

PETER HARPER

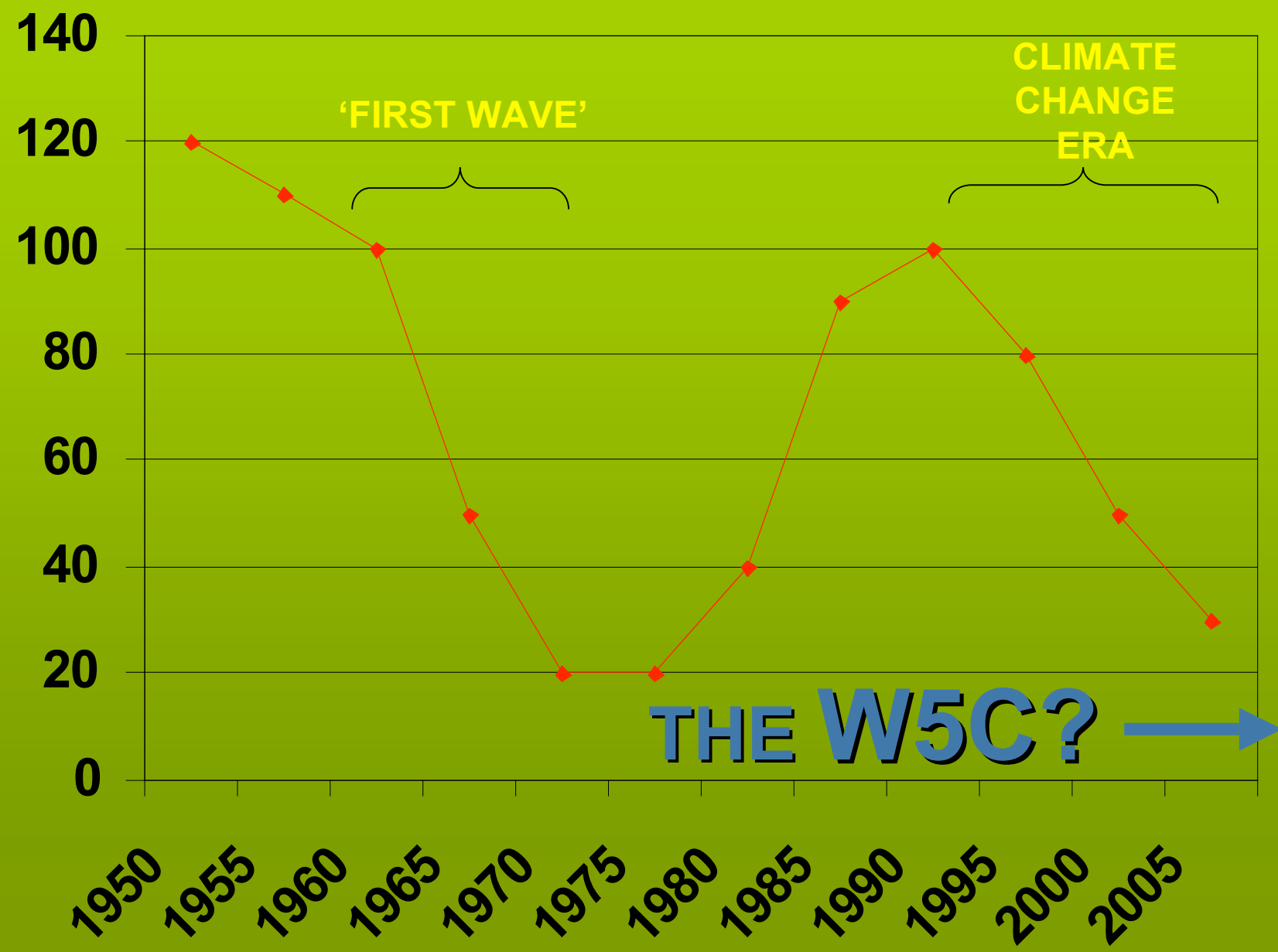
zerocarbonbritain  
an alternative energy strategy



Centre for  
Alternative  
Technology

In collaboration with:  
Public Interest Research Centre

HOW MANY YEARS HAVE WE GOT?



**1990s IPCC**

**“60% global cuts as soon as possible”**

**IPCC ARs**

**1995 2001 2007**

**2000 RCEP**

**“60% UK cuts by 2050”**

**White Paper 2004**

**Climate Change Bill**

**Stern  
Review  
2006**

**2005 Hillman, Monbiot, 2007 IPPR**

**“80-90% UK cuts by 2050 or sooner”**

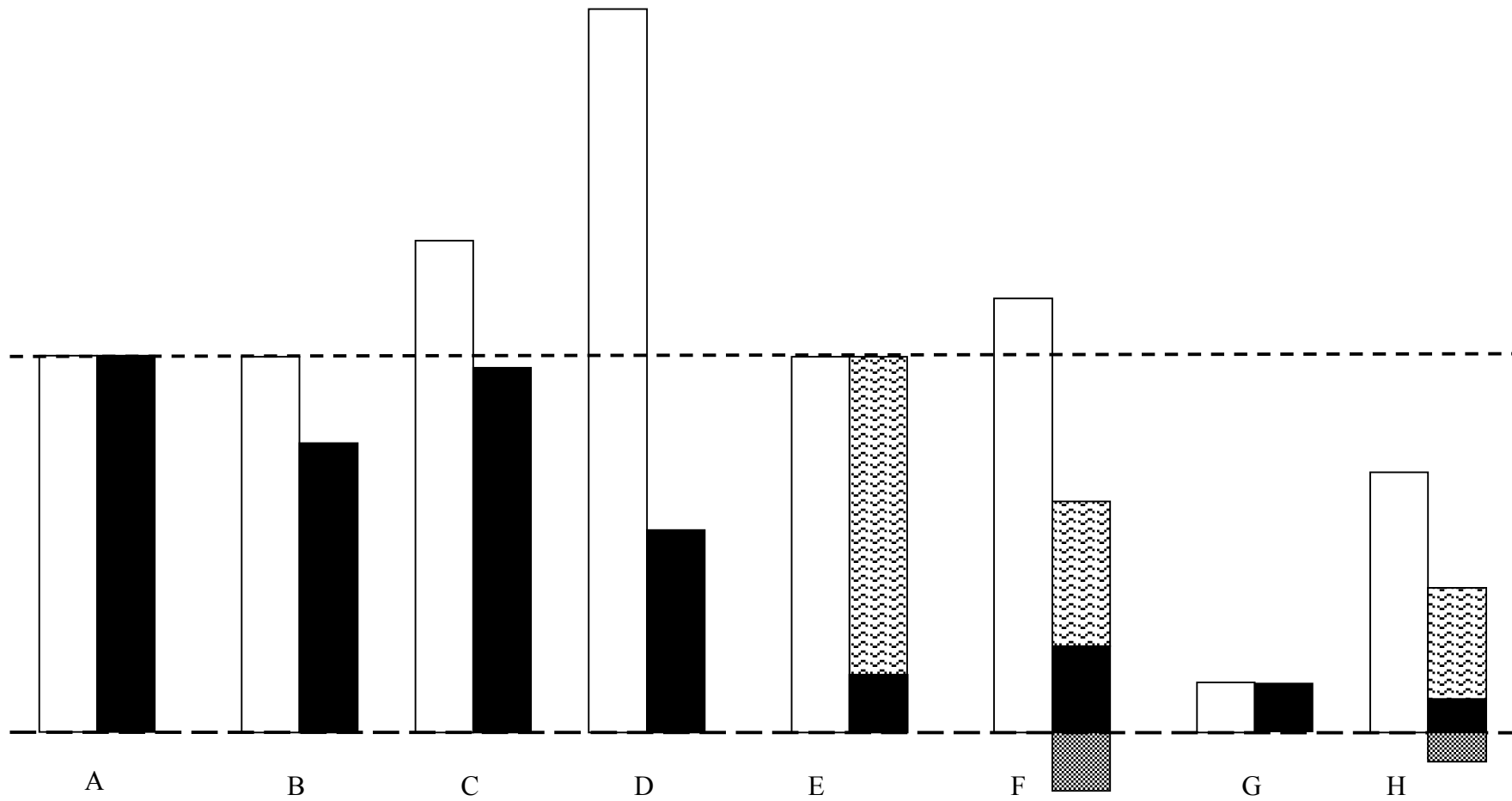
**Compelling evidence for  
feedback effects**



**2007 CAT ZCB**

**“100% UK cuts by 2027”**

# ENERGY AND CARBON STRATEGIES



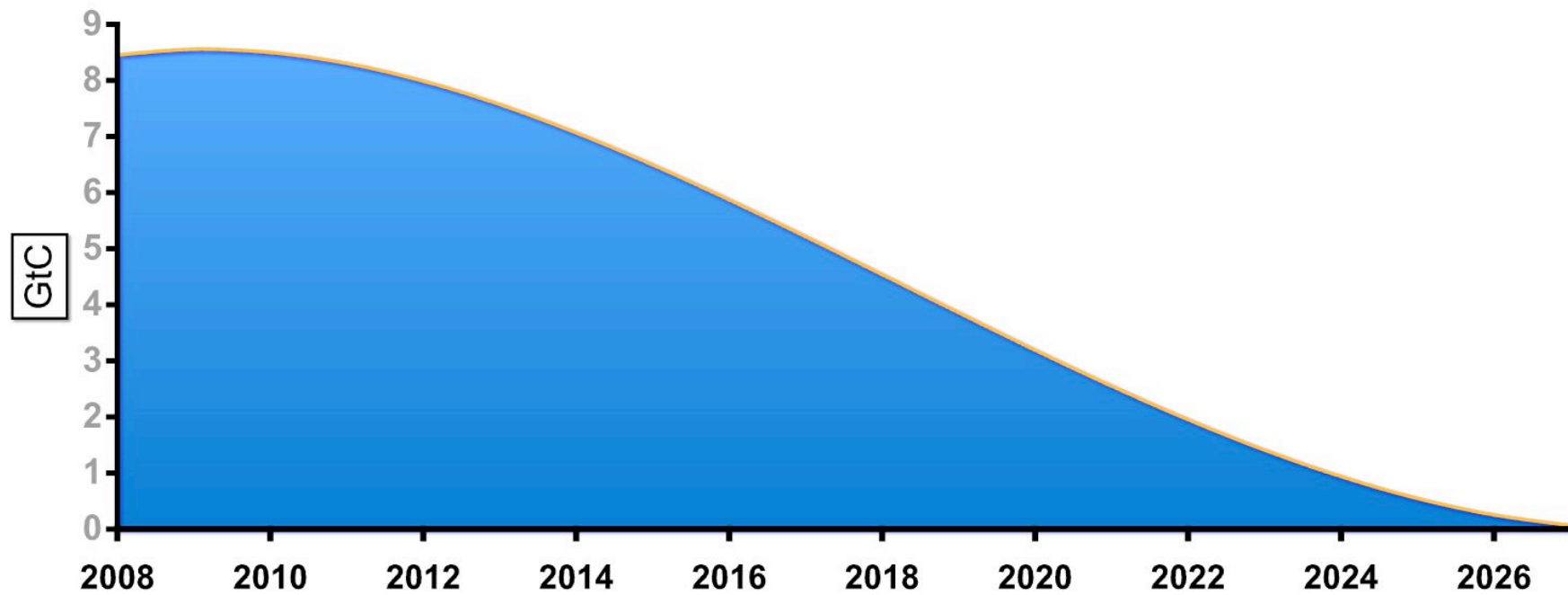


Keep it  
cheap!

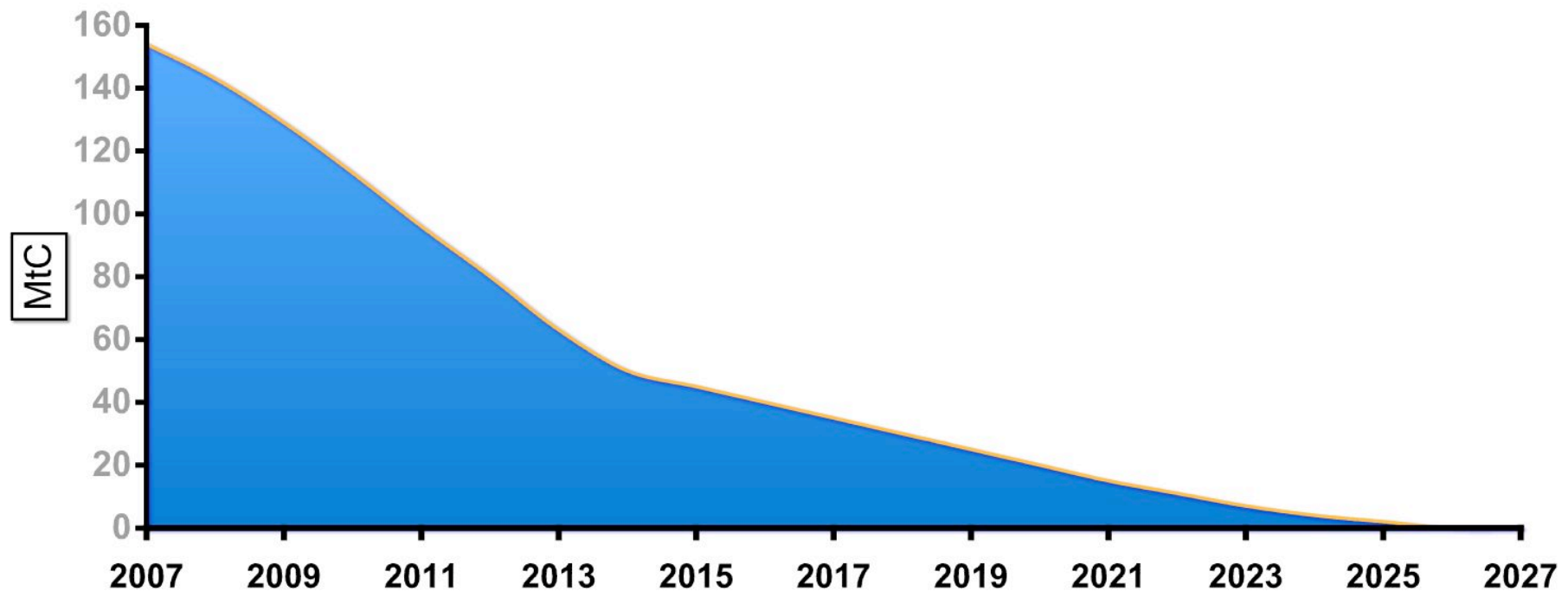
No Power Cuts!

LOTS of it!

# Carbon Budget - Global



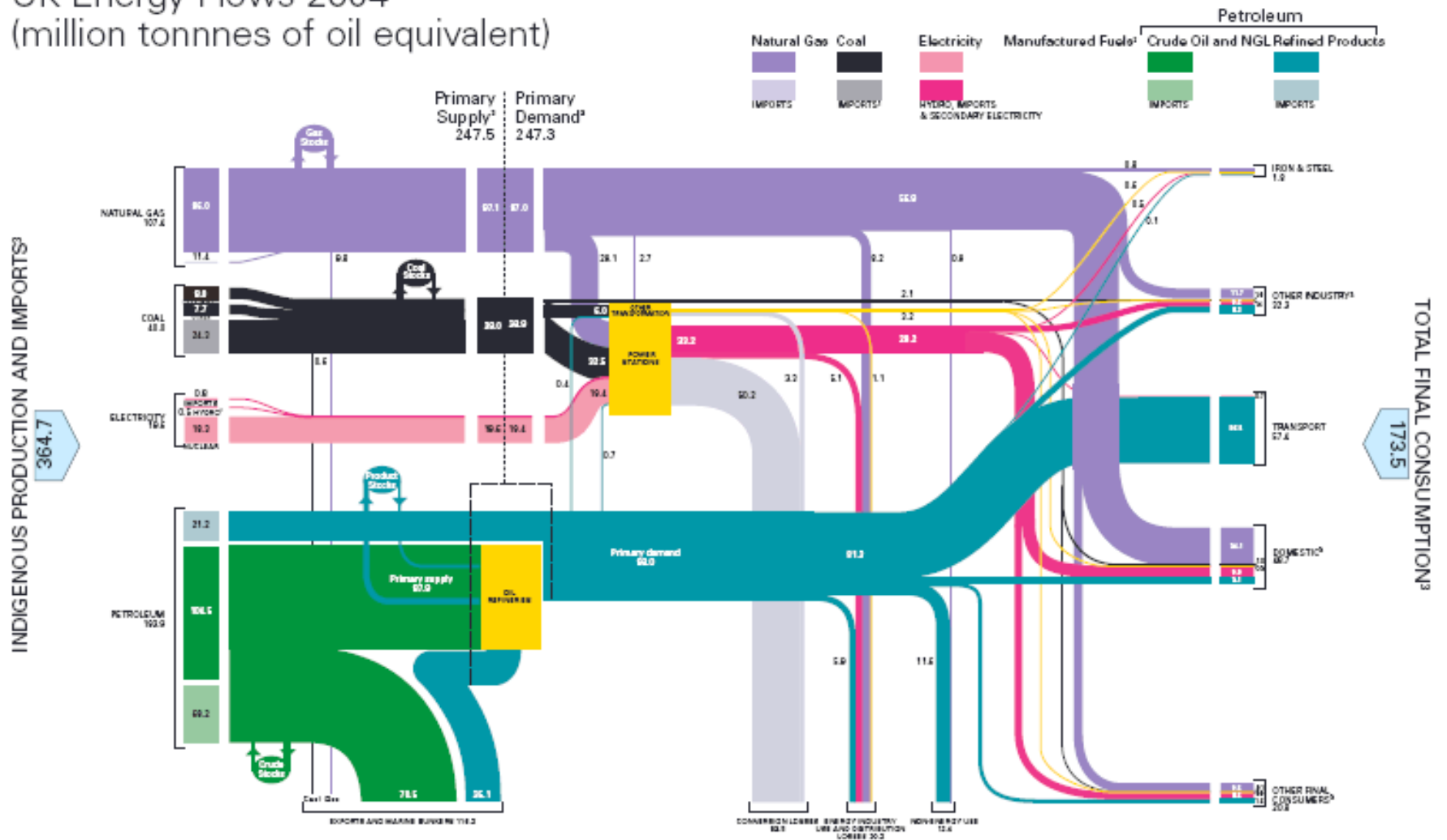
# National Carbon Budgets - e.g. Britain







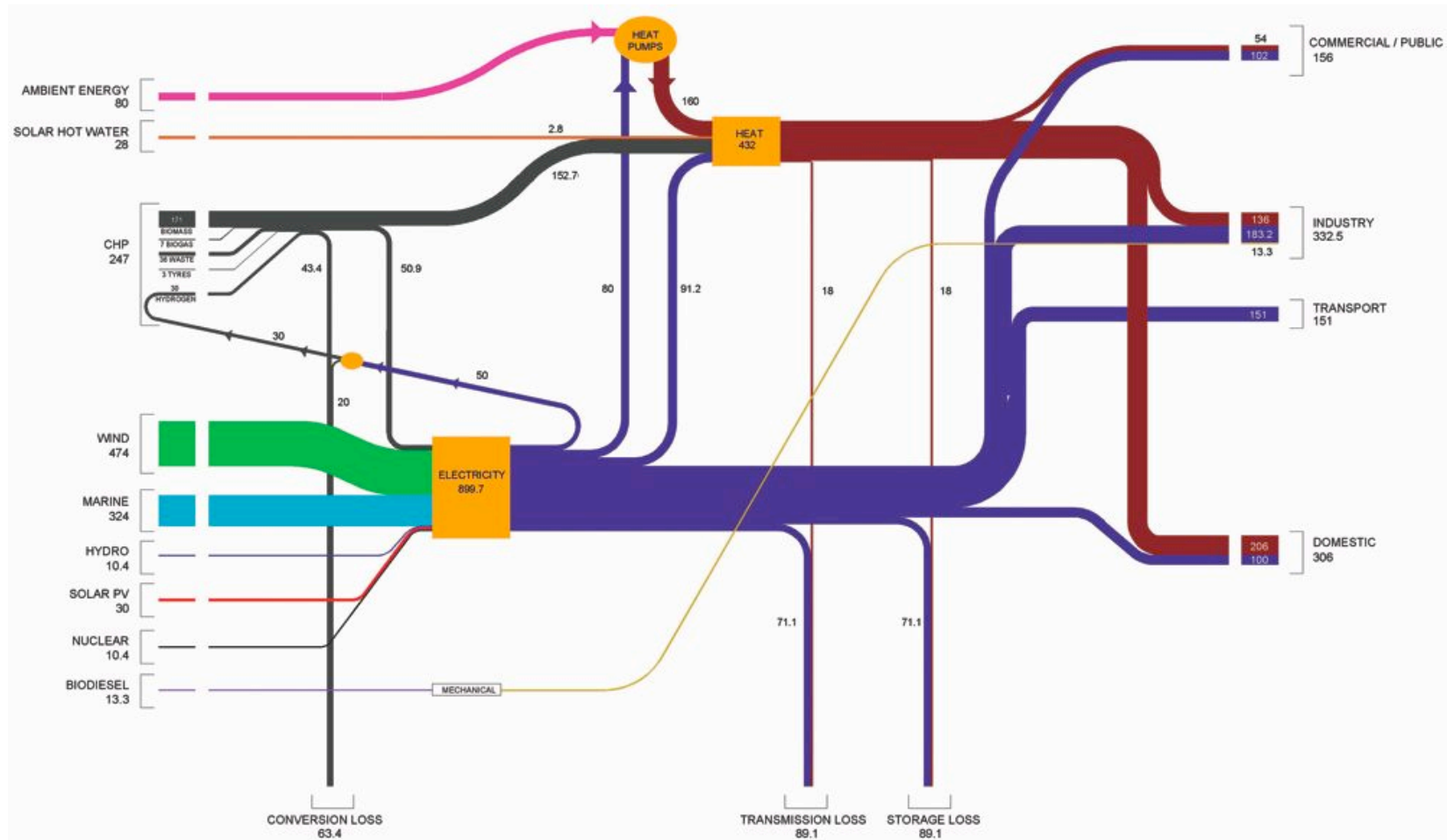
# UK Energy Flows 2004 (million tonnes of oil equivalent)



**NOTES:**  
 1. Coal imports include in-pore of manufactured fuel, which accounted for 2.1 million tonnes of oil equivalent in 2004.  
 2. Includes thermal oil.  
 3. Includes all transmission.  
 4. Includes wind, solar, geothermal and solar.  
 This flowchart has been produced using the style of balance and figure in the 2005 UK Digest of Energy Statistics, Table 1.1.



# UK **Potential** Energy Flows 2027 (terawatt hours)



# MAIN FEATURES

- International agreement based on Contraction and Convergence
- A cap on UK emissions declining gradually to zero
- Harnessing of market forces to drive a 'race out of carbon'
- Allocation of Tradable Energy Quotas to ensure fair access
- 'Power down' of primary energy demand through systematic efficiency improvements
- 'Power up' of low-carbon energy sources
- No 'silver bullets'
  - Well, not many

# SOME POWER-DOWN FEATURES

- Effectively rising price of carbon will drive changes quickly in all sectors
- New buildings zero-C by 2012
- Massive retrofits in older buildings
- Radically different transport patterns
  - And holidays!
- Transport mostly electric-powered
- Large changes in diets and land-use
- World will feel upside-down, especially for high- consumers

# SOME POWER-UP FEATURES

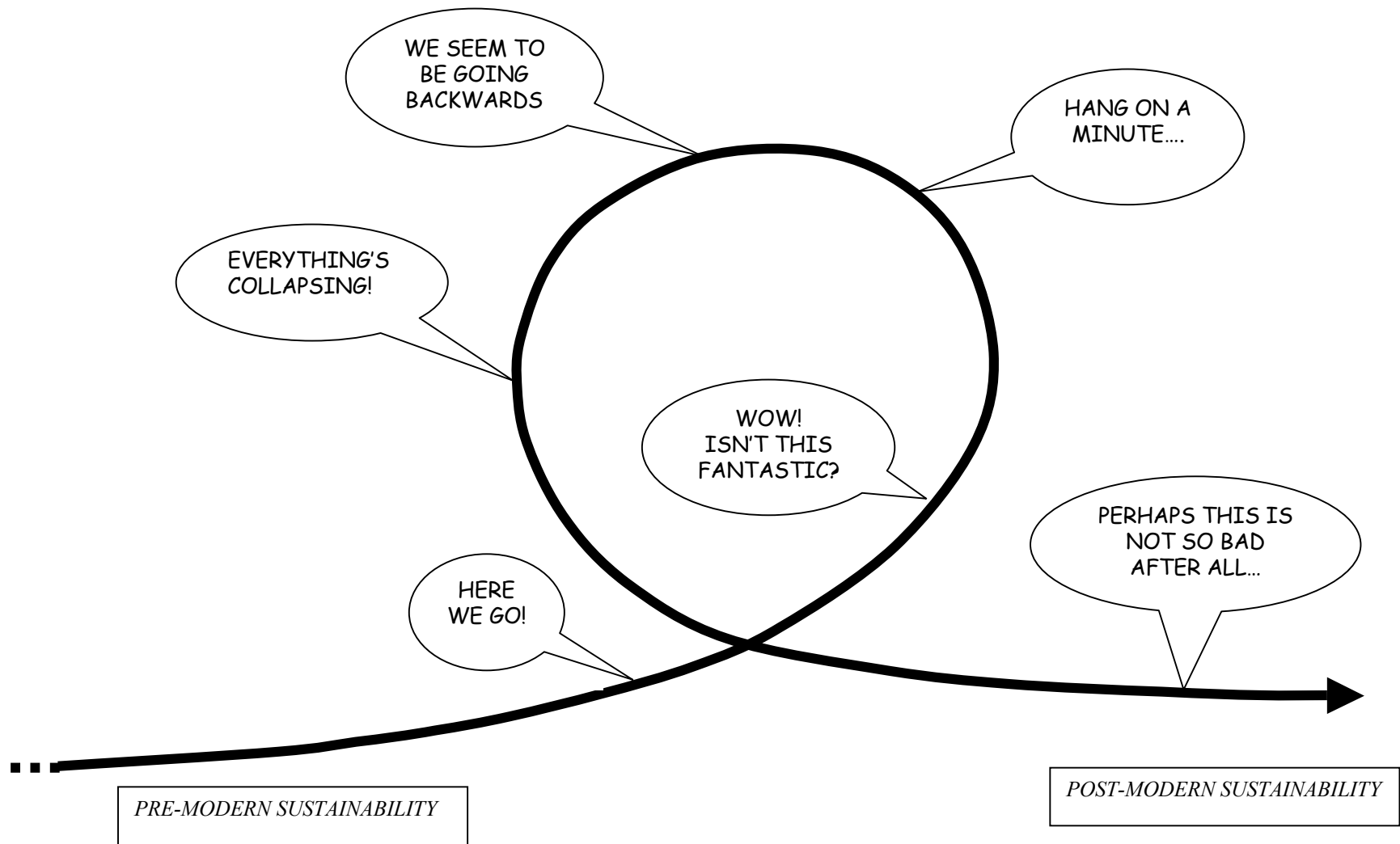
- A very electric Britain.
  - Big and small stuff. Ugly. Transmission lines
- Rigorous load-control and distributed storage measures
  - New kinds of batteries
  - Transport fleet helps balance loads
- Enormous development of marine energy resources, especially offshore wind- and wave-power
- Rapid development of CHP and heat-pump technology
- A crucial role for bio-energy

# IMPLICATIONS FOR FARMING AND LAND-USE

- Net-emitting processes must either be 'fixed', substituted or balanced by sinks
- This applies to ruminants
  - Also to paddy rice, cement production, worm farms, possibly aviation
- There are no fixes or substitutes
- Sinks will be scarce and very expensive
- There will therefore be massive reductions of ruminant numbers
- **This will transform food, farming and the landscape**
- The implications for traditional mixed and organic farming are particularly severe

# THERE ARE A FEW SILVER LININGS

- C-reduction programme will deal with the peak oil problem
- It will be harder to become obese
- Large amounts of land will be released for other purposes
- It will present enormous opportunities to farmers as well as threats
- It might improve biodiversity
  - But might not
- It would foster re-localisation
- It could be a chance to re-think and re-establish modern societies on the basis of fulfilment rather than stuff



WE SEEM TO BE GOING BACKWARDS

HANG ON A MINUTE....

EVERYTHING'S COLLAPSING!

WOW!  
ISN'T THIS FANTASTIC?

PERHAPS THIS IS NOT SO BAD AFTER ALL...

HERE WE GO!

*PRE-MODERN SUSTAINABILITY*

*POST-MODERN SUSTAINABILITY*



# IS IT REMOTELY LIKELY?

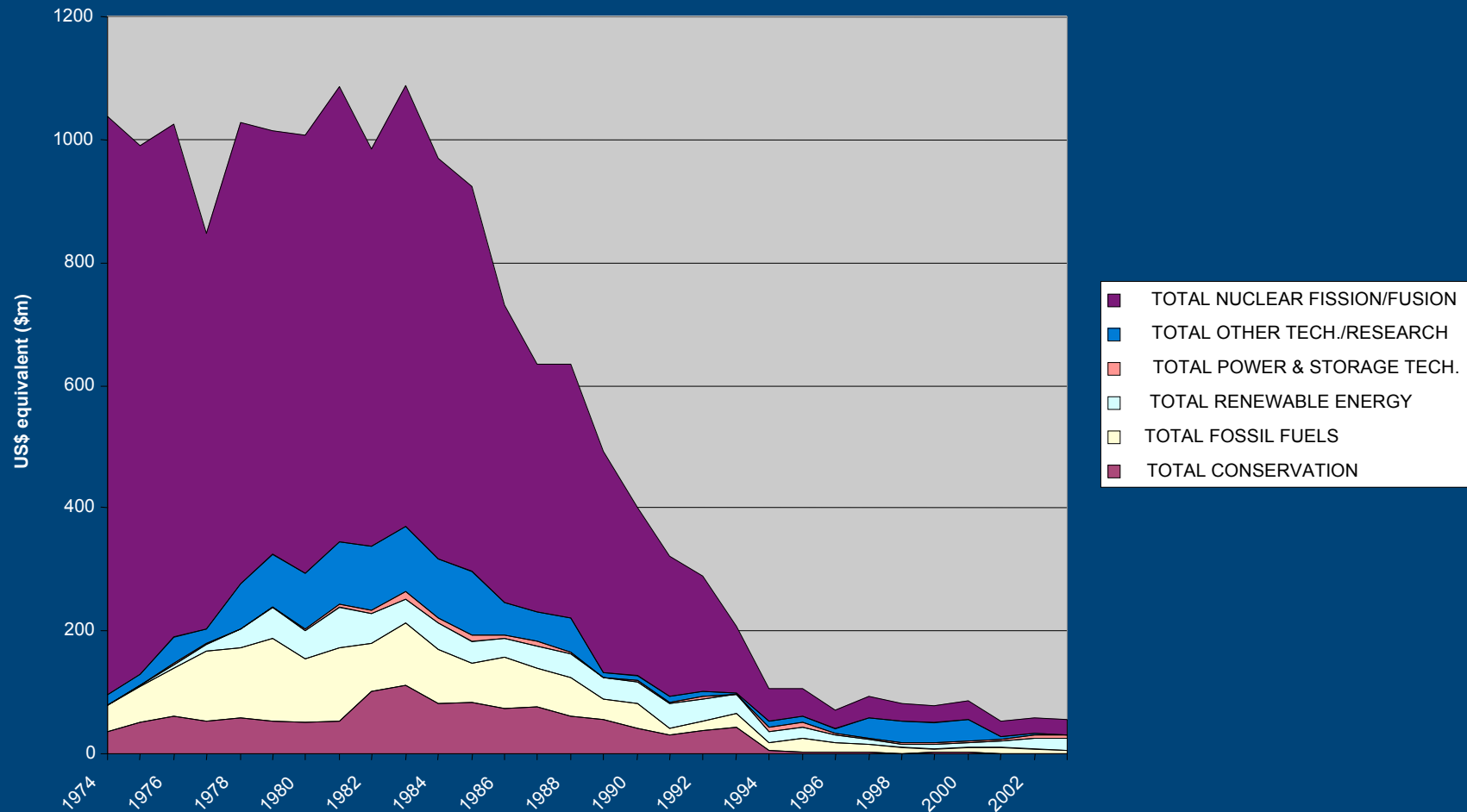
THAT WE'LL BITE THE BULLET AND AVOID TRIGGERING THE APOCALYPSE

- Probably not.
- By 2020 we'll know whether the world is stuffed
- But life in the UK will be rather similar for the next 50 years
  - How can you sell that?
- At what point should we switch to an adaptation strategy?
- To buy time, we might all be tempted by geo-engineering proposals, mass sequestration, and even nukes.
  - Why not? Are these worse than the W5C?
- Probably switching a very large amount of research effort into this, is the most rational and cost-effective strategy right now

# R&D Energy Trends

The most depressing graph I have yet seen!

But 'Peak Oil' might provoke action where climate change does not

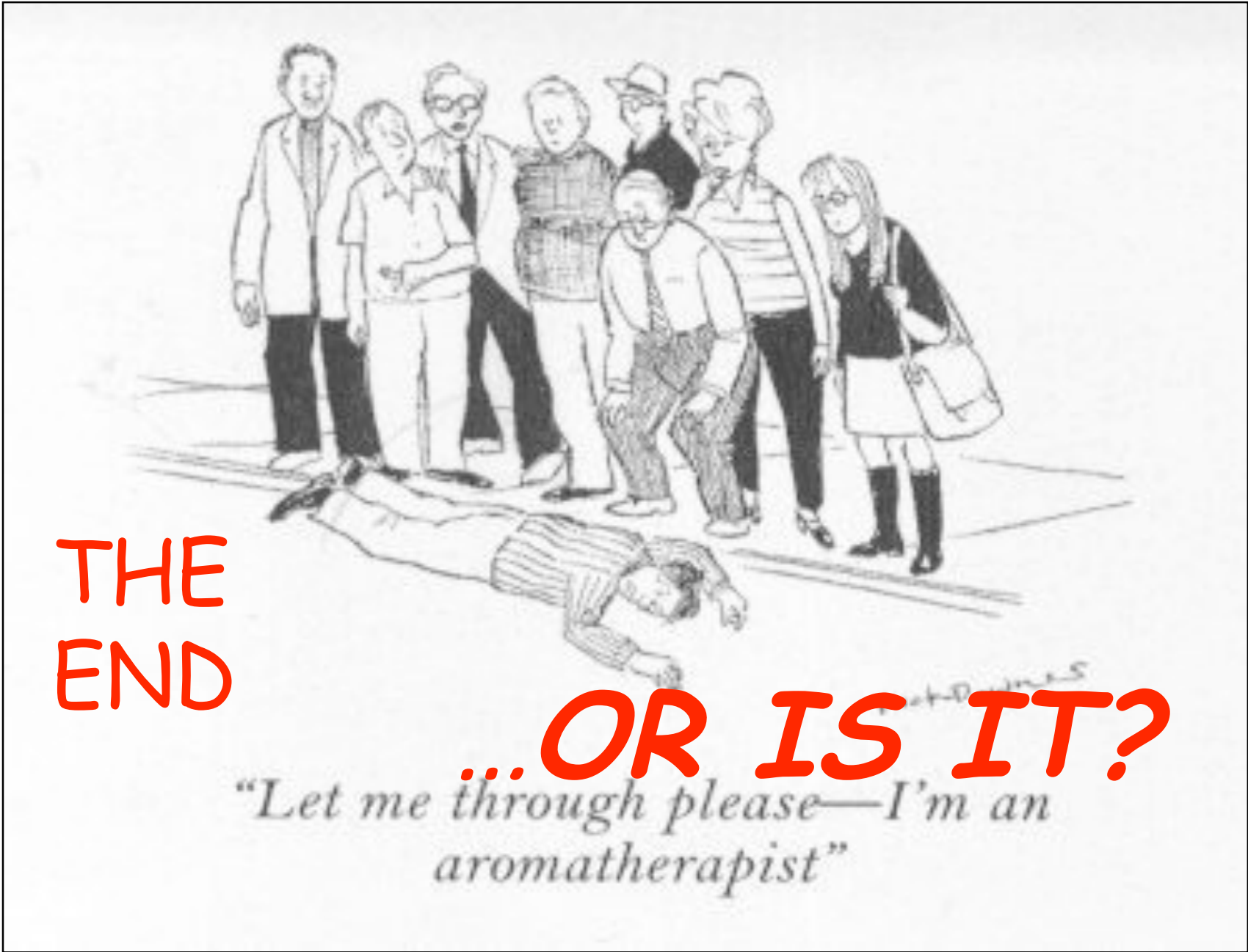


Source: Data reported to the IEA  
by IEA Member countries

# A SMALL TAKE-HOME MESSAGE

Because it's an emergency

- Deep-green eco-warriors need to accept that a lot of top-down control and Big Technology will be necessary
- Mainstream engineers, politicians and businesspeople need to accept that massive shifts of behaviour and lifestyle will be necessary
- A truce for 50 years?
  - then we can start arguing again about what long-term sustainability means!



THE  
END

**...OR IS IT?**

*"Let me through please—I'm an  
aromatherapist"*

STUFF

