



# Climate Change Commission Draft Advice for Consultation

bp submission

March 2021

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## Executive summary

bp welcomes this Draft Advice from the Climate Change Commission and strongly supports the legislated goal of net zero emissions by 2050 and the Commission's recommendation to meet the Paris goals. We are committed to working with the New Zealand Government and firmly believe that good public policy can help us – and the world – build a better future.

We endorse the Climate Change Commission's ambition for an equitable, inclusive, and well-planned climate transition and support the recommendation that all parts of Government work together to develop the required partnerships that support workplans and include the views of all New Zealanders.

Our submission presents our views on the energy transition, technology pathways and policies that will assist the energy and transport sectors achieve net zero by 2050.

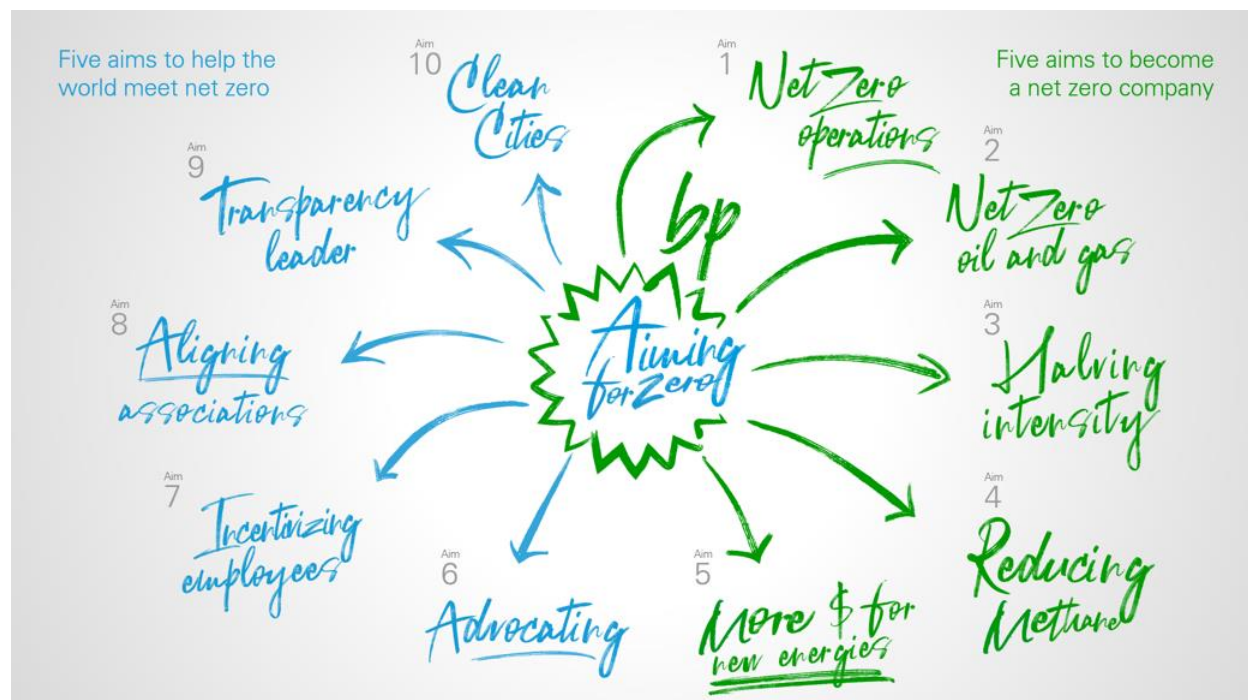
- bp recommends policies that incentivise emissions reduction and are technology agnostic. It is not possible to predict the energy mix with precision, so policies focused on technology development should support a range of technologies and be stable yet adaptive.
- bp advocates for fundamental and rapid progress towards Paris. The next decade is critical in the fight against climate change as the world drives the necessary change in the global energy systems. The world needs a rapid transition to net zero.
- A well-designed carbon price is the most efficient way to reduce greenhouse gas emissions. We believe the Emissions Trading Scheme should remain the primary policy instrument to achieve New Zealand's net zero goals.
- Rapid reductions in absolute emissions is urgently required for the world to meet the Paris goals. Complementary policies may need to be developed and targeted at the hard-to-abate sector to support a rapid transition.
- Electrification of transport is inevitable. This requires a stable, reliable, sustainable and affordable clean electricity sector. Electrified mobility can only deliver net zero emissions if the power sector itself has decarbonised. Policy frameworks should focus on dispatchable generation and storage to address the intermittency of increased renewable penetration.
- New Zealand's reliance on heavy vehicles and road transport logistics is a key opportunity for emissions reduction. bp supports policies that incentivise the uptake of biofuels, specifically advanced renewable fuels for hard-to-abate sectors, such as aviation and heavy haul trucking. We support mandates to facilitate the uptake of bio generated fuels and assist the sector reduce its emissions in the short to medium term. Biofuels have an important role to play over the coming decades as the transition continues to broader vehicle electrification. A drop-in replacement for petroleum-based diesel, renewable diesel is an interchangeable substitute for conventional petroleum-derived hydrocarbons, meaning it does not require adaptation of the engine, fuel system or the fuel distribution network. Policy design should encourage heavy industry and logistics companies to use lower emission modes of transport.

## 1. Introduction

On 12 February 2020 bp adopted a new purpose – ‘reimagining energy for people and our planet’ to make this purpose a reality we have adopted the ambition to become a net zero company by 2050 or sooner, and to help the world get to net zero.

**We have developed ten aims to supporting bp’s ambition; five to become a net zero company and five to help the world meet net zero:**

1. Net zero across bp’s operations on an absolute basis by 2050 or sooner.
2. Net zero on carbon in bp’s oil and gas production on an absolute basis by 2050 or sooner.
3. 50% cut in the carbon intensity of products bp sells by 2050 or sooner.
4. Install methane measurement at all bp’s major oil and gas processing sites by 2023 and reduce methane intensity of operations by 50%.
5. Increase the proportion of investment into non-oil and gas businesses over time.
6. More active advocacy for policies that support net zero, including carbon pricing.
7. Further incentivise bp’s workforce to deliver aims and mobilise them to advocate for net zero.
8. Set new expectations for relationships with trade associations.
9. Aim to be recognised as a leader for transparency of reporting, including supporting the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD).
10. Launch a new team to help countries, cities and large companies decarbonise.



The Climate Change Commission 2021 Draft Advice for Consultation support’s bp’s purpose and we welcome the opportunity to provide comment on the recommendations. In this submission, we present our view on the rapid transition to a lower carbon future that is necessary if the world is to meet the Paris goals. We do so as a significant contributor to the New Zealand economy and major stakeholder in delivering the energy transition.

We have included the bp view on energy transition and the role and strategies we are pursuing to achieve net zero. This view is based on the bp Energy Outlook<sup>1</sup>, a scenarios-based analysis of the future energy landscape, which we use to help explore a range of possible outcomes to 2050. bp is a member of BusinessNZ<sup>2</sup> and the BusinessNZ Energy Council<sup>3</sup> and therefore we have contributed to their submission and where relevant, we have referenced support to the points in their submission to provide New Zealand context in addition to our global bp positions.

In general, we believe all policy responses to climate change should be grounded in the following principles:

- Climate change is a global issue. The intention of all actions should be to reduce overall absolute emissions to the atmosphere. Though sovereign states will design policy that best suits their economies and development agendas, the world needs absolute emissions reductions to occur everywhere they can. Therefore, policy instruments that facilitate global absolute reductions are preferred.
- Successfully meeting net zero by 2050 will require all institutions to work together. Business, governments and the not-for-profit sectors must collaborate to solve what is proving to be one of the most difficult challenges of our time. This extends to sectors within these institutions. Collaboration, partnership, and a mindset of working together rather than competing will help the world achieve this task.
- The policy pathway to lowering emissions to net zero by 2050 will take time and strategies should acknowledge this. That way the transition will be more economically efficient and progress technologies in a neutral way so as to repurpose the economy in service of a low carbon future.
- Some climate change is irreversible. We are already experiencing the effects of climate change through seasonal adjustment, the frequency and severity of extreme weather events, biodiversity loss and ecosystem imbalances to name a few. Adaptation and resilience of societies and economies should be part of any climate change policy agenda. While reducing emissions to curtail the extend of the damage already done is a priority, we must also respond the changes in our climate.

## bp Energy Outlook 2020

bp Energy Outlook 2020 explores three main scenarios – **Rapid, Net Zero** and **Business-as-usual** – which span a wide range of possible outcomes for the global energy system to 2050. The scenarios are not predictions of what is likely to happen or what bp would like to happen. Rather, the scenarios help to illustrate the range of outcomes possible over the next thirty years.

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<sup>1</sup> <https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/energy-outlook/bp-energy-outlook-2020.pdf>

<sup>2</sup> <https://www.businessnz.org.nz/>

<sup>3</sup> <https://www.bec.org.nz/>

## Three scenarios to explore the energy transition

### Rapid

One of many possible scenarios that can be considered 'consistent with Paris', in line with a 'well below 2 degrees' pathway<sup>a</sup>. In this scenario emissions from energy use fall by around 70%, with a fall of approximately 80% in the developed world and 65% in the emerging world.

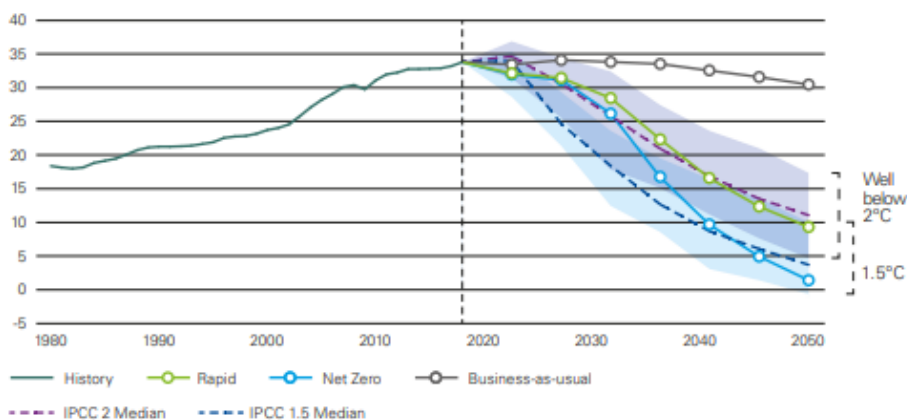
### Net Zero

In which global energy systems emissions fall by 95% by 2050 versus 2018, in line with a '1.5 degrees' pathway<sup>a</sup>. Changes in societal actions and behaviours are a key driver in this scenario.

### Business-as-usual

A continuation of recent trends without major change in the pace or direction of policy tightening; this scenario is not 'consistent with Paris' and results in a reduction in global energy greenhouse gas emissions of only 10% by 2050 versus 2018.

CO<sub>2</sub> emissions from energy use Gt of CO<sub>2</sub>



This chart compares the three main scenarios from the *bp Energy Outlook 2020*: Rapid, Net Zero and Business-as-usual, with the range of scenarios included in the Intergovernmental Panel on Climate Change<sup>b</sup>, which were judged to be consistent with meeting the Paris climate goals<sup>c</sup>.

#### Scenarios for strategic decision making

We have been using scenarios at bp to inform strategy, manage risk and improve decision making for many years. The scenarios we used to inform our new ambition and strategy were based on a collaborative approach between our economists, strategists and our senior management team.

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Three features are common across these scenarios and they form a set of core beliefs as to how energy demand is likely to change over the next three decades:

- Renewable energy will play an increasingly important role in meeting the world's growing energy needs.
- Customers will continue to redefine mobility and convenience, underpinned by the mobility revolution that is already underway combining electric vehicles, shared mobility and autonomy.
- Oil and gas – while remaining needed for decades – will be increasingly challenged as society shifts away from its reliance on fossil fuels.

<sup>a</sup>Graphic from p.11 of [bp-annual-report-and-form-20f-2020.pdf](#) a For more information on Paris-consistent pathways, see page 26 of annual report. b The Intergovernmental Panel on Climate Change (IPCC) is the United Nations' body for assessing the science related to climate change. It is the leading source of data that summarizes the potential pathways to achieve the Paris goals. The IPCC compiles a database of the published results on mitigation pathways from modelling teams around the world. c Ranges show 10th and 90th percentiles of IPCC scenarios. See bp Energy Outlook 2020 for more information.

**This work, coupled with our assessments on public sentiment, social change and the movement of capital, initiated bp's support of the *rapid transition* scenario to a lower carbon future. We believe that delaying today could lead to an abrupt, precipitous course-correction tomorrow. One that could be highly disruptive for business and the world's economy.**

A rapid transition for bp also means a complete change of the company. A new purpose, a new strategy and an organisational structure and skill base. On 12 February 2020 bp announced a new purpose: to reimagine energy for people and our planet; and set a new ambition: to become a net zero company by 2050 or sooner and help the world get to net zero<sup>5</sup>.

**Our new purpose and ambition are underpinned by four judgements about the future;**

The world is on an unsustainable path and its carbon budget is running out.

That energy markets will undergo lasting change, shifting towards renewable and other forms of zero- or low-carbon energy.

That demand for oil and gas will be increasingly challenged.

And that, alongside many others, bp can contribute to the energy transition that the world wants and needs, and create value doing so

bp is a global energy company committed to delivering energy products and services to people around the world. We operate in 72 countries and have been active in New Zealand since 1946. Under our new purpose and ambition, bp will continue to invest in our assets, infrastructure, people and the New Zealand community. bp values its strong community partnerships through its social investment commitments such as Surf Life Saving NZ, established in 1968, and Young Enterprise since 1993.

In New Zealand, we currently operate more than 100 bp Connect stores and Wild Bean Cafes, and maintain a national network of bp branded independent retailers, distributor partners, truckstops, and a terminals and logistics operation. Our wider operations include the Castrol lubricants business and the Air bp aviation business. Many of our retail sites are owned and operated by New Zealand small to medium businesses and roughly 3,000 New Zealanders are employed across our wider operations.

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<sup>5</sup> <https://www.bp.com/en/global/corporate/who-we-are/reimagining-energy.html>

Being part of the bp group enables bp in New Zealand to share global low carbon expertise, research and technology development with our New Zealand business partners, customers, and community stakeholders. As bp's ambition is global, it applies to all bp interests, wherever they are in the world.

Delivering bp's net zero by 2050 ambitions will be a significant and difficult task, requiring a reduction of around 415 million tonnes of emissions – 55 million from our operations and 360 million tonnes from the carbon content of bp's upstream oil and gas production.

## The role of business in achieving net zero

The private sector is a key player in developing resilient strategies, infrastructure and processes, as well as bringing forward innovative technology solutions necessary to meet New Zealand's carbon neutral target. In addition to this submission, as a member of BusinessNZ and its Energy Council bp has contributed to the BusinessNZ submission and where relevant, we have referenced support to the points in their submission to provide New Zealand context in addition to our global bp positions. As representatives of the broader business community of NZ – we encourage the Climate Change Commission to work closely with BusinessNZ and the BusinessNZ Energy Council. Only through collaboration can the community achieve the change required to transition the economy.

More generally, as the world recovers from the COVID-19 pandemic, there are several observations to consider.

- Governments should attach green conditions to any economic recovery packages associated with the COVID-19 pandemic.
- Companies who receive public support should be required to improve their carbon performance.
- Timing is critical. Asking too much too soon has the potential to hit sectors like aviation and transport the hardest even though they are key to the energy transition.
- Governments should increase policy support for green infrastructure, fuels and technology that accelerate the energy transition while creating growth and jobs. This means supporting renewables, clean hydrogen, carbon capture and storage and bioenergy.
- We believe that energy prices should reflect low carbon imperatives. Specifically, that means a well-designed carbon price, which doesn't negatively impact on lower income groups.
- Finally, it is important to support decarbonisation in developing economies. These economies are likely to account for a significant share of future growth in emissions, but this growth can be curbed if we act now. In recovery, they should not be forced to choose between promoting cleaner energy and supporting jobs and livelihoods.



## 2. The submission

For more than 20 years, bp has advocated a well-designed carbon price as the most efficient way to reduce greenhouse gas emissions. This remains our primary position on climate policy, however we must acknowledge that for a rapid transition to occur, complementary policies will need to be developed. This is especially so for sectors of the economy that are hard-to-abate such as aviation and heavy hauling transport. The following section presents our view on technology pathways and policies that may support our sector and the transport sector achieve net zero by 2050.

### 2.1 Carbon price

A well-designed carbon price is the most efficient way to reduce greenhouse gas (GHG) emissions. It provides the right incentives for everyone – energy producers and consumers alike – to play their part in reducing emissions. This is important because efficiency means lower costs and a better chance of maintaining the public and political support needed to get to net zero. A well-designed carbon pricing policy has the following characteristics.

- Full Coverage: Carbon pricing should apply to all sectors of the economy, it is everyone's responsibility to reduce emissions.
- Prevent carbon leakage: treatment for emissions intensive trade exposed industries (EITE), carbon pricing should be designed to prevent the shift of emissions and jobs from one country or subnational jurisdiction to another.
- Carbon pricing should be applied and collected as close as administratively possible to the point of emission.
- Explicit: can be effective either as a tax or a cap-and-trade system.
- Dynamic and adjustable: assure emissions and economic goals are achieved.
- Flexible abatement: support for high quality carbon offsets, as they give flexibility for society to achieve reductions at lower cost in both cap and trade and carbon tax policies.
- Limit the need for additional policies required to fill gaps in carbon pricing coverage.

A well-designed carbon price should ensure that all businesses play by the same rules and avoid simply moving emissions into jurisdictions without carbon pricing. As many countries adopt carbon pricing policies, complementary policy measures are needed to ensure such carbon pricing policies are still effective when other countries may lack them. This helps to avoid 'carbon leakage' whereby emissions are shifted elsewhere.

bp agrees with the BusinessNZ submission that the Emissions Trading Scheme (ETS) should be the primary policy instrument to achieve New Zealand's net zero goals. However, for instances where the pace of change or excluded sectors will require alternative policy measures to directly signal behaviour changes required to meet targets, sensible, affordable, simple (non-onerous) supplementary options may be required. Such supplementary policy options should be targeted at those parts of the economy that are particularly lagging in terms of abatement – this could be because the carbon price required for change in these sectors is extremely high, or the market barriers are exceptionally prohibitive.

Heavy industry (cement, steel, chemicals, LNG, aluminium) and heavy duty transport (shipping, trucking and aviation) are together responsible for nearly a third of global CO<sub>2</sub> emissions. For the world to reach net zero by 2050 these sectors will need to decarbonise. These sectors are classified as the 'hard-to-abate' sector because decarbonisation solutions in these sectors carry a higher abatement cost than current higher-carbon technologies.

bp participated in the Energy Transition Commissions Mission Possible report, an extensive analysis on technological options (pathways) to decarbonise these value chains, and the economic support required for these industrial sectors to reach net zero emission by 2050. bp participates in the transport sector, by producing and distributing the fuels required. We are also large-scale LNG producers and marketers. We have been very active globally in participating in modelling and analysis of the possible decarbonisation pathways of these value chains.

It is bp's view that targeted sector-specific policy support will be needed to drive innovation, demonstration, early deployment and enduring market development in the aviation and shipping sectors. These are sectors with high abatement costs and need targeted policy frameworks to incentivise and support investment into the deployment of the sustainable marine and aviation fuels required to meet the Paris climate goals. Policies to decarbonise aviation and shipping include:

- Sector-specific carbon pricing – separate from other carbon pricing policies – is required to meaningfully drive abatement and technological change in aviation and shipping.
- Ambitious sustainable fuel mandates to help develop the market for sustainable aviation and marine fuels and reduce their costs to levels nearer those faced in other sectors. Mandates in these sectors must focus on sustainable feedstocks such as wastes and residues, that avoid the creation of additional demand for food and feed crops and that limit (including to the point of exclusion) those feedstocks with the highest risk of indirect land use change.
- Introduce support measures to help reduce risk and incentivise the necessary investment in new production of sustainable fuels, such as: contracts for difference, research, development and deployment funding.
- For international sectors such as shipping and aviation regulation at the global level through the International Maritime Organisation (IMO) or the International Civil Aviation Organization (ICAO) is preferable, but this should not prevent regional action going further or faster in a way that builds upon existing internationally agreed principles or policies and that seeks to avoid competitive distortion.

## 2.2 Electrification

At bp, we believe that electrification of industrial processes is key to reducing emissions. The growth and advancement in renewable power generation, coupled with innovation in storage, presents low-cost opportunities to reduce emissions in other sectors of the economy by utilising renewable power as a source. Electrification technologies include technologies that support and augment the power sector as it transforms to more renewable sourced energy, as well as an energy-switch application in industrial processes (replacement of feed gas) or mobility (replacement of petrol with electricity).

The shift to electron-based fuels in the transport sector is a global trend but is happening at different speeds in different markets. It will take many years for the full fleet of vehicles and transport infrastructure to go fully electric and this will vary by country. There will therefore still be a need for liquid fuels, albeit low carbon. In order to meet Paris goals, investments and policies are needed that create incentives that support all low carbon options in the transport sector.

We note the points from BusinessNZ's submission around the 100% renewable electricity supply target. bp supports these points and the need for the electrification strategy to take into consideration the cost of electricity and grid reliability given the implication this will have across the economy.

## 2.3 Decarbonising the transport sector

As a company that has for more than a century been focused on keeping the world moving, bp is focused on the challenge to significantly reduce emissions while meeting the growing global need for mobility. Transport accounts for around a quarter of global carbon emissions from the combustion of fossil fuels. This contribution will need to be significantly reduced if the world is to achieve net-zero emissions.

It is important therefore to identify cleaner and more efficient fuels and lubricants, increase the use of biofuels and improve the efficiency of internal combustion engines (ICEs) in the immediate period ahead to help reduce emissions and improve air quality. Ultimately, we see the transport sector becoming more electrified, however electrified transport can only deliver net zero emissions if the power sector has transformed to renewable forms of electricity. This convergence of transport and power markets creates a dependency and reliance on the power sector and should be considered when developing a comprehensive National Energy Strategy. Policy frameworks should also focus on dispatchable generation and storage to address intermittency from an increase in renewable penetration. For electrification in transport to work, reliable, sustainable and affordable clean electricity is a first step.

bp supports the development of a long-term national energy strategy. We agree with BusinessNZ that the strategy needs to be comprehensive, prompt and allow business to plan for the investment needed to transition.

It is also important to consider that electrification may not be commercially or technically feasible in many parts of the transport sector, including long-distance haulage, shipping and aviation, or in certain geographies.

Decarbonisation in the transport sector will require a range of technologies including biofuels, 'e-fuels' and green and blue hydrogen, as well as making use of developments in the broader mobility transition such as autonomous vehicles and shared mobility services.

It is not possible to predict the energy mix with precision, so policies must be developed that support a range of technologies. Stable yet adaptive policy, technology development, and competition should determine the technology mix. The technology pathway to electrification of the light vehicle fleet has many types of technology options such as biofuels, 'e-fuels' and hydrogen, as well as autonomous vehicles and shared mobility services. This also includes greater recognition of the benefits of new, more advanced fuels and lubricants, increasing access to ultra-fast charging and support for sustainable biofuels.

bp recommends technology agnostic policies that incentivise emission reductions rather than picking technology winners. bp also believes the latest-technology internal combustion engines (ICEs) will play a role in lowering GHG emissions from transport and improve air quality in the near term.

The bp Energy Outlook suggests electric vehicles in a Rapid and Net Zero scenario account for around 30% of four-wheeled vehicle kilometres (VKM) travelled on roads in 2035 and between 70-80% in 2050, compared with less than 1% in 2018. The corresponding shares in BAU are a little over 10% in 2035 and around 30% in 2050. By 2050, electric vehicles account for between 80-85% of the stock of passenger cars in Rapid and Net Zero and 35% in BAU.<sup>6</sup>

bp supports vehicle efficiency regulations as an essential component of low carbon transport policy. These regulations should provide regulatory certainty to automakers, while seeking to incentivise emissions reductions from all technologies.

Our analysis in the 2020 Energy Outlook Rapid Transition scenario suggests that vehicle efficiency improvements can reduce oil use in passenger cars (and hence carbon emissions) by roughly twice as much as electrification.

So, it is important to identify cleaner and better fuels and lubricants, increase the use of alternative fuels and 'drop-in' biofuels - those compatible with existing infrastructure and vehicles – in order to reduce emissions. Vehicle efficiency regulations are an essential component. These should provide regulatory certainty to automakers, while seeking to incentivise emissions reductions from all technologies. This also includes greater recognition of the benefits of new, more advanced fuels and lubricants, increasing access to ultra-fast charging and support for sustainable biofuels.

Easy access to ultra-fast charging will help address concerns over range and provide a solution for those that cannot charge at home, enabling mass adoption of electric vehicles.

## Heavy vehicles

Our reliance on heavy vehicles and road transport logistics is a key opportunity in New Zealand's energy transition. Renewable diesel is a drop-in replacement for petroleum-based diesel, it is an interchangeable substitute for conventional petroleum-derived hydrocarbons, meaning it does not require adaptation of the engine, fuel system or the fuel distribution network. This has been corroborated by two major manufacturers of heavy-duty engines and trucks, Volvo Trucks North America<sup>7</sup> and Mack Trucks<sup>8</sup>, which have approved the use of renewable diesel fuel in all their diesel engines.

Policy design should encourage heavy industry and logistics companies to use lower emission modes of transport. As it stands, most logistics operators will choose the most economical and efficient way to move freight. It is important to encourage a change in behaviour, where the emissions intensity of a journey would be given appropriate weighting relative to cost and time.

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<sup>6</sup> bp Energy Outlook 2020 <https://www.bp.com/en/global/corporate/energy-economics/energy-outlook/demand-by-sector/transport.html>

<sup>7</sup> <https://www.volvogroup.com/en-en/news/2015/dec/news-151323.html>

<sup>8</sup> <https://www.macktrucks.com/mack-news/2016/mack-trucks-green-lights-renewable-diesel-fuel/>

## Electric vehicles

Electric Vehicles are key to decarbonising the global transport sector and their numbers continue to grow rapidly, specifically within passenger cars, light-duty trucks (LDTs) and public buses. They remain, however, a very small segment of the overall market. In 2020, the sale of electric cars accounted for 4.2% of global car sales (up from 2.5% in 2019).<sup>9</sup>

Advances in fast-charging batteries (5 minutes or less), along with accessibility to a nationwide charging network, could speed up the adoption of electric vehicles. EVs can only deliver on carbon savings if the electricity itself is decarbonised. Reducing the carbon footprint of the transport sector is dependent on decarbonisation and transformation of the electricity grid. A ready supply of lithium and cobalt are required to support the development of an EV market.

Several challenges will influence the speed at which EVs penetrate the market:

- The high cost of electric vehicles; and competition with efficiency improvements in ICE technology.
- Access to charging infrastructure. This includes access to charging stations within dense urban areas as well as access to charging stations in remote and regional areas.
- Availability of fast charging.
- Battery degradation, cost and lifetime.

Governments can encourage the rate of uptake of electric vehicles by providing incentives for industry investment in charging technology, such as co-investment in charging infrastructure.

Building a network of charging technology throughout New Zealand is key to increasing the uptake of electric vehicles. This network should be convenient for both businesses and consumers. Public investment in upgrading the grid will be necessary to enable it to carry the power required, as well as support to encourage breakthrough technologies such as higher-capacity batteries. Focused innovation support and demonstrators across the value chain (battery technology, vehicles, charging and power supply) are essential to ensure the projections for uptake can be met.

We are working hard to bring electrification to our customers in our global operations. We're investing in new forms of infrastructure and technology such as ultra-fast charging. bp now provides a network of more than 7,000 charging points across the UK, and we recently started the roll out of ultra-fast chargers on our forecourt network in both the UK and Germany. Currently in New Zealand, four of our 110 bp Connect sites offer electric vehicle charging as does one independently owned and operated bp dealer site. Globally, we plan for electric vehicle charging points to have increased from 7,500 to over 70,000 by 2030. This month, bp and Volkswagen have announced a partnership to extend and speed up the deployment of ultra-fast electric vehicle (EV) charging facilities at bp retail sites across the UK, Germany and elsewhere in Europe. bp estimates approximately 90% of people in the UK and Germany live within a 20-minute drive of a bp or Aral site.

Easy access to ultra-fast charging will help address concerns over range and provide a solution for those that cannot charge at home, enabling mass adoption of electric vehicles.

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<sup>9</sup> <https://www.ev-volumes.com/>

## Biofuels

Biofuels have a vital role to play in the pathway of reducing life cycle GHG emissions from hard-to-abate transport over the coming decades as the transition continues to broader vehicle electrification. Biofuels offer a solution today to help facilitate emissions reductions as new technology options continue to be developed and commercialised.

We're confident that biofuels can be sustainable, but not all biofuels are made equal. Production must consider impacts on land use, food production and sensitive environments particularly.

We welcome well-designed, stable and long-term policy frameworks to incentivise and support investment in sustainable biofuels. We aim to more than double our global bioenergy portfolio by 2025 – and to quadruple it by 2030 – compared to 2019.

We see sustainable liquid biofuels playing a significant role in providing low and zero carbon solutions for ground transport, particularly in hard to decarbonise transport sectors such as aviation, marine and heavy goods vehicles.

Any policy that is designed should be stable and long-term to incentivise and support investment in sustainable biofuels. bp supports policies that incentivise the uptake of biofuels, specifically in hard-to-abate sectors, such as aviation and heavy haul trucking. We support mandates, as a policy mechanism to facilitate the uptake of bio generated fuels (biofuels and renewable fuels) into the market today, so the sector can begin to cut absolute emissions in the short term.

There are a number of important components to consider when developing mandates to reduce emissions in the transport sector;

- Inclusivity – all renewable types of fuel should be acceptable to achieve the objective. This includes but is not limited to second and third generation biofuels, renewable liquid fuels such as renewable diesel and sustainable aviation fuel and emerging fuels such as e-fuels.
- The rules of the mandate must support flexibility for liable entities to achieve their obligation at lowest cost to consumer. bp advocates for mandates that allow for both imported and locally manufactured product. A vast and inclusive list of acceptable renewable fuel types which can be optimised over the duration of the obligation period of the mandate.
- Renewable fuels must be certified sustainable through a third-party authority. Government should work with industry to develop a cost-efficient mechanism for determining sustainability criteria taking into account both environmental and social impacts of some feedstocks particularly. The scale and complexity of biofuel supply chains bring both risks and opportunities to business, however sustainability guardrails are an important feature to avoid unintended consequences. bp is particularly interested in creating shared value along our supply chains.
- When considering mandates to support emissions reduction, consideration should be given to the structure of the mandate. Assessment of volumetric based systems, carbon intensity based mandates and energy mass balance type systems should be assessed taking into account local considerations and existing carbon prices to yield a system that can indeed make the cuts in emissions intended by the object of the policy.

- The mandate design should support a broad range of feedstocks and ensure feedstock is sustainable including a minimal indirect land use change (ILUC) impact. Accreditation on feedstocks should be aligned with the EU and International Sustainability & Carbon Certification (ISCC), supporting international consistency and markets. Consistent with the current treatment of biodiesel feedstock, international feedstocks should be eligible for use in local manufacturing.

bp believes it is vital that policy not only keeps pace with technological advances but drives it, and investment in advanced biofuels should not be discouraged by policy that favours first generation biofuels. If policy development is unable to keep pace with technological advances, policy must be developed in support of technology neutrality and with the necessary flexibility to enable emerging fuel technology. This is relevant to all areas of policy including tax and environmental policies.

For example, in Australia when the reduced excise rate for biodiesel replaced the cleaner fuels grant scheme in July 2015, renewable diesel was not included as producing second-generation biofuels in commercial quantities is a relatively recent development.

Renewable diesel, also known as hydrotreated vegetable oil or HVO, is a second generation biofuel made from organic biomasses; the production process makes renewable diesel chemically identical to petroleum diesel and meets the same ASTM specification (D975), but with 80% less greenhouse gas emissions and better cold storage properties than traditional biodiesel.

In recent years, the production and trade of biofuels has increased as policy settings around the world have matured and focused on reducing emissions through incentivising the production and use of biofuels. Traditionally trade has been in ethanol and biodiesel as they are the most established biofuels, however the trade of second-generation biofuels, including renewable diesel is increasing.

Promoting the export of domestically produced bioenergy, especially advanced biofuel, would stimulate the domestic bioenergy market and have broader positive impacts on the New Zealand economy as long as there is alignment with international sustainability accreditation on feedstocks.

The promotion of this could be supported through ensuring trade-related measures are flexible; and through alignment with international sustainability accreditation on feedstocks.

## Sustainable aviation fuel (SAF)

Globally Air bp fuels more than 6,000 flights every day and supplies fuel at around 900 locations in over 50 countries.

The volume of jet fuel used by bp alone presents an opportunity to make a material reduction in greenhouse gas emissions over the lifecycle of fuel by using sustainable aviation fuel (SAF) in place of regular jet fuel.

In 2016, bp was the first operator to start commercial supply of SAF through an existing hydrant fuelling system, at Norway's Oslo airport. bp SAF has been supplied at 16 airports worldwide across three continents – including in Norway, Sweden, France and in the US. Air Transport Action Group (ATAG)<sup>10</sup> statistics<sup>11</sup> show that more than 270,000 commercial flights had been made on sustainable aviation fuel by 2020.

SAF is made by converting sustainable material such as certain vegetable oils, recycled cooking oil or solid household waste to a high-quality synthetic product which is then blended with regular jet fuel. It can drop straight into aircraft and is approved for use in jet engines with no technical changes to aircraft necessary.

SAF gives a reduction of up to 80% in CO2 emissions depending on the sustainable material used, production method and the supply chain to the airport.

The development of SAF has been incentivised by the aviation industry's own emissions targets. The International Air Transport Association (IATA) aimed for zero growth in carbon by 2020 and a 50% reduction in carbon emissions by 2050, when compared to 2005<sup>12</sup>. The UK aviation industry aims to reach a net zero-carbon target for 2050. To achieve this the industry will employ more efficient aircraft and increase use of SAF and offsets.

Achieving the industry's long-term low carbon goals could ultimately require close to 100% SAF in long-haul flights. Scaling the production of SAF up to this level will require collaboration with aviation regulators to support this effort and long-term policy certainty. This will enable the necessary investment into commercial production, alongside continued research, to improve the technologies.

Many of the SAF production technologies are immature, but bp believes the best way to make them viable is a stable long-term policy framework that gives confidence for investors to back these projects. The following considerations should be included in policy framework design:

- In such an international industry, increased fuel costs in one country or region may lead to tankering and increased emissions from aircraft taking on board more fuel than necessary to reduce the need to refuel in those countries or regions with mandates. Care needs to be taken to avoid such situations.
- Technology neutrality is encouraged to help ensure efficiency in the market achieving compliance. bp sees this as a temporary measure until there is stability of supply at scale.
- Fuel suppliers are the most obvious point of obligation for policy compliance, as aggregators of fuel demand. However, other points of obligation could be considered as a mitigation for market distortion and CO2 leakage due to fuel tankering, for example to obligate airports to ensure a defined portion of fuel at their airport to be SAF, with the incremental cost shared between all users of the airport through landing fees, or similar.

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<sup>10</sup> <https://www.atag.org/>

<sup>11</sup> Blueprint for a green recovery p.6 <https://www.atag.org/our-publications/latest-publications.html>

<sup>12</sup> <https://www.iata.org/en/policy/environment/climate-change/>



- The cost of SAF is typically higher than that of conventional biofuels for ground transport due to tighter quality specifications. Therefore, bp supports policies allowing SAF to be on an equal footing with other biofuels. bp supports SAF to be counted as a low carbon fuel in regulated emissions trading and/or offsetting schemes.
- For advanced biofuel technologies such as gasification, pyrolysis and electro-fuels where technology risks are still relatively high, bp supports additional transitional support mechanisms to provide greater certainty on returns on investment.

## Marine

bp Marine supplies most of the major marine bunker fuel ports around the world, offering various grades of fuel oil, marine diesel, or gas oil.

Marine fuels is a large and complex global industry, and bp Marine has a presence in more than 50 ports around the globe.

As the shipping industry looks to rapidly decarbonise by 2050, low-carbon fuels, such as biofuels, will need to become commercially available. Additionally, it is expected that the International Maritime Organisation (IMO) will make changes to the International Convention for the Prevention of Pollution from Ships (MARPOL Convention) requiring lower carbon emissions in the short term.

bp Marine is currently supplying biofuel for use in ship bunkering in Rotterdam and is actively exploring expanding this into other jurisdictions through its supply portfolio.

Although, like most sectors, there are technical and logistical issues that need to be resolved before biofuels can be introduced at a larger scale in the shipping sector, there is interest in progressing low carbon fuels from both the fuel and shipping industry.

Volumes of marine fuel sold in our region's waters are lower than larger shipping ports such as Rotterdam and Singapore, however policy settings should be conducive to biofuel usage in marine fuels as demand from the shipping sector continues to rise.

## E-fuels

E-fuels is an umbrella term that refers to the conversion of electrical energy to gaseous and liquid fuels. If generated from renewable power, e-fuels are considered sustainable fuels. E-fuels use common constituents such as carbon dioxide, nitrogen and water to form chemical compounds that can serve as fuels or feedstock. They could be potential disruptors to the existing liquid fuels space in the long-term, with drop-in fuels such as e-diesel, as long as the power required to produce these fuels is sufficiently low cost.

E-fuels are gaining attention from energy companies, the automotive industry and Government agencies, particularly in Europe, as a means to decarbonise the transport sector with fuels which are broadly compatible with existing engines, and distribution infrastructure, and can be stored efficiently and at low cost.

The energy needed for CO<sub>2</sub> conversion to liquid fuels, or chemicals, is considerable and would need to come from renewable sources, or directly from concentrated sunlight (solar fuels). The development of efficient and low-cost catalysts is important and has been accelerated, with advances in material science and artificial intelligence. The economic feasibility of e-fuel commercialisation remains challenging due to the capital cost per unit of output and power consumption. E-fuels will compete with electrification of the transport sector, especially at the domestic car level, but may be better suited to heavy-hauling applications or replacing conventional fuels used in aviation. E-fuels may be developed as a storage medium of renewable energy, like hydrogen.

A key driver for e-fuels deployment may be to achieve long-term, deep decarbonisation of the transport sector - it may be required to support in-market segments less well suited to electrification, such as aviation, marine and long-haul road freight.

## Hydrogen

Hydrogen can be created from renewable power by electrolyzing water or produced by steam methane reformers. Once developed, it can be stored under pressure in caverns, pipelines or vessels. It can be blended into some natural gas networks at levels of up to 10% by volume, without the need for system modification, and used for heat, both domestic and industrial, or power<sup>13</sup>.

70Mt of grey hydrogen is produced worldwide today, 90% of which is used in industrial feedstock. Less than 2% of this hydrogen is produced by water electrolysis. Based on a trajectory consistent with net-zero by 2050, global hydrogen demand is forecast to increase. This increase is driven by the emergence of hydrogen as a clean energy vector and development of clean hydrogen markets to support decarbonisation in heavy transport and industrial heat.

The ultimate scale and pace of demand growth will depend on the pace of cost reductions (scale-up of technology and cheap renewable power), investment in associated infrastructure, and Government support. 'Blue' hydrogen, produced from steam methane reforming of natural gas in combination with CCUS, needs to be scaled up, but longer-term 'green' hydrogen, powered by renewables, will play an important role as we progress towards 2050. Green hydrogen can be produced by electrolyzing water using renewable power sources. Less than 1% of the world's hydrogen is currently produced by this method. bp believes that for hydrogen to make a real difference as a clean energy vector and clean feedstock, both blue and green hydrogen will be required.

Hydrogen could contribute to decarbonisation of many sectors, including transport, heating, lighting and industrial processes. Most hydrogen demand is likely to be in areas where electrification is not technically or economically feasible. Hydrogen's versatility is an important asset and can improve the resilience and flexibility of the whole energy system. Approximately 95% of hydrogen comes from fossil sources with high CO<sub>2</sub> emissions. Alkaline Electrolysis (AEL) and Proton Exchange Membrane (PEM) are the two electrolysis technologies which are commercially available today. Solid Oxide Electrolytic Cell (SOEC) and Anion Exchange Membrane (AEM) technologies are currently in development<sup>14</sup>.

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<sup>13</sup> bp Energy Outlook 2018, <https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/energy-outlook/bp-energy-outlook-2018.pdf>

<sup>14</sup> bp Energy Outlook 2019, <https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/energy-outlook/bp-energy-outlook-2019.pdf>

## Decarbonised gas and Carbon Capture Utilisation and Storage (CCUS)

In 2019, natural gas consumption increased by 2%, with the share of gas used in primary energy rising to a record high of 24.2%.

CCUS is likely to play an important role in getting to net zero and meeting the Paris goals at lower cost. The IPCC has set out scenarios in which deployment of CCUS more than halves the cost of limiting temperature rise to 2 degrees. CCUS can achieve deep emissions reductions and is a proven technology, but Government support is needed to commercialise and deploy it at scale to ultimately bring down the costs. CCUS offers significant cost and scale advantages over other low carbon options because it enables decarbonisation of existing infrastructure. Re-purposing existing infrastructure to distribute decarbonised gas or hydrogen reduces the cost of decarbonising a range of sectors, including transport, heating and industrial processes, compared to higher levels of electrification or bio-alternatives. Hard-to-abate sectors of the economy, such as LNG, may benefit from utilising such technology to support producing decarbonised gas. Decarbonised gas is critical in the short to medium term as a firming option for renewable power.

Natural gas has unique characteristics that make it an important part of the energy transition. It is locally abundant, affordable, easily transported, flexible and an energy-rich and efficient store of energy. The combination of renewables and gas supports decarbonisation in hard-to-abate sectors and provides a basis for the development of hydrogen, whether blue or green.

### 2.4 Adaptation and resilience

The Intergovernmental Panel on Climate Change (IPCC) is clear that the impacts of climate change are already occurring and are projected to become more severe even as substantial action is taken to reduce emissions.

Adaptation is essential for both bp and society and will require increased resilience in the energy system and other infrastructure. But adaptation is not an excuse for inaction; the world still needs a rapid transition to net zero.

We expect that Governments will lead adaptation efforts, but success will require the cooperation of all parties, including organisations like bp.

Climate impacts could occur in all regions where bp operates. These might include greater frequency and severity of storms, floods and sea level rise, with consequences such as damage to key infrastructure, and disruption to availability of water and food.

Risks associated with climate change and the transition to a lower carbon economy impact many elements of our strategy and, as such, these risks are considered through key business processes including the strategy, annual plan, capital allocation and investment decisions.

We provide guidance on how to characterise climate-related physical risk and approaches to managing it through our Operating Management System – bp’s global framework for all our operations.

We are also supporting science and research to help us understand the potential impacts of projections for climate change at Imperial College, UK and Princeton University, US.

Governments need to develop and implement national adaptation strategies, including at the local and regional levels. These strategies will need to include the private sector as a key player in developing resilient infrastructure and business processes, as well as bringing forward innovative technology solutions.

bp remains committed to the goals of the Paris Agreement and has the ambition to achieve Net Zero as a company by 2050 or sooner and to help the world achieve the same.

## 2.5 A just transition – jobs of the future

As we transform the economy, and support global transformation to net zero, we must ensure this transition is just. The workforce will need to adjust to support these new forms of energy and technology. For bp working with the workforce to ensure social inclusion, skills transfer and retraining goes side by side with reducing emissions. Our purpose is reimagining energy for people and the planet. We are part of a society and we value the contribution of the communities in which we operate. We want to improve people's lives, ensuring the transition to a low carbon economy does not leave anyone behind or disadvantage particular groups. We support the Climate Change Commission's intention to have an equitable, inclusive, and well-planned climate transition and agree with BusinessNZ's reference to this in their submission:

*"48. We support the Commission's finding that the transition to a low emissions society needs to be well-signalled, equitable, and inclusive in order to maximise opportunities, minimise disruption and inequalities, and be enduring as a result."<sup>15</sup>*

bp supports the recommendation that Government develop an Equitable Transitions Strategy that is linked to the Government's Economic plan. We look forward to working with the Government on developing a robust vision and strategy for the future workforce of NZ, as part of this strategy.

We support the Climate Change Commission's enabling recommendation that all forms of Government should work together, developing the required partnerships to support workplans and incorporate the views of all New Zealanders. We agree with the Climate Change Commission that future programs should take action to ensure genuine and enduring partnerships with iwi/Maori.

Workers and communities which today depend on fossil fuels will need to find alternative sources of income and revenue. It is important that their view is incorporated at the onset to allow for policies and programs to be developed that respond to their income needs during the transition and create the jobs of the future.

## 2.6 Looking ahead to COP26

As the world gets closer to meeting in Glasgow at COP26 this November, the role of countries that have progressed carbon pricing legislation and declared net zero goals by 2050 becomes more important to put the world on a pathway to net zero. This is a critical meeting, as the impact and social effects of the COVID-19 pandemic is realised in the context of redesigning socio-economic constructs to be more equitable, more people-orientated and lower in carbon pollution. We are committed to 'building back better' and working with Governments around the world on initiatives that:

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<sup>15</sup> BusinessNZ and the BusinessNZ Energy Council submission p.11

- **Support the UK Presidency's goal of the COP to put the world on a pathway of net zero emissions by 2050. bp encourages countries to declare ahead of COP 26 net zero greenhouse gas (GHG) emission targets and goals by 2050 or sooner.**
- Support the finalisation of the Article 6 rulebook (a framework for international carbon markets), with effective and transparent principles on international emission transfer accounting.
- Increase the mobilisation of climate finance flows to developing countries for mitigation and adaptation purposes, in line with the goals of Article 9 of the Paris Agreement.
- Support the development of a robust and transparent NDC registry.
- Support the development and finalisation of the Enhanced Transparency Framework on country climate progress reporting and the Global Stocktake.
- Support the recommendations of the Lima Work Programme on Gender and its gender action plan (GAP).

### 3. bp Contact

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