



# Leapfrogging Countries to Energy Efficient Lighting, Appliances, and Equipment

**Jonathan Duwyn**

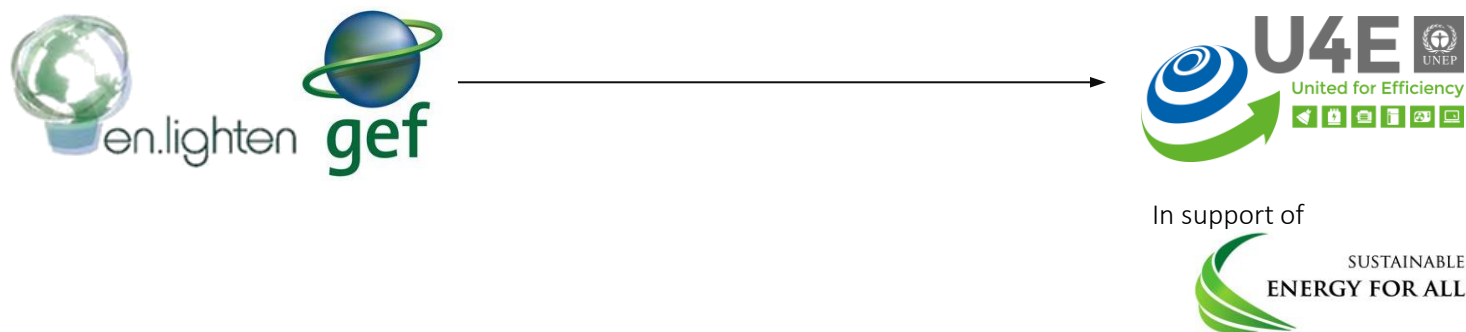
United Nations Environment Programme

IEA - 21<sup>st</sup> Century Energy Efficiency Standards and Labelling Programme

16 December 2015



# Efficient Appliances & Equipment – taking the en.lighten approach to the next *low hanging fruits*



- UNDP, ICA, CLASP, NRDC and UNEP launched the United for Efficiency (U4E) in 2014
- The Programme aims to **join forces with private and public sector** to **expand the en.lighten approach to the next *high impact opportunities***,
- Supporting the second goal of the Secretary General's SE4ALL initiative: double the global rate of improvement in energy efficiency
- The en.lighten and U4E initiatives form part of the **SE4ALL Energy Efficiency Accelerators on Lighting and Appliances & Equipment**



# Project Partners on Lighting, Appliances & Equipment

Donors and International organizations	     
Partner Organizations	           
Supportive Private Sector	           
Countries	<p>En.lighten: 66 partner countries</p> <p>U4E: 18 partner countries</p>

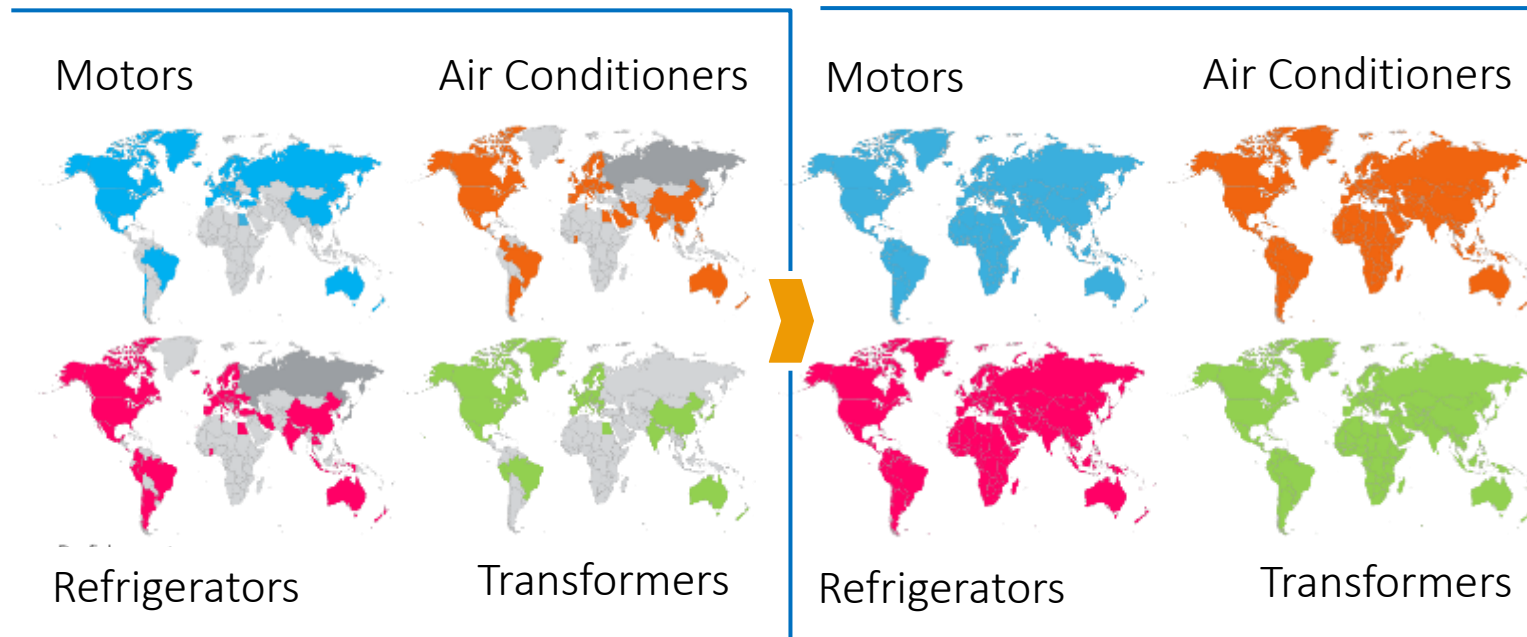


# Most Developing Countries Do Not Have Policies in Place Today to Leapfrog to Efficient Products

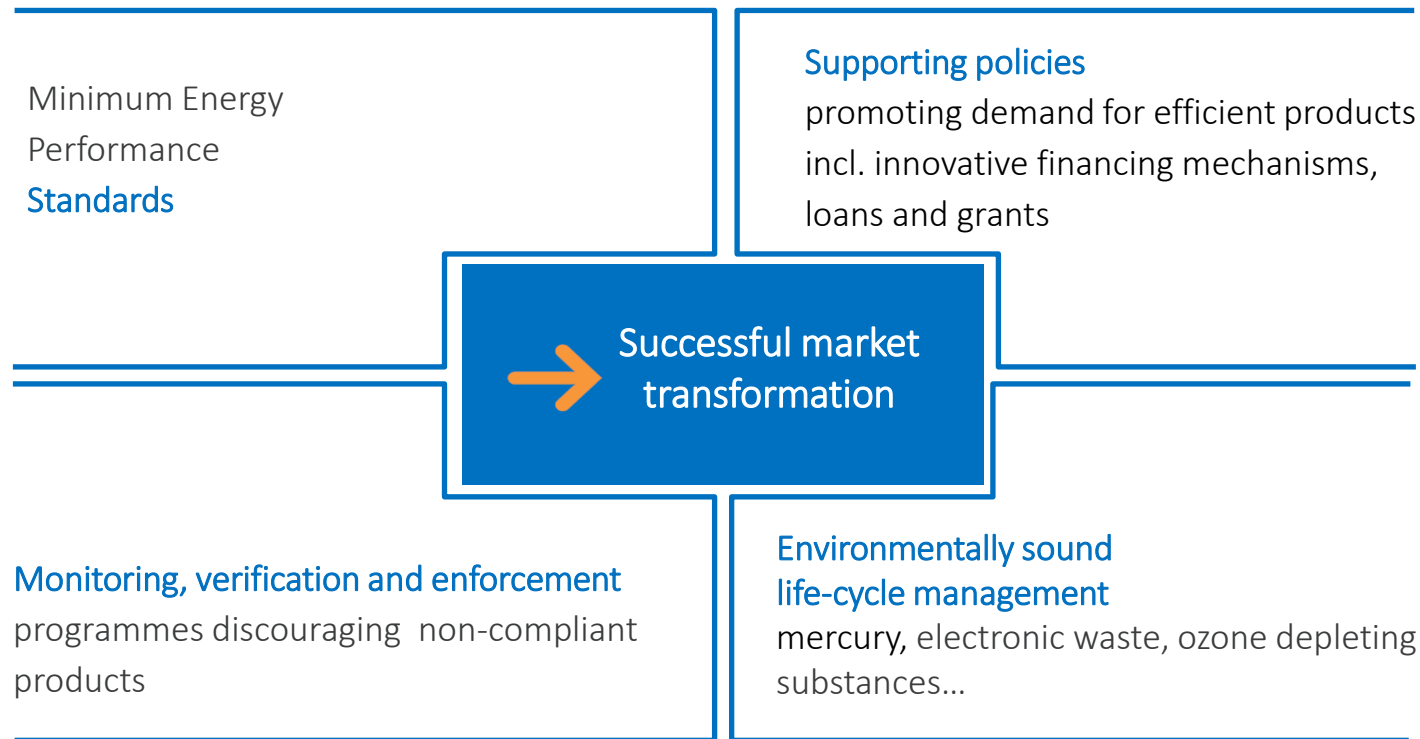


MEPS in 2013: mostly in OECD Countries

Our goal: MEPS in all countries by 2020!

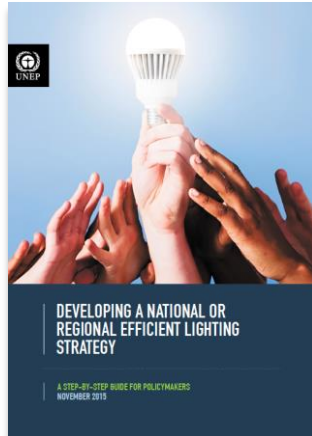


# Integrated Policy Approach to Transform Markets

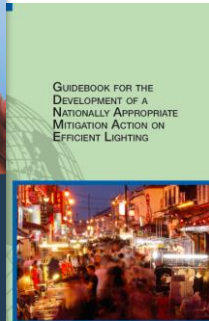


Policy Guidance Available for all Products in 2016!

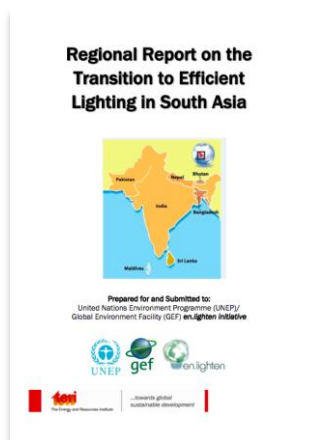
# Development of tools and guidance for countries



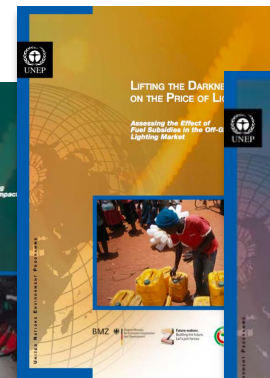
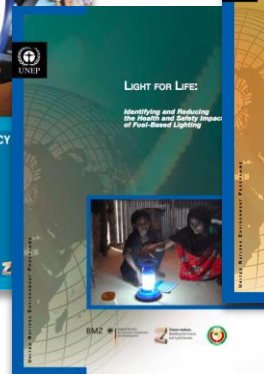
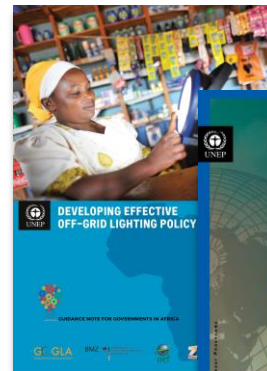
## On-grid lighting



## 6 regional status reports



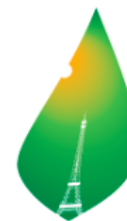
## Off-grid lighting



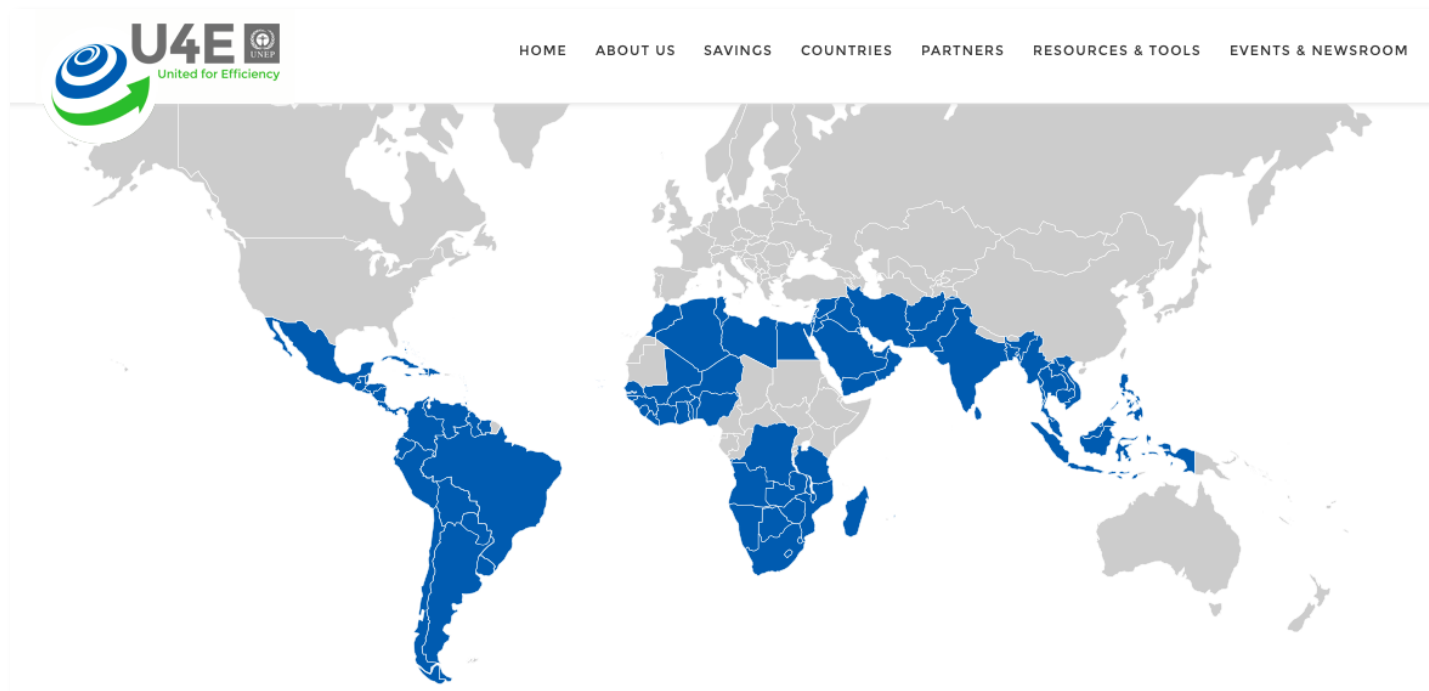


# MAKING THE CASE

## 100 Country Savings & Policy Assessments Released During COP21!



PARIS2015  
CONFÉRENCE DES NATIONS UNIES  
SUR LES CHANGEMENTS CLIMATIQUES  
COP21·CMP11



See <http://united4efficiency.org>



# Providing Expertise & Developing Tools

## The U4E Country Partnership



Support in the development of project proposals and providing access to financing





Training (online and face to face) on particular aspects of the integrated policy approach



Expertise provided throughout the implementation of projects advancing energy efficiency in lighting, appliances and equipment


**ENERGY EFFICIENCY**  
ACCELERATE THE  
TRANSITION TO EFFICIENT  
LIGHTING, APPLIANCES  
AND EQUIPMENT

  
**United Nations Environment Programme**  
Division of Technology, Industry and Economics  
75441 Paris Cedex 09 - France

In my capacity as representative of the Government of \_\_\_\_\_ [name of country] I request the accession of \_\_\_\_\_ [name of country] as a partner of the United Nations Environment Programme (UNEP) en.lighten and United for Efficiency (U4E) initiatives.

As a member of these partnerships with UNEP, the government of \_\_\_\_\_ [name of country] expresses its intention to take action to improve the efficiency of lighting, appliances and equipment. In return, \_\_\_\_\_ [name of country] will receive technical support and assistance in accessing funding for actions to promote the transition to energy efficient lighting, appliances and equipment.

The following officer is designated as the focal point of the partnerships in my country:



Name: \_\_\_\_\_

Title: \_\_\_\_\_


Address: \_\_\_\_\_


E-mail: \_\_\_\_\_

Name & Signature [Minister] and Ministry

Official Seal

Date

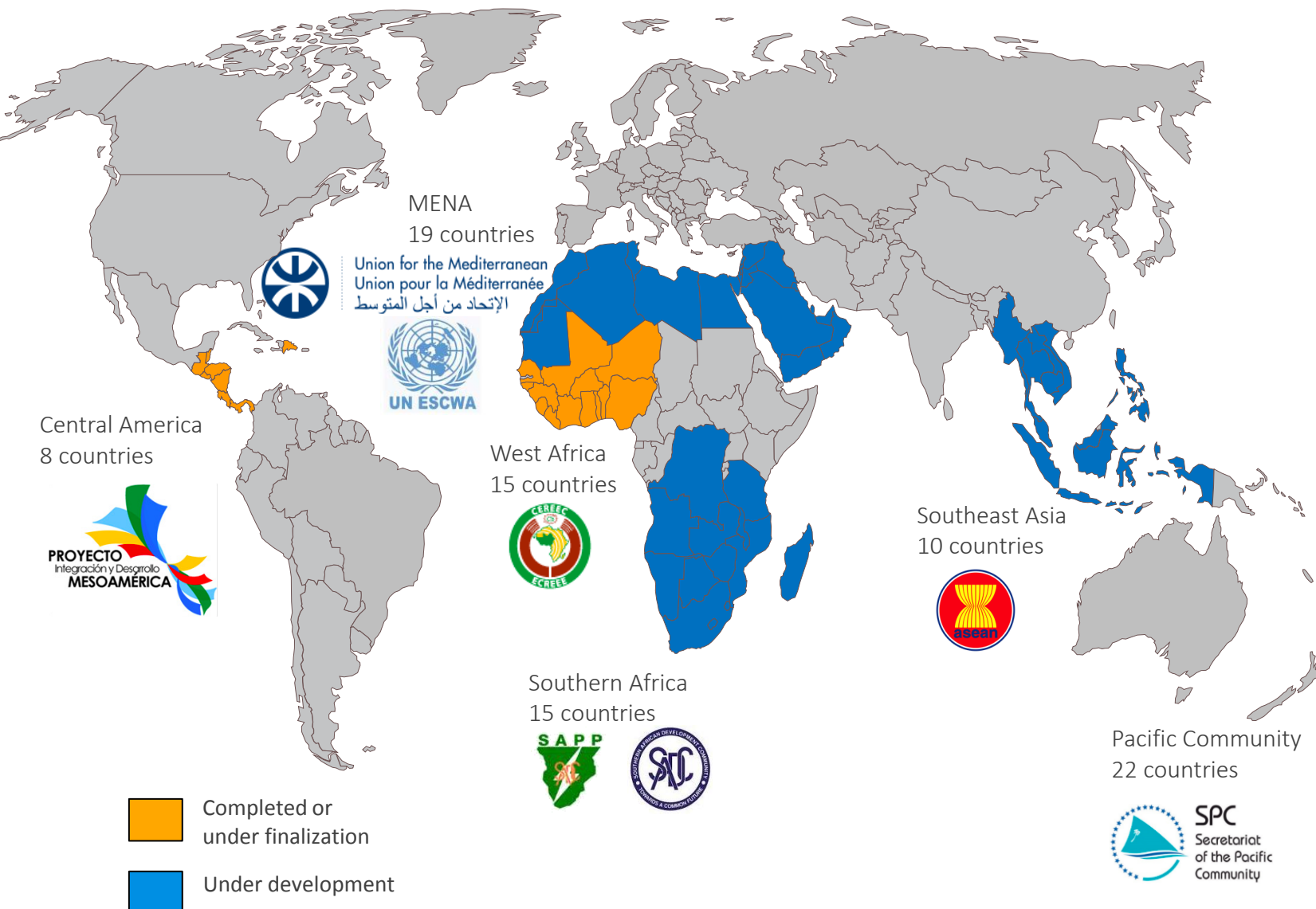
In support of  
 SUSTAINABLE  
ENERGY FOR ALL

 **GLOBAL ENERGY EFFICIENCY  
ACCELERATOR PLATFORM**





# Support to Regional Harmonization for Efficient Lighting, Appliances, and Equipment



## What U4E-en.lighten has to offer

### Promoting international cooperation

- ❑ Global public-private partnership (international organizations, expert organizations, manufacturers, countries)

### Promoting the development of new effective approaches to design, implement and evaluate energy efficiency standards and labels programmes

- ❑ Integrated policy approach and regional harmonization
- ❑ Making the case with country assessments
- ❑ Specific guidance and tools

### Opportunities for sharing experiences and data

- ❑ Country assessments
- ❑ U4E taskforces
- ❑ Training (online and workshops)
- ❑ Online platforms



# THANK YOU

For more information visit:

<http://united4efficiency.org/>

<http://www.enlighten-initiative.org/>



# Backup



# The potential annual savings in ECOWAS in 2030 for select products



Save electricity

- by over **11 TWh**
- By **8%** of future electricity use
- Equivalent to **Ghana** total electricity consumption in 2015



...and equivalent to  
**24 power plants**  
**[100MW]**



Save **1 billion US\$** on electricity bills

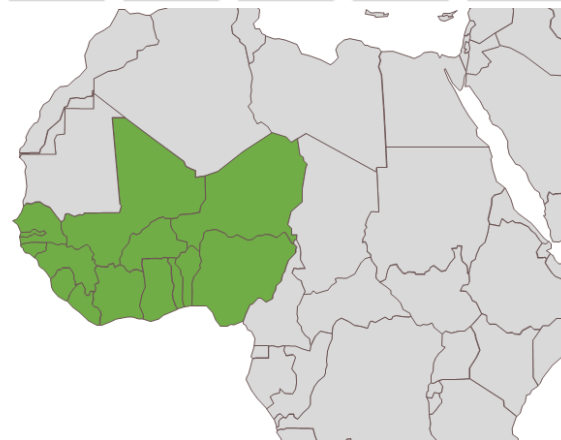


Increase grid connection  
**5 million Households**

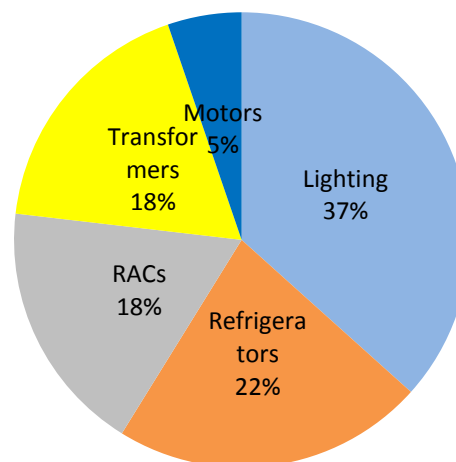


Reduce CO2 emissions by  
**5 million tonnes** per year

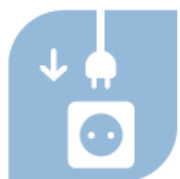
...equivalent to  
**3 million**  
**passenger cars**



Share of savings potential



# The potential annual savings in **Mesoamerican** in **2030** for select products



Save electricity

- by over **26 TWh**
- By **5%** of future electricity use
- Equivalent to **Costa Rica and Cuba** total electricity consumption in 2015



...and equivalent to

**58 power plants**  
**[100MW]**



Save **3 billion US\$** on electricity bills



Increase grid connection **2 million households**

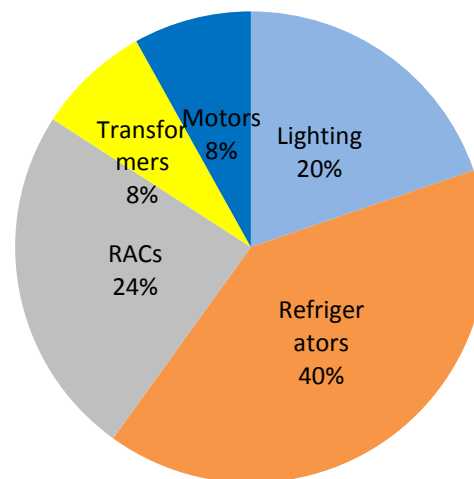


Reduce CO2 emissions by  
**14 million tonnes** per year

...equivalent to  
**8 million**  
**passenger cars**



Share of savings potential





# The potential annual savings in **Southeast Asia** in **2030** for select products



Save electricity

- by over **80 TWh**
- By **6%** of future electricity use
- Equivalent to **Philippines** total electricity consumption in 2015



...and equivalent to  
**184 power plants**  
**[100MW]**



Save **9 billion US\$** on electricity bills



Increase grid connection **18 million households**

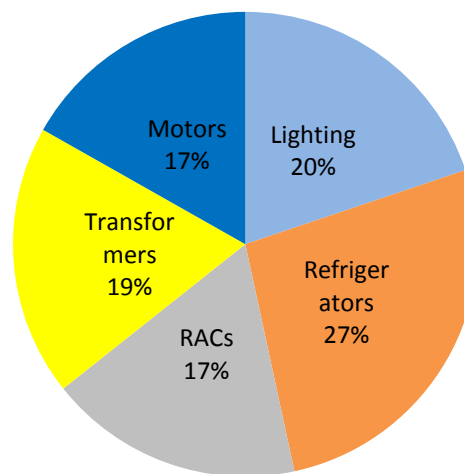


Reduce CO<sub>2</sub> emissions by  
**57 million tonnes** per year

...equivalent to  
**31 million**  
**passenger cars**



Share of savings potential



# The potential annual savings in ECOWAS in 2030 for select products



Save electricity

- by over **11 TWh**
- By **8%** of future electricity use
- Equivalent to **Ghana** total electricity consumption in 2015



...and equivalent to  
**24 power plants**  
**[100MW]**



Save **1 billion US\$** on electricity bills

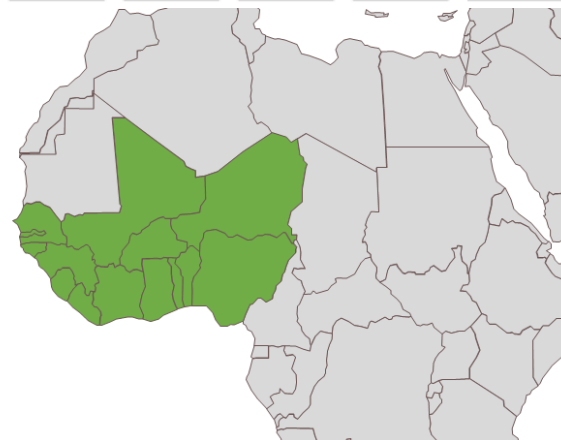


Increase grid connection  
**5 million Households**

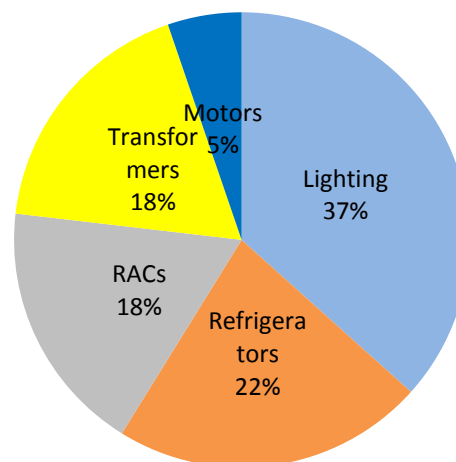


Reduce CO2 emissions by  
**5 million tonnes** per year

...equivalent to  
**3 million**  
**passenger cars**



Share of savings potential



# Making the Case Country Assessments



## Guatemala



Energy efficiency benefits from lighting, residential refrigerators, room air conditioners, distribution transformers and industrial electric motors with the implementation of globally benchmarked minimum energy performance standards

### ANNUAL SAVINGS IN 2030



Reduce electricity use

→ by over **1.3 TWh**

→ **10.0%** of future national electricity use



Save electricity worth **320 million USD**

equivalent to **3 Power Plants [100MW]**

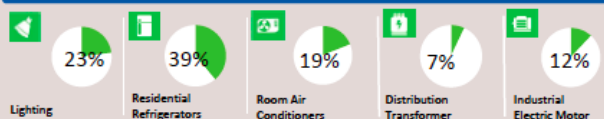


Reduce CO<sub>2</sub> emissions by **480 thousand tonnes**

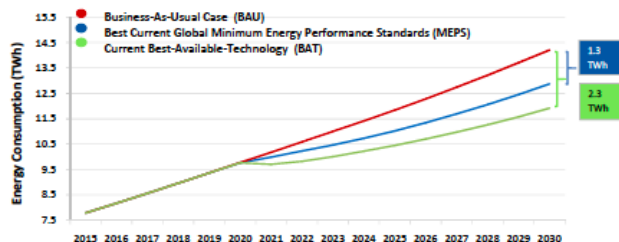
equivalent to **270 thousand Passenger Cars**



### PERCENTAGE OF EACH PRODUCT'S SAVINGS TO THE COUNTRY'S TOTAL SAVINGS IN 2030



### EVEN GREATER SAVINGS POSSIBLE WITH BAT MEPS



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## THE PATHWAY TO ENERGY EFFICIENCY



### ANNUAL SAVINGS IN 2025 and 2030

	Lighting		Residential Refrigerators		Room Air Conditioners		Distribution Transformers		Industrial Electric Motors	
	2025	2030	2025	2030	2025	2030	2025	2030	2025	2030
Electricity (GWh)	308.8	305.7	255.4	523.0	129.4	241.1	51.8	98.9	74.6	161.6
Electricity Bills (million US\$)	76.0	75.2	62.8	128.6	31.8	59.3	12.7	24.3	15.2	32.8
CO <sub>2</sub> Emissions (thousand tonnes)	112.3	111.1	92.9	190.1	47.1	87.6	18.8	30.4	27.1	58.7

### CUMULATIVE SAVINGS (2020 - 2030)

	Lighting	Residential Refrigerators	Room Air Conditioners	Distribution Transformers	Industrial Electric Motors
Electricity (TWh)	2.68	2.84	1.39	0.58	0.85
Electricity Bills (million US\$)	658.60	697.79	341.50	142.16	172.35
CO <sub>2</sub> Emissions (thousand tonnes)	973.25	1,031.15	504.65	177.41	308.30

### OTHER BENEFITS IN 2030

Direct GHG emissions reduced by →	<b>476.7 thousand tonnes</b>
Increased grid connection to →	<b>665.1 thousand households</b>
Reduced emissions by →	SO <sub>2</sub> <b>1.1 thousand tonnes</b> NO <sub>x</sub> <b>620.8 tonnes</b>

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# Policy Status



## Brazil



Energy Efficiency Policy Assessment for Lighting, Residential Refrigerators, Room Air Conditioners, Distribution Transformers and Industrial Motors.



### Lighting

	Policy Description	Policy Type	Mandatory or voluntary	Status
Minimum Energy Performance	MEPS for incandescent lamps/sodium lamps/CFL	MEPS		Implemented
Supporting Policy	EE Label for CFL, HID, incandescent/ballasts for HID	Label Comparative	Mandatory	Implemented
	EE Endorsement Seal for CFL/HID/incandescent/ballasts for	Label Endorsement	Voluntary	Implemented
Monitoring, verification and enforcement	Mechanisms of MV&E	MVE		Implemented
Environmentally sound management	Initiatives dealing with the recycling of fluorescent lamps			

Comments: For more details please visit <http://map.enlighten-initiative.org/>



### Refrigerators

	Policy Description	Policy Type	Mandatory or Voluntary	Status
Minimum Energy Performance	Ordinance Interministerial No 326/2011	MEPS	Mandatory	Implemented -2011
Supporting Policy	Procel - Refrigerators	Label Endorsement	Voluntary	Implemented -2010
	Ordinance Inmetro nº 20 de 01/02/06	Label Comparative	Mandatory	Under reversion 2006
Monitoring, verification and enforcement	Ordinance Interministerial No 326/2011	Verification and Enforcement	Mandatory	Implemented -2011
Environmentally sound management	Refrigerator Recycling Programme-a pilot facility	Recycling Facility...		Completed 2013

Comments:



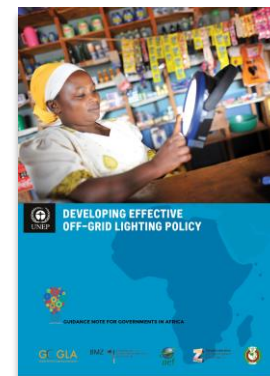
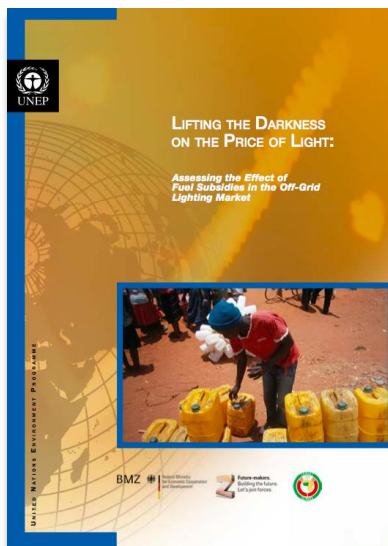
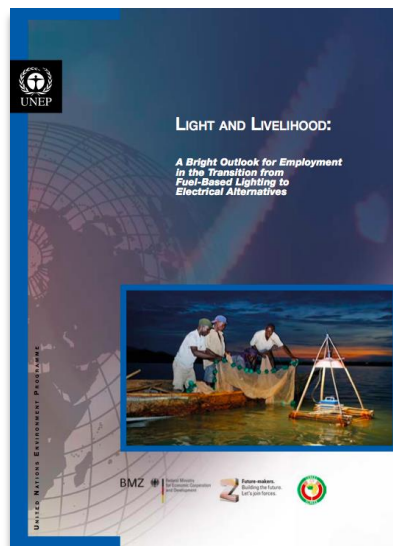
### Room Air Conditioners

	Policy Description	Policy Type	Mandatory or voluntary	Status
Minimum Energy Performance	Ordinance Interministerial No 323/2011	MEPS	Mandatory	Implemented -2011
Supporting Policy	Procel - Air conditioners	Label Endorsement	Voluntary	Implemented -2013
	RAC annexed to Inmetro Portaria No. 007 04/01/2011	Label Comparative	Mandatory	Implemented -2011
Monitoring, verification and enforcement	ORDINANCE INTERMINISTERIAL No 323, OF 26 MAY 2011	Verification and Enforcement	Mandatory	Implemented -2011
Environmentally sound management	Sectorial Plan Agreement	Agreement for recycling scheme...	Mandatory	Implemented -2013

Comments:



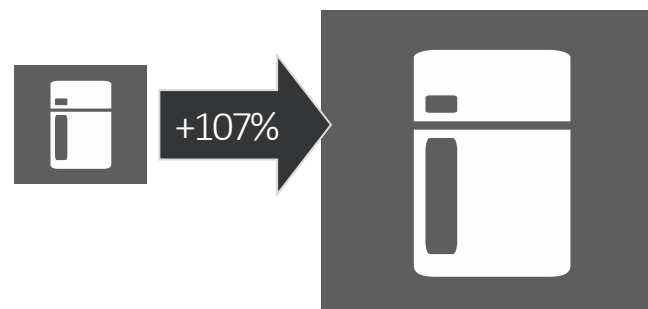
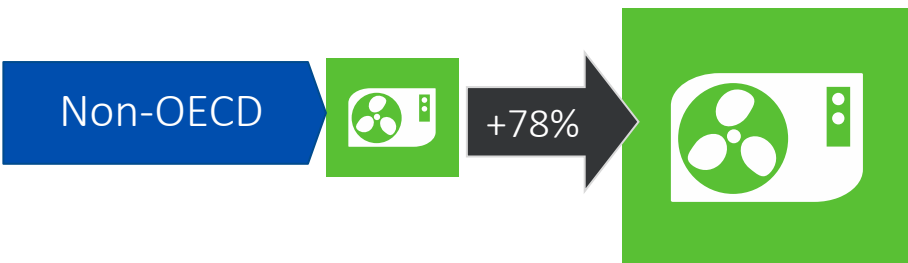
# Off-Grid Lighting Publications



# Countries Risk Locking-in Inefficient Products

Global stock of  
room air conditioners

Global stock of  
refrigerators



2010

2030

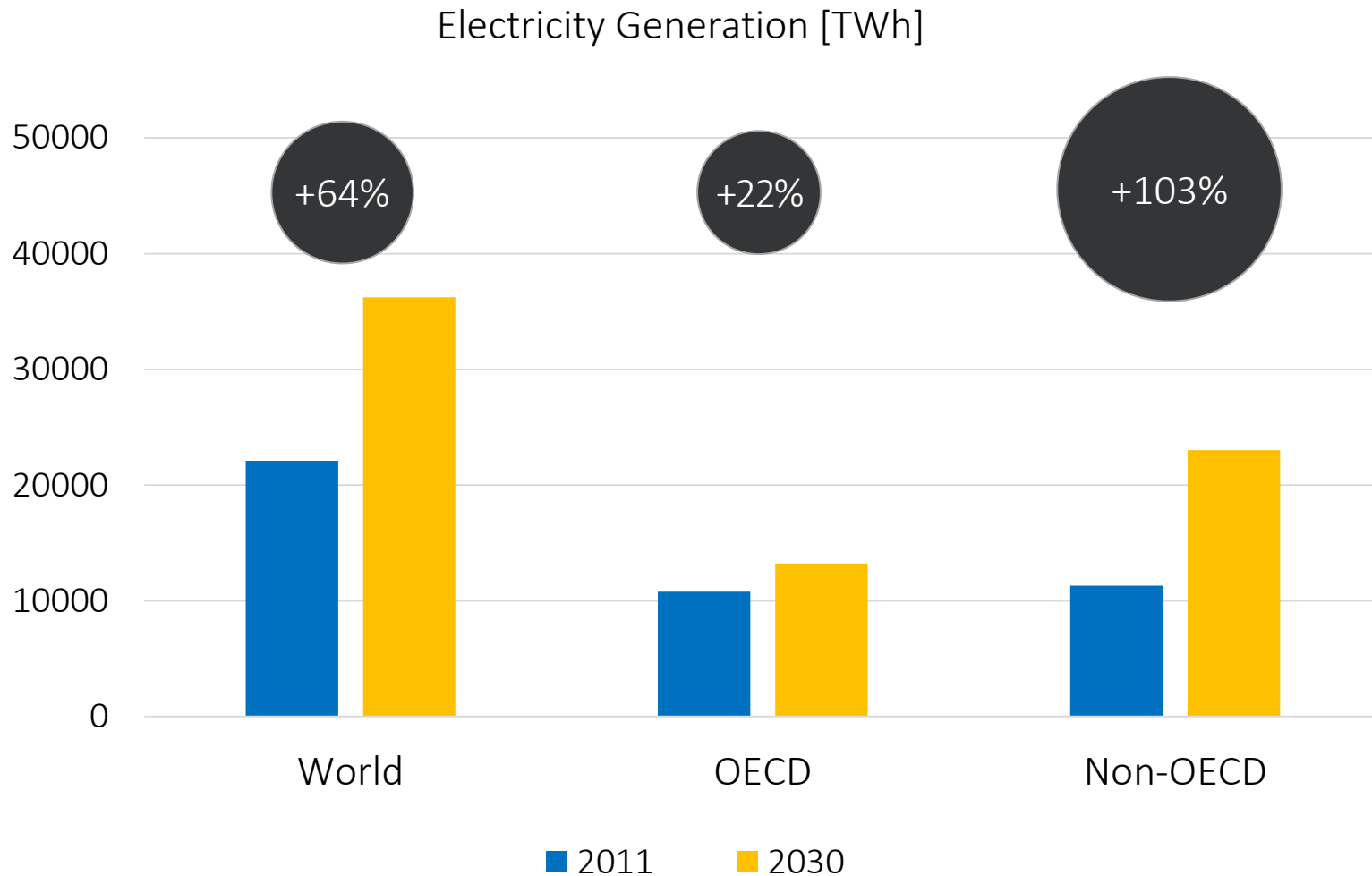
2010

2030

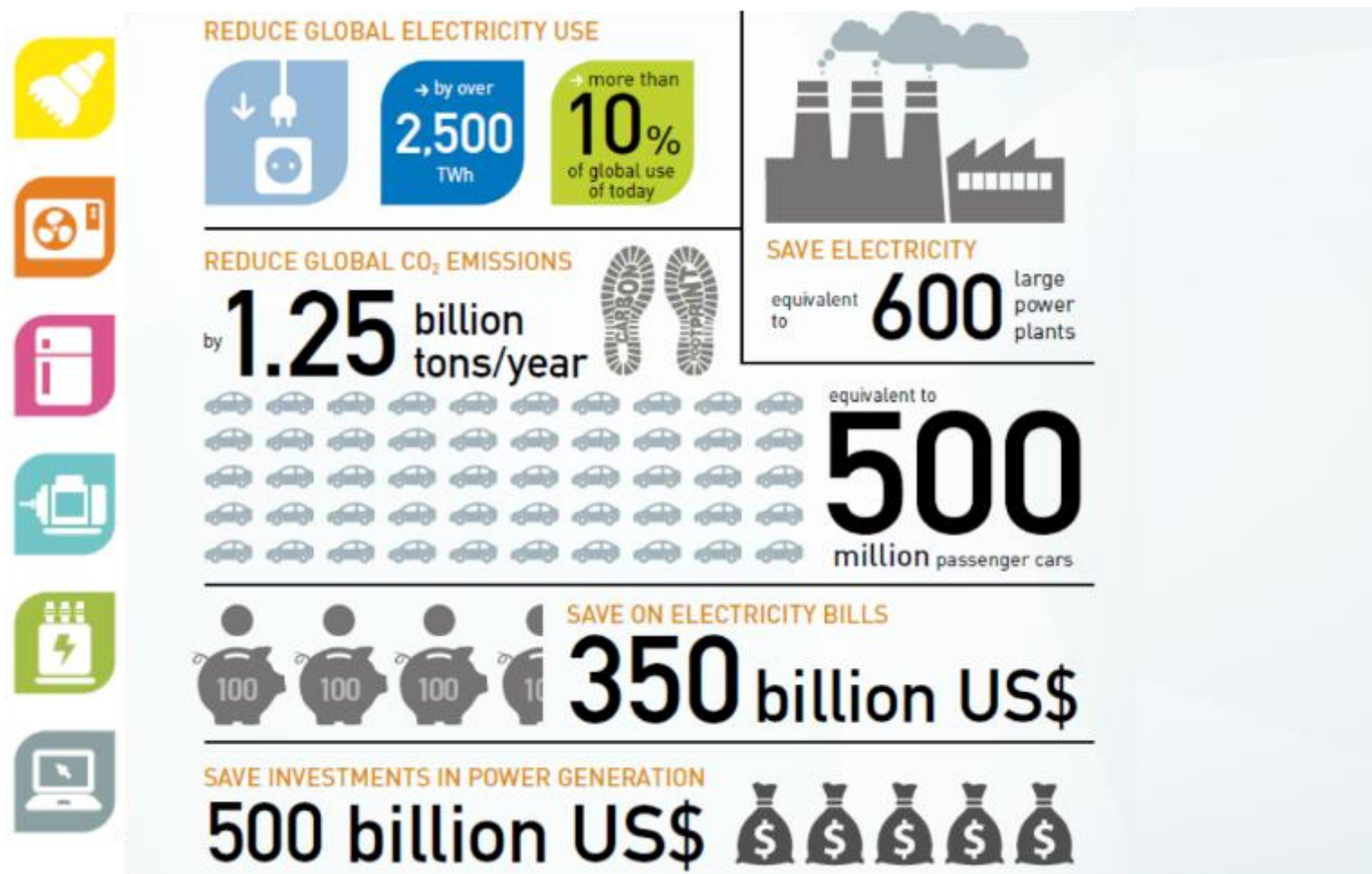




# With No Action, Electricity Demand in non-OECD Countries Will Double by 2030



# The Potential of Improving Energy Efficiency in the Top 6 High-consuming Products



Source: UNEP, 2014 (estimated annual figures for 2030)

# 50% of Savings We Need to Keep the 2°C Climate Goal Alive Can Be Achieved With Energy Efficiency



Image: Columbia Sportswear Company, Santiago de Chile (2009)

Figures: IEA WEO Special Report 'Redrawing the Energy-Climate Map' 2013

