

MINISTRY FOR THE ENVIRONMENT

National Interest Analysis

The Kigali Amendment

July 2018

Contents

1. Executive summary.....	2
2. Nature and timing of the proposed treaty action	3
3. Reasons for New Zealand becoming Party to the treaty.....	4
4. Advantages and disadvantages to New Zealand of the Amendment entering into force and not entering into force for New Zealand	6
5. Legal obligations which would be imposed on New Zealand by the treaty action, the position in respect of reservations to the treaty, and an outline of any dispute settlement mechanisms.....	9
6. Measures which the Government could or should adopt to implement the Kigali Amendment.....	10
7. Economic, social, cultural and environmental costs and effects of the treaty action.....	14
8. The costs to New Zealand of compliance with the Kigali Amendment.....	16
9. Completed and proposed consultation with the community and parties interested in the implementation of the Kigali Amendment	18
10. Subsequent protocols and/or amendments to the treaty and their likely effects	19
11. Withdrawal or denunciation provision in the treaty	19
12. Agency Disclosure Statement	20
Appendix I: Monitoring and evaluating the policy objective of phasing down HFCs .	22
Appendix II: Public consultation on the Kigali Amendment.....	23
Appendix III: Key proposals for the import and export permitting system.....	24
Appendix IV: Existing legislation which supports industry in relation to health and safety risks in the HFC phase-down.....	26

1. Executive summary

1. New Zealand is a Party to the *Montreal Protocol on Substances that Deplete the Ozone Layer* (Montreal Protocol), a protocol to the *Vienna Convention for the Protection of the Ozone Layer* (Vienna Convention). The Montreal Protocol is a well-established multilateral environmental agreement designed to protect the ozone layer by phasing down, or out, the use of ozone-depleting substances.

2. The Montreal Protocol has been amended five times, most recently by the *Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer*, which was adopted by the Parties to the Montreal Protocol at the Twenty-Eighth Meeting of the Parties in Kigali, Rwanda on 15 October 2016 (the Kigali Amendment). The Kigali Amendment was adopted to phase down hydrofluorocarbons (HFCs), which are frequently used as substitutes for ozone-depleting substances, mainly in refrigeration and air-conditioning.¹ Although HFCs only have a small effect on ozone depletion, some are potent greenhouse gases. Therefore, if successfully implemented, the Kigali Amendment is anticipated to avoid up to 0.5 degrees Celsius of global warming by the end of the century, which would be a significant contribution towards the Paris Agreement's objective of keeping the global temperature rise "well below" 2 degrees Celsius.

3. Ratifying the Kigali Amendment is in New Zealand's long-term national interests. The Kigali Amendment will enter into force on 1 January 2019 for those States that have ratified it at that time. It will enter into force for any other States on the ninetieth day after the date of that State's ratification. Ratification would demonstrate New Zealand's ongoing commitment to the goals of the Montreal Protocol, as well as to the global response to climate change and to reducing greenhouse gas emissions. Ratification would also support New Zealand's transition to a sustainable and climate-resilient future, including achievement of emissions reduction targets under the planned Zero Carbon Bill.

4. Ratification would allow New Zealand industry to proactively plan for the global HFC phase-down and manage associated costs, such as the cost of new refrigerants or of retrofitting, upgrading or replacing equipment to be compatible with these. In the longer term, even if we do not ratify, New Zealand will lose access to HFCs as the Kigali Amendment will prohibit trade with non-Parties in 2033.²

5. Ratification of the Kigali Amendment would require New Zealand to set up a mechanism to control the phase-down of HFCs by 85 per cent by 2036. To achieve this, the Government proposes to set up an import and export permitting system for bulk HFCs,³ and to amend the regulations under the Ozone Layer Protection Act 1996 (OLPA).

¹ The Kigali Amendment applies to 18 HFCs with high global warming potentials (GWPs) listed in Annex F of the Montreal Protocol. This is not an exhaustive list of HFCs in use worldwide. HFCs controlled by the Kigali Amendment include HFC components of blended substances (as HFCs are often used in blends with a range of HFCs, or with other substances). HFCs contained in manufactured products (referred to as 'pre-charged' equipment) are outside the scope of the Kigali Amendment.

² Under Article 4 of the Montreal Protocol Parties will not be able to import or export controlled HFCs from/to non-Parties to the Kigali Amendment. This Article will apply if 70 Parties ratify the Kigali Amendment by 2033.

³ Bulk HFCs are those that are still in their 'pure' form. That is, not contained in manufactured products (HFCs in storage containers are still considered bulk HFCs).

6. Alternatives to HFCs with high global warming potentials (GWPs)⁴ include other HFCs with lower GWPs, hydrofluoroolefins (HFOs), and natural alternatives. While more environmentally friendly, some of these alternatives can pose health and safety risks, particularly if they are used incorrectly such as in equipment designed for other refrigerants. Therefore, while not required for ratification of the Kigali Amendment, the Government plans a number of measures to ensure a safe and effective transition to alternatives for HFCs for affected industry. This includes identifying whether changes to existing health and safety regulations or equivalent non-regulatory solutions are needed to respond to the increased use of alternatives with hazardous properties, providing industry with guidance, and raising industry awareness of the phase-down.⁵

7. The main costs to the New Zealand government of domestic measures to implement the Kigali Amendment will be the requirements on the Environmental Protection Authority (EPA) from its functions associated with the permitting system under the OLP. Overall costs will be low and absorbed into baselines.

2. Nature and timing of the proposed treaty action

8. In October 2016, New Zealand was among the 197 Parties that adopted the *Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer* (Kigali Amendment). It is now proposed that New Zealand ratify the Kigali Amendment.

9. Article IV of the Kigali Amendment states that it will enter into force on 1 January 2019, provided that at least 20 States have ratified by this date. This condition was met in November 2017.

10. It is proposed that New Zealand ratify on 3 October 2019, and the Kigali Amendment enter into force for New Zealand on 1 January 2020. This is the most appropriate timing as it will ensure that New Zealand has in place a domestic regulatory system that is robust and effective, minimises costs and risks for domestic industry, and addresses the potential health and safety risks of alternative refrigerants. As New Zealand would ratify the Kigali Amendment after it enters into force on 1 January 2019, the Kigali Amendment would enter into force for New Zealand on the ninetieth day following the date on which New Zealand ratifies, in accordance with Article IV(4). Due to the structure of the phase-down, reporting and compliance requirements of the Kigali Amendment, New Zealand would need to time ratification such that entry into force occurs at the beginning of a calendar year.

11. It is proposed that New Zealand deposit an Instrument of Ratification with the Secretary-General of the United Nations in New York, as depositary of the Kigali Amendment, as soon as practicable following successful completion of the parliamentary treaty examination process and implementation of the required regulatory changes.

⁴ The GWP was developed to allow comparisons of the global warming impacts of different gases. Specifically, it is a measure of how much energy the emissions of 1 tonne of a gas will absorb over a given period of time, relative to the emissions of 1 tonne of carbon dioxide (CO₂). The larger the GWP, the more a given gas warms the Earth compared to CO₂ over that time period. For further information, see <https://www.epa.gov/ghgemissions/understanding-global-warming-potentials>.

⁵ See Section 6 *Existing legislation relevant to New Zealand industry in the HFC phase-down* for more information.

12. The trade control provisions in Article 4 of the Montreal Protocol banning the import and export of HFCs with Parties who have not ratified the Kigali Amendment will enter into force on 1 January 2033, provided that at least 70 States have ratified. If this condition is not fulfilled by that date, the trade provisions will enter into force on the ninetieth day following the date on which it has been fulfilled.

Application to Tokelau

13. New Zealand has extended territorial coverage of the Montreal Protocol to Tokelau. The Ministry of Foreign Affairs and Trade will consult with Tokelau to determine whether New Zealand's ratification of the Kigali Amendment should extend to Tokelau.

3. Reasons for New Zealand becoming Party to the treaty

Background

14. The Montreal Protocol protects the ozone layer by setting global timeframes for phasing down, or out, the use of ozone-depleting and climate-impacting substances. It is widely considered to be the most successful international environmental protection agreement, and provides an important climate benefit since most ozone-depleting substances are also greenhouse gases.

15. Implementation of the Montreal Protocol over the last thirty years has put the ozone layer on its way to recovery, with global ozone levels expected to return to their benchmark 1980 levels around mid-century. The Antarctic ozone hole is expected to take slightly longer to fully recover. Recovery of the ozone layer has benefits for human health: up to 2 million cases of skin cancer per year will have been prevented globally by 2030. The phase-out of ozone-depleting substances has also made a large contribution towards reducing global greenhouse gas emissions.

16. HFCs are man-made greenhouse gases, some of which have high GWPs, which can be up to 14,800 times that of carbon dioxide (CO₂).⁶ They are used mainly in the refrigeration and air-conditioning sectors, with some use in foam products, aerosols (such as metered dose inhalers⁷), fire protection services, and solvents. The use of HFCs has increased since the early 1990s when they began to be used as substitutes for ozone-depleting chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs), which are being phased out under the Montreal Protocol.⁸ HFCs in the atmosphere are increasing rapidly, at a rate of about seven per cent per year.⁹ Although they only have a small effect on ozone depletion directly, HFCs may have a much greater indirect impact on the ozone layer because of their high GWPs.

⁶ The GWP of CO₂ is 1; HFC-23 (the second most abundant HFC in the atmosphere) has a GWP of 14,800.

⁷ The Ministry of Health notes that the HFC phase-down will affect a large number of therapeutic products. These products are typically manufactured overseas and imported into New Zealand. Therefore this issue will need to be managed worldwide, and will not be impacted by New Zealand's ratification of the Kigali Amendment.

⁸ New Zealand phased out the import of CFCs by 1996 and of HCFCs by 2015.

⁹ World Meteorological Organization. 2014. *Assessment for Decision-Makers: Scientific Assessment of Ozone Depletion: 2014*. Global Ozone Research and Monitoring Project—Report No. 56. Geneva. Available at: http://ozone.unep.org/Assessment_Panels/SAP/SAP2014_Assessment_for_Decision-Makers.pdf.

17. New Zealand's annual average temperature has increased by 1 degree Celsius since 1909. This is in line with global average temperature increases, which are almost certainly the result of high levels of atmospheric greenhouse gases, such as HFCs, emitted from human activities, such as air-conditioning and refrigeration.

18. The high GWP of HFCs and the rapid increase in their use from the early 1990s led to international concern that the positive climate benefit from the phase-out of CFCs and HCFCs would be diminished. As a result, in 2009 Parties to the Montreal Protocol began negotiations to broaden the scope of the Montreal Protocol to include HFCs, resulting in the adoption of the Kigali Amendment in October 2016. As of 19 July 2018, 40 Parties have ratified the Kigali Amendment, including Australia, Canada, Finland, Germany, Norway, Sweden and the United Kingdom. If successfully implemented, the Kigali Amendment is anticipated to avoid up to 0.5 degrees Celsius of global warming by the end of the century, which would be a significant contribution towards the Paris Agreement's objective of keeping the global temperature rise "well below" 2 degrees Celsius.

19. The Kigali Amendment will move the world away from high-GWP HFCs. Without the Kigali Amendment or equivalent measures, it is estimated that HFCs could amount to 9–19 per cent of global CO₂ emissions by 2050.¹⁰ In addition to the climate benefits, the Kigali Amendment will continue to protect the ozone layer because of the threat that global warming poses to ozone levels.¹¹

20. The phase-down of bulk HFCs under the Kigali Amendment reduces the quantity of HFCs a country is permitted to import or produce. Developed countries such as New Zealand are required to begin phasing down HFCs upon entry into force. Most developing countries will follow with a freeze of HFC consumption levels in 2024, and some in 2028.¹² The phase-down schedule will see developed countries phase down HFC consumption by 85 per cent of their calculated baseline by 2036, with developing countries achieving this reduction by 2047.¹³

Key reasons why New Zealand should take the proposed treaty action

21. The main objective for New Zealand ratifying the Kigali Amendment is to make a contribution to the goals of the Montreal Protocol, as well as to the global response on climate change and to reducing greenhouse gas emissions.¹⁴ There are several significant reasons in favour of New Zealand ratifying the Kigali Amendment:

¹⁰ Climate & Clean Air Coalition. 2018. *Promoting HFC Alternative Technology and Standards*. Retrieved from www.ccacoalition.org/en/initiatives/hfc.

¹¹ Williamson CE, Zepp RG, Lucas RM, Madronich S, Austin AT, Ballare CL, Norval M, Sulzberger B, Bais AF, McKenzie RL, Robinson SA, Haeder D-P, Paul ND, Bornman JF. 2014. Solar ultraviolet radiation in a changing climate. *Nature Climate Change*, vol 4, no. 6, pp. 434-441.

¹² Under the Montreal Protocol, developing countries are Article 5 Parties, and include African, Pacific, Latin American, Caribbean, and most Asian nations. Developed countries such as New Zealand, Australia, the United States, Canada and European Union Member States are non-Article 5 Parties. A full list is available at <http://ozone.unep.org/en/article-5-parties-status>.

¹³ The baseline is the quantity of HFCs at a given time, from which point a country will start phasing down HFCs. Under the Montreal Protocol, the baseline is based on HFC consumption (production plus imports minus exports). The phase down provides an upper limit that cannot be breached, and the phase-down steps are a percentage-based reduction of the baseline in certain years.

¹⁴ See also Appendix I *Monitoring and evaluating the policy objective of phasing down HFCs*.

- *Ozone protection*: ratification will contribute towards avoiding further ozone depletion by protecting the ozone layer from the threat posed by global warming
- *Climate benefits*: HFCs have high GWPs, and the global phase-down of HFCs is expected to avoid warming of up to 0.5 degrees Celsius by the end of the century
- *Contributing to global and domestic climate objectives*: ratification and domestic implementation of the Kigali Amendment's requirements will contribute to global climate change goals, most significantly to the Paris Agreement's target of keeping the global temperature rise "well below" 2 degrees Celsius. It will also contribute to New Zealand's objectives under the Paris Agreement to reduce greenhouse gas emissions, and to our transition to a sustainable and climate-resilient future
- *International reputation*: ratification will demonstrate New Zealand's commitment to global environmental and climate objectives, and will contribute to our positive international environmental reputation and credibility
- *Providing business certainty*: ratification will give New Zealand importers and users of HFCs greater business certainty to plan and prepare for changes to the international HFC market as a result of the global phase-down of HFCs, and allow them to make investment decisions in a way that minimises costs. In addition, this would maintain access to HFCs after the Amendment's provisions to prohibit trade with non-Parties apply, from 2033.¹⁵

22. These reasons are discussed in further detail in Section 4 below.

4. Advantages and disadvantages to New Zealand of the Amendment entering into force and not entering into force for New Zealand

Advantages

Climate benefits

23. HFCs are potent greenhouse gases. Under the United Nations Framework Convention on Climate Change (UNFCCC), Kyoto Protocol, and Paris Agreement, Parties including New Zealand have broad obligations to limit and report greenhouse gas emissions, including HFC emissions (from both bulk HFCs and products), and account for progress towards emissions reduction targets. These climate agreements do not place specific limits on HFC production or use. In comparison, the Kigali Amendment requires a freeze or phase-down of consumption and production of HFCs.

24. New Zealand's current HFC emissions comprise approximately two per cent of our gross¹⁶ CO₂-equivalent (CO₂-eq) emissions, and are projected to nearly double by 2030. New Zealand's current target under the UNFCCC and the Paris Agreement is to reduce greenhouse gas emissions by 30 per cent below 2005 levels by 2030. The Government also plans to introduce a Zero Carbon Bill in late 2018 to provide a vision for how New Zealand

¹⁵ Under Article 4 of the Montreal Protocol countries will not be able to import or export controlled HFCs from/to non-Parties. This Article will apply if 70 countries ratify the Amendment by 2033.

¹⁶ Gross emissions include all direct greenhouse gases emitted from energy, industrial processes and product use, agriculture, and waste. They exclude emissions and removals associated with land use, land-use change, and forestry.

transitions to a sustainable and climate resilient future. The Bill will see New Zealand put a bold new emissions reduction target into law, and establish an independent Climate Change Commission to keep us on track to meet these goals.

25. Reducing the use and emissions of HFCs through ratification of the Kigali Amendment and implementation of the HFC phase-down will support achievement of New Zealand's international and domestic emissions reduction targets.

Contributing to global climate change goals

26. The global phase-down of HFCs is expected to avoid warming of up to 0.5 degrees Celsius by the end of the century, which represents a significant contribution from the global community to the Paris Agreement's target of keeping the global temperature rise "well below" 2 degrees Celsius. As a small country, contributing to collective global action is the most effective way of protecting New Zealand from the effects of global warming and ozone depletion. Ratifying the Kigali Amendment and phasing down the use of high-GWP HFCs will enable New Zealand to contribute to global climate change goals and to ozone protection by reducing the threat posed by global warming.

Supporting New Zealand's international reputation on environmental issues

27. New Zealand has supported the inclusion of HFCs under the Montreal Protocol since 2009, and was among the 197 Parties that unanimously adopted the Kigali Amendment. All four previous amendments to the Montreal Protocol have achieved universal ratification, so it is likely that the Kigali Amendment will also achieve this. Ratification will help maintain New Zealand's positive environmental reputation and credibility.

Preparing New Zealand for changes to the international HFC market

28. Bulk HFCs are not manufactured in New Zealand, but are imported. In 2016, the consumption of HFCs was 1,979.1 kilotonnes of carbon dioxide equivalent (KtCO₂-eq).¹⁷ Some estimates suggest that the refrigeration sector (including domestic refrigeration and the cold food chain) accounts for around half of bulk HFC consumption in New Zealand, with the stationary air-conditioning and mobile air-conditioning sectors combined accounting for approximately the other half of total consumption. The foam, fire protection and aerosols sectors are estimated to consume a small percentage. There may be some variability to this from year to year.

29. As a small country in the HFC market, New Zealand is heavily influenced by international market movements. With climate change being a key global issue, measures are being put in place by governments and businesses worldwide to move away from high-GWP HFCs, including developing alternatives.¹⁸ As alternatives to HFCs become more readily available, the availability of HFCs is likely to decline, and their cost is likely to increase. Existing technology will gradually become more expensive to operate, and eventually obsolete.

¹⁷ Ministry for the Environment. 2018. *New Zealand's Greenhouse Gas Inventory 1990–2016*. Available at <https://www.mfe.govt.nz/node/24120/>.

¹⁸ For example, Australia has committed to an 85 per cent phase-down of HFC imports by 2036, and began the gradual reduction in bulk HFC imports in January 2018. The European Union also updated their Fluorinated-gas (F-gas) regulations in 2015 to reduce the availability of HFCs by 79 per cent between 2015 and 2030.

30. Given these changes in the international market, it is likely New Zealand will move away from HFCs even without ratifying the Kigali Amendment. This means that local industry will need to make decisions on how to best manage a transition away from HFCs, including the timing for switching to alternatives or for upgrading or replacing equipment so that it is compatible with the new refrigerants. Past experience with phasing out CFCs and HCFCs shows that industry players have the ability and skills to handle a new phase-down. Ratification would provide New Zealand industry with greater certainty, and allow businesses to begin planning and preparing for any changes and avoid operating at an economic disadvantage.

31. The Kigali Amendment's global approach to reducing the production and use of HFCs will also be beneficial for New Zealand as it is likely to encourage the development and use of newer, more environmentally-friendly technologies. Low-GWP alternatives to HFCs are already being introduced to the market, and should steadily reduce the CO₂-eq value of New Zealand's annual HFC consumption over time.¹⁹

Disadvantages

32. There are no significant disadvantages to New Zealand of ratifying the Kigali Amendment. As set out in Section 8, there will be some costs to industry as a result of the global phase-down of HFCs, but as noted above these costs will be incurred regardless of whether New Zealand ratifies because of our dependence on the international HFC market. The exact costs to industry are difficult to predict, and will vary from user to user in each sector depending on the age, condition and current technology of their existing equipment. Industry's successful experience with changing from CFCs to HCFCs and on to HFC technology shows that any additional costs can be minimised with appropriate maintenance of existing systems and good investment decisions. Costs to industry particular to ratification will be minor, and will likely be limited to the administrative costs of applying for HFC permits where before a permit was not required.²⁰

Risks

33. Alternatives to HFCs can be flammable or acutely toxic or have higher operating pressures than HFCs, presenting potential health and safety risks for industry. While some of these substances are already in use, the phase-down is likely to result in their increased use over time. Fitting alternative gases into equipment designed for one refrigerant can be particularly high risk. With time, much of the risk will be mitigated by appropriate replacement of current equipment with equipment specifically designed for the alternative gases.

34. Implementing the Kigali Amendment and setting up a permitting system that gradually restricts the quantity of HFCs able to be imported may initially incentivise a quicker transition to alternatives to HFCs than if we do not ratify. It will be important for both industry and government to continue to plan for the management of any health and safety risks, particularly as they will arise regardless of whether New Zealand ratifies.

¹⁹ Expert Group, 2017. *A study into HFC consumption in New Zealand*. Prepared for the Ministry for the Environment. Wellington: Ministry for the Environment.

²⁰ In the medium to long term, an administrative cost to apply for HFC import permits from the EPA may be introduced.

35. New Zealand already has legislation in place to manage the risks associated with alternative refrigerants (with hazardous properties), and the plant and equipment that uses those refrigerants. The Ministry of Business, Innovation and Employment is working to identify and fix any gaps in the current regulatory requirements. Concurrently, WorkSafe New Zealand (WorkSafe) is undertaking work to raise awareness and understanding of current regulatory requirements. More information on potential measures to address these risks is available in Section 6 'Existing legislation relevant to New Zealand industry in the HFC phase-down' below.

36. As the HFC phase-down occurs globally from 2019, there is also some concern from New Zealand industry regarding the accessibility and cost of HFCs and alternatives to HFCs, and the cost of retrofitting, upgrading or replacing existing equipment in order to use flammable, toxic or higher pressure alternatives. Officials propose to monitor market developments over time, and to assess whether amending regulations to respond to changing circumstances in the future is recommended.

Overall assessment

37. On balance, the advantages of the Kigali Amendment entering into force for New Zealand outweigh the disadvantages. Because the threshold has been met for the Kigali Amendment to come into force, New Zealand will be subject to the international market phasing down HFCs globally from 1 January 2019, and key trading partners for New Zealand such as Australia and the European Union have already begun phasing down HFCs. New Zealand's ratification and a planned phase-down place us in a better position to proactively manage any risks that arise.

5. Legal obligations which would be imposed on New Zealand by the treaty action, the position in respect of reservations to the treaty, and an outline of any dispute settlement mechanisms

38. The Kigali Amendment amends the Montreal Protocol to bring HFCs into the current control regime that the Montreal Protocol establishes. The Kigali Amendment requires Parties to:

- In the twelve-month period commencing 1 January 2019, and in each twelve-month period thereafter, phase down the consumption (production plus imports minus exports) of the 18 HFCs listed in Annex F of the amended Montreal Protocol so that it does not exceed the specified threshold, as follows:
 - 2019 – 2023: 90% of baseline²¹
 - 2024 – 2028: 60% of baseline
 - 2029 – 2033: 30% of baseline
 - 2034 – 2035: 20% of baseline

²¹ The baseline, or starting point, for the quantity of HFCs a country can consume (consumption being production plus imports minus exports), is calculated for each country using the following formula: *Average HFC consumption for the period 2011–13 plus 15 per cent of the HCFC baseline*. The HCFC component bolsters a country's HFC baseline to allow for growth. It does not change any obligations countries have in regards to HCFCs.

- 2036 onwards: 15% of baseline (Article 2J(1)).²²
- Phase down the production of HFCs listed in Annex F to a certain percentage of their baseline (Article 2J(3)). This will not be onerous for New Zealand as we do not produce HFCs
- Ensure that HFCs or emissions of HFCs listed in Annex F from manufacturing facilities are destroyed using technology approved by the Parties (Article 2J(6) and (7)). This will not be onerous for New Zealand as we do not produce HFCs
- Ban the import and export of HFCs listed in Annex F from/to any State not Party to the Kigali Amendment from 1 January 2033 (Article 4)
- Establish a system for licensing the import and export of new, used, recycled and reclaimed HFCs listed in Annex F (Article 4(B))
- Report on statistical data related to the production, use, destruction, import and export of HFCs listed in Annex F (Article 7).²³

39. The Kigali Amendment to the Montreal Protocol also extends the existing financial mechanism that provides financial and technical cooperation to developing countries (the Multilateral Fund) to enable compliance with control measures relating to HFCs (Article 10).

40. No reservations may be made to the Kigali Amendment in accordance with Article 18 of the Montreal Protocol.

41. The settlement of disputes in respect of the amended Montreal Protocol will be governed by Article 11 of the Vienna Convention. It specifies that in the event of a dispute between Parties concerning the interpretation or application of the Vienna Convention or any Protocol under it, Parties must first seek solution via negotiation. If the Parties concerned cannot reach agreement by negotiation, they may jointly seek the good offices of, or request mediation by, a third party. If Parties are still unable to reach a solution, they can agree to either undergo arbitration procedures or submit the dispute to the International Court of Justice. If Parties do not accept either of these procedures, the dispute will be submitted to a conciliation commission, which will render a final and recommendatory award for the Parties to consider in good faith.

6. Measures which the Government could or should adopt to implement the Kigali Amendment

42. The overall objective of domestic implementation would be to design a system that provides certainty that New Zealand will be able to phase down high-GWP HFCs as per the Kigali Amendment's requirements.²⁴

²² Note that the Government is proposing more ambitious phase-down steps for New Zealand than those required under the Kigali Amendment in order to better reflect New Zealand's actual HFC consumption and incentivise emissions reductions.

²³ New Zealand reports annually to the Montreal Protocol on the substances its controls, and the 18 listed HFCs will be added to this annual report. The Kigali Amendment also requires a one-off report on imports and exports of HFCs for 2011 to 2013, to be provided within three months of entry into force of the Kigali Amendment for New Zealand.

²⁴ See also Appendix III *Key proposals for the import and export permitting system*.

43. There is no new primary legislation required at this stage to implement the Kigali Amendment.

Amending regulations under the Ozone Layer Protection Act 1996

44. The Kigali Amendment would be implemented in New Zealand via amendments to the Ozone Layer Protection Regulations 1996 (OLP Regulations). This is the same approach taken when New Zealand previously implemented the phase-out of CFCs and HCFCs under the Montreal Protocol. The amendments to the OLP Regulations would implement the permitting system to control New Zealand's HFC phase-down, as well as other controls required for ratification and workability. The amended OLP Regulations need to be in place prior to ratification, which is proposed for 3 October 2019.

45. The amendments to the OLP Regulations would:

- Add the 18 HFCs listed in Annex F to the Montreal Protocol to the list of controlled substances set out in Schedule 1
- include a permitting system for imports and exports of new, used, recycled and reclaimed HFCs listed in Annex F
- prohibit the manufacture of HFCs listed in Annex F
- prohibit imports and exports of HFCs listed in Annex F from/to non-Parties to the Kigali Amendment from 1 January 2033 (provided that at least 70 Parties to the Montreal Protocol have ratified the Kigali Amendment by this date)
- include additional changes to ensure a smooth and effective transition away from HFCs.

46. Subject to completion of the parliamentary treaty examination process, the Government expects to gazette the amendments to the OLP Regulations in December 2018. The OLP Regulations would then come into force in January 2019. Permit applications to the EPA for those importing HFCs would open in early 2019, and the EPA would notify industry of the outcome of applications in mid-2019. This timeframe has been set up to allow those importing HFCs adequate time to be notified of the requirements under the permitting system, as well as to enable the EPA to calculate and assign entitlement and import permits for the calendar year beginning 1 January 2020.

Permitting system for HFCs

47. A permitting system that imposes upper limits on New Zealand's annual consumption (defined as production plus imports minus exports) of the 18 HFCs listed in Annex F of the Montreal Protocol will need to be put in place in order to ratify the Kigali Amendment.²⁵ Provided we ratify by 3 October 2019, New Zealand's phase-down of HFCs will begin in 2020, and will involve regular phase-down steps until 2036.

48. It is proposed that the EPA administer the permitting system, and that the New Zealand Customs Service (Customs) be the border enforcement agency. The EPA is the

²⁵ HFC consumption is expressed in CO₂-eq tonnes (tonnes multiplied by the GWP of each HFC). This is designed to incentivise a move to low-GWP alternatives. For example, if the quantity upper limit was 100 CO₂-eq tonnes, a person would be able to import one tonne of a substance with a GWP of 100, or five tonnes of a substance with a GWP of 20.

enforcement agency for permit conditions and other breaches of the OLPA and the OLP Regulations.

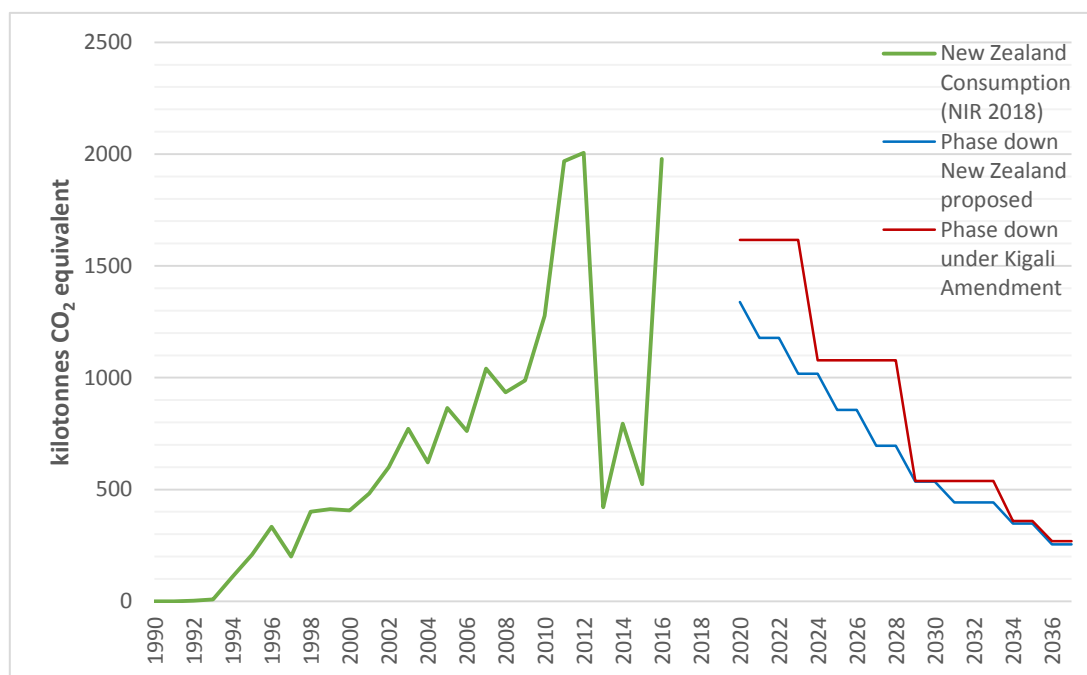
49. The permitting system would use a baseline of 1338.3 KtCO₂-eq, which represents New Zealand's upper limit for consumption of HFCs for 2020. The proposed baseline is more ambitious than the generous allowance under the requirements of the Kigali Amendment (1616.4 KtCO₂-eq²⁶), and aims to incentivise a prompt shift to HFC alternatives.

50. The baseline has been determined using a six-year average of New Zealand's HFC consumption from 2010-2015, and averages out New Zealand's peak consumption from 2010-2012 and comparatively lower recent consumption from 2013-2015.²⁷ Consumption of HFCs would be phased down over two-year cycles (with one three-year cycle). Each phase-down step would see a percentage-based reduction from the baseline of the upper limit of HFC consumption allowed in New Zealand at that time.

51. The proposed end point of the phase-down in 2036 would be 254.3 KtCO₂-eq, which is slightly lower than what is required under the Kigali Amendment due to uncertainty about the future demand for HFCs.

52. The proposed baseline and phase-down steps for New Zealand are illustrated in Figure 1.

Figure 1: Proposed baseline and phase-down steps for New Zealand



53. Those wishing to import new HFCs would be required to apply for a permit from the EPA that would allow them to import these up to a certain upper limit of GWP each year.

²⁶ This is New Zealand's average consumption from 2011 to 2013 plus 15 per cent of the HCFC baseline.

²⁷ The peak in consumption is likely a result of stockpiling before HFCs entered the New Zealand Emissions Trading Scheme (NZ ETS). The lower consumption may be a result of domestically using up the stockpile developed in 2011/12.

The total quantity of imports of new HFCs able to be permitted by the EPA on any given year would be connected to the upper limits on the consumption of HFCs imposed by the Kigali Amendment's phase-down steps. A person's entitlement to import new HFCs would be determined on the basis of past importation.

54. Two permit types are proposed in New Zealand: grandfathered permits and special permits. Up to 80 per cent of New Zealand's total upper limit of GWP would be allocated to grandfathered permits, which would be for importers who imported HFCs at some stage between 2015 and 2017. Those entitled to a grandfathered allocation will still need to apply to the EPA for an annual permit in order to import HFCs. Grandfathered permit volumes may be transferred to another person both temporarily and permanently, through a re-issued permit following a notification to the EPA.

55. The remaining 20 per cent of New Zealand's total upper limit of GWP would be allocated to special permits, which would be for those who did not import HFCs at some stage between 2015 and 2017, or for importers wishing to import more than their grandfathered entitlement. If any grandfathered allocations have not been claimed, the EPA would have discretion to allocate the GWP entitlement to special permits in accordance with set criteria. The proposed 80/20 split between grandfathered and special permits aims to deter new importers to the market and incentivise a shift away from HFCs.

56. If the full allocation to a person is not used for two years in a row, and has not been transferred to another person, it is proposed that the EPA would have discretion to decrease the quantity of HFCs the person can import for the following period.

57. Permits would also be required for the export of new HFCs. There would be no upper limit on the quantity of HFCs that can be exported. It is proposed that exports of HFCs be deducted from a person's total permit volume, and that this be managed by issuing additional special permits or amending existing permits for the volume of the export shipment. This is consistent with the Kigali Amendment's consumption calculation (production plus imports minus exports).

58. Permits will also be required for importing and exporting used, recycled and reclaimed HFCs, with no upper limit on the quantity that can be imported or exported as these are not subject to the phase-down.

59. Reporting on the proposed permitting system will be provided to the Ozone Secretariat, as required under our obligations.

Existing legislation relevant to New Zealand industry in the HFC phase-down

New Zealand Emissions Trading Scheme

60. In New Zealand, people who import or manufacture bulk HFCs are required to participate in the New Zealand Emissions Trading Scheme (NZ ETS), established under the Climate Change Response Act 2002. The purpose of the NZ ETS is to help New Zealand reduce net greenhouse gas emissions below business as usual and meet its international climate change obligations under the UNFCCC. Requirements under the NZ ETS mean that importers and manufacturers of bulk HFCs are required to complete an emissions report on their activities and surrender an equivalent number of emission units.

61. The Ministry for the Environment considered using the NZ ETS as an alternative mechanism for controlling the HFC phase-down, rather than a permitting system under the OLPA. While this option may have reduced the administrative burden for HFC importers, it would not on its own enable New Zealand to comply with its obligations under the Kigali Amendment. Although the NZ ETS puts a price on emissions, it does not set limits on specific gases or on the quantities of HFCs that can be imported. This means that the NZ ETS cannot guarantee a decrease in New Zealand's consumption of HFCs. Instead, HFC imports could increase under the NZ ETS if it were more economical for importers to purchase emission units from the market rather than reduce the quantity of HFCs imported.

Existing energy safety and work health and safety legislation

62. As noted in Section 4, the risks associated with alternative refrigerants (with hazardous properties), and the plant and equipment that uses those refrigerants, are currently managed by a range of regulatory requirements made under the Health and Safety at Work Act 2015, the Electricity Act 1992, and the Building Act 2004.²⁸ This includes:

- The Health and Safety at Work (General Risk and Workplace Management) Regulations 2016
- The Health and Safety at Work (Hazardous Substances) Regulations 2017
- The Health and Safety in Employment (Pressure Equipment, Cranes, and Passenger Ropeway) Regulations 1999
- The Electricity (Safety) Regulations 2010

63. The Ministry of Business, Innovation and Employment is undertaking work to identify and fix any gaps in the current regulatory requirements, which will be relevant during the process of phasing down HFCs. While not required for ratification, these controls (and their associated costs) will apply to an increasing number of refrigeration technicians and commercial refrigeration system owners as the use of alternatives to HFCs increases over time. Consequently, it will be important for industry to be aware of its obligations. WorkSafe New Zealand is undertaking work to raise awareness and improve understanding of current regulatory requirements.

Customs requirements to support the phase-down

64. Customs will be the border enforcement agency for imports and exports of HFCs. To facilitate the effective implementation of the Kigali Amendment, Customs has updated the Working Tariff Document of New Zealand to ensure unique classification codes are available to assist in the operationalisation of the permitting system. These new statistical key codes came into effect on 1 July 2018.

7. Economic, social, cultural and environmental costs and effects of the treaty action

65. HFCs in New Zealand are imported and used by domestic manufacturers in refrigeration and air-conditioning equipment in homes and in commercial and industrial facilities, as well as for air-conditioning in vehicles. Smaller quantities are used in foam

²⁸ See Appendix IV *Existing legislation which supports industry in relation to health and safety risks in the HFC phase-down* for more detail on this legislation.

products, aerosols, fire protection systems and solvents. While the costs and effects of a phase-down of HFCs will vary from user to user, the transition could present challenges for businesses. Information about the expected costs to industry is set out in Section 8 below.

66. The Government has been proactively engaging and working with industry likely to be impacted by the HFC phase-down under the Kigali Amendment to ensure a smooth and effective transition away from HFCs. This has included informational roadshows, presentations and workshops.

67. New Zealand's ratification of the Kigali Amendment is not expected to have any significant impacts on the general public, or any additional costs to household consumers of products containing HFCs, such as heat pumps. Most domestic products containing HFCs come pre-charged, and are outside the scope of the Kigali Amendment (see also Section 8 below). The Energy Efficiency and Conservation Authority (EECA) will notify the public should there be any future consequences for consumers of products containing HFCs controlled under the Kigali Amendment, such as an inability to re-service products due to a lack of availability of HFCs.

68. As set out in Section 9, the Ministry for the Environment sought feedback on whether the HFC phase-down and New Zealand's ratification of the Kigali Amendment would have any impact on iwi/Māori. The Ministry sought feedback from the Pou Taiao Iwi Leaders Group,²⁹ who work with the Ministry on natural resource matters; 41 Post Settlement Governance Entities (PSGEs) who have a relationship agreement with the Ministry negotiated as part of their Treaty settlements; and 15-20 other iwi groups who have indicated an interest in the Ministry's work. No significant concerns were raised.

Economic effects³⁰

69. As New Zealand does not manufacture HFCs and is dependent on the global market for access to HFCs and alternatives, the economic effects for industry will likely be the same overall, regardless of whether New Zealand ratifies the Kigali Amendment or not. Ratifying allows for a controlled phase-down and improved business certainty for importers and users of HFCs.

70. In addition, Article 4 of the Montreal Protocol restricts Parties from trading controlled substances with States not party to the Montreal Protocol. The Kigali Amendment will also restrict trade of HFCs between Parties and States that are not Parties to the Kigali Amendment, once Article 4 enters into force. This means that New Zealand would face HFC trade restrictions from 1 January 2033 if it does not ratify the Kigali Amendment.

²⁹ The Iwi Chairs Forum (ICF) comprises the chairpersons or representatives (iwi leaders) of some 70 iwi organisations. The ICF was established in 2005 as a platform for sharing information between iwi and it continues to convene quarterly. The ICF has established various Iwi Leaders Groups (ILG) in relation to particular kaupapa subjects, including Climate Change, Freshwater, Whānau Ora, Constitution and Social Issues. The natural resource section of the ICF has now been consolidated into a single ILG called Pou Taiao whose portfolio includes climate change, freshwater, conservation, biodiversity, marine protected areas, and oil and minerals.

³⁰ See also Section 8 *The costs to New Zealand of compliance with the Kigali Amendment*.

Social effects

71. Ratifying the Kigali Amendment is important for New Zealand in terms of making a contribution toward addressing global climate change, and for continuing New Zealand's role as a good international citizen by contributing to the aims of the Montreal Protocol. The HFC phase-down is also in line with the Government's aims of improving environmental outcomes for New Zealand in the climate change space. If New Zealand does not ratify the Kigali Amendment, it will lose credibility as a good international citizen playing its part in a successful environmental agreement and tackling climate change.

72. Internationally, New Zealand has an important role to play in terms of prosperity and stability in the Pacific. The system designed for implementing the phase-down of HFCs supports the ability of New Zealand's exporters to continue exporting smaller quantities of refrigerants to Pacific countries. Submitters on the public consultation document noted that some exporters provide training and education around health and safety to Pacific partners, which will become more important as the use of alternatives to HFCs increases over time.³¹

Environmental effects

73. As set out in Section 4, ratifying the Kigali Amendment has significant climate benefits for New Zealand. If New Zealand does not ratify the Kigali Amendment, it will miss the opportunity to make a domestic contribution to global environmental outcomes. As already noted, the implementation of the Kigali Amendment is expected to prevent global warming of 0.5 degrees Celsius, a significant contribution towards the Paris Agreement's long-term temperature goal.

74. New Zealand's current HFC emissions comprise approximately two per cent of our gross CO₂-eq emissions, and are projected to nearly double by 2030. Ratifying the Kigali Amendment and phasing out HFCs will encourage a faster transition to low GWP alternatives to HFCs, steadily reducing the CO₂-eq value of New Zealand's annual HFC consumption over time. Reducing the use and emissions of HFCs through ratification and implementation of the Kigali Amendment also supports New Zealand's current target under the UNFCCC and the Paris Agreement to reduce greenhouse gas emissions by 30 per cent below 2005 levels by 2030.

75. Ratification would also allow New Zealand to contribute to international efforts to avoid further ozone depletion by protecting the ozone layer from the threat posed by global warming.

8. The costs to New Zealand of compliance with the Kigali Amendment

76. The costs to the New Zealand government of domestic measures to implement the Kigali Amendment are likely to be low, and would be absorbed into existing baselines.

77. New Zealand makes contributions to the Multilateral Fund of the Montreal Protocol to assist developing country Parties in meeting their implementation obligations. New Zealand's contributions are managed by the Ministry of Foreign Affairs and Trade and come from Vote Official Development Assistance (ODA). The costs of implementation of the Kigali Amendment are factored into decisions made by the Montreal Protocol Parties

³¹ See also Appendix III *Key proposals for the import and export permitting system*.

around what level of contribution developed countries make to the Multilateral Fund. The amount that donors provide to the Multilateral Fund is negotiated every three years, with donor countries paying an assessed contribution based on the size of their economy and a technical assessment of the cost of projects to phase down chemicals. This commitment is likely to continue for up to 30 years. New Zealand's proportion of the total replenishment is currently 0.4 per cent. Any future increases are likely to be easily absorbed within current baselines. The annual payment for years 2018-2020 amounts to 0.15 per cent of all ODA allocated for 2017/18.

78. The costs of the HFC phase-down for affected businesses will vary from user to user in each of the affected sectors.³² The costs of upgrading or replacing equipment will depend on the age, condition and current technology of the existing equipment as well as the refrigerant they intend to use. For example, a flammable refrigerant may require safeguards to be retrofitted to a refrigeration system to ensure that the risks associated with the flammable alternative are managed. Similarly, there may be costs to industry associated with complying with existing energy safety or work health and safety legislation, or any new requirements that may need to be added at a later time.³³ As alternative refrigerants to HFCs may have added health and safety risks, there will be costs associated with providing training to installers and technicians on the safe handling of these. The cost of HFCs is also likely to increase as availability decreases over time, which could be problematic for users who do not upgrade or replace their equipment or maintain existing equipment well. However, the long time period for the phase-down may allow industry to spread out costs incurred over a long timeframe, and should enable businesses to plan and make investment decisions in a way that minimises those costs.

79. The initial cost of lower-GWP alternatives to HFCs is expected to be higher than the cost of the HFCs they will replace, but this is likely to decrease over time as suppliers recover their research and development costs and alternatives become more readily available. Many of the new refrigerants can achieve the same refrigeration effect using a smaller quantity than current refrigerants, providing a cost benefit. The lower GWP of the new refrigerants could also provide some cost savings for participants in the NZ ETS, due to reduced emissions obligations.³⁴

80. However, as New Zealand does not manufacture HFCs and is dependent on the global market, local industry is likely to incur these costs as part of the global HFC phase-down, regardless of whether New Zealand ratifies the Kigali Amendment. Ratification will provide greater business certainty, and will enable New Zealand industry to proactively plan and prepare for the upcoming changes in the international HFC market. The import

³² See also Section 4 subsection *Disadvantages*.

³³ See also Section 6 subsection *Existing legislation relevant to New Zealand industry in the HFC phase-down*.

³⁴ Importers of bulk HFCs are required to participate in the NZ ETS. Although the NZ ETS does not require participants to reduce the quantity of HFC imported over time, it creates a price signal that incentivises the import of lower-GWP HFCs and alternatives by requiring participants to surrender emission units for the tonnes of CO₂-eq emissions associated with the import. This means that higher-GWP HFCs require the surrender of more emission credits than lower-GWP HFCs or other alternatives.

permitting system will help importers to know the future volumes of HFCs available, and the quantity of HFCs they can import.

81. Additional costs to households are not anticipated as a result of ratifying the Kigali Amendment. As already noted, most domestic products containing HFCs (such as heat pumps and refrigerators) come pre-charged, and are outside the scope of the Kigali Amendment. Use of HFCs will continue in New Zealand, so these appliances can continue to be used, and when they need to be replaced the market will have likely moved to alternative lower-GWP substances. For vehicle owners, the new low-GWP HFCs will be increasingly used in air-conditioning in new cars. High-GWP HFCs may need to continue to be used for the life of some existing cars.

9. Completed and proposed consultation with the community and parties interested in the implementation of the Kigali Amendment

Public consultation on the Kigali Amendment

82. Public consultation on *New Zealand's phase-down of hydrofluorocarbons to ratify the Kigali Amendment to the Montreal Protocol and associated supporting measures* took place in May and June 2017.³⁵ The Ministry for the Environment received 35 submissions, primarily from businesses and industry representatives in the refrigeration and air-conditioning sectors.³⁶

83. Submitters were largely supportive of New Zealand ratifying the Kigali Amendment and choosing to phase down HFCs. However, many expressed reservations around the technical and practical implications of the proposals to implement an HFC phase-down. Key concerns included the proposed import permitting scheme not providing enough business certainty; the timeframe for the phase-down being too ambitious; concerns around the safety and efficacy of alternatives of HFCs; and the accuracy of import data.

Proposed targeted consultation with industry and Māori on amendments to the Ozone Layer Protection Regulations

84. The Ministry for the Environment plans to carry out targeted consultation on an exposure draft of the OLP Regulations in approximately September 2018. Importers of HFCs, industry submitters on the public consultation document, and iwi/Māori who have indicated an interest in being involved in further consultation will be invited to take part.

Seeking feedback from Māori on the impact of the Kigali Amendment

85. In drafting this NIA, the Ministry for the Environment sought feedback from three groupings: the Pou Taiao Iwi Leaders Group; PSGEs; and other iwi groups who have indicated an interest in the Ministry's work. No significant concerns were raised. One group expressed support for New Zealand to ratify the Kigali Amendment.

Agency Consultation on this National Interest Analysis

86. The Ministry for the Environment consulted the following agencies on this National Interest Analysis: the Ministry of Foreign Affairs and Trade, the Department of the Prime

³⁵ Ministry for the Environment. 2017. *New Zealand's phase-down of hydrofluorocarbons to ratify the Kigali Amendment to the Montreal Protocol and associated supporting measures: Consultation document*. Wellington: Ministry for the Environment.

³⁶ See also Appendix II *Public consultation on the Kigali Amendment*.

Minister and Cabinet, the Ministry for Primary Industries, the New Zealand Treasury, the Ministry of Business, Innovation and Employment, the Ministry of Health, WorkSafe New Zealand, the New Zealand Customs Service, the Environmental Protection Authority, the Energy Efficiency and Conservation Authority, the Ministry of Transport, Maritime New Zealand and Te Puni Kōkiri.

10. Subsequent protocols and/or amendments to the treaty and their likely effects

87. Any future amendments to the Montreal Protocol, including to the Kigali Amendment, can be made in accordance with Article 9 of the Vienna Convention. Under Article 9, any Party to the Montreal Protocol can submit a proposed amendment, which is required to be communicated to the Parties at least six months in advance of the Meeting of Parties of the Montreal Protocol.

88. The Parties shall make every effort to reach agreement on any proposed amendment by consensus. If all efforts at consensus have been exhausted and no agreement is reached, an amendment can be adopted by a two-thirds majority vote of Parties present and voting. An amendment will enter into force for a Party that has accepted or ratified it on the ninetieth day after the agreed number of Parties has deposited instruments of acceptance or ratification. All five amendments to the Montreal Protocol have so far been adopted by consensus, including the Kigali Amendment.

89. Any future amendments to the Montreal Protocol would be subject to New Zealand's domestic treaty-making requirements, including the parliamentary treaty examination process.

11. Withdrawal or denunciation provision in the treaty

90. Under Article 19 of the Montreal Protocol any Party may withdraw from the Montreal Protocol by giving written notification to the United Nations Secretary-General, as depositary, at any time after four years of assuming certain obligations following the entry into force of the Montreal Protocol for that Party.³⁷ Withdrawal takes effect one year after the receipt of the notification by the United Nations Secretary-General, or on a later date as specified in the notification of the withdrawal. New Zealand withdrawal would be subject to the New Zealand domestic treaty process.

³⁷ These obligations, specified in the first paragraph of Article 2A, are as follows: "Each Party shall ensure that for the twelve-month period commencing on the first day of the seventh month following the date of entry into force of this Protocol, and in each twelve-month period thereafter, its calculated level of consumption of the controlled substances in Group I of Annex A does not exceed its calculated level of consumption in 1986."

12. Agency Disclosure Statement

The Ministry for the Environment has prepared this National Interest Analysis (NIA) in consultation with other relevant government agencies. Under Standing Order 397, the Government is required to present to the House a NIA for any treaty that is to be subject to ratification by New Zealand. This NIA addresses the matters required by Standing Order 398, including the reasons for New Zealand becoming a Party to the *Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer* (Kigali Amendment), and has been extended to include regulatory impact analysis. It provides an analysis of New Zealand becoming Party to the Kigali Amendment, which has been designed to phase down the use of hydrofluorocarbons (HFCs). HFCs are potent greenhouse gases contributing to climate change worldwide, and without global action to curb their use they will become a significant influence on climate.

There are a number of limitations to the analysis undertaken. Most notably, the success of the Kigali Amendment is dependent on global action, and the Kigali Amendment is only likely to become fully effective once universal ratification is achieved. If the Kigali Amendment is not globally effective, New Zealand may not obtain the full benefits identified in the analysis despite becoming a Party.

Officials acknowledge that the data used, including data collected for the National Inventory Report, is always subject to uncertainties. Data on the import and use of HFCs has uncertainties because it is collected through surveys that may not result in complete coverage, and there are some technical uncertainties in the quantities and composition of refrigerants.

In preparing this NIA and drafting proposals for implementation, the Ministry for the Environment has taken into account the submissions on the public consultation on the HFC phase-down, as well as discussions with industry as part of an ongoing programme of engagement. It is possible that some industry members did not submit on the consultation and hold views on implementation that have not been taken into account.

The costs to New Zealand industry as a result of the global phase-down of HFCs are also difficult to quantify. As a small, trade-dependent country and importer of HFCs, New Zealand is heavily influenced by international market movements, which are difficult to predict. Most likely industry will incur the costs associated with phasing out HFCs regardless of whether New Zealand ratifies the Kigali Amendment.

The Ozone Layer Protection Regulations 1996 will be amended to put in place the import permitting system for bulk HFCs and other controls required to implement the Kigali Amendment. The Ministry for the Environment plans to undertake a targeted consultation on an exposure draft of the amended regulations in approximately September 2018, with a view to ensure their workability and effectiveness. This process may result in minor technical changes, but is unlikely to affect the design of the system.

Ratification and domestic implementation of the Kigali Amendment will not impair private property rights or market competition, or override fundamental common law principles. While the exact effects on incentives for business to innovate and invest are difficult to predict, these are unlikely to be impaired. Ratification is likely to provide business certainty to begin planning and preparing for the global HFC phase-down. Ratification is also likely

to encourage innovation as businesses move away from HFCs and towards newer, more environmentally friendly alternatives.



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Appendix I: Monitoring and evaluating the policy objective of phasing down HFCs

1. The overall objective of domestic implementation of the Kigali Amendment is to design a system that will provide certainty that New Zealand will meet the obligations under the Kigali Amendment. In doing this, officials have worked to ensure that the design of the rules to phase down HFCs would:

- be equitable/fair (including to both new and current HFCs users in New Zealand, and to both domestic and overseas manufacturers using HFCs)
- incentivise/influence a shift to HFC alternatives
- provide certainty to business.

2. There are four mechanisms in place to monitor and evaluate the way in which New Zealand meets the policy objective of phasing down HFCs: the revision of reduction timetables for the phase-down, international reporting requirements, engagement with international partners through attending Montreal Protocol meetings; and a five-yearly review of the domestic implementation of the Kigali Amendment. These mechanisms are explained below.

3. Section 27 of the Ozone Layer Protection Act 1996 (OLPA) requires the Minister for the Environment to undertake a review at least every two years to consider whether the prescribed reduction timetables are appropriate given the technology available. This provision will allow the HFC phase-down reduction timetable to be amended if necessary, including as a result of factors such as industry access to alternatives to HFCs.

4. New Zealand is required to submit an annual report on the use of substances controlled under the Montreal Protocol to the Ozone Secretariat. As of 2020, this reporting will include the HFCs controlled under the Kigali Amendment (this data is also used for New Zealand's domestic reporting under section 30 of OLPA³⁸). The Kigali Amendment also contains a requirement that Parties must provide a one-off report on their production, imports and exports of HFCs between 2011 and 2013 within three months of entry into force of the Amendment for them. These reporting mechanisms provide transparency and show the New Zealand public and our international partners our progress on the HFC phase-down.

5. New Zealand attends two meetings of the Montreal Protocol every year: a Working Group meeting, typically held in July, and a Meeting of Parties, usually held in November. These meetings also present an opportunity for New Zealand to compare with other Montreal Protocol Parties how our efforts are tracking in terms of Kigali Amendment implementation.

6. In order to strengthen the monitoring requirements of implementation, officials propose to carry out a five-yearly review of the implementation of the Kigali Amendment. The Minister for the Environment also has the power under section 16 of OLPA to make regulations to give effect to New Zealand's obligations under the Montreal Protocol.

³⁸ Under section 30 the Minister for the Environment must, as soon as practicable after the end of each year, prepare a report on the operation of OLPA during that year.

Appendix II: Public consultation on the Kigali Amendment

1. Public consultation on the Kigali Amendment to phase down HFCs and other supporting measures took place from 13 May to 23 June 2017 with the release of a public consultation document. Submitter concerns are summarised into four key themes, which are set out below along with policy responses. The Ministry for the Environment gave a presentation to industry on the results of the public consultation in September 2017, and held a meeting to update industry on policy proposals in February 2018. The results of the public consultation, as well as ongoing engagement with industry, have informed the Government's decisions on policy implementation of the Kigali Amendment.

Theme from submissions on public consultation	Policy responses to themes
The proposed permitting system may not provide enough business certainty to importers of HFCs and other impacted industry.	Officials are taking into account business certainty as well as achieving environmental outcomes in the design of the import and export permitting system.
The timeframe set for phase-down is too ambitious.	The upper limit provided under the Kigali Amendment is generous. The upper limit we propose is a more ambitious start: it averages out New Zealand's peak consumption, that is, imports, (from 2010–12) and comparatively lower recent consumption (2013–15). To incentivise a prompt shift to HFC alternatives, the New Zealand baseline needs to be lower than the limit provided under the Kigali Amendment. ³⁹
There are concerns around the safety and efficacy of alternatives to HFCs.	The Ministry for the Environment is working closely with WorkSafe New Zealand, the Ministry of Business, Innovation and Employment, and industry bodies to ensure a safe and effective transition away from HFCs. This includes work to identify and fix any gaps in the current regulatory requirements and work to raise awareness and understanding of those requirements. ⁴⁰
The general accuracy of import data could be improved.	Officials are using the best available information. This includes seeking data from industry on past, present and projected HFC imports and exports.

³⁹ See also Section 6 *Measures which the Government could or should adopt to implement the Kigali Amendment*.

⁴⁰ See also Section 6 subsection *Existing legislation relevant to New Zealand industry in the HFC phase-down*.

Appendix III: Key proposals for the import and export permitting system

1. The following section sets out key proposals for the import and export permitting system. These proposals would ensure that New Zealand meets its international obligations while enabling us to meet our environmental objectives (such as incentivising a shift away from the use of HFCs) and providing business certainty.

Determining New Zealand's baseline consumption

2. The permitting system requires a baseline from which to determine the starting point for the phase-down of HFCs. The obligation under the Kigali Amendment is to determine the baseline as average consumption (defined as production plus imports minus exports) for the period 2011 to 2013, plus 15 per cent of the HCFC baseline. However, it is proposed that New Zealand's baseline be determined by average HFC consumption from 2010 to 2015.⁴¹ The upper limit provided under the Kigali Amendment is generous, whereas the proposed upper limit is more ambitious: it averages out New Zealand's peak consumption from 2010 to 2012, and comparatively lower recent consumption from 2013 to 2015.⁴² This will incentivise a prompt shift to HFC alternatives.

Frequency of step-downs

3. The frequency at which the quantity of HFCs available for import would be progressively decreased needs to be determined. The Kigali Amendment requires five-yearly step-downs from 2019, with a final two-year step down between 2034 and 2036. More frequent and regular decreases than those required under the Kigali Amendment are proposed. HFCs would be phased down over two-year cycles (with one three-year cycle) with drops in the upper limit phase-down steps as regularly as possible. This would meet our international obligations while also incentivising a shift to alternatives. Importers would be able to make predictions about the quantity of HFCs they will be able to import in future years as the overall pool declines in two-to-three year cycles. In addition, section 27 of the Ozone Layer Protection Act 1996 (OLPA) requires the Minister for the Environment to undertake a review at least every two years to consider whether the prescribed reduction timetables are appropriate given the technology available. This allows for a revisit of this proposal.

End point of step-downs

4. We need to determine what percentage of our original baseline we wish to end the phase-down with in 2036. The Kigali Amendment's end point requirement for New Zealand would be that our total upper limit on importation in the year 2036 be 269.4 KtCO₂-eq. However, we propose that this upper limit be 254.3 KtCO₂-eq, or 19 per cent of the New Zealand baseline, which is slightly lower than that required under the Amendment. This allows us to meet our obligations while keeping some flexibility in the availability of HFCs,

⁴¹ The calculation results in New Zealand's baseline, or upper limit for consumption in 2020, of 1338 CO₂-eq. This is lower than the upper limit of 1616 CO₂-eq that would be needed to meet the Kigali obligations.

⁴² As noted above, the peak in consumption is likely a result of stockpiling before HFCs entered the NZ ETS. The lower consumption may be a result of domestically using up the stockpile developed in 2011/12. That is, there was no need to import HFCs as there were enough imported during the stockpiling years to meet demand in New Zealand. Therefore, the baseline needs to be higher than the 2013 to 2015 period of relatively low consumption to reflect actual use within New Zealand.

as we are not certain what requirements there will be for these controlled refrigerants in 2036 and thereafter.

Percentage share of HFCs for grandfathered and special permits

5. There are no specific international requirements on how permits to import HFCs should be allocated. It is proposed that 80 per cent of the overall pool of HFCs be allocated to those who imported at some stage between 2015 and 2017 (“grandfathered permits”). The remaining 20 per cent is proposed to be allocated to those who did not import HFCs between 2015 and 2017 (“special permits”), or to those eligible for grandfathered permits who consider that they require additional HFCs to meet business requirements.

Changing eligibility for grandfathered allocation from 2013-2015 to 2015-2017

6. Some industry members expressed concerns that the period used to determine eligibility for grandfathering permits should be revised to reflect HFC consumption in more recent years. New Zealand’s HFC consumption increased significantly in 2016 to 1,979.1 KtCO₂-eq.⁴³ In response to these concerns, it is proposed that eligibility for grandfathered allocation be changed from 2013-2015 to 2015-2017, to ensure that grandfathered permits are available to companies that began importing HFCs in 2016 and 2017 and the data used better reflects current market conditions.

Controlling the exportation of HFCs – relationship between export and import quota

7. New Zealand needs to implement a permitting system for the export of controlled substances to meet our obligations under the Kigali Amendment. It is proposed that the export of new, used, recycled and reclaimed HFCs be prohibited, except under the authority of an export permit granted by the EPA. The proposed permitting system will mirror the export requirements for HCFCs set out in Regulation 23 of the OLP Regulations. There will be no upper limit on the quantity of HFCs that can be exported, as the Kigali Amendment’s restrictions only apply to the importing end of the trade.

8. The consultation document proposed that if a person exported HFCs, their quota for importation would not increase, as this would result in administrative costs that would be disproportionate to the relatively low levels of exports in New Zealand. However, several industry submitters suggested that the level of exports might have been underestimated in the consultation document. Submitters also noted that the original proposal would discourage New Zealand exporters from exporting relatively small quantities of HFCs to Pacific Island nations because there would be no trade-offs for the cost of doing this, which would have a negative effect on the supply of HFCs in those countries.

9. Therefore, it is now proposed that exports of HFCs be deducted from a person’s total permit volume. This is consistent with the Kigali Amendment’s consumption calculation for HFCs (production plus imports minus exports). It is proposed that exports from stocks of HFCs be managed by issuing additional special permits, or by amending existing permits for the volume of the export shipment. Regulation 32 of the OLP Regulations also enables the EPA to grant an exemption for HFCs exported as part of a transshipment.

⁴³ Ministry for the Environment. 2018. *New Zealand's Greenhouse Gas Inventory 1990–2016*. Available at <https://www.mfe.govt.nz/node/24120/>.

Appendix IV: Existing legislation which supports industry in relation to health and safety risks in the HFC phase-down

1. New Zealand already has legislation in place to manage the risks associated with alternative refrigerants (with hazardous properties), and the plant and equipment that uses those refrigerants. This legislation will not need to be amended as a requirement of New Zealand's ratification of the Kigali Amendment. However, the Ministry of Business, Innovation and Employment is undertaking work to identify and fix any gaps in the current regulatory requirements that will be relevant during the process of phasing down HFCs and moving towards the increased use of alternatives. It is important that industry is aware of and supported by government in meeting these obligations. Consequently, WorkSafe New Zealand is undertaking work to raise awareness and understanding of current regulatory requirements.
2. Compliance with this legislation or with any future changes is likely to impose costs on industry, depending on the condition of existing equipment and whether it needs to be upgraded or retrofitted to use alternative refrigerant gases safely. For example, changing to a flammable refrigerant may require safeguards to be retrofitted to a refrigeration system to ensure that the risks associated with the flammable alternatives are managed.
3. The health and safety legislation relevant to the phase down of HFCs is set out below.

The Health and Safety at Work Act 2015

4. The primary duty of care under the Health and Safety at Work Act 2015 (the HSW Act) is a broad overarching duty which includes, but is not limited to, a business having effective practices in place for providing and maintaining a work environment that is without health and safety risks; and providing and maintaining safe plant (ie, refrigeration systems).
5. The Act places a duty on a business who manage or control plant at a workplace to ensure, so far as is reasonably practicable, that the plant is without risks to the health and safety of any person.
6. There are also complementary duties on businesses responsible for the design, manufacture, construction, installation, importation, and supply of plant at workplaces.

The Health and Safety at Work (General Risk and Workplace Management) Regulations 2016

7. The Health and Safety at Work (General Risk and Workplace Management) Regulations 2016 (the GRWM Regulations) place a general training obligation on business to ensure that every worker who carries out work of any kind, uses plant of any kind, or deals with a substance of any kind that is capable of causing a risk in a workplace, either has adequate knowledge and experience or is adequately supervised by a person who has that knowledge and experience. WorkSafe has issued guidance on its website to support businesses to meet this obligation.
8. The GRWM Regulations place a general obligation on business to ensure that an emergency plan for the workplace is prepared, maintained, and tested on an ongoing basis.

The Health and Safety in Employment (Pressure Equipment, Cranes, and Passenger Ropeway) Regulations 1999

9. The Health and Safety in Employment (Pressure Equipment, Cranes, and Passenger Ropeway) Regulations 1999 (the PECPR Regulations) require pressure equipment – including larger commercial or industrial refrigeration systems – to have design verification and a certificate of inspection by an authorised third-party inspection body. Pressure equipment that has been issued a certificate of inspection must subsequently be inspected and the certification renewed for the lifetime of the asset. The requirements of the PECPR Regulations apply to larger commercial or industrial refrigeration systems regardless of the type of refrigerant that is used.

10. An Approved Code of Practice (ACoP) has been made under the PECPR Regulations as a practical guide to support duty holders comply with their obligations. The ACoP requires designers of commercial and industrial refrigeration systems to ensure that all equipment, or any alteration to equipment, is designed in accordance with the joint Australian/New Zealand Standard for commercial refrigeration systems – although the version referenced has now been superseded.

11. While the ACoP is not legally binding in the same way as the requirements prescribed in the PECPR Regulations it can be used in legal proceedings as evidence of whether or not a duty or obligation under the PECPR regulations has been complied with.

The Health and Safety at Work (Hazardous Substances) Regulations 2017

12. The Health and Safety at Work (Hazardous Substances) Regulations 2017 (the Hazardous Substances Regulations) places requirements on commercial and industrial refrigeration systems and the handling of refrigerants with hazardous properties.

13. The requirements that apply to hydrocarbon refrigeration systems, which have been carried through into the Hazardous Substances Regulations, were strengthened in the wake of the 2008 Tamahere coolstore fire. Changes included ensuring that hydrocarbon refrigeration systems have appropriate means of leak detection and ensuring that those systems comply with the joint Australian/New Zealand Standard for commercial refrigeration systems.

14. There are a number of exemptions in the Hazardous Substances Regulations for ammonia refrigeration systems. These exemptions acknowledge that the risks associated with ammonia refrigeration systems are largely managed under the PECPR Regulations.

The Electricity (Safety) Regulations 2010

15. The Electricity (Safety) Regulations 2010 (the ESRs) place a duty on a refrigeration plant owner/operator to not use the installation if the installation is electrically unsafe.

16. An installation is deemed to be electrically unsafe when any commercial or industrial refrigeration system is charged with an alternative refrigerant that it was not designed to use, unless the system has subsequently been modified to operate safely with the alternative refrigerant.