



Hydrogen Infrastructure – BP's approach

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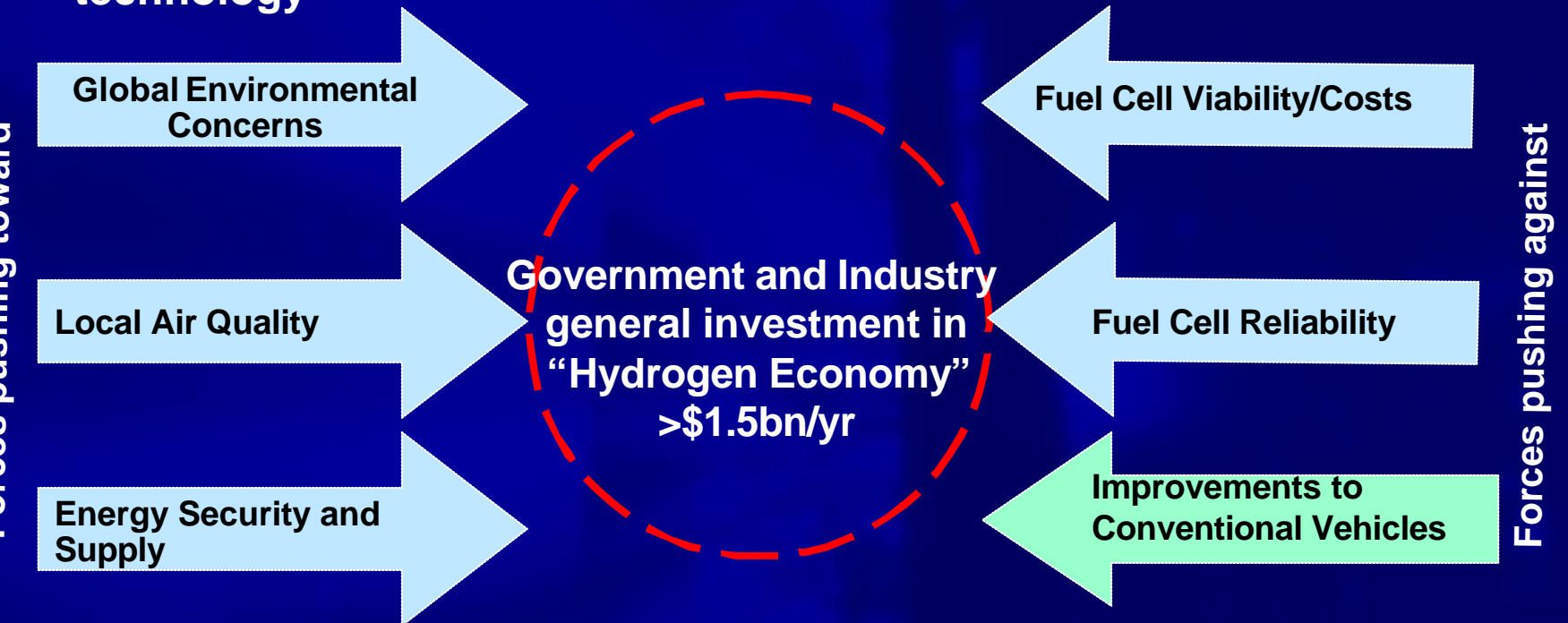
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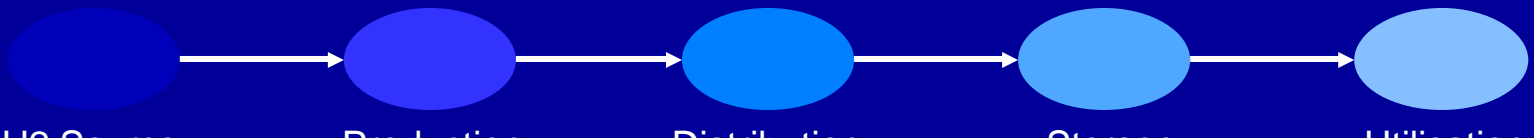
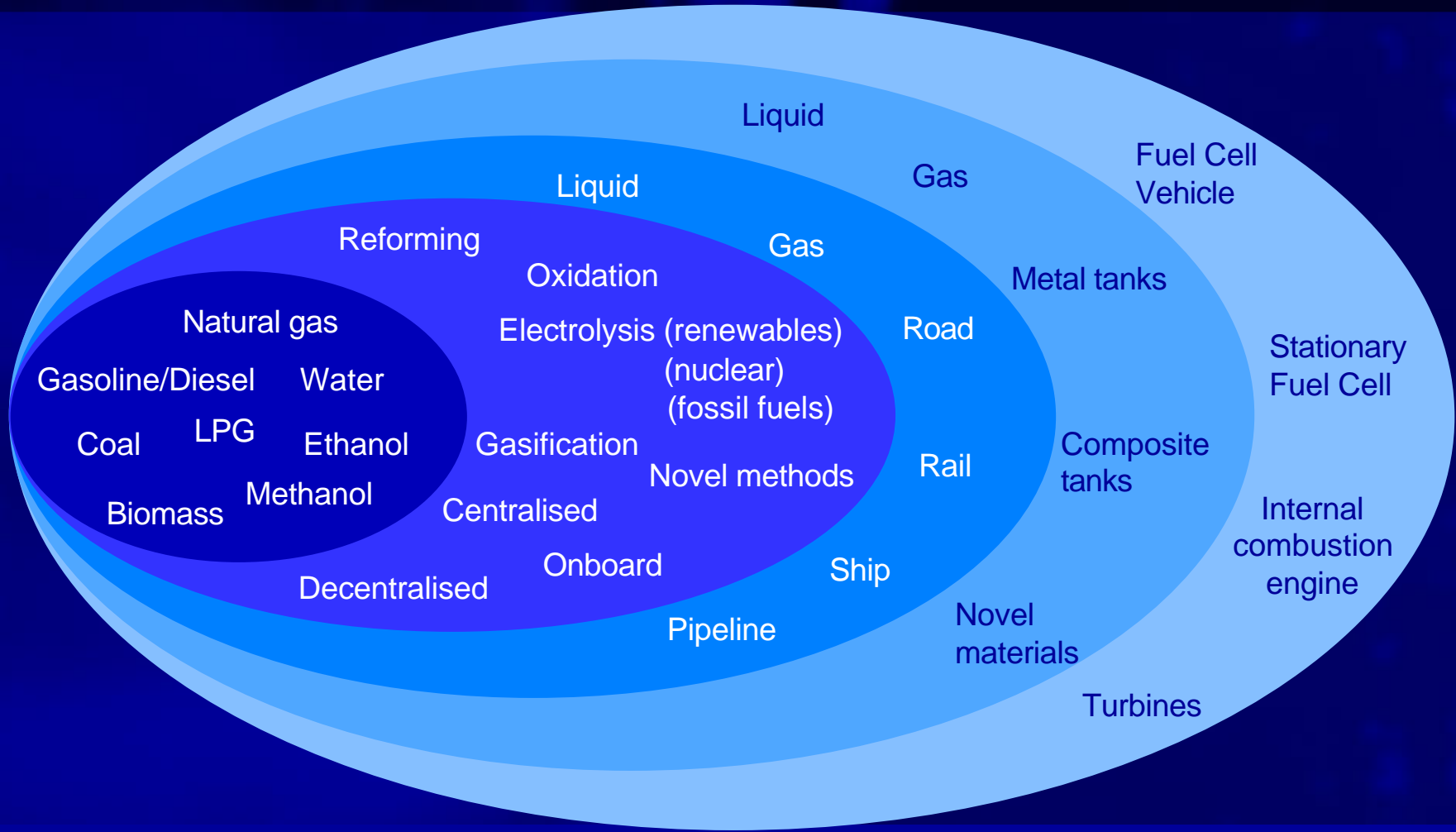
Will there be a Hydrogen Economy?

- The “Hydrogen Economy” based on hydrogen produced from renewable energy is not yet economic.
- A long transition based on hydrogen from hydrocarbons is likely
- Cost/technical hurdles to overcome to allow mass adoption of fuel cell technology



Despite increased momentum the timing to a Hydrogen Economy is uncertain.

Defining the paths to hydrogen economy



BP produces and uses over 5000 tonnes per day of hydrogen worldwide



 Hydrogen production locations

What conditions are needed to make the necessary investment?

- **Technology is in place to meet the demand.**
 - Reduction in capital cost of infrastructure
 - Higher H2 market prices?
 - Hydrogen storage?
- **Lower station density.**
 - Change customer acceptance of station coverage?
 - Higher hydrogen loading per station.
- **Automakers have committed to production of vehicles.**
 - What will make us want to buy hydrogen fuelled cars?
- **Public policy changes.**
 - Government action likely to overcome high infrastructure barriers.

The role of Government

- **Educating the public on the use and benefits of hydrogen,**
- **Updated codes and standards to allow hydrogen to be dispensed alongside conventional fuels.**
- **Fundamental research into distributed hydrogen production and storage.**
- **Demonstration projects are key to building real life experience.**
- **Public policy changes?**
 - **Favourable taxation on fuels and vehicles.**
 - **Government action to overcome high infrastructure barriers.**

BP's Hydrogen Activities



Three stage process



CaFCP

BP CUTE H₂ station Barcelona



BP Connect



Current status of hydrogen refuelling:

- Expensive
- Limited Hydrogen storage
- Limited availability
- Too large space requirements

Meeting our customers needs:

- Fuel at competitive prices
- Confidence about safety
- Easy and efficient refuelling
- Fuel widely available
- Safe and economic hydrogen storage