Cooling for All

Energy Efficiency Training Week

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International Energy Agency

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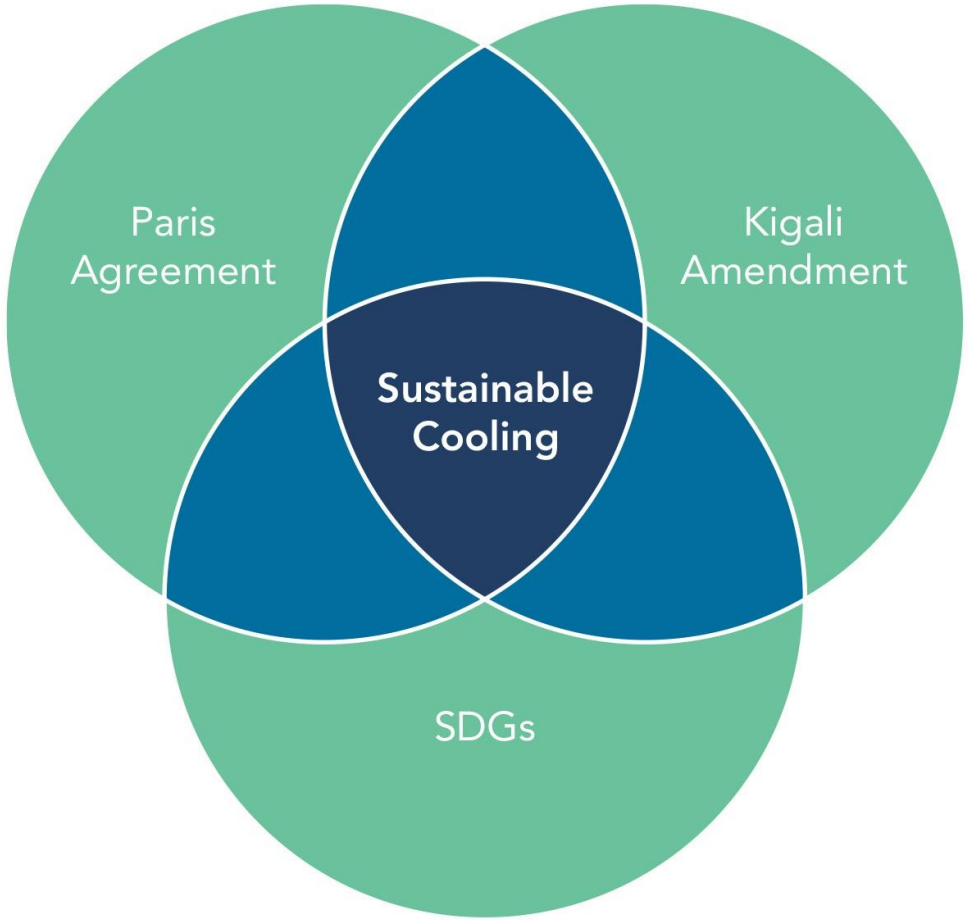
Cooling is at the intercept of the Kigali Amendment, Paris Agreement and SDGs



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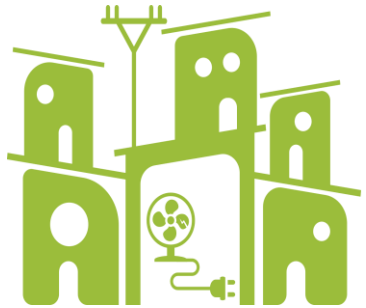
THE COOLING CHALLENGE | MORE THAN AIR CONDITIONERS

- Access to Cooling is about **equity, productivity and sustainability**
- **Blind spots**: the rural poor and slum dwellers require urgent solutions for sustainable cooling

Consumer Populations:

Rural poor

470 million
Electricity access
Poverty



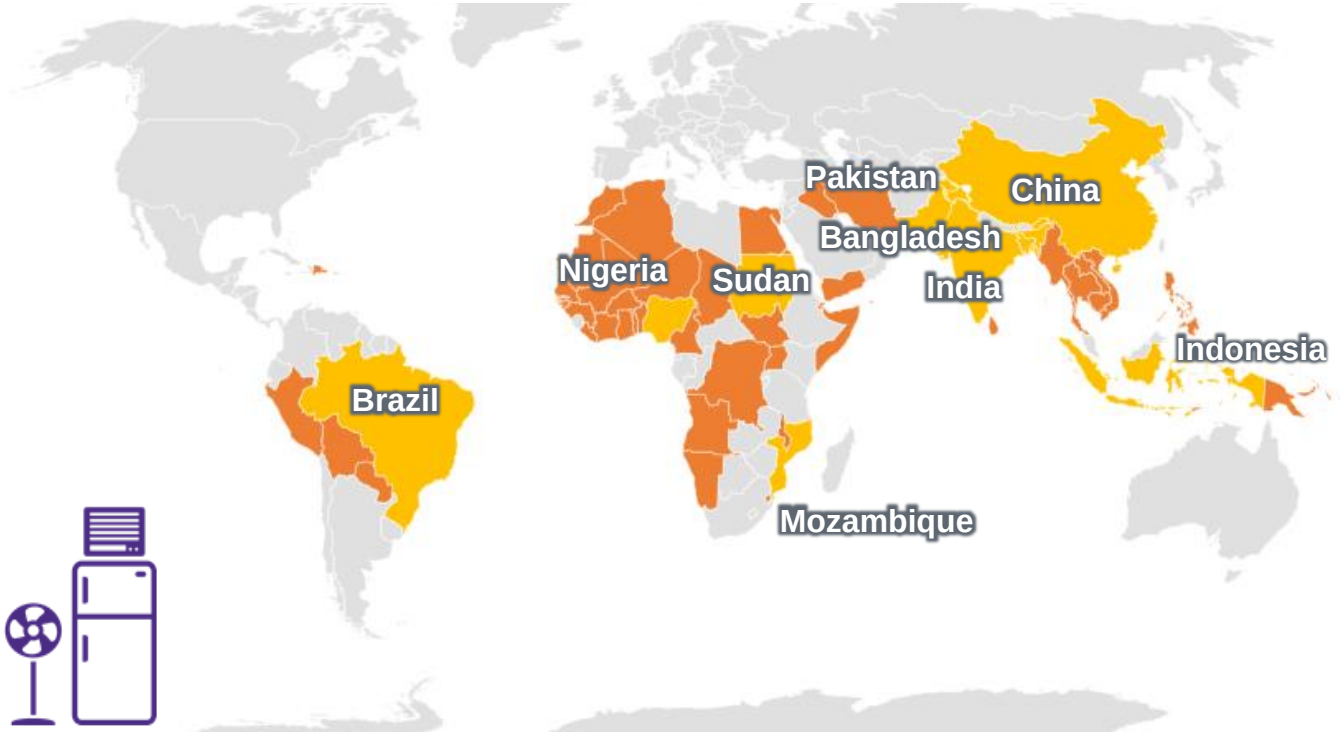
Slum dwellers

630 million
Dwelling quality

Carbon Captives

2.3 billion
Income

52 Countries with Populations at Risk



- 43 of 52 countries with populations at risk
- 9 of 52 countries facing largest risks

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THE COOLING CHALLENGE | A SPECTRUM OF RISKS

High risk

- No access to electricity
- Income below poverty line
- Poor ventilation and construction
- No access to refrigeration for food
- Farmers lack access to controlled cold chains
- Vaccines exposed to high temperatures

Medium risk

- Access to intermittent electricity
- Lower income levels
- Buildings constructed to older standards, ability to run a fan
- Farmers have access to intermittently reliable cold chains
- Vaccines may have exposure to occasional high temperature

Low risk

- Full and stable access to electricity
- Middle income and higher
- Well built home, can include insulation, passive design, air conditioning
- Food is refrigerated reliably
- Farmers' goods and vaccines have well controlled cold chains

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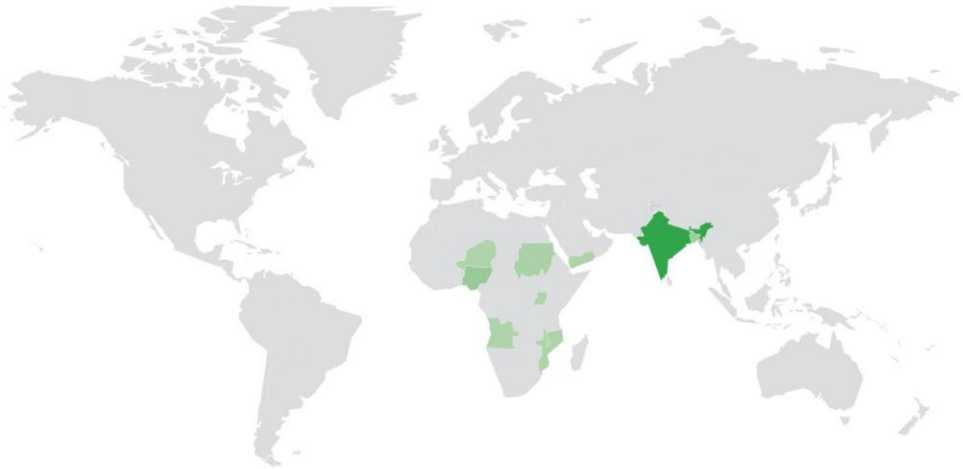
THE RURAL POOR : APPROXIMATELY 470 MILLION



7.1 POPULATION (IN MILLIONS) 226.3

- Likely to live below the poverty line and lack access to electricity
- Subsistence farmers unlikely to have access to intact cold chains
- Local medical clinics unlikely to have cold storage

10 COUNTRIES WITH THE LARGEST RURAL POOR POPULATIONS:

1. India
2. Nigeria
3. Bangladesh
4. Sudan
5. Mozambique
6. Niger
7. Malawi
8. Uganda
9. Angola
10. Yemen

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THE RURAL POOR : POTENTIAL SOLUTIONS

- Off-grid solar home systems to support fans, refrigerators
- Cold storage and pre-cooling for transportation and sale of goods
- Solar refrigeration and “last mile” transport for vaccines
- Public cooling centers and local heat action plans

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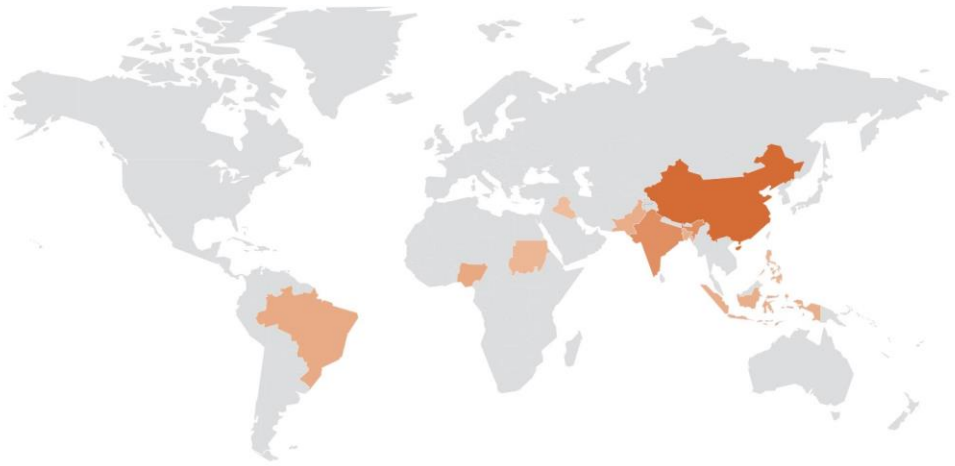
THE SLUM DWELLER : APPROXIMATELY 630 MILLION



11.8 POPULATION (IN MILLIONS) 192.2

- May have access to electricity but housing quality is very poor, income may not be sufficient to purchase or run a fan
- May own or have access to a refrigerator, but intermittent electricity can spoil food and increase risk of food poisoning
- Likely to have access to safe vaccines where health services exist

10 COUNTRIES WITH THE LARGEST SLUM DWELLER POPULATIONS:

1. China
2. India
3. Nigeria
4. Brazil
5. Pakistan
6. Bangladesh
7. Indonesia
8. Philippines
9. Sudan
10. Iraq

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SLUM DWELLERS : POTENTIAL SOLUTIONS

- Passive cooling through design and retrofit
- Cool roofs and walls
- Financing instruments that enable acquisition of energy efficient fans or refrigerators
- Public cooling centers and local heat action plans

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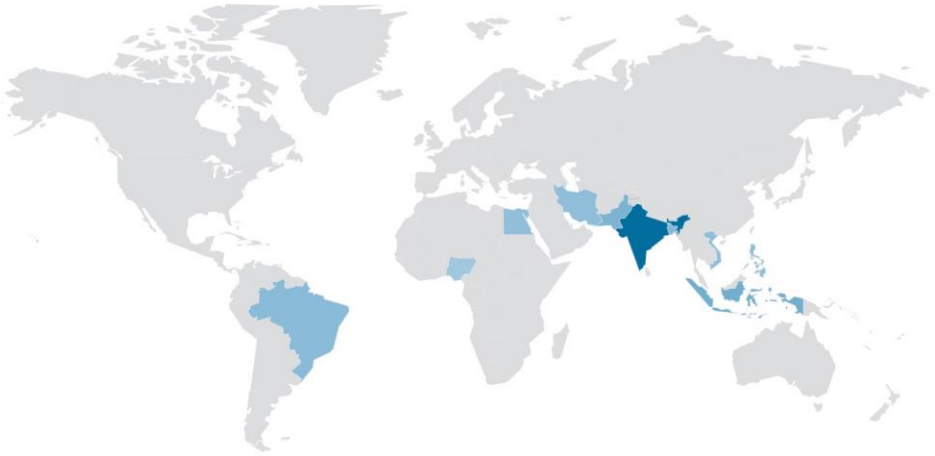
THE CARBON CAPTIVE : APPROXIMATELY 2.3 BILLION



51.6 POPULATION (IN MILLIONS) 997.5

- Increasingly affluent lower-middle class on the brink of purchasing the most affordable AC
- Limited purchasing choices favor currently inefficient devices and could cause dramatic increase in energy consumption and GHG emissions
- Likely have access to intact food and vaccin cold chains

10 COUNTRIES WITH THE LARGEST CARBON CAPTIVE POPULATIONS:

1. India
2. Indonesia
3. Pakistan
4. Bangladesh
5. Brazil
6. Vietnam
7. Phillipines
8. Iran
9. Egypt
10. Nigeria

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CARBON CAPTIVES : POTENTIAL SOLUTIONS

- Minimum energy performance standards for appliances
- Enforced building codes
- Enhanced use of vegetation and ventilation, including green roofs

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ACCESS TO COOLING | MOVING FORWARD

All countries produce more granular data to measure access to cooling gaps

Finance and technical assistance for access to cooling solutions, including through National Cooling Action Plans

Engage industry and finance to scale-up affordable and sustainable technologies

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COOLING FOR ALL | NEEDS ASSESSMENT

An Issue:

- To date, discussions and solutions focus on projections for equipment sales, GDP and population without considering the full diversity of cooling needs that are necessary to provide access to sustainable cooling for all.

An Opportunity:

- The **Cooling for All Needs Assessment** is a tool recommended for governments, development institutions, and NGOs to measure the full spectrum of cooling needs and the policy, technology, and finance measures to address those needs

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COOLING FOR ALL | NEEDS ASSESSMENT

Human Comfort and Safety

- To what extent does the population have access to space and mobility cooling to maintain safety and productivity, at home, at school, at work and while moving between each?

Food, Nutrition Security and Agriculture

- Do people have access to nutritious food to achieve a healthy diet?
- Are agricultural and fisheries incomes from delivering safe food sufficient to keep workers out of absolute and relative poverty?

Health Services

- Are national vaccine programs reaching their target population?
- Is there an unbroken cold-chain for medicine and healthcare products?
- Are health infrastructure buildings equipped with the cooling to deliver adequate health services?

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COOLING FOR ALL | NEEDS ASSESSMENT

Key Actors

- National Ozone Units (Ministries of Environment)
- And many other Ministries:
  - Such as Agriculture, Economic Development, Energy, Health, Housing, Public Works, Science and Technology, Transportation, Urban Development
- Domestic and international cooling industry

Cooling for All Needs Assessment

Available in November 2019 at **SEforALL.org/CoolingforAll**

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