BP Biofuels

achieving better, more sustainable biofuels, sooner

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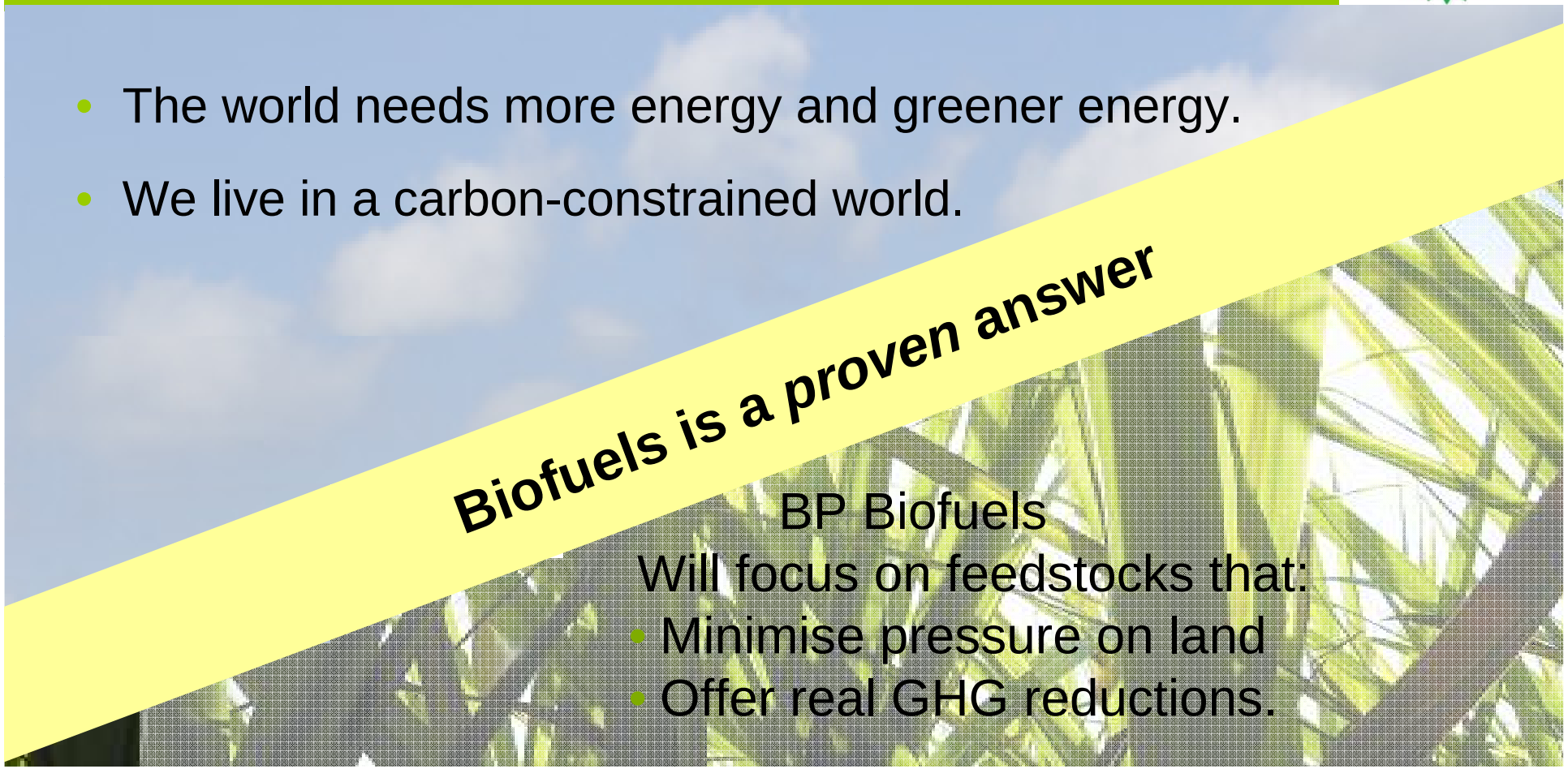
June 24th, 2009

Biofuels: a problem solver



- The world needs more energy and greener energy.
- We live in a carbon-constrained world.

Biofuels is a proven answer

BP Biofuels
Will focus on feedstocks that:

- Minimise pressure on land
- Offer real GHG reductions.

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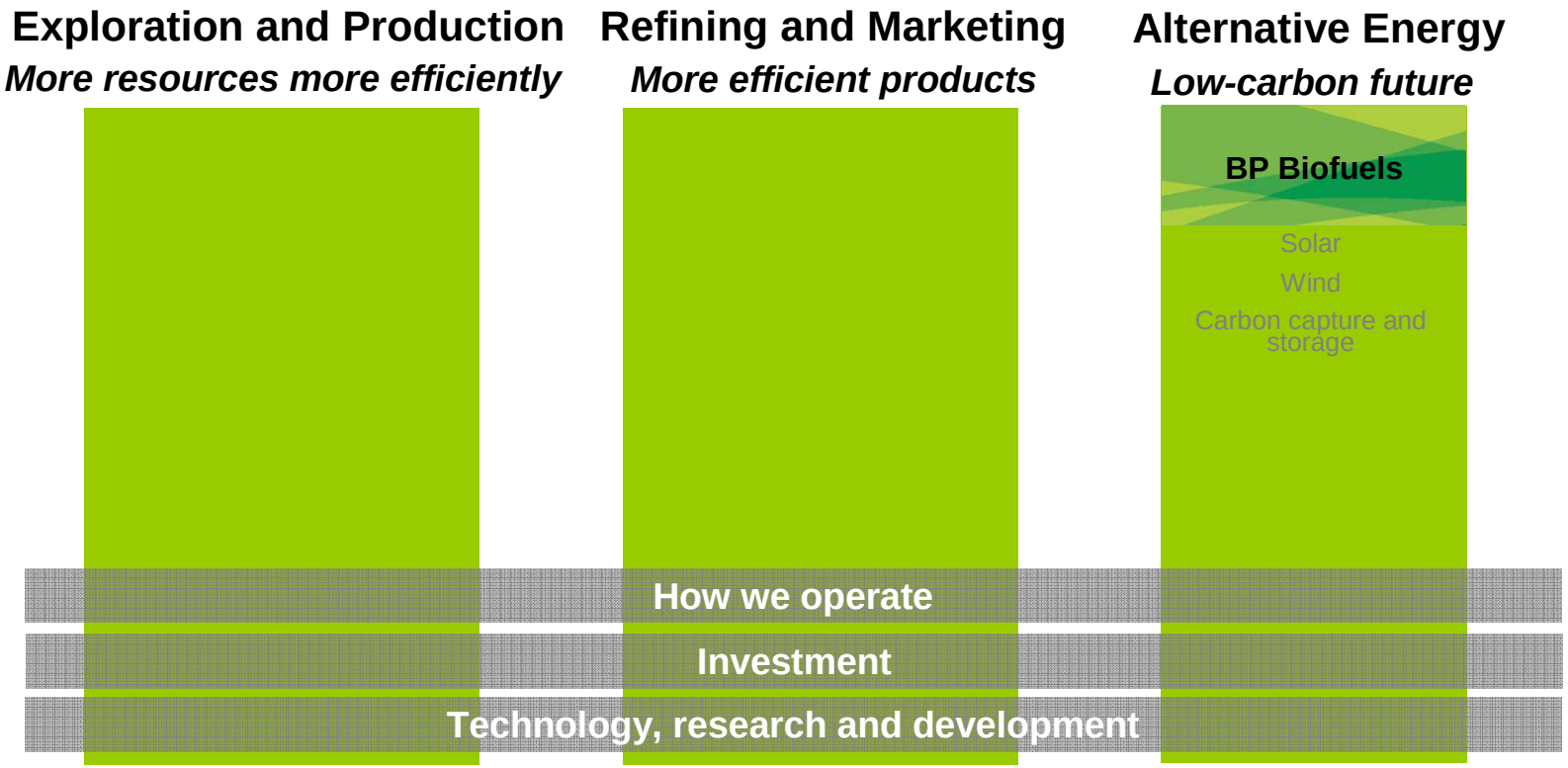
BP: who we are and why we have a biofuels business



- BP is a global business, with significant investment resources and technology expertise

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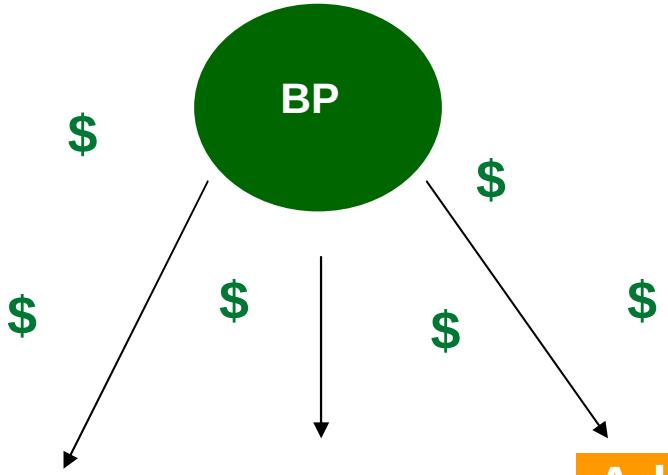
BP Biofuels: a focused strategy



Focusing on feedstocks that:

- Minimise pressure on land.
- Offer real GHG reductions.

Non-food feedstocks

Advanced technology (lignocellulosics)

Making ethanol better

Bridge to the future (biobutanol)

Sugarcane ethanol (Brazil)

- Biofuels done well today play an important role in getting to better biofuels tomorrow.

BP biofuels business milestones

- 2004 biofuels partnership with DuPont formed
- 2006 bp biofuels formed and public announcement of bio-butanol as first product of bp-DuPont partnership
- July 2008: Tropical joint venture announced in Brazil.
- August 2008: Verenium JV research agreement announced
- Feb 2009: Verenium's demonstration plant produces 1st US LC ethanol.
- March 2009: Highlands, Florida LC ethanol plant announced.
- April 2009: Vercipia LLC joint venture formed to progress LC commercialisation
- May 2009 Butanol UK pilot plant under construction

BP Biofuels: sugarcane ethanol

Tropical BioEnergia S.A. JV (BP 50%)

$1 billion investment.

2 ethanol refineries,
each with capacity of 435 million litres per year.

- Feedstock: locally grown sugarcane.
- GHGs: reduction of up to 90%.
- Power: waste product (bagasse) used to generate power - each refinery to export at least 30 MW surplus power to the grid.

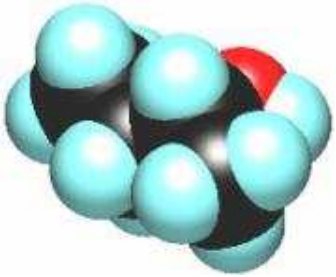
- Gets BP into the game – and at scale – quickly.

BP Biofuels: a bridge to the future - developing a better biofuel

Biobutanol $C_4H_{10}O$

Addresses 2 key challenges of corn ethanol:

- Power
- Infrastructure



A software change. Not a hardware change.

Can be used with cellulosic feedstocks as well as current generation.

A better biofuel

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BP Biofuels: advanced technology - cellulosic ethanol

- Strategic focus:
  - Biochemical conversion
  - Dedicated energy crops
- Energy Biosciences Institute
  - $500 million investment
  - Advanced and cellulosic biofuels
  - Social and environmental impacts
- Strategic partnership in the US - Verenium
  - $135m investment by BP:
    - $90m for research to accelerate development and commercialisation of cellulosic ethanol in US market.
    - $45 m toward construction of first commercial facility in Florida. 2012 estimated start date
  - Verenium: The leaders in this area. Have advanced technology for transforming energy grasses and cane (lignocellulose) into biofuels. They know how to deliver this technology.

- BP: Putting the pieces together to create a new industry

A more economical, and sustainable, biofuel.

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What are key drivers for Sustainable Biofuels Investment?

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Policy – Set Sustainability Guard Rails

Demand Side Policies

- RFS
- Blenders Credit
- CA LCFS

Supply Side Policies

- Production Incentives
- Investment Support Programs
- Feedstock Development

1. Goal of these policies was to de-risk investing in biofuels.
2. Policies should define and support a definition of sustainability consistently for investment certainty
3. Mechanisms to accommodate evolving definition without risk to investor

Business Fundamentals – Value Proposition for sustainable biofuels

Risk Reduction

- Sustainable access to necessary resources (Water, Soil, Labor)
- Reputational - Could lose policy support

Cost Efficiencies

- Brazil
  - Low cost producer
  - 30 years of cost driven efficiency yield environmental benefits

Targets for Emerging Industry facilitate sustainability value proposition

- As the advanced biofuels industry matures innovation will drive continuous improvement in sustainability performance.
- Successful policies will set performance levels that accommodates the technical challenges associated with an emerging industry
- Set performance level early and ensure sufficient time for industry to develop low cost methods to achieve performance level.

Biofuels done well can contribute to

energy security

- 2007: 1 million barrels/day displaced
- 2020: 2.4 million barrels/day displaced

(BP estimates)

GHG reductions

- Up to 90% using Cellulosic and/or Brazilian sugarcane ethanol

rural development

- Employment
- Infrastructure
- Increasing prosperity of rural communities

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