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

- **Room Air Conditioners**
  - Can improve efficiency by 30%

- **Indoor & Outdoor Lighting**
  - Can improve efficiency 40 - 60%

- **Electric Motor Systems**
  - Can improve efficiency 20 - 30%

- **Residential Refrigerators**
  - Can improve efficiency by 60%

- **Distribution Transformers**
  - Can improve efficiency by 30%

HOW DO WE FULFILL OUR MISSION?

- 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

- Adopt minimum energy performance and internationally-recognized test standards
- Ensure effective labels are in place and that appropriate consumer information and advice is available
- Consider a blend of financing mechanisms and incentives to help offset the incremental costs of energy-efficient products
- Include legal authority, enforcement powers, capacities and penalties in the national legal and enforcement frameworks; Use a product registration system as an initial compliance gateway
- Provide for Materials Recovery (e.g. glass, ferrous and nonferrous metals and phosphors including any mercury in lamps and refrigerant gases).
Minimum Energy Performance Standards (MEPS) ban the worst products

Offer incentives support the adoption of the best products (e.g. rebates, financing, bulk buy discounts)

Promote efficient products (e.g. labels and awareness campaigns to help buyers understand EE benefits)

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:

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*Dominican Republic, Bahamas, Barbados, Saint Lucia, Jamaica*
WHERE DO WE WORK – U4E SCOPE OF SUPPORT:

U4E provides support at various levels

GLOBAL
- 155 Country Savings Assessments
- 6 Policy Guides
- 5 Model Regulation Guidelines
- Product Registry System
- Communications and outreach
- www.united4efficiency.org

REGIONAL
- Regional Market Assessments
- Regional Capacity Building for Policy Makers
- Regional Harmonization Projects.

NATIONAL
- National Strategies
- National Training for Policy Makers and Practitioners
- Implementation Technical Assistance
- Project development and Fund rising support
GLOBAL - U4E International Tools & Resources

+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

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._
**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
By 2030 the electricity consumption used for equipment is forecasted to increase by 18%.

**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

Potential Energy, Economical and Environmental Savings:

Saving Opportunities from Energy-Efficient Equipment in Africa
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 CO$_2$
- **43 Million USD** on electricity bills

**North Africa**
- **1,012 GWh** of electricity consumption.
- **839,000 tonnes** of CO$_2$
- **35 Million USD** on electricity bills

**East Africa**
- **110 GWh** of electricity consumption.
- **45,000 tonnes** of CO$_2$
- **11 Million USD** on electricity bills

**Central Africa**
- **42 GWh** of electricity consumption.
- **14,000 tonnes** of CO$_2$
- **6 Million USD** on electricity bills

**Southern Africa**
- **724 GWh** of electricity consumption.
- **868,000 tonnes** of CO$_2$
- **65 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/

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