

US C&EA & GEP

Global Environmental Products (GEP)

October 2016



Themes from September Board meeting:

1. Regulation accelerates fossil fuel demand erosion and emergence of disruptive technologies
2. Current 'planned' commitments/regulation not sufficient to meet 2°C stabilisation target, cyclical tightening each five years
3. Renewables (without subsidy) already cheapest new capacity on planet, appetite for significant growth in this space, incl through investment, but through diverse set of business models
4. Desire to offer strategic country partners packages of low carbon energy solutions

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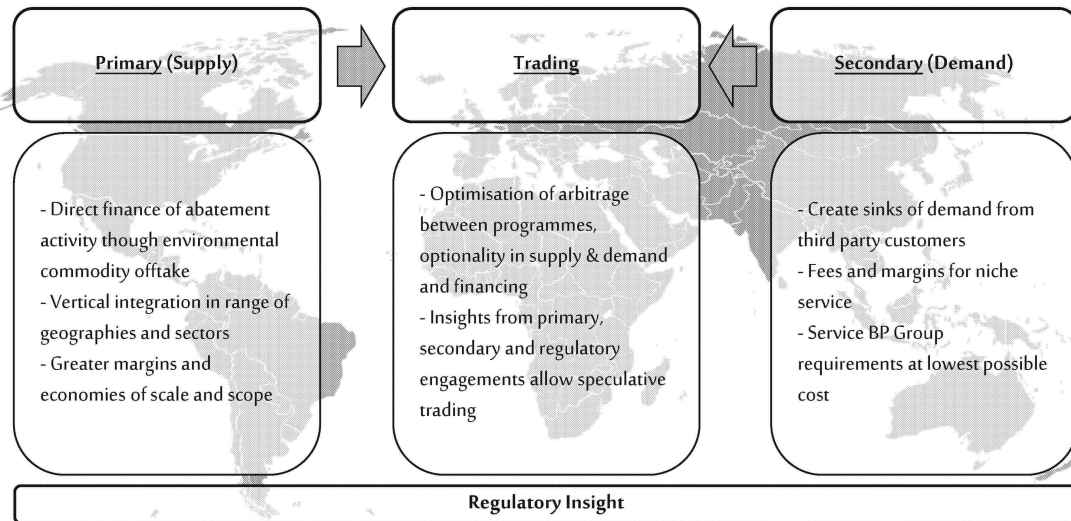
IST GEP Strategic Themes



IST Global Environmental Products' strategy to support the growth of Clean Energy within BP can be categorised into three main themes:

1. **Growth:** use existing, advantaged commodity value chains in liberalised markets to organically grow clean energy related margins to \$0.5bn+
2. **Mitigation:** engage regulators to allow investment in lower cost emissions reductions outside the energy sector, such as forestry and refrigerants, to alleviate burden on O&G industry
3. **Strategic Partnership:** select countries from BP's strategic relationship pool which have emerging clean energy policy and projects, supporting advantaged position for both GEP and wider BP Group

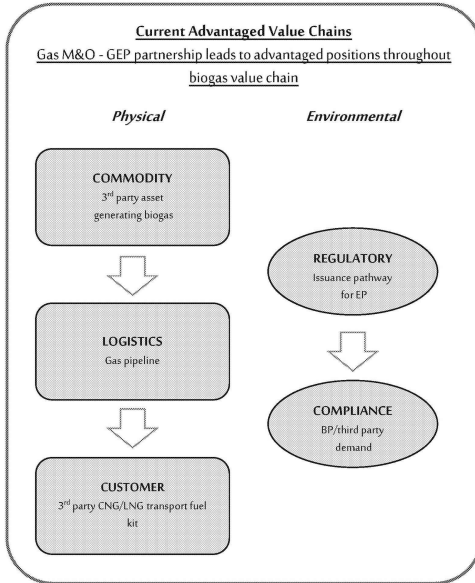




Vertical Growth & Optimisation Model



Targeting of advantaged physical and environmental coupled value chain through Gas M&O and GEP partnership establishes material business line with scope for steady state growth and further breakout growth with greater use of debt/capex



- Current margin based model (sharing % of environmental value between BP, 3rd party Commodity producer and third party Customer end user) targets \$100m/yr GM contribution
- Optimisation:** model to transition from margins to optimisation & margins based return. Regulation is key.
- Increasing number of regulatory regimes present options for recognition of Commodity's green attributes:
- Biogas molecule can flow to transport fuel kits in California, Washington, Alberta etc, to benefit from different transport fuel pricing regimes
- Potential for biogas molecule to generate power and benefit under CA CaT or CPP Clean Energy Incentive Program (CEIP)
- Cross border flows between US, Canada and Mexico
- Vertical Growth:** scope for IST to access Commodity or Customer margin share, increasing GM/yr by \$100m+
- Development/direct financing of biogas generating projects with ability to sell off operational assets with IST offtake secured
- Partnership/acquisition/build of CNG/LNG retail stations

What is the size of a vertical?



Front Office Estimate of Biogas Portfolio Growth

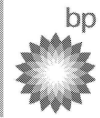
	2016	2017	2018	2019	2020
RINs (\$ 000)	23	60	80	95	110
LCFS (\$ 000)	12	19	23	25	27
TOTAL (\$ 000)	35	79	103	120	137

Assumptions

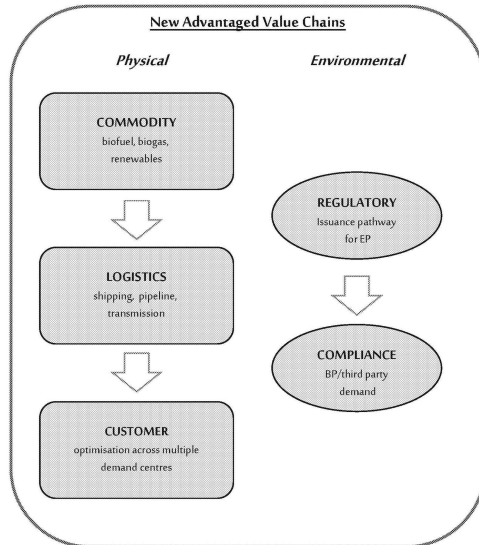
RIN (\$)	2.10
LCFS (\$)	100.00

- **Price uncertainty:** assumes D3 RIN at \$2.10 and LCFS at \$100
- **Group hedge:** gives natural portfolio to compliment refining position in terms of regulatory outcome and market price
- **Competitive advantage:** provides BP with material competitive advantage over peers in O&G industry at scale of refinery margins
- **Scope for further growth:** incremental to BAU GM above, vertical growth and optimisation value have potential to double scale of business

Horizontal Growth across liberalised markets



In liberalised markets add a renewable component to existing, advantaged BP commodity value chains, initially without need to own assets, but with option to scale margins to \$0.5bn+ through vertical growth into assets or horizontal growth across new emerging markets.



- **Horizontal:** margin & optimisation model can be replicated with increasing regulation in other physical commodity areas, each with potential for scale of GM as biogas, as well as option for vertical growth.
- Increasing number of regulatory regimes present opportunity to replicate Gas M&O and GEP partnership:
 - US renewable energy and the Clean Power Plan (CPP)
 - Biofuels, renewable diesel/jet and RFS/LCFS-like programs
 - Australian renewable energy and the Renewable Energy Target (RET)
 - European biogas and renewable energy and the renewed Renewable Energy Directive (RED)
- Major risk throughout is exposure to withdrawal of regulatory support

What does that mean practically?



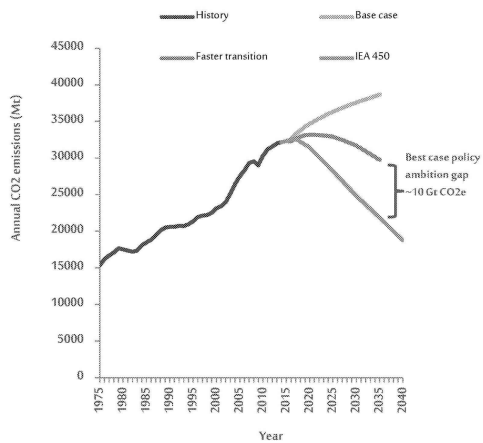
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Mitigation of Cost/Demand Erosion



Disproportionate focus on energy sector to deliver emission reduction targets results in high cost for BP compliance and associated erosion of consumer demand.

Simultaneously sectors such as refrigerant management and forest conservation lack large balance sheet corporations for regulators to target to incentivise change.



- Energy sector is easiest to target for meeting emissions reduction targets but can't close policy ambition gap alone
- Emissions reductions outside the energy sector will likely close gap at a lower cost to society than large scale elimination of fossil fuel emissions (e.g. CCS, EVs etc.)

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- IST can continue to scale up advantaged position, through financing carbon offsets/projects, in:
 - Forest conservation:** Reducing emissions through avoided deforestation and forest management
 - Refrigerant management:** improved recycling and destruction in refrigerant lifecycle reducing fugitive losses
- Combined advantage of \$50-100m/yr gross margin returns and reducing burden on O&G sector to meet targets
- Contingent on supporting policy frameworks

What does that mean practically?



- Single large scale strategic plays which support/enable regulations that create IST value, but also fundamentally mitigate pressure on energy sector and therefore slows demand erosion
 - 1. Green Climate Fund and Forest Carbon
 - Grant application to GCF
 - If successful, 2-4 transactions in each of Indonesia, Kenya and Suriname
 - Scope to replicate grant for additional countries
 - Potential need for GEP to manage incremental \$150m WC over 5 years
 - IG EGP for European biogas and renewable generation
 - 2. Global centre for recycling and destroying refrigerants
 - Work with regulator to create framework for unlocking management of global refrigerants and contribution to global carbon budget
 - If successful, early capture of value chain through investment in destruction and management facility. Unlikely to lead to transactions in 2017.
 - Targeting Albertan regulator
- Success based on working with regulator and therefore Group Policy, G&PA and central Strategy and Planning

Partnership in Strategic Regions



BP advantage in ability to implement large complex energy projects in challenging jurisdictions. Developing bundles of clean energy solutions, BP will seek to provide, gas, infrastructure, power and clean energy (potentially including trading mechanisms) in emerging countries where BP holds strategic host government relations

Example commitments made in Paris COP21

OMAN

- Committed to 2% reduction from current trajectory
- Focus on decreased flaring, increased renewables and refrigerant management

CHINA

- Peak CO2 emissions by 2030 & lower carbon intensity/GDP by 60% to 65% below 2005 levels
- National ETS commencing in 2017

TRINIDAD

- 30% reduction in business-as-usual CO2, CH4 and NOx from transport, power and industry by 2030
- Ambition to lead Caribbean ETS

INDIA

- Reduce GDP emissions intensity 35% by 2030 from 2005
- 40% non-fossil fuel based energy resources by 2030
- Additional forest carbon sink of 2.5-3 btCO2e by 2030

EGYPT

- Increased energy efficiency and renewables
- Upgrade of old fossil fuel plants and co-gen
- Introduction of carbon trading market

- At Paris COP21 **188 countries made commitments to reducing emissions**, with China through its G20 presidency targeting several \$tn of green financing being made available to meet these objectives
- Opportunity for **BP to identify select strategic partner countries** and support development of policies and projects to meet their Paris commitments.
- International investors have significant capital to deploy** to support these commitments, but are unable to manage risks in many of these countries
- BP is perceived as experienced operator with delivery track record in challenging jurisdictions**
- Multilateral Development Banks and Funds (MDB/Fs) (e.g. Green Climate Fund (GCF), African Development Bank (AfDB) etc.) are willing to **use donor money to underwrite risks** to support Paris commitments (e.g. providing guarantee for power offtake in large scale renewables projects)
- BP developed clean energy project opportunities, de-risking through MDB/Fs and **selling all or share of de-risked operational projects to international investors**