Super-efficient Equipment Appliance Deployment Initiative Workshop for Sub-Saharan Africa

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The Cold Crunch

Wider access to cooling is necessary, bringing benefits to human development, ***health, well-being and economic productivity***. But it will have a significant impact on 'countries' overall ***energy demand***, putting pressure on electricity grids and driving up local and global ***emissions***.

The Future of Cooling

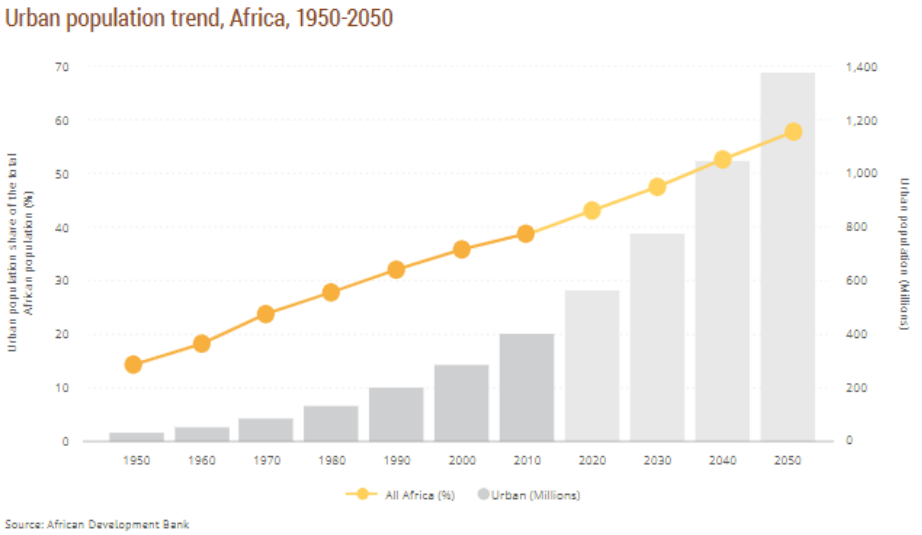
Africa AC Market Growth Drivers

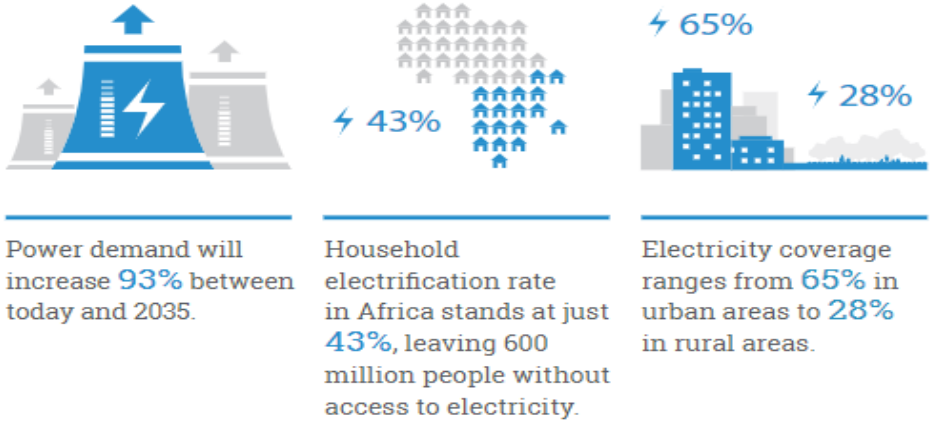
- Higher rate of electrification
- Higher rate of urbanization
- Economic Development

AC Market is expected to grow by 10% per annum

Impact

- Sharp Increase in Power demand
- Electricity Peak load demand
- Higher Carbon direct and indirect emissions

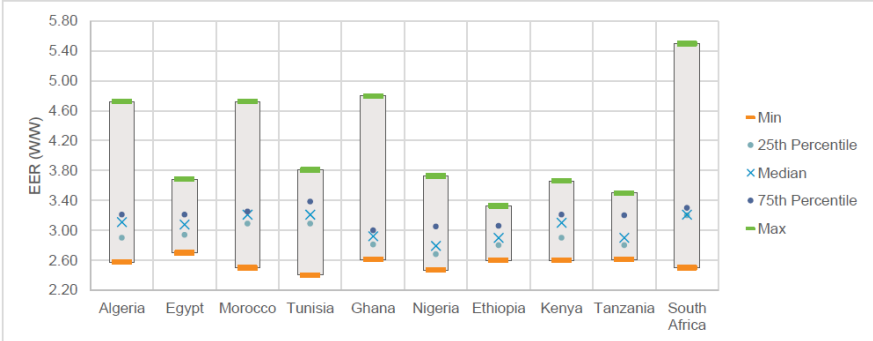




The current situation indicators

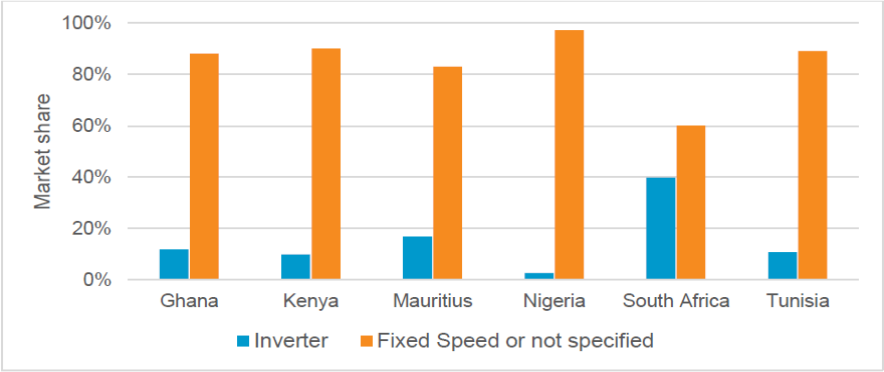
- Energy Efficiency ratio at lower rate than the minimum in exporting countries
- The use of Ozone depleting refrigerants such as R22 while prohibited in exporting countries getting slowly replace by the High GWP R 410 a
- Slow transition from Low efficiency fixed speed compressors towards High efficiency variable speed inverter compressors

EER



REFRIGERANTS

COMPRESSOR

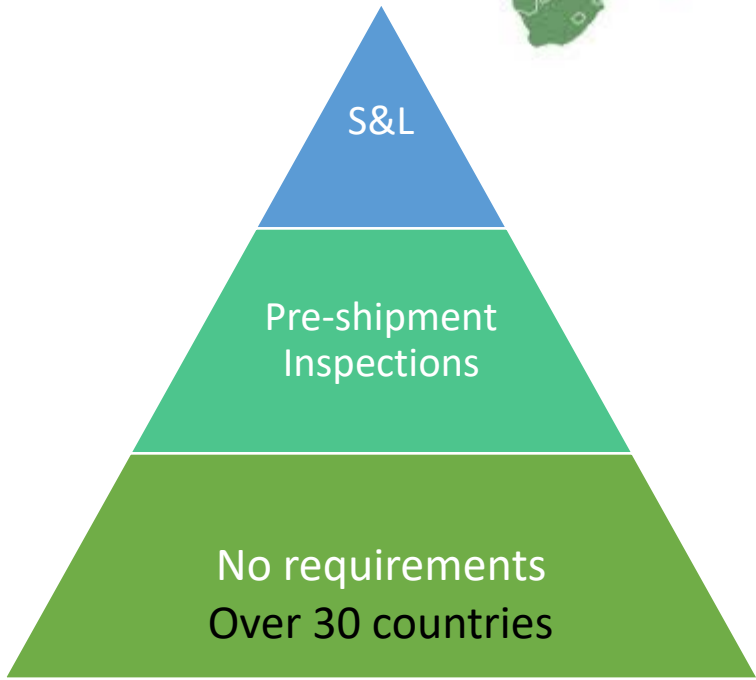


Source : Clasp report June 2020

Minimum Energy Performance Standards

Energy Efficiency Ratio [W/W]

@T1	@T1	@T1	@T1
Ghana	Kenya	Nigeria	South Africa
Mandatory	Mandatory	Voluntary	Mandatory



Sub-Saharan Africa countries requirements for air conditioners

The benefits of Energy Efficiency Standards

To the Consumer

- **Eliminate inefficient and unsafe products from the Market**
- **Higher Energy Efficiency AC's will reduce the consumer energy cost**
- **Labels will help the consumer take the right decision when purchasing a device.**

To the Economy

- **Reduce the impact of Air Conditioner Market Growth on the National Power Grid**
- **Reduce outages during peak hours**
- **Optimization for off grid renewable Energy installations**

To the Environment

- **Eliminate Ozone Depletion and reduce direct refrigerant emissions**
- **Reduce the indirect emissions from burning fossil fuel**
- **Lower impact on the Environment**

Renewable Energy Optimization

The reliance on off grid renewable Energy to increase the rate of electrification brings additional economical benefits for High Efficiency Air conditioners using Inverter Technology

Assumption :

- PV Panels 320 W
- 7 Solar Hours
- Operating for 30 Days

Conventional AC

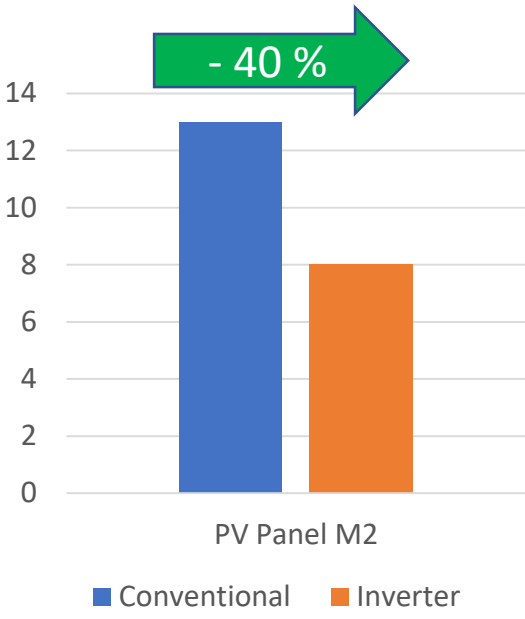
2 HP Split
Ac Operating for 12 Hours

No. of Panels 8
Roof Space required 13 Sq M

High Efficiency Inverter AC

2 HP Split
Ac Operating for 12 Hours

No. of Panels 5
Roof Space required 8 Sq M



The U4E Model Energy Efficiency Regulation

Scope : Air Conditioners with cooling capacity ≤ 16 kW

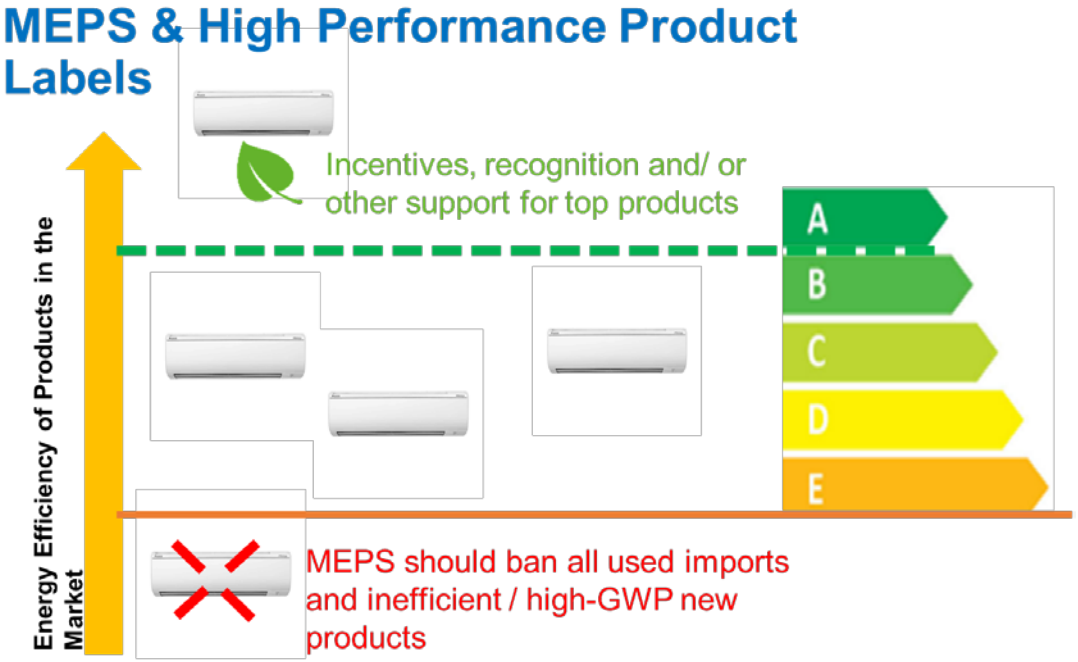
Product categories :
Non ducted single splits
Self contained
Portable Units

Testing standards : ISO 5151, ISO 18326

Energy Efficiency : CSPF as per ISO 16358

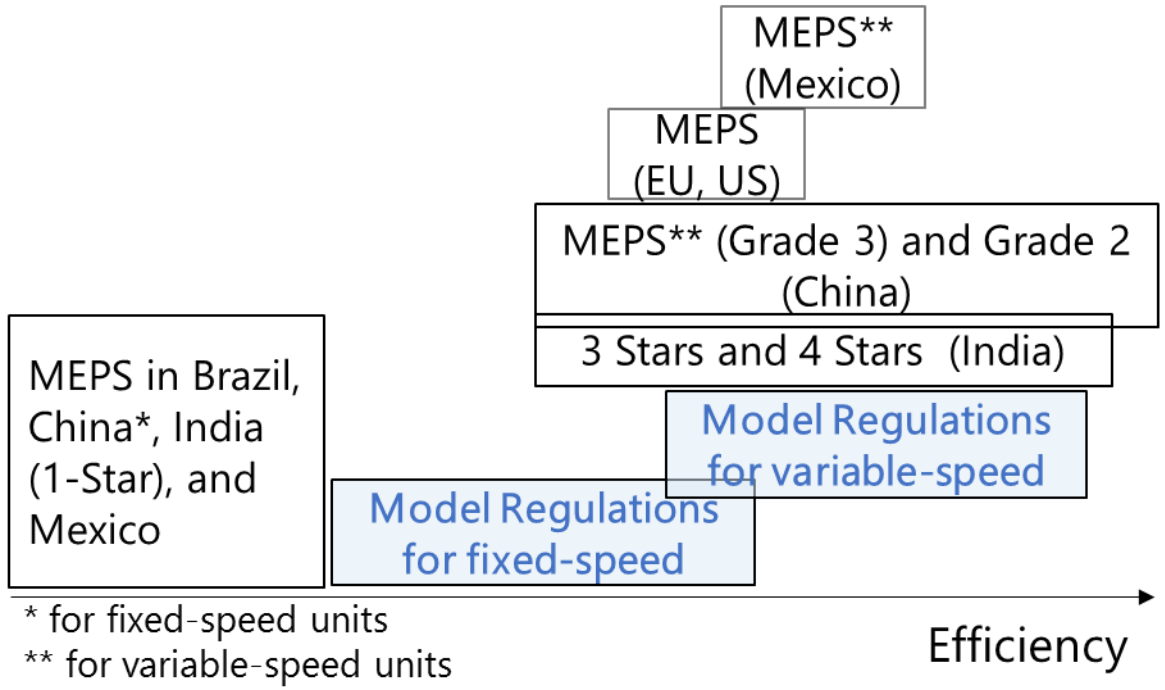
Weather groups :
Ashrae 169
Primary (Moderate to Hot)
Secondary (dry to Humid)

Minimum CSPF :
By Product category
By Weather group
By cooling capacity range



The U4E Model Energy Efficiency Regulation

Energy Efficiency



* for fixed-speed units
** for variable-speed units

Refrigerant

- **Requirements for ozone depletion potential (ODP) and global warming potential (GWP) over a 100-year time horizon**
- **Refrigerant designation (ISO 817), Safety requirements (IEC 60335-2-24; -40)**

	Refrigerators	Air Conditioners
GWP	20	• 750 (Split system) • 150 (Self-contained system)
ODP	0	0

ODP: Per *Handbook for the Montreal Protocol on Substances that Deplete the Ozone Layer, Seventh Edition, annexes A, B, C and E.*
GWP: Per *Climate Change 1995, The Science of Climate Change: Summary for Policymakers and Technical Summary of the Working Group I Report, page 22.*

Conclusion

- Sub-Saharan Africa need to regulate the Energy Efficiency of appliances to stop the dumping of inefficient and unsafe products
- The Acceleration of Implementation will produce quick and lasting benefits to the consumer, the economy and the environment
- The UN Energy Efficiency Model regulation is an opportunity to harmonize the regulations on a regional basis
- Consultation with manufacturers would help accelerate the alignment of all stakeholders towards the same target
- Market Surveillance is key for successful implementation

THANK YOU

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