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Cabo Verde

Net Zero Appliance Factsheet

September 2024

ABOUT

This fact sheet summarizes the climate, energy, and economic impacts of appliance energy efficiency improvements in Cabo Verde and contains recommendations for how to integrate net zero appliance targets into Nationally Determined Contributions (NDCs) 3.0. The data presented in this factsheet are reproduced from Mepsy, CLASP's appliance and equipment impact calculator:https://www.clasp.ngo/tools/mepsy/.

This fact sheet is a component of CLASP's Net Zero Appliances NDC Toolkit. The toolkit outlines the multiple benefits of appliance efficiency, summarizes how appliances have been included in NDCs to date, and contains recommendations for including appliance efficiency in NDCs 3.0 with two illustrative examples:https://www.clasp.ngo/tools/ndc-appliance-efficiency-toolkit.

If you are a policymaker who needs assistance incorporating appliance efficiency into an NDC, reach out to CLASP for support: ndcs@clasp.ngo.

BENEFITS OF NET ZERO APPLIANCES IN CABO VERDE

Appliances are a large and growing contributor to CO_2 emissions in Cabo Verde:

- Appliance-related CO_2 emissions were 0.105 megatons (Mt) in 2021, 15% of total emissions[1]
- Appliance energy demand will increase by 49% from 0.217 terawatt hours (TWh) in 2025 to 0.323 TWh in 2035 under business as usual
- Appliance-related CO_2 emissions will increase by 32% from 0.125 Mt in 2025 to 0.166 Mt in 2035

Efficient appliances are vital climate and sustainable development solutions. Meeting targets for common appliances[2] would yield significant benefits in Cabo Verde:

- Lower energy demand by 0.105 TWh in 2035 and 0.271 TWh in 2050
- Reduce annual CO_2 emissions by 0.054 Mt in 2035 and 0.111 Mt in 2050

[1]Total emissions exclude those from land use change and forestry (LUCF). Source: Climate Watch Historical GHG Emissions. 2022. Washington, DC: World Resources Institute. Available online at: https://www.climatewatchdata.org/ghg-emissions

[2]Included in this analysis are: electric motors(excluded), residential hot water heaters, space heaters, lighting, air conditioners, ceiling and portable fans, refrigerator-freezers, and televisions

- Avoid 0.238 Mt of CO_2 emissions cumulatively between 2025 and 2035
- Save consumers 22 million USD on energy bills in 2035 alone
- Reduce demand for fossil fuels, making it easier to transition to renewables
- Alleviate strain on electric grids and make it easier to integrate renewable energy resources
- Reduce air pollution
- Improve human health, food security, and productivity
- Expand access to cooling and accelerate cooling improvements in buildings and refrigeration

The national climate, and cost saving impacts of meeting the Net Zero Appliance Targets on Page 3 are shown in Table 1 below. Annual impacts are reported for the years 2035 and 2050.

Table 1: Mitigation Potential and Other Benefits

Year	Appliance	Annual Avoided Emissions (Mt CO2)	Annual Energy Savings (TWh)	Annual Energy Cost Savings (million USD)
2035	Air Conditioning	0.03	0.06	13.62
	Ceiling and Portable Fans	0.00	0.00	0.88
	Electric Motors	0.00	0.00	0.00
	Refrigerator-Freezers	0.00	0.00	1.05
	Televisions	0.00	0.00	0.92
	Lighting	0.02	0.03	5.09
	Residential Hot Water Heaters	0.00	0.00	0.00
	Space Heating	0.00	0.00	0.00
	Total	**0.05**	**0.10**	**21.55**
2050	Air Conditioning	0.08	0.20	16.26
	Ceiling and Portable Fans	0.00	0.01	0.65
	Electric Motors	0.00	0.00	0.00
	Refrigerator-Freezers	0.01	0.02	1.44
	Televisions	0.00	0.01	0.87
	Lighting	0.01	0.03	1.60
	Residential Hot Water Heaters	0.00	0.00	0.00
	Space Heating	0.00	0.00	0.00
	Total	**0.11**	**0.27**	**20.83**

Source: 'Mepsy: The Appliance & Equipment Climate Impact Calculator', CLASP, V1.12.1, July 2024. https://clasp.shinyapps.io/mepsy

Note: For some countries, the expected annual energy cost savings in 2050 is lower than in 2035. Mepsy includes the discount rate when calculating electricity savings for specific years that reduces the present value of future savings. While energy savings increase over time, the discount rate diminishes their value more significantly for the distant future, resulting in a lower present value for savings projected in 2050.

NET ZERO APPLIANCE TARGETS

CLASP's *Net Zero Heroes report* identifies specific energy efficiency targets for ten appliances that would lower appliance emissions in line with net-zero targets:

1. **LED LIGHTING:** 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.
2. **AIR CONDITIONERS:** Double the efficiency of new units by 2030. Transition to low-GWP refrigerants in accordance with the Kigali Amendment to the Montreal Protocol.
3. **COMFORT FANS:** Require permanent-magnet motors in new table, ceiling, and pedestal fans by 2025.
4. **REFRIGERATOR-FREEZERS:** Double the efficiency of new units by 2030.
5. **HEAT PUMP SPACE HEATING:** Stop sales of fossil fuel equipment to fully transition stock to heat pumps by 2050.
6. **HEAT PUMP WATER HEATERS:** Stop sales of fossil fuel equipment to fully transition the stock of storage water heaters to heat pumps and solar thermal by 2040.
7. **ELECTRIC MOTORS:** Double the efficiency of new industrial electric motor systems (controls, motor, and motor-driven equipment) by 2030. Greatly accelerate the replacement rate of existing stock by 2030 to achieve full replacement by the most efficient motors (IE5) by 2035.
8. **TELEVISIONS:** Require efficiency levels to be 11-13% better than European Union requirements by 2025.
9. **ELECTRIC COOKING:** Fully transition to electric cooking.
10. **SOLAR WATER PUMPING:** Fully transition to electric water pumping for irrigation.

RECOMMENDATIONS FOR DRAFTING NDCS

Parties to the Paris Agreement are encouraged to double the rate of efficiency improvement globally and to strengthen the 2030 targets in their nationally determined contributions by the end of 2024.The recommendations below contain actionable steps that governments can take to integrate appliance energy efficiency into their revised NDCs.

Before Drafting

- Identify the ministries responsible for appliance energy efficiency, which may include those in charge of:
  - Energy
  - Industry
  - Housing/buildings
  - Trade
  - Environment
- Review the current NDC and note the following:
  - Mentions of appliances and equipment (e.g., lighting, air conditioners, and industrial electric motors) and supporting policies (e.g., energy performance standards, labeling requirements, market transformation programs, and incentives)
  - Specific targets or goals for appliances or appliance energy efficiency
  - Synergies with stated climate resilience, adaptation, and sustainable development priorities such as clean energy, cooling access, job creation, and economic development
- Consult the ministries responsible for appliance energy efficiency to:
  - Understand the appliance sector, including current and projected ownership levels and energy use
  - Take note of current and future appliance energy efficiency priorities and how they relate to national climate change, economic growth, and development goals
  - Assess how appliance efficiency contributes to current NDC and national energy efficiency targets and greenhouse gas accounting mechanisms
  - Model energy-saving and greenhouse gas mitigation opportunities in the appliances sector

While Drafting

- Acknowledge that increasing the efficiency of appliances and equipment is critical for meeting the goals of the Paris Agreement and other near-term climate commitments. Consider including the following points:
  - Energy efficiency policies can double or triple the rate of appliance efficiency improvement, making them key to meeting the doubling target in the UAE Consensus and Global Renewables and Energy Efficiency Pledge.

  - Meeting targets for the ten appliances most critical to meeting net zero globally —fans, air conditioners, electric cooking appliances, electric motors, lighting, televisions, refrigerators, solar irrigation, space heating equipment, and water heating equipment—could mitigate 9.2 gigatons of carbon dioxide in 2050 alone.

- Highlight the cost-effectiveness and cross-cutting benefits of appliance energy efficiency investments.
  - Affordability: Longstanding appliance efficiency policies are cost effective, with financial benefits 4 times greater than the costs.
  - Resilience and adaptation benefits: Increased efficiency can expand access to cooling, information, and income-generating activities by reducing the total cost of appliance ownership and making appliances more affordable.
  - Connections to UN Sustainable Development Goals: Appliances and equipment are critical to reaching 12 of 17 UN Sustainable Development Goals.
  - Equity benefits: First-time appliance ownership can expand energy access, thereby raising productivity, incomes, and health outcomes for marginalized groups like women, children, and poor and rural households.

- Identify priority appliances and equipment in order to define clear efficiency improvement targets.
  - When determining which appliances to prioritize, consider products with high mitigation potential.
  - When selecting targets, consider aligning them with existing pledges such as the Global Renewables and Energy Efficiency Pledge and the SEAD Product Efficiency Call to Action or existing appliance efficiency targets like those in CLASP's *Net Zero Heroes* report.

- Discuss the policies, financing, and/or reporting requirements needed to meet appliance efficiency targets, including:
  - Appliance efficiency policies such as energy performance standards, labeling requirements, financial incentives, and bulk procurement. See *Net Zero Heroes* for a summary of policies
  - Information about how policies and programs will be funded or how much funding is needed
  - Monitoring, reporting, and verification (MRV) mechanisms to track progress. IEA's Evaluation Guidebook explains how to evaluate the impact of appliance efficiency policies

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