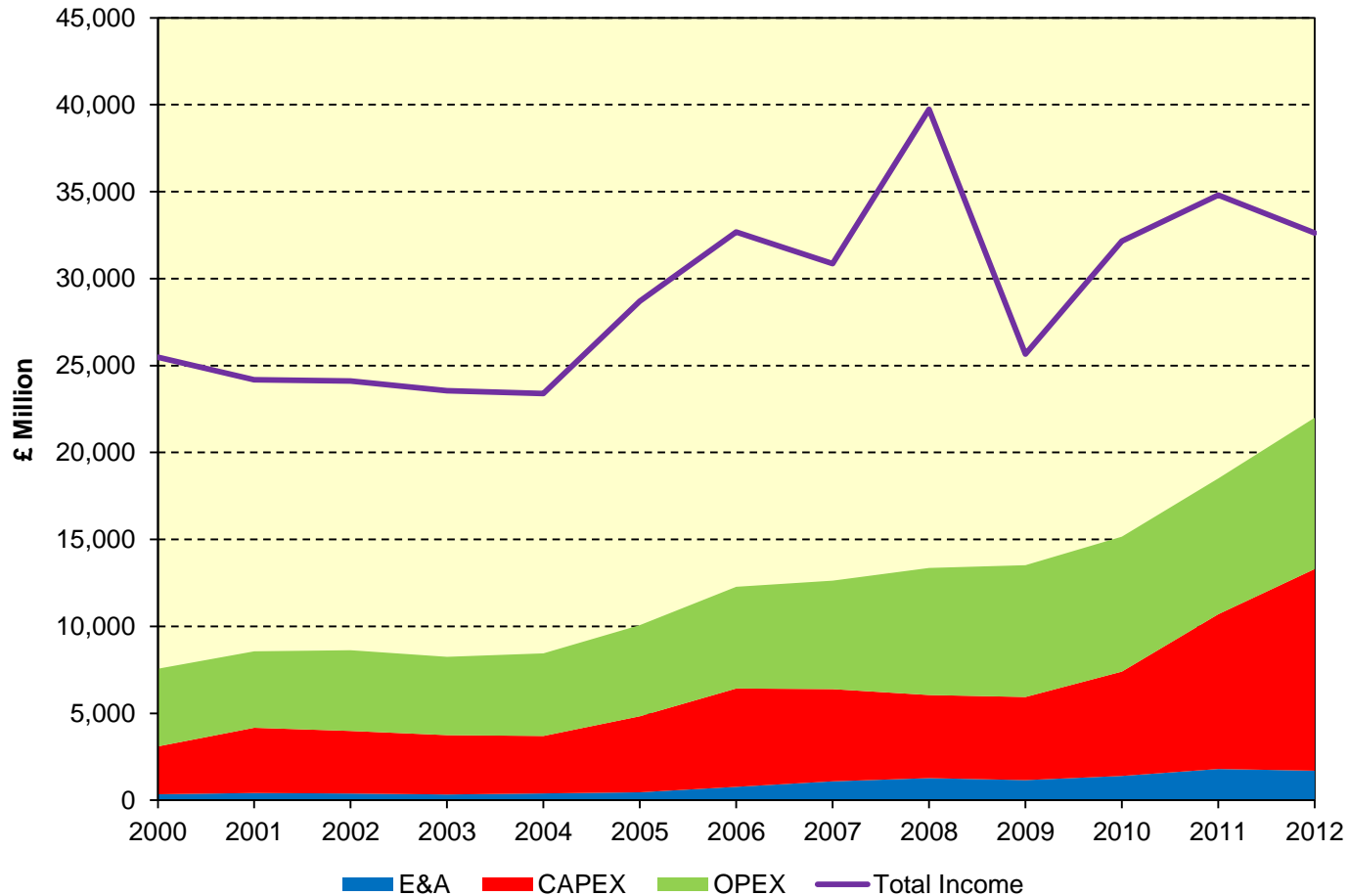
Causes of PE Loss 2010 -2013

Equipment Failures	44%
Annual Shutdowns	21%
Planned Maintenance	7%
Well work	10%
Reservoir Losses	10%
Export Systems	8%



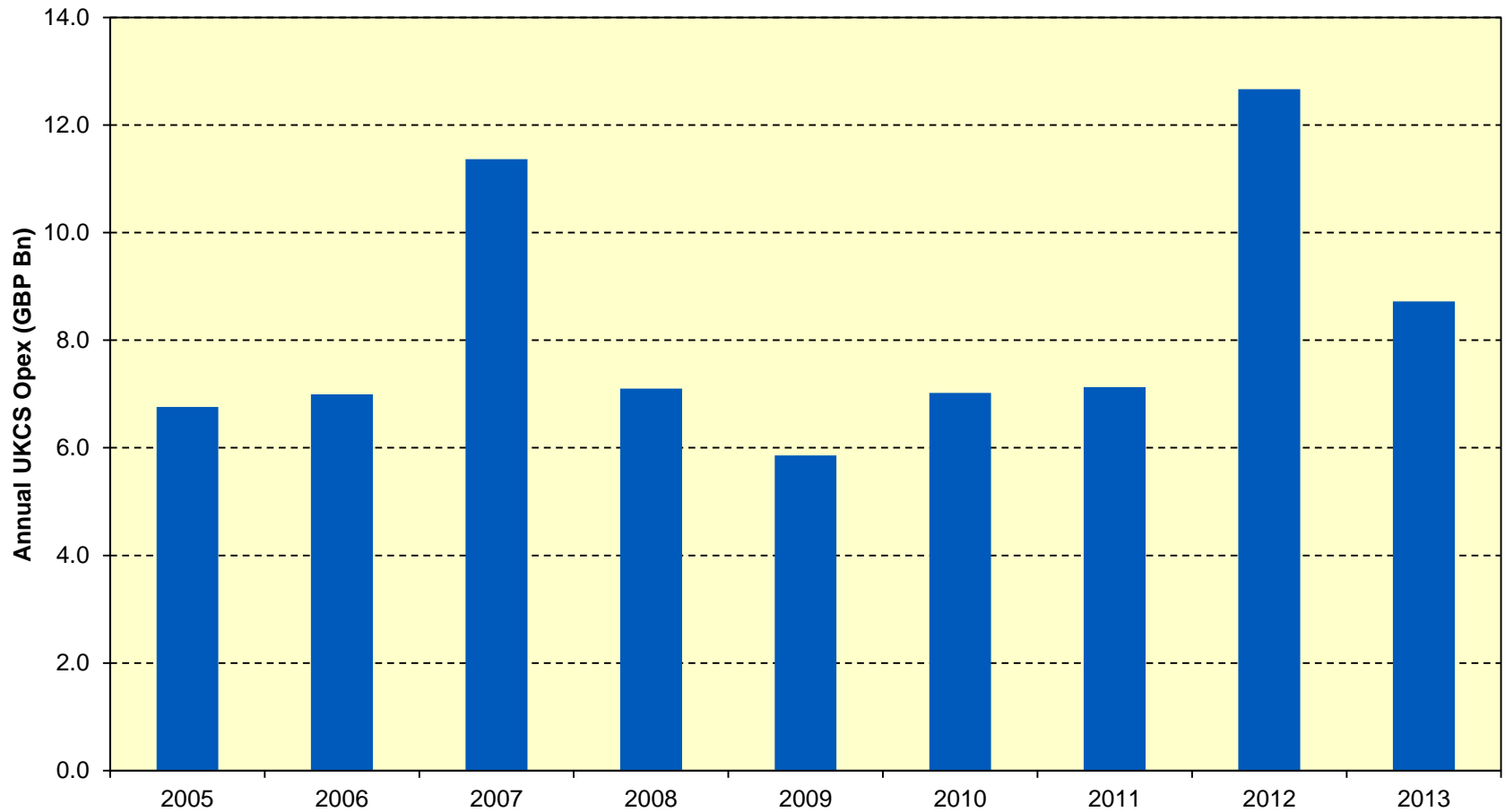
- PILOT programme to improve efficiency to 80% established in 2009
- Reported GBP 1Bn extra spent on integrity in 2012 and 2013
- “Average 60% Production Efficiency expected in 2012” (Reuters)
- PE is not necessarily age related in a well-maintained system – implication is maintenance expenditure needs to rise to improve PE

UKCS Revenue and Expenditures 2000 to 2012 (DECC data)



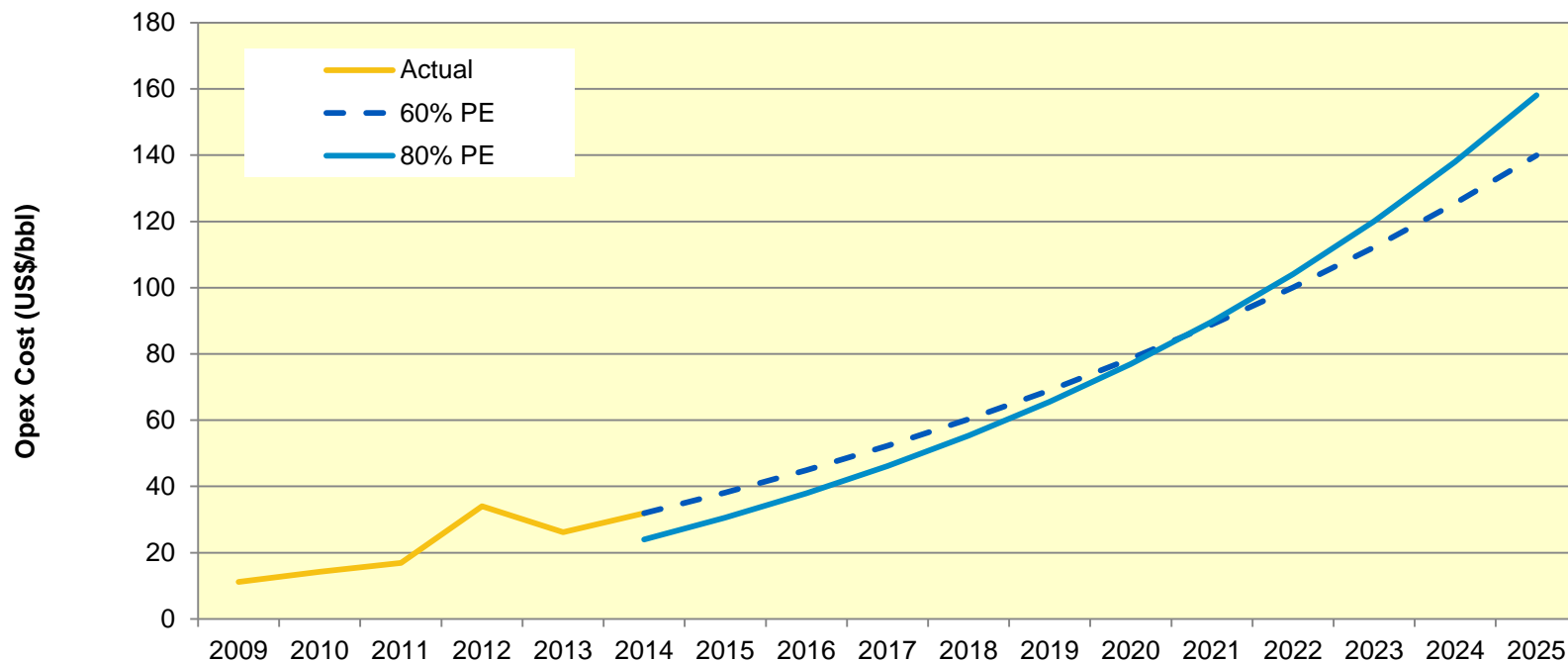
Using data from DECC

Total UKCS OPEX (Existing Fields), 2013 Prices



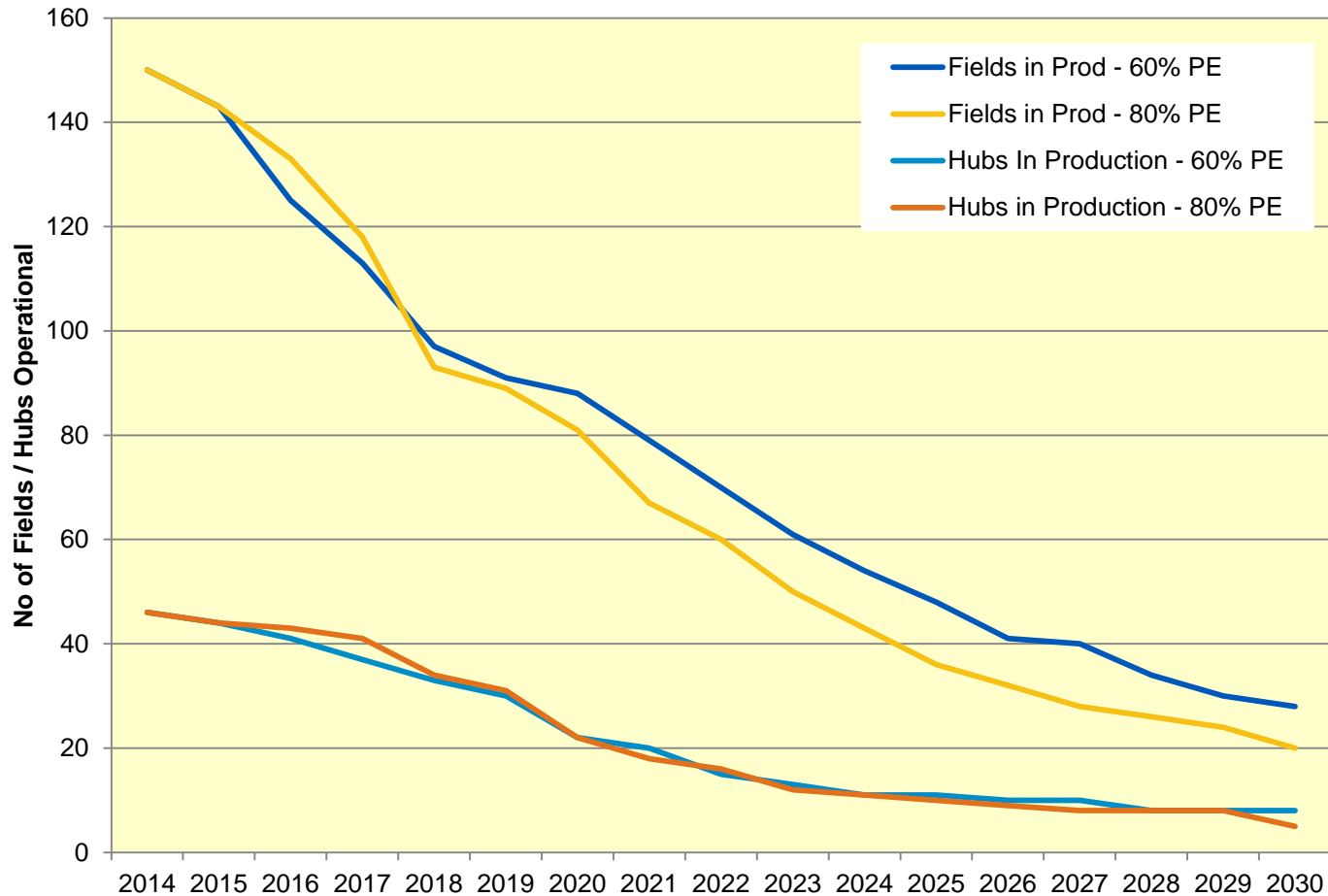
Using data from DECC

UK NS Oilfields - Increasing Opex per Barrel Do Nothing Case



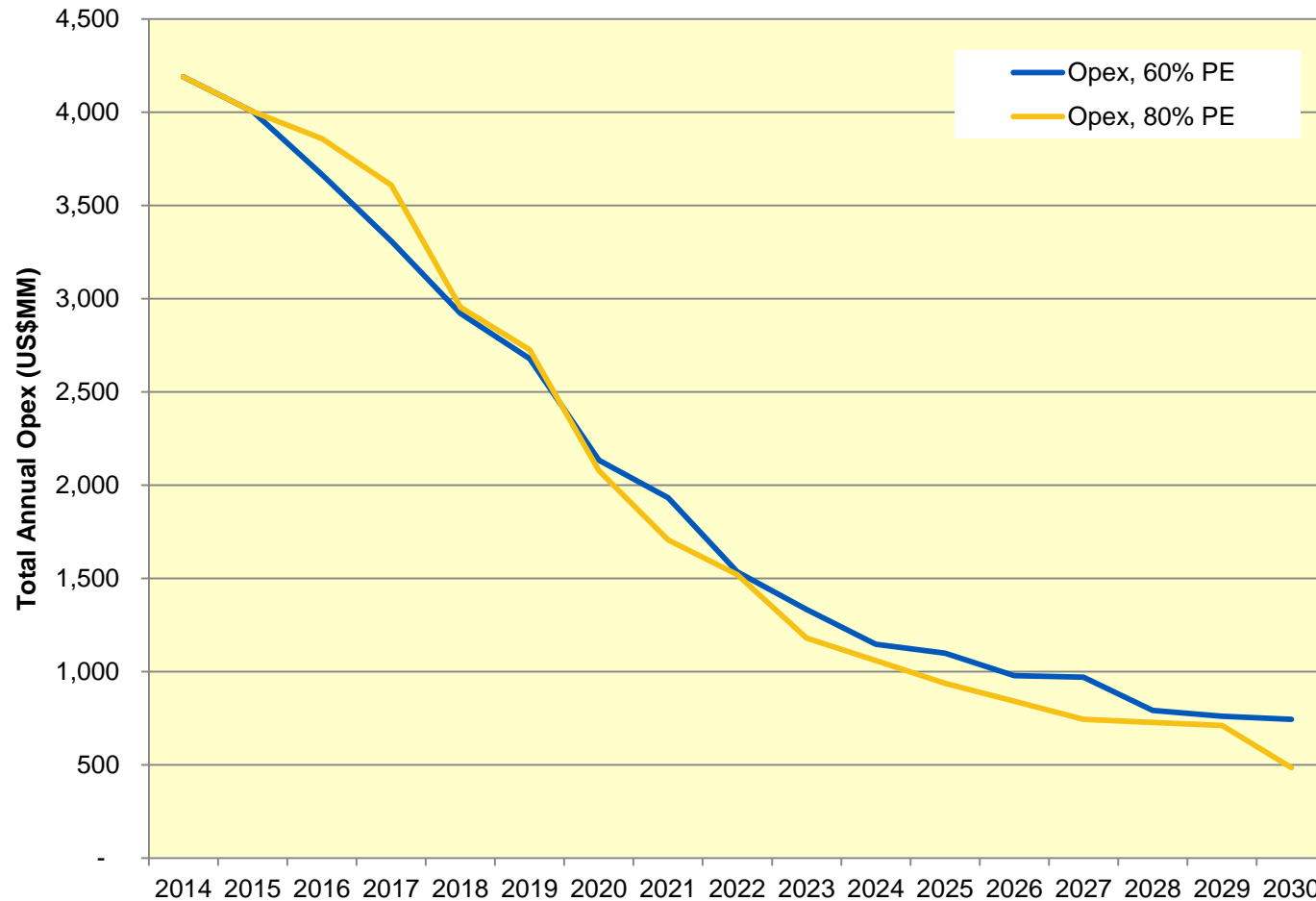
- Assumes 65% of total UK opex in NS, 80% to Oil, no Opex reduction
- Rationalisation, cost reduction, improved PE, EOR required
- New developments are essential to the future

Forecast Abandonment Rates



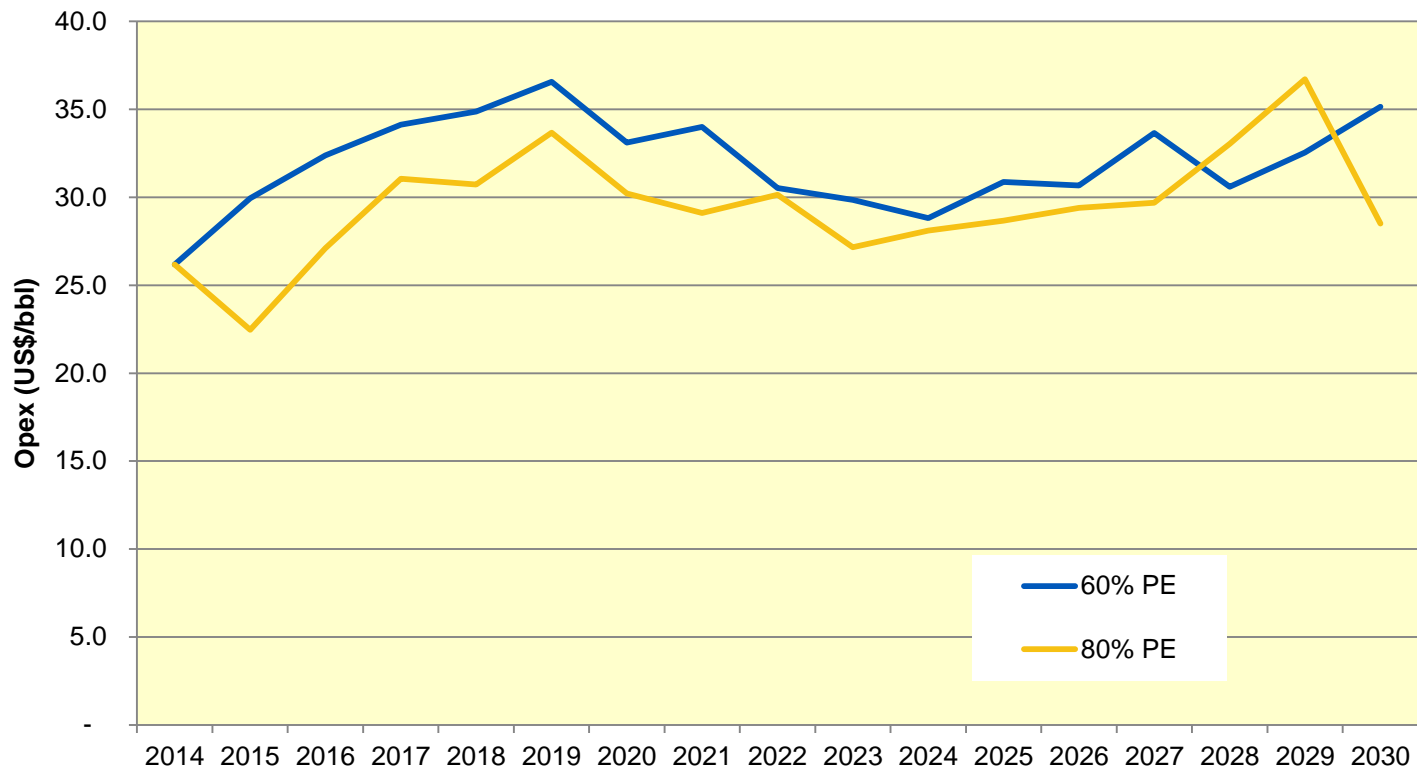
GCA estimate based on economic threshold for fields and hubs – assumes that fields are shut-in when sub-commercial.

Estimate of Future Oil OPEX – UKNS Mature Oilfields



- GCA estimate based on forecast “abandonment rates”
- As expected, OPEX tracks production decline

North Sea Oil Opex



- Forecast OPEX per Barrel based on abandonment schedule / CoP and curtailment of OPEX.
- But does not maximise recovery as required by DECC and suggested by Wood Report

Options for the Future

- OPEX reduction – how ?
 - Abandonment of non-performing fields
 - Consolidation / regulation of Hubs / Pipelines
 - Offshore manning reduction
- Improvement in production levels - EOR for existing mature fields – appears to be some potential for selective fields.
- Improvement in PE – requires investment, so increased OPEX.
- Optimisation / regulation of tariffs – however, if a field has OPEX of say \$ 30 per barrel, why would a third party tariff be less than this ??
- Change in fiscal terms ?
- New Field Developments, utilising existing infrastructure.
- Heavy oil developments – positive step, but typically do not utilise existing infrastructure. (FPSO)

Thank You

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