

TRANSITIONING HFCs IN INDIA

OPPORTUNITY FOR CLIMATE FRIENDLY COOLING IN THE FAST FOOD INDUSTRY



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The Environmental Investigation Agency (EIA) is an independent campaigning organization that identifies and campaigns for solutions to the world's most pressing environmental problems. As part of our work, we have undertaken groundbreaking investigations into the illegal trade in ozone depleting substances (ODS) and have been closely involved in the international ozone and climate negotiations for over a decade.

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INTRODUCTION

Hydrofluorocarbon (HFC) emissions are on the rise in India, with projections in 2030 potentially reaching as high as 1.01 billion metric tons of CO₂ equivalent,¹ equal to the annual emissions from 265 coal-fired power plants.² As HFC emissions are increasing, the fast food industry in India is booming, with the industry projected to double in size from 2013 to 2016³ growing at a compound annual growth rate of 18 percent.⁴ Projections forecast the Indian fast food industry to grow from about \$15 billion in size to more than \$50 billion over the next five years.⁵

Fast food restaurants typically contain multiple types of refrigeration equipment, including reach-in refrigerators and freezers, walk-in coolers and freezers, ice machines, under-counter refrigerators and freezers, refrigerated prep tables, soda fountain machines, and ice cream machines. In addition to onsite refrigeration, companies also store their products in cold storage warehouses and transport their products in refrigerated transport systems. To combat the significant growth of HFC emissions in India, the fast food industry can lead efforts to decrease these emissions and promote market uptake of low global warming potential (GWP)⁶ cooling technologies, by investing in and transitioning to available climate friendly, energy efficient technologies.

EIA studied seven multinational companies operating in India and has identified each company's current HFC emissions footprint, projected growth, and commitments and actions to mitigate greenhouse gas (GHG) emissions. By researching and compiling publicly available information on fast food

companies operating in India, EIA gained an understanding of the current GHG emissions and projected growth of highlighted companies' operations in India.

The results of the report found that by 2020, current and projected potential direct climate impact of the refrigeration equipmentⁱ in use by the companies highlighted is equivalent to carbon emissions of burning nearly 472 million kilograms of coal or the annual emissions from 204,549 cars.ⁱⁱ The carbon dioxide equivalent emissions of current equipment in use by the companies in the report equal more than 193 million kilograms, however the projected emissions of future equipment is equal to 279 million kilograms of coal. These projected emissions could be avoided, if the companies highlighted in this report invest in transitioning new stores and new equipment in existing stores to low-GWP technologies. Additionally, a significant amount of the current climate impact can be avoided if companies ensure proper disposal of equipment at end-of-life including recovery, recycling, and/or destruction of the HFC refrigerants and any HFC-containing foam.

Actions by the fast food industry in India will support overall efforts towards a broader progressive phase-down of HFC systems by developing the necessary infrastructure of manufacturers of low-GWP systems, component suppliers, and service technicians, helping to build the economies of scale of these new technologies. Robust and rapid transitions to energy efficient, low-GWP equipment and strong refrigerant management policies by the fast food industry in India will also support the broader movement towards a global phase-down of HFCs under the Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol), help India meet its international commitments to reduce GHG emissions, and increase the energy efficiency of company-wide operations.

While several companies detailed in this report have already committed to investing in low-GWP technologies globally and/or cutting GHG emissions, it is unclear how quickly these companies will transition their refrigeration equipment to low-GWP technologies in their Indian operations. Leadership by the fast food companies highlighted in this report through transitions to low-GWP equipment will be critical to creating the infrastructure that will facilitate increased adoption of low-GWP products throughout India, resulting in decreased GHG emissions and increased energy efficiency.

HFCs: Super Greenhouse Gases

HFCs are manmade fluorinated gases developed and commercialized to replace ozone depleting substances (ODS) for use primarily in refrigeration, air conditioning, foam blowing, fire suppression, aerosols, and solvents. They do not deplete the ozone, but they are powerful greenhouse gases (GHGs) with global warming potentials (GWP) hundreds to thousands of times more damaging to the climate than carbon dioxide (CO₂).

For example, HFC-404A, commonly used in commercial refrigeration, is almost 4,000 times more damaging to the climate than CO₂. To put this in context, just 1 kilogram of HFC-404A leaking into the atmosphere equates to the climate impact of four tonnes of CO₂.

HFCs are the fastest growing source of GHG emissions in much of the world. Current global projections show HFC emissions growing by at least 9-29 percent annually, with growth rates in developing countries at or exceeding 20 percent annually.

i Based on end-of-life venting of refrigerants in current and projected systems in use.

ii These numbers were based on EIA evaluations and projections and were developed using the EPA's Greenhouse Gas Equivalency Calculator.

CLIMATE IMPERATIVE

The year 2016 began with atmospheric concentration of CO₂ above 400 parts per million, the highest level concentration in at least the last 800,000 years.⁷ The steady growth of extreme weather events around the world is an indicator that the high level of GHGs in the atmosphere is significantly affecting the stability of the earth's climate.⁸ Fifteen of the 16 warmest years in the modern meteorological record have occurred since 2001, with 2016 on track to being the hottest year on record.⁹ At the same time, CO₂ emissions have hit a record high for the 30th year in a row,¹⁰ and global GHG emissions have increased by over 58 percent since the 1992 Rio Convention, despite the treaties in place to stabilize and to cut emissions.¹¹

By 2020 current and projected direct climate impact of the refrigeration equipment in use by the companies highlighted will be equivalent to carbon emissions of burning nearly 472 million kilograms of coal or the annual emissions from 204,549 cars.

Around the world, millions of hectares of agricultural land are being lost annually due to flooding and there have been declines in crop harvests due to drought¹² and in 2012 there were an estimated 31.7 million "climate refugees" in the world.¹³ Sea ice and glaciers are melting at an alarming rate and the ocean is warming resulting in sea level rise.¹⁴ In April 2014 the size of the Arctic sea ice, which has been referred to as the air conditioner of the planet, had shrunk by 236,000 square miles below the average extent

recorded between 1981 to 2010 (an average depletion rate of 14,800 square miles per day).¹⁵

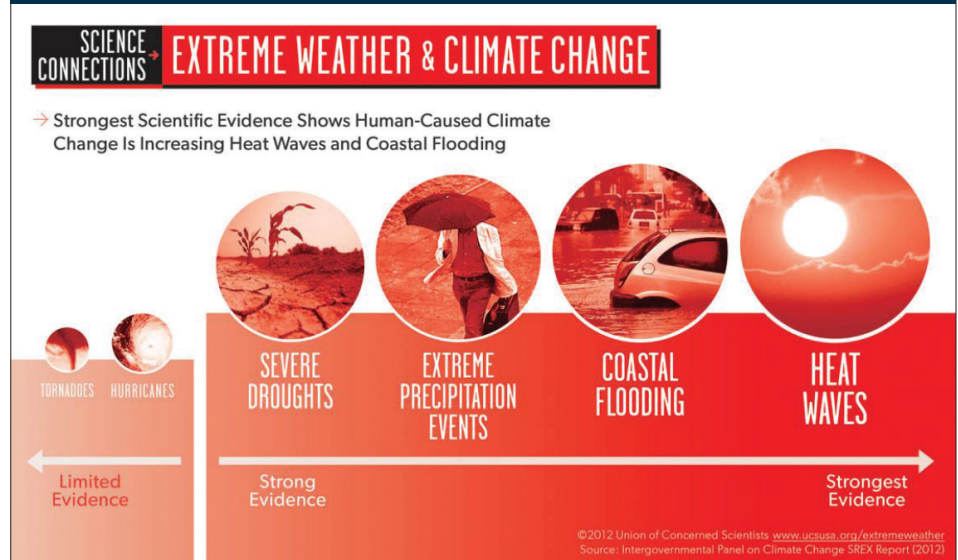
There is scientific and political consensus that we must keep global temperature rise between 1.5°-2° Celsius above pre-industrial levels if we are to avert full-scale climate catastrophes.¹⁷ According to Climate Action Tracker, full implementation of existing country mitigation pledges made under the Paris Agreement in 2015 would lead to a global average temperature increase of at least 2.7° Celsius by 2100.¹⁸ Additional and rapid action must be taken to close the emissions gap in order to limit temperature rise to less than 2° Celsius, preferably 1.5° Celsius, to avoid the worst impacts of climate change.¹⁹

This is where phasing down short-lived climate pollutants, such as HFCs, is of vital importance. A phase-down of HFCs is one of the most cost effective steps to reduce GHG emissions in the short term while the global community tackles the challenge of mitigating emissions of CO₂. The nature of HFCs is that they are "short-term climate forcing substances," thus, while their global warming potential is thousands of times greater than that of CO₂, they remain in the atmosphere

for an average of 22 years, therefore impact on the climate is most concentrated in the near term; whereas, CO₂ stays in the atmosphere for an average of 250 years.²⁰ Therefore, the phase-down of HFCs and transition to low-GWP alternative technologies will have positive impacts on climate change in decades and prevent a half a degree Celsius of warming by 2100.²¹

HFCs were commercialized to replace ozone depleting substances. Emissions of HFCs in 2050 are projected to grow between 9-19 percent of total CO₂ emissions.²² The rapid projected growth of HFCs is due in large part to the expansion of refrigeration, air conditioning, and foams in emerging economies. Actions to mitigate HFC emissions and to prevent continued expansion of consumption of HFCs is critical to prevent increased HFC emissions from offsetting all of the CO₂ mitigation undertaken or pledged to date.²³ With international momentum to phase-down HFCs under the Montreal Protocol, not only is it imperative to maintain a stable climate, but there will also be a legal requirement to promote rapid transitions by manufacturers and end users, such as the fast food industry.

Extreme Weather & Climate Change. Courtesy of Union of Concerned Scientists¹⁶



INTERNATIONAL MOVEMENT

The Montreal Protocol was created in 1987 to eliminate the use of chemicals that were destroying the ozone layer. By 2011, the 197 Parties to the Montreal Protocol had reduced consumption of ozone depleting substances (ODS) by 98 percent, in accordance with strict and binding schedules in both developed countries (Article 2 Parties) and developing countries (Article 5 Parties).²⁴ In fact, the Montreal Protocol has been called one of the most successful multilateral environmental agreements as a result of this rapid reduction in both consumption and production of ODS. As an added benefit, the phase-out of ODS has accomplished more to mitigate climate change than all other international environmental efforts combined, with cumulative emission reductions of 135 billion metric tons of CO₂ equivalent between 1989 and 2013.²⁵

However, HFCs were commercialized as replacements to ODS, so the climate benefits previously achieved could be significantly offset by the growth in HFC consumption and emissions over the coming decades (see Figure 1).²⁶ The Montreal Protocol has a duty to eliminate HFCs, so that it will not have saved the ozone layer at the expense of the global climate.

In September 2013, leaders of G20 countries agreed to utilize the expertise and institutions of the Montreal Protocol to phase down HFCs. High level bilateral engagement between the U.S. Government with China²⁷ and India²⁸ – two countries historically opposed to Montreal Protocol amendment proposals – helped to increase cooperation and build support for an amendment to phase down HFCs through the Montreal Protocol.

The April 2015 meeting of Montreal Protocol, saw further progress towards an amendment as India²⁹ and the European Union,³⁰ submitted HFC amendment proposals, with the African Group signaling strong support for an amendment.^{31,32}

In November 2015, all 197 Parties to the Montreal Protocol agreed to the “Dubai Pathway” that launched formal negotiations to “work within the Montreal Protocol to an HFC amendment in 2016.”³³ After successful meetings in April and July 2016, hopes are high that the remaining issues will be resolved and the Parties will adopt an amendment at the Meeting of the Parties to the Montreal Protocol in October in Kigali, Rwanda.

President Obama and Prime Minister Modi signaled their continued support for an amendment to the Montreal Protocol in a joint statement made in June 2016, “[T]he two countries resolved to work to adopt an HFC amendment in 2016 with increased financial support from donor countries to the Multilateral Fund to help developing countries with implementation, and an ambitious phasedown schedule, under the Montreal Protocol pursuant to the Dubai Pathway.”³⁴

With the increasing momentum towards an international agreement to phase down HFCs, due to its size and projected growth (see

In November 2015, all 197 Parties to the Montreal Protocol agreed to the “Dubai Pathway” that launched formal negotiations to reach an HFC amendment in 2016.

Figure 2) the Indian market will be key to the development and penetration of low-GWP technologies. End-user leadership, including by the fast food industry, is fundamental to a successful transition of the Indian market to low-GWP technologies, and in achieving a quick phase-down of HFCs.

President Obama and Prime Minister Modi. Official White House photo by Pete Souza



MARKET FOR LOW-GWP TECHNOLOGIES

HFCs and hydrochlorofluorocarbons (HCFCs) are the most commonly used refrigerants in refrigeration and air conditioning systems throughout the world. However, due to innovation, development of new technologies, efficiency improvements, and regulatory pressure, the market penetration of low-GWP technology is increasing. While HFC-based refrigerants have GWPs ranging from hundreds to thousands of times higher than CO₂, low-GWP refrigerants, such as hydrocarbons (HCs), ammonia, CO₂, water, and air all have GWPs less than four, with some as low as zero.³⁵ Not only are these refrigerants climate friendly, they are achieving superior energy efficiency improvements compared to HFC based systems. In fact, due to these improvements, the market for low-GWP refrigerants is rapidly developing with projected annual growth of 11.5 percent between 2015 and 2020.³⁶ Already there is significant market penetration in

Europe, with over two million commercial units using hydrocarbon refrigerants installed over the last 20 plus years and all domestic refrigerators using hydrocarbons as of January 1, 2016.³⁷

Increasing market penetration by developing an Indian demand for low-GWP technologies will be critical to not only slashing emissions of HFCs, but also to enable companies to meet sustainability goals and cut operational costs

A 2012 survey conducted by the Indian Institute of Technology, Kharagpur (IIT Kharagpur Survey),³⁸ documented that awareness of low-GWP refrigerants and technology is high throughout India. Of the respondents, including 35 percent industry and 65 percent academia, all respondents agreed that India needs to switch from HCFCs and HFCs to natural refrigerants.³⁹ Additionally, 72 percent of respondents agreed it would be

better for Indian industry to leapfrog the use of HFCs and transition directly from HCFCs to natural refrigerants. Further, 81 percent of respondents knew that natural refrigerant solutions exist. In addition to awareness of natural refrigerants, many of the respondents also identified barriers to market penetration, with the most significant being legislation (policies and standards), funding and support, refrigeration and safety engineering, and supply and availability of components. Overcoming these barriers, while challenging, is achievable through good leadership in various sectors, particularly the food and beverage sector.

As awareness of low-GWP technologies grows, so does the development of these technologies in the global marketplace. For the majority of systems in use by the fast food industry, low-GWP alternatives using hydrocarbon and CO₂ as refrigerants have already been developed and commercially available. For example, several types of hydrocarbon units are already available throughout the Asia Pacific market, including hydrocarbon reach-in refrigerators and freezers, under-counter refrigerators and freezers, refrigerated prep tables, and merchandisers.⁴⁰ Soda fountain machines,⁴¹ ice cream machines, and ice machines⁴² using hydrocarbon refrigerants are also currently available on the market. Not only do systems that use hydrocarbon refrigerants have a lower direct climate impact through the use of low-GWP refrigerants, they also achieve lower indirect climate impacts through increased energy efficiency compared to their HFC equivalents.⁴³ These systems are thus a smart choice for sustainability and for company budgets.

Figure 1. Projected World Emissions of HFCs
Source: www.green-cooling-initiative.org/

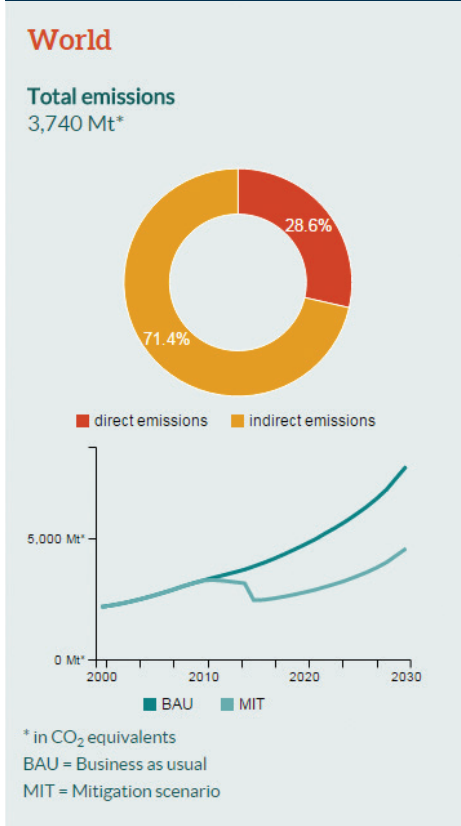
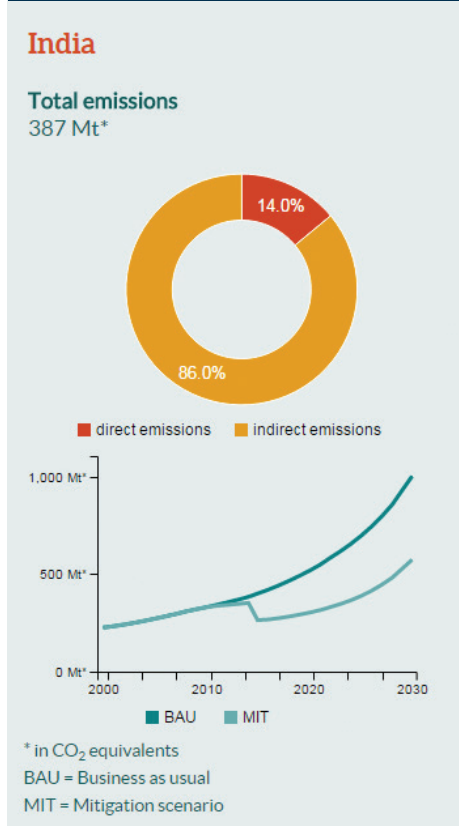


Figure 2. Projected Emissions of HFCs in India
Source: www.green-cooling-initiative.org/



THE ENERGY EFFICIENT SOLUTION

As the identified barriers are increasingly overcome, new energy efficient low-GWP technologies are progressively entering the Indian market, and the potential cost savings associated with investments in HFC-free cooling equipment could be substantial. These savings can have significant positive impacts on

By investing in energy efficient low-GWP equipment, companies can meet efficiency goals, reduce operating costs, and lessen the climate impacts of operations.

company budgets, helping to finance additional conversions to low-GWP equipment over time and allowing companies to allocate more resources to increasing growth and product

development. Efficiency in the refrigeration sector is not only important for company bottom lines, but also to indirect GHG emissions from electricity use. By investing in energy efficient low-GWP equipment, companies can meet efficiency goals, reduce operating costs, and lessen the climate impacts of operations.

As the world looks to find energy efficient equipment to reduce energy demand, converting to low-GWP cooling equipment holds huge and immediate promise. Energy efficient low-GWP equipment is already commercially available in nearly all sectors and more alternatives are being proven on a rapid basis. Producing this next generation of refrigeration and air conditioning equipment presents a major business opportunity for manufacturers and end-users, simultaneously delivering huge climate benefits and promoting sustainable development. There is a significant opportunity for India and Indian businesses to take advantage of this market development by immediately transitioning to these new technologies and leapfrogging

GLOBAL WARMING POTENTIAL (100 YEAR)

HFC-404A	LOW-GWP
3,990	0 - 4

outdated, climate-damaging HFC-based systems.

ENERGY SAVINGS IN RESTAURANT REFRIGERATION EQUIPMENT

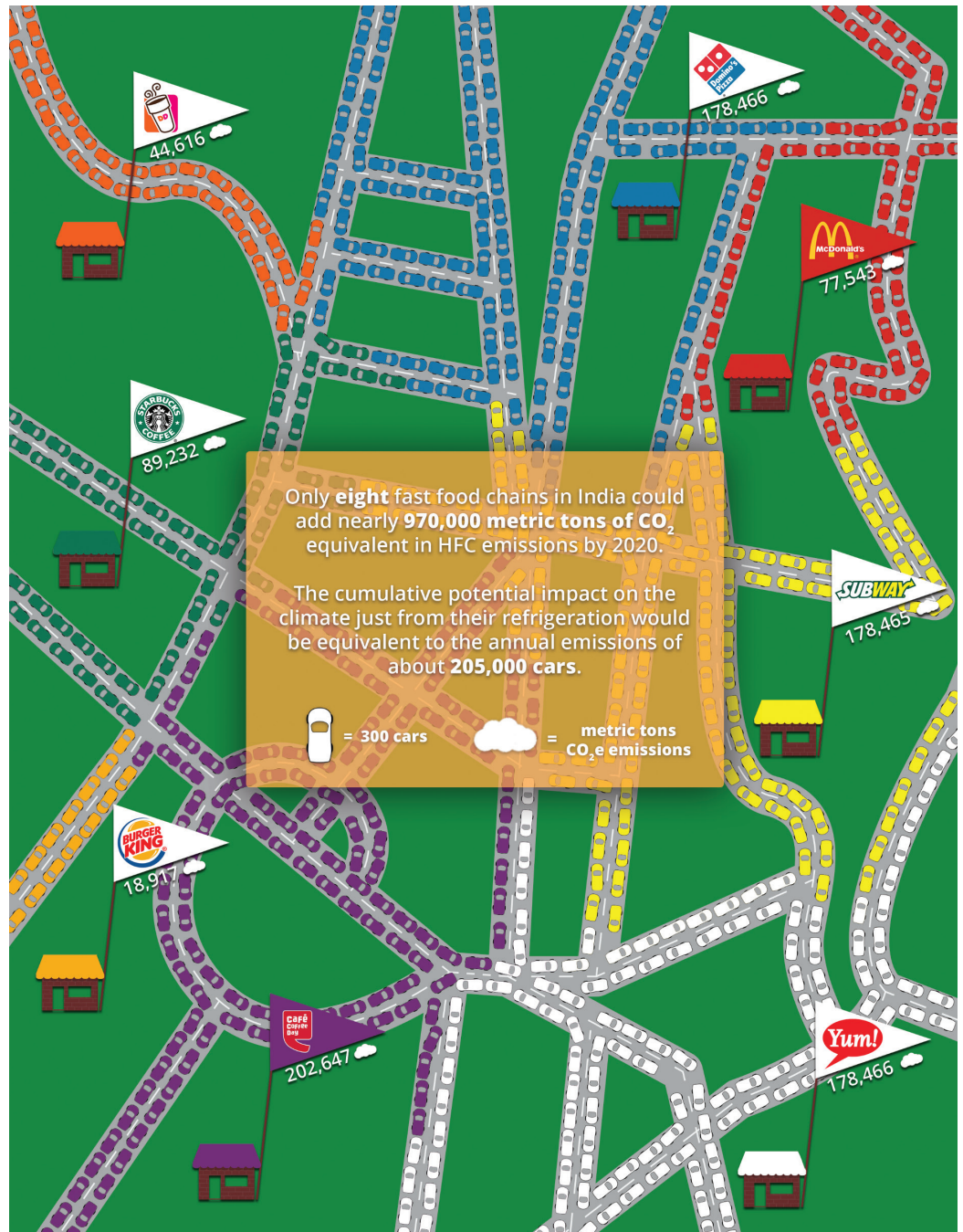
Energy consumption due to refrigeration equipment normally accounts for 9-12 percent of a restaurant's total energy use.⁴⁴ Therefore, investing in energy efficient low-GWP technologies can result in significant economic savings. CO₂ and hydrocarbon refrigerants have been the technologies of choice for many end-users transitioning to low-GWP, energy efficient equipment. Hydrocarbon based systems have been proven to work efficiently in high-ambient temperatures making them ideal for the hotter regions in India.⁴⁵ With nearly 2.7 million HFC-free light commercial refrigeration appliances are in use around the world, the technology has been proven and is ready for implementation in India.⁴⁶ Some hydrocarbon based systems are achieving more than 45 percent energy efficiency improvements compared to HFC-based systems,⁴⁷ with modern propane vertical freezers reaching 43 percent reduction in energy consumption compared to a HFC-404A systems.⁴⁸ A case study comparing energy use in a vertical freezer using HFC-507A and one using R-290 (propane) with a variable speed compressor, showed 38 percent less energy consumption and savings of \$1,260 over five years.⁴⁹ Transitioning all of the systems used at a fast food restaurant will multiply these benefits and lead to a significant return on investment, making it not only the best environmental choice but also the right economic choice.

2015 South Indian Floods. Image Credit: Indian Navy



KEY FINDINGS AND CLIMATE IMPACT

EIA compiled publicly available information for each of the companies listed below,ⁱⁱⁱ including current commitments, actions, and goals^{iv} relating to combatting climate change, and increasing sustainability within their operations. EIA evaluated each company's current and projected GHG footprint based on number of stores in operation in India, the average number of pieces of refrigeration equipment in each restaurant,^v the charge-sizes⁵¹ (in grams) of each piece of refrigeration equipment in use, and the type of refrigerant used in the various types of refrigeration equipment such as reach-in refrigerator and freezers, walk-in coolers and freezers, ice machines, under-counter refrigerator and freezers, refrigerated prep tables, fountain machines, and ice cream machines. These evaluations enabled EIA to calculate the total climate impact of the fast food companies, which are detailed in this report (see Figure 3).^{vi}



iii Information on EIA's methodology can be made available upon request.

iv Based on best available information on the date of writing.

v Due to the difficulty of obtaining each company's average number of refrigeration equipment, EIA based projections on publicly available information on average refrigeration equipment in use in McDonald's restaurants, which is 21 minus the HVAC system. The number of each type of refrigeration in each restaurant was estimated by comparing data from several sources. See citation 32 for information.

vi Does not include Coca-Cola, Hindustan Unilever, Nestle, or PepsiCo.

BURGER KING

Burger King, headquartered in Miami, Florida (USA) with Indian headquarters in New Delhi, operates more than 13,000 stores globally and entered the Indian market in 2014.⁵² Currently with approximately 52 restaurants in India,⁵³ Burger King has signaled that it intends to make India one of its largest markets globally and is projecting annual growth rates of 35-40 percent per year.⁵⁴ Burger King India's CEO stated in 2016, "it is aiming for another 35 to 40 [stores]."⁵⁵

COMMITMENTS AND ACTIONS:

- Established an energy management team working to research, identify, and implement energy reduction initiatives throughout its global operations⁵⁶
- Established a return on capital design, focused on energy efficiency to reduce heating and cooling costs⁵⁷

DOMINO'S PIZZA

Domino's Pizza headquartered in Ann Arbor, Michigan (USA) with Indian headquarters in Mumbai, has a significant footprint in India, with more than 1,004 restaurants⁵⁸ making the country its second largest market behind the United States.⁵⁹ Domino's India, franchised through Jubilant FoodWorks,⁶⁰ has signaled that it plans to build 150 new stores each year with hopes of reaching 1,500 to 2,000 restaurants by 2020.⁶¹ Domino's is the leader in the organized pizza market in India with a 72 percent market share.⁶²

COMMITMENTS AND ACTIONS:

- Not enough publicly available information on refrigerant choice or management
- Reports reducing power use by 580,000 kWhs annually by refrigeration in Southern California supply chain center
- Franchisee in Mumbai, India installed 200kW solar power plant in Supply Chain Center⁶³

DUNKIN' DONUTS

Headquarters in Canton, Massachusetts (USA), Dunkin' Donuts has more than 11,300 restaurants worldwide.⁶⁴ Dunkin' Donuts currently has 66 restaurants operating in India,⁶⁵ and its master franchisee, Jubilant FoodWorks, states the company is on track to meet its previously announced target of 500 restaurants over the long-term.⁶⁶ Currently, Dunkin' Donuts is one of the fastest growing brands in India.⁶⁷

COMMITMENTS AND ACTIONS:

- Recognize that company operations have an impact on the environment
- Committed to adopting better, more sustainable approaches whenever possible
- Upgraded vending machines at headquarters to machines with HFC-free insulation
- Established Dunkin' Donuts Green Achievement program⁶⁸
- Has a Power Down, Profit Up toolkit, which helps franchisees and construction managers identify ways to implement cost effective, energy reduction initiatives⁶⁹
- Produces information on its annual direct and indirect GHG emissions⁷⁰
- Goals for 2015-2016 - Energy and Climate:
 - Establish 2020 and 2025 energy and GHG emission reduction targets
 - Conduct a comprehensive review of energy reduction efforts in its corporate facilities for the period 2010-2016
 - Publish an interim progress report on Dunkin' Donuts Green Achievement in 2016, including baselines for energy and water use, reduction targets and achievements to date

McDONALD'S

McDonald's, headquartered in Chicago, Illinois (USA) with Indian headquarters in New Delhi, operates more than 35,000 stores around the world⁷¹ and has grown over three-fold in India between 2008 and 2013.⁷² McDonald's currently operates more than 369 stores throughout India⁷³ and plans to build up to 500 new stores in the next two years.⁷⁴ McDonald's Europe has installed over 13,500⁷⁵ pieces of HFC-free equipment since 2010, including meat freezers, frozen fry dispensers, blended ice machines, ice machines, juice dispensers, beverage system chillers, and display refrigerators.⁷⁶

COMMITMENTS AND ACTIONS:

- Believes climate change presents a significant global challenge that must be addressed
- Aspires to develop and operate the most environmentally-efficient McDonald's restaurants
- In 2003, opened world's first 100 percent HFC-free restaurant in Denmark⁷⁷ and is operating several more HFC-free stores in Denmark and Germany⁷⁸
- Since 2010, McDonald's Europe has installed more than 9,000 HFC-free equipment, including meat freezers, frozen fry dispensers, blended ice machines, ice machines, juice dispensers, and beverage chillers⁷⁹
- Has a goal to increase energy efficiency 20 percent by 2020 in company-owned restaurants in top markets, with a focus on restaurant design standards, equipment innovation and operational practices
- Its 2013-2014 Corporate Social Responsibility Report stated, "We have committed to working with our equipment suppliers to develop and implement hydrofluorocarbon (HFC)-free refrigerant solutions, where possible, to help reduce impacts to climate change."⁸⁰ In 2014 McDonald's reaffirmed its commitment stating, "We will also continue to work with our equipment suppliers to develop and implement HFC-free refrigerant solutions."⁸¹

STARBUCKS

Starbucks, headquartered in Seattle, Washington (USA), which operates over 20,000 stores in 64 countries, is currently expanding existing operations in India. Operating under a joint venture with Tata Global Beverages as Tata Starbucks Private Limited, the company has seen the fastest growth in its history since first opening in India in 2012 with rapid growth of over 40 stores in seventeen months.⁸² Starbucks believes India will become its fastest growing market.⁸³ In 2013, Starbucks CEO Howard Schultz stated Starbucks plans to "have thousands of stores" in India in the "not-too-distant future" and that India will take its "place alongside China as one of our two largest markets outside of North America."⁸⁴ With more than 80 percent of Starbucks' GHG emissions caused by the energy use in its operations, transitioning to energy efficient low-GWP refrigeration equipment could lead to significant decreases in energy use.⁸⁵ As of May 2016, Starbucks operated a total of 85 outlets in India.⁸⁶

COMMITMENTS AND ACTIONS:

- Founding member of the Business for Innovative Climate & Energy Policy (BICEP) Coalition, which advocates for smart climate policy both in the United States and internationally
- Reduce energy use in company-owned Starbucks stores by 25 percent compared to a 2008 baseline⁸⁷
- Developed a strategy to implement natural refrigerants into front and back of house refrigeration units⁸⁸
- Plans to transition more than 150,000 units to natural refrigeration equipment⁸⁹

SUBWAY

Subway, headquartered in Milford, Connecticut (USA), with Indian headquarters in Chennai, is the largest fast food chain by store count in the world with about 44,736 locations in 112 countries.⁹⁰ Subway is growing globally at a rate of 2,000 stores per year and already has over 500 stores in India⁹¹ with a target to build more than 2,000 stores over the next four years.⁹²

COMMITMENTS AND ACTIONS:

- Back counter chillers in the United Kingdom and Republic of Ireland use hydrocarbon-based refrigerants which saves more than 13 percent of energy than traditional systems⁹³

YUM! BRANDS

Yum! Brands, which includes Pizza Hut, KFC, and Taco Bell, is headquartered in Louisville, Kentucky (USA) with Indian headquarters in Gurgaon and is one of the largest and fastest growing companies in India.⁹⁴ In 2015, for the fifth successive year, the company was on track to build more than 100 new stores and since has grown three times in size over the last five years,⁹⁵ with 811 stores.⁹⁶ Yum! Brands expects to have 2,000 stores in India by 2020.⁹⁷

COMMITMENTS AND ACTIONS:

- Participant in the Carbon Disclosure Project reporting since 2010
- Exceeded its goal to reduce energy consumption by 15 percent in company-owned restaurants by the end of 2015 by reducing energy consumption by 17 percent total⁹⁸

ADDITIONAL CONSIDERATIONS

CAFÉ COFFEE DAY

Indian-based company, Café Coffee Day is headquartered in Bangalore and is a fast growing coffee chain restaurant with over 1,556 stores⁹⁹ in India and projections of 10-15 new stores per month.¹⁰⁰ Currently, it has the largest footprint of any coffee chain in India with approximately 27 percent of the organized café market and by 2020 is estimated to have 36 percent of the total market.¹⁰¹ Due to Café Coffee Day's large presence in India, its climate impact was included in this report's climate impact findings and the above infographic.

COMMITMENTS AND ACTIONS:

- Ensure environmental sustainability, ecological balance, protection of flora & fauna, agro-forestry, conservation of natural resources and maintaining of soil, air and water by facilitating capacity building and promoting sustainable agriculture practices by their major coffee suppliers¹⁰²

COCA-COLA

Coca-Cola, headquartered in Atlanta, Georgia (USA) with Indian headquarters in New Delhi, has stated that from 2012 to 2020 it is planning an additional \$3 billion USD investment to support long-term growth in India,¹⁰³ with plans to invest in the expansion of its distribution network, cold drink equipment placement and augmentation of manufacturing capacity,¹⁰⁴ Coca-Cola is poised for significant growth throughout the Indian market. As of 2015, Coca-Cola had more than 1.4 million HFC-free coolers in India, the majority of which are using CO₂ as the refrigerant.¹⁰⁵ With more than 10 million vending machines and coolers in the global market, replacing all of these with CO₂ refrigerant would result in mitigating 52.5 million metric tons CO₂e emissions which is equivalent to taking 11 million cars off the road for a year.¹⁰⁶

COMMITMENTS AND ACTIONS:

- Member of Refrigerant, Naturally!¹⁰⁷
- Pledged to eliminate HFCs from new cooling equipment by 2015¹⁰⁸
- Members of the Global Food Cold Chain Council and the Global Refrigerant Management Initiative, which has committed to:¹⁰⁹
 - Reduce the use and emissions of high-GWP HFCs and emissions of HFCs from servicing from 30-50 percent within 10 years
 - Enhance energy efficiency
- Set emission reduction targets in line with climate science with commitments to:¹¹⁰
 - Reduce absolute GHG emissions from their core business operations by 50 percent by 2020 based on 2007 levels
 - Reduce GHG emissions by 33 percent by 2020 based on 2007 levels

HINDUSTAN UNILEVER

Unilever, headquartered in London, United Kingdom, with Hindustan Unilever headquartered in Mumbai, has over 30 factories in India with products available in over seven million retail outlets.¹¹¹ Hindustan Unilever's brands include ice cream brands, such as Magnum and Kwality Wall's. Additionally, Hindustan Unilever operates cold storage warehouses throughout India and has ice cream cabinet refrigerators throughout the country. Globally, as of 2016, Unilever had more than 2 million HFC-free freezers in use.¹¹²

COMMITMENTS AND ACTIONS:

- Member of Refrigerant, Naturally!¹¹³
- Has committed to setting set emission reduction targets in line with climate science (Science Based Targets)¹¹⁴
- Partner in the Carbon Pricing Leadership Coalition¹¹⁵
- Committed to decoupling its growth from its environmental footprint¹¹⁶
- Deepening efforts to lower GHG impact from sourcing and manufacturing, and through innovation and behavior change
- Plans to use its scale, influence and resources to create transformational change
- As of 2014, deployed 3,761 HFC-free refrigeration cabinets in the United States using natural refrigerant technology¹¹⁷

NESTLÉ

Nestlé, headquartered in Geneva, Switzerland with Indian headquarters in Gurgaon, is the world's largest food and beverage company.¹¹⁸ Nestlé operates eight manufacturing facilities in India and provides several dairy, beverage, food, and vending products on the Indian market requiring refrigeration.¹¹⁹ Movenpick Ice Cream, owned by Nestlé, sees India as one of its top 10 markets over the next five years.¹²⁰

COMMITMENTS AND ACTIONS:

- Has committed to setting set emission reduction targets in line with climate science¹²¹
- Pledged to reduce its greenhouse gas emissions in its factories by 35 percent compared to 2005 baseline by the end of 2015^{122, 123}
- As of 2013, Nestlé had introduced 18,000 natural refrigerant hydrocarbon freezers worldwide¹²⁴
- Invested more than \$247 million to replace synthetic refrigerants with natural alternatives in more than 92 percent of its industrial refrigeration systems¹²⁵
- Pledged to invest more than \$61 million in energy efficiency efforts¹²⁶
- Pledged to phase out HFC refrigerants by 2016 and replace them with non-HFC refrigerants throughout Europe¹²⁷

PepsiCo

PepsiCo, headquartered in Purchase, New York (USA) with Indian headquarters in Gurgaon, has seen significant growth in India with revenue in the double digits for most of 2014 making it the company's fastest growing emerging market.¹²⁸ Further, PepsiCo has signaled that India is a high-priority market for the company.¹²⁹ PepsiCo has over 42 plants throughout India, in addition to vending machines and beverage coolers throughout the country.¹³⁰

COMMITMENTS AND ACTIONS:

- Member of Refrigerants, Naturally!¹³¹
- Recognize that limiting global warming to 2° Celsius is absolutely critical to the future
- Called for collective action and committed to implementing solutions that will help achieve the goal of limiting warming to 2° Celsius
- All future point of sale equipment (coolers, vending machines and fountain dispensers) purchased in the United States will be HFC-free by 2020
- Since 2009, PepsiCo has purchased more than 290,000 HFC-free pieces of equipment around the world¹³²
- Since 2010, all PepsiCo equipment has been using 100 percent HFC-free insulation and foam¹³³
- Announced a goal to be HFC-free in all future point-of-sale equipment (coolers, vending machines and fountain dispensers) purchased in the United States by 2020¹³⁴
- India-specific:¹³⁵
 - Improve electricity use efficiency by 20 percent per unit of production by 2015
 - Commit to an absolute reduction in GHG emissions across global operations

NEXT STEPS

Although this report is based upon the best available data and information in the public domain, additional data gathering and information is necessary to increase accuracy and thoroughness of the information contained in the report. Additionally, the scope of the report is limited to on-site refrigeration, thus further information on each company's cold storage, transport refrigeration, and air conditioning use would be beneficial and increase both the direct and indirect GHG mitigation that can be achieved by transitioning the fast food retail sector to low-GWP equipment. Furthermore, it would be beneficial to the fast food industry, as well as the refrigeration industry servicing fast food companies, to state their HCFC and HFC usage in annual reports and identify the barriers the companies are encountering that are slowing transitions to low-GWP technologies.

CONCLUSION

While the majority of companies highlighted in this report were found to have sustainability commitments based on decreasing their GHG emissions by improving the energy efficiency of their equipment, only a few of the companies specifically stated their intention to transition to low-GWP technologies. None of the companies have made explicit statements related to investing in low-GWP refrigeration technologies in their operations in India. The direct GHG emissions of these companies' operations in India, if they do not transition refrigeration to low-GWP technologies, will have the approximate equivalent climate impact of burning about 472 million kilograms of coal. In addition to the large direct GHG emissions from these companies, if there is no transition to low-GWP technologies, there will also be increased indirect emissions due to energy efficiency losses of HFC-based

systems compared to low-GWP technologies. Fast food companies operating in India have a significant opportunity to meet sustainability goals, reduce GHG emissions, increase the efficiency of operations, and provide leadership to the Indian market by transitioning to low-GWP technologies in new stores and in new equipment placed in existing stores and beverage or ice cream dispensers. These global companies also have a responsibility to ensure that their growth in emerging markets such as India does not lead to a corresponding surge in the use of HFCs. It is therefore vital that these companies make strong efforts to manage their refrigeration footprint and contribute to India's mitigation efforts.

Recommendations

FAST FOOD COMPANIES AND BEVERAGE RETAILERS MUST make a commitment to combating climate change and contributing to fast-mitigation by:

1. Installing at least 1 percent of equipment that is HFC-free in stores and beverage dispensers throughout India by January 1st, 2018
2. Publicly committing to not install new HFC equipment in all new stores built as of January 1, 2019
3. Providing a date by which HFCs will be phased out in refrigeration equipment throughout the supply chain
4. Developing and publicly sharing by January 1st 2018 a plan to transition existing refrigeration equipment to low-GWP technologies over time and developing a refrigerant management policy that mandates the following:
 - An inventory of all systems that use refrigerant and respective refrigerant charge

- Conducting at least annual leak checks and promptly repairing all leaks
 - Keeping a record of all refrigerant leaks, repairs, and refrigerant recycling or disposal
 - Installing of doors on all refrigeration retail equipment
 - Using reclaimed HCFC or HFC refrigerants, where and whenever feasible when servicing existing equipment
 - Proper disposal and destruction of all equipment and refrigerants during servicing and at end-of-life
5. Joining 'Refrigerants, Naturally!' initiative, which encourages big companies to switch from climate damaging gases to natural low-GWP refrigerants
 6. Including language incentivizing transitions to HFC-free/low-GWP technologies and development of best refrigerant management practices in all green/sustainability related company programs

INDIAN GOVERNMENT SHOULD:

1. Ban the use of HFCs with a GWP higher than 1000 in new food and beverage refrigeration equipment from 1st January, 2018 in multinational food and beverage retailers
2. Support fast food and beverage retailers' ability to transition to HFC-free technology by increasing support in the RAC installation and servicing sectors especially for training on working with new low-GWP refrigerant containing equipment
3. Mandate responsible disposal and destruction of all equipment and refrigerants at end-of-life by multinational fast food and beverage retailers
4. Mandate annual reporting of leaks and emissions of refrigerants from large fast food and beverage retailers

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EIA – WASHINGTON, DC

PO Box 53343, Washington, DC 20009, USA

TEL +1 202 483 6621

FAX +1 202 986 8626

EMAIL info@eia-global.org

www.eia-global.org

