

# Eco-Innovation Opportunities and challenges

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# Outline

- What drives innovation and investment
- Examples
  - Fuel Economy
  - Vehicle emissions
- Making markets for the things we want
- Regulation and procurement

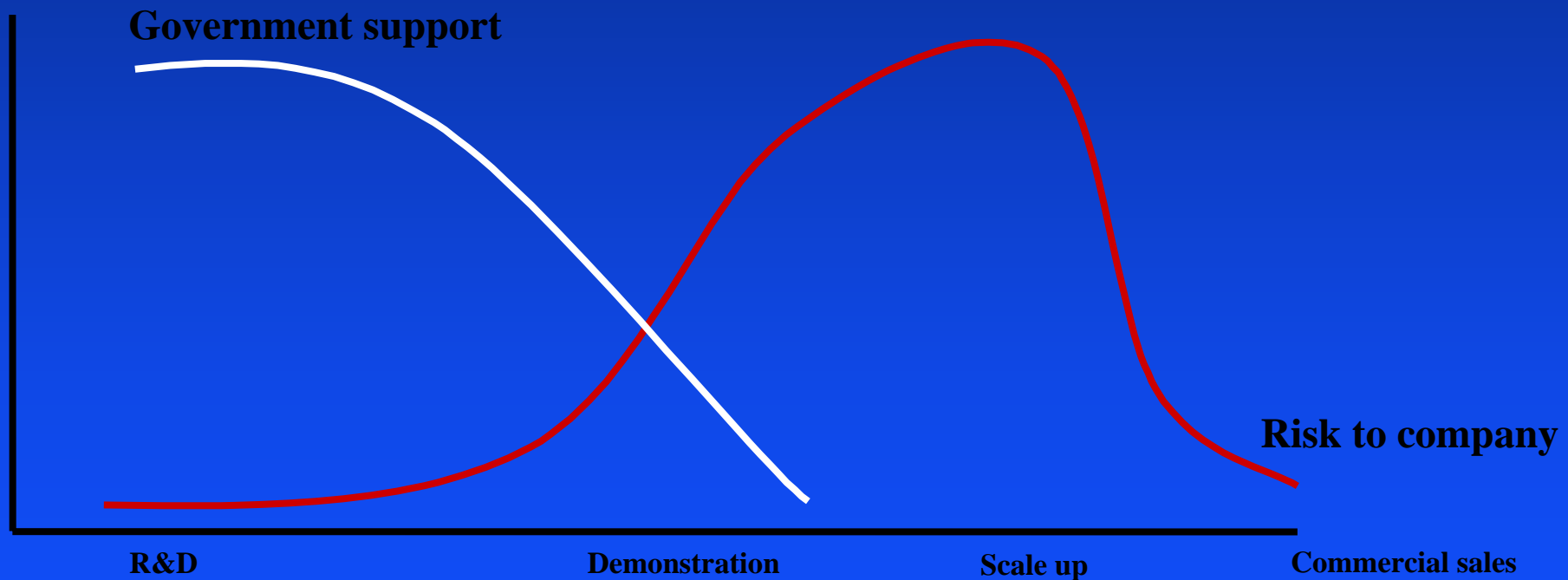
# Innovation

- Innovation is hard
  - it takes a long time to come to fruition
  - Its not been done before so its risky
  - It requires us to think ahead about unmet needs
- It doesn't happen unless its really necessary
  - Survival
  - No other way of meeting a real need
- If it is necessary its almost impossible to stop
- Necessity - the mother of innovation

# Innovation and Research

- Research is a process of turning money into knowledge
- Innovation does the opposite
- Don't know the results of Research in advance
- Innovation always targeted on outcomes
- For innovation the key success factor is an accurate understanding of the unmet need it is targeting

# Innovation from the suppliers side



# Environmental markets

- Problems are well known
- Public is sympathetic
- No shortage of ideas
- So why is progress so slow ?
  
- Current solutions too costly, inconvenient, risky or just plain ugly
- Need new products - investment and product innovation
  
- No market pull for things that don't exist .... And anyway markets can't price environmental benefits
  
- Unless society gives benefits a value the case for investment and innovation in the sector is weak

# Environment and society

- In many cases the public sector can cherry pick investment and product innovation from other sectors
- Waiting for private market forces to deliver new and better sustainable or environmental products does not work.
- The environment has value only if society gives it value
- This gives a special responsibility to society and its agents to manage supply chains to deliver new products with sustainability and environmental benefits designed in.

# Pricing externalities is not enough

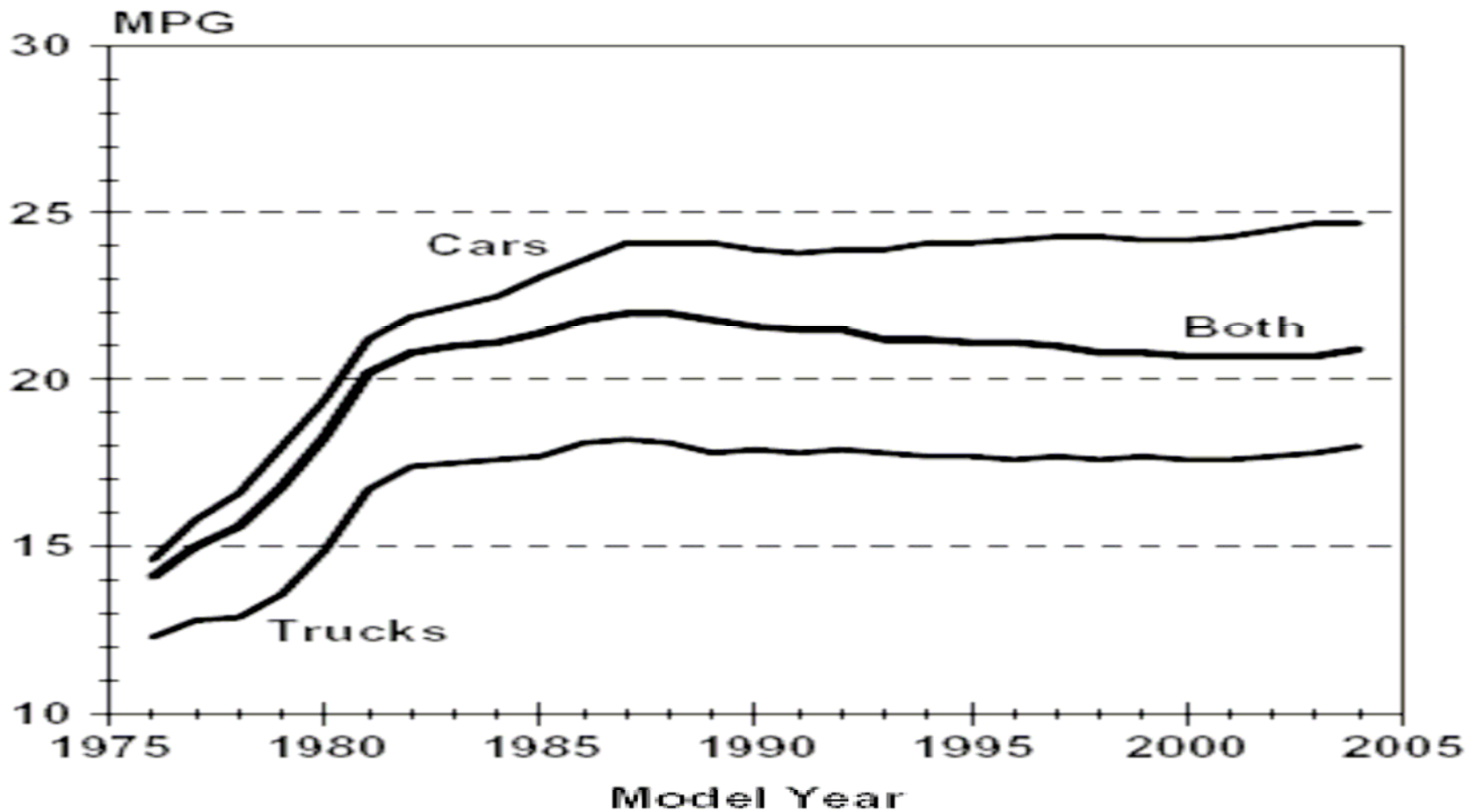
- Future environmental markets are not visible to today's investment decisions
- Is establishing a future market by price signals such as fiscal measures or tradable permits the answer ?
- Not sufficient to drive innovation
- Eg Fuel duty on petrol and diesel



# Effects of pricing mechanisms

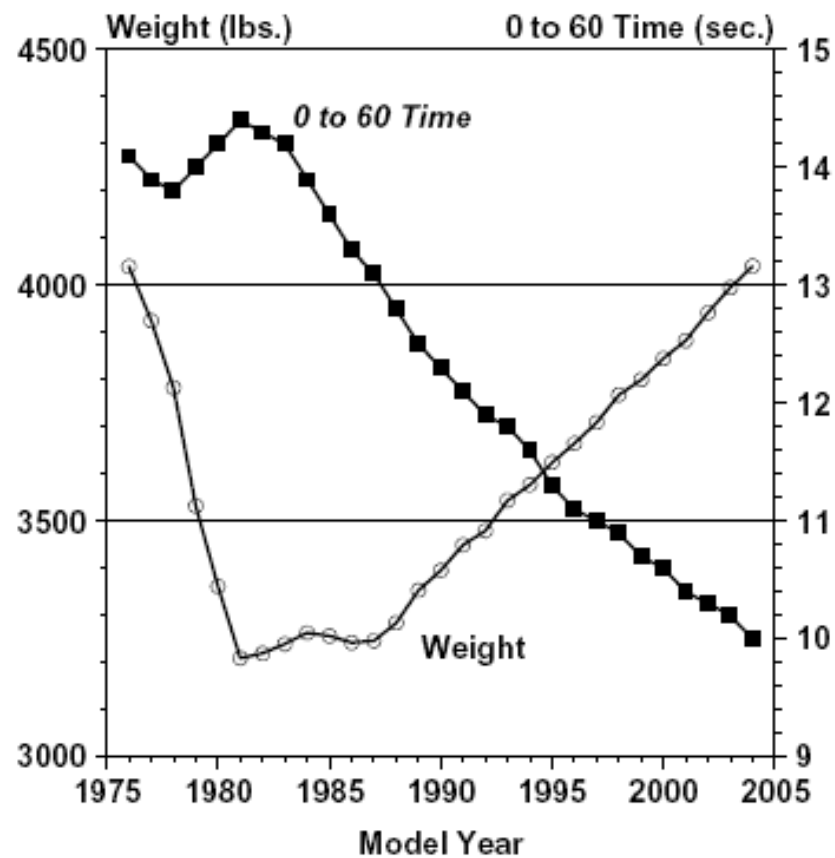
- Carbon tax on motor fuel
- US £100/ 1000kg carbon
- UK £750/ 1000kg carbon
- Consistently applied for last 20-25 years
- Other countries available for comparison

## Adjusted Fuel Economy by Model Year (Three-Year Moving Average)



Source: US EPA, EPA420-S-05-001, July 2005

## Weight and Performance (Three Year Moving Average)

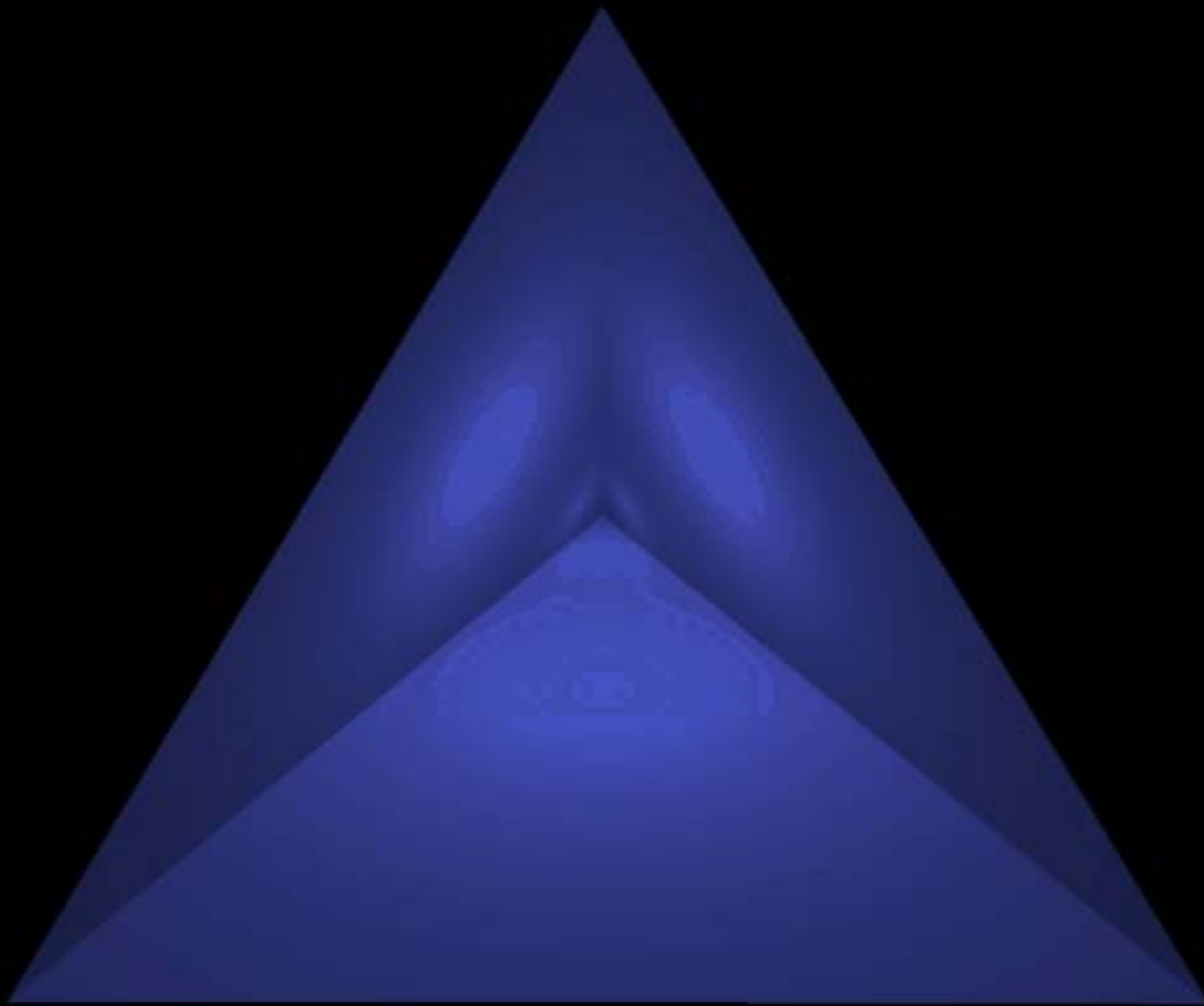


Consumers have taken improved  
Engine performance as safety (weight)  
And performance

Rather than fuel economy

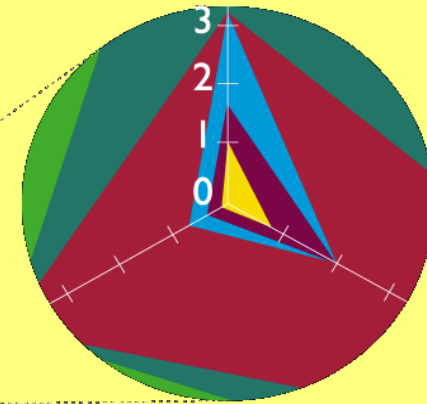
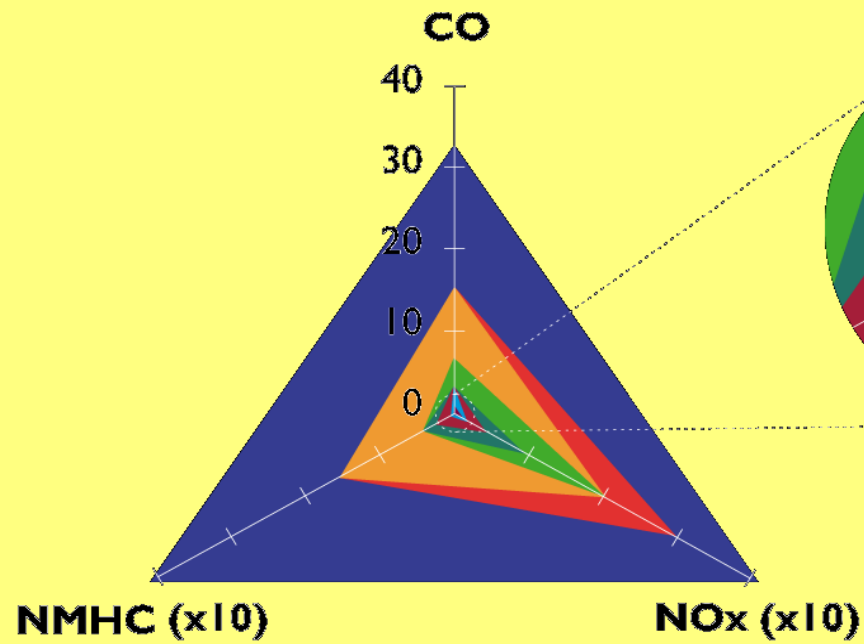
# We have been here before

- 30 years ago air quality was becoming a critical concern
- Existing approaches including clean burn engines and better fuel quality could help but these were intrinsically limited .... other approaches looked risky and expensive
- However some visionary decisions were made and history showed that the apparently unreasonable demand for much higher standards was actually rather modest



# North American Emissions Standards

- None
- 1975
- 1977
- 1980
- 1983
- 1994
- LEV



- ULEV
- SULEV

# Regulation

- Regulation can create a future market prospect that drives innovation and investment at little or no cost to the consumer.
- Fuel Cells created by the California ZEV mandate - some \$12 billion of private investment
- It must be
  - So bold that current options can't meet the need
  - Long range to allow innovation time to work
  - Progressive to drive continuing investment
  - Credible – don't rely on taxes, subsidies etc
- Simple carbon pricing doesn't drive innovation – it might help diffusion once the innovation is in the market place

# Regulation is also not enough

- Emission control regulations worked ..... because the delivery supply chain already existed and was competent
- Leading edge regulation in California has not created an industry in California in cars, emission control or fuel cells
- Delivery is all about having an effective supply chain
- Jobs and economic advantage lie in the supply chain
- Innovation comes from the lower reaches of the supply chain
- The need for innovation, the management and direction comes from the top of the chain
- In the environment sector society has the need – its agents are the supply chain managers – given the right lead the private sector will deliver the investment and the benefits



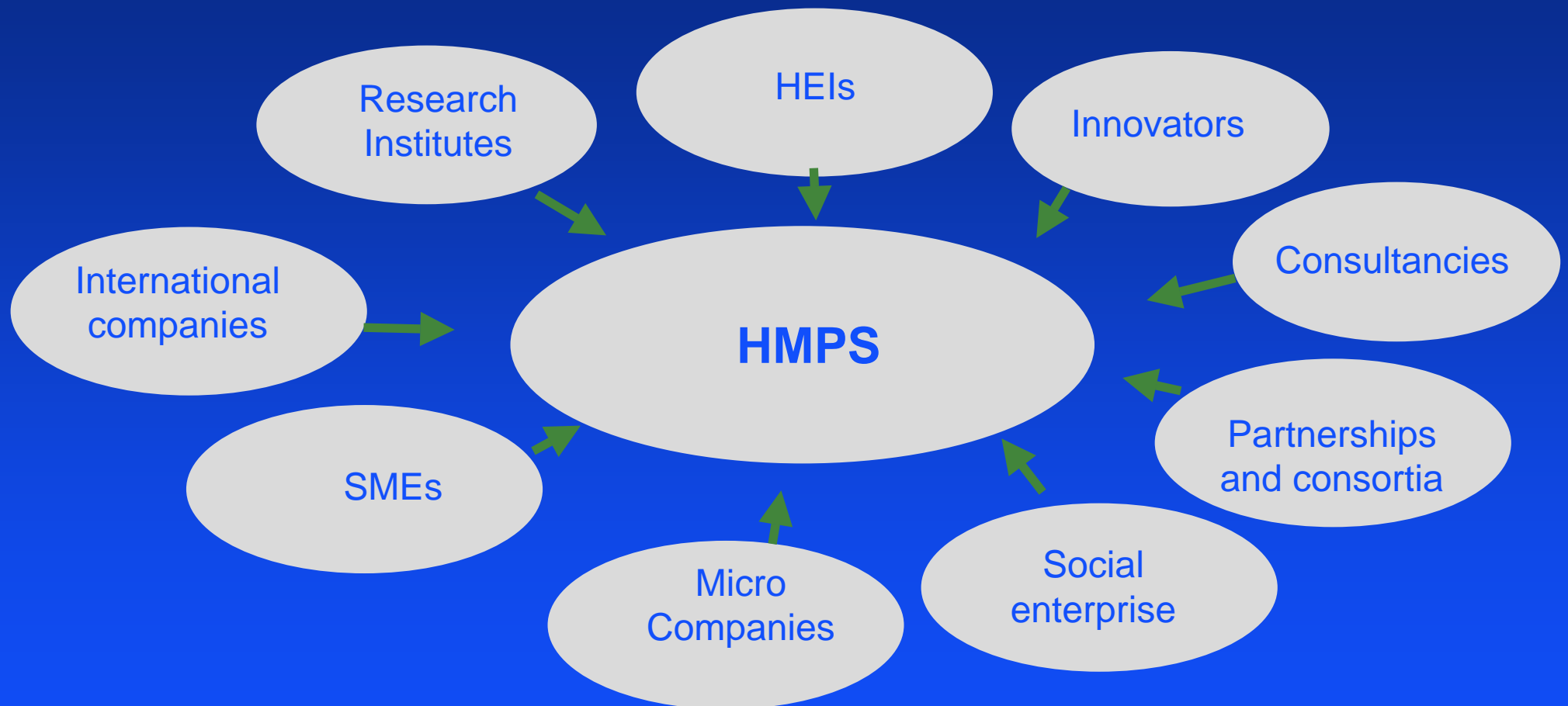
# Creating and managing supply chains

- Forward Commitment Procurement – a tool for public supply chain management
- A commitment to purchase in the future a product which:
  - Doesn't yet exist in the market place
  - Against a specification that current products don't meet
- Works best in conjunction with regulation that requires the higher specification
- Makes future needs visible to today's investment decisions.

# Forward Commitment Procurement

- EIAG/Defra/DTI/ OGC / HMPS, pioneering the demonstration of FCP in practice to thrash out the issues and document the process
- Zero waste prison mattresses
- Call for solutions issued (PIN in the EJ)
- 33 responses

# HMPS Zero Waste Mattress Response to Marketing Sounding



- Over 30 responses, across the range.....

# Next stages

- Critical role for cities, regions and RDA's
- Identify opportunities
  - Eg Town and City regeneration (Swindon and SWRDA)
  - Eg Transport (low carbon buses, zero emission zones)
  - Eg Waste
  - Eg Water
- Advertise and aggregate unmet needs – an unmet needs portal to link needs with solutions via KTN's, innovation centres etc

# The Opportunity

- By making problems into opportunities we can mobilise investment and innovation
- Its not just a case of removing barriers, supporting R&D, setting targets and hoping good things will happen ...
- Demonstrate a real need – and people will beat a path to your door
- There are spectacular gains to be made if we get it right