



# **Low Carbon Future Fuels – Delivering on the Fuels Quality Directive**

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# The Fuel Quality Directive

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## Current inclusions

- Mandatory target of 6% CO<sub>2</sub> reduction by 2020
- Non-mandated additional 4%
- Via bio-fuel and refinery related CO<sub>2</sub> measures such as efficiency

## Timeline

- EU Commission interpretive guidance end-2010



# The Energy Challenge

## Three hard truths

### 1. Energy growth

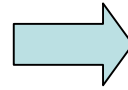
From 6.7 billion people today to ~9 billion mid century using twice as much energy

### 2. Supply challenges

The world is finding itself forced to tap less conventional sources of oil – like oil sands and oil shale – that require even more technology, energy, money and patience

### 3. More CO<sub>2</sub>

More energy use means more CO<sub>2</sub> emissions – at a time when the climate can ill-afford it.



## Three key requirements

### 1. Cheap

Competitive with fossil hydrocarbon

### 2. Clean

Less greenhouse gas emissions

### 3. Convenient

Easy to use and readily available



# Scope for harmonisation

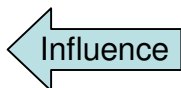
## UK

### Energy Act, 2004



- Renewable Transport Fuels Obligation (RTFO)
- Targets 2.5% by volume 2008/9 increasing to 5.0% volume by 2010/11

### Road Transport Fuel Fuel Obligation, 2009



- Commenced 15th April 2008 - 'Gallagher' review reported June 2008
- Targets revised to 3.5% by volume by 2010/11 & 5.0% by 2013/14

## EU

### Biofuels Directive, 2003

- Indicative target of 5.75% by energy (~7.5% by volume) by 2010

### Renewable Energy Directive, 2008



- Target 10% by energy (~13% volume) by 2020, with review 2014.

### Fuel Quality Directive, 2008/9

- Target 6% CO2 reduction by 2020, plus non-mandated additional 4%.
- EU Commission interpretive guidance end-2010

## US

### Energy Independence & security Act, 2007

- Increased volume of renewable fuel (36bn G)

### California AB32 and LCFS, 2006/7

- Carbon caps and supply chain quantification by Mega-Joule

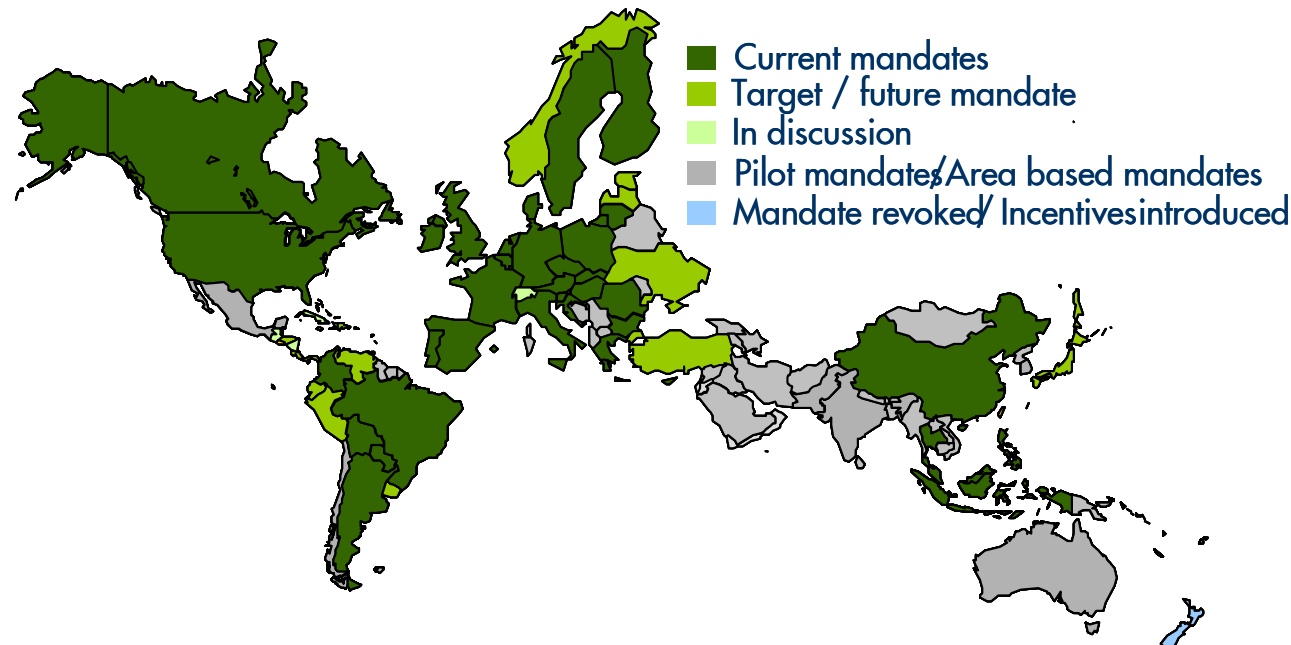
### Clean Energy & Security Act, 2009

- Renewable energy, CCS, fuel and vehicle measures, and energy efficiency.



# Shell is compliant

- More than 40 countries have or are considering renewable fuels mandates
- Shell now markets fuel that contains bio-components in many markets, including the USA, Brazil, Germany, France, Netherlands, UK, Sweden, Italy, Thailand, the Philippines and Australia
- In the UK, Shell:
  - met the UK biofuel volume obligation in the last period, 15 April 2008 to 14 January 2009
  - exceeded the target of 40% biofuel GHG savings in this period
  - exceeded the target of 50% of data reporting of renewable characteristics of the fuel
  - delivered performance on sustainability (83%) reflecting commitment to accurate reporting
  - reported on the previous land use for 79% of the fuel supplied.



# Key policy principles

1. Reduce significantly WtW CO<sub>2</sub>e production per unit of distance travelled.

2. Reward better GHG performance

3. Protect social and environmental needs

- Reward GHG performance of fuel – by having financial return that reflects the higher cost of production, and accurate pathway assessments that reflect the true lifecycle emissions
- Protect social and environmental needs – e.g. internationally agreed sustainability standards for biofuels
- Stimulate action by energy and auto companies – by having integrated policies targeting lowest-cost solutions, such as energy efficiency
- Flexible, performance based standards – setting the required standard and letting innovation drive the solution
- Influence driver behaviour and mobility choices – demand pull and consumer behaviour need to be stimulated
- Regulatory certainty, consistency and alignment across borders – longer planning horizon and cross-border trade
- Challenging but achievable goals – reflecting key trade-offs with sustainability and economics
- Stimulating technology in all main phases – Discover, Develop, Demonstrate, Deploy



# Shell investment in sustainability

- **Renewable and sustainable energy development**

The world's largest bio-fuel distributor  
Next generation technologies  
Developing CCS and Hydrogen

- **Internal Governance**

Rules and practices to help assess risks in biofuels supply chain, implement controls, monitor compliance and report our progress

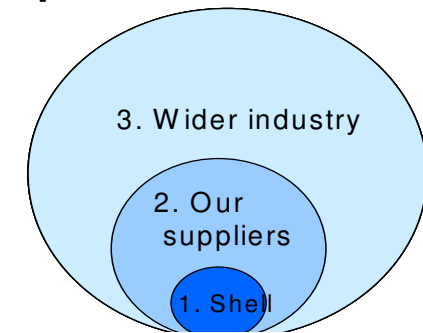
- **Our suppliers**

Sustainability clauses into new and renewed contracts

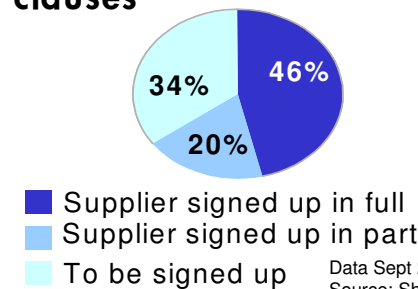
- **Wider industry**

Encouraging sustainability standards in the biofuels supply chain

## Our approach and sphere of influence



## Volume of biofuel components covered by Shell sustainability clauses



Data Sept 2008.  
Source: Shell internal records



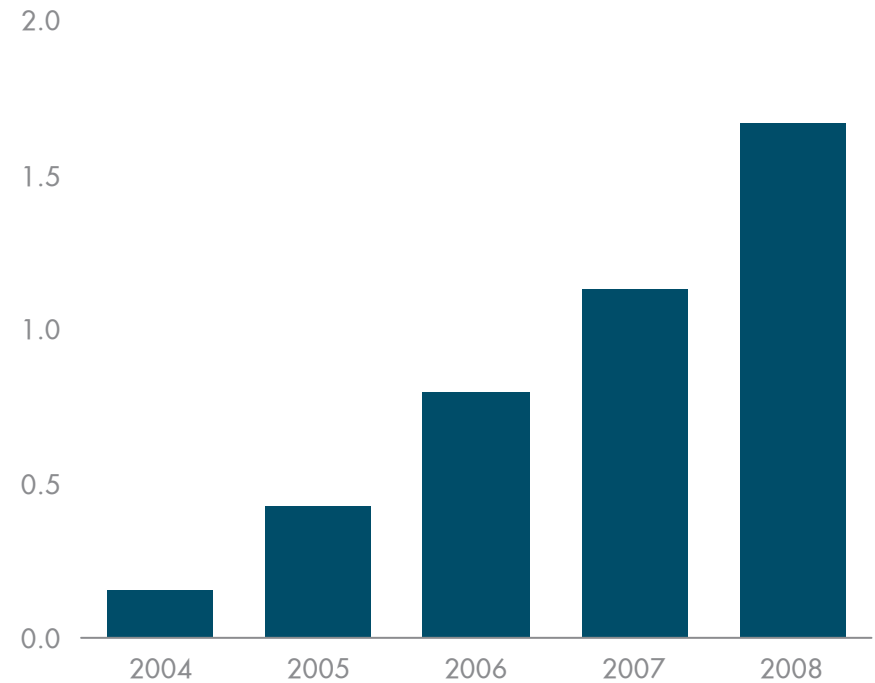
# Shell is investing heavily in Alternative Energy & CO<sub>2</sub>

## Biofuels Research



## Alternative Energy and CO<sub>2</sub>

Cumulative spend - \$ Bln



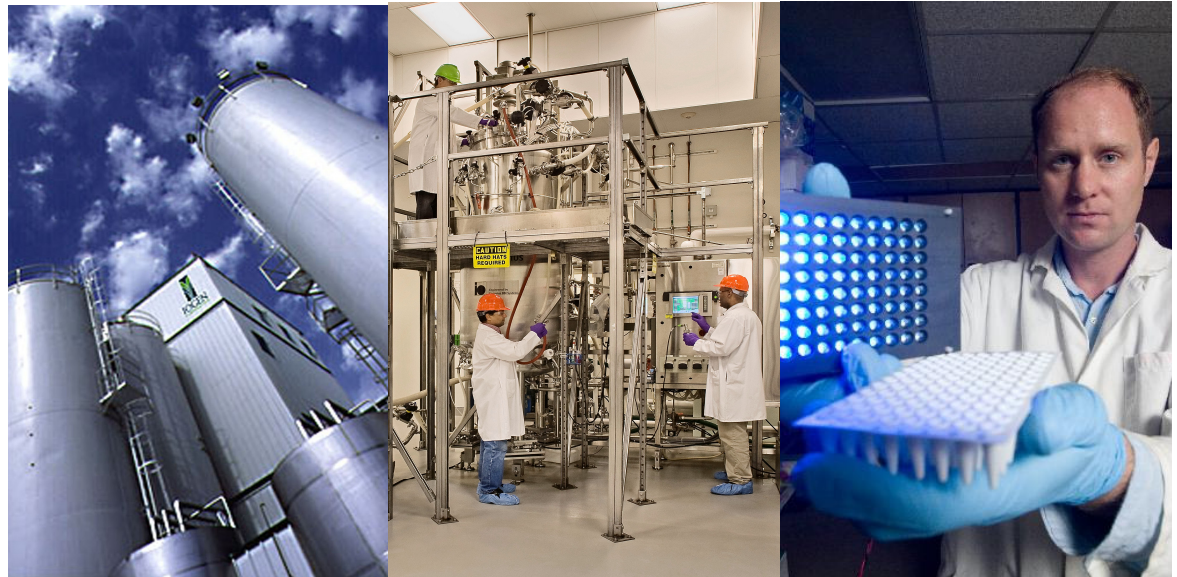
## Refocusing the Shell portfolio

- Increasing priority on Biofuels
- CCS technologies and Hydrogen
- No new Wind and Solar



# Shell investment in advanced biofuels pathways

**Cellulosic Ethanol**  
**Optimised Enzymes**  
**Biomass-to-Liquid**  
**Marine Algae**  
**Advanced Catalysts**



# Shell investment in Carbon Capture and Storage



*Shell is also a member of multiple CCS research partnerships.*

- Demonstration / research projects
- Industrial scale (>100 KTPA) projects under development



# Shell investment in Hydrogen

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**Reykjavik, Iceland**

**Washington DC, USA**

**Tokyo, Japan**

**New York, USA**

**Shanghai, China**

**West LA, USA**



# Conclusion

- **More energy, less CO<sub>2</sub>**
- **Consistent policy frameworks internationally**
  - to minimise cost and allow trade
- **Linking economic reward to lower greenhouse gases**
  - to cover increased cost and encourage innovation
- **Sustainability requirements built-in**
  - to protect the planet and provide a level playing field for competition

