

**Preventing the Dumping in  
Vulnerable Developing-Country  
Markets of Inefficient Cooling  
Equipment Using Obsolete  
Refrigerants**

*A Resource Guide*

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**Institute for Governance & Sustainable Development**



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## **About the Institute for Governance & Sustainable Development**

IGSD's mission is to promote fast climate mitigation to slow near-term warming and self-propagating climate feedbacks, avoid or at least delay catastrophic climate and societal tipping points, and limit global temperatures to 1.5 °C—or at least keep this temperature guardrail in sight and limit overshoot.

IGSD's research confirms that decarbonization alone is insufficient to slow near-term warming to keep us below 1.5 °C or even the more dangerous 2 °C guardrail and that the fastest and most effective strategy is to combine the marathon to zero out carbon dioxide (CO<sub>2</sub>) emissions from decarbonizing the energy system with the sprint to rapidly cut non-CO<sub>2</sub> super climate pollutants and protect carbon sinks. The super climate pollutants include four short-lived climate pollutants (SLCPs)—methane (CH<sub>4</sub>), hydrofluorocarbons (HFCs), black carbon soot, and tropospheric ozone (O<sub>3</sub>)—as well as the longer-lived nitrous oxide (N<sub>2</sub>O).

Combining the fast mitigation sprint with the decarbonization marathon also helps address the ethical issues of intra-generational equity by giving societies urgently needed time to adapt to unavoidable changes and build resilience. The latest science suggests that the window for exceeding the 1.5 °C guardrail could close as soon as the early 2030s, making this the decisive decade for fast action to slow warming.

The fastest way to reduce near-term warming in the next decade or two is to cut SLCPs. Because they only last in the atmosphere from days to 15 years, reducing them will prevent 90 percent of their predicted warming within a decade. Strategies targeting SLCP reductions can avoid four times more warming at 2050 than targeting CO<sub>2</sub> alone. Reducing HFCs can avoid nearly 0.1 °C of warming by 2050 and up to 0.5 °C by the end of the century. The initial HFC phasedown schedule in the Kigali Amendment to the Montreal Protocol will capture about 90 percent of this. Parallel efforts to enhance the energy efficiency of air conditioners and other cooling appliances during the HFC phasedown can double the climate benefits at 2050. Cutting methane emissions can avoid nearly 0.3 °C by the 2040s, with the potential for significant avoided warming from emerging technologies to remove atmospheric methane faster than the natural cycle.

Combining the fast mitigation sprint with the decarbonization marathon would reduce the rate of global warming by half from 2030 to 2050, slow the rate of warming a decade or two earlier than decarbonization alone, and make it possible for the world to keep the 1.5 °C guardrail in sight and reduce overshoot. It would also reduce the rate of Arctic warming by two-thirds. This would help slow self-amplifying climate feedbacks in the Arctic, and thus avoid or at least delay the cluster of projected tipping points beyond 1.5 °C. Reducing climate risks and staying within the limits to adaptation are critical to building resilience.

IGSD approaches to fast mitigation includes science, technology, law and policy, and climate finance. IGSD works at the global, regional, national, and subnational levels.

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**Note:** Some organizations and concepts are more commonly known by their acronyms or abbreviations. These are defined on first usage, and a list is provided at the end of this *Resource Guide*.

## 1. Introduction

This introduction defines environmental dumping of cooling equipment and elaborates on the national and global harm caused by dumping.

### A. Environmental dumping is the practice of marketing inefficient cooling equipment with obsolete refrigerants in vulnerable developing countries.

In the context of the Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol), Article 5 Parties are developing countries that do not consume more than a specified annual level of controlled (i.e., regulated) substances that can damage the ozone layer or contribute to global warming. These Parties have expressed strong concern about shipments into their markets of new, inefficient cooling equipment that uses or was designed to use obsolete ozone-depleting and high global-warming potential (GWP) refrigerants. The terms “environmental dumping” or simply “dumping” are used to refer to this practice. This concern arose as early as the [9<sup>th</sup> Open-Ended Working Group \(OEWG\) of the Parties to the Montreal Protocol](#), held in Geneva, Switzerland (30 August–1 September 1993).

The description of environmental dumping was formalized in a legal framework elaborated in *Defining the Legal and Policy Framework to Stop the Dumping of Environmentally Harmful Products* (Duke University Environmental Law & Policy Forum, 2018). This paper defines environmental dumping as:

*[T]he practice of exporting products to another country or territory that: 1) contain hazardous substances, 2) have environmental performance lower than is in the interest of consumers or that is contrary to the interests of the local and global commons, or 3) can undermine the ability of the importing country to fulfill international environmental treaty commitments.*

(Citations omitted.)

Drawing from the definitions in this paper, the environmental dumping of new refrigeration and air conditioning equipment includes:

- 1) Marketing in developing countries of technology that cannot legally be sold in the exporting country because it fails to meet environmental, safety, energy efficiency, or other product standards; and
- 2) Marketing in developing countries of technology that is unusable in the exporting country because national regulations or Montreal Protocol phaseout and phasedown control schedules have made these refrigerants unavailable.

(Citations omitted.)





Excerpts from the early Montreal Protocol discussions of dumping are included in Section 3 of this Resource Guide.

Additional materials referenced in this Resource Guide provide further insights on activities that comprise environmental dumping and the definition of obsolete refrigerants. These materials include the CLASP and IGSD analyses of dumping in [Africa](#) (2020) and [Southeast Asia](#) (2023) and the [Report of the Climate & Clean Air Coalition \(CCAC\) Stop Dumping Workshop: More Rapid Transition to Sustainable Cooling Technology](#). Additional analyses and reports are planned and will be included in updates to this Resource Guide.

## B. Dumping harms developing nations and, thus, all nations.

Dumping pushes developing nations into actions that make it difficult to meet their responsibilities under the Montreal Protocol and their climate obligations. The low cost of the initial purchase of cheap but obsolete air conditioning is quickly outweighed by higher electric bills, more expensive and hard-to-find parts for service and maintenance, and expensive or unavailable refrigerants that deplete the ozone layer and contribute to global warming when released. The equipment itself contributes to the problem of global warming by using more electricity than air conditioners based on superior technology. In developing countries, electricity—particularly during peak cooling-power demand times—comes from fossil fuel power plants that emit carbon dioxide (CO<sub>2</sub>) and other pollutants into the atmosphere, endangering public health. Lawrence Berkeley National Laboratory (LBNL) calculated that if room air conditioners were made 30% more efficient, [the energy savings would avoid the need for up to nearly 1,600 medium-size peak power plants globally in the near-term](#).<sup>1</sup> This would free-up energy for development along with public funds that could be used for local infrastructure improvement, public services, and education.

Simply stated, developing nations need access to affordable, next-generation technology that will provide safe, efficient, and reliable cooling for many years to come.

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<sup>1</sup> Shah, Nihar, Max Wei, Virginie Letschert, and Amol Phadke. 2015. “Benefits of Leapfrogging to Superefficiency and Low Global Warming Potential Refrigerants in Room Air Conditioning.” *Lawrence Berkeley National Laboratory*. <https://www.osti.gov/servlets/purl/1235571>.



## 2. Montreal Protocol dumping and related decisions and guidelines

The following decisions of the Montreal Protocol Meeting of the Parties (MOP) and the Multilateral Fund for the Implementation of the Montreal Protocol (Multilateral Fund) are relevant to efforts to address environmental dumping.

### A. 94th Meeting of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol, Further Elaboration on the Operational Framework to Support Maintaining and/or Enhancing Energy Efficiency Described in Document UNEP/OzL.Pro/Excom/93/98 (Decision 9393(d)) (2024)

**Short description:** On 2 May 2024, the Executive Committee of the Multilateral Fund (MLF) for the Implementation of the Montreal Protocol elaborated upon an “Operational Framework” that, among other things:

- Establishes a mechanism for MLF incentives needed to achieve higher levels of cooling-equipment\* efficiency
- Indicates that no such incentives would be provided for cooling equipment with a target performance below the minimum energy performance level
- Provides that products exported without minimum energy performance standards (MEPS) can only be included in MLF project submissions if said products’ performance is equal to or greater than the national MEPS

\*“Cooling equipment” in the Operational Framework document includes domestic refrigerators, refrigerated display cabinets, chest freezers, residential air conditioners, and commercial air conditioners. (See UNEP/OxL/Pro/ExCom/94/61, Section I.1(7) (p. 4).)

**Link:** [https://prod.multilateralfund.edw.ro/api/drupal-documents/download/file/2f5a1657-2ed6-4031-8c77-e57628c8d08e?filename=9461\\_0.pdf](https://prod.multilateralfund.edw.ro/api/drupal-documents/download/file/2f5a1657-2ed6-4031-8c77-e57628c8d08e?filename=9461_0.pdf)

### B. Montreal Protocol MOP Decision XXXV/13: The import and export of prohibited cooling equipment (2023)—35<sup>th</sup> Meeting of the Parties (23–27 October 2023)

**Short description:** In the Decision’s preamble, the Parties recognize that the dumping of inefficient equipment containing obsolete refrigerants is a problem requiring solutions involving both exporting and importing parties. Also, the Parties welcome measures from certain Parties to prohibit, in their domestic regulations, the export of cooling equipment that does not satisfy their national regulations or is inconsistent with their standards. The Decision then requests that the Executive Committee of the Multilateral Fund consider allocating funds within Kigali Amendment hydrofluorocarbon (HFC) implementation plans and hydrochlorofluorocarbon (HCFC) phase-out management plans to assist Article 5 Parties in developing and enforcing policies and measures to prevent future non-compliance caused by the importing of prohibited cooling equipment.

**Link:** <https://ozone.unep.org/system/files/documents/MOP-35-12-Add-1E.pdf>

C. Montreal Protocol MOP Decision XXXIV/4: Illegal import of certain refrigeration, air-conditioning and heat pump products and equipment (2022)—34<sup>th</sup> Meeting of the Parties (31 October–4 November 2022)

**Excerpt:** “1. To invite parties that have restricted the manufacture and/or import of certain refrigeration, air-conditioning and heat pump products and equipment containing or relying on controlled substances, including with respect to energy efficiency, and that do not want to receive such products and equipment from other parties against payment or free of charge, to submit to the Secretariat by 1 May 2023 [specifically listed] information ...”

**Link:** <https://ozone.unep.org/system/files/documents/MOP-34-9-Add-1-Rev-1E.pdf>

D. Montreal Protocol MOP Decision XXXIV/3: Enabling enhanced access and facilitating the transition to energy-efficient and low- or zero-GWP technologies (2022)—34<sup>th</sup> Meeting of the Parties (31 October–4 November 2022)

**Short description:** This Decision requests, among other things, that the Ozone Secretariat organize a one-day workshop in 2023 to assess challenges related to ways of improving availability and accessibility of energy-efficient equipment and equipment using low- or zero-GWP alternatives during the implementation of the Kigali Amendment.

**Link:** <https://ozone.unep.org/system/files/documents/MOP-34-9-Add-1-Rev-1E.pdf>

E. Montreal Protocol MOP Decision XXVIII/3: Energy Efficiency (2016)—28<sup>th</sup> Meeting of the Parties (10–15 October 2016)

**Short description:** Rwanda and Morocco, aiming to combat the environmentally harmful dumping of inefficient and obsolete cooling equipment, introduce the Montreal Protocol’s first energy efficiency decision. The Montreal Protocol Parties adopted this decision shortly after reaching agreement on the Kigali Amendment to the Montreal Protocol.

**Link:** <https://ozone.unep.org/system/files/documents/MOP-28-12E.pdf>

F. Montreal Protocol MOP Decision XXVII/8: Avoiding the unwanted import of products and equipment containing or relying on hydrochlorofluorocarbons (2015)—27<sup>th</sup> Meeting of the Parties (1–5 November 2015)

**Excerpt:** “To invite those parties that do not permit the importation of products and equipment containing or relying on hydrochlorofluorocarbons from any source to inform the Secretariat, on a voluntary basis, if they so choose, that they do not consent to the importation of such products and equipment[.]”

*“To request the Secretariat to maintain a list of parties that do not want to receive products and equipment containing or relying on hydrochlorofluorocarbons, which shall be distributed to all parties by the Secretariat and updated on an annual basis[.]”*

**Link:** <https://ozone.unep.org/treaties/montreal-protocol/meetings/twenty-seventh-meeting-parties/decisions/decision-xxvii8-avoiding-unwanted-import-products-and-equipment-containing-or-relying>

**G. Montreal Protocol MOP Decision X/9: Establishment of a list of countries that do not manufacture for domestic use and do not wish to import products and equipment whose continuing functioning relies on Annex A and Annex B substances (1998)—10th Meeting of the Parties (23–24 November 1998)**

**Short description:** In this Decision, the Parties recall the recommendations of Decision IX/9 regarding both Article 5 and non-Article 5 Parties’ responsibilities to implement measures to regulate the import and export of components, products, and equipment requiring the use of substances listed in Annex A and Annex B of the Montreal Protocol. The Parties then “[r]equest the Secretariat to maintain a list of Parties that do not want to receive products and equipment from one or more categories listed below.\* This list shall be distributed to all Parties by the Secretariat at the Eleventh Meeting of the Parties and updated on an annual basis thereafter[.]”

The last paragraph of the decision lists the categories:

“\* Products and equipment containing a controlled substance specified in Annex A or B of the Montreal Protocol: 1) Automobile and truck air conditioning units (whether incorporated in vehicles or not); 2) domestic and/or commercial refrigeration and air conditioning/heat pump equipment (when containing controlled substances in Annex A or Annex B as a refrigerant and/or in insulating material of the product) (e.g. refrigerators, freezers, dehumidifiers, water coolers, ice machines, air conditioning and heat pump units); 3) transport refrigeration units; 4) aerosol products, except medical aerosols; 5) portable fire extinguisher; 6) insulation boards, panels and pipe covers; 7) pre-polymers.”

**Link:** <https://ozone.unep.org/treaties/montreal-protocol/meetings/tenth-meeting-parties/decisions/decision-x9-establishment-list-countries-do-not-manufacture-domestic-use-and-do-not-wish-import>

**H. Montreal Protocol MOP Decision XII/10: Monitoring of international trade and prevention of illegal trade in ozone-depleting substances, mixtures and products containing ozone-depleting substances (1995)—12<sup>th</sup> Meeting of the Parties (5–7 December 1995)**

**Excerpt:** “[T]o request the Ozone Secretariat, in consultation, as appropriate, with the Technology and Economic Assessment Panel, the United Nations Environment Programme, the discussion group on customs codes for ozone-depleting substances and international trade and customs organizations, to examine the options for studying the following issues and to report on

*these options at the twenty-first meeting of the Open-ended Working Group for consideration by the Parties in 2001[.]” (A list of items follows.)*

**Link:** [https://ozone.unep.org/Meeting\\_Documents/mop/12mop/12mop-9.e.shtml](https://ozone.unep.org/Meeting_Documents/mop/12mop/12mop-9.e.shtml)

I. Montreal Protocol MOP Decision VII/33: Illegal imports and exports of controlled substances (1995)—Seventh Meeting of the Parties (5–7 December 1995)

**Excerpt:** *“To request that the Secretariat examine information available to it, and request further information from the Parties regarding dumping, illegal imports and exports, and uncontrolled production of Annex A and B substances and products containing them that could undermine the effectiveness of the Protocol, and report to the Eighth Meeting of the Parties, taking into account the non-compliance procedure.”*

**Link:** <https://ozone.unep.org/sites/default/files/2019-04/MOP-7-12E.pdf>

J. Montreal Protocol MOP Decision VII/9: Basic domestic needs (1995)—Seventh Meeting of the Parties (5–7 December 1995)

**Excerpt:** *“3. That in order to prevent oversupply and dumping of ozone-depleting substances, all Parties importing and exporting ozone-depleting substances should monitor and regulate this trade by means of import and export licences;”*

**Link:** <https://ozone.unep.org/sites/default/files/2019-04/MOP-7-12E.pdf>

### 3. Montreal Protocol discussions establishing environmental dumping as a global concern (excerpts)

The following Montreal Protocol Open-Ended Working Group (OEWG) and MOP discussions further elaborate on concerns about the dumping of new but inefficient cooling equipment in developing nations.

#### A. Report of the 30th Meeting of the Parties to the Montreal Protocol (5–9 November 2018)

**Excerpt:** *“The representative of Rwanda, speaking on behalf of the African Group, introduced a proposal for a draft decision, which had been revised after the fruitful discussions at the fortieth meeting of the Open-ended Working Group. She said that it was intended to provide the basis of a renewed discussion at the current meeting, to facilitate consideration of the crucial issue of energy efficiency and how it could be addressed under the institutions of the Montreal Protocol. She noted that the Scientific Assessment Panel had confirmed that improvements in the energy efficiency of refrigeration and air-conditioning equipment during the transition to low-GWP alternatives could double the climate benefits of the Kigali Amendment. She also drew attention to the problems caused by the dumping of obsolete and inefficient equipment in African markets, which undermined efforts by African countries to meet the climate challenge.”*

**Link:** <https://ozone.unep.org/system/files/documents/MOP-30-11E.pdf>

#### B. Report of the 10th Meeting of the Parties (MOP-10) to the Montreal Protocol (23–24 November 1998)

**Excerpts:** *“10. Among important issues facing the Parties, [Klaus Töpfer, Executive Director of the United Nations Environment Programme (UNEP)] drew attention to the need for awareness-building activities by the developing countries; the possible marketing of new ozone-depleting substances and the need for criteria to identify such substances; and the dumping of used chlorofluorocarbon (CFC) products and equipment, in which context he drew attention to the UNEP-initiated pledge by companies not to manufacture or sell any new CFC-using equipment or technology in developing countries or countries with economies in transition.”*

*“60. Many representatives expressed concern at the dumping of second-hand equipment in developing countries based on the use of controlled substances, which constituted an extra impediment to the implementation of the Montreal Protocol. One representative proposed that the Secretariat should support developing countries in their efforts to ban such equipment. Others pointed to the enactment of national legislation prohibiting the import of products or equipment using ozone-depleting substances. Several representatives expressed support for the draft decision before the Meeting on the issue. One representative said that, as many of those transactions did not involve the remittance of funds through banks, monitoring the import of such items was difficult. Mitigating that problem would require the introduction of controls at the point of export and he solicited the cooperation of developed countries to that end. Another*

*representative suggested the introduction of a requirement for conversion of such equipment before it was exported.”*

**Link:** <https://ozone.unep.org/system/files/documents/10mop-9e.shtml>

### C. Report of the Eleventh Meeting of the OEWG of the Parties to the Montreal Protocol (8–12 May 1995)

**Author:** UNEP Ozone Secretariat

**Excerpt:** *“[One representative] said that the practice of dumping obsolete ODS-using products and technologies in Article 5 countries was on the increase and, if the situation were not addressed, it could well affect the implementation of the Protocol. Dumping could significantly increase ODS consumption in the countries in question and there were some grounds for suspecting that some suppliers in Article 2 countries were deliberately engaging in dumping in order to maintain their ODS production. Since the Article 5 countries were institutionally incapable of monitoring dumping effectively, they needed the support of their Article 2 partners.”*

**Link:** <https://ozone.unep.org/sites/default/files/2019-04/OEWG-11-10E.pdf>

### D. Report of the Fifth Meeting of the Parties (MOP-5) to the Montreal Protocol (17–19 November 1993)

**Author:** UNEP Ozone Secretariat

**Excerpt:** *“[Replacement with] [h]ydrochlorofluorocarbons [HCFCs] was not taking place at a rapid pace, thus leading to prolonged CFC emissions. Moreover, the phase-out process in the developed countries must not result in the dumping of outmoded equipment in the developing countries and competitive solutions to the problem of replacement substances were needed.”*

**Link:** <https://ozone.unep.org/system/files/documents/5mop-12e.shtml>

### E. Report of the Ninth Meeting of the OEWG of the Parties to the Montreal Protocol (30 August–1 September 1993)

**Author:** UNEP Ozone Secretariat

**Excerpt:** *“The closing of CFC production facilities in developed and developing countries could reduce availability in the developing countries. Phase-outs could lead to ‘dumping’ in developing countries of obsolete equipment that use ODS. As a result, incremental costs could increase and ozone-depleting substance (ODS) phase-out among Parties operating under Article 5, paragraph 1, could be delayed.”*

*“A number of delegations expressed concern over the possibility and impact of dumping. One delegation enquired if the Parties needed to address the issue formally. Another delegation requested that the Executive Committee of the Multilateral Fund examine projects to ensure that*



*they did not inadvertently lead to dumping. One delegation noted that it would be beneficial for the work of the Technology and Economic Assessment Panel to include an update on the assessment of the supply of CFCs to Article 5, paragraph 1 countries after 1995.”*

**Link:** <https://ozone.unep.org/system/files/documents/9oewg-7.e.shtml>

#### 4. International organization and country-led initiatives

The following announcements, agreements, and activities demonstrate bilateral, regional, and multilateral recognition of the problem of environmental dumping and the need for global availability of affordable, best-technology cooling equipment.

##### A. UNEP and IFC, Cooler Finance: Mobilizing Investment for the Developing World’s Sustainable Cooling Needs (25 September 2024)

**Authors:** United Nations Environment Programme (UNEP), International Finance Corporation (IFC)

**Description:** 108 pages. Released in 2024, this study from IFC and UNEP finds that the market for sustainable cooling in developing economies is set to more than double over the next 25 years from a current annual demand of approximately US\$ 300 billion. Adopting sustainable cooling instead of cheap but inefficient equipment could reduce electricity bills for consumers in developing countries by as much as US\$ 5.6 trillion over the next 25 years and reduce by \$1.8 trillion the amount of new investment in electricity generation needed meet peak demand.

The study references the 2023 report from CLASP and IGSD, which finds that energy-efficiency policies in Southeast Asia are not keeping pace with technological improvements in high-efficiency appliances or with policies in neighboring countries. As a result, Southeast Asia is at risk of becoming a dumping ground for outdated and inefficient appliances that are prohibited in the home jurisdictions of the multinational corporations that make them. By implementing minimum energy performance standards (MEPS), Southeast Asia could reduce cumulative emissions from 2025 to 2050 by 20 percent and generate cumulative savings of US\$ 148 billion in electricity costs. In Africa, another region that risks becoming a dumping ground for inefficient equipment, implementing energy-efficiency standards could reduce cumulative emissions by 14 percent.

The study notes that the presence of regulations alone is often insufficient to ensure compliance, as informal cross-border trade and second-hand markets can undermine the enforcement of efficiency standards. These issues underscore the need for regional and international measures to fully realize the benefits of high-efficiency equipment.

**Link:** <https://www.ifc.org/content/dam/ifc/doc/2024/cooler-finance-report.pdf>



## B. Wilmington Declaration Joint Statement from the Leaders of Australia, India, Japan, and the United States (21 September 2024)

**Author:** U.S. White House

**Description:** Online. At the conclusion of the Quad Leaders Summit on 21 September 2024, Australian Prime Minister Anthony Albanese, Indian Prime Minister Narendra Modi, Japanese Prime Minister Kishida Fumio, and U.S. President Joe Biden released a Joint Statement that includes, among other climate and clean energy provisions, “a focused Quad effort to boost energy efficiency, including the deployment and manufacturing of high-efficiency affordable, cooling systems to enable climate-vulnerable communities to adapt to rising temperatures while simultaneously reducing strain on the electricity grid.”

**Link:** <https://www.whitehouse.gov/briefing-room/statements-releases/2024/09/21/the-wilmington-declaration-joint-statement-from-the-leaders-of-australia-india-japan-and-the-united-states/>

## C. UN Secretary-General’s Call to Action on Extreme Heat (25 July 2024)

**Author:** UN Secretary-General’s Climate Action Team, including inputs from the UNEP, World Health Organisation (WHO), Food and Agriculture Organisation (FAO), International Labour Organisation (ILO), World Meteorological Organisation (WMO), UN Human Settlements Programme (UN-Habitat), UN Office for the Coordination of Humanitarian Affairs (OCHA), UN Office for Disaster Risk Reduction (UNDRR), UN Educational, Scientific and Cultural Organisation (UNESCO), and UN Children’s Fund (UNICEF).

**Short description:** This document stresses the need for urgent action change to limit the impacts of extreme heat and specifically mentions that “[r]egulation that promotes low to zero global-warming potential alternatives in air conditioning and refrigeration equipment is critical, and so are efforts to avoid the dumping of new inefficient cooling appliances with obsolete refrigerants in developing countries.” Sections include:

- Climate science and extreme heat
- Weather-related deaths and at-risk populations
- Impacts on lives, livelihoods, and environment
- A call to action on extreme heat
- Strengthening global action

**Link:** [https://www.un.org/sites/un2.un.org/files/unsg\\_call\\_to\\_action\\_on\\_extreme\\_heat\\_for\\_release.pdf](https://www.un.org/sites/un2.un.org/files/unsg_call_to_action_on_extreme_heat_for_release.pdf)

D. Regulation (EU) 2024/573 of the European Parliament and of the Council of 7 February 2024 on fluorinated greenhouse gases, amending Directive (EU) 2019/1937 and repealing Regulation (EU) No 517/2014 (EU F-gas Regulation) (7 February 2024)

**Author:** European Union

**Description:** Online. The Preamble to the EU F-Gas Regulation in paragraph 25 reflects how developing countries' efforts to stop the dumping in their countries of inefficient cooling equipment using high global-warming-potential refrigerants (as recognized in Montreal Protocol Decision XXXV/13) served as motivation to prohibit export in the Regulation of certain used and new equipment containing or relying on climate-harmful fluorinated greenhouse gases.

**Link:** [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L\\_202400573](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L_202400573)

E. U.S.-China Sunnylands Statement on Enhancing Cooperation to Address the Climate Crisis (14 November 2023)

**Author:** U.S. Department of State

**Description:** Online. Released on 14 November 2023, this Statement by U.S. Special Presidential Envoy for Climate John Kerry and China Special Envoy for Climate Change Xie Zhenhua reaffirms previous climate-related commitments and notes in paragraph 13 that “[t]he two countries intend to work together under the Kigali Amendment to phase down HFCs and commit to ensure application of ambitious minimum efficiency standards for all cooling equipment manufactured.”

**Link:** <https://www.state.gov/sunnylands-statement-on-enhancing-cooperation-to-address-the-climate-crisis/>

F. Report of the Climate & Clean Air Coalition (CCAC) Stop Dumping Workshop (24–25 August 2023): More Rapid Transition to Sustainable Cooling Technology, Paris, France

**Author:** CCAC

**Description:** 16 pages. Participants from 14 African nations (Benin, Burkina Faso, Djibouti, Ghana, Kenya, Lesotho, Mali, Morocco, Nigeria, Senegal, Togo, Tunisia, Uganda, Zimbabwe), CCAC, CLASP, IGSD, UNEP OzonAction, and United for Efficiency (U4E) collaborated on the following items from 24–25 August 2023:

- Creating definitions of environmental dumping and obsolete refrigerants
- Explaining the reasons for developed countries to stop dumping in African marketplaces
- Presenting statistics on the local and global effects of inefficient cooling equipment dumped in Africa

- Defining the necessary next steps for African nations, corporations, and government leadership

**Link:** <https://www.ccacoalition.org/sites/default/files/resources/files/DUMPING%20ON%20AFRICA%20FINAL%20Book-updatw%202410.pdf>

#### G. African Ministerial Conference on the Environment Decision 17/1 (November 2019)

**Author:** African Ministerial Conference on the Environment (AMCEN)

**Short description:** At its Seventeenth session in Durban, South Africa on 14–15 November 2019, AMCEN decides “[t]o urge Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer to adopt an action plan preventing the market penetration of obsolete equipment in Africa while facilitating access to secure and energy-efficient technologies on the continent.”

**Link:** <https://www.unep.org/events/conference/seventeenth-regular-session-african-ministerial-conference-environment-amcen>

#### H. Biarritz Pledge for Fast Action on Efficient Cooling (22 August 2019)

**Author:** France, with implementing partners Germany, United Kingdom, Japan, UNEP, IGSD, and the World Bank

**Short description:** One page. In this pledge, France and other signatories agreed to “undertake immediate actions to improve efficiency in the cooling sector while phasing down hydrofluorocarbon (HFC) refrigerants as per the Kigali Amendment to the Montreal Protocol.”

**Link:** <https://www.elysee.fr/admin/upload/default/0001/06/306cf93611abfad315fbc8ebce8e86dc27282363.pdf>

## 5. Technical reports, workshop proceedings, and research papers

The following technical reports, workshop proceedings, research papers, and other reports provide comprehensive information on dumping of inefficient appliances in vulnerable countries. These resources include overviews and more in-depth information that discusses:

- The history of environmental dumping in developing nations' marketplaces
- The environmental, public health, and equity problems caused by dumping
- Policy and legal tools to end dumping
- The use of buyers clubs\* to provide access to best technology cooling equipment
- Case studies showing successes and challenges

\* The term "buyers club" reflects spelling and punctuation used in previous publications.

### A. Key Milestone Achieved in the Development of Minimum Energy Performance Standards (11 April 2024)

**Author:** East African Centre of Excellence for Renewable Energy and Efficiency (EACREEE).

**Short description:** Online. This brief announcement discusses the outcome of a three-day workshop in Uganda to develop regional MEPS, with similar workshops held in Burundi, Kenya, Rwanda, South Sudan, and Tanzania. This achievement is part of a continuing effort to prevent dumping in African nations of inefficient products.

**Link:** <https://www.eacreee.org/article/key-milestone-achieved-development-minimum-energy-performance-standards>

### B. Pathways to Prevent Dumping of Climate Harming Room Air Conditioners in Southeast Asia (September 2023)

**Authors:** Lina Kelpsaitė, Jillian Webber, Katriana Dubytz, and Shirin Mavandad (CLASP); with contributions from Ana Maria Carreño, Colin Taylor, Hu Bo, Lei (Steven) Zeng, Herlin Herlianika, Kynan Tjandaputra, Lauren Boucher, Ari Reeves, and Hannah Blair (CLASP); and Tad Ferris, Dr. Gabrielle Dreyfus, Xiaopu Sun, Dr. Stephen O. Andersen, and Kristen Taddonio (IGSD)

**Short description:** 95 pages. Created by CLASP and IGSD with input from stakeholders in Southeast Asia, this report examines how Southeast Asia is vulnerable to becoming a dumping ground for obsolete cooling appliances. Topics covered in the report include:

- Global room air conditioner (RAC) market policy trends
- Southeast Asia RAC marketplaces, trade flows, and policies

- Low-efficiency cooling equipment in Southeast Asia and the impact of its use
- Recommendations for policymakers and other stakeholders

**Link:** <https://ozone.unep.org/system/files/documents/Pathways-to-Prevent-Dumping-of-Climate-Harming-ACs-in-SEA-Sep-2023.pdf>

### C. Speeding Ghana’s Transition to Low-GWP and Energy-Efficient Cooling (27 September 2022)(2022–2023 International Special Issue)

**Authors:** Kofi A. Agyarko (Ghana Energy Commission Director of Renewable Energy and Energy Efficiency), Emmanuel Osae-Quansah (Ghana Environmental Protection Agency Director of Climate Change and the National Ozone Unit), Hubert Zan (Ghana Energy Commission Assistant Manager of Energy Efficiency Inspection and Enforcement), Richard “Tad” Ferris (IGSD Senior Counsel), Mohamed Rida Derder (IGSD Special Counsel for the Middle and North Africa (MENA) region and Africa), and Leslie Olonyi Bosire (Environmental Lawyer and independent legal consultant)

**Short description:** Online. This report published in *Industria e Formazione* (the official journal of Centro Studi Galileo and the Renewable Energy Institute) as an International Special Issue, describes how the Ghana Energy Commission is working to end dumping of inefficient cooling equipment through several efforts, including

- Developing improved energy efficiency labelling and refrigerant metrics
- Strengthening minimum energy efficiency standards (MEPS)
- Facilitating communications with national authorities to prohibit the import and sale of new but inefficient equipment that uses obsolete refrigerants
- Requesting Parties to the Montreal Protocol to enact and enforce regulations that stop product dumping in developing countries

**Link:** <https://international.centrogalileo.it/speeding-ghanas-transition-to-low-gwp-and-energy-efficient-cooling>

### D. Policy Measures to Prevent Dumping of Environmentally Harmful and Low Efficiency Cooling Appliances in African Countries: Kenya as a Case Study (19 May 2022)

**Authors:** Naomi Wagura and Ana María Carreño

**Short description:** 13 pages. Abstract available online. Conference paper was originally presented at the 10th International Conference on Energy Efficiency in Domestic Appliances and Lighting held in Jinan, China from 6–8 November 2019 and is in the book series *Springer Proceedings in Energy*. This paper demonstrates that low-efficiency air conditioners dumped in African marketplaces are manufactured by companies that offer high-efficiency units in other countries and explains how some African nations are developing policies to prevent dumping. Topics include:

- Data collection methods to describe market characteristics
- Comparison of MEPS rating of cooling equipment sold in Kenya with the MEP of equipment available in the source market
- Using regulation to avoid dumping of new inefficient cooling equipment and certification to prevent dumping of used cooling equipment
- Overview of refrigerants found in RACs in the Kenyan marketplace
- Current regulations and policy recommendations

**Link:** [https://link.springer.com/chapter/10.1007/978-3-030-79124-7\\_24](https://link.springer.com/chapter/10.1007/978-3-030-79124-7_24)

#### E. Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report: Working Group III: Mitigation of Climate Change (4 April 2022)

**Authors:** Luisa F. Cabeza (Spain), Quan Bai (China), Paolo Bertoldi (Italy), Jacob M. Kihila (the United Republic of Tanzania), André F.P. Lucena (Brazil), Érika Mata (Spain/Sweden), Sebastian Mirasgedis (Greece), Aleksandra Novikova (Germany/the Russian Federation), Yamina Saheb (France/Algeria)

**Short description:** In chapter 9, section 9.9.7.1 of this report published in 2022, the IPCC states that “[e]fficiency requirements for traded goods and the associated test methods could be set at global level in order to enlarge the market, avoid technical barriers to trade; reduce the manufacturers design and compliance costs. International standards could be applied to developing countries when specific enabling conditions exist, particularly in regard to technology transfer, assistance for capacity buildings and financial support. This would also reduce the dumping of inefficient equipment in countries with no or lower efficiency requirements. An example is the dumping of new or used inefficient cooling equipment in developing countries, undermining national and local efforts to manage energy, environment, health, and climate goals.”

**Link:** <https://www.ipcc.ch/report/ar6/wg3/chapter/chapter-9/>

#### F. The Importance of Stopping Environmental Dumping in Ghana: The Case of Inefficient New and Used Cooling Appliances with Obsolete Refrigerants (November 2021)

**Authors:** Kofi A. Agyarko, Dr. Stephen O. Andersen, Richard “Tad” Ferris, Hubert Zan, Emmanuel Osaë-Quansah, Dr. Gabrielle Dreyfus, Mohamed Rida Derder, Leslie Olonyi Bosire, Laura Bloomer, and Xiaopu Sun

**Short description:** 56 pages. Published in 2021 in the *Duke Environmental Law and Policy Forum*, this report documents how environmental dumping continues to occur in Ghana, despite a ban on importing used cooling equipment and the establishment of energy efficiency standards. The report covers topics including:

- The definition of environmental dumping applied to air conditioners and refrigerators

- Drivers of environmental dumping in Ghana
- Discussions of case studies of dumping new and used equipment in Ghana
- Interventions and examples of authorities that have the power to intervene

**Link:** <https://scholarship.law.duke.edu/cgi/viewcontent.cgi?article=1391&context=delpf>

## G. Environmentally Harmful Dumping of Inefficient and Obsolete Air Conditioners in Africa (24 June 2020)

**Authors:** CLASP and IGSD

**Short description:** 85 pages. This 2022 report explores the market conditions in Africa where global suppliers dump inefficient equipment using obsolete refrigerants. Research and statistics include:

- Market evidence of environmental dumping of inefficient cooling equipment
- Market evidence of environmental dumping of cooling equipment that uses high GWP refrigerants
- Identification of the sources of obsolete air conditioners and components
- Statistics showing the impact on governments and consumers of environmental dumping
- Tools for policymakers and governments

**Link:** <https://storage.googleapis.com/clasp-siteattachments/2020-Environmentally-Harmful-Dumping-of-Inefficient-and-Obsolete-Air-Conditioners-in-Africa.pdf>

## H. Assessment of Climate and Development Benefits of Efficient and Climate-Friendly Cooling (March 2020)

**Authors:** Dr. Gabrielle Dreyfus (IGSD), Nathan Borgford-Parnell (UNEP, CCAC), John Christensen (UNEP Danish Technical University Partnership), David W. Fahey (NOAA Earth System Research Laboratory, Chemical Sciences Division), Brian Motherway (IEA), Toby Peters (University of Birmingham), Romina Picolotti (CEDHA, currently IGSD), Nihar K. Shah (LBNL), and Yangyang Xu (Texas A&M University)\*

\* CEDHA = Center for Human Rights and Environment; IEA = International Energy Agency; LBNL = Lawrence Berkeley National Laboratory; NOAA = U.S. National Oceanic and Atmospheric Administration

**Short description:** 76 pages. This report by IGSD and Centro Mario Molina examines the increasing need for cooling equipment due to global warming, the need for adaptation, and ways to maximize ability of the Montreal Protocol and Kigali Amendment to protecting the climate. The report provided the basis for the Cooling Emissions and Policy Synthesis Report by the UNEP and IEA. Topics covered include:

- HFC emissions, current uses, and future scenarios
- Energy-related emissions from cooling equipment and opportunities for mitigation



- Recommendations for policies and financing strategies to promote fast phasedown from HFC refrigerants and improving the energy efficiency of cooling equipment

**Link:** [https://www.ccacoalition.org/sites/default/files/resources/2020\\_Assessment-benefits-efficient-cooling\\_3\\_30\\_20.pdf](https://www.ccacoalition.org/sites/default/files/resources/2020_Assessment-benefits-efficient-cooling_3_30_20.pdf)

## I. Buyers Club Handbook Update (January 2020)

**Authors:** Dr. Stephen O. Andersen (IGSD), Dr. Suely Carvalho (UNEP TEAP), Dr. Ezra Clark (formerly OzonAction, currently UNESCO), James Curlin (UNEP OzonAction), Dr. Gabrielle Dreyfus (IGSD), Richard “Tad” Ferris (IGSD), Saurabh Kumar (formerly EESL, currently GEAPP), Manu Maudgal (formerly ESSL, now Shakti Sustainable Energy Foundation), Marco Gonzalez (Montreal Protocol Ozone Secretariat, retired), Alex Hillbrand (NRDC), Karan Mangotra (formerly TERI, now ISA), Dr. Ajay Mathur (formerly TERI, currently ASI), Shamila Nair-Bedouelle (formerly UNEP OzonAction, currently UNESCO), Rajendra Shende (TERRE Policy Centre), and Dr. Nancy J. Sherman (IGSD)\*

\* ESSL = Energy Efficiency Services Limited; GEAPP = Global Energy Alliance for People and Planet; ISA = International Solar Alliance; NRDC = National Resources Defense Council; TERI = The Energy and Resources Institute; TERRE = Technology, Education, Research and Rehabilitation for the Environment; UNESCO = United Nations Educational, Scientific and Cultural Organization

**Short description:** 43 pages. Published jointly by IGSD and UNEP OzonAction Compliance Assistance Programme, this handbook provides guidance and best practices for policymakers who wish to start a buyers club\* for best technology cooling equipment in countries where the marketplace is dominated by dumped inefficient products. Handbook topics include:

- Air conditioning’s impact on ozone depletion and climate change
- Refrigerant choices under the Montreal Protocol
- The importance of super-efficiency with lower-GWP refrigerants
- Opportunities to introduce affordable and efficient RACs
- Traditional regulatory and supporting approaches, including minimum energy performance standards (MEPS), product labelling, and fiscal incentives
- Planning and starting a buyers club
- Lessons learned

\* Note that the term “buyers club” reflects spelling and punctuation used in previous publications.

**Link:** <https://www.igsd.org/wp-content/uploads/2020/07/Buyers-Club-Handbook-Jan2020.pdf>

## J. Defining the Legal and Policy Framework to Stop the Dumping of Environmentally Harmful Products (November 2018)

**Authors:** Dr. Stephen O. Andersen, Richard “Tad” Ferris, Romina Piccolotti, Durwood Zaelke, Dr. Suely Carvalho, and Marco Gonzalez



**Short description:** 48 pages. Published in Volume 29 (Fall 2018) of the *Duke Environmental Law and Policy Forum*, this article by IGSD environmental policy experts established the foundation for stopping dumping through law and policy. The report includes:

- The historical and policy origins of the “environmental dumping” concept, with definitions
- An anti-dumping “toolkit” for policymakers in developing countries, with detailed explanations of the legal and policy tools in the toolkit
- A summary of the national and global consequences of environmental dumping
- Recommendations for policymakers and other stakeholders aimed at protecting environmental stop-dumping tools from international trade challenges

**Link:** <https://scholarship.law.duke.edu/cgi/viewcontent.cgi?article=1356&context=delpf>

#### K. How to Read the Energy Label—Air Conditioners (April 2018)

**Author:** Pacific Appliance Labelling and Standards Programme

**Short description:** Two pages. This pamphlet explains to consumers how to read energy efficiency ratings and see how more efficient technology can be cheaper in the long run, despite a higher initial purchase price.

**Link:** [https://prdrse4all.spc.int/sites/default/files/how\\_to\\_read\\_the\\_energy\\_label-air\\_conditioners.pdf](https://prdrse4all.spc.int/sites/default/files/how_to_read_the_energy_label-air_conditioners.pdf)

## 6. Media coverage of environmental dumping (examples)

This final section provides examples of media coverage of product dumping in Africa and Southeast Asia.

### A. Cooling appliances uptake exposes Kenya to dumping risk (16 January 2024)

**Author:** Macharla Kamau

**Short description:** Online. This article published in *The Standard* discusses how the cooling equipment marketplace in Kenya is dominated by inefficient appliances and how Kenyan consumers are forced to pay high electric bills because best technology air conditioners and refrigerators are unavailable for purchase.

**Link:** <https://www.standardmedia.co.ke/business/financial-standard/article/2001488994/cooling-appliances-uptake-exposes-kenya-to-dumping-risk>

### B. Inefficient air-cons are being dumped in Southeast Asia. That's costly for consumers and the climate (18 November 2023)

**Author:** Kiki Siregar

**Short description:** Online. This 2023 article published by Singapore-based Channel News Asia examines the problem of multinational corporations dumping inefficient air conditioners in countries including Indonesia, the Philippines, Malaysia, Thailand, and Vietnam.

**Link:** <https://www.channelnewsasia.com/asia/inefficient-air-conditioners-dumping-southeast-asia-indonesia-climate-change-energy-3922116>

### C. Dumping of environmentally-harmful products is 'imported poverty' (7 August 2023)

**Author:** Kofi Agyarko

**Short description:** One page. This article, reposted from the *Ghanian Times*, explains how environmental dumping of inefficient cooling equipment creates poverty through many effects including:

- Greater electricity costs
- Increased pollution that harms public health and affects the workforce
- Barriers to entry for modern cooling equipment
- The use of refrigerants that cause global warming and deplete the ozone layer

**Link:** <https://www.igsd.org/wp-content/uploads/2023/08/Kofi-Ghanaian-Times-dumping-article-7-August-2023.pdf>

D. Pan-African association U-3ARC warns that ‘environmental dumping’ stifles ability to adopt low-GWP and energy efficient technology (3 October 2022)

**Author:** Andrew Gaved

**Short description:** Online. Published in *RAC* magazine, this article describes how the Pan-African cooling body U-3ARC has issued what it calls the Casablanca Declaration, calling for an end to the practice of exporting equipment that doesn’t meet F-Gas, Kigali, or Ecodesign regulations to countries that haven’t yet adopted similar requirements. According to the U-3ARC website, the U-3ARC association represents 30 national organizations in the refrigeration and air conditioning sector from 29 countries representing 18,000 companies that employ 200,000 people.

**Links:**

(U-3ARC website) <https://www.u-3arc.org>

(*RAC* magazine article) <https://www.racplus.com/news/stop-dumping-old-kit-in-our-countries-says-african-cooling-body-03-10-2022/>

E. A Flood of Polluting Air Conditioners Hampers Africa’s Climate Efforts (9 September 2020)

**Author:** Peyton Fleming

**Short description:** Online. Published in *Yale Environment 360*, this article describes how old and inefficient air conditioners dumped in Africa are generating increased electricity use and greenhouse gas emissions. The article notes that progress is occurring in Ghana and Rwanda and describes the challenges in Nigeria caused by lack of enforcement of its import ban and by cooling equipment manufacturers poor compliance with voluntary energy performance standards and energy labels.

**Link:** <https://e360.yale.edu/features/a-flood-of-polluting-air-conditioners-hampers-africas-climate-efforts>

## 7. Acronyms and abbreviations

AMCEN	African Ministerial Conference on the Environment
CCAC	Climate and Clean Air Coalition
CEDHA	Center for Human Rights and Environment
CFC	chlorofluorocarbon
CLASP	originally Collaborative Labeling and Appliance Standards Program
CO <sub>2</sub>	carbon dioxide
EACREEE	East African Centre of Excellence for Renewable Energy and Efficiency
ESSL	Energy Efficiency Services Limited (India)
FAO	Food and Agriculture Organisation
F-Gas	fluorinated gas
GEAPP	Global Energy Alliance for People and Planet
GWP	global warming potential
HCFC	hydrochlorofluorocarbon
HFC	hydrofluorocarbon
IEA	International Energy Agency
IFS	International Finance Corporation
IGSD	Institute for Governance & Sustainable Development
ILO	International Labour Organisation (UN)
IPCC	Intergovernmental Panel on Climate Change
ISA	International Solar Alliance
LBNL	Lawrence Berkeley National Laboratory (USA)
MENA	Middle and North Africa Region
MEPS	Minimum Energy Performance Standard
MOP	Meeting of the Parties to the Montreal Protocol
NOAA	National Oceanic and Atmospheric Administration (USA)
NRDC	National Resources Defense Council
OCHA	UN Office for the Coordination of Humanitarian Affairs
ODS	ozone-depleting substance
OEWG	Open-Ended Working Group (of the Montreal Protocol)
RAC	room air conditioner
TERI	The Energy and Resources Institute (India)
TERRE	Technology, Education, Research and Rehabilitation for the Environment (India)
U4E	United for Efficiency
UN	United Nations
UN-Habitat	UN Human Settlements Programme
UNDRR	UN Office for Disaster Risk Reduction
UNEP	UN Environment Programme
UNESCO	UN Educational, Scientific and Cultural Organisation
UNICEF	UN Children's Fund (UN International Children's Emergency Fund)
WHO	World Health Organisation
WMO	World Meteorological Organisation