

The logo for amee, featuring the lowercase letters 'amee' in a bold, green, sans-serif font.

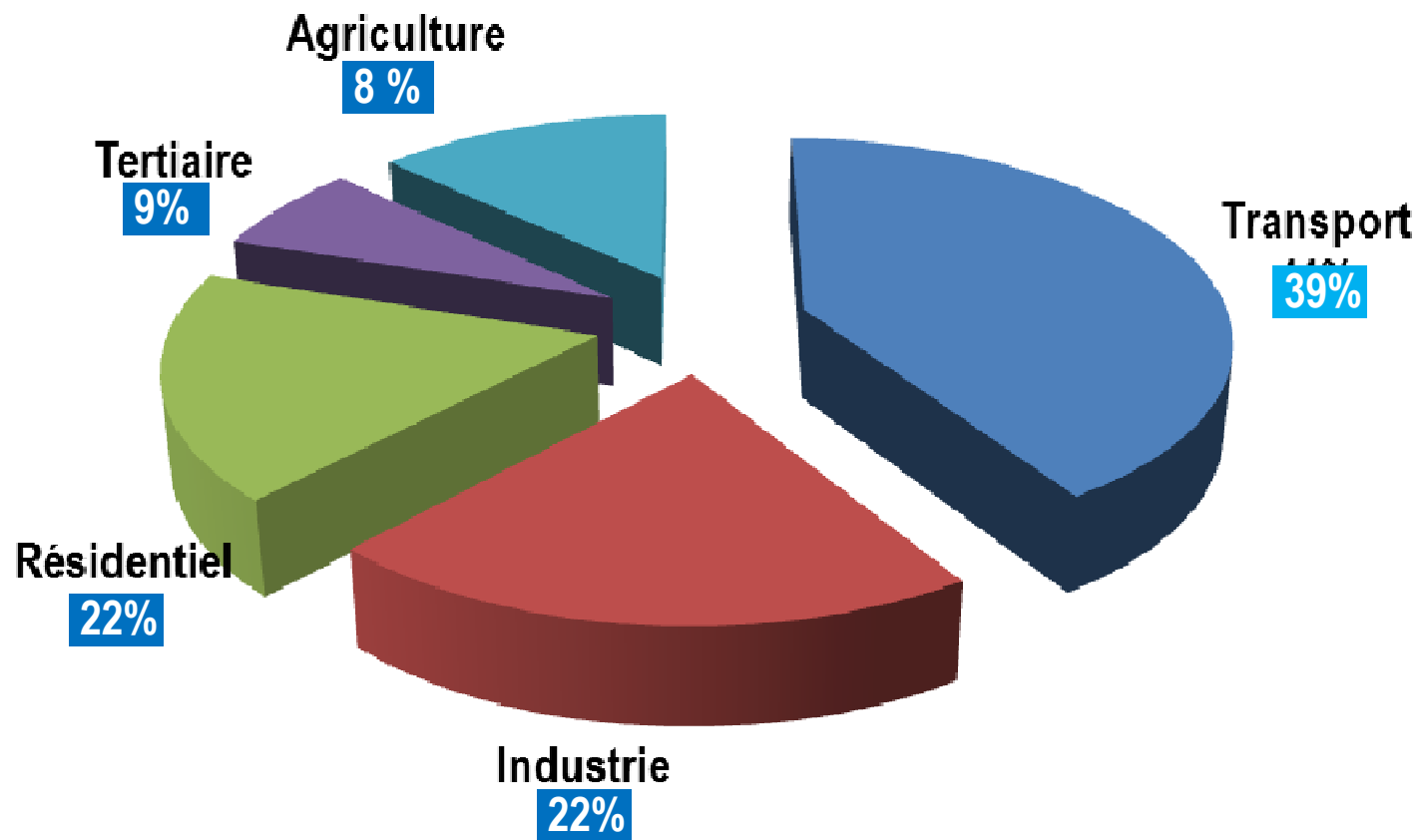
Agence Marocaine  
Pour l'efficacité Energétique

The background of the slide is a close-up photograph of a green energy meter. The meter has several circular dials with numbers and a needle. The text 'KILOWATTHOURS' is embossed on the meter's face. The lighting is dramatic, with strong highlights and shadows, giving it a textured appearance.

# Energy Efficiency and Quality Morocco

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*Director of Energy Efficiency*

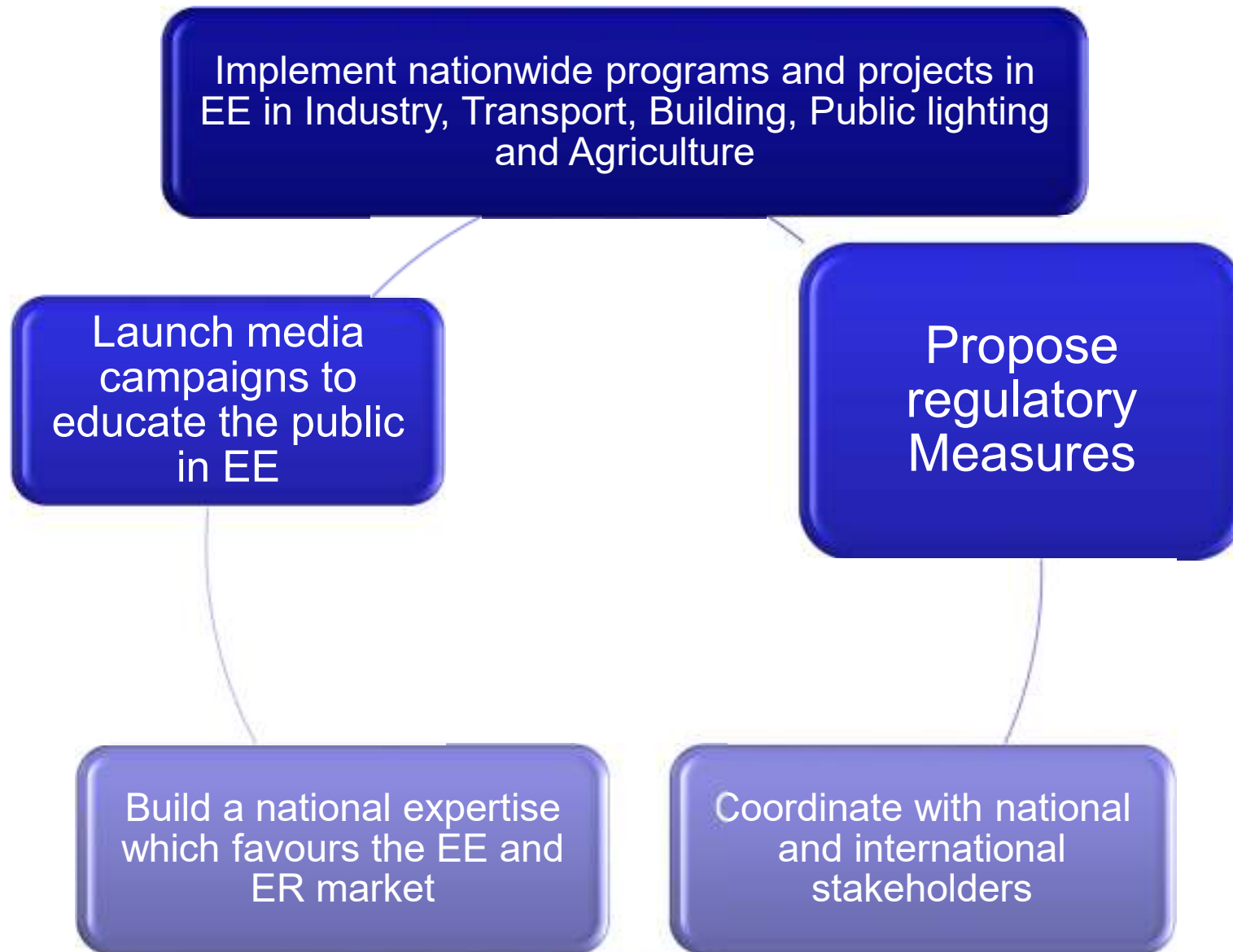
# Energy Consumption



## Energy Consumption

- ❑ Morocco's energy consumption is highly dependent on foreign imports. **Over 93% of energy consumption is imported**
- ❑ Morocco's energy consumption is estimated at 19 million tonnes of oil equivalent (Mtoe). Total energy consumption has increased by almost 4.2% per annum since 2004, and remains dominated by **fossil fuels which account for 73%**.

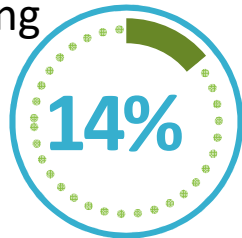
# AMEE's Missions



# National EE Objectives

The Energy Efficiency Strategy sets ambitious target objectives in energy savings for each sector

Construction  
and Public  
Lighting



Transport



Industry



Agriculture  
and Fisheries



A 20% reduction of the national energy consumption  
by 2030

## Main AMEE's National Programs on EE in buildings

- New regulatory framework** : EE in construction/Thermal insulation (RTCM-2015)
- Setting up training plate-forms and standards in buildings , **New National Software BINAYATE**, Guides,etc
- Rising awareness** and support : national campaign, Guides, training,etc
- Study of energy impact
- New Clean and **sustainable cities**
- Solar water heaters and PV in the building

# Smart Grid and Energy Efficiency- 5 new Cities Under Way

Buildings  
and  
Public  
Lighting

Energy monitoring : Providers-  
Consumers  
High EE Equipements  
Code of Buildings

Smart  
Buildings

Transport

Electrical Vehicules  
Multiple Public transport Services  
Public Services closer

Clean  
Mobility

Industry

Mandatory Audits  
-ISO 50001  
Energy Monitoring  
Centralized Energy Distribution

Smart  
Industry

**I-Quality of the Equipment**



## Minimum Energy Performance Standards (MEPS)

- ❑ Implementing the **Minimum Energy Performance Standards** - Energy efficiency standards and labelling in Morocco ” Project
- ❑ Improve **Best quality of equipment** in Industry and Building

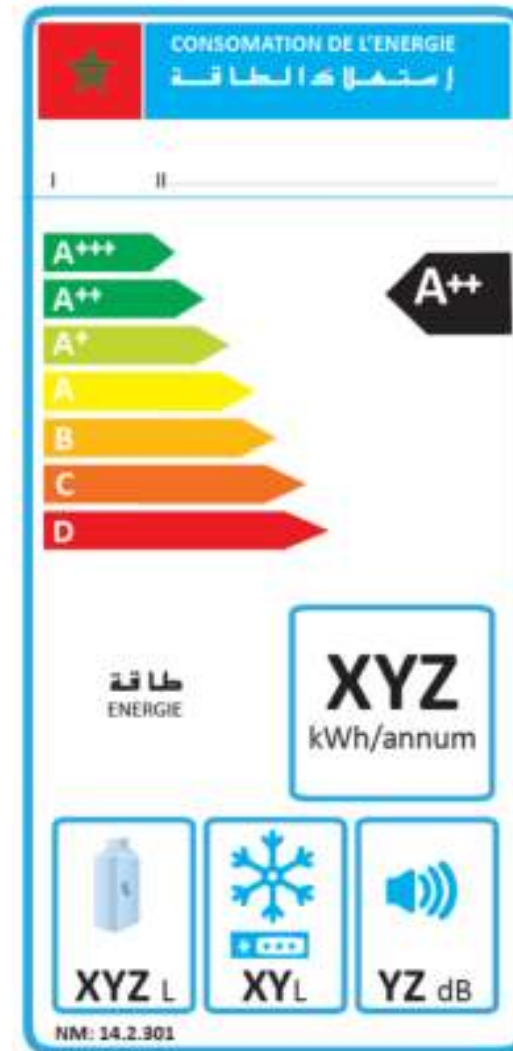
### Four Equipment:

1. **Air conditioning** : Done, New Standards **approved**
  2. **Refrigerators** : Done, New Standards **approved**
  3. Electrical Motors : in progress
  4. Transformers in progress
- ❑ Technical Assistance to Private and Public Sector : **Energy Audit, Tenders, training, awarness,etc**

# Moroccan Air conditioning and Refrigerators LABELS



PNM 14.2.302



NM: 14.2.301

# AMEE Thermal test LABORATORY

## Test Bench for Solar Thermal systems

- Solar Collectors

- SWH systems

## SWH

- NM ISO 9806 (Solar Collectors)

- NM 14.5.002 & NM EN12976-2 (SWH Systems)

## PV systems

- Test of PV Systems and panels (IEC 61215)

- Test Outdoor

- Test Indoor (solar simulator)

# Thermal Laboratory

N°	Test
	<b>Thermal performance (<math>\eta_0</math>-<math>a_1, a_2</math>) : collector</b>
1	<b>Internal pressure tests for fluid</b>
2	<b>High temperature resistance test</b>
3	<b>External thermal shock test</b>
4	<b>Internal thermal shock test</b>
5	<b>Water tightness test</b>
6	<b>Positive pressure mechanical load test</b>
7	<b>Negative mechanical load test "depression"</b>
8	<b>Impact test using steel balls</b>

**Accreditation process underway ISO/IEC 17025 standard  
(Cooperation with the German PTB).**

# Thermal Laboratory



# PV Solar Simulator

1. I/V curve indoor and outdoor according to IEC 61215
2. Electrical isolation test



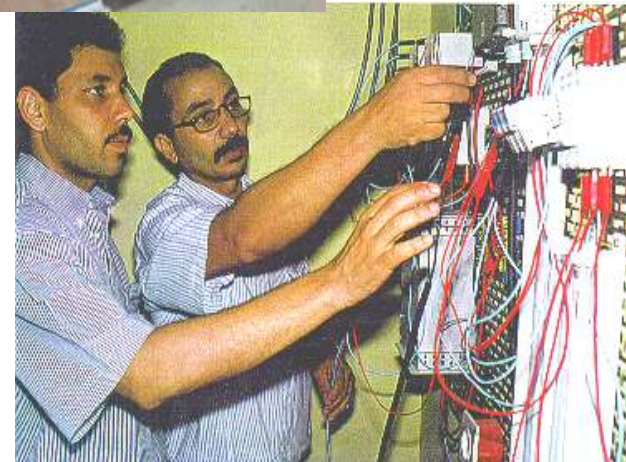
- Solar simulator class AAA LA 150200
- Test surface: 1500 mm \* 2000 mm
- Up to 500 Wc PV panel

## **II-Quality of the Installation**

# AMEE-UNESCO's Training Centrer



- AMEE has in its Green Platform in Marrakech, a Training Center accredited and selected in June 2013 by **UNESCO** as **Category II**
- **PV and Solar Thermal Laboratories**
- African and regional **RE and EE training Platform**
- More than **2100 trainees since 1996** from **22 African** countries





## GrennPlateform- Marrakech



### Training (2-15 practical training days (Sizing, O&M, etc) : Training Module

1. Solar Water Heaters (**SWH**)
2. **PV** connected to the grid and decentralized
3. Energy efficiency in **Industry**
4. Energy Efficiency in **Building**
5. **Public Lighting**



# Creation of a New National Green Market

- ❑ Development of manufactures and companies in **energy efficiency and electronic devices** (lamps, detectors, spare parts,etc), **PV systems, SWH, Thermal Insulation and Double Glazed, Industry process,etc**
- ❑ **New engineering firms and experts,etc**, in energy efficiency in **building** and in **Industry** (audit certification ISO 5001, energy audits, verification, etc)
- ❑ **EE component in Buildings, Industry, Transport, Agriculture and Public lighting** (Electronic and Thermal component and devices)
- ❑ **New EE and RE Institutes- High level skills**

***Thank you for your attention***



***Mohamed EL Haouari***  
*Director of Energy Efficiency*