



ECONOLER

In Collaboration with:



**AGoSEREE-AO Project: Implementation of ECOWAS
Approved Minimum Energy Performance Standards
(MEPS) and Development of New MEPS for Electric
Appliances in West Africa**
– **Baseline Report**

Paul Waide

**Regional workshop for validation of draft standards
Dakar, Senegal, 20 May 2019**

GIZ - ECREEE

KEY ACTIVITIES

Core Processes

WP 0. : Holding a kick-off meeting with ECREEE/GIZ team and the ECOWAS members

Kick-off meeting and inception report

WP 1. Making a Baseline Assessment

Data collected on existing MEPS (ECOWAS and national), labels, testing facilities, institutional and regulatory framework in the sub-region and identification of new MEPS to be developed

WP 2. Formulating a Strategy for Implementing Regional MEPS at the National Level

Formulation of a strategy for the implementation of regional MEPS at national level.

WP 3. Developing Two New MEPS

Development of drafts of two new MEPS and Organization of the workshop for validation and harmonization of two new MEPS.

WP 4. Developing a Regional EE Label for Electrical Appliances

Development of a regional EE S&L for electric appliances and define the content and directive or regulation on EE S&L for electric appliances

WP 5. Conducting an Appraisal of Testing Facilities for Electrical Appliances

Appraisal of MEPS testing facilities in West Africa.

WP 6. Harmonizing the MEPS and the Labelling Scheme

Harmonization process of MEPS and labelling.

WP 7. Reporting

Reporting activities (monthly progress reports, interim reports and final reports).

ORIENTATION - A REVIEW OF ECOWAS, WAEMU AND OTHER ORGANIZATIONS REPORTS ON THE MEPS AND LABELLING SCHEMES IN EACH REGION AND COUNTRY ADDRESSED

1. The Team began by compiling and reviewing all available reports on the previous and on-going initiatives related to MEPS and energy labelling in each country addressed
2. Econoler and Fraunhofer staff have previously been involved in supporting many of these initiatives and hence have good connections to local sources and actors
3. A team of local consultants has been hired to support the project and their input and knowledge has been canvassed to help clarify the current local situation and working assumptions

MAP OF NATIONAL EXPERTS



Figure 7: Map of National Experts

SELECTION OF FOUR PRIORITY EQUIPMENT TYPES FOR FURTHER ANALYSIS

The first step is to perform a triage of the potential residential electrical end-uses to determine which products are the most promising candidates for MEPS. In principle the triage considers the following:

- a) the products which account for the highest share of electricity use
- b) the likely energy savings potential from using more efficient products
- c) practical factors that affect the viability of introducing MEPS

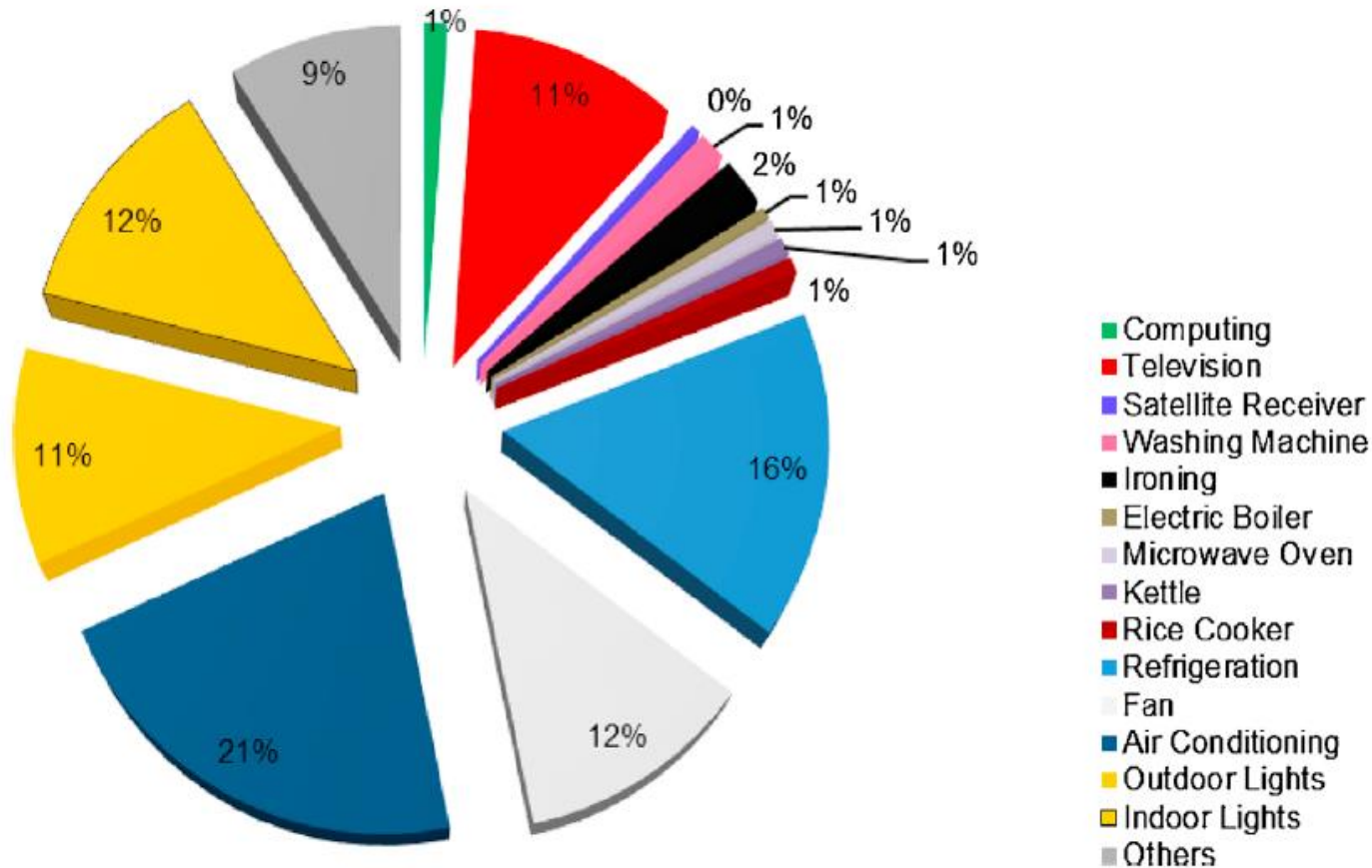
SELECTION OF FOUR PRIORITY EQUIPMENT TYPES FOR FURTHER ANALYSIS

- The rank order of product's energy use is determined by the typical unit energy consumption (UEC) expressed in kWh/year of a product group multiplied by the number of products in the stock
- The energy savings potential depends on the technical potential to improve efficiency of any given product group
- This varies as a function of the average technical solution currently in use (the Base Case) versus the best (most energy efficient) that could be used – the Best Available Technology (BAT)
- It also needs to consider market realities e.g. MEPS are unlikely to be proposed at an efficiency level that would force the adoption of products which may be extremely energy efficient yet would become unaffordable to the general public

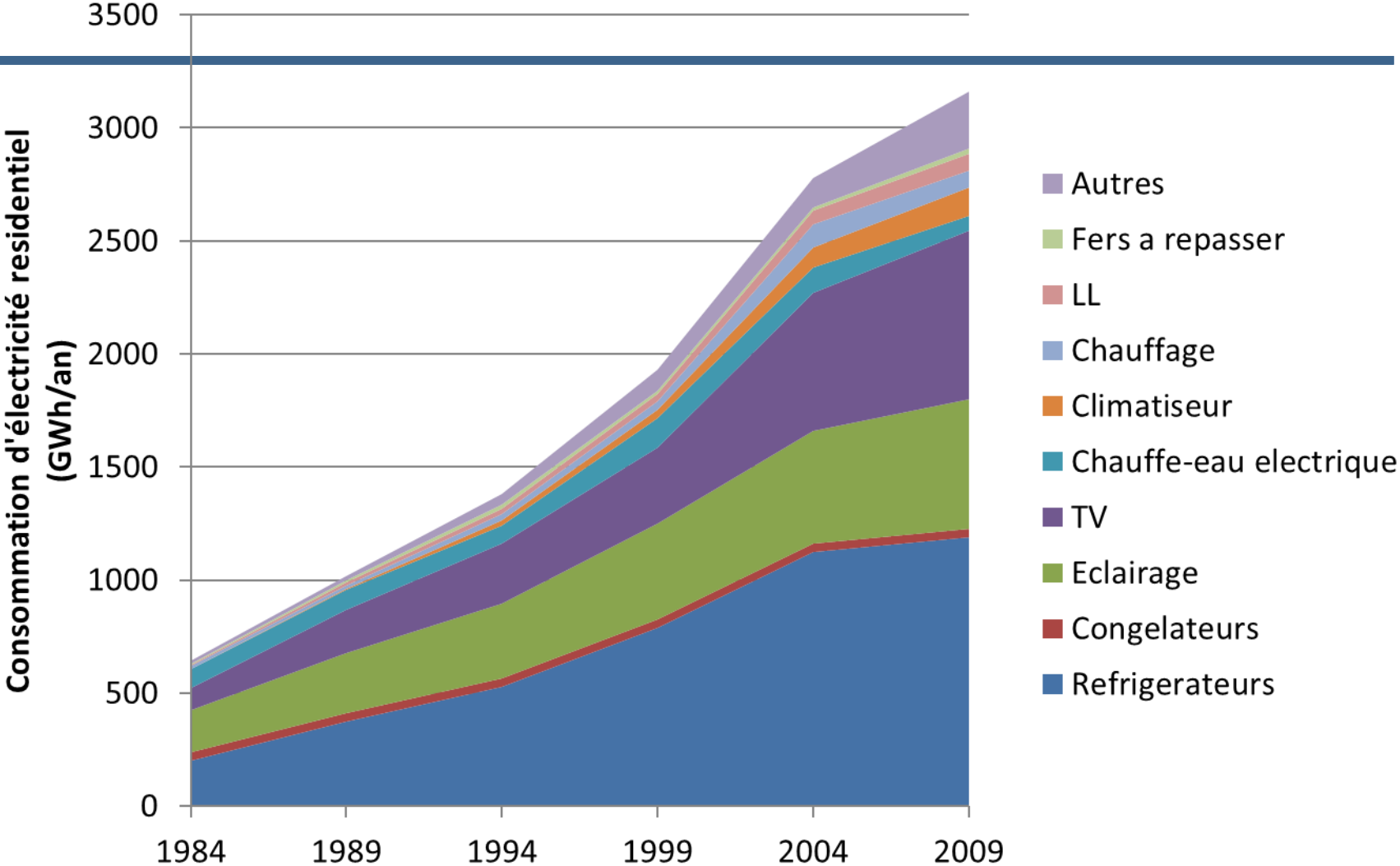
METHODOLOGY APPLIED

- Local surveys on the UECs, the share of energy use by appliance type, the efficiency and savings potentials are missing in most of the ECOWAS region
- But this is typical when MEPS and labelling programmes first start, so it is necessary to make informed assumptions
- Use a blend of international and whatever local data sources are available to develop the estimates
- This method is very well proven – the study team members have applied it in very diverse projects including in South Africa, Tunisia, Egypt, and Morocco and later research based once detailed data has become available has always validated the original estimates
- This is because there is quite a high degree of commonality across regions and with regard to household electricity use

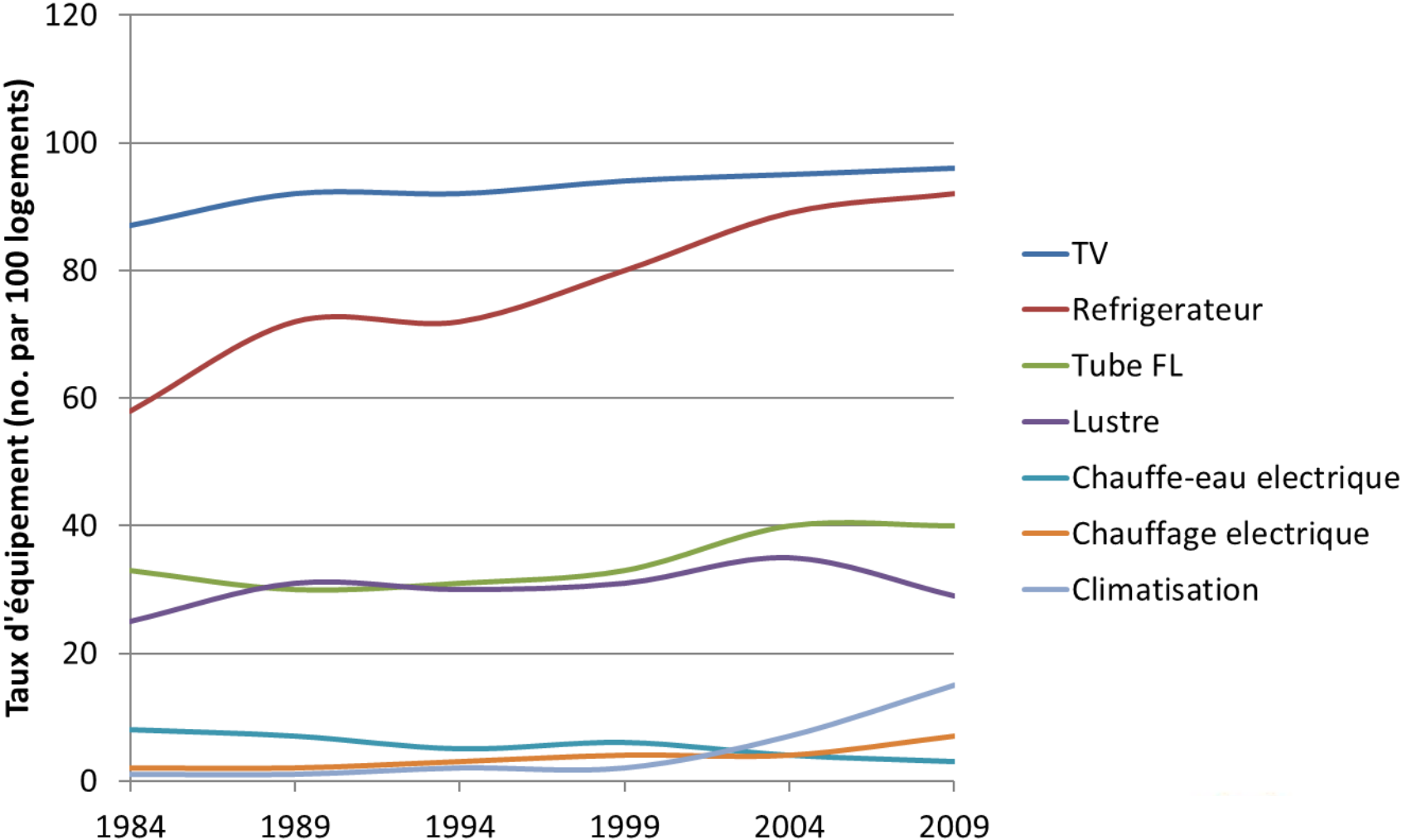
HOW MUCH ELECTRICITY IS CONSUMED BY DIFFERENT END USES? A CASE STUDY FROM DAKAR



RESIDENTIAL ELECTRICITY CONSUMPTION BY END-USE – AN EXAMPLE FROM TUNISIA



OWNERSHIP OF HOUSEHOLD APPLIANCES BY END-USE – AN EXAMPLE FROM TUNISIA



POTENTIAL ENERGY SAVINGS BY END-USE – AN EXAMPLE FROM TUNISIA

End-use	Energy savings potential from MEPS and labelling	Part of the total residential electricity consumption by end-use
Refrigerators	40%	38%
Freezers	40%	1%
Lighting	45%	18%
TV	25%	24%
Electric water heaters	10%	2%
Air conditioners	35%	4%
Heaters		2%
Clothes washing	35%	2%
Irons		1%
Others	15%	8%
Total	33%	

WHAT IS THE ESTIMATED ELECTRICITY CONSUMED BY DIFFERENT END USES AND SAVINGS POTENTIALS IN ECOWAS?

	Share of electricity use	Savings potential	Savings potential (share of total HH electricity consumption)
Lighting	23%	50%	11.5%
Refrigerators	16%	50%	8.0%
Air conditioning	21%	35%	7.4%
Televisions	11%	30%	3.3%
Fans	12%	20%	2.4%
Computers	1%	30%	0.3%
Water heaters	1%	20%	0.2%
Rice cookers	1%	15%	0.2%
Washing machines	1%	8%	0.1%
Microwave ovens	1%	5%	0.1%
Satellite receiver/Set-top boxes	0%	5%	0.0%
Irons	2%	0%	0.0%
Kettles	1%	0%	0.0%
Other	9%	5%	0.5%
	100%		34%

A QUESTIONNAIRE TO COLLECT DATA FROM EACH COUNTRY COVERED BY THE PROJECT

- A questionnaire on MEPS and labelling relevant topics has been developed
- local consultants have been hired in every country
- Lists of all relevant stakeholders have been compiled
- The questionnaires have been circulated to these stakeholders
- Responses have been received from several countries but many more are still pending

QUESTIONNAIRE CONTENT

Part 1: General Information Data Collection Form

Part 2: Data collection form for electrical appliances and equipment market analysis not yet covered by ECOWAS draft regulations

Part 3: Data Collection Form for the Development of MEPS for Electrical Appliances and Equipment

Part 4: Data Collection Form for Electrical Appliances and Equipment Testing Facilities

Part 5: General Questions

Status – currently results received from just under half the countries addressed so more are needed to get complete picture

EXAMPLE - BENIN

Electrical equipment	MEPS	Status	Energy Label	Status	Institution in charge
Fans	NO	Not planned	NO	Not planned	ANM ¹
TV	NO	Not planned	NO	Not planned	
Electric water heaters	NO	Not planned	NO	Not planned	
Desk top computers	NO	Not planned	NO	Not planned	
Other relevant electrical appliances and equipment other than lighting / fridge/ AC	NO	Not planned	NO	Not planned	

EXAMPLE – BURKINA FASO

Electrical equipment	MEPS	Status	Energy Label	Status	Institution in charge
Fans	NO	Planned	NO	Planned	Agence Burkinabé de la Normalisation de la Métrologie et de la Qualité
TV	NO	Planned	NO	Planned	
Electric water heaters	NO	Planned	NO	Planned	
Desk top computers	NO	Not planned	NO	Not planned	
Other relevant electrical appliances and equipment other than lighting / fridge/ AC	NO	Not planned	NO	Not planned	

EXAMPLE – CÔTE D’IVOIRE

Electrical equipment	MEPS	Status	Energy Label	Status	Institution in charge
Fans	NO	Not planned	NO	Not planned	Bureau des économie d'énergie / CNTS
TV	NO	Not planned	Yes	Not planned	
Electric water heaters	NO	Not planned	NO	Not planned	
Desk top computers	NO	Not planned	NO	Not planned	
Other relevant electrical appliances and equipment other than lighting / fridge/ AC	NO	Not planned	NO	Not planned	

EXAMPLE – GUINEA

Electrical equipment	MEPS	Status	Energy Label	Status	Institution in charge
Fans	NO	planned	NO	planned	Le Ministère de l'Énergie et le Ministère de l'Industrie à travers l'IGNM (l'INSTITUT GUINEENNE DE NORMALISATION ET DE METROLOGIE).
TV	NO	planned	Yes	planned	
Electric water heaters	NO	planned	NO	planned	
Desk top computers	NO	planned	NO	planned	
Other relevant electrical appliances and equipment other than lighting / fridge/ AC	NO	planned	NO	planned	

EXAMPLE – TOGO

Electrical equipment	MEPS	Status	Energy Label	Status	Institution in charge
Fans	NO	Not planned	NO	Not planned	Ministère de l'énergie, Industrie a travers de la direction des Énergie Renouvelables et Domestiques.
TV	NO	Not planned	Yes	Not planned	
Electric water heaters	NO	Not planned	NO	Not planned	
Desk top computers	NO	Not planned	NO	Not planned	
Other relevant electrical appliances and equipment other than lighting / fridge/ AC	NO	Not planned	NO	Not planned	La Direction Générale de l'Énergie (DGE) et l'Agence Togolaise de Normalisation(ATN)



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BASELINE REPORT: MODEL TO ASSESS THE POTENTIAL IMPACTS OF MEPS

ECREEE / GIZ

Antoine Durand (Fraunhofer ISI), Dakar, 22 May 2019

RECOMMENDATIONS REGARDING TARGETS FOR MEPS

- The most promising candidates for MEPS are:
 - Fans
 - Televisions
 - Electric storage water heaters
- Desk top computers have significant energy savings potential but are very hard to set MEPS for (only Japan has tried and EU is considering) due to the high rate of technical change. Laptops do not have a market failure (as the market rewards high efficiency) and hence do not need regulation
- While washing machines are regulated in many economies this is only worth doing when hot water (rather than ambient) is used – both hand washing and ambient water temperature washing seem to predominate in the region