



Market Transformation Opportunities for Energy Efficient Transformers in Africa

Eco-Efficient Power Distribution Transformers in Africa
13th July 2021

Soledad GARCIA, United for Efficiency





Supporting Countries to Save 20% of their Electricity

By accelerating the Global Transition to [much more energy efficient lighting and appliance technologies](#) by strengthening country capacities around the world, as well as ensuring environmentally sound management practices.

Building synergies among stakeholders, sharing knowledge and information, helping create strategic policy and regulatory frameworks, and addressing technical and quality issues.



Electric
Motors



Light
Bulbs



Residential Refrigerators



Room Air
Conditioners



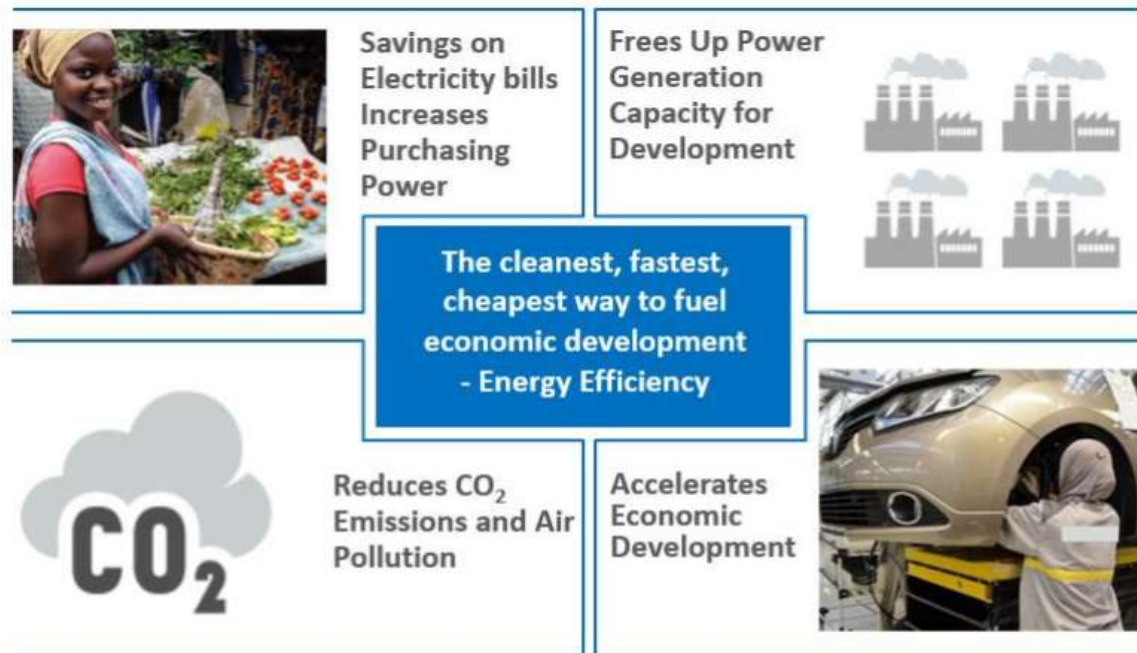
Distribution
Transformers

OUR MISSION:

Support the second goal of the UN Secretary General's SE4ALL initiative: to **double the global rate** of improvement in energy efficiency by providing assistance to developing countries and emerging economies to **move their markets to energy-efficient appliances and equipment**.



WHY ENERGY EFFICIENCY?



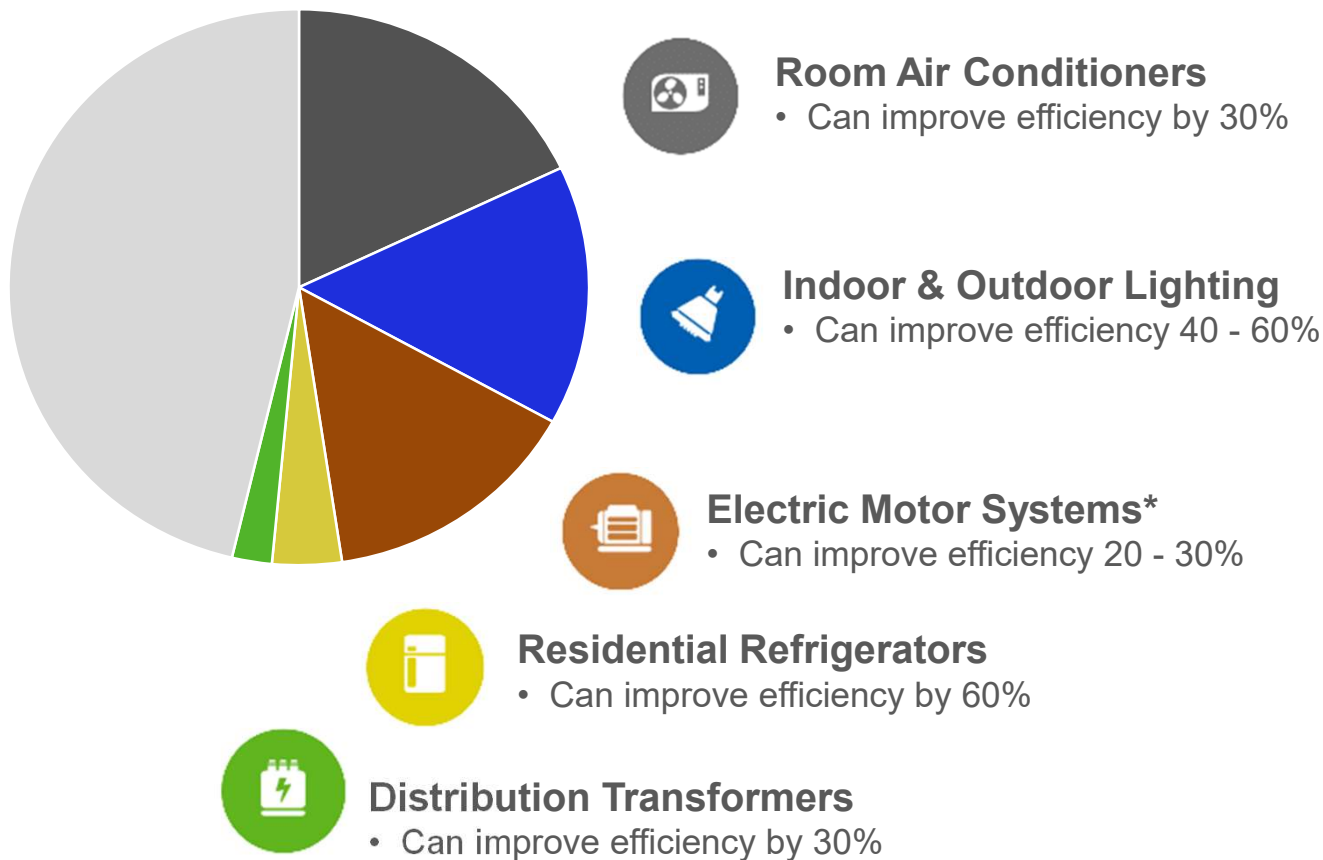
A global transition to high efficiency products will make possible:

- ✓ for people to enjoy the benefits of their increased incomes,
- ✓ for governments in reaching their economic and environmental ambitions.
- ✓ Minimize the impact on climate change and contribute towards meeting the 2°C climate target



HOW DO WE FULFILL OUR MISSION?

WE TACKLE THE 5 PRODUCTS THAT USE MORE THAN 50 % OF GLOBAL ELECTRICITY:



We inform policy makers of the potential environmental, financial and economic savings of a transition to high-efficiency products

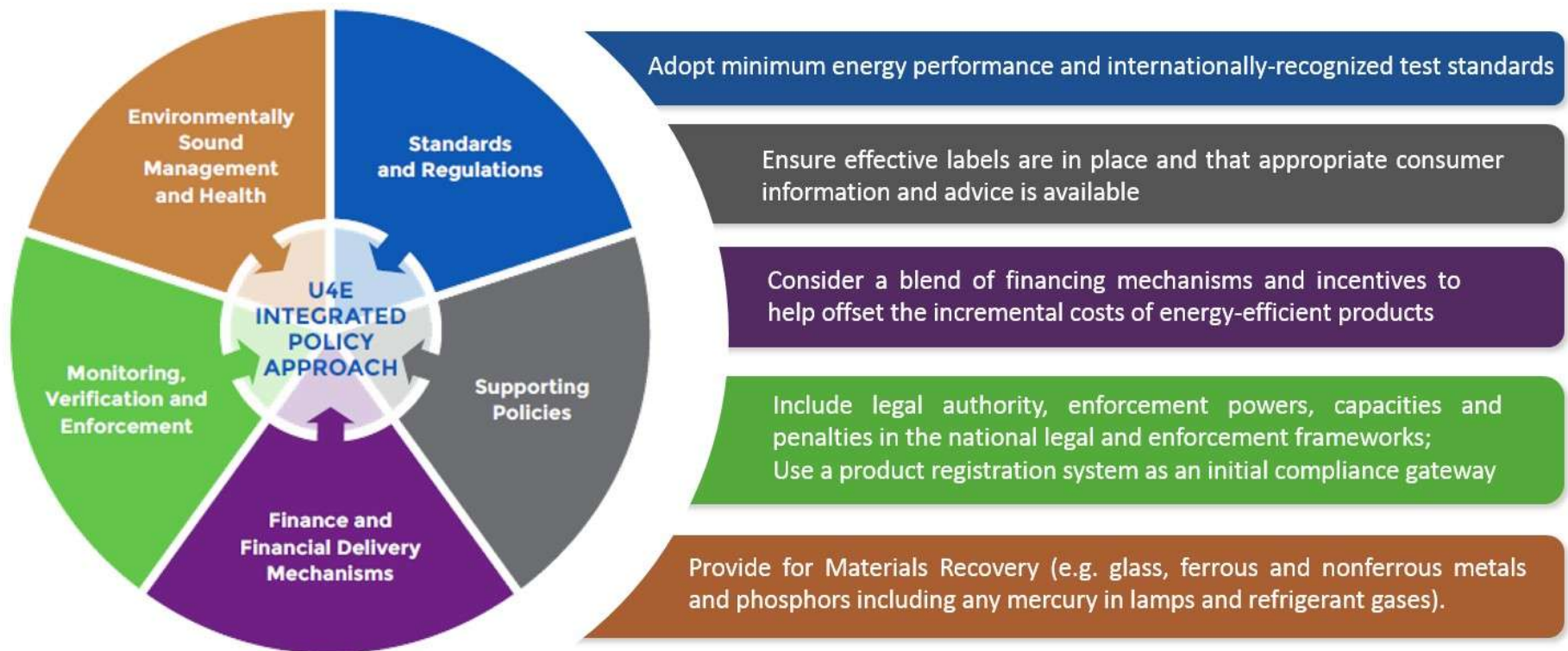
We identify and promote global best practices in transforming markets

We offer tailored assistance to governments to develop and implement national and regional strategies and projects to achieve a fast and sustainable market transformation

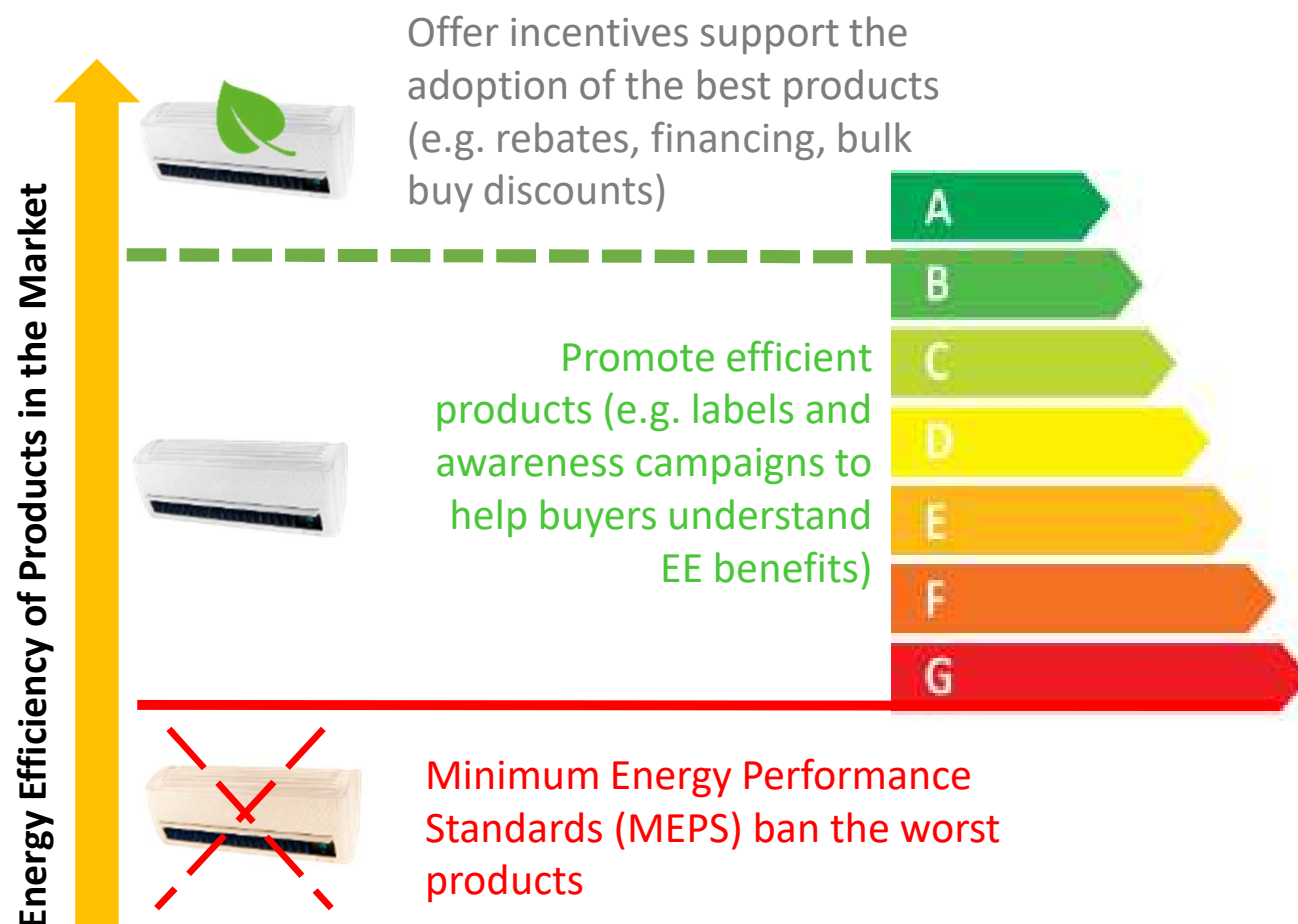


STRATEGIC 5-YEAR INTEGRATED POLICY APPROACH PROGRAMMES WORK

U4E implements a proven *Integrated Policy Approach* for product market Transformation



STANDARDS, LABELLING, GREEN PUBLIC PROCUREMENT AND MARKET BASED INCENTIVES WORK



Monitor the market for MEPS compliance, test the products and enforce the rules



ESM for Recycle & dispose old products in a sustainable way



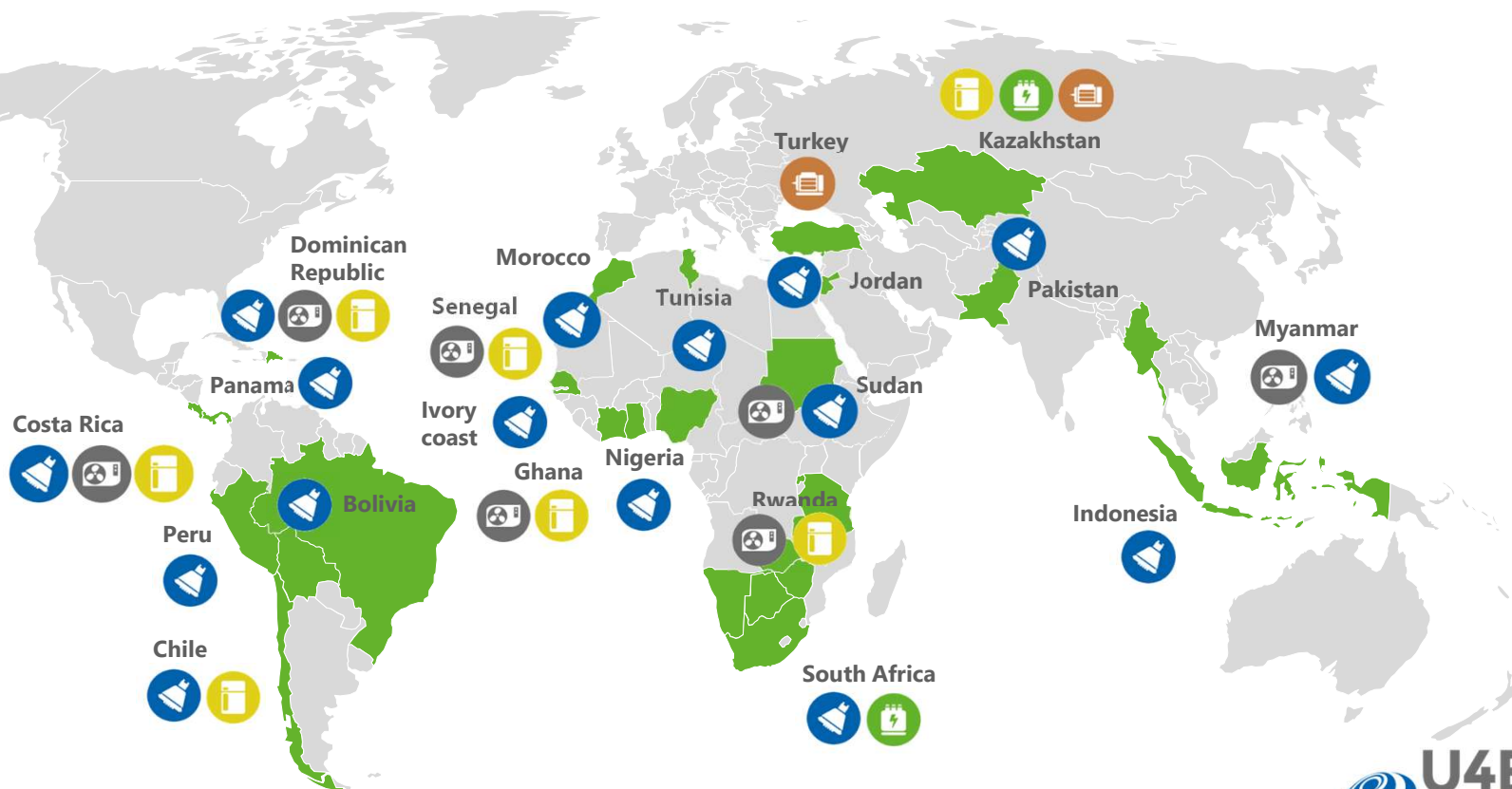
WHO WE WORK WITH – U4E PROJECT PARTNERS INCLUDE:

<p>MANUFACTURERS & INDUSTRY ASSOCIATIONS</p>	          
<p>TECHNICAL ORGANISATIONS & INITIATIVES</p>	                   
<p>FUNDERS, FINANCIERS & IMPLEMENTING AGENCIES</p>	         



NATIONAL – WHERE DO WE WORK?

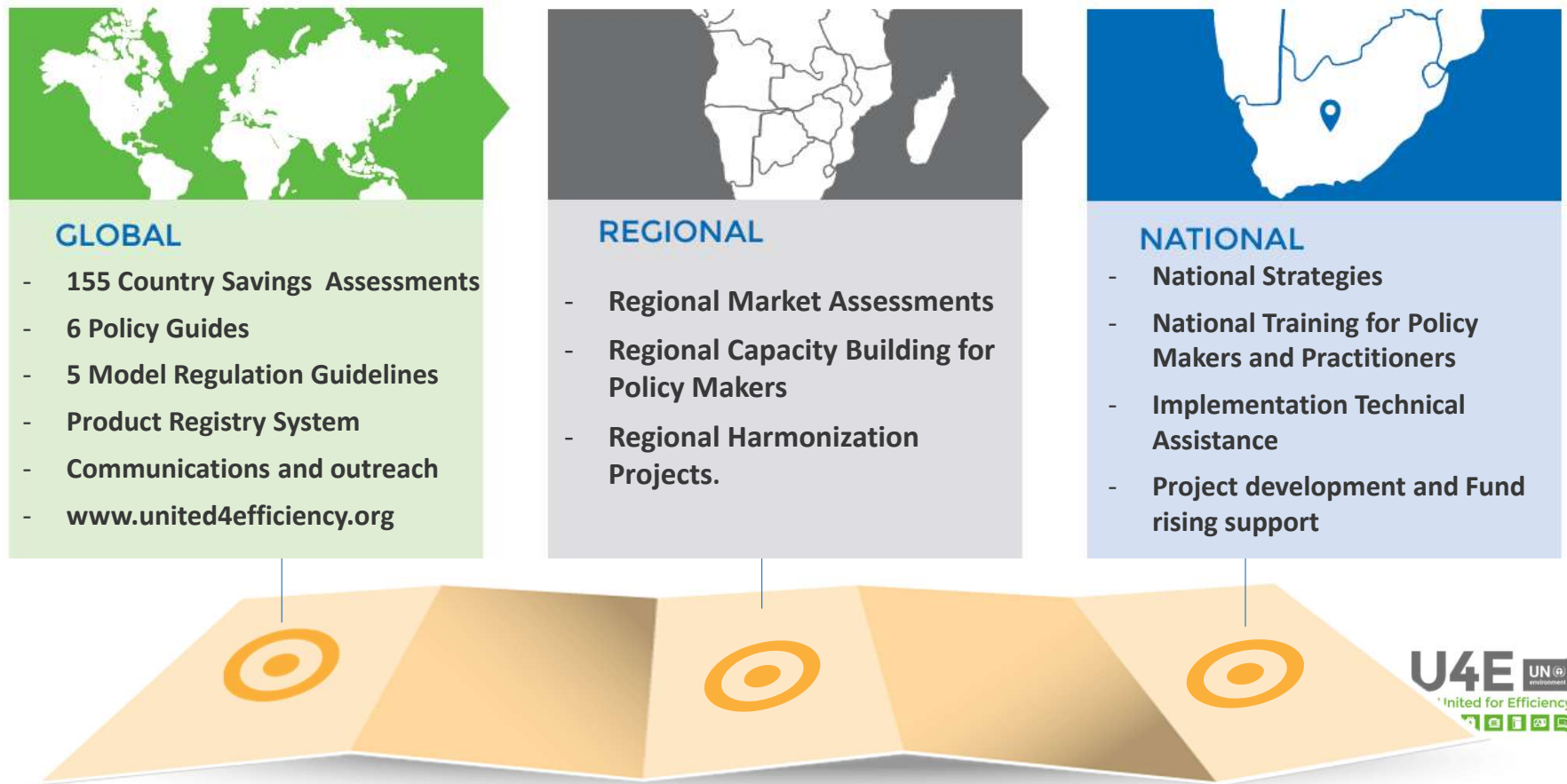
U4E National Projects



*Dominican Republic, Bahamas, Barbados, Saint Lucia, Jamaica

WHERE DO WE WORK – U4E SCOPE OF SUPPORT:

U4E provides support at various levels





GLOBAL - U4E International Tools & Resources

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+155 Country Saving Assessment



Procurement Specifications
Guideline and
Financial Manuals



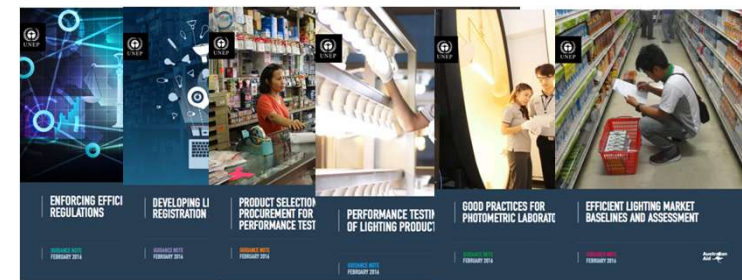
5 Policy Guides for selected products



Model Regulation Guidelines



Monitoring, Verification and
Enforcement Guides





GLOBAL – Country Savings Assessment

11

Overview report:

- Summary of key benefits by 2030
- Higher ambition and other benefits
- Detailed benefits in 2030/40 by product
- Assumptions and methodology

Product reports:

- Summary of key benefits by 2030
- Detailed benefits in 2030/40 by product
- Assumptions and methodology

Regional report:

- Summary of key benefits by 2030
- Higher ambition and other benefits
- Detailed benefits in 2030/40 by country
- Detailed benefits in 2030/40 by product
- Assumptions by products
- Country data and methodology





GLOBAL - New Global Model Regulation Guidelines

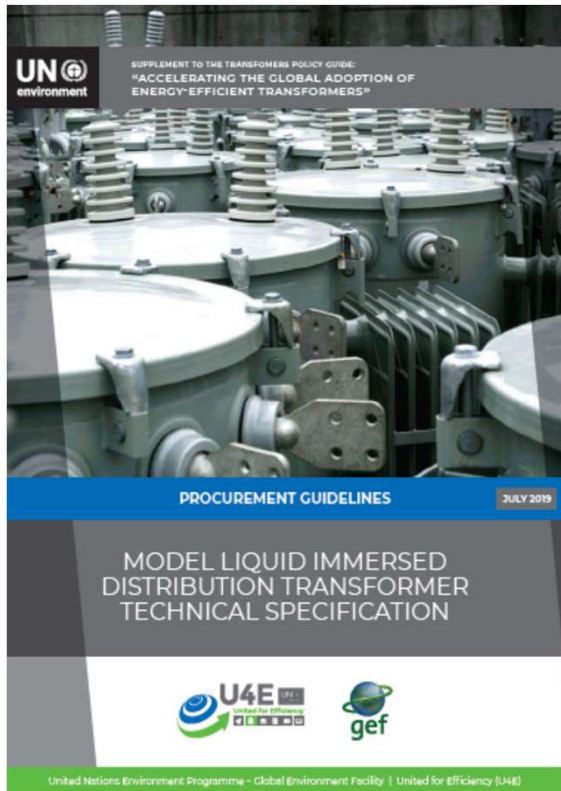
- helping **inform regulatory authorities and policy makers** in developing and emerging economies.
- guideline on setting a **minimum efficiency floor** to prohibit future sales of inefficient products from the market.
- use proven **best practices** and tap into global policy and technology trends
- to **harmonize requirements** to reduce trade barriers and unlock economies of scale to make products more affordable

A range of stakeholders, including governments, manufacturers, technical institutions and environmental groups have contributed to their development.





GLOBAL - Distribution Transformer Model Procurement Technical Specifications



Technical Specification

- ✓ Voluntary guidance to assist Governments & utilities in developing and emerging economies that are considering a procurement of liquid immersed distribution transformers.

Balance between General & Specific Requirement

- ✓ Includes introductory main part and two annexes providing specifications (Annexes B and C) as per the U4E model regulation.
- ✓ Purchasers can adopt, either as they are or to use as a baseline to adjust to their own unique specifications.

User Flexibility

- ✓ Although the sample technical specifications to use, also provides additional comments and suggestions to each clause of the annexed technical specifications
- ✓ The words/terms/figures in grey indicate that the purchaser should pay attention to suit their system requirements.

Promotes Life Cycle Cost based Purchases

- ✓ Procurement policies set a minimum energy performance (max. losses) of the transformer and include Total Cost of Ownership (TCO) based evaluation of the bids.



Why Leapfrogging to Energy-Efficient Transformers?

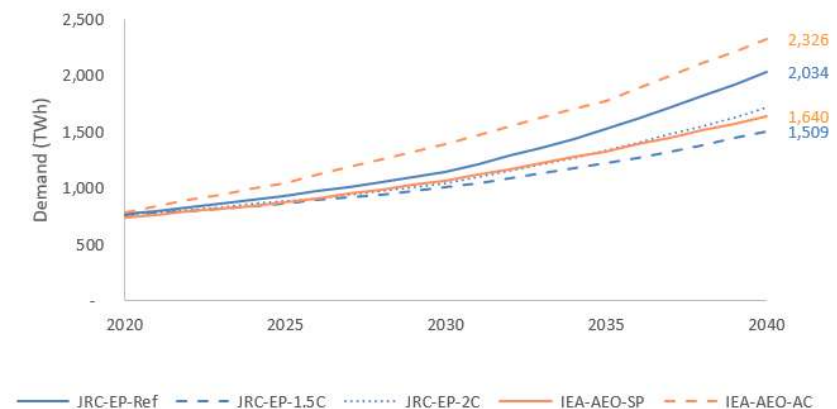
- Lose nearly **5% of global electricity**: transformers lose about **1,100 TWh** of electricity worldwide.
- Over the next two decades, such losses are projected to rise as economies expand and additional capacity is added.
- Significant risks of inaction: lock-in decades of electricity waste given its non-stop operation and 25-years service life.
- Very attractive when considering the total cost of ownership
- Payback periods vary with the equipment, electricity costs and the cost of capital: as short as one year or as long as six years or more, which can still be very attractive.



Countries (in red) lacking national mandatory efficiency policies for distribution transformers

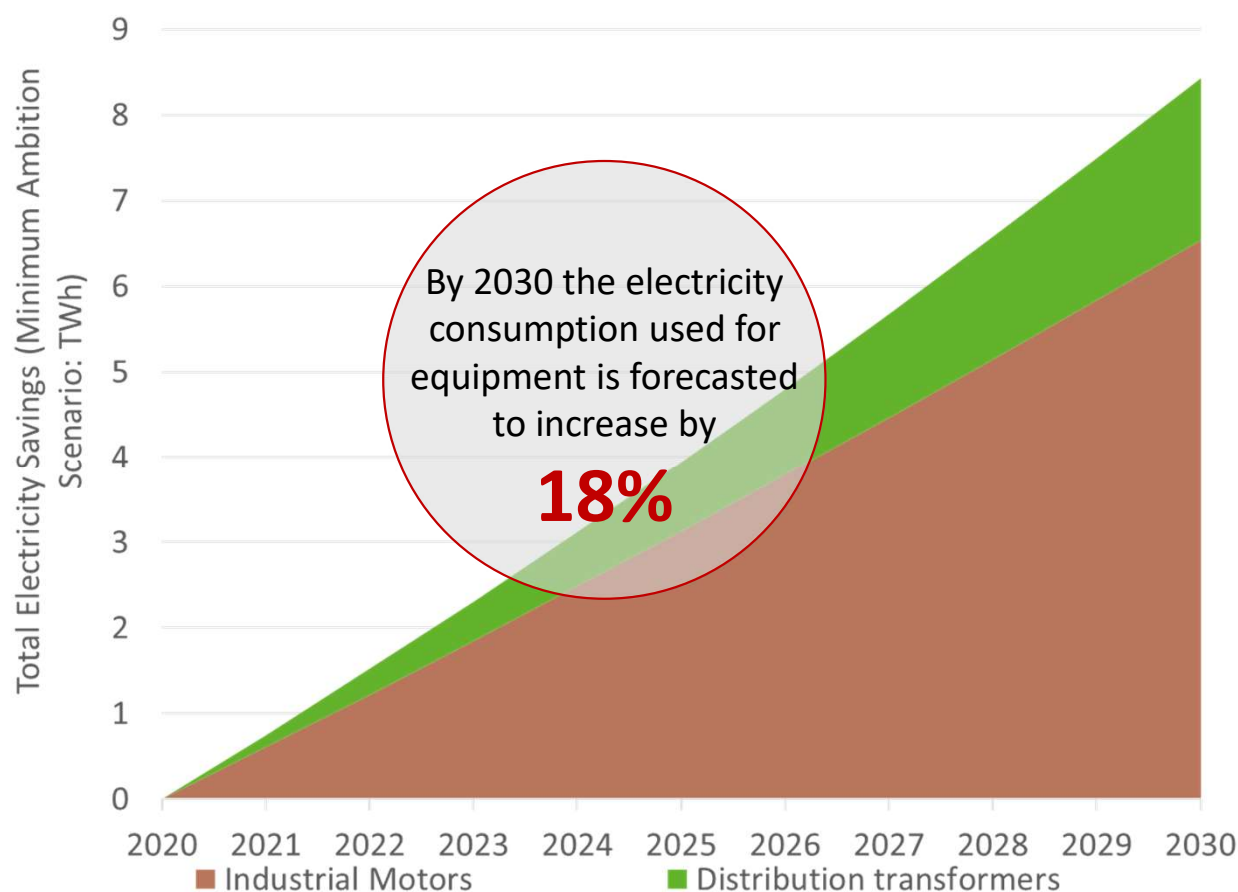
Figure 4-1 Electricity demand projection at continental level.

Evolution of the continental demand in IEA and JRC studies



Potential Energy, Economical and Environmental Savings:

Saving Opportunities from Energy-Efficient Equipment in Africa



Annual Savings in 2030 for Distribution Transformers *:

2.12 TWh of electricity consumption, which is equivalent to:

- **1 Power stations** [500 MW each]
- **1.9 Million tonnes of CO₂**
- **160 Million USD on electricity bills**



*Minimum Ambition Scenario

Potential Energy, Economical and Environmental Savings:

Saving Opportunities from Energy-Efficient Distribution Transformers in the 5 African regions

West Africa



223 GWh of electricity consumption.



137,000 tonnes of CO₂



43 Million USD on electricity bills

Central Africa



42 GWh of electricity consumption.



14,000 tonnes of CO₂



6 Million USD on electricity bills

North Africa



1,012 GWh of electricity consumption.



839,000 tonnes of CO₂



35 Million USD on electricity bills

Southern Africa



724 GWh of electricity consumption.



868,000 tonnes of CO₂



65 Million USD on electricity bills

East Africa



110 GWh of electricity consumption.



45,000 tonnes of CO₂



11 Million USD on electricity bills

Country Savings Assessment:

<https://united4efficiency.org/countries/country-assessments/>



KNOW MORE ABOUT U4E AND JOIN US:

Check our websites

Find out tools, policy guides and policy briefs, webinars, model regulations, country assessments and news releases on our official website.

<http://united4efficiency.org/>

U4E introduction video

Need a quick introduction to our project? Our three minute general video is at:

[EN http://united4efficiency.org/accelerating-the-transition-to-high-efficiency-products/](http://united4efficiency.org/accelerating-the-transition-to-high-efficiency-products/)

African energy Efficiency Programme

Want to know more about AFREC-U4E African Energy Efficiency Programme? Here our Factsheet:
<https://united4efficiency.org/resources/african-energy-efficiency-program/>



**WE NEED MORE
ENERGY EFFICIENCY
TO COOL THE WORLD**





Contact

TRANSFORMING

MARKETS

TO ENERGY-EFFICIENT

PRODUCTS



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