

The role of Carbon Capture and Storage in a Lower Carbon World



bp

Lower Carbon Growth Strategy - Options

Past Compliance model

Regulations determine 'acceptability' of risks,
Our performance judged by regulators view of compliance,
Industry focused upon cost and pace of new regulations,
Managed as a License to Operate issue,



Current Reputation model

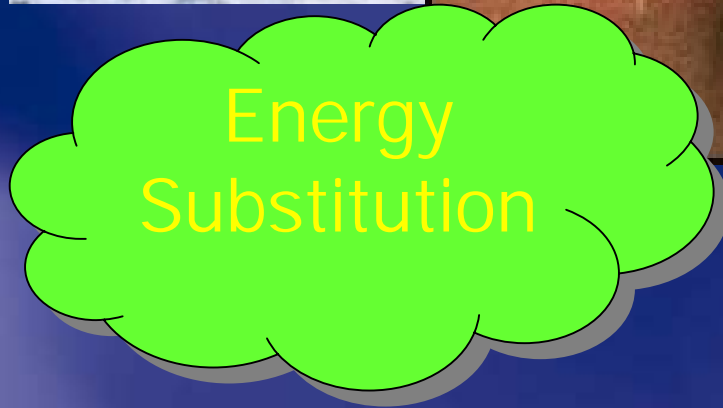
'Acceptability' of risk set by our own expectations,
Responsible care determined by opinion formers,
Our focus is upon investing in our Corporate Reputation,
Success recognised by governments, NGOs and suppliers.

Future Customer model

BP fuels our customers economic and social growth, while allowing them to invest in their own environment through us,
Our offer is to help Customers manage their environmental impact,
The environment becomes an integral part of individual customer transaction,



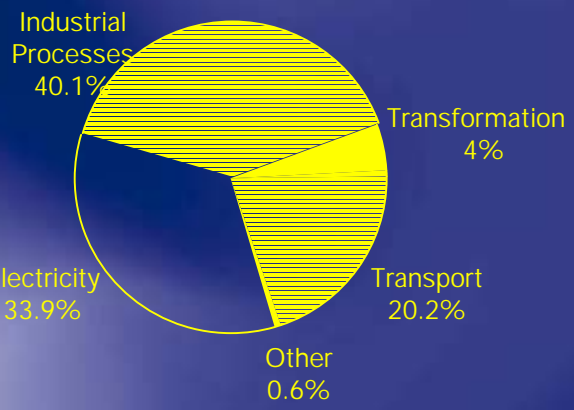
Key Strategic Issue – Resource Productivity



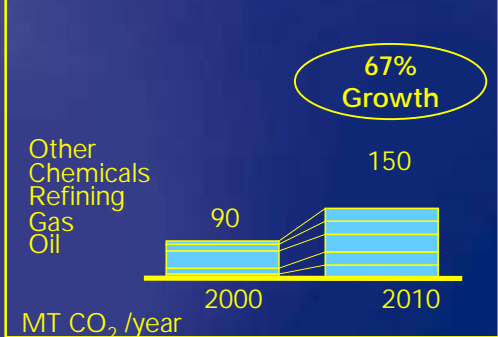


Changing our Climate

World CO2 Emissions 23,900 MT CO₂/year



BP CO₂ emissions - business as usual

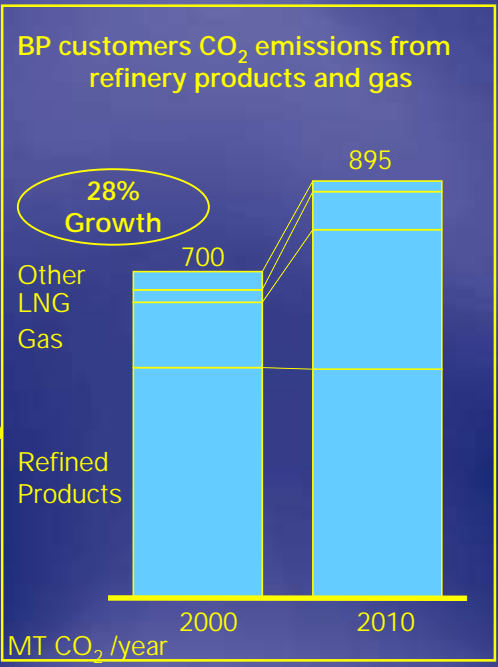


BP - Actions to reduce emissions

- Upper quartile energy efficiency/new technology
- Eliminate non emergency flaring
- Eliminate Methane venting
- Reduce GHG emissions by 40%
- Provide clean fuel options
- Potential sequestration options

Boundary shift drives significantly higher growth for BP

- Increased LNG production
- Increased electricity production
- Cleaner transport fuels



Activities to reduce customer emissions

- C&I energy efficiency services
- Move to more efficient vehicles
- Support improved domestic energy efficiency
- Move to lower carbon energy
- Support carbon capture
- Provide an increasing 'green' electricity option through Green Mountain, Solar, Wind



BP's Promises and Stakeholder Expectations

Annual growth in production

Oil 4–5%

Gas 8–10%

Chemicals 8–10%

Sustainable, double digit EPS growth

10% decrease on 1990 CO₂ emission levels by 2010

\$500m over 3 years on renewables investments

Green as an important brand value

No harm to the environment

Mean global GDP growth 2000 - 2010 = 3.0%pa.

Mean growth in primary energy demand: Coal 2.0 %pa., Oil 2.0 %pa, Gas 2.8 %pa.



What has BP done to reduce Emissions?

- > Established rigorous base lines of GHG emissions
- > Improving our energy efficiency
- > Improving our energy management processes
- > Reducing flaring and venting in our operations
- > Operating a CO₂ permit trading program
- > Identifying positive uses for CO₂ such as in EOR and Coal bed methane production
- > Established networks across the Company to enable sharing of best practice and accelerate time to implement

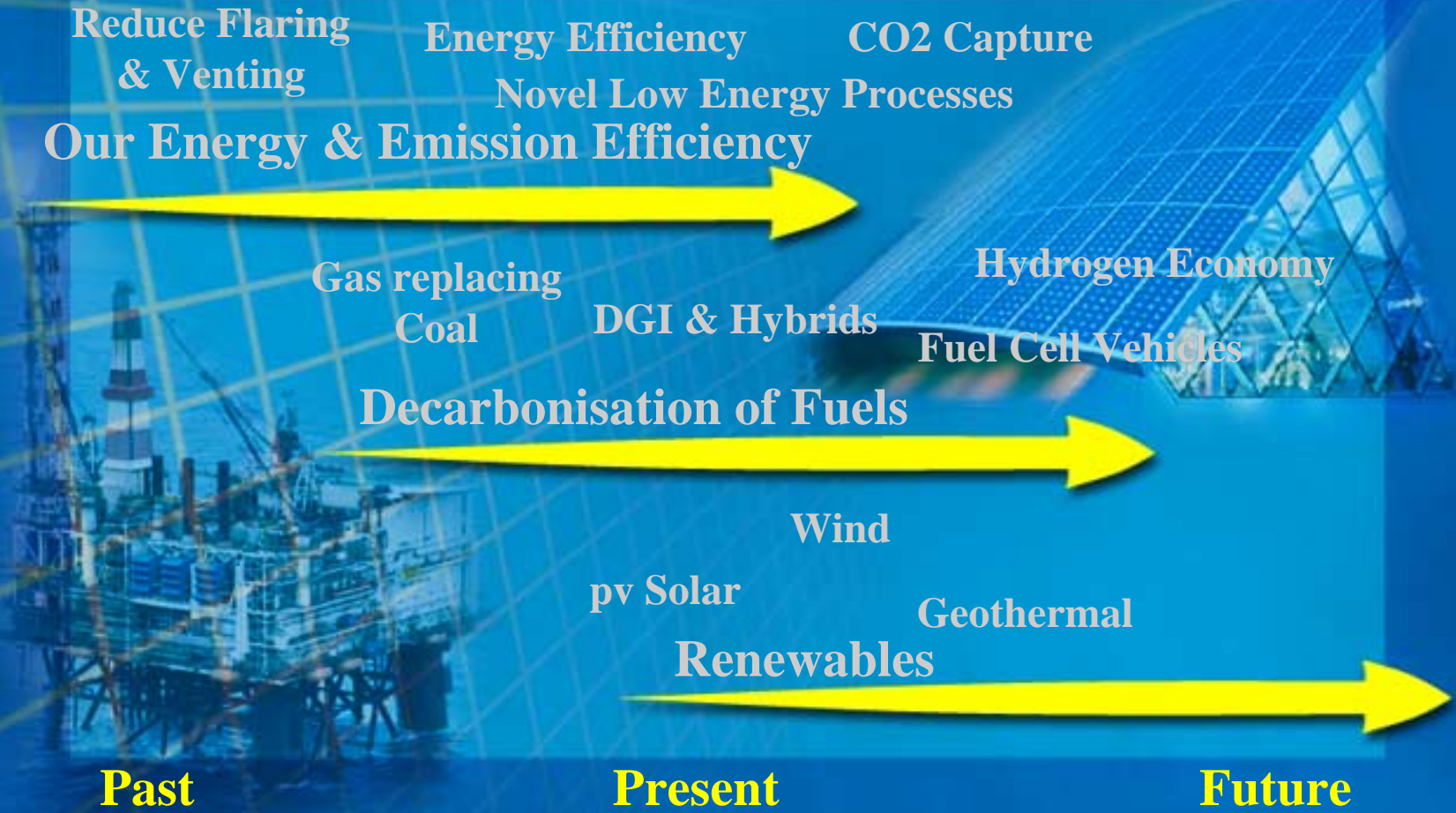


What else BP is doing to reduce Emissions?

- > Participating in an International JIP aimed at developing new technology to substantially reduce the cost of CO₂ capture and geologic storage
- > Established R&D programs strongly focused on technology.
- > Participating in a partnership with Princeton University and Ford Motor Company, to understand the basic science and engage in fundamental research and understanding
- > Developing our Solar renewable energy business
- > Working with auto manufacturers on Hydrogen Fuel Cells

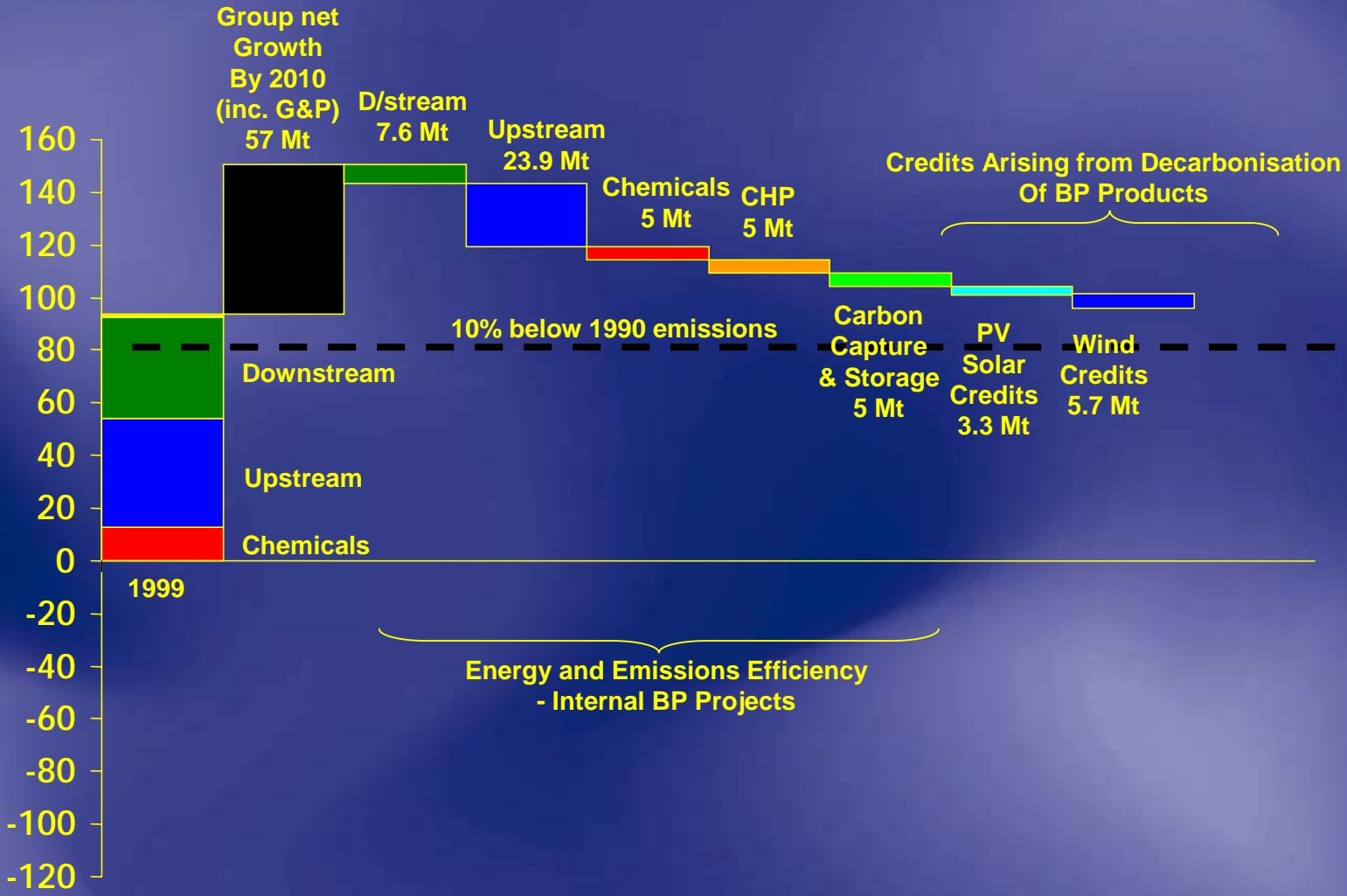


Lower Carbon Energy



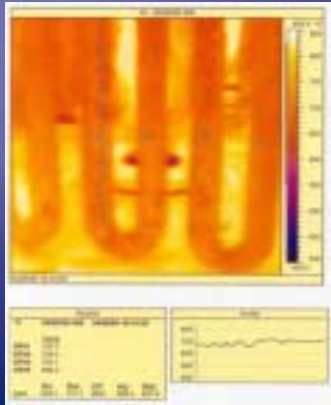
BP Internal Energy and Emission Efficiency

Examples for purpose of illustration



CO₂ Reduction through Energy Efficiency

Reduction



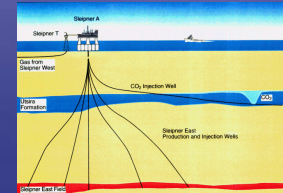
- Energy Saving
- Reducing Flaring
- Operating Efficiencies

Separation

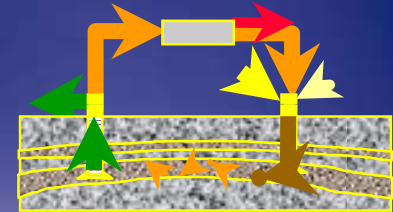


- Flue Gases
- Produced Gas
- Oxy Fuel
- Decarbonisation

Storage



Utilization



CO₂ trapped

- EOR
- EGR
- Chemicals

Our Energy and Emission Efficiency - examples

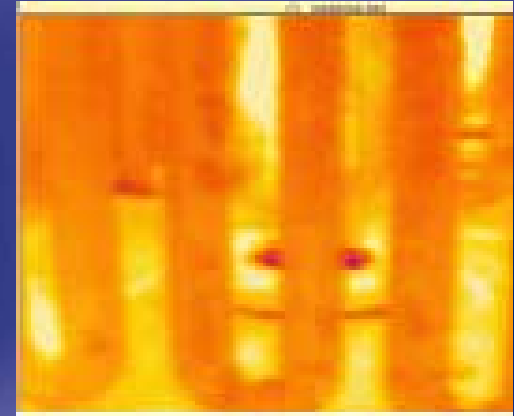


Pompano (GoM)

- CO₂ reduction of 8,000 t/yr
- Fuel cost savings of \$265k
- Cost saving of \$400k per engine

Grangemouth

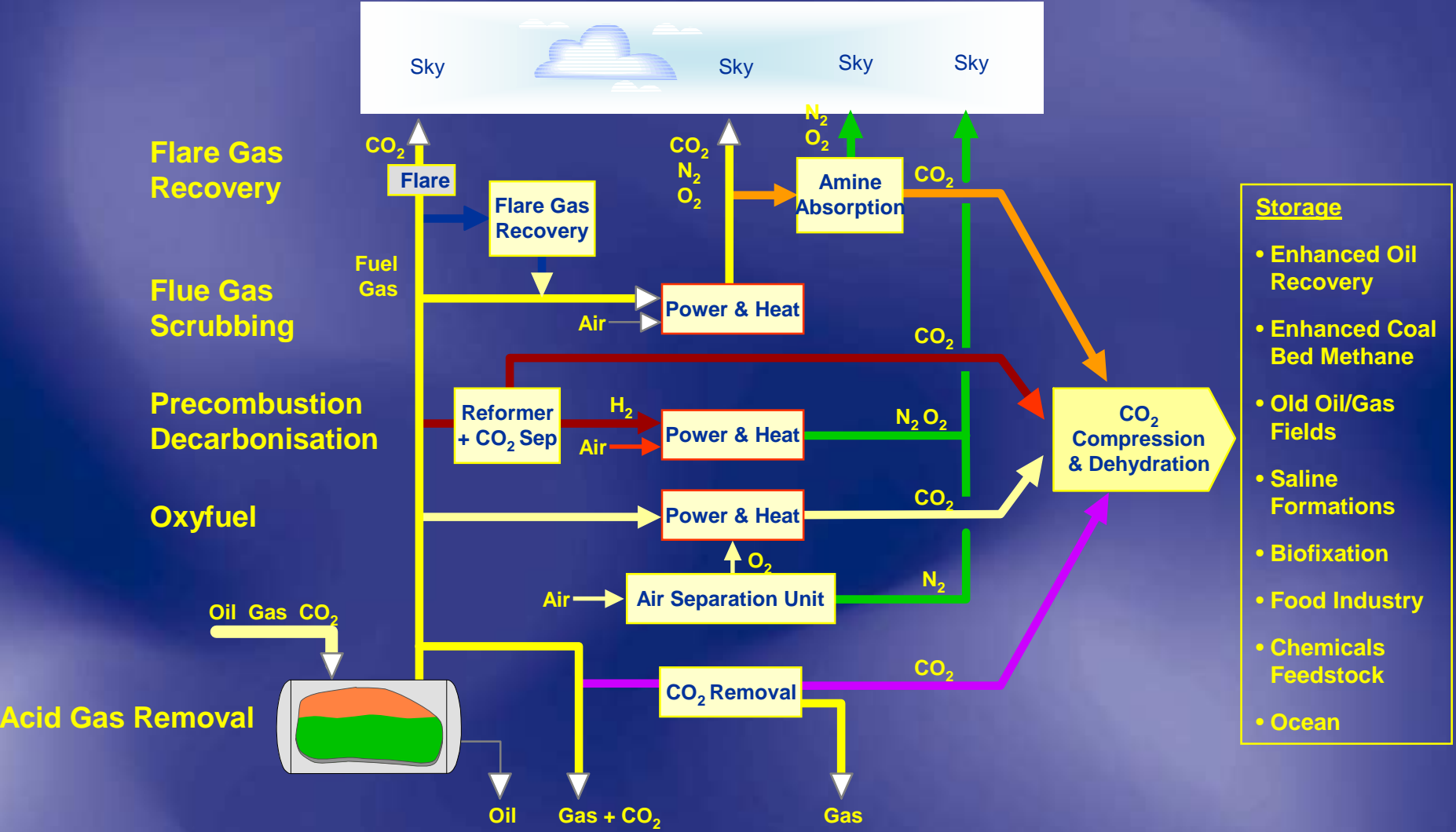
- Saving of \$300k per year
- Reduction of 8,000 tonnes of CO₂
- Equivalent to an 8% saving in fuel fired



Western Gas, New Mexico

- 0.5Mt/year of CO₂ equ emissions saved
- 8% Business Unit emissions saved
- Additional 18M scfpd of gas being sold

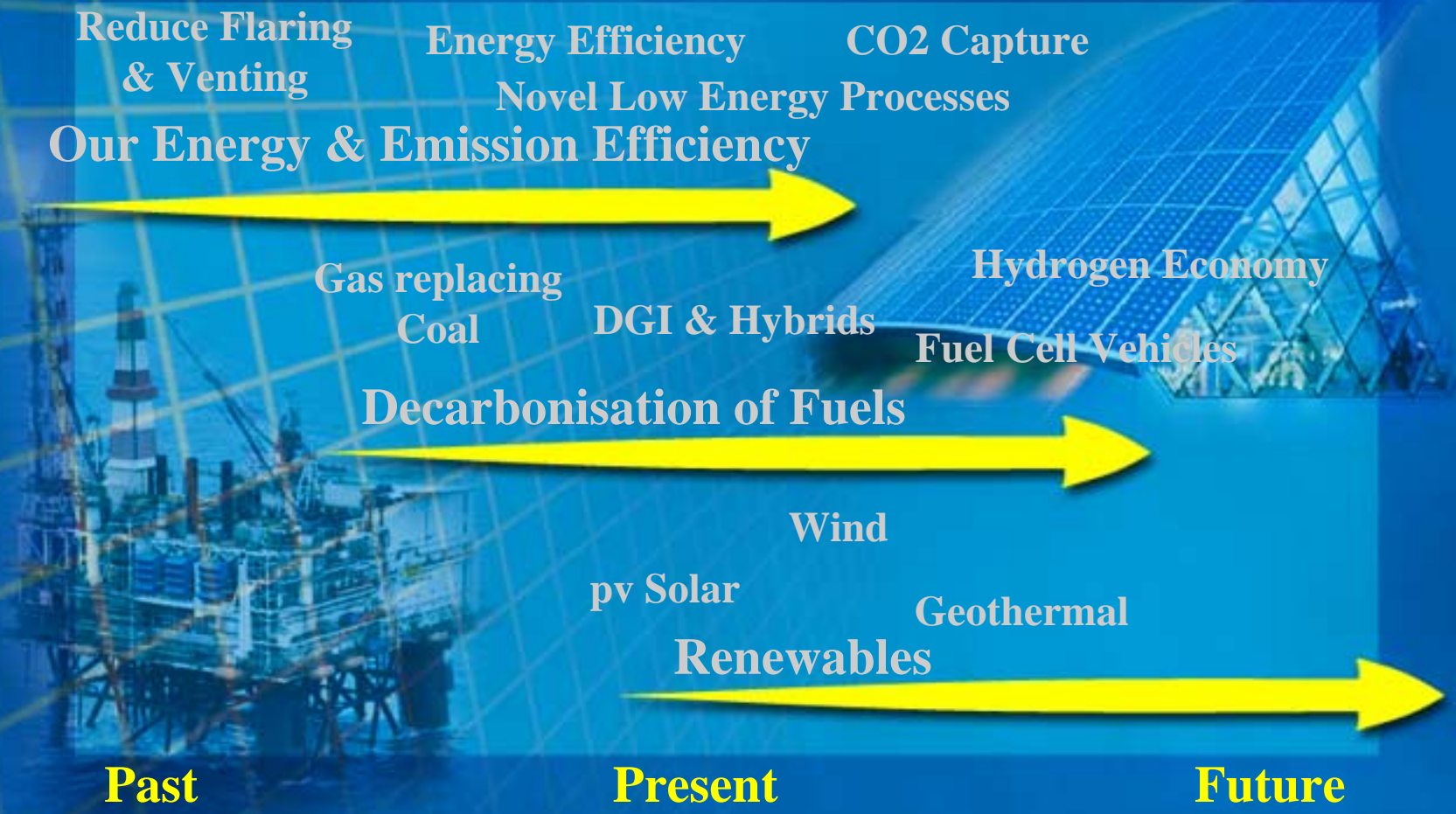
CO₂ Separation Options



- Storage**
- Enhanced Oil Recovery
 - Enhanced Coal Bed Methane
 - Old Oil/Gas Fields
 - Saline Formations
 - Biofixation
 - Food Industry
 - Chemicals Feedstock
 - Ocean



Lower Carbon Energy

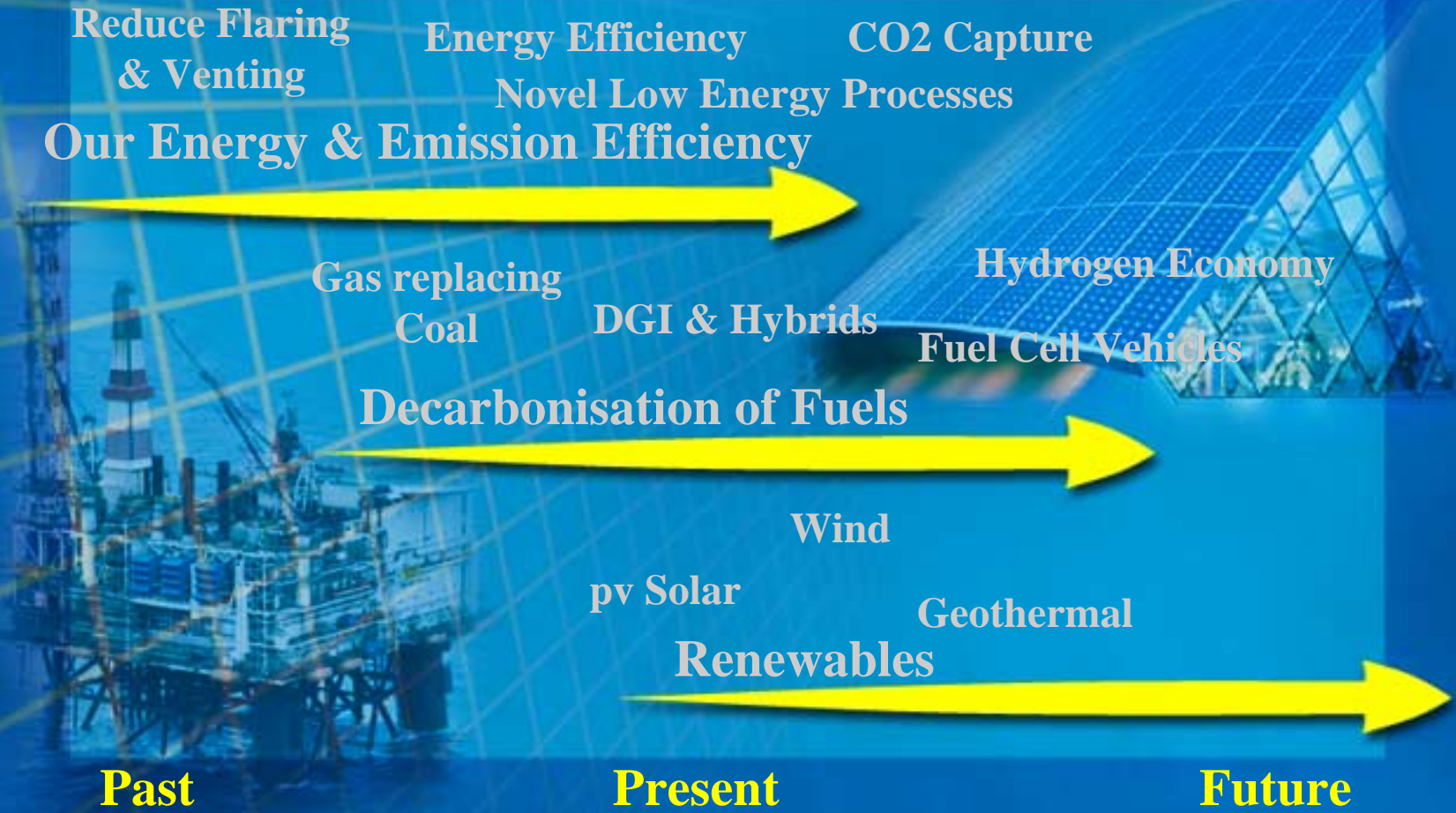


Decarbonisation of Fuels – example

Hydrogen for FC Vehicles



Lower Carbon Energy



Renewables - example



Conclusion:

Hydrocarbon production will grow to fuel economic and social progress in the developed and developing world.

There is sufficient evidence of the connection between mans activities and climate change that prudent actions on GHG are necessary.

There is no single answer – and Carbon Capture and Storage has a critical role, particularly during the first half of the 21st Century.

