Sao Tome and Principe

Equipment	
Industrial Electric Motors, Distribution Transformers	Energy efficiency benefits from industrial electric motors and distribution transformers with the implementation of Minimum Energy Performance Standards at two levels of ambition (minimum and high).

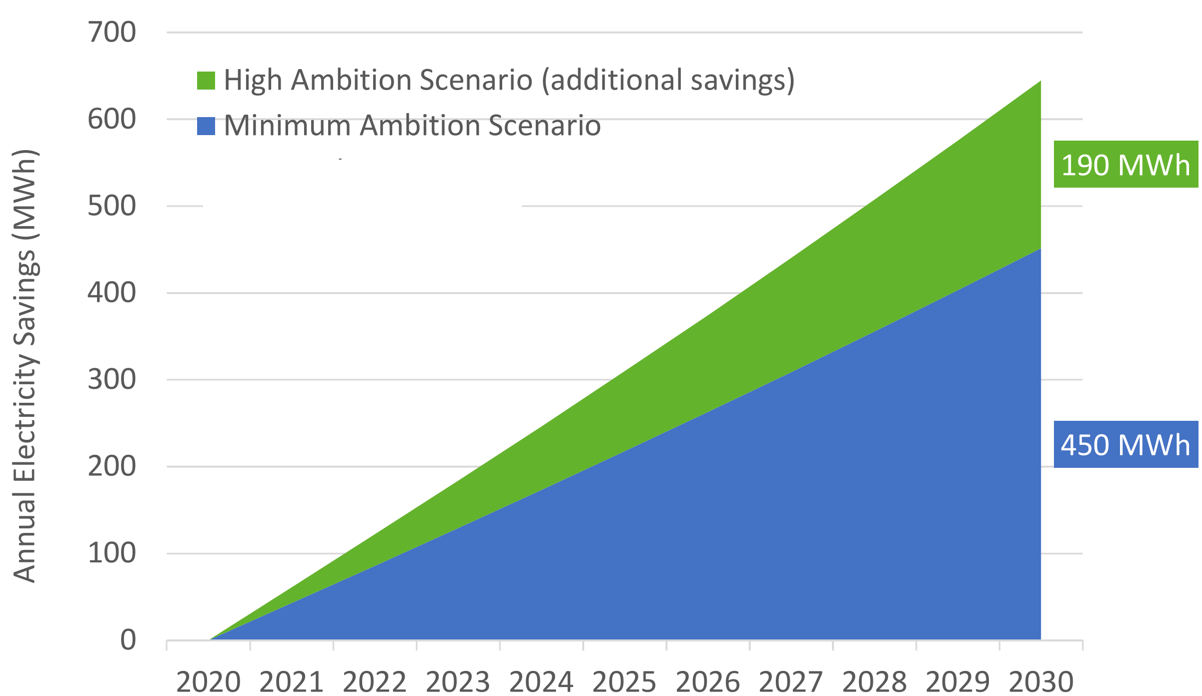
ANNUAL SAVINGS IN 2030*

Reduce electricity use by over **450 MWh** which is **0.7%** of current national electricity use

Save electricity worth **160 Thousand US$** equivalent to over **5 Power Plants [20kW each]**

Reduce electricity CO_2 emissions by over **340 Tonnes** equivalent to **190 Passenger Cars**

EVEN GREATER SAVINGS POSSIBLE WITH MORE STRINGENT REGULATION



* Denotes savings are from the Minimum Ambition Scenario.

DETAILED BENEFITS

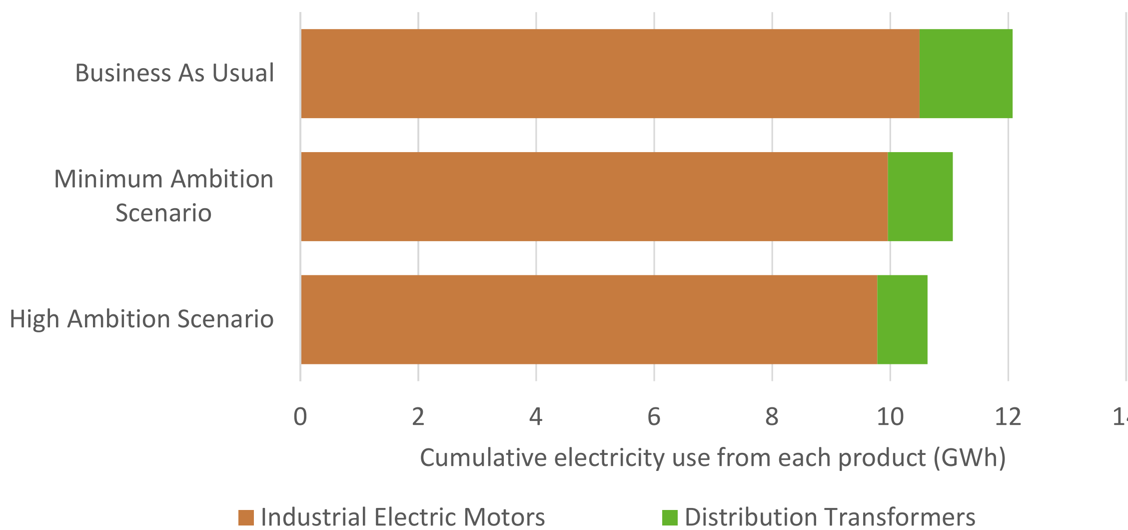
ANNUAL SAVINGS IN 2025, 2030 AND 2040*

		Industrial Electric Motors			Distribution Transformers		
		2025	2030	2040	2025	2030	2040
	Electricity (MWh)	140	270	540	76	180	480
	Electricity Bills (Thousand US$)	50	98	190	27	63	170
	CO2 Emissions (Tonnes)	110	210	410	59	140	370

CUMULATIVE SAVINGS BY 2030 AND 2040*

		Industrial Electric Motors		Distribution Transformers	
		2030	2040	2030	2040
	Electricity (GWh)	1.5	5.7	0.9	4.2
	Electricity Bills (Million US$)	0.5	2.0	0.3	1.5
	CO2 Emissions (Thousand tonnes)	1.2	4.4	0.7	3.2

CONTRIBUTION TO CUMULATIVE ELECTRICITY USE BY 2040



* Denotes savings are from the Minimum Ambition Scenario.

Country Data and Input Assumptions

GENERAL INFORMATION	
Population	209 Thousand
GDP per capita	2,001 US$
Electrification level	72.9%
CO_2 Emission Factor	0.62 kg / kWh

ELECTRICITY MARKET	
Residential Electricity tariff	0.36 US$ / kWh
Transmission and distribution loss factor	19.8%

ASSUMPTIONS

Product	Efficiency Level			Type of Product
	Business As Usual	Minimum Ambition Scenario	High Ambition Scenario	
Industrial Electric Motors (IEC level)	IE0	IE2	IE3	3-phase induction motors used in the industrial sector
Distribution Transformers (Model regulation level)	See note	Level 1	Level 2	Three-phase liquid-filled Three-phase dry-type Single-phase liquid-filled

Note: it is assumed that distribution transformers have losses in line with those assumed in the CENELEC harmonization research for the development of the EU standards.

METHODOLOGY

The analysis uses the UNEP-U4E's Country Savings Assessment Models to estimate the impacts of implementing policies that improve the energy efficiency of new industrial electric motors and distribution transformers. The savings potential in each scenario assumes Minimum Energy Performance Standards (MEPS) are introduced in 2020 at two different levels of ambition (minimum and high) as shown above.

ASSUMPTIONS AND DATA SOURCES

- Electricity savings from each product are estimated using a top-down approach using data including electricity consumption (total, industrial and motors) and industrial GDP as detailed below.
- Industrial GDP (2018) comes from the World Bank with future growth forecasts derived from the Shared Socioeconomic Pathway (SSP3) used in the Intergovernmental Panel on Climate Change's (IPCC) sixth assessment.
- Current total electricity consumption comes from the World Bank and the U.S. Energy information Administration (EIA) with industrial share based on the International Energy Agency's (IEA) World Energy Outlook 2018. Motors electricity consumption is taken IEA reports and other internet research.
- Future electricity demand is based on forecasts from the IEA's World Energy Outlook 2018 and the IPCC's SSP3 scenario.
- Residential electricity tariffs are based on IEA data.
- Transmission and distribution loss factor is a regional average calculated from electricity production and consumption data published by the IEA.
- Electrification levels come from the IEA's Word Energy Outlook 2018 and the World Bank.
- CO2 emission factors come from the IEA and the Institute of Global Environmental Strategies (IGES) and are assumed constant in future years.
- Product typical characteristics are based on analysis from the UNEP-U4E Model Regulation Guidelines and other data from UNEP-U4E industry partners and technical experts.
- Additional to the above sources, a questionnaire was used to gather data from country officials.
- In a small number of instances, additional data was obtained from internet research or by using proxy data from similar markets.

Further details of the modelling approach and assumptions are available on the U4E website. For more information contact: U4E@un.org

* Denotes savings are from the Minimum Ambition Scenario.