

A high-angle, long-exposure photograph of a busy street in India. The street is filled with traffic, including a prominent green bus in the center, several yellow taxis, and many motorcycles. Pedestrians are visible on the sidewalks, and the street is lined with buildings and various signs, including a 'Male' sign. The overall atmosphere is one of a densely populated and active urban environment.

 clasp The role of energy efficiency
towards global carbon-neutral
goals

378 #gu9ct

Lei Zeng
November 7, 2024

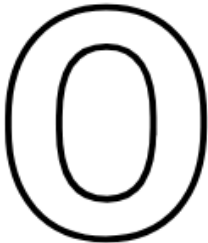


MISSION

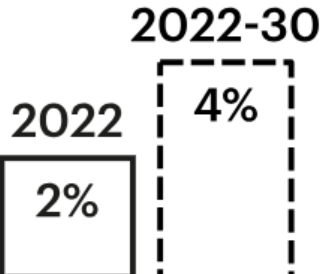
CLASP improves the energy and environmental performance of the appliances & equipment we use every day, accelerating our transition to a more sustainable world.

Stocktake agreement in COP28 addressed a large, critical, urgent need for Net Zero Emissions

Double the global average annual rate of energy efficiency improvements by



A critical step on the path to net zero

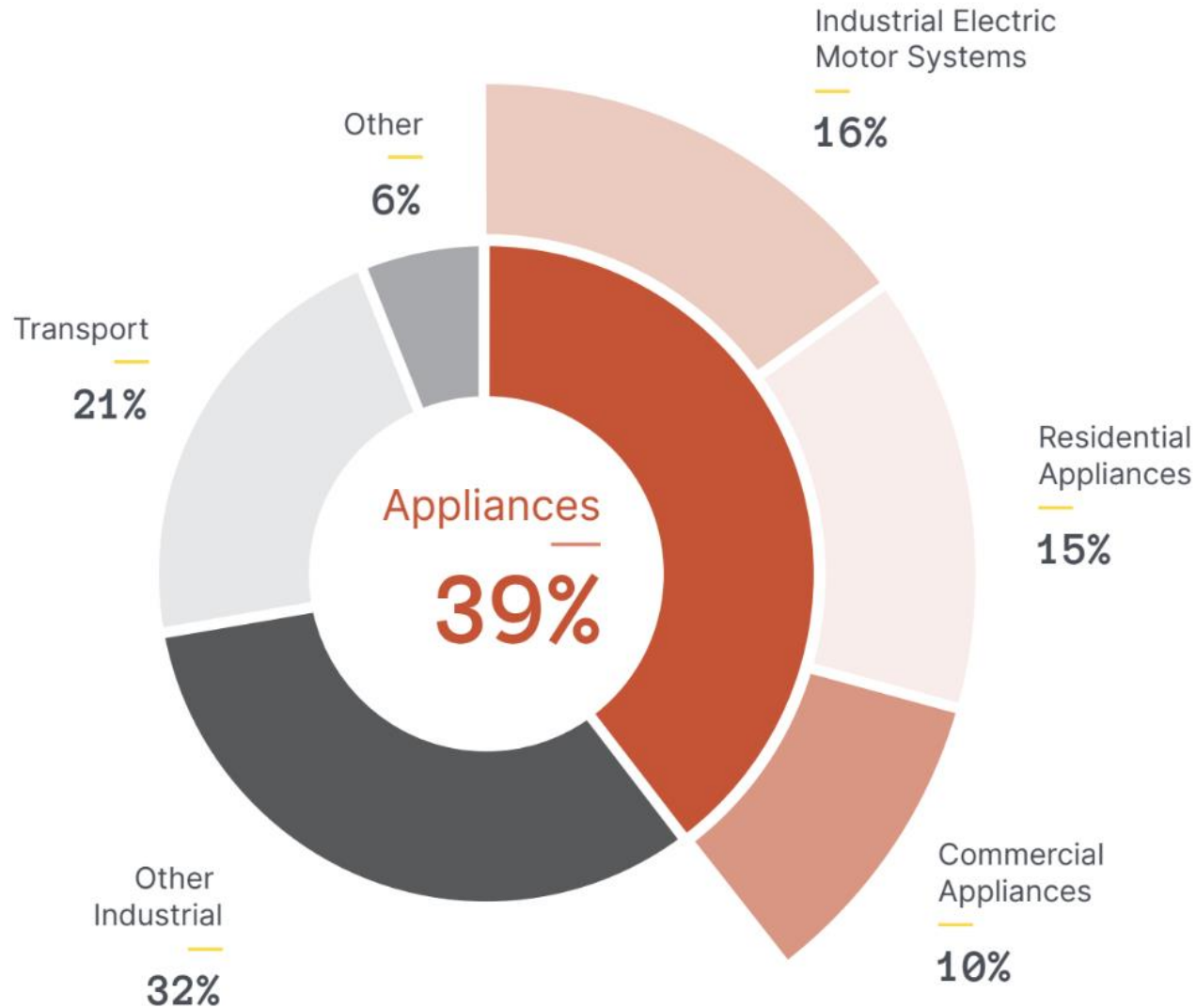


Global annual progress on energy intensity doubles this decade



The target is global, all countries have a part to play

Appliances have a major impact on our climate



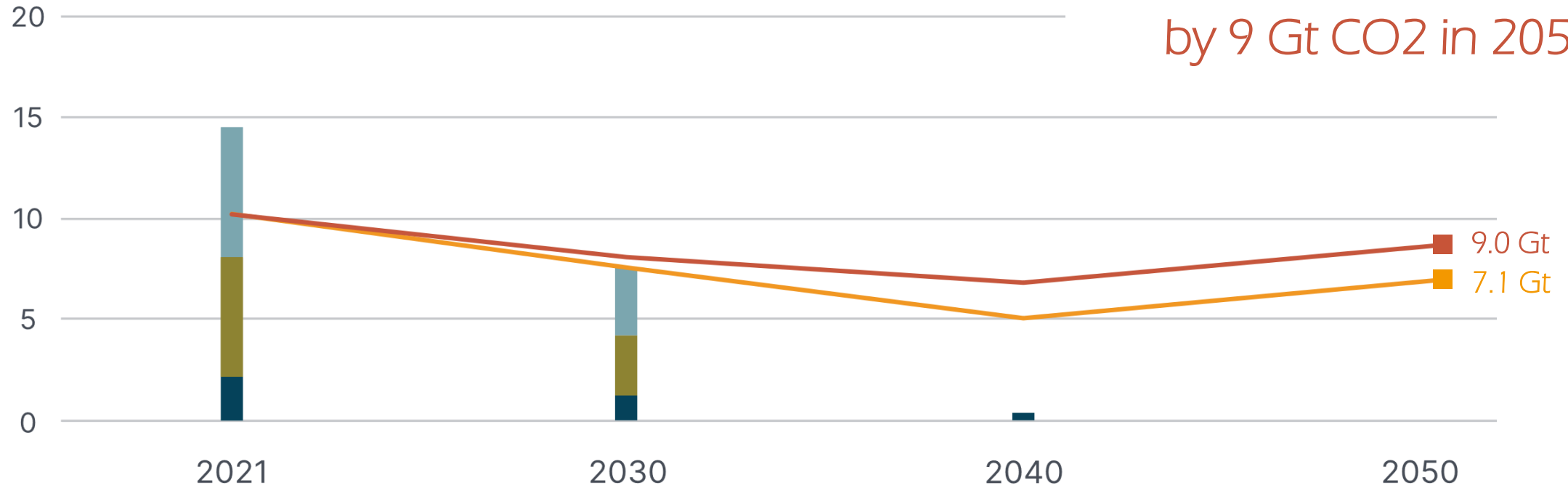
Appliances are responsible for **39.3%** of energy-related CO₂ emissions.

These emissions are equal to roughly the total CO₂ emissions from **China, Europe, and Brazil**.

CO₂ Emissions Under Business as Usual (BAU) & Global Benchmarks Scenario

Under business as usual, appliances would overshoot Net Zero Emissions by 9 Gt CO₂ in 2050

CO₂ Emissions (Gt)



- Residential and Commercial Net Zero Indirect Emissions Target from IEA
- Industrial Electric Motor Systems Net Zero Target from IEA
- Residential Net Zero Direct Emissions Target from IEA

- Global Benchmarks
- Business as Usual

A clear pathway
to planet- and
people-friendly
appliances exists

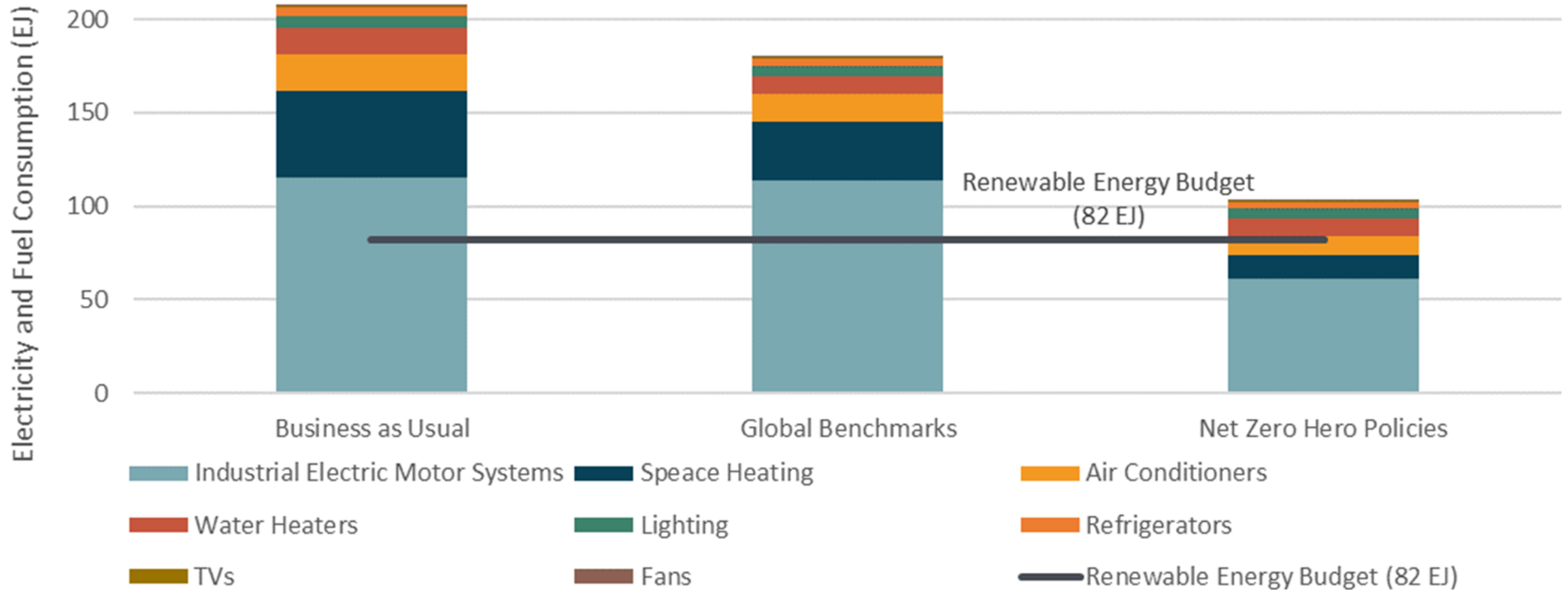
CLASP has identified the ten appliances that should
form the basis of an unprecedented efficiency push:

THE NET ZERO HEROES



Net Zero Hero Targets

Ambitious policy targets get appliances within 21 EJ of the renewable energy budget in 2050.



A clear, achievable pathway to Net Zero pathway through action on appliance energy efficiency

10

Improved efficiency of key appliance would **AVOID 9.2 Gt** of CO₂ in 2050 relative to BAU, enabling appliances to do their part in meeting IEA's Net Zero goal

In its Net Zero Heroes, CLASP offers specific, implementable recommendations for actions

Governments

Manufacturers & Distributors

Donors & Financial institutions

Civil society

Potent products

- Several products dominate energy use, emissions, and other impacts
- Addressing them in one place can create spillovers elsewhere:
 - Global conventions and pledges
 - Targeting major manufacturers
 - Product recognition



Industrial motors: 69% of industrial electricity



Cooling: 5% of buildings energy but growing



Heating: 32% of buildings energy; electrification will reduce methane



Lighting: 6% of buildings energy; mercury reduction



Cooking: health benefits from indoor air quality



LED LIGHTING

TARGET

- Completely phase out fluorescent and incandescent lighting by 2025
- Double the luminous efficacy of new LEDs by 2030 to take advantage of rapid technological improvement

2040 MITIGATION
RELATIVE TO BAU

0.2Gt CO₂

2050 MITIGATION
RELATIVE TO BAU

0.03Gt CO₂

OTHER BENEFITS

- **Eliminate mercury pollution** from production, breakage, and disposal of fluorescent lighting
- **Reduce waste** due to longer LED lifetimes

AIR CONDITIONERS

TARGET

- Double the efficiency of new units by 2030
- Transition to low-GWP refrigerants in accordance with the Kigali Amendment to the Montreal Protocol

2040 MITIGATION
RELATIVE TO BAU

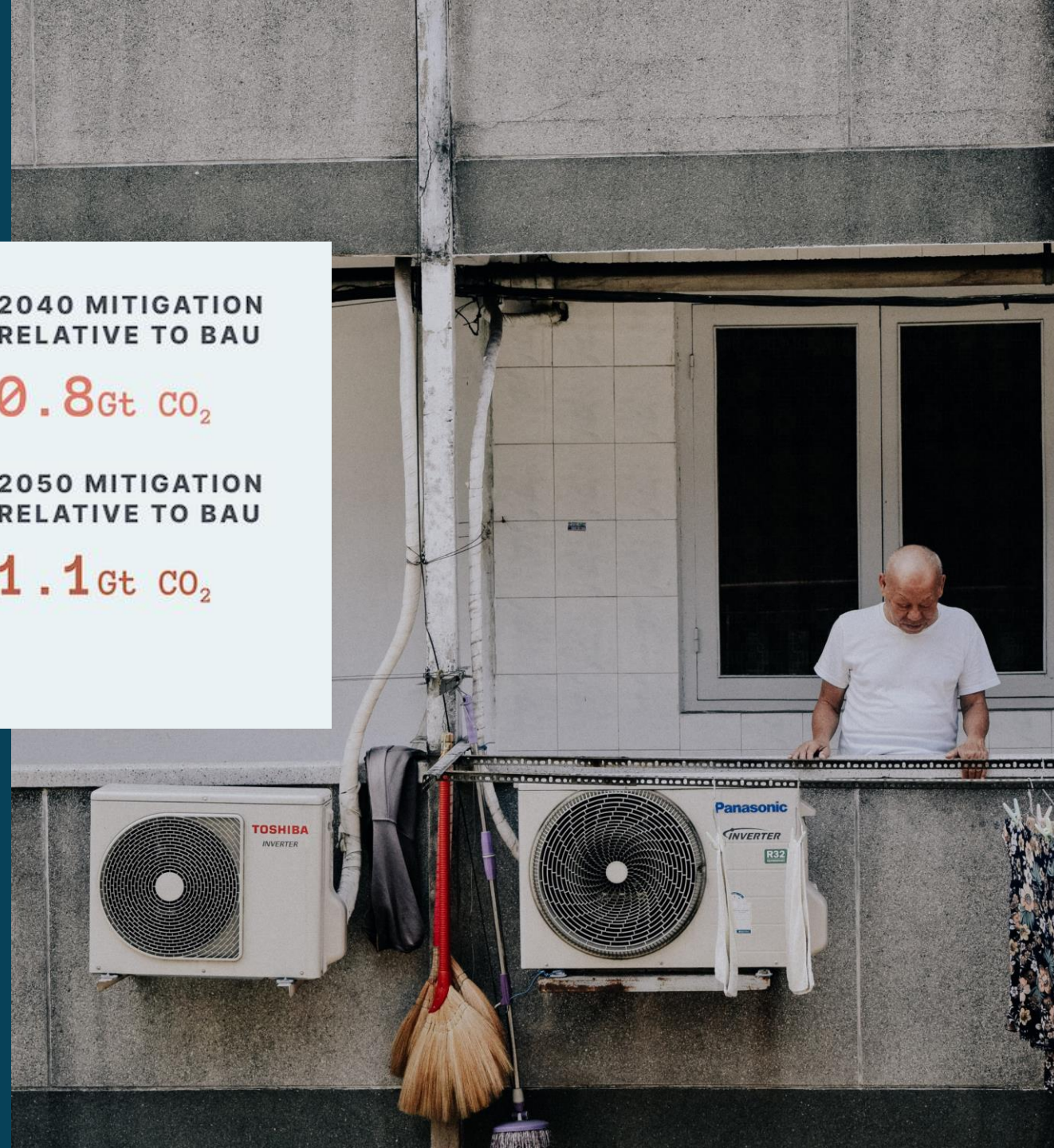
0.8 Gt CO₂

2050 MITIGATION
RELATIVE TO BAU

1.1 Gt CO₂

OTHER BENEFITS

- 123 million people with first access
- 116 million people with improved thermal comfort
- 93 million people with improved health and wellbeing





REFRIGERATOR-FREEZERS

TARGET

- Double the efficiency^{xxxiii} of new units by 2030¹¹⁹

2040 MITIGATION
RELATIVE TO BAU

0.1 Gt CO₂

2050 MITIGATION
RELATIVE TO BAU

0.2 Gt CO₂

OTHER BENEFITS

- 262 million people with first access
- 39 million people with improved quality of life
- 29 million people with improved food security and nutrition

COMFORT FANS

TARGET

- Require permanent-magnet motors in new table, ceiling, and pedestal fans by 2025

2040 MITIGATION
RELATIVE TO BAU

0.04 Gt CO₂

2050 MITIGATION
RELATIVE TO BAU

0.03 Gt CO₂



HEAT PUMPS

TARGET

- Stop sales of fossil fuel equipment to fully transition stock to heat pumps by 2050

2040 MITIGATION
RELATIVE TO BAU

1.2Gt CO₂

2050 MITIGATION
RELATIVE TO BAU

1.8Gt CO₂

OTHER BENEFITS

- Eliminate methane leakage from space heating
- Reduce outdoor air pollution





HEAT PUMP WATER HEATERS

TARGET

- Stop sales of fossil fuel equipment to fully transition the stock of storage water heaters to heat pumps and solar thermal by 2040

2040 MITIGATION
RELATIVE TO BAU

0.2Gt CO₂

2050 MITIGATION
RELATIVE TO BAU

0.3Gt CO₂

OTHER BENEFITS

- Eliminate methane leakage from water heating
- Reduce outdoor air pollution

INDUSTRIAL MOTORS

TARGET

- Double the efficiency^{xxxiv} of new industrial motor systems (controls, motor, and motor-driven equipment) by 2030¹²⁰
- Greatly accelerate the replacement rate of existing stock by 2030 to achieve full replacement by the most efficient motors (IE5) by 2035

2040 MITIGATION RELATIVE TO BAU

3.4 Gt CO₂

2050 MITIGATION RELATIVE TO BAU

5.1 Gt CO₂

OTHER BENEFITS

- Improved industrial competitiveness, productivity, and quality control





ELECTRIC COOKING

TARGET

- Fully transition to electric cooking worldwide^{xxxv}

2040 MITIGATION
RELATIVE TO BAU

0.4Gt CO₂

2050 MITIGATION
RELATIVE TO BAU

0.4Gt CO₂

OTHER BENEFITS

- 3.7 million premature deaths avoided annually
- 0.7 million fewer people with asthma
- Improved respiratory and heart health
- Time savings and reduced deforestation by eliminating the need to gather firewood
- Eliminate methane leakage from cooking

TELEVISIONS



TARGET

- Require efficiency levels to be 11-13% better than European Union (EU) 2023 requirements by 2025

2040 MITIGATION
RELATIVE TO BAU

0.03Gt CO₂

2050 MITIGATION
RELATIVE TO BAU

0.02Gt CO₂

SOLAR WATER PUMPS

TARGET

- Fully transition to electric water pumping for irrigation^{xxxvi}

2040 MITIGATION
RELATIVE TO BAU

0.4 Gt CO₂

2050 MITIGATION
RELATIVE TO BAU

0.4 Gt CO₂

OTHER BENEFITS

- **98 million** people with improved food security
- **15 million** smallholder farmers with yield increases >30%
- **0.85 million** new jobs in the agricultural sector
- **\$100 USD billion** in fuel costs savings annually



JUST
LAUNCHED



The **Net Zero Appliances NDC Toolkit** helps governments incorporate climate-friendly targets for appliance efficiency into Nationally Determined Contributions (NDCs) to the Paris Agreement.

**NET ZERO
APPLIANCES NDC
TOOLKIT**





Efficient Appliances for People & the Planet



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THANK YOU!