



## Knowledge Exchange Seminar Series (KESS)

*...is a forum that encourages debate on a wide range of research findings, with the overall aim of promoting evidence-based policy and law-making within Northern Ireland*



# ***Carbon, economic growth and unsustainability: the inevitable transition to a low carbon economy beyond GDP***

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# 1. Beyond GDP debate. New tools needed for measuring the economy and social progress

- ‘Measuring what makes life worthwhile’ Bobby Kennedy  
[http://ec.europa.eu/environment/beyond\\_gdp/key\\_quotes\\_en.html](http://ec.europa.eu/environment/beyond_gdp/key_quotes_en.html)
- Problems with current economics and measures of social progress – not a new debate but need reframed again by demands of climate change
- Stiglitz, Sen and Fitoussi Commission in France, Cameron speech 2008, Carnegie UK Trust’s wellbeing programme and conference in NI in Sept 2013.
- Quality of life, not just economic growth, a matter of public policy

## 2. Limitations of modern economics, and the ‘myths of growth’

- Bernake: the ‘why’ of economics, its ultimate purpose
- Tim Jackson’s ‘Prosperity Without Growth’ thesis – counter intuitive relationship between income growth and other metrics to human flourishing – see following graphs
- The Spirit Level (Wilkinson and Picketts) – economic growth maps inequality, growing the cake doesn’t help - why more equal societies always do better (graph)
- Some business leaders also realize the unsustainability of carbon –fueled growth – e.g. Jeremy Grantham
- Economics fit for purpose in a world of climate change
- Environmental economics: Stern, Nordhaus and Barry

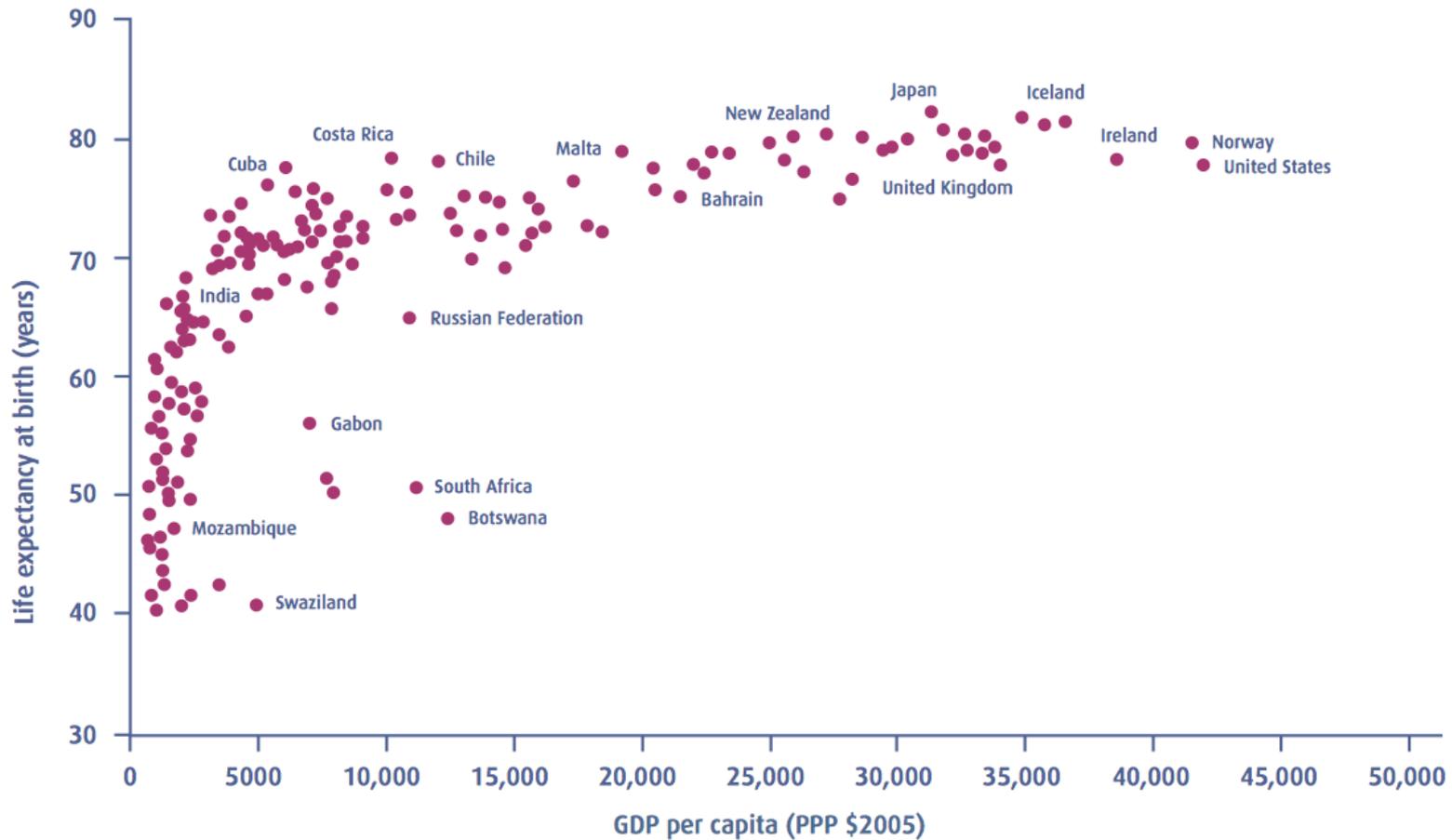
Figure 6 Happiness and average annual income<sup>15</sup>



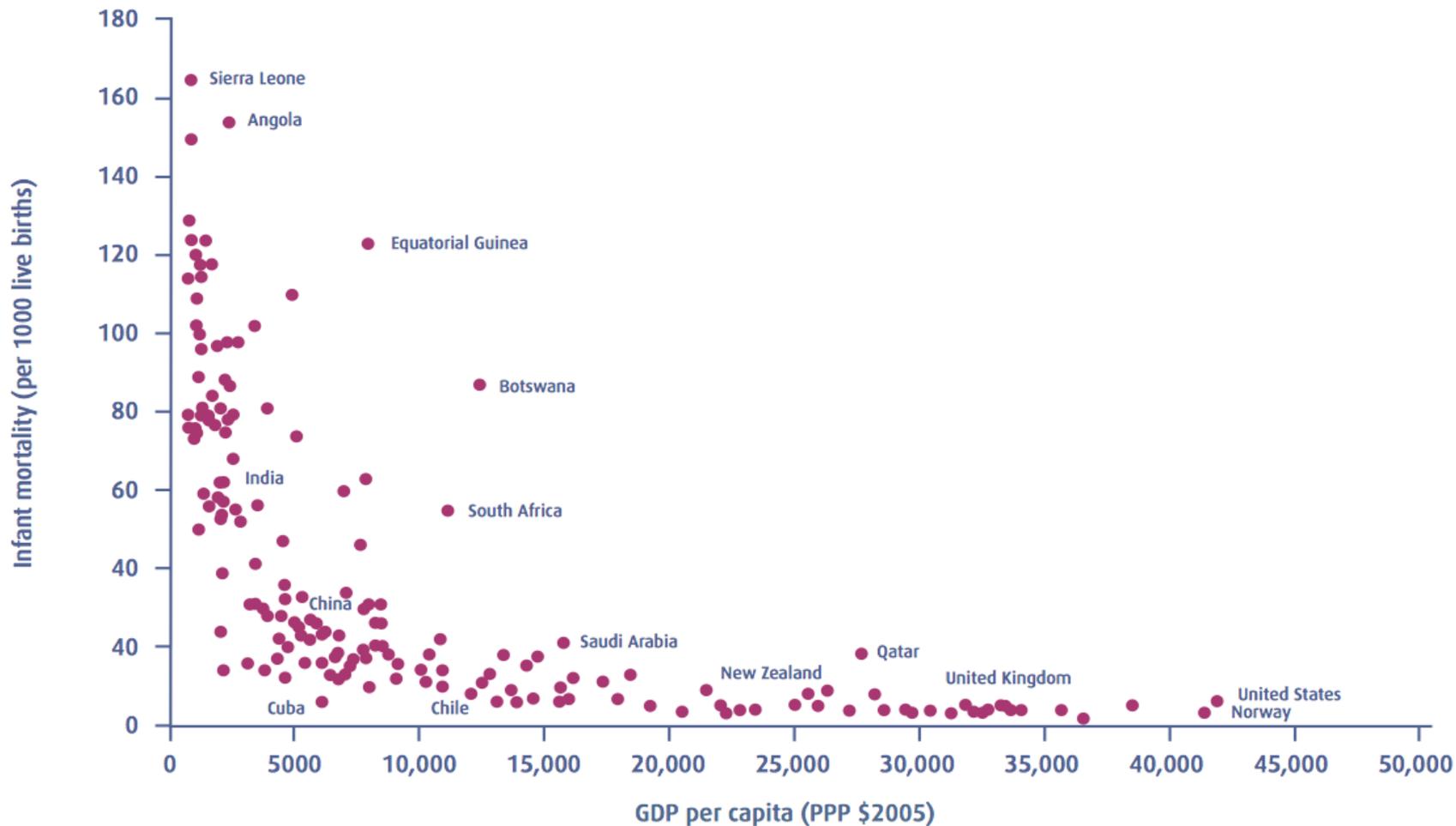
Sustainable Development Commission, (2009) 'Prosperity Without Growth Report'. p.32



Figure 8 Life expectancy at birth vs average annual income<sup>16</sup>

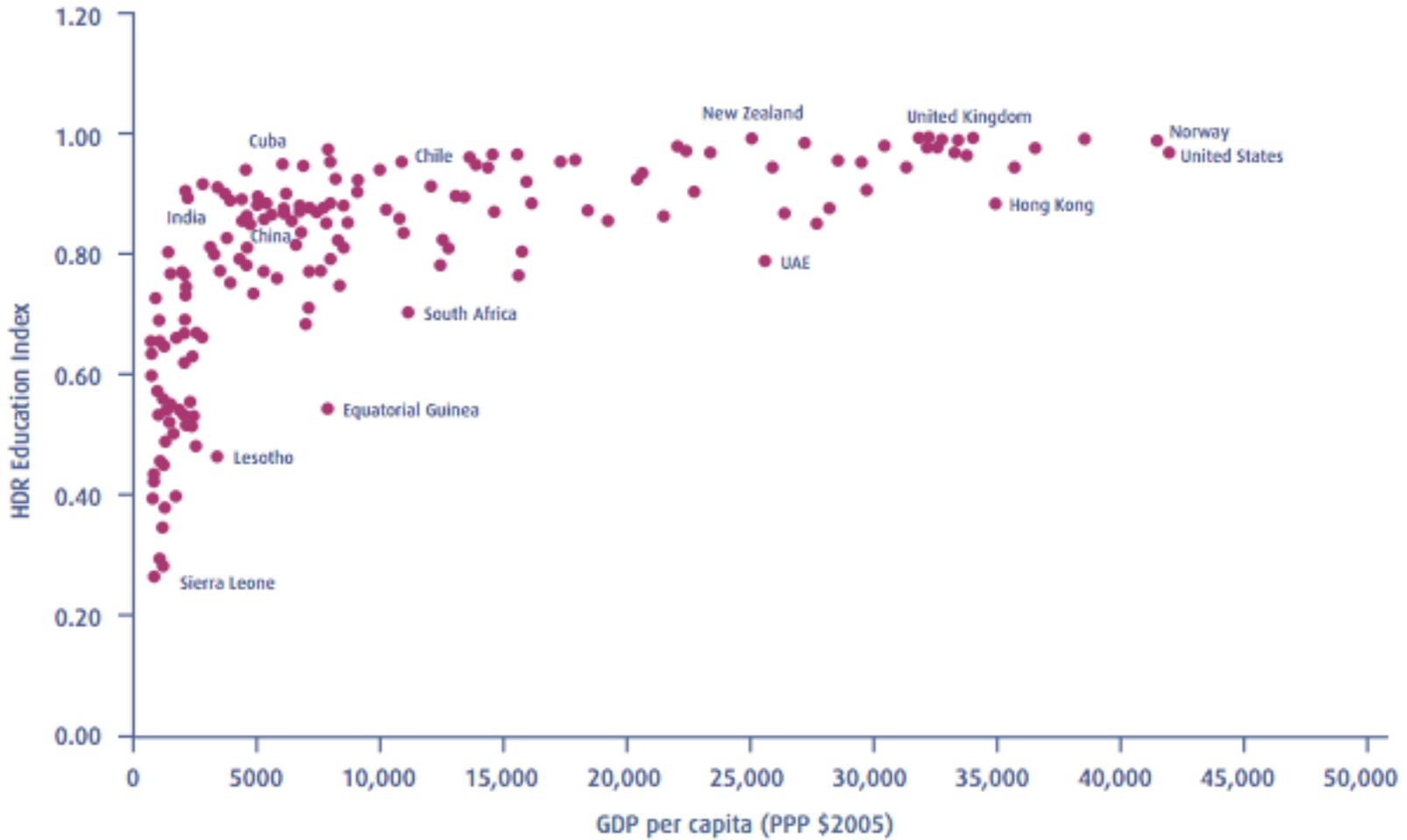


Jackson, 2009, p.56, Figure 4.2: Life expectancy at birth vs. average annual income



Jackson, 2009, p.57, Figure 4.3: infant mortality v. per capita income

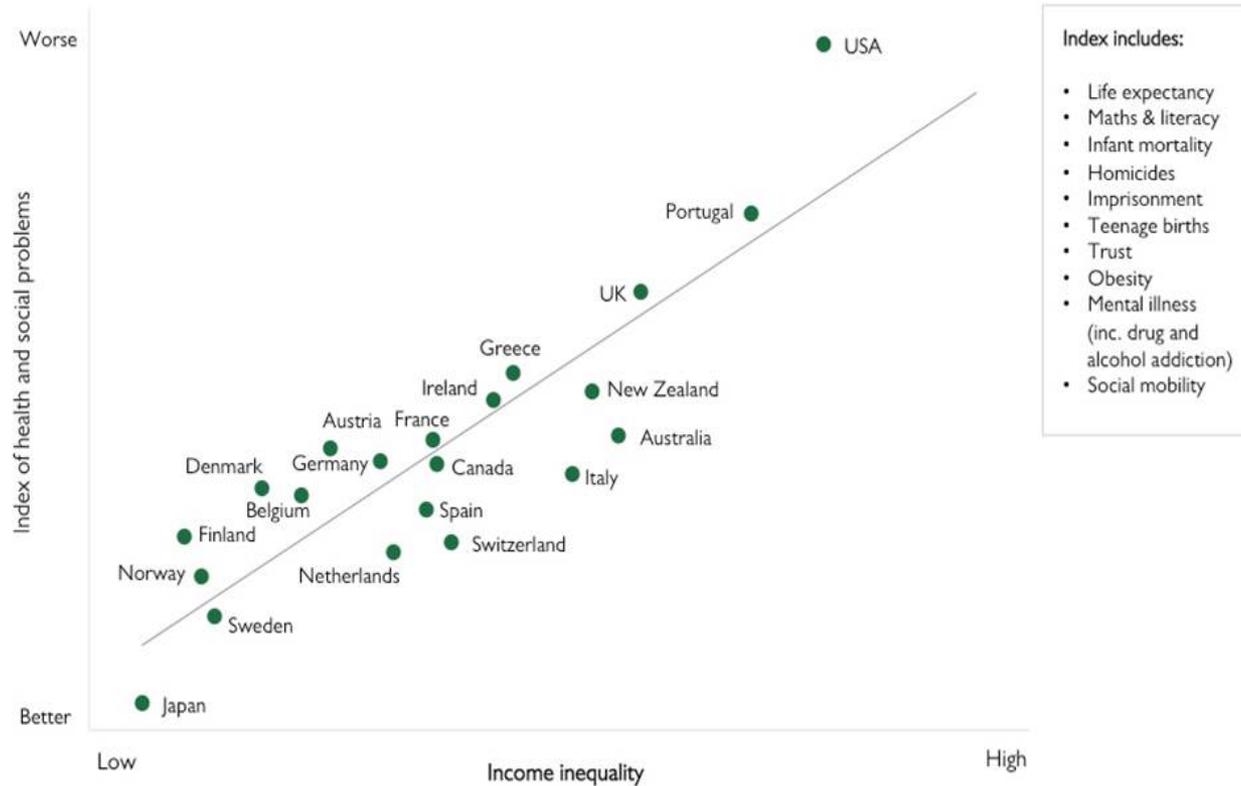
Figure 10 Participation in education vs income per capita<sup>18</sup>



Jackson, 2009, p.58, Figure 4.4: Participation in education vs. income per capita



# Health and social problems are worse in more unequal countries



Source: Wilkinson & Pickett, *The Spirit Level* (2009)

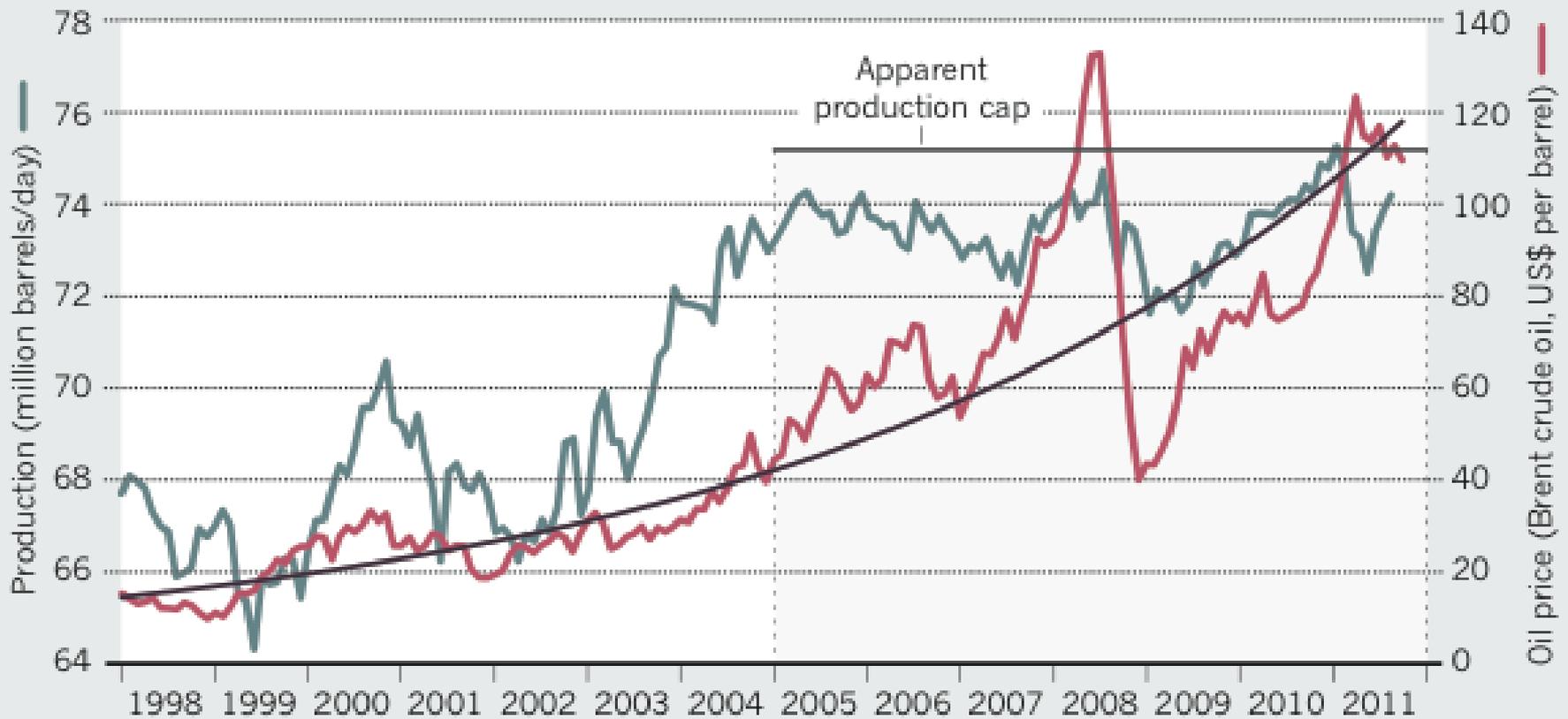
THE EQUALITY TRUST

### 3. Questions of Limits and Scarcity

- Peak Oil revisited – but also food scarcity an issue
- ‘Tipping point’ in global oil supply in 2005, production now ‘inelastic’ – unable to respond to rising demand, leading to wild price swings (Murray and King, 2012), with possibility peak even closer - Kerschner, et al (2013)
- Even if governments don’t accept the environmental reason for curbing fossil fuels, ‘the economic cost of a flattening supply’ will force the issue
- Globally we must reduce our dependence on fossil fuels
- Northern Ireland highly dependant on oil imports and vulnerable - strong action needed for alternatives

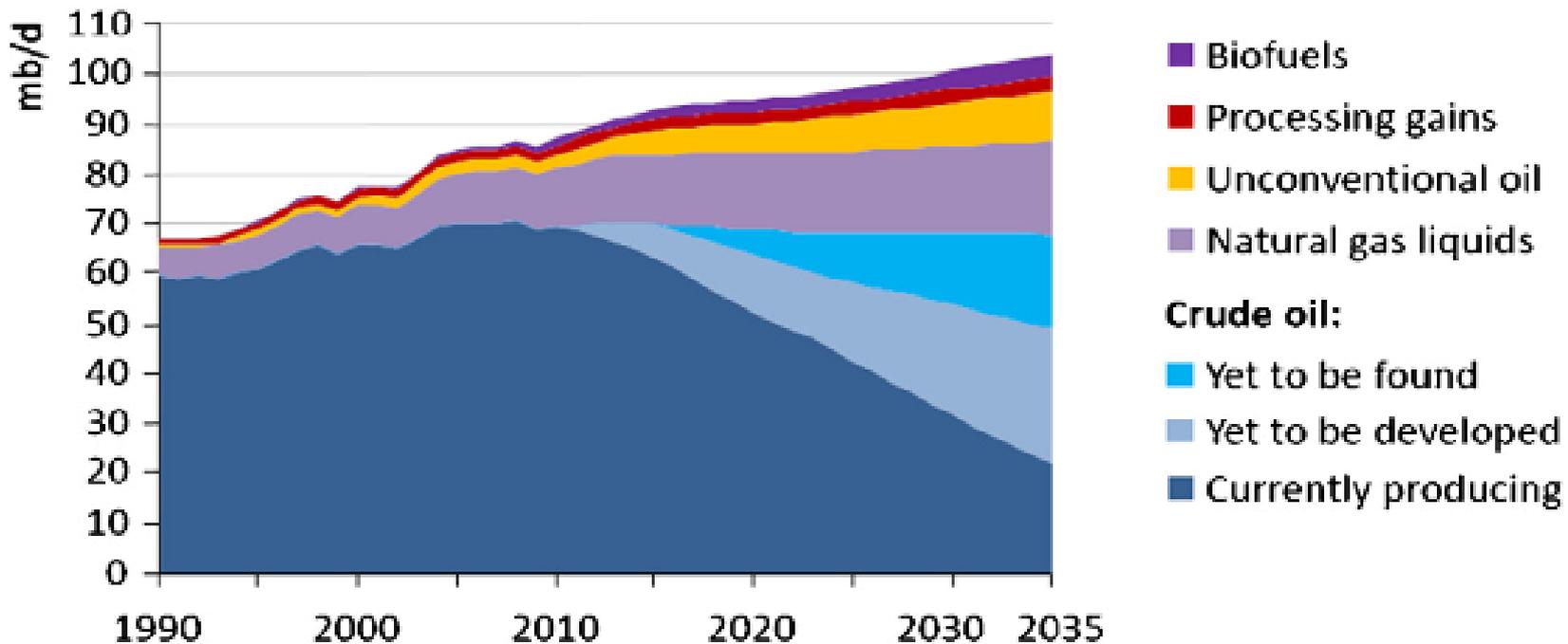
# OIL PRODUCTION HITS A CEILING

Production followed demand until 2005, when it levelled off despite continued price increases. There seems to be a production 'cap' at about 75 million barrels per day.



Reproduced from Murray and King, *Nature*, Vol. 481, 26 January 2012, p.434

Kerschner, et, al , 2013: Scenario that a production peak for conventional oil likely before 2030 with a significant risk it could occur before 2020.



**Fig. 1. World liquids supply by type in the New Policies Scenario.**

Source: IEA WEO (2011).

Reproduced from Kerschner et al, (2013) 'Economic vulnerability to Peak Oil'. *Global Environmental Change* [in press] Fig.1, p.2

## 4. Three Troubling Numbers – ‘Do the maths’

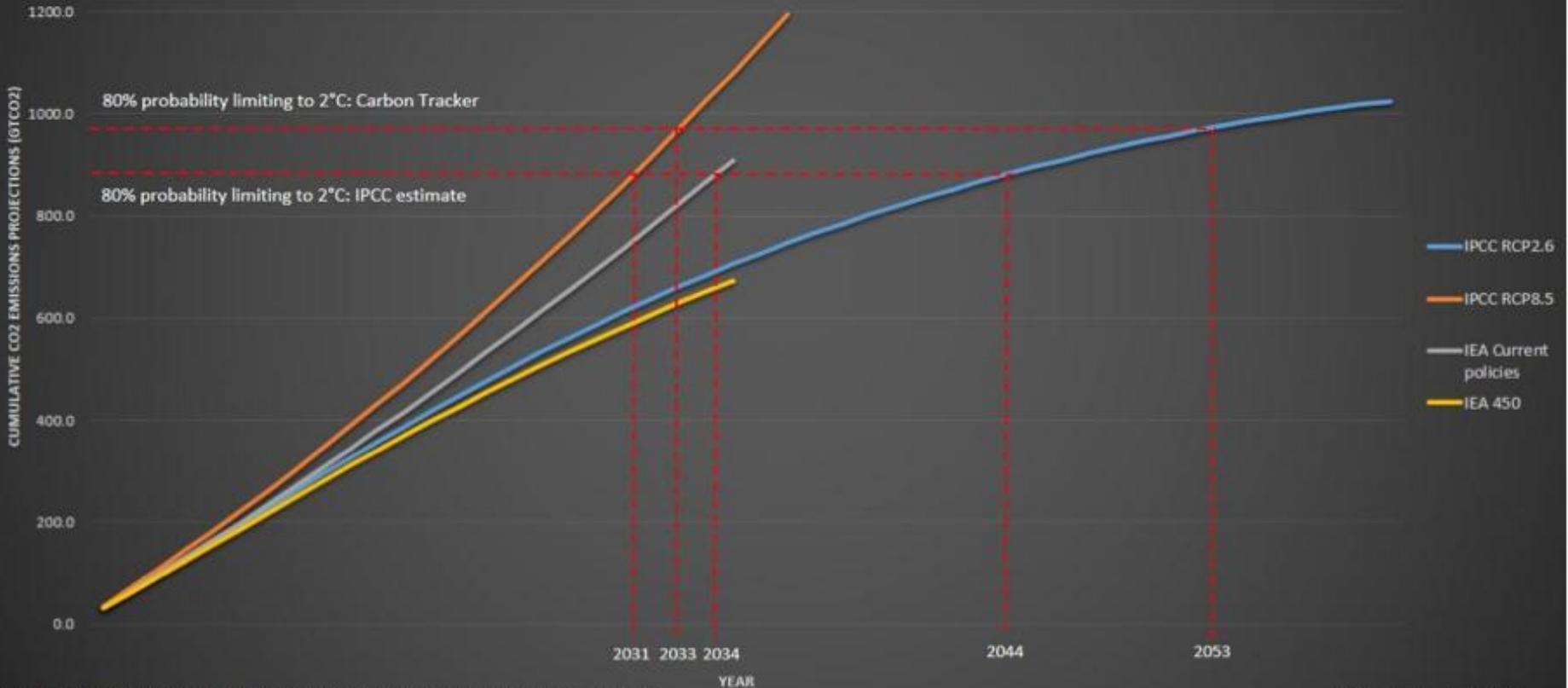
Analysis by Carbon Tracker Initiative and Bill McKibben

- 2 degrees. ‘The increase in global temperature should be below 2 degrees’ - the de facto international target
- 565 gigatonnes is our carbon budget – what we can put into the atmosphere by 2050 and still have reasonable chance of staying below 2 degrees
- Carbon Tracker estimates proven oil, coal and gas reserves of 2,795 gigatonnes = 5 x 565. To meet 2% target then 80% of those reserves must remain underground.

Will these reserves remain ‘stranded assets and ‘wasted capital’?

## When will we break the carbon budget?

This graph draws on the latest best and worst case scenarios on CO<sub>2</sub> emissions from fossil fuel combustion from the IPCC and International Energy Agency. The IPCC2.6 forecast is a best case, assuming emissions are halved by 2050 while RCP8.5 assumes 'business-as-usual' meaning we are 'as likely as not to exceed 4°C'. The IEA 450 scenario is their best case scenario assuming policy action consistent with limiting global warming to 2°C; the 'Current Policies' assumes no implementation of new policies past mid-2012. This graph illustrates that we could break the budget to 2°C of warming by 2031 – only 18 years time!



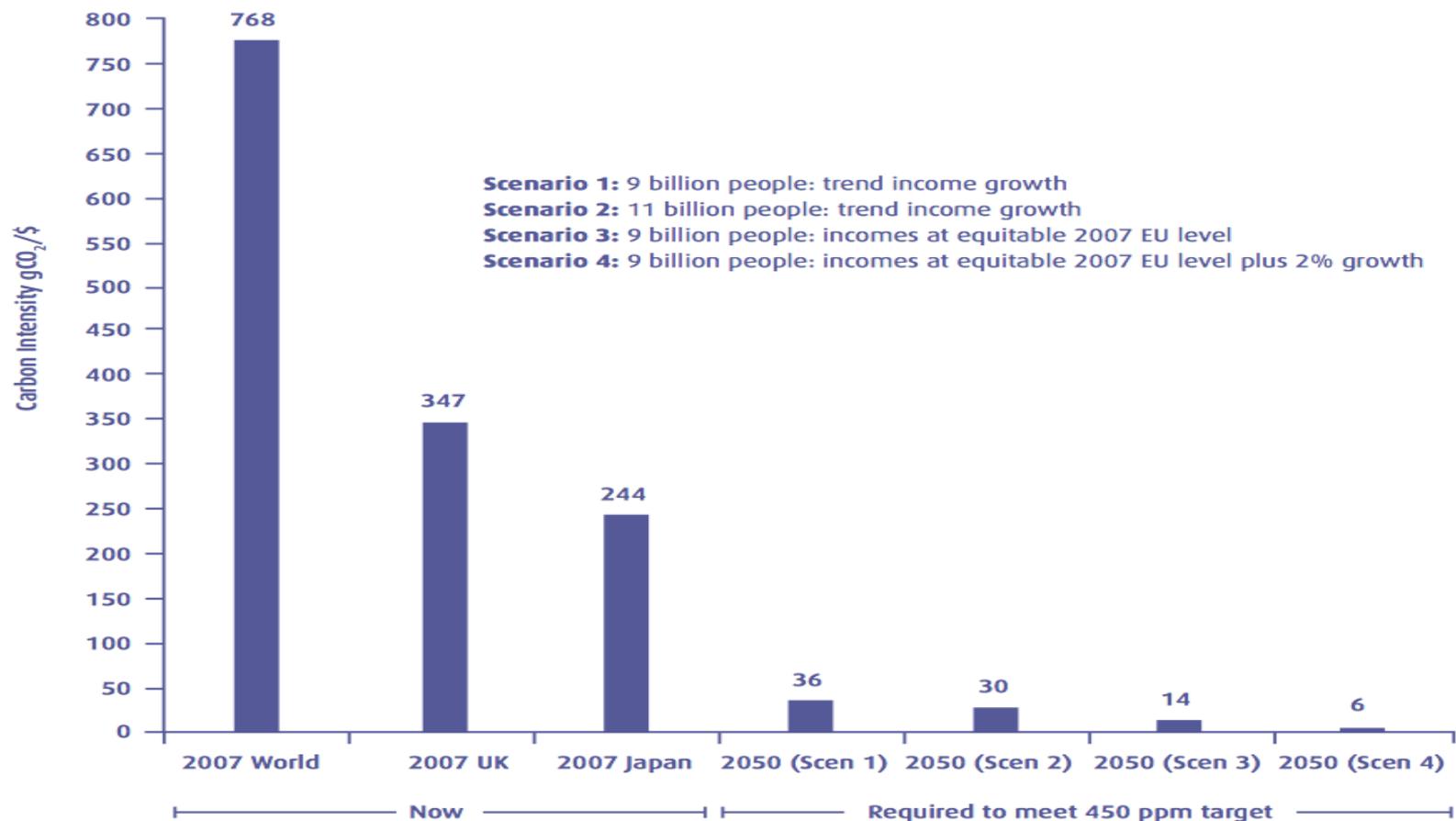
Sources: IEA World Energy Outlook 2012, IPCC AR5, Carbon Tracker 2013 Wasted Capital and Stranded Assets

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## 5. Solutions: Technology and Decoupling required to meet 450 ppm target in 2050

Figure 17 **Carbon Intensities Now and Required to Meet 450 ppm Target**<sup>25</sup>



Source: Reproduced from Jackson, 2009, p.81.

## 6. What now? Three steps for today... (Nordhaus, 2013)

### 1. Public awareness

People to understand and accept the gravity of in the impacts of global warming – counter the contrarians with public education and the science facts.

### 2. Pay the cost of carbon.

Countries need to establish polices to raise the price of CO<sub>2</sub> and other GHG emissions. 'Foul medicine now for better long term health'. Global coordination needed.

### 3. Accelerated research.

Rapid technological change in the energy sector is key to a low-carbon economy. Governments and private sector must pursue low carbon and zero carbon technologies.



## 7. The Northern Ireland Policy Context

- UK Climate Change Act 2008, Climate Change (Scotland) Act in 2009. Climate Change Bill in Northern Ireland ?
- Programme for Govt target, Cross Depart'al Working Group on CC, etc. But, overall: 'To say that Northern Ireland devolved administration is a Government ill at ease with its commitment to climate governance is something of an understatement' Sarah Turner, (2013)
- Yet, a strong civil society and environmental voluntary sector in NI with viable, costed proposals – e.g. 'Green New Deal' approach.
- Investment in a low carbon economy will bring local job opportunities in housing and renewables, greater energy independence and security, the reduction of fuel poverty. Technologies with potential for deep cuts in GHG emissions especially with improvements in electricity storage and distribution.
- Reduce energy consumption and as well as more efficient production
- Need to show leadership and take ownership of climate change in NI to break the inertia and move beyond vague aspirations and current cautious approach

To discuss: What's holding us back? **Not** the science.

