

Impact of Ozone Layer Protection on the Avoidance of Climate Change: Legal Issues and Proposals to Address the Problem

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This article examines some of the issues raised by the interconnections between efforts to protect the ozone layer and efforts to address climate change. It focuses on the replacement of certain ozone-depleting substances with alternatives that have high global warming potential, and the proposals made by some countries to address the resulting problems by placing the responsibility on parties to the Montreal Protocol to control these alternatives. The article also discusses some of the challenges of having two or more regimes deal with the same subject matter, albeit in different ways, and highlights the need for cooperation and coordination across regimes.

INTRODUCTION

The parties to the Montreal Protocol on Substances that Deplete the Ozone Layer¹ recognize the negative impact on the global climate of certain high global warming potential alternatives to ozone-depleting substances. At the first Meeting of the Parties to the Protocol (MOP-1) in 1989, the parties agreed that the fact that some of these alternatives have global warming potential (GWP)² should be taken into account when their suitability as substitutes is considered.³ In July 2009, a Workshop for a Dialogue on High Global Warming Potential Alternatives for Ozone-Depleting Substances was held, and parties agreed that 'the Montreal Protocol should continue to envisage the possibility of making a further contribution by tackling the issue of high-global-warming-potential alternatives to ozone-depleting substances'.⁴

It was to address this negative impact that the Federated States of Micronesia (Micronesia) and Mauritius sub-

mitted a joint proposal in May 2009 to the Ozone Secretariat to amend the Montreal Protocol to deal with the problems caused by the phase-out of hydrochlorofluorocarbons (HCFCs) and their replacement with hydrofluorocarbons (HFCs).⁵ Canada, Mexico and the USA subsequently submitted their own proposal (the North American proposal) to supplement the Micronesia and Mauritius proposal.⁶ The crux of both proposals is to control and phase down HFCs under the Montreal Protocol. However, adoption of these proposals would cause some complications because HFCs are not ozone-depleting substances, but greenhouse gases that contribute to climate change, and are currently regulated under the Kyoto Protocol⁷ to the United Nations Framework Convention on Climate Change (UNFCCC).⁸ The questions that must be addressed include the appropriate regime to regulate HFCs, as well as the appropriate regulatory measures under either regime.

THE HFC PROBLEM

The Montreal Protocol controls the production and consumption of ozone-depleting substances (ODSs),⁹

⁵ Proposed Amendment to the Montreal Protocol (UNEP/OzL.Pro.WG.1/29/8, 4 May 2009).

⁶ Draft Decisions and Proposed Amendments to the Montreal Protocol (UNEP/OzL.Pro.21/3/Add.1, 17 September 2009).

⁷ Kyoto Protocol to the United Nations Framework Convention on Climate Change (Kyoto, 12 December 1997), Article 3.1 and Annex A. The relevant provisions are contained in the Protocol itself, rather than in the UNFCCC. As it is being debated, the choice of instrument to regulate HFCs is essentially the Montreal Protocol or the Kyoto Protocol. In addition to the issues highlighted in this article, the outcome of this debate will also depend on what happens to the Kyoto Protocol under the ongoing climate change negotiations: whether it is continued, or is replaced with a new instrument and, if replaced, whether this new instrument adopts similar provisions to those in the Kyoto Protocol. For a summary of the climate change negotiations and these options, see K. Kulovesi and M. Gutiérrez, 'Climate Change Negotiations Update: Process and Prospects for a Copenhagen Agreed Outcome in December 2009', 18:3 *RECIEL* (2009), 229.

⁸ United Nations Framework Convention on Climate Change (New York, 9 May 1992).

⁹ See generally J. Brunnée, *Acid Rain and Ozone Layer Depletion: International Law and Regulation* (Transnational Publishers, 1988); D.H. Ogden, 'The Montreal Protocol: Confronting the Threat to Earth's Ozone Layer', 63:4 *Washington Law Review* (1988), 997;

¹ Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal, 16 September 1987).

² Global warming potential is an index for calculating the ability of different greenhouse gases to contribute to global warming (that is, to trap heat in the atmosphere) relative to the ability of carbon dioxide (which is set at 1).

³ See *Report of MOP-1* (UNEP/OzL.Pro.1/5, 6 May 1989), para. 19.

⁴ See *Report of the Twenty-Ninth Meeting of the Open-Ended Working Group of the Parties to the Montreal Protocol* (UNEP/OzL.Pro.WG.1/29/9, 15 July 2009), para. 130.

generally by phasing out¹⁰ their production and consumption, and replacing them with substances that have no or low ozone-depleting potential. Most ODSs are also greenhouse gases so they not only deplete the ozone layer, but also contribute to climate change. In phasing them out, the Montreal Protocol has made a significant contribution to mitigating climate change.¹¹ So far, therefore, the implementation of the ozone regime has had a positive impact on the global climate system.¹²

At MOP-4 in 1992, HCFCs were added as controlled substances to be phased out under the Montreal Protocol,¹³ and at MOP-19 in 2007, parties agreed to accelerate the phase-out.¹⁴ The substances generally used as HCFC alternatives are HFCs.¹⁵ Currently, the Multilateral Fund for the Implementation of the Montreal Protocol (the Multilateral Fund) funds the conversion to HFCs in developing countries.¹⁶ The Multilateral Fund was established to meet the agreed incremental costs incurred by developing country parties in complying with their Protocol obligations¹⁷ and, *inter alia*, funds conversion to ozone-friendly technologies. HFCs are

particularly ozone-friendly because they have no ozone-depleting potential. However, they are powerful greenhouse gases regulated under the climate change regime.¹⁸ Therefore, HFCs, though currently considered part of the ozone solution, are part of the climate problem,¹⁹ and HFC emissions are expected to increase threefold by 2015.²⁰ The GWPs of HFCs range from 43 to 14,310,²¹ making them quite harmful to the climate.

HFC-23 in particular is very harmful to the climate. It has the highest GWP of all HFCs and the second highest of the greenhouse gases regulated by the Kyoto Protocol, with a GWP of 14,310.²² Unlike other HFCs, HFC-23, rather than being directly produced, is generated as an unwanted by-product of the HCFC-22²³ manufacturing process.²⁴ Ordinarily then, since HFC-23 is a by-product of HCFC-22, it ought not to be a problem in the long term since HCFCs are being phased out. However, production of controlled substances for use entirely as feedstock²⁵ in the manufacture of other chemicals is excluded from the Protocol definition of 'production' and so is not being phased out by the Montreal Protocol.²⁶ Therefore, although HCFC-22 production for direct use will be phased out worldwide by 2040, its production for feedstock use is actually projected to continue to grow,²⁷ as a result of which HFC-23 emissions are projected to increase by about 60%.²⁸

M.M. Pinkham, 'Montreal Protocol: An Effort to Protect the Ozone Layer', 15:1 *Suffolk Transnational Law Journal* (1991–1992), 255; and P. Birnie *et al.*, *International Law and the Environment*, 3rd edn (Oxford University Press, 2009).

¹⁰ Phasing out means completely eliminating production and consumption, possibly with very limited exceptions. Phasing down, on the other hand, means reducing production and consumption to a specified percentage or level. For example, Article 2A(4) of the Montreal Protocol, n. 1 above, provides for the phase-out of chlorofluorocarbons by requiring that, from 1996 onwards, their production and consumption in developed countries shall not exceed zero. See also, *ibid.*, Article 2A(8).

¹¹ Chlorofluorocarbons, halons and HCFCs, which are all ODSs regulated by the Montreal Protocol, have high global warming potential. See B. Metz *et al.* (eds), *IPCC/TEAP Special Report: Safeguarding the Ozone Layer and the Global Climate System: Issues Related to Hydrofluorocarbons and Perfluorocarbons* (Cambridge University Press, 2005), at 3 and 6. See at 8 for a table of the GWP values of these substances. See also S. Oberthür, 'Linkages between the Montreal and Kyoto Protocols: Enhancing Synergies between Protecting the Ozone Layer and the Global Climate', 1:3 *International Environmental Agreements: Politics, Law and Economics* (2001), 357, at 359; and E. Kintisch, 'Tougher Ozone Accord Also Addresses Global Warming', 317:5846 *Science* (2007), 1843, at 1843.

¹² See UNDP, *Phasing Out Ozone-Depleting Substances: Protecting the Ozone Layer and Safeguarding the Global Climate* (UNDP, 2009), at 4; and G.J.M. Velders *et al.*, 'The Importance of the Montreal Protocol in Protecting Climate', 104:12 *PNAS* (2007), 4814, at 4814.

¹³ See the Amendment to the Protocol, contained in Annex III of the Report of MOP-4 (UNEP/OzL.Pro.4/15, 25 November 1992).

¹⁴ The phase-out of HCFCs was accelerated to 2020 for developed countries and 2030 for developing countries. See Decision XIX/6, Adjustments to the Montreal Protocol with regard to Annex C, Group I, Substances (hydrochlorofluorocarbons), in *Report of MOP-19* (UNEP/OzL.Pro.19/7, 21 September 2007), Annex III.

¹⁵ See S. Oberthür, n. 11 above, at 361 and B. Metz *et al.*, n. 11 above, at 405.

¹⁶ See B. Metz *et al.*, *ibid.*, at 405, which states that 'Nearly US\$130 million has been disbursed to the developing countries for the conversion to HFCs . . . '.

¹⁷ See Decision II/8, Financial Mechanism (UNEP/OzL.Pro.2/3, 29 June 1990).

¹⁸ See Kyoto Protocol, n. 7 above, Article 3.1, which requires developed country parties to ensure that their total emissions of the greenhouse gases listed in Annex A of the Protocol do not exceed their allowed emission levels. The gases in Annex A are carbon dioxide, methane, nitrous oxide, HFCs, perfluorocarbons and sulphur hexafluoride.

¹⁹ See B. Metz *et al.*, n. 11 above, at 3.

²⁰ *Ibid.*, at 11 and table TS-4 at 33 and 37. See also C. Clerbaux and D. Cunnold, 'Long-Lived Compounds', in WMO *et al.*, *Scientific Assessment of Ozone Depletion: 2006* (World Meteorological Organization, 2007).

²¹ For an explanation of GWP, see n. 2 above.

²² See B. Metz *et al.*, n. 11 above, at 8 and 456.

²³ HCFC-22 is used in air conditioning, refrigeration and foam blowing applications. Like all other HCFCs, its consumption and production for direct use are being phased out.

²⁴ See B. Metz *et al.*, n. 11 above, at 56; and A. McCulloch and A.A. Lindley, 'Global Emissions of HFC-23 Estimated to Year 2015', 41:7 *Atmospheric Environment* (2007), 1560.

²⁵ Feedstock is raw material for industrial processing.

²⁶ See Montreal Protocol, n. 1 above, Article 1. Production for use as feedstock is permitted indefinitely because the process does not involve the release of ODSs to the atmosphere, and so does not damage the ozone layer. See B. Metz *et al.*, n. 11 above, at 77.

²⁷ See B. Metz *et al.*, *ibid.*, at 11, 48 and 77. HCFC-22 is the most abundant of all HCFCs and, apart from its direct use as a refrigerant, is also used as a chemical feedstock for manufacturing fluoropolymers such as polytetrafluoroethylene (commonly known as Teflon, and is, for example, used as non-stick coating for cookware). See also *Report of MOP-19*, n. 14 above, para. 69, where the United Nations Environment Programme's Technology and Economic Assessment Panel (TEAP) reports that HFC-23 emissions from continuing feedstock production could add 450 million tonnes of CO₂ equivalent annually. HCFC-22 demand for feedstock use is not expected to decline and a reduction in the growth rate is not expected. See A. McCulloch and A.A. Alindley, n. 24 above, at 1562.

²⁸ See B. Metz *et al.*, n. 11 above, at 405.

IMPLICATIONS FOR THE CLIMATE SYSTEM

The implications of this for the climate are significant. The production and consumption of certain HFCs have increased as a result of the Montreal Protocol control measures, because HFCs are the primary alternatives to HCFCs. The increase in the production and consumption of HFCs as a result of the phase-out of HCFCs has a direct negative impact on the climate system, because of the high GWP of most HFCs.

In addition, the by-production of HFC-23 also creates the problem of perverse incentives under the climate change regime. Under the Kyoto Protocol's Clean Development Mechanism (CDM), projects that destroy HFC-23 in developing countries can generate Certified Emission Reduction units (CERs), which can be sold and used to offset developed country mitigation commitments under the Kyoto Protocol.²⁹ Issuing CERs for HFC-23 destruction at HCFC-22 plants, particularly new plants, could act as an incentive to increase HCFC-22 production, leading to a higher production of HFC-23. The Kyoto Protocol parties recognized this problem and, at their first meeting, requested the UNFCCC's Subsidiary Body for Scientific and Technological Advice (SBSTA) to consider the implications of this problem, as well as ways of addressing it.³⁰ This issue has been regularly taken up by every subsequent SBSTA meeting, but remains unresolved.³¹

The baseline for calculating developing country HCFC phase-out commitments is the average of their 2009 consumption levels and 2010 production levels, and they are required to freeze production and consumption at this baseline by 2013.³² This means that, until 2013, developing countries can increase their production of HCFC-22 and, potentially, the ability to generate CERs for HFC-23 destruction could act as an incentive to do so.³³ Although HFC-23 destruction projects only account for about 0.5% of current CDM projects, they

generate about 12% of CERs per annum, and account for 55% of all CERs issued so far.³⁴ HFC-23 is quite inexpensive to destroy³⁵ and the credits generated from HFC-23 destruction far outweigh the cost of producing and destroying it.³⁶ Although developing countries must phase out HCFC production and consumption between 2013 and 2030 according to the established schedule,³⁷ HCFC-22 production for feedstock use can continue, which means so can the by-production of HFC-23. The possibility of generating CERs from the continued production of HCFC-22 generally between 2013 and 2030, and subsequently for feedstock purposes, could act as an incentive against transitioning to more climate-friendly substitutes even where these exist.³⁸ This appears doubly perverse when account is taken of the fact that the Multilateral Fund finances conversion from CFCs to HCFCs in developing countries, so this could be seen as the Multilateral Fund financing conversion to HCFC-22, and the carbon markets paying to destroy the HFC-23 produced in the process.

The potential climate impact of ODS substitutes has long been recognized. As far back as 1998, the Conference of the Parties to the UNFCCC invited parties and other interested stakeholders to provide information on ways to limit HFC emissions, including their use as ODS substitutes.³⁹ Other decisions were subsequently made, both by the parties to the UNFCCC and to the Montreal Protocol, to initiate more work on the issue.⁴⁰ However, it was essentially left up to countries to consider all the information provided and to attempt to reconcile the objectives of protecting the ozone layer and the climate.⁴¹

³⁴ See UNEP Risoe CDM/JI Pipeline Analysis and Database (1 January 2010), available at <<http://www.cdmpipeline.org>>.

³⁵ HFC-23 is usually destroyed through a thermal oxidation/incineration process using a thermal oxidiser/incinerator.

³⁶ See *Report of MOP-19*, n. 14 above, para. 70, where, in discussing issues relating to the CDM and HCFC production, the TEAP notes, *inter alia*, that, 'the value of Clean Development Mechanism credits was up to 10 times the cost of HFC-23 emissions abatement and was likely to exceed the sales revenue of HCFC-22; that revenues received by chemical suppliers from such credits might provide an additional competitive advantage . . . '.

³⁷ See Decision XIX/6, n. 14 above, para. 4.

³⁸ See M.W. Roberts, 'The Montreal Protocol Must Act to Prevent Global Climate Change While Restoring the Ozone Layer', 9:3 *SDLP* (2008–2009), 33, at 38; and *Report of MOP-19*, n. 14 above, para. 70.

³⁹ See Decision 13/CP.4, Relationship between Efforts to Protect the Stratospheric Ozone Layer and Efforts to Safeguard the Global Climate System: Issues Related to Hydrofluorocarbons and Perfluorocarbons (FCCC/CP/1998/16/Add.1, 25 January 1999).

⁴⁰ See B. Metz *et al.*, n. 11 above, at vii.

⁴¹ See Decision 17/CP.5, Relationship between Efforts to Protect the Stratospheric Ozone Layer and Efforts to Safeguard the Global Climate System (FCCC/CP/1999/6/Add.1, 2 February 2000), para. 1, which invites parties to consider the available information on limiting HFC emissions. When presenting the report of the task force on the implications of the Kyoto Protocol's regulation of HFCs and perfluorocarbons, the TEAP, *inter alia*, reported that, 'the Kyoto Protocol need not interfere with implementation of the Montreal Protocol and

²⁹ See Article 12 of the Kyoto Protocol, n. 7 above, and Decision 3/CMP.1, Modalities and Procedures for a Clean Development Mechanism, as defined in Article 12 of the Kyoto Protocol (FCCC/KP/CMP/2005/8/Add.1, 30 March 2006). Regarding the term 'destroy', HFC-23 is produced as an unwanted by-product of HCFC-22 production. After the HFC-23 gas is produced, it is then destroyed through thermal oxidation/incineration.

³⁰ See Decision 8/CMP.1, Implications of the Establishment of New HCFC-22 Facilities Seeking to Obtain Certified Emission Reductions for the Destruction of HFC-23 (FCCC/KP/CMP/2005/8/Add.1, 30 March 2006).

³¹ The item has been listed and taken up by every subsequent SBSTA meeting (eight so far, up to SBSTA 31 in December 2009). Parties have been unable to come to an agreement to resolve the issue, and at SBSTA 31, it was once again forwarded to the next SBSTA meeting.

³² See Decision XIX/6, n. 14 above, paras 1 and 2.

³³ See D. Kaniaru *et al.*, 'Strengthening the Montreal Protocol: Insurance Against Abrupt Climate Change', 7:3 *SDLP* (2006–2007), 3, at 4.

THE AMENDMENT PROPOSALS

In relation to HFCs, the Micronesia and Mauritius proposal is to regulate and phase down HFCs 'with a high GWP'⁴² in order to protect the climate benefits already achieved by the Montreal Protocol, and provide 'fast-action' climate change mitigation. The core of the HFC proposal is to amend the Montreal Protocol to authorize it to regulate HFCs. The proposed regulation of HFCs (other than HFC-23) involves establishing: a schedule for phasing down the production and consumption of the specified HFCs; control measures for developing countries; and a new Annex F listing the HFCs to be controlled.⁴³ For HFC-23, the proposal is to control emissions by requiring its mandatory destruction.⁴⁴ The proposed schedule for developed countries is outlined in a proposed Article 2J. It requires them to commence HFC phase-down in 2012 and conclude by 2030, with a final phase-down level of 10% of their 2004–2006 average. For developing countries, the control measures would involve either establishing a specific phase-down schedule with different dates to that of developed countries, or allowing developing countries to delay, by a specific number of years, their compliance with the schedule.⁴⁵ The latter is the method currently employed by the Montreal Protocol.⁴⁶

As Article 3 of the Montreal Protocol provides that parties are to calculate their control levels by reference to the ozone-depleting potential of the controlled substances, which is not appropriate for HFCs, the proposal suggests calculating control levels by reference to other measures such as GWP.⁴⁷ The proposal also suggests that parties should consider requiring that financing provided to developing country parties to assist them in complying with their HCFC phase-out obligations should give preference to climate-friendly alternatives and technologies other than substances listed in (the new) Annex F.⁴⁸

The North American proposal supplements the Micronesia and Mauritius proposal in several ways.⁴⁹ For

example, developed countries would commence HFC phase-down in 2013 and conclude by 2033, with a final phase-down level of 15% of their 2004–2006 average.⁵⁰ The proposal further specifies the control measures for developing countries. They would commence HFC phase-down in 2016 and conclude in 2043, with a final phase-down level of 15% of their 2004–2006 average.⁵¹ The North American proposal also adds two other gases to the list of HFCs to be controlled⁵² and introduces specific limits on HFC-23 by-production and emissions.⁵³

Micronesia and Mauritius introduced their proposal at the twenty-ninth meeting of the Open-Ended Working Group of the Parties to the Montreal Protocol in July 2009, and parties discussed the proposal quite extensively, as well as the issue of high-GWP HCFC alternatives generally.⁵⁴ The discussions resulted in two bracketed draft decisions on HCFCs and HFCs, which were annexed to the report of the meeting and forwarded to MOP-21 for consideration.⁵⁵ Discussions during MOP-21 focused mainly on these draft decisions and the North American proposal.⁵⁶ Parties were unable to reach agreement on the draft decision amending the Protocol to regulate HFCs. Instead, 40 parties signed a declaration on high-GWP alternatives to ODSs, in which they, *inter alia*, agree to take appropriate measures to limit the use of such alternatives.⁵⁷ MOP-21 did, however, adopt a decision on HCFCs and environmentally sound alternatives, which, *inter alia*, encourages parties to develop further and use low-GWP HCFC alternatives and promote policies and measures to avoid the selection of high-GWP alternatives.⁵⁸ Parties also requested the Technology and Assessment Panel to provide an assessment of available and emerging HCFC alternatives and substitutes; list all sub-sectors using HCFCs, with examples of technologies where low-GWP alternatives are used; and to provide updated information on the uses for which low- or no-GWP and/or other suitable technologies are or will soon be commercialized, including the amount of high-GWP alternatives to ODS uses that can potentially be

the Montreal Protocol need not interfere with the Kyoto Protocol'; see *Report of MOP-19*, n. 14 above, para. 27. No further decisions were taken by the Montreal Protocol parties. See also S. Oberthür, n. 11 above, at 369.

⁴² It is not immediately clear whether this means that the amendment is only to cover those HFCs that have high GWPs, or whether the reference is to the fact that HFCs have high GWPs. The HFCs listed in the Micronesia and Mauritius proposal have GWPs ranging from 12 to 14,800 and the North American proposal adds two HFCs, which have GWPs of 4 and 6.

⁴³ See Micronesia and Mauritius proposal, n. 5 above, at 29.

⁴⁴ *Ibid.*, at 19.

⁴⁵ *Ibid.*, at 24.

⁴⁶ See Montreal Protocol, n. 1 above, Article 5.1.

⁴⁷ See Micronesia and Mauritius proposal, n. 5 above, at 21. The North American proposal adopts GWP (see North American proposal, n. 6 above, at 5).

⁴⁸ See Micronesia and Mauritius proposal, n. 5 above, at 11–12.

⁴⁹ See North American proposal, n. 6 above, at 2.

⁵⁰ *Ibid.*, at 2–5.

⁵¹ *Ibid.*, at 2 and 7.

⁵² The two additional gases are HFC-1234yf and HFC-1234ze. *Ibid.*, at 2 and 8.

⁵³ *Ibid.*, at 5.

⁵⁴ See T. Akanle *et al.*, 'Summary and Analysis of the 29th Meeting of the Open-Ended Working Group of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer', 19:67 *Earth Negotiations Bulletin* (21 July 2009).

⁵⁵ See *Report of the Twenty-Ninth Meeting*, n. 4 above, at 40–42.

⁵⁶ See M. Ashton *et al.*, 'Summary and Analysis of the 21st Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer', 19:73 *Earth Negotiations Bulletin* (11 November 2009), 6.

⁵⁷ See *Report of MOP-21* (UNEP/OzL.Pro.21/8, 21 November 2009), paras 42 and 212, and Annex III.

⁵⁸ See Decision XXI/9, Hydrochlorofluorocarbons and Environmentally Sound Alternatives (UNEP/OzL.Pro.21/8, 21 November 2009), paras 4 and 5.

replaced. This information is to be included in the panel's full 2010 assessment.⁵⁹ As parties could not reach agreement on amending the Protocol to include HFCs, the issue was taken up again during the thirtieth meeting of the Open-Ended Working Group in June 2010, when parties were again unable to reach agreement. Discussions will therefore continue at MOP-22 in November 2010.⁶⁰

The issue is also being considered by parties to the UNFCCC under ongoing negotiations for the post-2012 climate change regime.⁶¹ During the Fifteenth Conference of the Parties to the UNFCCC held in December 2009, parties continued consideration of this issue as a possible way to enhance the cost-effectiveness of, and promote, climate change mitigation action. Discussions in this regard focused on encouraging parties to adopt measures under the Montreal Protocol to phase down the production and consumption of HFCs, but the text on this issue remains bracketed, as parties could not reach agreement on it.⁶²

LEGAL IMPLICATIONS OF THE PROPOSAL

On a general note, these proposals raise the issue of the overlap of treaties and how countries should deal with it. This is particularly problematic in cases where two or more treaties deal with the same subject matter or where two or more treaties contain conflicting provisions. An example of the former is the situation with the various regimes regulating the prevention of pollution in the Baltic Sea/North Sea Region.⁶³ Regarding the latter, World Trade Organization rules, for example, promote free trade and generally prohibit trade restrictions; whereas some treaties, such as the Montreal Protocol, prohibit trade in certain circumstances, such as with non-parties.⁶⁴ The Vienna Convention on the Law of Treaties⁶⁵ governs the application of successive trea-

ties dealing with the same subject matter. Generally, as between parties to both treaties, and unless otherwise provided, the later in time takes precedence over the earlier treaty, which is then subject to it.⁶⁶ In relation to the Micronesia and Mauritius, and North American amendment proposals, this means that if the proposals are adopted, as between parties to both the Montreal and Kyoto Protocols, the amendments would apply, even if they conflict with the provisions of the Kyoto Protocol. For countries that are only party to one or the other, only the treaty to which they are party would apply to them.

It is however recognized that the methods of regulation used by these two treaties differ – the Kyoto Protocol regulates HFC emissions, while the Montreal Protocol would regulate its production and consumption. This is a fact noted by the proposal proponents. However, the subject matter is the same, and having these two instruments regulating HFCs raises some issues that would need to be addressed before this can be successfully achieved.

First, the issue about whether the Montreal Protocol can in fact regulate HFCs must be addressed. The Montreal Protocol has been amended and adjusted several times to control additional substances or accelerate their phase-out. For example, the Protocol was amended by MOP-2 in 1990 to add carbon tetrachloride and methyl chloroform, as well as ten additional CFCs, to the list of controlled substances.⁶⁷ The key point however is that all these substances are ODSs. HFCs, on the other hand, are not. The Micronesia and Mauritius proposal states that, 'these proposals will strengthen the Montreal Protocol to provide fast-action climate change mitigation...'.⁶⁸ This highlights the first problem with having the Montreal Protocol regulate HFCs: HFC regulation is for climate change mitigation purposes, not ozone layer protection, and is therefore probably beyond the current mandate of the Vienna Convention for the Protection of the Ozone Layer (the Vienna Convention)⁶⁹ and its Montreal Protocol.

The Vienna Convention and Montreal Protocol were both adopted with the objectives of protecting the ozone layer and eliminating or reducing the production and consumption of the substances that deplete it.⁷⁰ The Multilateral Fund was established for the same objective. Although the Convention and Protocol acknowledge the need to protect the environment, this is in relation to activities that modify or are likely to

⁵⁹ Ibid., paras 1 and 2.

⁶⁰ For the discussion, see *Report of the Thirtieth Meeting of the Open-Ended Working Group of the Parties to the Montreal Protocol* (UNEP/OzL.Pro.WG.1/30/7, 12 July 2010), paras 48-75. See also Provisional Agenda of MOP-22 (UNEP/OzL.Pro.22/1, 9 July 2010).

⁶¹ See, e.g., the *Report of the Ad Hoc Working Group on Long-Term Cooperative Action under the UNFCCC on its Seventh Session* (FCCC/AWGLCA/2009/14, 20 November 2009), at 110.

⁶² See the draft decision on the Outcome of the Work of the Ad Hoc Working Group on Long-term Cooperative Action under the UNFCCC on 'various approaches, including opportunities for using markets, to enhance the cost-effectiveness of, and to promote, mitigation actions' (FCCC/AWGLCA/2009/L.7/Add.8/Rev.1, 16 December 2009). The Ad Hoc Working Group will continue its work in 2010 on the basis of this text and discussions undertaken during the conference.

⁶³ See E. Kirk and H. Silfverberg, 'Harmonization in the Baltic Sea Region', 21:2 *IJMC* (2006), 235.

⁶⁴ See P. Sands, *Principles of International Environmental Law* (Cambridge University Press, 2003), at 136-138.

⁶⁵ Vienna Convention on the Law of Treaties (Vienna, 23 May 1969).

⁶⁶ Ibid., Article 30. See also P. Sands, n. 64 above, at 137-138.

⁶⁷ See *Report of MOP-2* (UNEP/OzL.Pro.2/3, 29 June 1990), Annex II.

⁶⁸ See the Micronesia and Mauritius proposal, n. 5 above, at 3.

⁶⁹ Vienna Convention for the Protection of the Ozone Layer (Vienna, 22 March 1985).

⁷⁰ See *ibid.*, preamble and Article 2, and Montreal Protocol, n. 1 above, preamble.

modify the ozone layer.⁷¹ The Vienna Convention on the Law of Treaties provides that, 'a treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose'.⁷² Generally, it is expected that a treaty is to be guided by its object and purpose as outlined by the parties to it,⁷³ and in the case of the Vienna Convention and its Montreal Protocol, the purpose is to 'protect the ozone layer', including protecting the environment from activities that modify the ozone layer.⁷⁴ HFC regulation will not accomplish this purpose. However, during the twenty-ninth meeting of the Open-Ended Working Group of the Montreal Protocol Parties, it was suggested that the proposed regulation of HFCs to mitigate climate change might actually be consistent with the Vienna Convention, in terms of its Article 2.2(b).⁷⁵ This article provides that parties should, *inter alia*, adopt legislation or administrative measures to limit, reduce or prevent human activities under their jurisdiction or control, where these activities have or are likely to have adverse effects resulting from modification or likely modification of the ozone layer. Article 2.2 is subject to Article 2.1 and its purpose is to ensure fulfilment of the obligation contained in Article 2.1 by specifying the kind of measures that could be taken in furtherance of the article.⁷⁶ Article 2.1 provides that parties should take appropriate measures to protect human health and the environment from adverse effects resulting or likely to result from human activities that modify or are likely to modify the ozone layer. The measures that can be taken are therefore those that relate to activities that modify or are likely to modify the ozone layer. Production and consumption of HFCs are not ozone damaging or ozone modifying, and it is therefore doubtful that they would fall within this article.

With regard to the proposed amendments to Article 10 of the Protocol to require the Multilateral Fund to meet the agreed incremental costs of developing country compliance with the new obligations, there are two possible implications: one relates to conversion from CFC or HCFC to non-HFC; and the other relates to conversion from HFC to non-HFC. With regard to the former, although the underlying reason may be to protect the climate, this is probably allowed under the Convention and Protocol, because there is the recognition of the

need to, *inter alia*, protect the environment, which includes the climate, and in protecting the ozone layer, actions that would directly negatively impact on the climate ought to be avoided. The latter however would mean directly funding non-ozone-protecting activities, and it is difficult to see how this could fall within the mandate of the Montreal Protocol or its Multilateral Fund.

From a purely legal perspective, the Vienna Convention and Montreal Protocol, therefore, are not currently mandated to pursue pure climate change mitigation and it appears that the Montreal Protocol does not have the authority to regulate HFCs or to authorize the Multilateral Fund to finance their phase-down. However, it is recognized that the treaty-making process is also a political process and parties ultimately can decide to include climate change mitigation as one of the objectives of the Vienna Convention, and amend the Convention to this end, which would then extend the mandate of the Montreal Protocol and allow it to be authorized to regulate HFCs.

The proposal also has several implications for the climate change regime, as HFCs are currently included in the basket of gases regulated by the Kyoto Protocol.⁷⁷ Currently, the UNFCCC and Kyoto Protocol deal with 'gases not controlled by the Montreal Protocol'.⁷⁸ If the Protocol parties adopt the amendment to control HFCs, then in relation to this stipulation, it would mean that HFCs could no longer be considered as gases not controlled by the Montreal Protocol. This issue would need to be addressed appropriately.

The emission-reduction targets for developed countries for the first commitment period of the Kyoto Protocol were calculated based on all the gases controlled by the Kyoto Protocol, including HFCs.⁷⁹ If regulation of HFCs is transferred from the Kyoto Protocol to the Montreal Protocol, this would affect these targets and compliance with them. This is however only for the first commitment period (2008–2012) and if parties decide to exclude HFCs from the Kyoto Protocol, they can choose to do so with effect from any subsequent commitment periods and calculate new reduction targets based on the remaining gases. The Micronesia and Mauritius proposal acknowledges that such a transfer should take effect in the post-2012 climate change regime.⁸⁰

If, however, parties do not desire to remove HFCs from the control of the UNFCCC regime, an amendment would be required to the provision 'gases not controlled by the Montreal Protocol' to read 'gases not controlled by the Montreal Protocol, except HFCs', or something

⁷¹ See Vienna Convention, *ibid.*, Article 2.1, and Montreal Protocol, *ibid.*, preamble, para. 2.

⁷² See Vienna Convention on the Law of Treaties, n. 65 above, Article 31(1).

⁷³ See also V. Crnic-Grotic, 'Object and Purpose of Treaties in the Vienna Convention on the Law of Treaties', 7 *Asian Yearbook of International Law* (1997), 141.

⁷⁴ See Montreal Protocol, n. 1 above, preamble. See generally P. Birnie *et al.*, n. 9 above and P. Sands, n. 64 above.

⁷⁵ See T. Akanle *et al.*, n. 54 above, at 9.

⁷⁶ Article 2.2 opens with 'to this end', that is to the end specified in Article 2.1.

⁷⁷ See Kyoto Protocol, n. 7 above, Annex A.

⁷⁸ *Ibid.*, Article 5. See also UNFCCC, n. 8 above, Article 4.

⁷⁹ See Kyoto Protocol, *ibid.*, Article 3.1.

⁸⁰ See the Micronesia and Mauritius proposal, n. 5 above, at 12.

to this effect. In this case, HFCs would be regulated under both the ozone and climate regimes. The idea would be for the Montreal Protocol to regulate production and consumption, and the Kyoto Protocol to regulate emissions. This is a distinct possibility, as, for example, the proposal is for the Montreal Protocol to phase down, rather than phase out, HFC production and consumption, which means there will still be emissions from permitted production and consumption, and the Kyoto Protocol can then deal with these emissions. This raises a similar issue to that above – the current Kyoto Protocol emission-reduction targets were calculated based on all Annex A gases, based on their current emissions, and without taking account of substantial reduction actions outside the Kyoto Protocol. This point is acknowledged by Micronesia and Mauritius, which recommend in their proposal that both treaties be coordinated to ensure that the reductions achieved by the Montreal Protocol are reflected in corresponding reductions to the emission allowances under the Kyoto Protocol.⁸¹ It is also envisaged that this would apply from any subsequent commitment period. Under the Kyoto Protocol's basket of gases approach, developed countries, when complying with their emission-reduction targets, have the flexibility to reduce emission of any of the gases in the basket, as the Protocol commits developed country parties to reduce their total emissions of the six greenhouse gases contained in the basket, with no distinction between the various gases.⁸² Emission reductions of individual gases are translated into 'CO₂ equivalents' using their GWP, and then added up to produce a single figure. HFCs have high GWP and are therefore a cheap way for countries to achieve their commitment. For example, reducing 1 tonne of HFC-23 is equivalent to reducing 11,700 tonnes of CO₂ and counts as such.⁸³ The gases included in the basket of gases were negotiated together with the Kyoto Protocol so countries can perhaps say they relied on the possibility of HFC mitigation when agreeing their reduction targets. Therefore, just as discussed above, transferring HFCs to the Montreal Protocol would only be possible in any second commitment period, when new reduction targets are negotiated by countries.⁸⁴ If parties do agree

to move HFC control to the Montreal Protocol, this may affect countries' negotiations in terms of the size of targets they would be willing to take on, considering that the relatively inexpensive HFC credits would no longer be available to them.

On the issue of how both treaties could regulate HFCs, the North American proposal states that the amendment is not intended to result in removing HFCs from the scope of the greenhouse gas mitigation commitments under the climate change regime, including the provisions of the Kyoto Protocol relating to 'greenhouse gases not controlled by the Montreal Protocol'. It states that each party to the amendment would continue to apply the relevant provisions of the UNFCCC and the Kyoto Protocol.⁸⁵ This does not appear possible unless the Kyoto Protocol is amended as noted above.

In addition, the case of HFC-23 is also a special one. As HFC-23 is not a product, but a by-product of HCFC-22, there can be no direct control of its production, other than through controlling HCFC-22 production. It would not be possible for both the ozone and climate regimes to regulate HFC-23, as regulation under the Montreal Protocol would involve regulating emissions, just as is being done by the Kyoto Protocol. The Micronesia and Mauritius proposal notes that special provisions would be required to deal with HFC-23, by either moving HFC-23 emissions control to the Montreal Protocol, or having both instruments deal with it in a coordinated and cooperative manner. It is unclear how the latter would be possible, as having the Kyoto Protocol control HFC-23 emissions has an impact on the reduction targets of countries and also on the CDM. Having the Montreal Protocol simultaneously dealing with the same subject matter would complicate issues, especially if funding is provided by the Multilateral Fund to destroy HFC-23 emissions and credits can be generated under the CDM for doing the same thing. A possible solution would be for the Montreal Protocol to control HFC-23 emissions by strictly controlling the production and consumption of HCFC-22 used for feedstock purposes. On the other hand, the Kyoto Protocol could be amended to deal with HFCs except HFC-23 if parties prefer having the Montreal Protocol control HFC-23 emissions (subject to the discussion above about the ability of the Montreal Protocol to do this).

An interesting implication is what this all means for developing country climate change mitigation actions. Although under the current operation of the Montreal Protocol, developing countries are required to phase

⁸¹ *Ibid.*, at 12.

⁸² See Kyoto Protocol, n. 7 above, Article 3.1.

⁸³ A GWP of 11,700 is the agreed HFC-23 GWP for the Kyoto Protocol first commitment period. See Decision 2/CP.3, Methodological Issues Related to the Kyoto Protocol (FCCC/CP/1997/7/Add.1, 25 March 1998), para. 3.

⁸⁴ Negotiations for the second and subsequent commitment periods of the Kyoto Protocol are still ongoing. During the Fifteenth Conference of the Parties to the UNFCCC in December 2009, agreement could not be reached on a second commitment period and the targets for such a period. Consequently, the mandates of the two subsidiary bodies under which discussions are being undertaken – the *Ad hoc* Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol and the *Ad hoc* Working Group on Long-Term Cooperative Action under the Convention – were extended to enable them to continue their work with a view to presenting the outcomes at their next meeting in December 2010. See draft decision -/CMP.5,

Outcome of the Work of the *Ad Hoc* Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (FCCC/KP/CMP/2009/L.8, 18 December 2009) and draft decision -/CP.15, Outcome of the Work of the *Ad Hoc* Working Group on Long-term Cooperative Action under the Convention (FCCC/CP/2009/L.6, 18 December 2009).

⁸⁵ See North American proposal, n. 6 above, at 8.

out certain substances that have high GWP, the primary reason for these measures is that these substances are ozone depleting. The climate change mitigation benefits are an added bonus and supplementary to the ozone protection goal of these measures. This is the case even where climate mitigation is taken into consideration when establishing the measures, such as with the accelerated HCFC phase-out. However, if the HFC transfer is implemented, this would amount to developing countries directly taking on pure climate change mitigation objectives. This would be an interesting development considering the consistent opposition to this by developing countries. However, the upside of this is that they would receive direct funding to do this.

There are other supplementary issues that would need to be resolved if regulation of HFCs is moved from the Kyoto Protocol to the Montreal Protocol. For instance, what would happen to projects already registered by the CDM Executive Board to generate credits for the destruction of HFC-23 emissions? This needs to be addressed, even for a post-2012 commitment period, as there are some projects with crediting periods that extend beyond 2012.⁸⁶ Logically the solution would be for these projects to either be taken over by the Multilateral Fund, which would then compensate all involved parties, or for the projects to remain CDM projects and generate credits which can still be used to offset developed country commitments, including in a second commitment period, but have the CDM closed to new HFC-23 projects. Of course, if the Kyoto Protocol does continue to control HFC-23 emissions, then there would be no problem with current or future HFC-23 CDM projects.

RECOMMENDATIONS

There is definitely a place for arguing that the Montreal Protocol should not exacerbate global warming. There is probably even a place for arguing that the Montreal Protocol should, to the extent possible, actively contribute to climate change mitigation. It is, however, unlikely that this could be done in the manner currently proposed, that is, having the Montreal Protocol directly regulating HFCs.

Rather than having the Montreal Protocol actively control HFCs, a better alternative, which would still be in line with the Montreal Protocol's mandate, would be *not* to introduce HFCs as HCFC substitutes, *not* have the Multilateral Fund finance conversion to HFCs, and then have the UNFCCC regime deal with existing and future emissions. Currently, HFCs are the commonly used alternatives and the Multilateral Fund is paying

for developing countries to switch from CFCs and/or HCFCs to HFCs. This should be discontinued, depending of course on the availability of alternatives. But if there is the possibility of phasing down HFC use, that means there are available alternatives.⁸⁷ Preference should be given to non-HFC and low-GWP alternatives.

One of the main reasons for bringing HFCs under the Montreal Protocol is that it 'created' the problem and should help solve it, rather than because it is the appropriate instrument for addressing the problem.⁸⁸ Instead of attempting to solve the problem by possibly creating additional ones, the Protocol could solve the problem by only funding conversion to non-global warming ODS alternatives or prioritizing funding for such conversion, particularly where there are suitable alternatives. This should be done by laying down the boundaries for converting from HCFCs, and require parties to convert to environmentally friendly options. This is an option already being considered, and even applied, by parties. For example, Montreal Protocol MOP Decisions V/8⁸⁹ and VI/13⁹⁰ support the idea of the need to consider the environmental, including climate, impacts of ODS substitutes. Decision XX/8 acknowledges that the transition from ODSs has climate impacts, and also recognizes the possibility of coordinating with the UNFCCC and Kyoto Protocol to reduce emissions and minimize the environmental impacts of HFC use.⁹¹ More specifically, by Decision XIX/6, parties agreed on the need to promote the selection of HCFC alternatives that minimize environmental impacts, particularly climate impacts, as well as meeting other health, safety and economic considerations.⁹²

These general recommendations or aspirations should be made into a firmer obligation by, *inter alia*,

⁸⁷ See B. Metz *et al.*, n. 11 above, which outlines various options for reducing the climate impact of ODSs and their substitutes, including through improved containment of substances, end-of-life recovery and recycling or destruction of substances, and increased use of more climate-friendly alternatives. See also the Report of the Protocol's Technology and Economic Assessment Panel on HCFC and HFC alternatives – Task Force Decision XX/8 Report, *Assessment of Alternatives to HCFCs and HFCs and Update of the TEAP 2005 Supplement Report Data* (UNEP, 2009). See also Decision XXI/9, n. 58 above, where the parties requested the TEAP to assess the availability of low- or no-GWP alternatives, and the ODS uses that can potentially be replaced.

⁸⁸ In their proposal, Micronesia and Mauritius identify other reasons for regulating HFCs under the Montreal Protocol, such as the existing governance structure and financial transfer mechanism of the Protocol, and the fact that it enjoys universal ratification. See Micronesia and Mauritius Proposal, n. 5 above, at 10.

⁸⁹ See Decision V/8, Consideration of Alternatives (UNEP/OzL.Pro.5/12, 19 November 1993), para. 1.

⁹⁰ See Decision VI/13, Assessment Panels (UNEP/OzL.Pro.6/7, 10 October 1994), para. 1.

⁹¹ See Decision XX/8, Workshop for a Dialogue on High-Global Warming Potential Alternatives for Ozone-Depleting Substances (UNEP/OzL.Conv.8/7-UNEP/OzL.Pro.20/9, 27 November 2008), preamble.

⁹² See Decision XIX/6, n. 14 above, para. 9.

⁸⁶ See the CDM website, Project Search, available at <<http://cdm.unfccc.int/Projects/projsearch.html>>, for a breakdown of all registered CDM projects.

establishing definite rules for this, rather than applying it in an *ad hoc* manner. There is sufficient justification to support this.

It can be considered that the general principles of international law, particularly of international environmental law, require countries to consider the impact on the environment of their actions. The Vienna Convention on the Law of Treaties provides that, 'a treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose'.⁹³ In considering the context of the treaty, relevant rules of international law applicable in the relations between the parties should also be taken into account.⁹⁴ This makes it apparent that a treaty is not to be considered in isolation, but its context, object and purpose are relevant factors to be considered in interpreting it.⁹⁵ As the International Court of Justice pointed out in the *Gabčíkovo-Nagymaros* case, norms of environmental law are relevant for treaty implementation.⁹⁶ According to Birnie *et al.*, the application of norms of international law dealing specifically with environmental problems may also have to take account of other bodies of law. This would include the climate regime. Where there is a conflict, the preference is for an integrated conception of international law.⁹⁷

Relevant principles of international law include the duty of States to prevent pollution and environmental harm, including prevention of transboundary pollution and protection of the global environment.⁹⁸ It is without doubt that conversion to HFCs will indeed cause environmental harm, and as the discussion below shows, this cannot be justified, especially where suitable alternatives exist. The Stockholm Declaration provides that States have the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond

national jurisdiction.⁹⁹ The global environment falls into this category. Another relevant norm is the requirement to undertake environmental impact assessments (EIAs) of proposed activities that could cause environmental harm. The purpose of EIAs is to evaluate the likely impact of a proposed activity on the environment.¹⁰⁰ In the 1992 Rio Declaration, countries endorsed the need to work towards international agreements 'which respect the interests of all and protect the integrity of the global environmental and developmental system'.¹⁰¹

The purpose of the Montreal Protocol includes protection of the environment from activities that modify the ozone layer, also recognizing the potential climatic effects of these activities.¹⁰² It would be against this purpose to choose to participate in acts detrimental to the environment.

More specifically on the protection of the ozone layer, Agenda 21 calls on countries to prevent ozone depletion and to 'replace CFCs and other ozone-depleting substances, consistent with the Montreal Protocol, recognizing that a replacement's suitability should be evaluated holistically and not simply based on its contribution to solving one atmospheric or environmental problem'.¹⁰³ What this means is that in phasing out ODSs and replacing them with other gases, account should be taken of other atmospheric or environmental problems. When selecting ODS substitutes, the Montreal Protocol parties should not only be concerned about solving the ozone layer problem, they should also be concerned about not contributing to other atmospheric or environmental problems.

While the above analysis strongly supports the need to consider environmental protection holistically, it is doubtful that it provides support for one regime taking over responsibility for addressing an environmental problem within the ambit of another regime. What it does support however is that a regime should avoid contributing to environmental problems, even when these are being addressed by other regimes.

Therefore, where climate-friendly substitutes exist, conversion to HFCs should not be financed by the Multilateral Fund, as this would amount to financing environmentally harmful technologies. Any HFC conversion proposal must show conclusively that there are no suitable alternatives. The higher cost of the

⁹³ See Vienna Convention on the Law of Treaties, n. 65 above, Article 31.1.

⁹⁴ *Ibid.*, Article 31.3(c).

⁹⁵ See P. Birnie *et al.*, n. 9 above, at 109, where the authors note the need for an understanding of customary international law and general principles even when the applicable law is treaty-based. See also P. Sands, n. 64 above, at 130–133.

⁹⁶ ICJ 25 September 1997, *Hungary v. Slovakia (Gabčíkovo-Nagymaros Case)*, [1997] ICJ Rep. 7, paras 112 and 140.

⁹⁷ P. Birnie *et al.*, n. 9 above, at 109. See also Agenda 21 (A/CONF.151/26, 14 June 1992), Vol. I, para. 9.24(e), which recommends an holistic approach to protecting the ozone layer.

⁹⁸ See, e.g., Declaration of the United Nations Conference on the Human Environment (Stockholm Declaration) (Stockholm, 16 June 1972), Principles 7 and 15; Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel, 22 March 1989), preamble, para. 15; and *United States v. Canada (Trail Smelter Case)* (1931–41) 3 *Reports of International Arbitral Awards* 1905. See also P. Sands, n. 64 above, at 235–249; P. Birnie *et al.*, n. 9 above, at 137–152; and G. Handl, 'Transboundary Impacts', in D. Bodansky *et al.* (eds), *The Oxford Handbook of International Environmental Law* (Oxford University Press, 2007).

⁹⁹ See Stockholm Declaration, *ibid.*, Principle 21.

¹⁰⁰ Convention on Environmental Impact Assessment in a Transboundary Context (Espoo, 25 February 1991), Article 1(vi). See also Rio Declaration on Environment and Development (A/CONF.151/26, 12 August 1992), Vol. I, Principle 17, available at <<http://www.un.org/esa/dsd/agenda21/index.shtml>>.

¹⁰¹ See Rio Declaration, *ibid.*, preamble.

¹⁰² See, e.g., Montreal Protocol, n. 1 above, preamble, paras 2 and 3.

¹⁰³ See Agenda 21, n. 97 above, para. 9.24(e).

alternative should not be a significant factor, as the Fund is meant to pay the agreed incremental costs borne by developing countries in meeting the Montreal Protocol's commitments.¹⁰⁴

Rejecting some options on the basis of their contribution to other environmental problems such as climate change is already being done by the parties, but in an *ad hoc* manner. Decision XIX/6 requires the Executive Committee of the Multilateral Fund, when developing and applying funding criteria for projects and programmes, to give priority to cost-effective projects and programmes that, *inter alia*, focus on substitutes and alternatives that minimize other environmental impacts, including climate impacts, taking into account GWP, energy use and other relevant factors.¹⁰⁵ At its third meeting in 1991, the Executive Committee of the Multilateral Fund adopted some project eligibility criteria, including that financial and technical assistance shall be available for projects that are cost-effective and based on environmentally sound alternative technologies or substitutes.¹⁰⁶ These decisions support the need to consider the environmental impacts of ODS alternatives, and give priority to those alternatives which minimize these impacts.

An example of this can be seen from the proceedings of the fifty-seventh meeting of the Executive Committee.¹⁰⁷ UNIDO¹⁰⁸ had submitted a project proposal on behalf of Iraq, relating to the replacement of CFC-12 and CFC-11 at a company in that country.¹⁰⁹ The proposal involved replacing CFC-12 with HFC-134a and CFC-11 with cyclopentane. The Ozone Secretariat reported that with regard to the choice of HFC-134a, it was of the opinion that, in light of decision XIX/6, the use of isobutane would have been the more appropriate technology choice for the project, as it minimized the impact on the environment.¹¹⁰ After some discussion by the Executive Committee members, and after the UNIDO representative reverted to the Iraqi enterprise to convince it to choose isobutane,¹¹¹ the Ozone Secretariat reported that UNIDO had been informed by the

Iraqi government that the enterprise was willing to choose isobutane.¹¹² The Executive Committee then decided to approve the project to replace CFC-12 with isobutane and CFC-11 with cyclopentane.¹¹³ This is a good example of avoiding conversion to HFCs, particularly where suitable alternatives exist.¹¹⁴ There should be well laid down rules to make this mandatory.

With regard to HFC-23 emissions, this will be partly addressed by the accelerated HCFC phase-out. However, as HCFC-22 production for feedstock purposes is not regulated, this would need to be addressed. According to Kaniaru *et al.*,¹¹⁵ half of current HCFC-22 production is for feedstock purposes. The Protocol should help reduce HFC-23 emissions by controlling HCFC-22 production for feedstock purposes. Assessments should be carried out into determining appropriate alternatives, to enable removal of this exemption.¹¹⁶

What is therefore required is a decision by the parties actively promoting the use of low-GWP climate-friendly substitutes¹¹⁷ and authorizing the Multilateral Fund to finance the additional costs incurred by developing countries in converting to more climate-friendly alternatives. If the Montreal Protocol can take care of HFCs by not promoting their use, rather than actively controlling them, then the Kyoto Protocol can continue controlling HFC-23 in the manner in which it is doing so now. In addition, the Kyoto Protocol should remove the perverse incentive to increase production of HCFC-22 or build new HCFC-22 plants, by restricting CDM eligibility to HFC-23 emissions produced at old HCFC-22 facilities. Also, HFC-23 emissions resulting from an

used HFC-134a and pentane, and because no other producer of domestic refrigerants in the region used isobutene. See *ibid.*, para. 25.

¹¹² See *Report of the Fifty-Seventh Meeting of the Executive Committee*, n. 107 above, para. 148.

¹¹³ See Executive Committee Decision 57/27, National Phase-Out Plan (UNEP/OzL.Pro/ExCom/57/69, 5 May 2009). See also *Report of the Fifty-Eighth Meeting of the Executive Committee* (UNEP/OzL.Pro/ExCom/58/53, 10 July 2009), paras 127–132, where a similar situation arose and a similar discussion took place.

¹¹⁴ See *Report of MOP-19*, n. 14 above, para. 21, where the TEAP reported, *inter alia*, that, 'several low-global warming potential refrigerants provided comparable energy efficiency to HFC-134a in vehicle air conditioning and likely would do so in other sectors and applications'.

¹¹⁵ D. Kaniaru *et al.*, 'Landmark Agreement to Strengthen Montreal Protocol Provides Powerful Climate Mitigation', 8:46 *SDLP* (2007–2008), 46, at 50.

¹¹⁶ A request can be made to the TEAP, similar to that made in Decision XXI/9, n. 58 above, requesting the TEAP to assess the availability of environmentally sound alternatives to HCFC-22.

¹¹⁷ See, e.g., *Report of MOP-19*, n. 14 above, para. 192, noting that a representative of a non-governmental organization called on parties to adopt a policy barring the use of HFCs in new or retrofit applications, where there were more appropriate environmentally friendly technologies, and urged the Multilateral Fund to stop funding HFC-based projects.

¹⁰⁴ See Decision II/8, n. 17 above.

¹⁰⁵ See Decision XIX/6, n. 14 above, para. 11.

¹⁰⁶ *Report of the Third Meeting of the Executive Committee of the Interim Multilateral Fund for the Implementation of the Montreal Protocol* (UNEP/OzL.Pro/ExCom/3/18/Rev.1, 17 June 1991), Annex III, Section III.

¹⁰⁷ See *Report of the Fifty-Seventh Meeting of the Executive Committee* (UNEP/OzL.Pro/ExCom/57/69, 5 May 2009).

¹⁰⁸ UNIDO is one of the implementing agencies of the Multilateral Fund, through which the Fund delivers financial and technical assistance to developing countries.

¹⁰⁹ See Document of the Fifty-Seventh Meeting of the Executive Committee, Project Proposals: Iraq (UNEP/OzL.Pro/ExCom/57/38, 2 March 2009).

¹¹⁰ *Ibid.*, paras 24–26.

¹¹¹ The reason for the enterprise's original choice of HFC-134a over isobutane was not cost or suitability. It was because the enterprise perceived problems regarding isobutane availability in the region, because it favoured close cooperation with another enterprise that

increase in HCFC-22 production, even at old facilities, should not qualify for CER generation.¹¹⁸

While it is important to avoid overlap or conflict between the two treaties, it is equally important to encourage synergies and cooperation between them, in order to avoid the kind of situation currently being seen, in which efforts under one treaty potentially (and significantly) frustrate or undermine efforts under another.

However, as already noted, the treaty development process is a political process. Countries are free to agree to take actions, if they do not contradict rules and principles of international law. Therefore, if the Montreal Protocol parties so wish, they *can* decide to transfer regulation of HFCs to the Montreal Protocol. However, if this is done, the issues described above would of necessity be required to be addressed and resolved.

CONCLUSION

The idea behind these amendment proposals is a good one, and essential for the protection of the environment. Its delivery, however, should be different from what is proposed – it should not be achieved by controlling HFCs under the Montreal Protocol. Rather, it is possible, and indeed preferable, to avoid replacing CFCs and HCFCs with HFCs, as these have high GWPs and are very damaging to the climate. So far, the climate benefits of ozone protection greatly outweigh those expected from the climate change regime itself, and there is potential to deliver even greater benefits, particularly through the accelerated HCFC phase-out.¹¹⁹ According to the UN Development Programme, this accelerated HCFC phase-out will result in the

mitigation of a total of 14–18 billion tonnes of CO₂ equivalent, assuming HCFCs are substituted with alternatives with low, or no, climate impact.¹²⁰ This reduction does not take account of the climate change mitigation already achieved by the CFC phase-out – the GWPs of CFCs range from 1640 to 10,720, and by 2010 will have been completely phased out in all countries.¹²¹ This is in contrast to the achievement of the Kyoto Protocol, which is expected to result in mitigation of 5 billion tonnes CO₂ equivalent over the first commitment period (2008–2012), and the CDM currently has a pipeline totalling 1.5 billion tonnes CO₂ equivalent.¹²² Replacing HCFCs with HFCs will considerably reduce the positive climate achievements of the Montreal Protocol. Avoiding this will preserve and greatly enhance the climate benefits of ozone layer protection.

As noted above, the issue of how to control HFCs will be taken up again by parties at MOP-22 in November 2010.¹²³ The information to be provided by the Technology and Economic Assessment Panel regarding low- or no-GWP HCFC alternatives should help parties make an informed decision about, *inter alia*, available no- or low-GWP alternatives to HCFCs, and also about the current ODS uses that can be replaced by such alternatives. Using this information, the parties can then ensure that following the HCFC phase-out, no- or low-GWP alternatives are phased in, and not high-GWP HFCs.

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¹¹⁸ This can, e.g., be achieved by establishing a baseline and cut-off date, such that subsequent increases will not count for purposes of the CDM. This will remove the incentive for countries to increase HCFC-22 production to generate CERs through HFC-23 destruction projects.

¹¹⁹ At MOP-19 in 2007, parties agreed to accelerate the phase-out of HCFCs to 2020 for developed countries and 2030 for developing countries. See n. 14 above.

¹²⁰ See UNDP, n. 12 above, at 3–4.

¹²¹ CFCs were phased out in developed countries in 1996 (consumption) and 2010 (production) and developing countries will complete their phase-out in 2010. See Montreal Protocol, n. 1 above, Articles 2A and 5.

¹²² See UNDP, n. 12 above, at 4.

¹²³ See n. 60 above.