MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

COVERSHEET

Minister	Hon Dr Megan Woods	**Portfolio**	Energy and Resources
Title of Cabinet paper	A Sustainable Transport Biofuels Mandate: preferred design for public consultation	**Date to be published**	19 July 2021

List of documents that have been proactively released		
Date	**Title**	**Author**
April 2021	A Sustainable Transport Biofuels Mandate: preferred design for public consultation	Office of the Minister of Energy and Resources Office of the Minister of Transport
19 April 2021	Sustainable Transport Biofuels Mandate: Release of Consultation Document CBC-21-MIN-0046 Minute	Cabinet Office
April 2021	Sustainable Transport Biofuels Mandate SAR and RIS	MBIE

Information redacted **YES / <u>NO</u>**

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In Confidence

Office of the Minister of Energy and Resources

Office of the Minister of Transport

Chair, Cabinet Business Committee

A Sustainable Transport Biofuels Mandate: preferred design for public consultation

Proposal

1 This paper seeks Cabinet's agreement to release a public consultation document on the preferred design of a sustainable transport biofuels mandate. This consultation document proposes a model largely similar to the 2008 Biofuels Sales Obligation, but makes several key changes to raise the level of ambition, prioritise focus on emissions reduction and increase flexibility by applying the mandate to all transport fuels.

Relation to government priorities

2 The proposed sustainable transport biofuel mandate (the Sustainable Biofuels Mandate) will be one of the many actions taken in response to Parliament's declaration of a climate change emergency, and aligns with the Government's focus on intergenerational wellbeing as set out in the 2020 Speech from the Throne.

3 The Sustainable Biofuels Mandate will support the Government's commitment to transition to a clean, green and carbon-neutral New Zealand, as outlined in *Our Manifesto to Keep New Zealand Moving*. In particular, the Sustainable Biofuels Mandate will help to:

- ensure a just transition to a zero carbon and climate-resilient economy and society, which also optimises economic development opportunities;
- continue to support New Zealand's freight network to become more sustainable and efficient; and
- as part of the COVID-19 economy recovery, reshape New Zealand's energy system to be more renewable, affordable and secure, while creating new jobs and developing the high-skill workforce our future economy requires to thrive.

Executive Summary

4 Transport currently comprises 47 percent of national carbon dioxide (CO_2) emissions. If New Zealand is to meet its net zero emissions target by 2050, transport emissions will need to fall significantly, and quickly.

5 Liquid biofuels are a renewable, low-emissions fuel source that can be immediately used to reduce our transport sector emissions.

6 Biofuels are the only viable mitigation opportunity for New Zealand's existing internal combustion engine (ICE) vehicle fleet, which will remain active over the next 20 years on average. For the aviation and heavy freight sectors, biofuels are the only immediately commercially available mitigation option in New Zealand. Unlike

biofuels, other low-emissions transport fuels, such as hydrogen and electricity, are not compatible with existing ICE vehicles and fuelling infrastructure.

A mandate is the preferred approach to increase uptake of biofuels in transport

7 Mandating the supply of biofuels is a key mechanism to address barriers to their uptake in transport.

8 Biofuels mandates of some type are being used in nearly 70 countries. Mandates can be set to focus on reducing the net GHG emissions of fuels sold, or the amount of biofuel required to be sold, or to be blended.

9 New Zealand briefly had a volume-based sales mandate in 2008, with the 2008 Obligation, although it was repealed soon after coming into effect.

10 Following Cabinet direction, officials from the Ministry of Business, Innovation and Employment and the Ministry of Transport have reviewed the 2008 Obligation to determine its suitability as a measure to facilitate an increase in the supply and use of sustainable biofuels in transport.

11 The 2008 Obligation is largely fit for purpose and would be retained with the Sustainable Biofuels Mandate. However, several design changes could support New Zealand to make larger gains in emissions reductions. These key amendments are to:

- **adopt a percentage GHG emissions reduction mandate** rather than a volume-based sales mandate. International experience, and modelling conducted as part of the officials' review, indicates that an emissions reduction mandate will generate greater emissions reductions than a volume based one;

- **apply the Sustainable Biofuels Mandate to all transport fuels**, including domestic aviation fuel, rather than restricting the mandate to petrol and diesel for road transport. Fuel suppliers would have flexibility as to where biofuels are deployed; and

- **set the level of the Sustainable Biofuels Mandate's ambition higher than the 2008 Obligation**, and allow for provisional future levels to be set in conjunction with the cycle of five-yearly emissions budgets.

The Sustainable Biofuels Mandate will set a higher ambition level and achieve greater emissions reductions over a volume-based sales mandate

12 The Sustainable Biofuels Mandate's emissions reduction potential makes it one of the strongest implementable measures to abate transport emissions. If in effect over the period 2023 – 2025, modelling suggests around 1,342 kilotonnes of GHG emissions could be avoided. In comparison, the Clean Car Standard and Clean Car Discount combined would abate up to 1,601 kilotonnes of GHG emissions over the period 2020-2025 (note these time periods differ as modelling for the Clean Car policies was conducted earlier).

13 To put this in context, the Sustainable Biofuels Mandate would reduce the level of annual transport emissions forecast for 2025 by 4.1 percent in that year alone. In contrast, reinstating the 2008 Obligation would result in emissions reductions of 1.2 percent in 2025.

14 The Sustainable Biofuels Mandate sets a higher level of ambition for the uptake of low-carbon liquid fuels than that proposed by the Climate Change Commission (the CCC) in their 2021 Draft Advice for Consultation.[1] Modelling and initial stakeholder discussions signal that the CCC's recommendation is conservative, and that a higher level of ambition is achievable.[2]

How would a GHG emissions reduction mandate work?

15 A GHG emissions reduction mandate would require liable fuel suppliers to reduce the emissions of the liquid fossil fuels they supply in New Zealand by a set percentage each year. Fuel suppliers would do this by selling more and more biofuels (in blends or neat form) in place of fossil fossils over time. Both domestically produced and imported biofuels could be used to meet the percentage reduction, subject to their meeting set sustainability criteria.

16 The Sustainable Biofuels Mandate's design would encourage fuel suppliers to supply biofuels with low lifecycle emissions, including advanced 'drop-in' biofuels. Such fuels are fully compatible with existing ICE vehicles and fuel infrastructure.

17 The lifecycle emission and sustainability of biofuels would need to be assessed and independently audited by a third party verification service to qualify. This will ensure the emissions reductions claimed by liable fuel suppliers are genuine and that qualifying biofuels are sustainable.

18 For the first few years, the bulk of biofuels used to meet the emissions reduction target would be imported, as is done for the majority of New Zealand's fossil fuel supply. This is due to existing limitations in domestic biofuels production, and the long-lead time required to expand this capacity.

19 The Sustainable Biofuels Mandate provides the platform for domestic biofuels production capacity to expand over time. However, the international experience is that, while a necessary prerequisite, a mandate alone is insufficient to ensure a sustainable domestic industry over time. This suggests that complementary measures may be needed. For example, direct subsidies to biofuels producers to overcome upfront establishment costs.

Economic opportunities from the Sustainable Biofuels Mandate

20 By encouraging liable fuel suppliers to favour biofuels with low lifecycle GHG emissions, the Sustainable Biofuels Mandate will accelerate the adoption of advanced drop-in fuels in New Zealand. This may also stimulate their domestic production. Advanced biofuels offer the most direct and indirect benefits as they generally have the lowest carbon and environmental footprints, and do not require modifications to engines or fuel infrastructure.

21 A sizeable domestic biofuels industry could have significant positive impacts on the levels of regional development and employment opportunities, as well as on domestic primary industries with biofuels feedstock production capacity.

[1] The Climate Change Commission's draft advice proposes to set a target and introduce policies so that at least 140 million litres of low-carbon liquid fuels are sold in New Zealand by 31 December 2035.
[2] In their 2-21 report to EECA, Sapere estimate that around 270 million litres of advanced biofuels could potentially be produced in New Zealand by 2030, using local tallow and forest biomass as feedstock. With importation, this figure could significantly increase.

22 For example, if domestically produced sustainable aviation fuel is used to account for 50 percent of New Zealand's jet fuel demand, Air New Zealand, Z-Energy and Scion estimate that this would enable 1,800 new permanent direct jobs, over 5,000 additional indirect jobs and another 6,400 temporary infrastructure development jobs. Gains would be even greater if there was also domestic production of road transport biofuels.

23 The Ministry for Primary Industries (MPI) has commissioned a major report analysing the commercial viability for using domestic woody biomass to produce liquid transport biofuels. This includes identifying the magnitude of the domestic production opportunity, including the level of regional economic development and employment creation.

Economic costs from the Sustainable Biofuels Mandate

24 A biofuels mandate will increase fuel prices as biofuels currently cost more to produce relative to conventional fossil fuels. These increased fuel prices will have a negative impact on real gross domestic product (GDP) and to households.

25 If in effect in 2023, modelling indicates that for 2025, the Sustainable Biofuels Mandate would result in a 0.2 percent (0.4 cents/litre) increase in petrol prices, a 5.8 percent (7.1 cents/litre) increase in diesel prices, and an 11.2 percent (7.1 cents/litre) increase in jet fuel prices.

26 While there will be an economic cost, New Zealand has made a commitment to decarbonise and become a net-zero emissions economy. Options to decarbonise the existing ICE vehicle fleet, and heavy freight, shipping and aviation sectors are few to none. Biofuels are one of the lowest cost carbon mitigation opportunities for these hard-to-abate sectors.

27 Overtime, the cost of biofuels is likely to decrease owing to technological progress and expanded production capacity. This would reduce impacts to GDP. In the short term, complementary measures could be introduced to mitigate negative economic impacts, such as targeted investment in public transport infrastructure to support affected low-income New Zealanders.

Next steps

28 The Sustainable Biofuels Mandate, particularly its level of ambition and coverage, would be reviewed in 2024. This review will give fuel suppliers and the Government confidence to proceed.

29 The attached public consultation document for your agreement seeks public feedback on the Sustainable Biofuels Mandate's design. We intend to have a six-week period of consultation over May 2021 to June 2021. Following consultation, we expect to report back with the final proposal for Cabinet's consideration by 30 September 2021.

30 The attached Regulatory Impact Statement sets out the analysis of the options considered for the Sustainable Biofuels Mandate's design, including the 2008 Obligation. It also provides supplementary analysis of the December 2020 in-principle decision to implement a biofuels mandate, as required by the *Impact Analysis Requirements for Regulatory Proposals.*

Background

31 On 16 December 2020, the Cabinet Business Committee agreed in principle to implement a biofuels mandate, subject to outcomes of an officials' review of the 2008 Obligation [CBC-20-MIN-0139 refers].

32 The Ministry of Business, Innovation and Employment and the Ministry of Transport, in consultation with the Ministry for Primary Industries, the Energy Efficiency and Conservation Authority, the Ministry for the Environment and Waka Kotahi, were directed to conduct the review and undertake further research into the costs and benefits of a biofuels mandate and sustainability criteria for biofuels.

33 The Minister of Energy and Resources and the Minister of Transport were invited to report back to the Cabinet Economic Development Committee on the outcomes of the officials' review and to seek approval to release a public consultation document on the preferred biofuel mandate's design.

Biofuels offer a practical alternative to conventional fossil fuel use across the transport sector

34 Transport comprises approximately 47 percent of national CO_2 emissions and 21 percent of total GHG emissions. Decarbonising the transport sector is therefore critical for New Zealand to meet its net zero emissions target by 2050. In their 2021 Draft Advice for Consultation, the Climate Change Commission has signalled transport emissions need to fall by approximately 50 percent by 2035 to achieve nearly 100 percent reductions in transport emissions by 2050.

Biofuels release less carbon dioxide (CO_2) emissions than fossil fuels

35 Biofuels are liquid fuels derived from biomass (plant or animal material), and are used as an alternative to fossil fuel-based liquid fuels, such as petrol, diesel and aviation fuels.

36 Biomass used to produce biofuels is referred to as 'feedstock'. Feedstocks commonly comprise of agricultural crops and residues, forestry residues, agricultural by-products, and organic wastes.

37 Biofuels reduce our net CO_2 emissions because they are made from renewable sources that cycle CO_2, unlike conventional fossil fuels. CO_2 is captured as biomass grows, with roughly the same amount of CO_2 released when combusted for transport.

There are a range of sustainable biofuels that can be used for transport, although their emissions reduction potential varies

38 Biofuels offer a practical, low-emissions solution to reduce New Zealand's transport sector emissions in the immediate future.

39 There are two main categories of biofuels used for transport:

- **conventional biofuels**, which are generally produced from edible feedstock. The majority are bioethanol, a petrol substitute, and biodiesel, a diesel substitute.
- **advanced biofuels (many of which are drop-in fuels)**, which are generally produced from non-edible feedstock, agricultural and organic waste residues.

These include bio-derived oils used to make biofuels for aviation, which are commonly referred to as biojet, or sustainable aviation fuel (SAF).

40 Advanced biofuels are preferred because they have lower emissions and environmental footprints on average. This results from their being commonly generated from low-emissions feedstocks and possessing a higher level blend capacity.[3]

41 Production costs for advanced biofuels are, however, higher than conventional biofuels and fossil fuels. For example, the landed price of conventional ethanol is currently around 30 percent more expensive than petrol. Advanced biofuels, like SAF, are two to three time more expensive on average.

Biofuels can support decarbonising the aviation, shipping and heavy road freight sectors, which have few practical low-emissions fuel alternatives

42 Biofuels are the leading alternative to fossil fuels in New Zealand's aviation, shipping and heavy road freight where low emission vehicles, ships and planes powered by electricity and hydrogen are prohibitively expensive, or are still being developed.

43 Biofuels are widely compatible with existing internal combustion engine (ICE) vehicles and refuelling infrastructure, subject to the relevant blend limits. Biofuels can therefore be used to reduce emissions much sooner than other low-emissions fuels, and without costly and time-intensive upfront modification or establishment. In contrast, using hydrogen would first require establishing sources of supply, the importation of hydrogen-compatible vehicles and the construction of costly hydrogen-compatible fuelling infrastructure.

44 The following table compares the estimated marginal abatement costs for fuel-switching for heavy trucks.[4] Biofuels are estimated to have the lowest marginal abatement cost when charging is more or less frequent than overnight. However, this analysis assumes that both hydrogen and battery electric heavy trucks are commercially available in New Zealand, which they are not at present.

Table 1 - estimated marginal abatement costs for fuel-switching for heavy trucks ($/tonne CO_2e)

Recharging frequency	Once a fortnight	Once a week	Once every two days	All overnight	50% top-up during day	Full top-up during day	Full top-up twice a day
Biofuel	$189	$189	$189	$189	$189	$189	$189
Battery Electric	$859	$477	$192	-$41	$109	$190	$248
Hydrogen	$525	$450	$425	$456	$451	$449	$446

[3] Blend limits for conventional biofuels in New Zealand are currently 10 percent and 7 percent, for ethanol in petrol and biodiesel in diesel, respectively. Engine problems may result if these limits are exceeded. In contrast, advanced biofuels can be blended up to 100 percent, depending on the relevant fuel specifications.

[4] This table has been informed by a marginal abatement cost curve analysis prepared by the Ministry for the Environment in 2019. The assessment focused solely on technical potential, and did not analyse infrastructure or supply constraints.

45 The Climate Change Commission estimates the cost of emissions reductions through the use of biofuels to be approximately $400/tonne CO_2e.[5]

46 In its Draft Advice for Consultation, the Climate Change Commission also recommends increasing support for biofuels uptake across the aviation, shipping and heavy freight sectors.

Biofuels can be an immediate low-emissions transition fuel as the light vehicle fleet is electrified

47 Biofuels are the only viable option to achieve an immediate reduction in petrol and diesel emissions from the existing light vehicle fleet as it gradually transitions to low- and zero- emissions vehicles. Their use is critical because every conventional vehicle that enters the fleet today will be driven until it is, on average, 20 years old.

The 2008 Biofuels Sales Obligation offers a robust mandate model but needs modernising

48 The 2008 Obligation provides a robust model for the Sustainable Biofuels Mandate.

49 The Sustainable Biofuels Mandate proposed in this paper builds on and improves the 2008 Obligation. It retains the majority of the 2008 Obligation's design features, including its compliance model (as outlined in paras 79 – 83), but we propose modifying it to:

- have a GHG emissions reduction mandate rather than a volume-based sales mandate;
- apply the Sustainable Biofuels Mandate to all transport fuels; and
- set a higher level of ambition than the 2008 Obligation for 2023 – 2025, and to make it durable by setting provisional future levels for 2026 – 2030 and 2031 – 2035. These periods reflect the cycle of five-yearly emissions budgets.

50 These recommended amendments will better enable New Zealand to meet its climate change commitments and provide more flexibility to fuel suppliers and consumers.

We propose adopting a greenhouse gas emissions reduction mandate over a volume-based sales mandate

How would a greenhouse gas emissions reduction mandate work?

51 The proposed Sustainable Biofuels Mandate would require fuel suppliers[6] that first purchase or import fuel for use in New Zealand to reduce the total emissions of the fuels they sell by a set percentage each year. Fuel suppliers would do this by blending biofuels into some, or potentially all, of the fuels they sell. Both domestically produced and imported biofuels could be used to meet the percentage reduction, subject to their meeting set sustainability criteria.

[5] Climate Change Commission, Draft Supporting Evidence, Chapter 4b: Reducing emissions – opportunities and challenges across sectors: Transport, buildings and urban form.
[6] Under the Sustainable Biofuels Mandate, liable fuel suppliers would be: Allied Petroleum, BP, Challenge, Caltex (administered by Z Energy), Gull, Gasoline Alley Services, McKeown Group, Mobil, Nelson Petroleum Distributors, Petroleum Logistics, RD Petroleum, Southfuels, Northfuels, Waitomo Group, Z Energy.

52 The sustainability criteria will set the acceptable baseline for environmental performance. The specific standards would be set out in regulation and would focus on ensuring that biofuels and the cultivation of their feedstocks do not:

- compete with food production and where relevant are not grown on land of high value for food production. A case where the latter is not relevant is where an energy crop, like rape-seed, is grown as a rotational crop to improve soil quality as part of usual farming practice;
- reduce indigenous biodiversity or adversely affect land with high conservation value; and
- affect land of high carbon stocks. Although the effects of direct and indirect land use change would be considered when evaluating the GHG emissions reduction of biofuels, land should not be converted for the production of biofuel feedstocks if the stored carbon it emitted upon conversion could not, within a reasonable period, be compensated by the greenhouse gas emission saving resulting from the production of biofuels.

53 There are international standards for assessing biofuels against sustainability criteria, such as the International Sustainability and Carbon Certification (ISCC) standard ISCC-EU and the Roundtable on Sustainable Biofuels standard (RSB). Those standards will be referred to as officials develop regulations on the technical requirements for biofuels that would be counted towards the Sustainable Biofuels Mandate. Subject to Cabinet agreement, officials intend to develop the regulations on the technical requirements for biofuels in parallel with the legislative process for the primary legislation for the Sustainable Biofuels Mandate.

54 Fuel suppliers would have flexibility in deciding the types and quantities of biofuels used to meet their mandated emissions reduction, and where their biofuels would be deployed. This will allow fuel suppliers to make commercial decisions based on consumer demand and available supply. Biofuels could therefore be distributed and used across the transport sector, subject to their meeting sector-specific fuel specification requirements.

A GHG emissions reduction mandate places greater incentives on using higher emissions reducing biofuels in New Zealand

55 With a sales mandate, the 2008 Obligation focussed fuel suppliers on increasing the supply of biofuels, with less emphasis on the level of emissions reduction achieved.

56 The 2008 Obligation did require qualifying biofuels to have minimum levels of GHG emission reductions of no less than 35 percent relative to fossil fuels. However, this minimum threshold is unlikely to incentivise supply and demand for biofuels with GHG emissions reduction capacities beyond 35 percent. This is because biofuels with lower lifecycle emissions, such as advanced biofuels, are more costly.

57 A GHG emissions reduction mandate would more effectively incentivise fuel suppliers and biofuels producers to purchase and supply biofuels with higher emissions reduction potential. Although more expensive on average, smaller quantities of higher emissions reducing biofuels would be needed for liable fuel suppliers to meet their mandated percentage emissions reduction.

A GHG emissions reduction mandate provides economic opportunities and a platform for domestic biofuels production capacity to expand over time

58 By encouraging liable fuel suppliers to favour biofuels with low lifecycle GHG emissions, the Sustainable Biofuels Mandate will accelerate the adoption of advanced drop-in fuels in New Zealand. This may also stimulate their domestic production. Advanced biofuels offer the most direct and indirect benefits as they generally have the lowest carbon and environmental footprints, and do not require modifications to engines or fuel infrastructure.

59 A sizeable domestic biofuels industry could have significant positive impacts on the levels of regional development and employment opportunities, as well as on domestic primary industries with biofuels feedstock production capacity.

60 For example, if domestically produced sustainable aviation fuel is used to account for 50 percent of New Zealand's jet fuel demand, Air New Zealand, Z-Energy and Scion estimate that this would enable 1,800 new permanent direct jobs, over 5,000 additional indirect jobs and another 6,400 temporary infrastructure development jobs. Gains would be even greater if there was also domestic production of road transport biofuels.

61 The Ministry for Primary Industries (MPI) has commissioned a major report analysing the commercial viability for using domestic woody biomass to produce liquid transport biofuels. This includes identifying the magnitude of the domestic production opportunity, including the level of regional economic development and employment creation.

62 The analysis commissioned by MPI will be able to inform Ministers' final decisions in September. A key issue within the analysis is the competition for woody biomass from other emissions intensive sectors, for example process heat.

63 Although a necessary prerequisite, a mandate alone will not generate the conditions needed to ensure a sustainable domestic biofuels industry over time. This suggests that complementary measures may be required. For example, direct subsidies to biofuels producers to overcome upfront establishment costs. Despite this, consultation will canvas what design features of the mandate may assist to encourage more domestic supply.

Greater certainty in the levels of emissions reductions achieved per year and alignment with upcoming emissions reduction budgets

64 Although total emissions reductions will vary across fuel suppliers, a GHG emissions reduction mandate will provide greater certainty in the level of expected aggregate emissions reductions for any forecast period. This would help to inform the Government in planning additional transport decarbonisation policies.

Alignment with international best practice

65 GHG emissions reduction mandates for transport fuel are already being used by a number of jurisdictions, including California, Sweden and the European Union. The majority of these countries are also leaders in the production and use of biofuels. More discussion on how the proposed Sustainable Biofuels Mandate compares with the mandates in these overseas jurisdictions is discussed in paragraphs 79 and 80.

Compatibility with other low-emissions fuels

66 The Sustainable Biofuels Mandate could be expanded to include other low-emissions fuels, such as hydrogen and electricity. While this could decrease incentives for biofuels supply and use, and expanded Sustainable Biofuels Mandate could support additional transport decarbonisation initiatives, such as electrification of the light vehicle fleet.

67 Extending the range of emissions reducing transport fuels available to fuel suppliers could also generate corresponding economic benefits, such as reduced compliance costs for liable fuel suppliers and end-fuel costs for the consumer. Signalling this intent early could also incentivise fuel suppliers to begin taking steps to expand their supply of other low-emissions fuels and supporting infrastructure, such as EV charging stations at refuelling locations.

68 Officials will report back in 2024 on whether to expand the Sustainable Biofuels Mandate to include other fuels, such as electricity and hydrogen.

69 We consider the focus should remain on increasing the supply and use of biofuels in the first two years of the Sustainable Biofuels Mandate, but consider there is value in creating the potential for expansion to other low-emissions fuels at a later stage.

70 Low-emissions transport fuel mandates are already in practice internationally. For example, California's Low Carbon Fuel Standard currently requires liable fuel suppliers to reduce their total GHG emissions from transport fuel through a mix of qualifying low-carbon intensity[7] (low-emissions) fuels.

A GHG emissions reduction mandate will only be slightly more administratively complex than a volume-based sales mandate

71 A mandate will impose compliance costs for liable fuel suppliers and administrative costs for the regulating agency. Certification and verification of a biofuel's lifecycle emissions[8] and its performance against sustainability criteria would be required for the biofuel to count against the Sustainable Biofuels Mandate. Consistent methodologies for assessing lifecycle emissions and sustainability criteria would be set out in regulation.

72 A volume-based sales mandate modelled on the 2008 Obligation would still require emissions and sustainability certification and verification to ensure qualifying biofuels met the minimum 35 percent reduction threshold and other designated sustainability criteria. A GHG emission reduction mandate would thus represent a similar level of administrative complexity as under the 2008 Obligation.

Why not rely on the New Zealand Emissions Trading System?

73 In theory, increased demand and supply of biofuels might be achieved by bringing them under the New Zealand Emissions Trading System (ETS).

[7] **Carbon intensity** is the measure of GHG emissions associated with producing and consuming a transportation fuel, measured in grams of carbon dioxide equivalent per megajoule of energy (gCO2e/MJ).
[8] **Lifecycle assessment** addresses the environmental impacts of a given product based on the identification of energy and materials inputs and emissions released to the environment over its entire lifetime. Lifecycle assessment is therefore well equipped to capture the variation across biofuels owing to differing input feedstocks, production and distribution methods.

74 However, even continuing to zero-rate the biofuel component of transport fuels, biofuels are unlikely to compete with fossil fuels under the current ETS and carbon price, particularly if oil prices continue to be diluted by global subsidies. The current emissions price for diesel adds around 9 cents per litre, and for petrol, 7.8 cents per litre. These are a very small component of fuel prices and are unlikely to incentivise the production and supply of biofuels.

75 As well, demand for transport fuel is relatively inelastic. Large increases in fossil fuel prices are needed to mute their demand. These are unlikely to occur in the short-term.

We propose that the Sustainable Biofuels Mandate apply to all transport fuels and suppliers would decide where biofuels would be deployed to reduce their emissions

76 The 2008 Obligation set biofuel sales requirements for petrol and diesel for use in road transport.

77 We propose the Sustainable Biofuels Mandate apply to any liquid transport fuel. This is important because aviation, shipping and heavy vehicle road freight are difficult sectors to abate, with few practical options to limit their emissions.

78 Fuel suppliers, in response to demand from their customers, would decide where biofuels are best deployed. As long as liable fuel suppliers operate within the existing regulated fuel specifications, they would choose:

- *The type(s) of biofuels they would supply and to what blend levels.* For example, liable suppliers could choose to reduce the emissions of their fuels by predominantly supplying biodiesel and sustainable aviation fuels.

- *The customers and locations to which they would supply*. For example, suppliers could choose to fulfil their emission reduction obligations by supplying primarily to road freight companies and the aviation sector.

79 This flexibility would better enable fuel suppliers to respond to short-term supply disruptions, such as from unforeseen disruptions to importation sources, seasonality in biofuel supply and climate conditions.

80 To enable this flexibility, a uniform emissions reduction percentage would apply across all fuel types. However, as conventional biofuels are cheaper than advanced drop-in biofuels, there is risk that a single percentage could delay the latter's introduction. To inform our view on whether it may be preferable to have separate targets by fuel type, the attached consultation document seeks stakeholders' views on this issue.

81 As under the 2008 Obligation, the Sustainable Biofuels Mandate would not apply to any fuels sold for export. This would also exclude any fuel used by aircrafts and ships on international trips. This design reflects the Sustainable Biofuels Mandate's overarching purpose: to support New Zealand in meeting its domestic emissions reduction targets as set under the Climate Change Response Act 2002.

The Sustainable Biofuels Mandate would set a higher level of ambition than the 2008 Obligation, with provisional future levels tied to the cycle of five-yearly emissions budgets

82 The Sustainable Biofuels Mandate would require fuel suppliers to reduce the emissions of the fuels they sell by a set percentage each year. The proposed initial percentages are:

	Year 1 2023	Year 2 2024	Year 3 2025
Required percentage emissions reduction across fuel sales	1.2%	2.3%	3.5%

83 These initial percentages are low compared to the targets required by some of the countries that have GHG emissions reduction mandates. For example, Sweden has mandated that fuel suppliers achieve a 40 percent decrease in their transport fuel emissions by 2030, while California requires a 20 percent reduction in carbon intensity of transport fuels by 2030. These jurisdictions can set relatively high targets because they have had mandates in place for a number of years. They also have complementary measures to improve the price competitiveness of biofuels. For instance, Sweden exempts sustainable drop-in biofuels from carbon tax and fuel excise tax. In the United States its biofuel producers are supported through a wide range of grants for landowners and operators, as well as development grants for establishing advanced biofuel production facilities[9]).

84 We are proposing lower percentages initially to allow biofuel producers and liable fuel suppliers time to scale-up their volumes and adapt to the Sustainable Biofuels Mandate. If domestic production were to expand, it would take time, particularly as existing capacity and support for biofuels production is considerably limited in New Zealand[10]. While importation of biofuels will take comparatively less time, sources of reliable and affordable supply have to be established.

85 Use of domestically produced biofuels could increase in future, particularly if they have lower lifecycle emissions over imported biofuels, and are produced at scale. Complementary measures will likely be needed to further stimulate domestic production. There will also be tensions between competition for domestic feedstock from overseas demand, and from other domestic sectors.

86 Additional government interventions, such as direct grants or subsidies to biofuels producers, may help to overcome upfront establishment costs associated with biofuels production, such as the construction of processing plants and cost of feedstock supply.

87 Liable fuel suppliers will also need to source independent auditing services to calculate the emissions content of their biofuels. Additional blending and distribution facilities may be needed.

88 The Sustainable Biofuels Mandate's proposed emissions reduction percentages equate to an estimated biofuel supply of around 3.75 petajoules in 2023 and 11.08

[9] Examples of the US biofuels grants can be found on the web page, https://afdc.energy.gov/fuels/laws/BIOD?state=US.

[10] Liquid biofuels make up less than 0.1 percent of total domestic liquid fuel sales, compared to a 4 percent global average.

petajoules in 2025. In contrast, the 2008 Obligation would have required the supply of biofuels to be 0.5 petajoules in 2008, increasing to 5.4 petajoules in 2012.

Higher GHG emissions reduction percentages would be set beyond 2025

89 In future, the Sustainable Biofuels Mandate could set increased emissions reduction percentages, mirroring the scale-up approach adopted in the countries that are most progressive in terms of use and production of biofuels, such as Sweden and the United States. Increased emissions reduction percentages could also be set in line with upcoming emissions budgets, such as 2026– 030 and 2031–2035. This increase in the level of ambition will be dependent on the maturation of the biofuels supply chains in New Zealand, and this could be accelerated by other government interventions beyond the Sustainable Biofuels mandate.

90 To improve the durability of the Sustainable Biofuels Mandate and to increase certainty for biofuels producers and suppliers, we propose setting future provisional percentages for 2026 – 2030 and 2031 – 2035. These provisional percentages would be finalised in 2024 and 2029 respectively.

The additional features of the Sustainable Biofuels Mandate would be the same, or largely similar, to those of the 2008 Obligation

91 The Sustainable Biofuels Mandate would take forward the 2008 Obligation's compliance model. The key features of which are as follows.

92 *Annual reporting*. To enable compliance against the emissions reduction percentage to be assessed, liable fuel suppliers would be required to submit independently audited annual reports to the regulating agency within three months at the end of each mandated reduction period. In this return, fuel suppliers would set out the emissions reductions they achieved through the supply of biofuels relative to the mandated percentages. The regulating agency would verify and publicly report each year the performance information contained in the annual returns.

93 *Penalties to encourage compliance*. Civil pecuniary penalties would apply where suppliers fail to achieve the minimum percentage emissions reduction. The penalties would be imposed by the High Court. The Court would have the ability to reduce the penalty where it was satisfied that the fuel supplier took all reasonable steps to meet the required emissions reduction. Lower penalty levels would apply in the first three years in recognition of the risk of long-lead times for fuel suppliers in securing sufficient emissions-reducing biofuels.

94 *Deferral in the first two years*. To minimise any risk that fuel suppliers are unable to source adequate levels of biofuels, fuel suppliers would be able to partially or fully defer meeting their mandated emissions reductions for the first two years into the third year. However, approval to defer would need to be gained from the Minister of Energy and Resources, and an emissions penalty would be applied.

95 Flexibility mechanisms to reduce compliance costs, including:

- **Banking any surplus emission reductions**: A fuel supplier could carry-forward a surplus of the required percentage emissions reduction from one year to use to meet their percentage emissions reduction in the following years.

- **Borrowing for up to a 10 percent shortfall in emissions reductions**: If a fuel supplier was short in meeting their percentage emissions reductions in a year, it could make up that shortfall the following year. Borrowing would be limited to 10 percent of the required emissions reduction.

- **Trading**: Fuel suppliers would be able to trade with others to meet the mandated percentages. Trading would be conducted through entitlement agreements between fuel suppliers, or between fuel suppliers and biofuel producers/owners. Entitlement agreements would need to meet strict reporting requirements.

The regulatory agency will ensure compliance under the Sustainable Biofuels Mandate, and take enforcement action where necessary

96 The regulating agency would monitor compliance and take enforcement action where necessary. It would also publish the performance information contained in the fuel suppliers' annual returns. This will increase transparency and public accountability. It would also create the potential for consumers to reward the industry leaders in emission reductions through increased patronage.

97 At present, there are two viable options for the regulatory agency: the Ministry of Business, Innovation and Employment and the Environmental Protection Authority. Both agencies possess compliance and enforcement functions. However, further engagement is needed to determine which is better suited to the regulatory agency role.

98 We will make a recommendation on the regulator for the Sustainable Biofuels Mandate in our September 2021 report back to Ministers.

Timeline for policy proposal finalisation

99 The timeline for finalisation of the proposed Sustainable Biofuels Mandate design is outlined in the table below. This timeline allows Cabinet to decide on the final design of the mandate in September 2021, following public consultation over May 2021 – June 2021. Should Cabinet agree to progress the mandate in its final design, the legislative process would follow.

Milestone	Timeframe
Public consultation on the design of the Sustainable Biofuels Mandate	6 week period over May 2021 – June 2021
Report to the Cabinet Economic Development Committee: • on the outcomes of public consultation and the changes made to the preferred mandate • seeking approval to implement the preferred mandate and of the key elements of its design, including the: o required emission reduction percentage levels o emissions calculation	30 September 2021

methodologies ○ sustainability criteria and quality specifications for biofuels ○ testing, certification, verification and enforcement requirements	

Financial Implications

100 Details on the financial implications of the proposed Sustainable Biofuels Mandate, including estimates of government administration costs and impacts on fuel excise duty, will be provided in the September 2021 final report back to Ministers.

Legislative Implications

101 The introduction of a sustainable biofuels transport emissions reduction mandate requires primary legislation to be enacted. Allocation of Sustainable Biofuels Mandate features between primary, secondary and administrative processes will be finalised in the course of drafting the empowering legislation. This would include amending the Energy (Fuels, Levies and References) Act 1989 and the Engine Fuel Specifications Regulations 2011 as both provide the fuel specifications for biofuels and the limits on biofuels blends in transport. Amendment to the Customs and Excise Act 2018 may also be required.

102 Regulations and rules will be required to give full effect to the Sustainable Biofuels Mandate. They will specify the administrative, compliance and enforcement responsibilities of the regulating agency, and the operational details of the Sustainable Biofuels Mandate.

Impact Analysis

103 Computable general equilibrium (CGE) modelling was undertaken to estimate the emissions and economic impacts of the Sustainable Biofuels Mandate.

Impact on emissions and wider environment

104 The following table presents estimated emissions reductions in kilotonnes carbon dioxide equivalent (CO_2e) from baseline:

Mandate	**Reduction in transport emissions from baseline (kilotonnes CO_2e)**		
	2025		
	Annual	**% of annual transport emissions**	**Cumulative 2023–2025**

The Sustainable Biofuels Mandate[11]	-708	4.1%	-1,342
Reinstated 2008 Biofuel Sales Obligation[12]	-203	1.2%	-389

105 In 2025, the Sustainable Biofuels Mandate could singularly avoid approximately 4.1 percent of the transport emissions forecast for that year.

106 In addition to emissions reductions, increased use of transport biofuels could result in reductions in non-GHG pollutant emissions and corresponding health and amenity benefits, although this is contingent on the type of biofuel being combusted.

107 Emissions reductions may also occur as a result of increased fuel prices, which could suppress vehicle kilometres travelled (VKT). Quantitative estimates have not been sourced, however studies on VKT and petrol consumption elasticities demonstrate that higher fuel prices can correspond to decreased VKT and thus, reduced emissions.

Impacts to gross domestic product

108 Time constraints have limited the extent of the modelling. Economic impact estimates should be taken as an upper bound for these costs.

109 The following table presents estimated impacts on cumulative real gross domestic product (GDP) over the period 2023 – 2025. Note that the estimated potential impact to GDP reflects an assumption that most biofuels will be imported rather than produced in New Zealand. In reality, the impact is likely to be lower for reasons outlined below in para 107

Mandate	Change in real GDP 2023-2025 %	Change in real GDP 2023-2025 $m
The Sustainable Biofuels Mandate	-0.3%	-$1,245m

[11] The Sustainable Biofuels Mandate would require fuel suppliers to reduce the emissions of the fuels they sell by 1.5% in 2023, 2.3% in 2024 and 3.5% in 2025.
[12] As for the 2008 Obligation, the required percentages sales of biofuels would start at 0.5% in 2023 rising to 2.5% in 2027.

Reinstated 2008 Biofuel Sales Obligation	-0.07%	-$269m

110 Estimated impacts to GDP underscore the economic challenge of transitioning from conventional fossil fuels as biofuels cost more to produce. Conversely, failure to take action on climate change will generate significant impacts to future GDP, such as from rising sea levels, extreme weather events and higher incidence of infectious disease. GDP may also be impacted if businesses lose access to some international markets due to inaction on emissions reductions.

111 In practice, the impact to GDP from the Sustainable Biofuels Mandate could be lower because:

- **these projections assume that there is no further technological progress**. It is likely that the global long-term policy commitment to biofuels will lead to higher investment in cost-reducing biofuels research and technology;
- **the economic impact is highly dependent on the price of biofuels and fossil fuels.** The modelling's sensitivity analysis demonstrates that, when biofuels are relatively less expensive, and/or fossil fuels are relatively more expensive, the economic costs of the Sustainable Biofuels Mandate fall. Emissions reductions are also slightly higher under this scenario;
- **the Sustainable Biofuels Mandate will help to protect future levels of GDP.** Key exporters, like the food and fibre sector, have expressed concern that their businesses will lose access to key international markets if we fail to take timely action to reduce emissions[13];
- **estimates do not include potential positive impact on economic activity and regional economic development** arising from any domestic biofuel production. Substituting imported fossil fuels with domestically produced biofuels could boost GDP, even while increasing the cost of the energy system. Capturing this benefit may depend on further measures to support domestic industry; and
- **estimates do not include the impact of other carbon mitigation measures in transport**. Measures to encourage mode shift will reduce levels of vehicle travel, and reduce demand for liquid fuels. The Clean Car reforms will accelerate electrification of the light vehicle fleet, and increase vehicle fuel efficiency. These two changes will also diminish demand for liquid fuels.

112 Should domestically-sourced organic waste residues be used to generate biofuels, this could also contribute to wider Government objectives around a circular bioeconomy and waste minimisation, with associated environmental co-benefits. The value of these wider environmental co-benefits has not been quantified.

Estimates of the marginal abatement cost

113 From the analysis available to officials, the abatement cost for fuel-switching to biofuels for heavy trucks was between $189 and $400/tonne CO_2e. While these are a

[13] 2021 Draft Advice for Consultation, He Pou a Rangi (Climate Change Commission)

useful indicator of the order of magnitude of the marginal abatement cost, these figures have not been calculated with regard to the proposed Sustainable Biofuels Mandate. The September report back to Cabinet on the final Sustainable Biofuels Mandate design will include estimates of the specific marginal abatement costs for the proposal.

Regulatory Impact Statement

114 A quality assurance panel with representatives from the Regulatory Impact Analysis Team at the Treasury and the Ministry of Transport has reviewed the Regulatory Impact Statement (RIS) "Sustainable Transport Biofuels Mandate" produced by the Ministry of Business, Innovation and Employment, and the Ministry of Transport. The panel considers that it meets the Quality Assurance criteria.

115 This RIS covers a supplementary impact analysis of the in-principle policy decision taken by Cabinet in December 2020 to implement a biofuels mandate for transport, and impact analysis of the detailed design of the mandate. A problem has been clearly defined. A wide range of regulatory and non-regulatory options have been identified and evaluated against a comprehensive assessment framework, covering social, economic and environmental impacts.

116 The RIS confirms that a mandate for biofuels in transport is the best approach to increasing the demand for biofuels in New Zealand to reduce transport emissions. The preferred option identified for the mandate supports New Zealand's goal under the Climate Change Response Act 2002 to have net-zero GHG emissions by 2050. This preferred option strikes a balance between emissions reductions and economic impact.

117 It is recognised that time constraints have resulted in less engagement with stakeholders than is desirable. However, the proposed public consultation following the Cabinet decision will afford greater engagement by stakeholders on the final approach to the mandate and any implementation challenges.

118 The Ministry of Business, Innovation and Employment and the Ministry of Transport acknowledge that the modelling results presented in the RIS are subject to uncertainty around modelling assumptions for a range of factors, such as technological developments, carbon prices, biofuels and fossil fuel prices, and the future structure of the New Zealand economy. The Ministries therefore intend to conduct further research and modelling on the impacts of the proposed biofuels mandate, particularly how its economic impacts might differ if a sizeable biofuels industry is developed in New Zealand in the foreseeable future, prior to the final report back to Cabinet in September.

Climate Implications of Policy Assessment

119 The Climate Implications of Policy Assessment (CIPA) team has been consulted and confirms that the CIPA requirements do not apply to this proposal at this stage.

120 An in-depth CIPA will be required at a later stage as one of the main objectives of a biofuels mandate is to reduce emissions, and the final policy option progressed is likely to have a significant emissions impact.

121 The CIPA team will work with the Ministry of Business, Innovation and Employment and the Ministry of Transport to assess the emissions impact of policy proposals as they are advanced.

Population Implications

122 Increased fuel prices from the Sustainable Biofuels Mandate will negatively impact on people with few viable low-emissions transport alternatives, such as the disabled or low-income New Zealanders, including Māori and Pacifica communities. Low-income households will be especially affected as transport consumes a larger share of their household expenditure.

123 To offset these distributional impacts, officials favour greater investment in public transport infrastructure and services in low-income areas. This could be accompanied by additional funding for community-based transport initiatives to promote shared mobility, such as EV car-sharing. Financial measures, such as the Clean Car Discount, could also support households to purchase more fuel efficient vehicles.

124 There are no significant gender implications arising from this proposal at present. However, it is noted that women are over-represented in low-income single-parent households.

Human Rights

125 The proposals in this paper are consistent with the New Zealand Bill of Rights Act 1990 and the Human Rights Act 1993 at this stage. A final view as to the consistency of the proposals contained in this paper with the rights and freedoms affirmed in the New Zealand Bill of Rights Act 1990 and the Human Rights Act 1993 will only be possible once the legislation has been drafted.

Consultation

126 The following agencies were consulted in the development of this paper: the Civil Aviation Authority, the Environmental Protection Authority, Waka Kotahi New Zealand Transport Agency, the Ministry of Business, Innovation and Employment, the New Zealand Customs Service, the Energy Efficiency and Conservation Authority, the Ministry for Primary Industries, the Ministry of Social Development, Te Puni Kōkiri, the Department of Conservation, the Ministry of Justice, the Ministry for the Environment, Maritime New Zealand, the Ministry of Foreign Affairs and Trade, the Treasury, and the Inland Revenue Department. The Department of Prime Minister and Cabinet has been informed.

Communications

127 Following confirmation from Cabinet, we intend to issue a media statement announcing the period for public consultation on the proposed Sustainable Biofuels Mandate's design.

Proactive Release

128 We propose to proactively release this Cabinet paper subject to any necessary redactions. This would be done within 30 business days following confirmation of Cabinet's decisions.

Recommendations

The Minister of Energy and Resources and the Minister of Transport recommend that the Committee:

1 **note** that on 16 December 2020, Cabinet agreed in principle to implement a biofuel mandate, subject to officials' review of the 2008 Biofuels Sales Obligation and further research into the costs and benefits of a biofuels mandate and the sustainability criteria for biofuels [CAB-20-MIN-0139 refers]

2 **note** that the design of the proposed Sustainable Biofuels Mandate retains the majority of the design features of the 2008 Biofuels Sales Obligation

A percentage greenhouse gas emissions reduction mandate applied to all transport fuels

3 **agree** to consult on a greenhouse gas (GHG) emissions reduction mandate, which would require liable fuel suppliers to reduce the total emissions of the fuels they sell by a set percentage each year through the supply of biofuels

4 **agree** to consult on a mandate that applies to any liquid transport fuel, with fuel supplier autonomy as to where biofuels are deployed

5 **note** that both domestically produced and imported biofuels could be used to meet the mandated percentage reduction, subject to their meeting set sustainability criteria

6 **note** that the proposed Sustainable Biofuels Mandate would not apply to any fuels sold for export, nor any fuel used by aircrafts and ships on international trips

7 **agree in principle** that should the proposed Sustainable Biofuels Mandate be progressed, officials would, in 2024, review the desirability of extending its coverage to include other low-emissions fuels, such as hydrogen or electricity

Initial percentages would be set for 2023 – 2025, followed by higher percentages

8 **note** that the proposed Sustainable Biofuels Mandate would set initial emission reduction percentages starting at 1.2 percent, and increasing to 3.5 percent in 2025

9 **agree** to consult on a mandate that would permit higher percentages to be set in future in conjunction with the Government's five-yearly emissions budgets

Sustainability criteria

10 **agree** to consult on sustainability criteria to include in the mandate, which would ensure that there is an acceptable baseline for the environmental performance of eligible biofuels

Compliance under the Sustainable Biofuels Mandate

11 **agree** that the features of the compliance regime consulted on for the proposed Sustainable Biofuels Mandate be the same, or largely similar, to those of the 2008 Obligation, with the key ones being:

- annual reporting
- penalties for non-compliance
- the ability to defer in the first two years, and

- flexibility mechanisms, including banking of any surplus emissions reductions, borrowing for any shortfall in emissions reductions, and trading

12 **note** that the regulatory agency responsible for compliance and enforcement of the proposed Sustainable Biofuels Mandate will be determined prior to the September 2021 final report back to Ministers

Public consultation on the proposed sustainable transport biofuels mandate

13 **agree** to the Ministry of Business, Employment and Innovation and the Ministry of Transport releasing the attached public consultation document on the preferred design of the Sustainable Biofuels Mandate

14 **agree** that public consultation occur for a six-week period over May 2021 – June 2021

15 **invite** the Minister of Transport and the Minister of Energy and Resources to report back to the Cabinet Economic Development Committee on the outcome of the consultation and on final proposals for the Sustainable Biofuels Mandate by 30 September 2021

Authorised for lodgement

Hon Megan Woods
Minister of Energy and Resources

Dated:_____

Hon Michael Wood
Minister of Transport

Dated:_____