

**Issues Management Working Group
9 September 2016**

Pre-read

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Agenda Item 1: Context, Agenda, Minutes

Members of the Issues Management Working Group

IMWG agenda and pre-read for 9 September 2016

At the June meeting, we finalised the positions on marine spatial planning and sensitive and protected areas. These are available on Messagebank.

At this meeting, we will:

- Agree the revised positions on:
 - Innovation policy
 - Sustainable Development Goals (SDGs)
- Discuss and agree a new position on the electrification of transport.
- Discuss and agree a revision of our existing IMWG position on biofuels.
- Receive an overview of the Paris climate agreement Intended Nationally Determined Contributions (INDCs) for information.
- Review and agree the IMWG 2016 agenda and discuss proposals for the 2017 agenda.
- Discuss progress to date on IMWG process and suggestions for improvements.

I look forward to our discussions on 9 September.

Dev Sanyal

26 August 2016

BP p.l.c.
ISSUES MANAGEMENT WORKING GROUP MEETING
Friday 9 September 2016
SJS 4.53 Caspian 2.00-5.00pm, St James's Square London

AGENDA

14.00	1	Context	Dev Sanyal
		<ul style="list-style-type: none"> To confirm minutes from the June 2016 meeting and review actions* To confirm objectives for today's meeting To highlight key activities in current context 	
14.20	2	Innovation policy*	David Eyton
		<ul style="list-style-type: none"> To approve the draft final position To review audiences for this position 	
14.45	3	Sustainable development goals (SDGs)*	Kathrina Mannion
		<ul style="list-style-type: none"> To approve the draft final position To review audiences for this position 	
15.00	4	Electrification of transport*	Jon Platt
		<ul style="list-style-type: none"> To note current context and background To discuss and agree a position To review audiences for this position 	
15.45	5	Biofuels* (<i>position review</i>)	[James Primrose?]
		<ul style="list-style-type: none"> To note current context and changes since last review To discuss and agree the revised position To review audiences for this position 	
16.15	6	Paris climate agreement INDCs* (<i>information note</i>)	Kathrina Mannion
		<ul style="list-style-type: none"> To note a summary of the national Paris climate pledges To note a high level assessment of their business implications for BP 	
16.30	7	IMWG process*	Kathrina Mannion
		<ul style="list-style-type: none"> To note the proposed forward agenda for 2016 To discuss possible agenda items for 2017 To note feedback on IMWG process and suggestions for improvement 	
16.55	8	AOB and date of next meeting	Dev Sanyal

* Papers attached

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Issues Management Working Group

IMWG Meeting Notes – 9 June 2016

Caspian 4.53

14.00 – 17.00

Attendees: Dev Sanyal (chair), Richard Bridge, Dominic Emery, David Eyton, Peter Henshaw, Paul Jefferiss, Kathrina Mannion, Edlyn Moy, Eamonn Naughton, Jonathan Neal. By phone: Bob Stout, John Mingé

Guests Mark Frena (for Jon Platt)

Apologies: Emily Carey, Spencer Dale, Andy Hopwood, Peter Mather, Shiva McMahon, Jon Platt

Context

- IMWG is progressing well and it's helpful to look at more expansive issues e.g. innovation policy and SDGs.
- Communication of the positions including identifying the right audiences continues to be important.
- Would be useful to reflect on IMWG process and identify what's working well and what can be improved.

Action: Work with IMWG members to assess current IMWG process and identify areas for improvement (KM) - by September 2016.

Marine Spatial Planning (MSP)

IMWG members made the following comments:

- Support the addition of the specific names of the forums we engage with. This could be considered for all positions.
- The forums identified should be consistent in the key messages and the additional information.
- The inclusion of API should be double-checked as not clear if they engage on MSP.

Subject to these final amendments the position is agreed.

Action: Make final amendments and place final position on Messagebank (EN/KM) – by July 2016.

Sustainable Development Goals (SDGs)

IMWG members made the following points:

- Support taking a positive position. This should be balanced along the lines of the current draft – i.e. we should not overpromise our contribution.
- Consider how the position responds to the potential stakeholder expectations outlined in the background paper.
- The third key message should be softened – we have a contribution to play but should not take on the role of governments.
- Distinguish between SDGs we support through core business (what we do) and those we support through how we do business.
- Prioritise a small sub-set of goals (7, 8 and 13) – this should be highlighted more strongly, perhaps in the key messages.
- Consider further what SDGs mean for reporting and how we wish to address them.
- Goal 2 is not negligible given our activities in biofuels for example. We also have some examples we can provide on goal 10.
- Avoid specific reference to Target Neutral given our offsets position on our wider business.

Action: Revise position to reflect IMWG feedback for discussion at next meeting (KM) – by mid-August 2016.

Sensitive and protected areas

IMWG members made the following comments:

- We should retain our position of not declaring no-go into protected areas. Need to also be mindful that our activity includes renewables which can be quite expansive.
- The reference to 'no-go' should be moved to the additional information so that the key (proactive) messages are positive.
- The key messages should make more explicit reference to the fact that our practices are codified in OMS (i.e. we have very robust requirements).

Subject to these final amendments the position is agreed.

Action: Make final amendments and place final position on Messagebank (EN/KM) – by July 2016.

Innovation policy

IMWG members made the following comments:

- The position sets out well our position on innovation policy but should include more on what BP does on innovation itself and why innovation is important to BP.
- Would be useful to include more specifics or concrete examples of how we support innovation and why we support innovation in key countries where we operate.
- Consider referencing the changing model of large company innovation – via external institutions (universities) not big in-house capability and labs.
- Need to be cautious about listing everything we do in this space as it is significant, but there are good stories to tell on our long term sponsorships.
- Reference that innovation isn't limited to technology – for example it can also relate to business models (e.g. battery leasing), advertising, modes of customer interface, etc.

Action: Revise position to reflect IMWG feedback for discussion at next meeting (DEy) – by mid-August 2016.

Forward agenda

The scope of the renewables paper needs to be very clear as it could be very broad. It was also agreed to move Energy Access to 2017 as the December agenda is quite full. Otherwise the forward agenda was agreed.

Action: Circulate scope of renewables paper to ensure IMWG alignment (PJ) – by end June 2016.

AOB

DEy offered to circulate a summary of the recently published Energy Technology Perspectives (ETP).

Action: Circulate ETP summary to IMWG members (DEy) – by September 2016

The next IMWG meeting is 9 September

IMWG Action Log: Updated 26 August 2016							
	Action	Lead	Issue	Complete by	Status	Notes	IMWG Meeting
163	Work with IMWG members to assess current IMWG process and identify areas for improvement	KM	IMWG Processes	September 2016	Complete	On September agenda	09/06/2016
164	Make final amendments and place final position on Messagebank	KM	Marine spatial planning	July 2016	Complete	On Messagebank	09/06/2016
165	Revise position to reflect IMWG feedback for discussion at next meeting	KM	SDGs	mid-August 2016	Complete	On September agenda	09/06/2016
166	Make final amendments and place final position on Messagebank	EN/KM	Sensitive Areas	July 2016	Complete	On Messagebank	09/06/2016
167	Revise position to reflect IMWG feedback for discussion at next meeting	DEy	Innovation Policy	mid-August 2016	Complete	On September agenda	09/06/2016
168	Circulate scope of renewables paper to ensure IMWG alignment	PJ	Renewables	end June 2016	Complete	Decision to defer position until strategy agreed	09/06/2016
169	Circulate ETP summary to IMWG members	DEy	General	September 2016	Complete	To be circulated in September	09/06/2016

Agenda Item 2: Innovation policy

Members of the Issues Management Working Group

Innovation policy

The innovation policy position has been revised to reflect the discussion at the June 2016 IMWG meeting and to incorporate the comments provided.

Communication

The external audiences for this position are:

- Relevant governments/ universities as appropriate

The suggested internal staff that need to be aware of this position are:

- C&EA teams (Europe, US and China)
- GPA teams (Europe, US and China)
- BP Ventures team
- University and Learned Society Relationship Managers

The purpose of this IMWG review is to approve this revised position.

David Eyton

26 August 2016



Innovation policy

Key messages

- BP recognizes that **innovation is a key driver for socio-economic growth** and a key component in solving some of the world's toughest challenges.
- **Governments** have a key role to play in accelerating innovation by:
 - Creating an **enabling policy environment**, for example competitive markets and a reliable intellectual property regime.
 - Supporting the **excellence of higher education and research**.
 - Fostering **collaboration within the wider innovation ecosystem**.
 - Setting **national priorities** based on capabilities and strengths, through consultation with industry and academia.
- A **region's approach** to innovation is **contingent on its circumstances** – the maturity of the economy, its natural resource endowment, etc.
- Innovation in the energy sector requires **long term, stable policy and regulatory** frameworks.
- **Innovation lies at the core of BP's activities**, in the form of distinctive technologies, products, services and business models.
- It is delivered through the expertise of our staff, including **over 2,000 scientists and engineers**, working with a network of **strategic partners** - universities, national laboratories and other companies - as well as through our corporate venturing business

Additional information

Context

- Innovation is the process which translates knowledge into value through new or improved businesses, products, processes, methods and practices.
- It is multi-disciplinary and multi-national, spanning technology, policy, regulatory, commercial and societal aspects, and is a key contributor to economic growth.
- Governments across the globe are recognising the importance of innovation:
 - The UK government is increasingly talking about innovation as “the growth engine” and is linking it to increased productivity.
 - Countries, like China, with fast growing economies are targeting innovation to deliver productivity alongside economic growth to remain globally competitive.

The role of governments

Governments have a role to play in accelerating innovation through:

- Creating an enabling policy environment – where companies are attracted to invest, by:
 - Supporting open and competitive markets.
 - Embracing transparent, coherent, long term policy and regulatory frameworks.

- Implementing appropriate intellectual property rights regimes.
- Adopting labour legislation which makes provisions for labour mobility.
- Developing and maintaining national enabling infrastructure, e.g. national labs.
- Supporting the excellence of the higher education and research system - to generate ideas translatable into innovative products and services, by:
 - Long term investments awarded on the basis of excellence, and balanced across physical, knowledge, and human capital.
 - An education system that delivers the quality and volume of skilled researchers the market needs.
- Fostering collaboration with the wider innovation ecosystem – to address the cross discipline and cross sector challenges nations face, by:
 - Promoting cross-discipline and cross-sector collaborations between industry and academia.
 - Supporting the creation and development of innovation hubs or clusters of companies, universities and other governmental organisations.
 - Attracting international investment and encouraging companies to locate key elements of their innovation ecosystem in the country, e.g. technology development facilities.
- Setting national priorities based on national capabilities and competitiveness – to leverage innovation to drive economic growth, by:
 - Recognising priority areas for innovation, based on the prevailing national economic structure, the endowed natural resources, the country's strategic goals and its competitiveness vis a vis other nations.
 - Developing – in concert with business and academic stakeholders – sector differentiated, long-term innovation strategies.
 - Leveraging national innovation assets such as universities and research centres.

Innovation in the energy sector

- Different industry sectors have different approaches to innovation.
- The energy sector has unique attributes – it is shaped by the national energy resource endowment and it impacts national economic choices; it has a large installed capital base and a slow clock-speed; it operates as a highly integrated “system of systems”; and it is a key factor in many global challenges, from geopolitics to climate change.
- A systems-based approach and long term, stable policy and regulatory frameworks assume a particular importance in order to effectively drive innovation in the sector.

Innovation in BP

- Over the past 25 years, BP like many large companies has focused internal technology capabilities and worked more closely with strategic, external partners - universities, national laboratories and other companies.
- Long-standing (>10 years) examples include universities – the Princeton Carbon Mitigation Initiative, BP Institute for Multiphase Flow and Tsinghua Clean Energy Centre - and companies such as GE, Ford, Schlumberger and IBM. More recent examples include the BP International Centre for Advanced Material, Oil & Gas Climate Initiative, Palantir, and corporate venturing.
- BP also contributes to innovation policy development in locations where it has big operations, by providing inputs to governmental reviews, roundtables and conferences.

Contact: Bob Sorrell

Agenda Item 3: Sustainable development goals (SDGs)

Members of the Issues Management Working Group

Sustainable Development Goals (SDGs)

The SDG position has been revised to reflect the discussion at the June 2016 IMWG meeting and to incorporate the comments provided.

Communication

The external audiences for this position are:

- Governments
- NGOs
- Partnerships (e.g. World Business Council for Sustainable Development).
- Industry associations (e.g. IPIECA)
- Investors
- UN bodies

The suggested internal staff that need to be aware of this position are:

- S&OR
- Group Communications
- Social and environmental practitioners (e.g. via the Global Environment Forum, Social Practitioners network)
- C&EA and GPA teams (Europe, US and China).
- Group Technology

The purpose of this IMWG session is to:

- To review and discuss initial implications of the SDGs
- To discuss and agree a position

Kathrina Mannion

26 August 2016



Sustainable Development Goals (SDGs)

Key messages

- BP **welcomes the SDGs** which aspire to address the major sustainable development challenges the world faces.
- These aspirational goals will require **leadership from governments** to set the framework to enable civil society, the private sector and others to help deliver the goals at a national level.
- **BP contributes to a number of these goals** through activities aligned with our capabilities and business:
 - Our **core business of delivering energy** to the world relates directly to the SDG goals for affordable and clean energy, economic growth and climate action (goals 7, 8 and 13 respectively).
 - **How we operate** supports countries' implementation of many of the other goals.
- We will **continue to monitor the SDGs** as they move from political agreement to international and national implementation to understand their implications for our business and what we can contribute to them.

Additional information

The SDGs

- The SDGs are a set of 17 aspirational and non-binding goals and 169 targets agreed by UN member states in 2015, succeeding the Millennium Development Goals (MDGs).
- The SDGs have expanded to include environmental and economic issues as well as social issues. They also apply to all countries and are expected to frame development agendas and policies through to 2030.
- Implementation is ultimately up to governments who can decide if and how they wish to meet them. However, delivery of the SDGs is seen as relevant to all – the public sector, civil society and, notably, the private sector, whose contribution to the success of the goals is recognized in the text of the UN document.

Relevance to BP

- Almost all the SDGs have some relevance for BP. Some that are not relevant at group level could be important locally or vice versa.
- The SDGs may inform regulatory environments in which BP operates and raise expectations of stakeholders regarding actions and disclosures.

Most relevant goals for BP, e.g. those supported by core business activity

Goal 7 - Ensure access to affordable, reliable, sustainable, and modern energy for all.

- BP supports the development and growth of modern, productive economies wherever we operate through the provision of affordable and reliable energy.
- BP is increasing the share of natural gas in our portfolio. The cleanest fossil fuel, gas can help energy availability for the 1.3bn people that currently lack access to electricity.

- BP provides and develops ever more efficient fuels and lubricants for consumers.
- We have a growing biofuels business in Brazil and are a major producer of wind energy in the US.

Goal 8 - Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.

- BP provides income to governments in countries where we operate, which can help to foster economic growth. BP paid \$3.5billion in taxes worldwide in 2015.
- We employ around 80,000 people around the world and many thousands more through our supply chain. We seek to recruit from the local community or country, as occurs in Azerbaijan and Indonesia, and work to build skills in countries such as Angola and Oman.
- BP treats our workforce with fairness, respect and dignity and expects those we work with to act in a way that is consistent with this.

Goal 13 - Take urgent action to combat climate change and its impacts

- BP is taking action on climate change: by calling for a price on carbon emissions, supplying and advocating the use of natural gas, investing in renewables, pursuing energy efficient operations and products, and supporting research through partnerships.

Other relevant goals, e.g. those supported by the way in which BP operates

Goal 6 - Ensure availability and sustainable management of water and sanitation for all.

- BP assesses water risks at both group and site level including local water conditions and constraints, which allows appropriate management actions to be developed.
- BP manages operations in areas of water stress at a local level and where necessary works to lower fresh water demands and improve waste water discharge quality.

Goal 9 - Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.

- Working with regulators and governments where appropriate, we define local content strategies to promote the use of local suppliers and support the local skilled workforce.
- BP supports independent research through our collaborative partnerships with universities worldwide.

Goal 12 - Ensure sustainable consumption and production patterns (including reporting)

- Improvements in BP's operations, including energy efficiency supports this goal, as does development of advanced products.
- We publish a sustainability report on an annual basis with the materiality of content informed in part by external stakeholders.

Goal 14 - Conserve and sustainably use the oceans, seas and marine resources for sustainable development and Goal 15 - Protect, restore and promote sustainable use of terrestrial ecosystems...and halt biodiversity loss.

- BP's expertise and understanding of the marine environment can inform and support countries in future management processes.
- BP works to understand the marine and terrestrial environments where we operate and this informs our project requirements, mitigation actions and operational practices.
- We identify and manage potential environmental and social risks through our operating management system.

Contact: Kathrina Mannion / Antony Andrews

Agenda Item 4: Electrification of road transport

Members of the Issues Management Working Group

Electrification of road transport

Interest in and use of electrification in transport is increasing. The pace and quantum of reduction in demand for liquid fuels from electrification is of critical interest to BP in terms of strategic planning, future portfolio management and providing differentiated and diverse mobility offers as consumer preferences evolve.

It is also of great interest to many external stakeholders including shareholders, government and pressure groups.

Communication

The external audiences for this position are:

- Regulators and policymakers
- SRIs
- Other external stakeholders e.g. NGOs

The suggested internal staff that need to be aware of this position are:

- Group and Downstream Technology teams
- Group Economics
- Downstream Market Analytics teams
- Group Long Term Planning
- C&EA teams and GPA teams (Europe, US, China)
- Group Communications

The purpose of this IMWG session is to review and agree the updated position.

Jon Platt

26 August 2016



The electrification of road transport

Key messages

- Electrification covers a **range of vehicle types** which are plugged into and partly or wholly fuelled by electricity from the grid.
- Electrification can help **lower CO₂ emissions** and tackle **local urban air quality** issues
- **Plug-in electric vehicles will increase** their penetration into the vehicle fleet and are likely to **have a significant impact** on markets for liquid fuels but the **scale and pace is uncertain** because of:
 - Customer preferences and lack of familiarity with new technology.
 - Technology barriers including slower refuelling, limited electric range, and higher cost of ownership.
 - Growing conventional vehicle fleets, especially in developing countries.
 - Future policy and regulation, including CO₂ regulation, incentives and lower liquid fuel duty income.
 - The impact of new business models, including ride-sharing.
- BP actively **monitors and assesses technology and market trends** to inform our portfolio choices and business models.
- BP believes that the internal combustion engines (ICE)) and the **use of liquid fuels in transport will continue to have a significant role to play** due to lower cost vehicles, higher energy-density, rapid refuelling and scope for further efficiency improvements.
- BP supports a **level playing field** for road transportation through:
 - Economy wide carbon pricing.
 - Comparing emissions of all types of vehicles on a life cycle rather than vehicle-only basis.

Additional information

Different types of electrification

- Electrification refers to vehicles that are plugged into and receive electricity from the grid.
 - Plug-in hybrid electric vehicles that are partly powered by electricity from the grid.
 - Battery electric vehicles that run only on battery power charged from the grid.
- These vehicles, owing to their electric powered range, are likely to have significant impact on liquid fuels demand.
- Hybrid electric vehicles (such as Toyota Prius) that combine electric motors and an internal combustion engine, but do not use electricity from the grid for power, are sometimes also referred to as electric vehicles. However, their greater efficiency is largely the result of more efficient ICE operation.

Policy and regulation

- All vehicle emissions should be compared on a life cycle basis. Emissions from plug-in electric vehicles (PEVs) fuelled by coal-fired electricity may not have lower emissions to conventional vehicles.
- Regulations to curtail tailpipe CO₂ emissions from light duty vehicles have been enacted in many OECD and some developing economies (e.g. China). Regulation for medium and heavy duty vehicles may follow.
- The immediate burden of emission regulation falls on car manufacturers, who must persuade customers to purchase lower emitting, but more efficient, vehicles.
- Some countries offer subsidies and incentives to close the cost gap between plug-in electric and conventional vehicles.

Technology status and development

- Plug-in electric vehicles have become viable options for light duty transportation offering lower vehicle CO₂ emissions / greater fuel efficiency but with higher costs as well as range and refuelling limits.
- Lithium-ion (Li-ion) batteries seem likely to remain the predominant vehicle battery technology. While the cost of Li-ion battery packs has fallen, parity with internal combustion engine technology is not expected soon without subsidies.

Car manufacturers and consumers

- Development and sales of PEVs will be a key aspect of Auto industry strategies, as they seek to comply with increasingly stringent tailpipe CO₂ regulations.
- PEVs offer consumer benefits including lower fuel costs and CO₂ emissions, and quieter vehicles with strong acceleration. On the other hand they can have higher total cost of ownership, limited range, and/or slower refuelling.
- The number of plug-in electric models on sale is accelerating. In 2015, sales of plug in electric vehicles globally exceeded 500,000 (still less than 1% of global light vehicle sales), but is likely to grow.

Outlook for liquid fuels demand

- BP monitors and projects market and technology trends through our Liquid Fuels Demand modelling (Demand 2050), Energy Outlook and Long term Technology View.
- Fossil-based liquid transport fuels will continue to be needed for the foreseeable future but electrification will affect the size and shape of the market, increasing and changing the nature of competition within it.
- Increasingly stringent of tailpipe CO₂ regulations, and growth of PEVs, will gradually curtail the growth of liquid road fuel demand. This will be dampened by the relatively slow pace of fleet turnover.
- BP modelling of scenarios that limit CO₂ emissions more quickly than expected, suggests that up to 20% of global road fuel demand in 2035 (ca 8 million bd) could be removed, however demand for road fuels will remain significant (greater than 40 million bd).
- Global liquids demand in 2035 is still projected to be higher than in 2015: while demand in OECD economies is decreasing, demand growth in developing economies is expected to increase.

Contact: Robert Spicer / Jon Platt

Members of the Issues Management Working Group

Electrification of road transport

What is the issue?

Interest in and use of electrification in transport is being driven by both climate (reducing emissions) and health (reducing air pollution) concerns in many parts of the world where BP has interest. Further, changing preferences for mobility and vehicle ownership may increase electrification. This is likely to increasingly substitute the use of liquid hydrocarbon fuels. The pace and quantum of reduction in demand for liquid fuels from electrification is of critical interest to BP in terms of strategic planning and future portfolio management, and providing differentiated and diverse mobility offers as consumer preferences evolve. It is also of great interest to many external stakeholders including shareholders, government and pressure groups. A robust position is needed to respond and to help inform advocacy efforts.

Policy and regulation

In response to climate change concerns, regulations to curtail tailpipe CO₂ emissions from light duty vehicles have been enacted in many OECD economies. Some developing economies, e.g. China, have also followed suit. By 2025, in the most progressive economies, new passenger cars will be emitting around 40% less CO₂ emissions than in 2010. Many governments have also provided incentives for the uptake of plug-in electric vehicles (PEVs). Similar regulation for medium and heavy duty vehicles is more nascent but likely to follow as part of global initiatives to decarbonise road transportation.

In addition, degradation of urban air quality caused by vehicle emissions is increasingly leading to concerns regarding public health. Ultra low, or zero, emission vehicles, i.e. those that burn hydrogen (H₂) and/or include electrified powertrains, offer pathways to address such concerns and improve conditions with respect to pollutants such as NO_x.

The immediate burden of these regulations falls on Automobile Manufacturers (OEMs). To meet the burden, OEMs not only need to cut emissions by the required amount (which is technically and economically challenging) but also to persuade end customers in a competitive market to purchase the lower emitting, more efficient, but also more costly vehicles

that they must produce (which is commercially challenging).

Markets without regulation are also still likely to see new vehicles with lower CO₂ emissions given the globalised nature of the automobile industry. However they are likely to lag behind the leading regulated markets (US, EU, Japan and China). The level and rate of closure of the gap, owing either to spread of technology, changes in consumer preference, or simply because currently unregulated markets become regulated, is a key uncertainty. Further significant uncertainty lies with the nature and definition of future emissions regulation both in terms of CO₂ emissions and other pollutants, and their measurement.

A key policy point is that most current vehicle CO₂ regulations, including both tail pipe regulations and incentives for electric vehicles, focus on emissions from the vehicle itself (so called tank to wheels or TTW). They do not account for CO₂ emissions upstream of the vehicle, which can be significant. Critically this systematically favours plug-in over conventional liquid fuelled vehicles, even if the electricity supply is carbon intensive. That said, advancing the electrification of road transportation is likely to enable an overall greater decarbonisation of the total energy system through leverage of more cost-effective lower carbon power generation.

Technology status and development

A. Light Duty Vehicles

The options for decarbonisation of light vehicles range from improvements to conventional ICE powertrains and associated elements of the vehicle (such as bodymass, lubricants, and aerodynamics), through lower carbon fuels including biofuels, to combination with electric powertrains (hybridization) and ultimately to vehicles with solely electric powertrains. The term “electric vehicles” can be applied to hybrid electric vehicles (HEV) that employ electric motors and electric energy captured from braking to allow more efficient operation of the ICE but these vehicles still rely on liquid hydrocarbon fuels for most of the energy consumed; more predominantly the term refers to plug-in electric vehicles (PEVs) that use electricity from the grid transferred to the on-board battery prior to departure. PEVs are segmented into two broad categories:

- PHEVs (plug-in hybrid electric vehicles) with their combination of both electric drive and internal combustion engine (ICE) have better range flexibility and a lower initial cost owing to the combination of ICE/liquid hydrocarbon fuel capability and smaller battery/AER¹.

¹ AER – All Electric Range. The range of the vehicle driving solely under electric power

- BEVs (battery electric vehicles) are initially more expensive given their larger batteries but have greater AER. They are more range challenged given that they have no ability to use energy dense liquid hydrocarbon fuels. However BEVs offer the greater potential for reduction in TTW CO₂ emissions. EREV (extended range electric vehicle) is a BEV variant with a small ICE on board as a generator; its sole function is to provide additional energy to the electric motors.

(i) *Decarbonisation potential of PEVs*

Although CO₂ emissions from grid generation are currently ignored by vehicle regulations based on TTW emissions. PEVs with electric drive that use stored grid electricity are an attractive way to significantly reduce CO₂ emissions. This is because conventional internal combustion engines are relatively thermally inefficient and more costly in terms of the energy required to drive, or essentially move mass over distance. PEVs are also attractive because they position transport for longer term decarbonisation through associated decarbonisation of the power system.

(ii) *Refueling / charging times*

A notable difference for PEVs is the much longer time required to refuel. Charging and energy transfer times vary greatly depending on battery size and charging equipment. However, in all scenarios, it is clear that future drivers of PEVs will for the foreseeable future need to adapt their approach to energy acquisition in order to stay mobile.

(iii) *Battery technology and cost of PEVs*

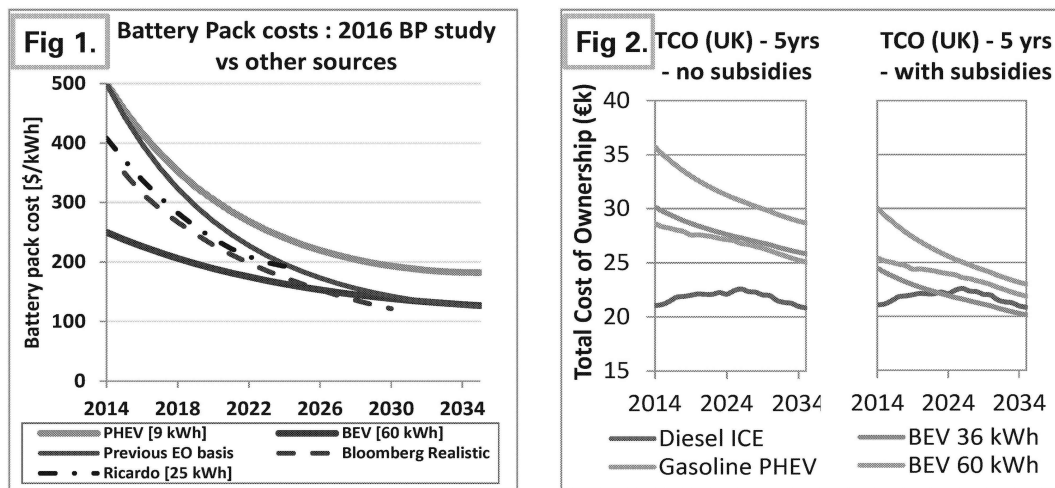
The 2016 BP Battery Study reaffirmed the view that Lithium Ion (Li-ion) technology will remain the dominant electricity storage medium in PEVs for the foreseeable future. The study also noted critically that the cost of Li-ion battery packs has fallen significantly in the last 3 years and will continue to fall over the next decade (see Fig 1). The long term implication of improving battery pack costs is that electric vehicles will steadily become more cost competitive with conventional ICE vehicles. That said, battery storage and other parts in 2030 will still add an incremental €5-10,000 to the cost of a BEV vs ICE equivalent.

(iv) *Economics of PEVs*

Total Cost of Ownership (TCO) analysis² suggests that vehicles with conventional ICE powertrains are likely to be a lower cost option than plug-in variants on an unsubsidised basis until at least 2035. But where cash subsidies or tax incentives are available the gap can obviously be closed.

² This TCO analysis is an add-on model to BP's Demand 2050. The view shown is based on Demand 2050 reference case technology assumptions and end user product prices (including duties & VAT) built off the BP Energy Outlook 2016 oil price assumptions.

Fig 2 shows results analysis for the UK medium car segment. If the UK's current plug-in grant were to remain in place, TCO crossover for a short-range BEV (36 kWh, ca 100 miles range) vs. Diesel ICE cars is projected in the mid 2020's. Without that incentive Diesel ICE is likely to remain the most competitive option, despite the projected reduction in cost for Li-ion batteries. BEVs with larger batteries (e.g. 60 kWh, for 200 mile range) do not become cheaper than an ICE equivalent in either scenario. The results are similar for other geographies and car segments. Clearly, there are technological and, policy uncertainties that could change this view.



B. Medium and heavy duty vehicles

Moving goods generally requires much more energy. As a result medium and heavy duty vehicles are significantly more challenged to use electric power given need for sufficient range, at an economic cost, and optimization of battery mass. Electric buses are more feasible, with increasing size options appearing. Single deck buses have been available for some time, but 2016 has also seen the first double deck electric bus enter service in London. The higher cost (reportedly 2 x alternatives) trades off against fuel savings and emissions benefits.

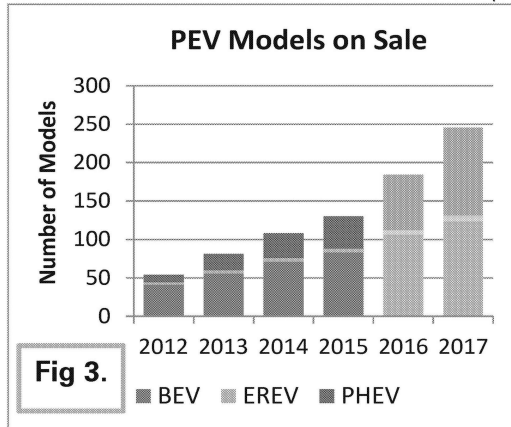
Electricity supplied on the move removes the need for costly, heavy, and range-limited batteries, and could be provided via catenaries or induction charging, but these require costly infrastructure development and so for heavy trucks appear to be very much in an initial, limited trial phase.

Supply and demand of PEVs

Supply: trends among automobile manufacturers (OEMs)

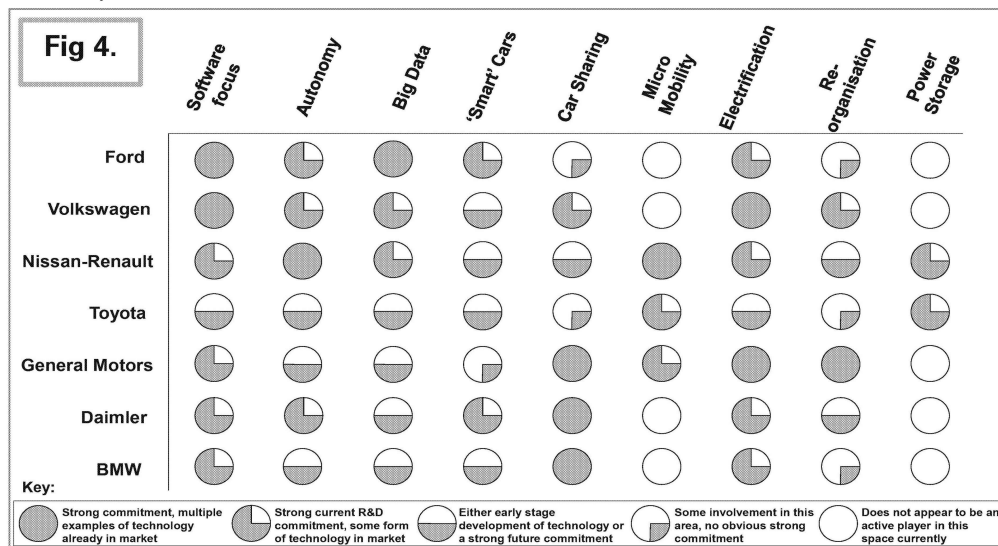
Despite being more costly for end consumers, PEVs are likely to be a key element of OEM's approach to compliance with CO₂ regulations. Owing to the limitations and inefficiencies of conventional ICE powertrains to meet

both EU (2021) and US (2025) regulations for light vehicles, BP analysis indicates that most OEMs are likely to need some PEVs in their sales mix. As a result we can see that the number of models on sale, being launched, and in development is rising fast. It is likely that the next few years will see further acceleration of this trend (Fig 3.)



Extracted from LMC Automotive
Global Hybrid & Electric Vehicle
forecast - Jan 2016

Meeting stringent CO₂ regulations, though the introduction of hybrid and electric powertrains, will increase the average cost and selling price of light vehicles. This is a serious concern to OEMs in that, to meet the burden of regulatory compliance, they also need their customers to want to buy more expensive products. The regulatory landscape, particularly in Europe, is further complicated by other changes such as the introduction of an improved test cycle³ (WLTC, to replace NEDC) and the need to address heightened concerns about other pollutants, such as NO_x. Admitted errors in meeting regulations, by VW, Mitsubishi and others, have added to industry tensions.



³ NEDC – New European Driving Cycle. Current test cycle used for homologation of vehicles in the EU.
WLTC – World Light (Vehicle) Test Cycle. Proposed replacement test cycle for homologation of vehicles in Europe and other markets. Likely to take effect from model year 2017. Unlikely to replace US cycles.

Electrification is also a significant opportunity for OEMs, as it is likely to be an enabler of their competitive strategies. In seeking to respond, and adapt to a changing future, many leading OEMs are acting similarly, but there are differences in emphasis. Fig 4. depicts qualitatively the engagement that we see for the major automotive players in this future mobility space.

Clear alignment can be seen in terms of commitment to electrification, and some associated areas such as autonomy and software development. On the other hand, some associated areas such as power storage or micro-mobility (electric bi-, tri-, or quadri-cycles) have a narrower focus.

Demand: trends among end consumers

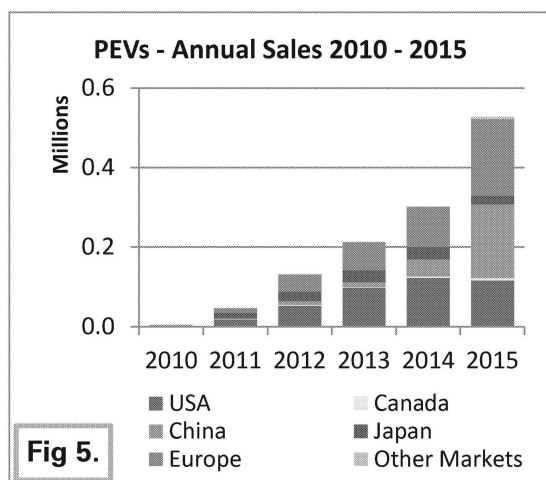
The electrification of road transport is initially likely to be most material in respect of light vehicles. For drivers the increasing viability of electrified powertrains may enable access to different product benefits.

1. An attraction for some will be that PEVs are a means to minimize, and potentially eliminate the need to visit traditional service stations.
2. In addition, electric drive may attract as it offers a different driving experience: quieter with high torque and strong acceleration.
3. For some, there will be the perceived benefit that it is a more efficient, lower CO₂ emitting vehicle.
4. For others the key attraction will be acquisition, or use, of new technology.

On the other hand, the arrival of these vehicles in the market place is recent, and still developing. Many will perceive risks in buying a vehicle that is more costly than conventional alternatives, with unproven durability, limited range, and charging limitations.

Policy makers have recognized these issues and deployed a variety of incentives, including cash subsidies, to reduce customer resistance. Such incentives are clearly aimed at assisting penetration through closing the TCO gap, incentivizing OEMs to develop their ranges, and the encouragement of charging infrastructure development.

Sales of PEVs have been growing rapidly since 2010 (Fig. 5). In 2015 sales exceeded 500,000 vehicles, but set against global light vehicle sales of ca. 84 million units the penetration was 0.6%. There was strong growth in China and EU, with the latter sales share rising to 1.3%. In 2016, global interest has been shown to be strong with ca 370,000 pre orders for the Tesla Model 3 that may start to ship in 2017.



Source: BP analysis based on data from InsideEVs, MarkLines, RAC Foundation, EV Sales Blogspot – Mar 2016

In terms of the diffusion, or adoption, of new technology, PEVs can firmly be seen to be at the start of their customer journey. However, this is likely to change as end consumers grow and share their awareness; and clearly, the pace of adoption is another area of significant uncertainty.

Uncertainties in the trajectory for electrification

In addition to the trajectory of future CO₂ emissions regulations, and the rate of adoption by end consumers of PEVs, there are a number of other policy/regulatory and investment issues that are likely to also impact the future evolution of electrification in road transport. These include:

- a) The depth and longevity of incentives offered to end consumers that narrow the cost gap with conventional ICE vehicles, will assist the current pace of adoption. 2016 has seen the introduction of an incentive programme in Germany, whereas in other markets, e.g. China, there are clear signals that current (generous) incentives will eventually be withdrawn. In the US, full federal subsidies are limited to the first 200,000 vehicles sold by each OEM and curtail thereafter.
- b) The relatively slow pace of vehicle fleet turnover has been recognized as a barrier to penetration of PEVs. To overcome this hurdle there is the possibility of the wider introduction of “low” or “zero” emission vehicle mandates, such as that found in California, that require OEMs to ensure the mandated penetration of PEVs into the fleet.
- c) PEV charging behavior and infrastructure development: PEV range limitations and charging times suggest that consumers will need to change the way in which they acquire energy for mobility. Greater penetration of PEVs into the parc will require greater levels of charging infrastructure - both in homes but also in public locations. Unresolved questions in this space include whether plans for charging installations match policymakers’ ambitions for parc penetration, and whether local electricity grids can cope with the increase in instantaneous load that

fast or rapid charging requires. In addition, there are competing standards for charging points.

- d) Fuel taxation: in many countries, hydrocarbon fuels provide material tax income to national and local governments; in others fuel duty income maintains roads, whereas electricity is not taxed in the same manner. Reducing demand for hydrocarbons will likely require this to change.
- e) Urban transportation policy development: while the clamour for action is clear in London, Paris, and other cities, it is not clear what the long term nature of such policy action will be, and to what extent policies focused on improving city centres and urban environments will affect the levels of vehicle ownership and usage.
- f) Alternative decarbonisation pathways including the greater use of biofuels, and, potentially, hydrogen (H₂). Biofuel use is growing, particularly where there is local supply, but the policy drive to higher blends in the USA and Europe has moderated, in recognition that some biofuels are more sustainable than others, and because advanced ligno-cellulosic biofuels have been slower to develop than expected. H₂ fuel cells are attractive in that the range and refueling limitations of PEVs are largely overcome, but the costs of this technology remain much higher and need to reduce. Associated infrastructure re-development costs for hydrogen distribution would also be very significant.

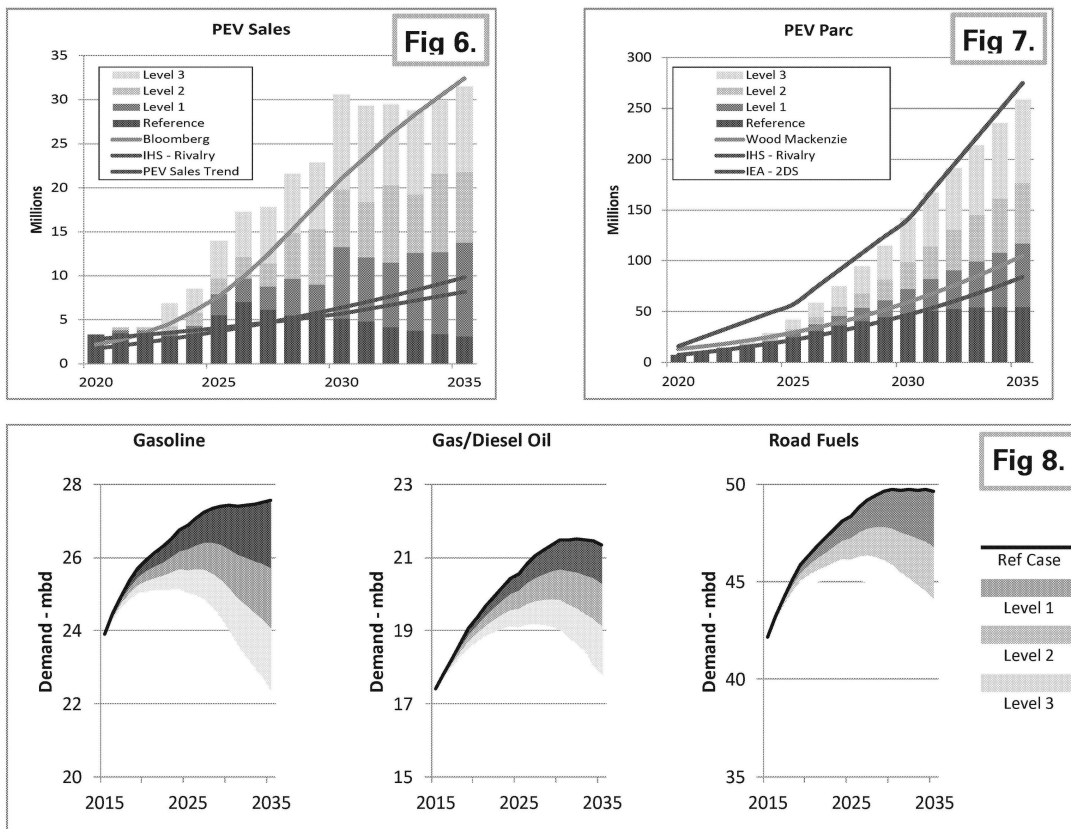
Scenarios and outlook for liquid hydrocarbons demand

To assist with gauging the impact of these uncertainties, particularly with regard to the level and pace of penetration of PEVs into the light vehicle fleet, we have created a number of “Faster Transition” scenarios in addition to our reference case. One of these was included in BP Energy Outlook 2016. These scenarios have also been used in several more recent internal studies. The scenarios explore multiple pathways to lower CO₂ emissions, including the impact of electrification in road transport.

The results from this BP analysis are shown in Figures 6 and 7. They depict the changing nature of PEV sales and parc penetration in both our current reference case and three faster transition cases (ranging from level 1 to level 3, where level 3 is the most progressive⁴.) These scenarios also give clear indications of how demand for hydrocarbon fuels could change in the event that future demand for refined products is lower in line with these

⁴ Demand 2050's faster transition scenarios progressively combine the impact of a) more stringent tailpipe emissions standards (leading to more PEVs), b) shifting the sales mix to smaller cars, c) increasing biofuels, and d) reducing average mileage to test the limits of achievable CO₂ reductions from road transportation.

faster transition scenarios. Fig 8. Illustrates the potential impact for Gasoline, Diesel and overall Road Fuels.



In the fastest transition case, the potential impact on liquids demand for road transportation is a reduction of ca. 8 mbd vs the reference case in 2035. As a % of liquids demand in road transportation, this would be a reduction of ca. 20%. Set against the totality of global liquids demand across all sectors in our projection the impact is a decline of 7%. The potential decreases are material, and likely disruptive, but they do not appear to spell the end for liquid hydrocarbon fuels in this timeframe.

Competitor views:

Exxon – Generally sceptical about the pace of PEV penetration. Their 2016 Outlook for Energy asserts “that conventional (non-plug-in) hybrid-electric vehicles tend to be the most practical and affordable of the advanced models... We expect conventional hybrids to jump from about 2 percent of new-car sales in 2014 to more than 40 percent by 2040. In contrast, plug-in hybrids and fully electric cars are likely to account for less than 10 percent of new-car sales globally in 2040.”

Shell – Open-minded. Shell consider that over the long term passenger transport can be mostly electrified. In their most recent supplement, to their 2013 New Lens Scenarios, they state “Passenger road transport will

be the easiest to electrify, with battery and fuel cell electric vehicles potentially reaching 80% of the global passenger car fleet over coming decades". Shell also co-sponsored the Auto Fuel Coalition study that stated: "PEV share of new car sales will remain relatively small [to 2030] and their influence on overall emissions remains marginal".

Chevron – Neutral. Chevron support a balanced approach to addressing climate change through short and long-term measures, but do not appear to be drawn on the potential or likely pathways such as fleet electrification. Historically, Chevron were the patent holder on NiMH battery technology (used in Conventional ICE Full Hybrid vehicles, such as the Toyota Prius).

Total – Pragmatic. In their recent report "Integrating Climate into our Strategy", Total states "We believe... that electricity will not be able to meet all requirements, particularly those related to transportation. Electric cars will continue to gain ground, but we must not overlook trucks, aircraft and ships. That is why... we also believe biofuels offer another renewables opportunity that we can leverage". On the other hand Total is currently present, or developing capabilities in solar power generation (SunPower), battery storage (Saft) and system control (Stem) that could potentially enable the creation and subsequent marketing of a turnkey offer around electrical energy that could assist with sustainable PEV penetration.

Conclusions/Recommendations:

- Penetration of PEVs into the global vehicle fleet is highly likely given perceived benefits, and policymakers' desire to target CO₂ emissions that in part are discretionary.
- OEMs are gearing up to supply PEVs as a core element of their compliance strategies and early adopter customers are buying the technology. Current fleet share is negligible, and the pace of adoption is significantly dependent on subsidies and incentives.
- While there are a significant number of uncertainties, electrification appears not to provide an existential threat to liquid fuels demand but likely to be disruptive. It is likely to make significant inroads by 2035, and more beyond that point.
- We should take a pragmatic and factual tone, with the aim of being highly trusted on this topic. We should be unafraid to debate the choices that society faces and challenge unsupported assertions where necessary.
- Specific recommended messages and relevant information are contained in the 2 page position, which IMWG is invited to review.

Robert Spicer

26 August 2016

Agenda Item 5: Biofuels

Members of the Issues Management Working Group

Biofuels

The IMWG approved the Group position on biofuels in 2012. Since then there have been changes internally and externally, including in the market and BP's business interests.

Communication

The external audiences for this position are:

- Regulators and policymakers
- SRIs
- Other external stakeholders e.g. NGOs

The suggested internal staff that need to be aware of this position are:

- BP Biofuels relevant staff
- C&EA teams and GPA teams (Europe, US, Brazil)
- Group Communications

The purpose of this IMWG session is to review and agree an updated position.

James Primrose

26 August 2016

Biofuels

Key messages

- BP believes that biofuels can play an **important role in meeting global energy challenges** as part of a diverse mix of fuels and technologies.
- Most of the car fleet including hybrids are expected to still use liquid fuel for several decades. Biofuels can help **reduce GHG emissions**.
- Hybrid vehicles using low carbon biofuels blends deliver similar well to wheels GHG reductions as electric vehicles.
- Longer term, biofuels can make a key contribution in aviation and haulage.
- Our **Brazilian biofuel operations** form a core part of our renewables business, which is the largest operated one among our oil and gas peers.
- BP produces biofuels that meet **rigorous standards** - using high yielding feed-stocks; managing water, land and waste efficiently; respecting biodiversity and local communities; and improving safety performance.
- BP purchases and blends biofuels to comply with biofuel targets in markets where we operate, meeting legal sustainability requirements.
- AirBP supplies biojet into Oslo Airport and the BP Bioscience Centre is exploring wider biotechnology applications across BP's businesses.
- We welcome **proactive government support for biofuels done well**; sustainably and, efficiently produced, at low cost, and with low GHG emissions.

Related briefs: Climate change, Low carbon fuel standards, Life cycle assessment, Electrification in transport.

Additional information

Biofuels businesses/activities

- BP operates three large, modern sugarcane ethanol mills in Brazil, producing both low carbon ethanol and green power. Our biofuels production has grown year-on-year.
- BP is preparing to commercialise biobutanol, developed in partnership with DuPont.
- BP ceased its cellulosic ethanol program in 2014 due to the sharp falls in crude price. It transferred its key capabilities to the Bioscience Centre that is exploring wider applications of biotechnology across all of BP businesses.
- BP's downstream business sources and blends biofuels in response to biofuel regulations in the markets where BP operates, meeting sustainability requirements where they exist and encouraging them where they don't.

General sustainability and certification

- Biofuels can contribute to energy security, and economic growth as well as providing positive social and community benefits.
- Different types of biofuels differ with respect to impacts on land, food, GHG emissions, water and social and environmental sustainability.
- Brazilian sugarcane ethanol can deliver lifecycle GHG emission reductions in excess of

70% versus gasoline at a supply cost comparable to fossil fuels.

- BP's Brazilian sugarcane mill, Tropical, is certified under the Bonsucro sugarcane sustainability standard, and SA8000 – socially acceptable labour practices. Work is under way for two other mills to achieve Bonsucro certification.
- BP's Brazilian operations use existing agricultural land, and are located in areas of ample water availability. Crops are primarily rain-fed with little supplemental irrigation.
- BP is a member of Bonsucro, and the International Sustainability and Carbon Certification.

Land use

- Biofuels represent a growing demand for land and certain crops. However, biofuels are just one factor driving land use change.
- BP agrees with the views of multiple studies that, with improved technology and agricultural productivity, there is adequate land to meet food, feed and local community demands out to 2050 as well as providing for sustainable bioenergy supply.
- There are inherent scientific and economic uncertainties around indirect land use change (ILUC) – the concept of unintended GHG emissions due to the indirect conversion of forests or grassland to cropland due to increased biofuels usage.
- BP's view on ILUC is that the most effective way to regulate land use and sustainability objectives is through direct land management, wider agricultural policy, plus biofuel sustainability standards.
- Numerical ILUC GHG emission penalties for biofuels should not be used while the modelling of the potential GHG implications remains uncertain.

Biofuels and the electrification of transport

- In many markets, the electrification of transport is increasingly perceived as the sole or primary solution to decarbonise transport, with biofuel use in passenger cars regarded as a transitional option before full electrification occurs.
- While progressive electrification of transport is likely, the slow turnover of the vehicle fleet means that the vast majority of the global car fleet will still be reliant on the internal combustion engine for several decades. In addition, some transport sectors – e.g. haulage, aviation – are hard to electrify.
- Biofuels combined with hybrids deliver similar well-to-wheel GHG emission reductions to electric vehicles and will do so until electricity carbon intensity is substantially reduced.

Biofuels policy

- The current biofuels policy environment is driven by a range of interests, including a strong emphasis on delivery of agricultural objectives and energy security.
- An economy-wide carbon price is the most efficient policy to limit CO₂ emissions. BP believes that additional policy support for biofuels should:
 - Be time-limited and targeted at the commercialisation of high-performing, sustainable biofuels
 - Provide support linked to GHG performance and enhanced for 'advanced' biofuels that have the potential for substantial cost and GHG reduction.
 - Provide certainty and be transparent, clear and credible.
 - Set realistic and achievable targets.
 - Remove trade barriers.
 - Avoid unintended outcomes (e.g. over-incentivising wastes).

Contact James Primrose

Members of the Issues Management Working Group

Biofuels

What is the issue?

IMWG approved the Group position on biofuels in 2012. Since then there have been a number of changes both in the external environment, both market and policy, and in BP's biofuel related activities. An updated position is required to reflect these changes.

Biofuels definitions

Definitions of biofuels vary according to prevailing biofuel regulations, and advocacy/marketing positioning of sector participants. However, the following (non-exhaustive) definitions are generally accepted and have been applied in this paper.

1st generation or conventional biofuels: produced from sugar, starch, or fatty acids contained in agricultural crops (grains, oilseeds), using established / technically mature conversion processes, e.g. sugarcane or corn ethanol, esterification of vegetable oils to biodiesel / FAME.

2nd generation or advanced biofuels: Biofuels produced from the lignocellulosic fraction from dedicated energy crops, agricultural residues, and the biogenic fraction of other wastes/residues using non-technically mature conversion processes, e.g. cellulosic ethanol, thermochemical conversion of wood feedstocks to synthetic diesel. Also included is the photosynthetic conversion of CO₂ by algae to fatty acids (biodiesel feedstock).

In Europe, biodiesel produced from used cooking oil qualifies as advanced under the Renewable Energy Directive. In the US, driven by agricultural interests, biodiesel produced from virgin vegetable oil (e.g. soya oil) qualifies under the Biomass Based Biodiesel Renewable Volume Obligation (RVO) that forms part of the Advanced sub-targets under the Renewable Fuels Standard.

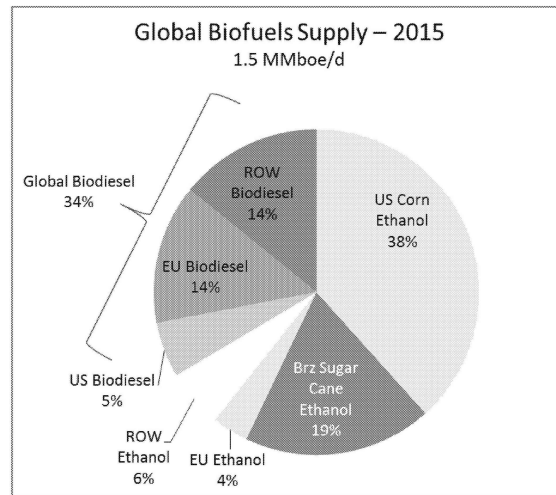
External market and policy related developments

Market: Biofuel penetration into road transport fuels has continued, albeit at significantly reduced rates of growth than witnessed in the period pre 2012. Globally, biofuels now account for 1.5 million boe/d or

around 2.6% energy of global total transport demand, almost equivalent to the annual crude output of Algeria.

Ethanol remains the largest biofuel type with US and Brazil dominating the sector. In contrast Europe, the world's 3rd largest market, remains heavily focused toward biodiesel, due to its high share of diesel passenger cars, but also due to its gasoline and diesel supply/demand imbalances.

The biofuel market remains almost wholly dominated by conventional or 1st generation biofuels.



Advanced biofuels: Aspirations on the penetration and use of advanced (2nd generation biofuels) have largely failed to materialize due to a combination of technological and cost challenges and uncertainty on policy/regulatory support. Many of the advanced biofuel start-ups have either gone bankrupt (e.g. Kior), or re-positioned into non-fuels applications (e.g. Amyris).

In terms of the technology genres, photosynthetic algae routes to biodiesel are now generally considered not to be economically viable pathways to fuels. While there is interest in thermochemical routes (BtL, pyrolysis), primarily to produce synthetic biodiesel and/or biojet molecules, deployment at commercial scale has yet to occur. BP is working with Johnson Matthey and Davy to produce Biojet from Municipal Solid Waste (MSW) using gasification and Fischer Tropsch conversion.

Cellulosic ethanol is the one advanced technology where commercial scale deployment has occurred, with 6 plants commissioned within the last 2 years (US, Brazil and Europe). However, this level falls well below previous ambitions, and in each case, each plant has been struggling with significant operational/reliability issues.

In contrast, biofuels that have been defined as “advanced” within biofuel regulations due to their use of non-food feedstocks or

feedstocks that do not directly compete with feed, rather than being truly advanced in technological terms have made material progress. For example, biodiesel produced from used cooking oil, which benefits in Europe from double counting under the Renewable Energy Directive, now comprises a significant proportion¹ of the EU's biodiesel slate. In the US, biogas produced from landfill is the predominant source of cellulosic RINs².

Although not typically regarded as advanced, Hydrogenated Vegetable Oil (HVO – EU term) / Renewable Diesel (US term) has become a material option in both Europe and the US. HVO is produced from vegetable oils and/or animal fats utilizing oil refining know-how, hydrotreating and isomerization, to produce a molecule similar to conventional fossil diesel. As such it allows the blending of biodiesel into diesel above the specification limits for conventional biodiesel (FAME). Its GHG emission performance is comparable to FAME produced from the same feedstocks.

Fuels ESA is procuring HVO as means to fulfill biofuel obligations that require blending beyond the European FAME specification limit in diesel (7% vol), and is currently investigating investment projects at the Castellón and Rotterdam refineries.

Neste is the primary global producer of HVO with 4 plants in Finland, Netherlands and Singapore. In addition, Total and ENI have re-purposed their refineries at La Mede (Total) and Venice (ENI) to produce HVO, both sites that would have otherwise closed due to over-capacity.

External stakeholder discourse

Since the 2012 paper, the external discourse on biofuels has evolved with the policy debate now focusing on a couple of key issues while waning on others.

Indirect land use change: From the E-NGO perspective, indirect land use change (ILUC) is now the primary cause of concern, most prominently articulated in the European policy debate. While the science around

¹ EU28 UCO FAME 2015 consumption ~ 1.6 mill tes, ~14% of total FAME/biodiesel consumption. LMC estimate.

² Renewable Identifier Number – a tradable bio-credit used within the US Renewable Fuels Standard. Renewable CNG & LNG RINS made up 98% of total 2015 cellulosic D3 RIN generation, ~140 mill RINS.

ILUC remains complex and inherently exposed to fundamental uncertainties, the evidence set from the multiple studies point to low or potentially negative (i.e. CO₂ sequestration) ILUC impacts from high yielding biofuels such as sugarcane ethanol, cellulosic ethanol, and ethanol produced from grains and sugarbeets. In contrast, studies³ have confirmed that biodiesel produced from oilseed crops (such as palm and soya oil) has the highest ILUC factors which can in some circumstances result in a higher carbon foot print than fossil diesel. As a result, E-NGOs, primarily in Europe, are focusing their critic on biodiesel produced from oilseeds. European regulation / policy is exposed on this issue given the dominance of biodiesel (vs ethanol) in Europe's biofuel mix.

Food vs fuel and land grabs: Other issues connected to Indirect Land Use change such as Food vs Fuel and biofuel related land grabs have largely diminished as points of contention, as the underlying evidence base has been shown to be weak or non-existent, and specifically for the Food-vs Fuel as global agricultural commodities have fallen from 2008 highs.

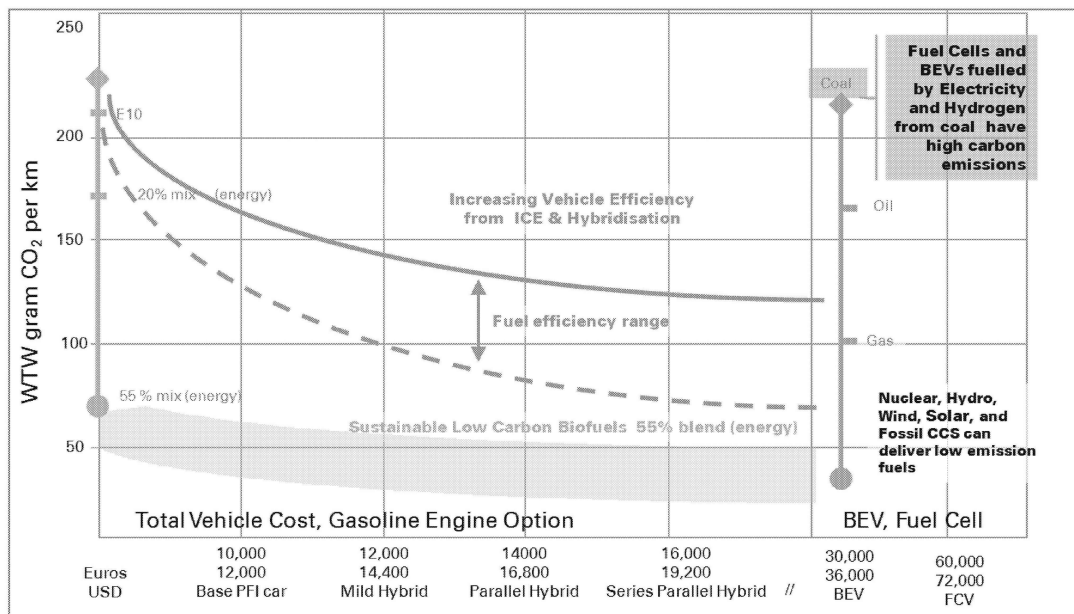
Blendwall: Structural declines in liquid fuel demand in OECD markets combined with continued growth in biofuel volumes, has increased the focus on current biofuel specification and vehicle compatibility limits in gasoline and diesel – the so-called blendwall. This issue is of particular prominence in the US concerning ethanol and the E10 limit in gasoline.

Electric Vehicles: The electrification of transport has become far more prominent both in terms of market activities (e.g. Tesla, BYD, etc...), and in terms of the policy debate as a perceived solution to decarbonise transport. In a number of markets the use of biofuels in passenger cars is seen at best as transitional before full electrification occurs.

BP's view is that while the progressive introduction of electrification into road transport, (hybrids, plug in hybrids and dedicated electric vehicles) is likely, the size and rate of turnover of the existing global car fleet means that the significant majority of the global car fleet will still be reliant in some form on the liquid fuelled internal combustion engine for several decades. In addition, electrification is difficult to achieve in certain sectors such as aviation and heavy duty trucks.

³ The land use change impact of biofuels consumed in the EU, IIASA, Ekofys, E4Tech, October 2015.

Moreover, the use of sustainable low carbon biofuels produced from high yielding low input crops such as sugarcane, and other dedicated energy crops, have an important role in complementing the GHG emission reductions achieved through increasing vehicle efficiency. An efficient hybrid, fuelled with a high % blend of a sustainable, low carbon biofuel could offer similar lifecycle CO₂ reduction as EVs using low carbon grid electricity, or fuel cell vehicles using low carbon hydrogen, at a substantially reduced cost to the motorist, without major changes to the infrastructure, and with a reduced technology risk.



Source: Ricardo Engineering, BP

Policy and regulatory developments

Short and longer-term biofuels policy: The current failure of advanced biofuels to match with aspirations has created disconnects between the short-term regulation and longer term policy aspirations. Longer-term the deployment of bioenergy forms an integral part of many low emission (<2°C) pathways (e.g. IEA 450 and 2DS scenarios). This includes the use of biofuels in “hard to electrify” transport sectors (e.g. aviation and heavy duty vehicles), and also the combination of biofuels/bioenergy with Carbon Capture and Storage (BeCCS) to provide negative emission energy options, which will be necessary if the net zero emission ambition is to be achieved post 2050. While recognising the longer-term role that biofuels and bioenergy have to play in any low emission pathway, many policymakers have struggled to incorporate this aspect into their shorter-term policy developments.

Europe: The issue of ILUC has had its greatest impact on biofuel policy

development in Europe. After a lengthy and protracted debate the EU ILUC issue was “resolved” in 2015 with an amendment to the Renewable Energy Directive imposing a cap on food-based biofuels. However, the impact of the debate was to remove any support for an EU wide biofuel target post 2020 within the EU’s 2030 Energy and Climate Package. Individual member states are likely to continue with their existing biofuel regulations post 2020, but with increasingly divergent levels of ambition. At an EU Institutional level there remains a desire to support advanced biofuels (non-food based biofuels), but with no clarity or consensus on how this might be achieved.

US: In contrast to Europe, the failure of advanced/cellulosic biofuels to deliver and the blendwall (E10) are the issues that have had the biggest impact on biofuel regulations. Near-term cellulosic targets under the Renewable Fuels Standard (RFS) have undergone very significant downward revision as volumes have failed to materialise. The EPA is almost certain to structurally revise down all the cellulosic targets out to 2022 as part of a review that is likely to occur by end 2016.

It is however the E10 blend wall that is the primary issue of contention in the US biofuel policy arena. The US market effectively reached the E10 blendwall in 2013. As a consequence of that and the associated increase in RIN prices, the EPA has subsequently adjusted the post 2013 RFS targets to reflect the E10 limitation, but still appears intend on pushing targets beyond E10 consistent with the evolution of the E15 and E85 markets.

California: The Californian Low Carbon Fuels Standard (LCFS) was re-adopted 1 Jan 2016, having overcome/resolved a number of legal challenges relating to the State Commerce Clause. The re-affirmation of the legislation, together with a stated ambition to extend the current LCFS targets beyond 2020 has resulted in the LCFS carbon credit price increasing from ~40\$/te CO₂e to ~115 \$/te CO₂e.

ROW policy/regulation: Biofuel policy in other markets has continued to evolve and extend, albeit at lower growth rates than before. Economic blending of biofuels that was occurring in a number of markets (e.g. Middle East) prior to the collapse of the crude price in 2H 2014 has now diminished.

Internal developments

BP business activities have also evolved in the light of changes in the

external environment and as a consequence of the lower oil price environment.

BP Biofuels

BP Biofuels has consolidated and expanded its position in Brazil, with 3 large operating sugarcane mills, with total productive capacity of 10 kboe/d. This business now forms the core element of BP's renewable energy business, a business that is the largest operated renewable energy business within BP's O&G peers. BP is also preparing to commercialize biobutanol, an advanced biofuel molecule.

However, BP sold its stake in Vivergo (a UK wheat ethanol plant) to its former JV partner, ABF, in the face of a tough EU ethanol margin environment.

Technology

In 2014, BP has ceased its activities in cellulosic ethanol due to the sharp fall in crude price, and US regulatory uncertainty around cellulosic ethanol targets. Associated with this exit, BP also wound down its activities with the Energy Bioscience Institute (EBI).

Likewise the re-structuring of CTC (Conversion Technology Centre now the Centre of Applied Physics and Chemistry) saw the winding down of BP's activities in BtL and ethanol to diesel programs.

BP transferred some its capabilities from the cellulosic ethanol program and the teams supporting the EBI into the Bioscience Centre. This team is now driving BP's longer-term biotechnology interests, and is currently conducting a study to identify wider biotechnology opportunities across all of Downstream's businesses.

Downstream

BP's Fuels Value Chains remain active in the sourcing and blending of biofuels in response to biofuel regulations in the markets where BP operates. Within this Downstream, in conjunction with IST origination, continues to seek advanced biofuel supply options to optimize biofuel mandate compliance.

Air BP is also actively exploring biojet opportunities in response to airline interest. Following the acquisition of SFRA (Statoil Fuel and Retail Aviation), Air BP is supplying biojet volumes (hydrogenated vegetable oil sourced from Neste) into the Oslo Airport.

Advocacy / external representation

Despite being an early member of the Roundtable of Sustainable Biofuels, BP resigned its membership in 2011 when it became clear that the RSB was unlikely to deliver a workable sustainability scheme for biofuels. BP's resignation was preceded by resignations by biofuel trade associations due to similar concerns.

Likewise in 2016, BP resigned from the Roundtable on Sustainable Palm Oil, due to limited interaction with the RSPO and limited availabilities of RSPO certified material in Europe, coupled with a preference to the ISCC sustainability scheme to assure compliance with biofuel sustainability requirements within the European market.

Recommendation

Despite the some significant changes both in the external and internal environment the fundamentals of BP's overall position on biofuels are sound and therefore should remain broadly unchanged.

There are however some nuances in the positioning and messaging that should be considered, as follows:-

- BP participatory biofuel activities are now focused on BP's Brazilian sugarcane ethanol operations.
- There is a wider biofuel/bioscience activity set evolving within BP, extending beyond BP's fuel business to Air BP, and the investigation of other bioscience applications.
- The electrification of transport, deployment of electric vehicles, has gained increased prominence in the policy discourse on road transport. This increases the importance to articulate the role that biofuels, and hence liquid transport fuels, have to play in combination with further vehicle technology developments going forward.
- BP positioning and advocacy also needs to continue to recognize that agricultural support and the reduction of fossil fuel imports are also major drivers behind biofuel policy in many regions.

James Primrose

26 August 2016

Agenda Item 6: Paris climate agreement INDCs

Members of the Issues Management Working Group

Intended Nationally Determined Contributions (INDCs) information note

A short note on the INDCs submitted under the Paris agreement has been prepared for IMWG members' information.

The purpose of this IMWG session is to note this information.

Kathrina Mannion

26 August 2016

Members of the Issues Management Working Group

Intended Nationally Determined Contributions (INDCs): Information note

This information note provides a high-level assessment of the potential implications of the INDCs pledged by non-OECD countries in which BP has material business interests¹. The INDCs of BP-relevant OECD (e.g. US, EU) countries are not included in the assessment because climate policy risk in these countries is already well understood and managed.

The Paris climate agreement

In the negotiations leading up to the Paris agreement in 2015, countries registered their INDCs with the UN. INDCs describe a country's ambition for climate action for a 5-10 year period from 2020, the first year of implementation. Analysis of current INDCs indicates there is a wide gap between what has been pledged and the agreement's long-term aim to hold temperature rise to well below 2°C above preindustrial levels - let alone pursue efforts towards 1.5°C.²

Countries are therefore being encouraged to increase the ambition of their existing INDCs and a pre-implementation "global stocktaking" will take place in 2018 to assess additional progress by then. The agreement also requires countries to submit new NDCs³ every 5 years from 2023, with the clear expectation that these will be more ambitious each time.

Characteristics of INDCs

- INDCs/NDCs are voluntary – Countries are not legally bound to deliver them, although they are required to pledge them and report on their progress. There is no minimum or harmonised level of commitment.
- INDCs from the more developed OECD countries tend to be more ambitious, with specific time-limited and absolute targets (e.g. the

¹ Defined as countries where BP internally reported CH₄ and CO₂ emissions are in excess of 0.1 Mt CO₂e per year or where BP has fuel and lubricant markets over 3bn litres annual sales volume. The INDCs from these countries are summarised and assessed in a table in Annex 1.

² 'The estimated aggregate annual global emission levels resulting from the implementation of the INDCs do not fall within the scope of least-cost 2°C scenarios by 2025 and 2030'. Source: *Aggregate effect of the intended nationally determined contributions: an update* – UNFCCC FCCC/CP/2016/2 - 46

³ When the Paris Agreement is ratified by a country, its INDC is registered as an NDC (i.e. no longer just 'intended').

EU committed to 40% domestic reduction in greenhouse gas emissions by 2030 compared to 1990, and the US committed to reduce GHGs by 26-28% below its 2005 level by 2025)

- Non-OECD countries (most countries) are proposing climate policy for the first time, so their INDCs are more cautious. They typically:
 - Are non-specific and unquantified (e.g. Egypt).
 - Have only aspirational targets (if at all) which are often relative to projected business as usual (BAU) growth forecasts, not absolute (e.g. Angola, Oman).
 - Are heavily caveated and conditional, often on international financing (most).
 - Are restricted to specific economic sectors (e.g. Trinidad & Tobago).
 - Describe few associated policy delivery mechanisms (most).

Opportunities and risks from INDCs

The very existence of new public climate pledges may encourage countries to strengthen national climate policy or, in some cases, consider introducing it for the first time. This may create some opportunity for crafting new BP business offers aimed at helping countries meet their pledges. However, given the deliberate lack of detail in many INDCs, over-reliance on current pledges as a basis for developing new business propositions may also create risk, either because they do not fully reflect national policy that already exists (e.g. Egypt INDC), or because the country priorities they do identify may change. Ongoing analysis of actual in-country policies and how they evolve is therefore essential.

In a very few cases, mainly the large economies in transition, INDCs may contain enough specificity on GHG mitigation ambition levels, policy focus areas, mechanisms and timing to provide more secure guidance – both about risks to existing businesses and potential opportunities for new businesses. For example:

- The Chinese INDC mirrors its existing commitments under its Five Year Plan: a headline target to lower CO₂ emissions per unit of GDP by 60% to 65% from 2005 levels, and to peak GHG emissions by 2030 with best efforts to peak early.
- Using a 2005 baseline, the Brazilian INDC aims to reduce GHG emissions by 37% in 2025 with a 'subsequent indicative contribution' of 43% in 2030.
- The South African INDC has an absolute (though generous) peak

target range for 2025-2030, from which GHG emissions will decline. It mentions several specific policy instruments under development including a carbon tax, regulatory standards and controls for specifically identified GHG pollutants and emitters.

- India has an emissions intensity target of 33-35% improvement relative to 2005, along with non-fossil power, renewable energy and forest cover targets. The solar target is challenging.

However, these countries are the exception. In most other cases the new non-OECD INDCs do not appear to have clear, direct or material effects on BP's businesses, either positive or negative, at least in the short term.

Conclusions

The Paris Agreement has clarified long-term global climate ambition, and committed all parties to some form of national climate policy that will likely strengthen over time. In the medium to longer term (after 2025) this may result in greater focus and increased stringency of national climate policy in some countries. However, in most cases the Paris Agreement has not and probably will not lead to specific or significant national climate policy changes in the short term (before 2025). Detail may be added to existing INDCs in the next 2-3 years, but it is unlikely to be until after the first formal global stocktake in 2023 that real clarity and stronger NDCs may emerge for the period 2025 and beyond.

Way forward

Group Policy, working with relevant group functions and local business and GPA teams, will update the current INDC review on a timetable that matches the formal UN process, starting in 2018 and every five years after that. These periodic updates will be supplemented by a light-touch annual review to assess unanticipated changes, and any relevant evolution of the Paris agreement or new decisions at successive climate summits.

Bill Thompson

26 August 2016

Annex 1: Non OECD INDC Analysis by BP Share Direct GHG Emissions and/or Market Fuel & Lubes Volumes

BP non OECD countries ranked by BP equity share 2015 emissions	BP's footprint		INDC		INDC policy delivery mechanisms		Comments
	BP equity share 2014 Emissions Mt CO ₂ e ⁴	BP Fuel market (2014) volume M litres ⁵	GHG Targets	Sector Coverage	Direct carbon price	Regulation indirect carbon price, or other policy	
Angola	2.9	low	Unconditional up to 35% GHG reduction by 2030 vs BAU . Additional 15% conditional on further funding	Mitigation from power generation from renewable sources; and reforestation	None	None	BAU is 188% increase 2005 to 2020. Unconditional 35% decrease means emissions plateau over 2020 to 2030
Trinidad & Tobago	2.2	low	- Unconditional target: 30% GHG reduction by 2030 in transport vs BAU - Conditional 15% GHG reduction by 2030 in 3 main sectors vs BAU : needs international financing	- Unconditional target: Public transport sector only - Conditional Target: Power generation, industry & transport	None	None	Unconditional target limited to public transport. Conditional target 103Mt CO ₂ 15% BAU reduction but baseline is only 34.2Mt CO ₂
Indonesia	2.1	low	29% GHG reduction by 2030 vs BAU Additional target of up to 41% GHG reduction. Higher target is subject to conditions	2030 BAU 2.88 Bn t/CO ₂ e is 1bn tonnes higher than 2005. Policy addresses LULUCF & renewable energy.	None	None	Indonesian INDC stresses development challenges: slow GDP growth, and 5.9% unemployment + 10.98% population living in poverty (2014)
China	1.5	240 (Lubes)	Peaking of CO ₂ emissions around 2030 and making best efforts to peak early; lower CO ₂ emissions intensity relative to GDP by 60% to 65% from 2005 level;	China's INDC is the previously announced, current enhanced actions and measures on climate change that stretch to 2030.	Not in INDC	Increase the share of non-fossil fuels in primary energy consumption to around 20%; increase the forest stock volume by around 4.5 billion cubic meters.	Carbon pricing and other regulation are in place or under development but not specifically referenced in the INDC.

⁴ BP S&OR 2015 BP GHG database NFMI extract dated 19/02/2016.

⁵ BP R&M BFB Country Marketing Data extract 04/03/2016.

BP non OECD countries ranked by BP equity share 2015 emissions	BP's footprint		INDC		INDC policy delivery mechanisms		Comments
	BP equity share 2014 Emissions Mt CO ₂ e	BP Fuel market (2014) volume	GHG Targets	Sector Coverage	Direct carbon price	Regulation indirect carbon price, or other policy	
Egypt	1.2	low	No quantified targets	List of mega projects for funding	National carbon trading may be established	None	Catalogue of national climate change impacts, project funding list + request for US\$73.04bn for mitigation+ adaptation
Azerbaijan	0.7	low	Absolute 35% reduction in the level of greenhouse gas emissions compared to 1990 baseline	Energy, agriculture and waste sectors, LULUCF	None	None	The submitted INDC presents a highly ambitious commitment
United Arab Emirates	0.6	low	No GHG target	Energy Intensive Industry and oil & gas sector	None	Increase renewables to 24% of Energy Mix by 2030 (0.2% 2014).	Promotion of flaring reduction, new fuels pricing mechanisms + possible energy & water tariff reform.
South Africa	0.5	3,973 million litres	GHG emissions to peak in an absolute range between 2025 and 2030, plateau for a decade, then decline in absolute terms). At COP 17 in Durban, South Africa committed to undertake appropriate national actions to curb GHG emissions by 34 per cent by 2020 and 42 per cent by 2025 below BAU .	All sectors based on production and subject to a minimum threshold of 0.1Mt per plant. A carbon tax on fossil fuel consumption is set for later implementation.	Carbon tax under development. Legislation near finalisation. Implementation set for 2017/18	National Policy tools under development include Sector 'Desired emission reduction outcomes' (DEROs); Company-level carbon budgets Regulatory standards and controls for identified GHG pollutants & emitters.	Peak emissions between 2025 and 2030, between 398 and 614 Mt CO ₂ e. Mandatory GHG reporting from 2016. Significant INDC external financing required. Target subject to review. For the petroleum sector the regulated price does not allow recovery of a carbon tax from the consumer. Pass-through options under discussion.
Oman	0.4	low	2% reduction from expected BAU GHG emissions growth to 88,714 Mt in period 2020 – 2030	Energy, Industrial processes & Waste	None	Unspecified reduction in Gas flaring from oil industries.	Small 2% reduction in BAU. Target subject to external funding and technology transfer.

BP non OECD countries ranked by BP equity share 2015 emissions	BP's footprint		INDC		INDC policy delivery mechanisms		Comments
	BP equity share 2014 Emissions Mt CO ₂ e	BP Fuel market (2014) volume M litres	GHG Targets	Sector Coverage	Direct carbon price	Regulation indirect carbon price, or other policy	
Brazil	0.3	1,036 Million litres + 795 million litres of ethanol equivalent	Absolute reduction in GHG emissions of 37% by 2025 and 43% by 2030 from a 2005 baseline.	Economy-wide, absolute mitigation target	None	Increase share of sustainable biofuels in energy mix to approx. 18% by 2030	Brazil reserves right to use international market mechanisms
India	Nil	200 million litres	Reduce emissions intensity relative to GDP by 33-35% by 2030 (base 2005).	All	None	40% of installed electric capacity from non-fossil fuels by 2030 subject to external funding. Additional forestry sink of 2.5-3bn Tt CO ₂ e by 2030. Increase renewable electricity to 175GW by 2022 of which 100GW solar; National energy efficiency target to save 10% current energy consumption by year 2018-19. Pledge to reduce fuel subsidies.	The INDC looks achievable. The solar target is challenging. India reserves right to make an additional INDC submission.
Algeria	0.2	low	Reduction of GHG emissions by 7% to 22%, by 2030, compared to BAU . Conditional on external finance, technology development and transfer, and capacity building.	All	None	- Reach 27% of electricity generated from renewables by 2030; - Increase the share of liquefied petroleum and natural gas in the consumption of fuels 2021 to 2030; - Reduce gas flaring volume to less than 1 % by 2030.	Emphasis on use of natural gas for generation

BP non OECD countries ranked by BP equity share 2015 emissions	BP's footprint		INDC		INDC policy delivery mechanisms		Comments
	BP equity share 2014 Emissions Mt CO2e	BP Fuel market (2014) volume M litres	GHG Targets	Sector Coverage	Direct carbon price	Regulation indirect carbon price, or other policy	
Singapore	Nil	3,808 million litres	Reduce Emissions Intensity relative to GDP by 36% from 2005 levels by 2030, and stabilise emissions with aim to peak around 2030.	Not relevant – no BP business exposure	None	Renewable energy up to 8% of peak demand.	97.7% of transport fuel & lubricants volumes are via IST Global Oil Trading. The final customer is unlikely to be in Singapore, hence little or no BP exposure to the Singapore INDC.
Turkey	0.1	3,183 million litres	Up to 21 percent reduction in GHG emissions from BAU level by 2030. Use of international market mechanisms. Turkey may revise INDC if circumstances change.	Energy, Industry, Buildings & Urban Transformation, Waste & Transport	None	Implementation of unspecified alternative fuels and clean vehicles, scrappage schemes, urban sustainable transport.	BAU is based on continued economic growth to 2030. Even 15% reduction target is still increasing emissions albeit at a lesser rate. Many of BP's major fuels and lubes markets coincide with BP's direct CO2e emissions, Turkey is an exception.
Russia	N/A	N/A (Air BP and Lubes – but well below 3bn litre threshold)	Limiting anthropogenic greenhouse gases in Russia to 70-75% of 1990 levels by the year 2030 "might be a long term indicator."	Economy-wide, but in particular, energy; industrial processes and products use; agriculture; land use, land-use change and forestry; waste.	None	None	Russian GHG Emissions peaked in 1990 at levels much higher than today, making the target easy to achieve. . Current Russian regulation (outside the INDC) anticipates achievement of the 2030 targets by 2020. Russia is included for completeness.

Agenda Item 7: IMWG forward process and agenda

Members of the Issues Management Working Group

IMWG process

The purpose of this IMWG session is to review and discuss:

- The IMWG forward agenda for December 2016 and initial proposals for the 2017 agenda.
- A review of IMWG process and suggestions for improvements.

Kathrina Mannion

26 August 2016

Members of the Issues Management Working Group

Forward agenda for 2016 and 2017

December 2016 IMWG agenda

The following issues are scheduled for discussion in December 2016:

Renewable energy: Stakeholder interest in our position on renewable energy is very high, particularly in the context of the increased profile of climate change. This has been deferred from the September agenda, pending internal discussions on strategy.

Supply chain sustainability: External regulation and interest in how companies are managing risks and impacts within their supply chain are increasing. A position would help respond to external interest and set out a clear unified position on how we are working to drive a consistent approach across all segments.

Biodiversity: The global loss of biodiversity is widely seen as one of the greatest environmental challenges after climate change. Although we have made public statements (e.g. Lord Browne speech) and have historic positions on some aspects, we don't have an up to date position on biodiversity or on important related matters such as biodiversity offsetting.

2017 IMWG agenda

The issues prioritization process has been completed to develop a shortlist of possible IMWG topics for 2017. See Annex A. A full list of positions agreed to date is at Annex B for information. Over the years, we are seeing a shift towards fewer new positions and a greater focus on revising existing positions. This is to be expected as most known relevant material issues have now been covered by IMWG. Following IMWG discussion a final proposed 2017 agenda, including timings, will be provided at the December meeting.

IMWG members are asked for their views on the issues proposed:

- Are any proposed issues a particular priority?
- Are any issues missing (either new issues or requiring revision)?
- Are there any issues that shouldn't be on the list?

Kathrina Mannion

26 August 2016

Annex A: Initial issues shortlist for 2017 Agenda

The process for prioritizing IMWG issues is carried out concurrently with the process for prioritizing issues for Corporate Reporting and is aligned with the Group Risk process. It draws on the inputs of a wide range of internal and external stakeholders, and is primarily based on assessing business impact and stakeholder interest. The screening process also considers factors such as need for internal alignment, urgency of the issue and potential for it to become an issue in the future, or bring BP advantage. The need for reviewing existing positions is also considered. The results of this process are set out below:

1) New issues

	Issue	Further information	Lead
1	Energy access	The importance of providing access to energy for the world's poor is a significant focus of policy at the international level through initiatives such as the UN Sustainable Energy for All initiative. The role of enabling greater access to energy also forms parts of our (and our industry's) narrative when advocating for the continued need for fossil fuels. It may be helpful to have a position to respond to any challenges/questions on this.	Group Policy
2	Modern slavery	Interest in modern slavery has significantly increased, particularly within the UK with the introduction of the UK Modern Slavery Act. However, the risks to BP are worldwide. A robust position is needed to respond.	Group Policy/ S&OR
3	BP's contribution to society	The positive contribution of BP to individual economies (e.g. UK and US) has been well articulated but a single coherent response regarding our positive global contribution to economies and societies has never been developed. This would be helpful to put forward a positive position and to help underpin our positions in other areas, e.g. Sustainable Development Goals.	Group Policy / Group Comms
4	Fossil fuel subsidies	Calls to remove (inefficient) fossil fuel subsidies continue to mount from certain stakeholder groups (e.g. IMF, NGOs, G20), particularly after the Paris agreement. Definitions of what is meant by a subsidy vary widely and there is a risk that the debate is dominated by an overly simplistic narrative. A high level position to respond to queries on this topic would be helpful.	Group Policy

2) Issues for revision

	Issue	Further information	Lead
1	Climate change	We have several positions on climate change (a general overview, BP's programme of action and the Paris agreement). One year on from Paris, with company, sector and societal views evolving, these would benefit from a refresh.	Group Policy
2	Unburnable carbon	The 'keep it in the ground' narrative of NGOs and other stakeholders continues to grow. Our current position would benefit from a refresh to respond to this.	Group Policy/ BP America
3	Life Cycle Assessment	Our current position on LCA is quite negative, yet in some areas (e.g. advocacy of natural gas, our position on electric vehicles) we advocate for an LCA approach. Our position needs updating to address this complexity. LCA is also a factor in standards such as ISO14001 which impacts BP businesses.	Group Policy/ S&OR
4/ 5	Oil sands & Arctic	Linked to the 'keep it in the ground' campaign, we are receiving questions from stakeholders including investors on high carbon/high cost investments. In addition our business activity in both oil sands and Arctic has changed since the positions were agreed. Updated positions could address this.	Group Policy / BP Canada / BP Arctic
6	Climate change adaptation	Adaptation has attracted a lot more attention since the position was last agreed. A more 'on the front foot' position, with more specifics on what we are doing operationally and how important this is would be helpful to respond to this interest.	S&OR/Group Policy
7	Carbon offsets	Our position on carbon offsets was agreed in 2013 and is very high level. A more specific and targeted position is required to respond to growing interest in many areas including for example forestry offsets, the use of offsets following Paris, use in aviation etc.	Group Policy
8	Revenue transparency	Our current position was agreed in early 2013 and is now out of date. It would benefit from a refresh to reflect changes in the external environment and internal approach.	Group Policy

Information notes

	Issue	Further information	Lead
1	Net zero emissions	The Paris agreement aims for a “balance between anthropogenic GHG emissions by sources and removal by sinks in the second half of this century”, widely referred to as “net zero” emissions. This concept is complex to understand and could be delivered in various ways, each of which would have different but significant implications for fossil energy demand, if achieved. To help understand what is meant by net zero, how it might be achieved, and the implications for oil and gas, an information note would be helpful. This may or may not suggest the need for a position to respond to growing stakeholder interest in our view of net zero (and the Paris temperature goals).	Group Policy
2	Net positive approach (NPA)	NPA - where businesses are expected to demonstrate positive environmental or societal impacts in key areas of their operations – is starting to gain some momentum amongst NGOs and may become an issue in the future.	S&OR
3	Circular economy	Interest in the need to move towards a circular economy (i.e. re-using, repairing, refurbishing and recycling existing materials and products - ‘waste’ can be turned into a resource) continues. E.g. the European Commission published a circular economy strategy in December 2015. It would be useful to understand implications.	S&OR
4	Decommissioning and remediation	Interest in decommissioning is slowly increasing in some areas where BP has a key interest (e.g. North Sea prompted by forthcoming Shell activity in the Brent field) The financial impact of decommissioning is significant and we may need to be on the front foot with advocacy (e.g. rigs to reef) as our own decommissioning activity increases.	Remediation management

Annex B: IMWG positions to date

Position	Last revision	Revision in 2017?	Note
Advocacy and Lobbying	2014	No	No significant change in position.
Air Quality	2015	No	No significant change in position.
Arctic	2014	Yes	See explanation above.
Biodiversity	2016	No	To be agreed in 2016
Biofuels	2016	No	To be agreed in 2016
Canadian oil sands	2014	Yes	See explanation above.
Carbon offsets	2013	Yes	See explanation above.
Carbon, capture & storage	2014	No	Factual update in 2016
Climate change adaptation	2014	Yes	See explanation above
Climate change overall position	2015	Yes	See explanation above
International climate policy	2015	No	Retired in 2015. Incorporated into Paris position and other climate positions
Carbon pricing	2015	No	No significant change in position
BP programme of action on climate	2015	Yes	See explanation above
Contract transparency	2013	No	No change in position.
Energy efficiency	2015	No	No significant change in position
EU climate change and energy policy for 2030	2014	No	Retired in 2015. Further positions going through EU PGB.
Free, prior & informed consent (FPIC)	2014	No	No change in position.
Human rights	2014	No	No significant change in position
Innovation policy	2016	No	To be agreed in 2016
Life cycle assessment	2013	Yes	See explanation above.
Low carbon fuel standards	2014	No	No change in position.
Marine spatial planning	2015	No	Agreed in 2016.
Methane	2015	No	No significant change in position
Renewable energy	2016	No	To be agreed in 2016
Revenue Transparency	2012	No	No change in position.
Role of natural gas	2015	No	No significant change in position
Sensitive and international protected areas	2016	No	Updated in 2016
Sustainable development goals (SDGs)	2016	No	To be agreed in 2016
Supply chain sustainability	2016	No	To be agreed in 2016
Unburnable carbon	2015	Yes	See explanation above.
Unconventional gas and hydraulic fracturing	2012	No	No significant change in position
US carbon tax	2013	No	No change in position. But some elements may be in carbon pricing paper.
US crude exports	2016	No	Updated in 2016
Water management	2013	No	On December 2015 agenda.

Members of the Issues Management Working Group

IMWG process review

IMWG members were consulted over the summer to assess the current IMWG process and identify areas for improvement.

Overall, feedback was very positive with members satisfied with both the process (e.g. meetings, membership, paper preparation, issues identification) and the products (seen as high quality and very useful).

A few potential areas for improvement were identified, mostly to do with internal communications. These are outlined in Annex A.

IMWG is asked to review the proposed actions and to offer any further views or suggestions.

Kathrina Mannion

26 August 2016

Annex A: Possible areas for improvement in IMWG process

Feedback received	Proposed actions
Important to ensure relevant senior management are aware e.g. ETM, Upstream and Downstream Executive teams etc.	<ul style="list-style-type: none"> • Continue to brief on IMWG in RWD quarterly update. • Consider circulating the annual pack of positions with relevant leadership teams (usually in December). • Continue ad-hoc updates on major issues such as was done for climate.
Regions and the businesses need to be sufficiently plugged into both preparation and communication of IMWG products.	<ul style="list-style-type: none"> • Actively assess business and regional relevance of positions when preparing consultee list – e.g. ensure not just EU/US consulted, consider business impact. • Regularly raise awareness of IMWG and relevant positions at relevant regional fora (e.g. Global Political Network, C&EA heads monthly call). • Identify which regions need to receive positions once agreed.
Continue to improve general communication of products. Could we be more creative?	<ul style="list-style-type: none"> • Continued implementation of actions from February communications paper, i.e. <ul style="list-style-type: none"> - Targeted communication of positions once agreed to relevant audiences. - Quarterly summaries sent to IMWG distribution lists. - Ad-hoc presentations to relevant staff networks (e.g. Upstream Offshore Forum). • Consider more innovative approaches – e.g. webcasts, recorded interviews, use of one bp where appropriate.
Challenges of developing BP position when strategy is unclear.	<ul style="list-style-type: none"> • Where possible, time positions to follow on from strategy decisions (e.g. as has been done for renewables).
IMWG should stick to material issues like it does now – even if that means that it will evolve towards more of a reviewing mode.	<ul style="list-style-type: none"> • Continue to assess new issues for the agenda based on group materiality (e.g. business impact and stakeholder interest). • Continue to review existing positions annually to assess whether updates needed.
Consider whether positions could be more communications friendly	<ul style="list-style-type: none"> • Work with Group Comms to develop 'rules of the road' for position development – e.g. fewer key messages, simpler language. Consider Policy/Comms leading on drafting messaging (with SME input).