

The Journalist as a Change Agent for Rational Use of Electrical Energy in Beninese Public Administrations

Dokpo Alain Junior

National School of Information and Communication Science and Technology, University of Abomey-Calavi, Godomey, Republic of Benin

Email address:

dokpo3@yahoo.fr

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Abstract: This research paper focuses on the issue of energy efficiency in Beninese public administrations which are viewed as pockets of waste of electrical energy. The user-doesn't pay behavior developed by some administrative staff often result in overrunning the budget's voted appropriations as regards energy expenditure. As a result, the government doesn't always succeed in paying its electricity bills on time. To reverse the trend, to reduce the government's electricity bills, the journalist, in accordance with his/ her mission to inform, educate and entertain has a part to play. For that purpose, the journalist himself/herself must be informed about energy efficiency to grasp not only its semantic content but above all the kind of small actions which help save energy and money. Noting that the theme of energy efficiency is less commonly addressed by the Beninese journalists in the print media as well as in the audiovisual media, we have carried out two surveys by questionnaires in Abomey-Calavi and Cotonou, two neighboring cities. The former with ninety-four (94) administrative staff and the latter with seventy-four (74) Beninese journalists intervening in the Society and Environment Desks responsible for the issue of energy efficiency. The findings are striking: 89,75% of the administrative staff set the air conditioner in their office at 16°C instead of 24°C or 25°C; consuming more electrical energy as a result. Regarding the journalists, our findings show that the theme of energy efficiency is addressed only during the implementation phases of energy efficiency-related projects. The journalistic genres they use are journalistic accounts, reporting of events, and talk shows.

Keywords: Energy, Public Administrations, Waste, Journalists, Awareness

1. Introduction

Humanity assures its flourishing thanks to the energy. Man cannot lead a decent existence without using energy. The availability of energy remains and remains a determining factor of sustainable development [1], the survival of man and development of societies [2]. Therefore access to energy is essential for socio-economic development in the poor countries of the world [3]. Energy is therefore an important factor in achieving the millennium goals for the development [4].

Our modern world is undergoing great energy change and that is compelling nations to undertake a paradigm shift by defining a new energy policy. There are several reasons behind such a constraint. First, there are tensions in the oil and gas market and the rise in prices. Secondly, there is the need for energy security not to mention the deterioration of the climate with impacts that are of very great concern not

only to leaders but also to citizens. The situation is worrying in countries such as Benin, which in part is dependent on countries abroad for its energy supply. Meanwhile, domestic demand continues to increase, forcing the Government and Benin's Electricity Company to make new investments. The little energy available, imported at great expense, is wasted by households as well as the public administration due to the use of lightbulbs and other energy-intensive equipment. Bad behavior that is so out of touch with energy efficiency contributes to the waste of this precious commodity that some countries are striving to save. The International Energy Agency (IEA) in its 2012 report estimated that: "*Energy efficiency is a major policy failure in countries as a whole. Even if in 2011, the United States, Japan, and China have reduced their energy consumption, we are still far away from the necessary investments*".

Benin has been working for nearly 15 years to develop a culture of energy efficiency in the public sector. With

funding from the World Bank through the Energy Service Delivery Project (ESDP), the implementation of an energy management strategy in administrative buildings has proved to be the first step in a large-scale energy efficiency plan. To build on the achievements of the ESDP, a new project, Development of Access to Modern Energy (DAEM), was launched with the main objective of improving reliability and access to modern energy services nationwide. The implementation of this project in 2013, in its communication component, has made it possible to raise awareness not only among households but also among the public administration on the choice of low-consumption energy equipment. On this occasion, Beninese journalists were asked to provide media coverage. Beyond the commercial nature of the services provided by the various media outlets, journalists have a role to play in fostering a genuine culture of energy efficiency. However, few media outlets initiate reports, investigations, or debate programs on energy efficiency issues. As a result, energy continues to be wasted in Benin's public administration, as evidenced by poorly regulated air conditioners working sometimes with open windows, and lights left on even when the office occupants are absent.

2. Benin's Energy Context

Benin is not independent in terms of electrical energy: 85% of its electrical consumption comes from countries abroad [5]. For this Beninese expert in energy efficiency, Benin is one of the African countries characterized by an energy system dominated by biomass, which represents 60% of energy consumption. Modern forms of energy make up 40% (38% for petroleum products and 2% for electricity). Countries such as Nigeria and Ghana, which supply energy to Benin, are themselves experiencing a shortfall in supplying their inhabitants. Hence, there is a need for Benin to appropriately manage the amount of energy made available to it by neighboring countries.

From the point of view of populations' access to electricity, recent studies carried out by experts from the Development of Access to Modern Energy (DAEM) project reveal a low rate of access to electricity supply for households, particularly in rural areas (3.1% compared to 55.7% in urban areas for an electrification rate of 27.1% in 2009). Benin's total consumption in 2009 is estimated at 2026 ktoe, which represents a relatively low per capita consumption of 0.29 toe/year compared to the world average of 1.14 toe/year.

Over the last two decades, electricity demand has been

continuously increasing at an annual average rate of 7% and most of the demand is due to the household sector which consumes 48% against 35% for services and 17% for the industrial sector.

Although on the rise, Benin's electricity consumption and the coverage rate are relatively low. The figure below shows the increased energy shortfall to be addressed over the period of 2015 to 2030:

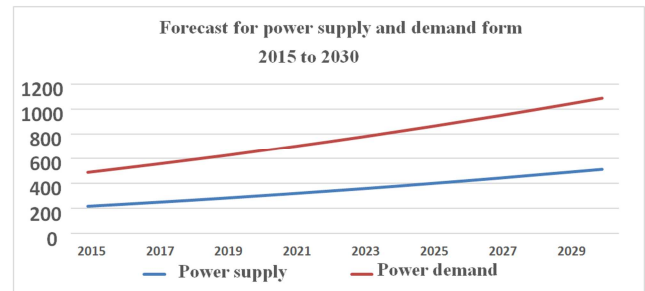


Figure 1. Energetic gaps to be addressed.

Benin urgently needs to address this shortfall. Hence, there is a need for administrative staff and households to perform small daily actions that help save energy and money. In the absence of sustainable solutions, their possible outcomes are, among others:

- 1) low productivity and low competitiveness of companies,
- 2) lack of efficiency in the provision of public and social services,
- 3) reduced welfare,
- 4) lack of economic opportunities for the population, which in turn slows down the country's overall economic growth.

But the energy gap cannot be closed without reducing energy intensity. According to the EIS report [11] a country's energy intensity is the ratio of net supply to the country's gross domestic product (GDP USD). It is an indicator of energy efficiency. An upward trend in the energy intensity of a sector generally reflects poor energy management in that sector.

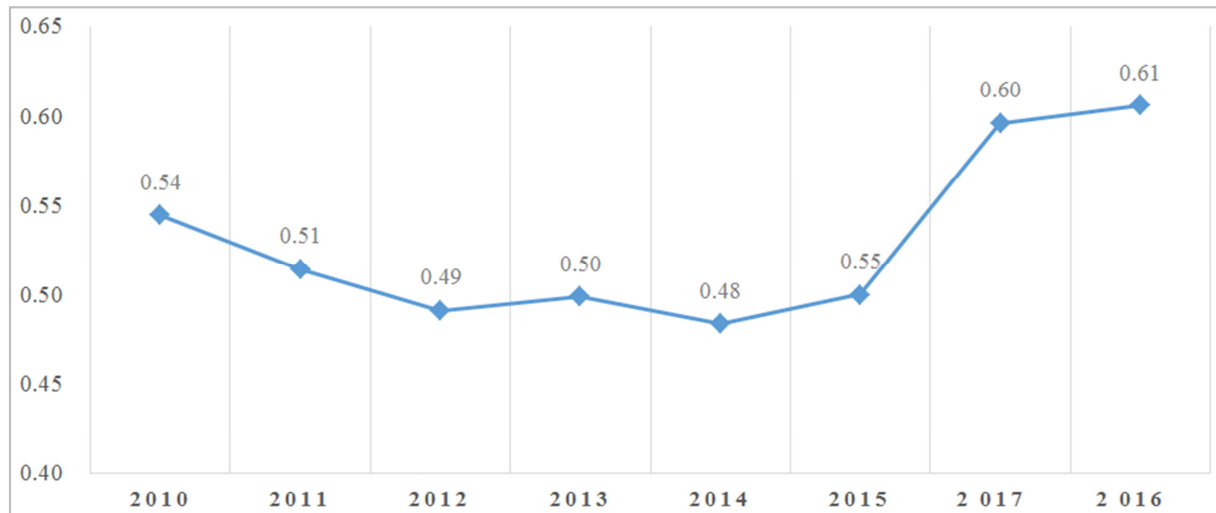
Energy intensity can also be calculated for each sector of activity by determining the ratio of the sector or branch's overall final energy consumption to its value-added, thus enabling the energy performance of the sector or branch to be established and the energy management policies to be implemented. Benin's energy intensity over the period of 2010-2017 is as follows:

Table 1. Changes in energy intensity 2010-2017 (ktoe¹).

| Year | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|-------|-------|-------|-------|-------|-------|-------|-------|
| Net supply (ktoe) | 3,794 | 3,691 | 3,693 | 4,020 | 4,146 | 4,377 | 4,821 | 5,026 |
| GDP (Million \$ US 2010 constants) | 6,970 | 7,177 | 7,522 | 8,063 | 8,576 | 8,755 | 7,959 | 8,435 |
| Energy intensity: (toe/1,000 GDP \$ US) | 0.54 | 0.51 | 0.49 | 0.50 | 0.48 | 0.55 | 0.60 | 0.61 |

Source: GDE and GDAE.

¹ Ktoe is a technical term which means kilo ton oil equivalent. It is actually a unit of energy like the kwh used for electrical energy.



Source: Author, June 2022

Figure 2. Graph showing changes in Benin's energy intensity from 2010-2017.

Over 2010 to 2017, there was a slight improvement in energy intensity until 2014, followed by a deterioration which reached a new high level of 0.61 in 2017; a fairly high value compared to the world average: 0.144 toe/thousand US dollars (www.iea.org). Ghana, for instance, has an energy intensity level of 0.22 with a steady improvement noted (www.iea.org) against a level of 0.23 with a steady improvement noted for Tunisia. (www.iea.org) while it is 0.13 for the USA and 0.09 for France.

3. Data and Methods

In the course of writing this article, we conducted two surveys by questionnaire in two cities in Benin, namely: Abomey-Calavi and Cotonou. These two cities were chosen because the administrative buildings and most of the media outlets are based there. The first survey was conducted among 94 administrative staff and the second among 74 Beninese journalists.

The selection criteria for the respondents were twofold:

3.1. For the Administrative Staff

- 1) Being employed in a local community or financial board located in the localities of Abomey-Calavi and Cotonou.
- 2) Being either a Director, a Head of Division, or a Head of Department occupying an air-conditioned office.

3.2. For the Journalists

- 1) Being a member of an editorial staff located in Abomey-Calavi and Cotonou.
- 2) Being in charge of the Society or Environment desk responsible for the coverage of energy efficiency issues.

The respondents were selected at random from a parent population estimated at 124 administrative staff and 92 journalists.

4. Conceptual Framework

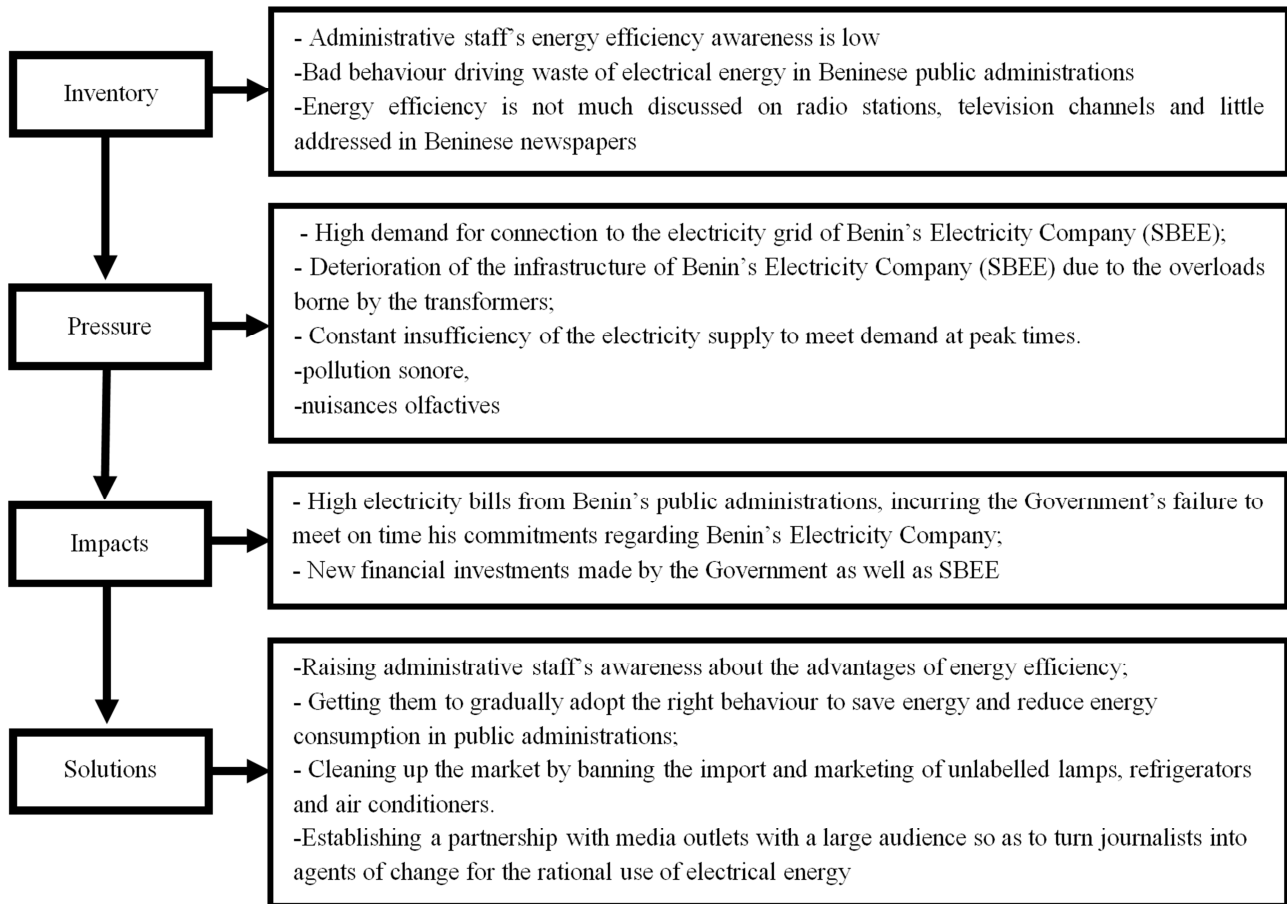
Energy efficiency is a multidisciplinary concept that aims to increase energy savings in the energy chain from upstream to downstream. It is the energy efficiency that consists in reducing energy consumption for the same type of product or service [6]. For Migniha, Euloge [7], energy efficiency is the ratio between the device or system's output and what it consumes in terms of energy. Consuming less for the same level of comfort is the objective of all *energy efficiency* concepts. Energy efficiency is a key factor in improving the competitiveness of both private and public companies. In a report on the opinions issued in 2013 by the French Economic, Social and Environmental Council (CES), energy efficiency is defined as "*the energy output of a process, appliance or building with the energy input it requires for its proper functioning*". From this perspective, energy efficiency can be optimal, active, or passive. It is optimal when the energy consumption is lower for the same service provided. For Bethencourt, Anne and Chorin, Jacky [8], active energy efficiency involves the systems for controlling and managing energy needs. This is the case for energy flows and equipment. Passive energy efficiency, on the other hand, represents the envelope of a building, i.e. its insulation.

As the planet's energy resources are not inexhaustible, it is essential to reduce energy consumption. This reduction cannot be achieved without a rational use of energy. This term has been used by many authors in their work to describe energy efficiency. This is the case for Rumpus, Lucas [9] and Mundler, Patrick [10]. For Badarou [11], the Rational Use of Energy (RUE) includes actions aiming at consuming less the energy that we need in our activities. It is committed to an energy efficiency strategy that consists of developing policies and implementing measures and means to change energy consumption conditions in all economic and social activities

by improving the efficiency of consumption methods and equipment.

5. Problems to Address

Benin's energy situation is shown in the figure below:



Source: Author, June 2022

Figure 3. From the inventory to addressing the problematic situation.

The inventory highlights two problems to address:

- 1) Administrative staff's energy efficiency awareness is low and they develop user-doesn't pay behavior, thus wasting electrical energy in their workplaces.
- 2) As for journalists, they know what energy efficiency is, but take few initiatives to raise awareness among their readers, listeners, and viewers, making it difficult for small energy and money-saving actions to take root in the collective memory.

6. Objectives and Hypotheses

This article has two objectives namely:

- 1) assessing the level of the Beninese public administration's awareness regarding the issue of energy efficiency;
- 2) checking whether Beninese journalists are developing a societal awareness by informing Beninese opinion on the topic of energy efficiency in the aftermath of projects devoted to it.

In line with these objectives, we have formulated the following hypotheses.

- 1) the user-doesn't pay behavior fostering a waste of electrical energy which is noticed among officers on duty in Beninese public administrations can be explained by a lack of information on energy efficiency for this target;
- 2) the total absence of articles in the print press and radio and television programs devoted to energy efficiency in the aftermath of related projects can be explained by the absence of an envisaged partnership in both the design and implementation stages of these projects.

7. Results and Discussion

The questionnaire survey of the administrative staff revealed the following:

Only 27.66% of the administrative staff claim to be informed about energy efficiency; this happens during the implementation of the awareness phase of energy efficiency projects;

- 1) 82.98% of the respondents do not know how to set their air conditioners to the right degree of Celsius. Among them, 89.75% admit setting their office air conditioner

to 16°C and 10.25% to 18°C;

- 2) 70.21% of the respondents leave the lights in their office on during the day, even when they are not there;
- 3) 52.13% of the administrative staff confess that they switch off their office computers only in the evening at closing time. The latter prefer leaving their computers in standby mode.

From these results, it turns out that if administrative staff develop user-doesn't pay behaviors that foster waste of electrical energy, it is because a high proportion of them (72.34%) don't know anything at all about energy efficiency. Since they don't know anything about it, they do not act in a way that can save energy and money. One of the energy and money-saving actions is setting the temperature of the air conditioner properly. Even among those who know about energy efficiency, some of them set the temperature of their office air conditioner incorrectly. According to AIR3D [12], which published an article under the revealing title: *Air conditioning: what is the ideal temperature?*, scientific studies by the National Institute of Sleep and Vigilance (INSV) have shown that the temperature should be set according to the season, the time of the day and the activity undertaken. According to this study, *"the official recommendation is to set the temperature of your air conditioner 8°C below the external temperature. So if the external temperature is 30°C, you should set your air conditioner to a nominal temperature of 22°C"*. According to this Institute, when you are at work, the level of physical activity should determine the optimal room temperature. For sedentary work, working on a computer, for instance, sitting at a desk to study, initial, or sign files, a temperature of 24°C is strongly recommended. However, our results showed that 89.75% of the respondents set their air conditioner temperature to 16°C. Meanwhile, 10.25% set it at 18°C, thus exposing themselves to sleep. The National Institute of Sleep and Vigilance considers that *"a temperature between 16°C and 18°C favors sleep"*. By selecting the lowest temperature to lower the room temperature, experts explain that this practice triggers the maximum power of the air conditioner, thus increasing the consumption of electrical energy [13].

As for the journalists, research results showed that they all know what energy efficiency is as they have covered training seminars and launches of activities related to the concept. They claim to have been approached by stakeholders in various energy efficiency projects. The journalistic genres used to cover the events for which they were invited were journalistic reports, reportage of events, and talk shows. But once the energy efficiency projects are completed, the concept ceases being a focus of attention for Beninese journalists. However, if the culture of energy efficiency is to take root sustainably in everyday practices, the awareness-raising aspect must be permanent. It is therefore important to examine this component for the various energy efficiency projects initiated by Benin, both in their design and awareness-raising phases.

An analysis of the projects' communication/awareness-raising sub-component reveals weaknesses both in their

design and implementation.

The Energy Efficiency sub-component of the DAEM project has been proposed to address the electricity supply issues and the climate change-related challenge. This sub-component is part of the GEF energy program for West Africa which focuses on practical actions and projects that demonstrate the technical and economic viability of renewable energy and energy efficiency technologies. With an initial overall cost of 90.25 billion F CFA, it is jointly funded by the World Bank (IDA), the Global Environment Fund (GEF), the Nordic Development Fund (NDF), the European Investment Bank (EIB), KfW, the ESMAP fund, the Global Environment Facility (GEF), the Government of Benin (National Budget) and Benin's Electrical Community. The DAEM project is headquartered at the General Directorate of Energy (GDE) under the Ministry of Energy, Petroleum and Mining Research, Water and Renewable Energy Development (MERPMEDER) and is implemented in partnership with several other structures, namely Benin's Electrical Community (CEB); Benin's Electricity Company (SBEE); Benin's Agency for Rural Electrification and Energy Management (ABERME); Benin's Environmental Agency; Benin's Agency for Standardization and Quality Management (ABeNOR). This project has made it possible to introduce 350,000 efficient lamps into households. This action should result in a reduction in peak demand of 9.8 MW, or 1.6% of the 2010 peak demand of 160 MW [14]. This corresponds to an energy saving of about 18,000 MWh/year. In addition, 33,000 MWh of electricity can be spared through the penetration of efficient air conditioners in the market. In November 2013, an awareness-raising plan was implemented, followed by a marketing-promotion plan targeting numerous stakeholders, including more than 3,8176 households; this was achieved through 553 outreach sessions, 96 target campaigns, the setting up of 15 stands, poster campaigns on giant billboards of varying sizes (12 m², 18 m² and 21 m²), and the broadcasting of 03 radio spots and 03 television spots (Final mission report by Mercato Communication Agency [15]).

The project design did not identify journalists as a target audience. Instead, they were identified as agents responsible for relaying information. This is evidenced by the fact that during the preparatory stage prior to the project's implementation, training seminars on various topics were organized. For instance, there were:

- 1) the workshop held at INFOSEC on July 3, 2014 to raise awareness among importers and distributors of electrical equipment about the advantages and opportunities related to their marketing;
- 2) the exchange workshop held in Porto-Novo on 2nd and 3rd of September 2014 focused on the global strategy chosen for the distribution of efficient light bulbs and the promotion of efficient equipment;
- 3) the exchange session on the preparations for the implementation of the operation of distribution of subsidized CFLs to households, which gathered around the sponsor and its local partners, the NGO Autre Vie,

the Mercato communication agency, and the designer of the database management software for the distribution operation.

Journalists were not trained on the energy efficiency concept. Their role was limited to ensuring the publication of the planned awareness-raising messages in the print media on the one hand, and the broadcasting of radio and television spots on the other. There was no partnership between the project sponsor and the media. This weakness was corrected during the implementation of the MCA-Benin II Program, which runs from 2017 to 2022. At the end of the five years of the Program's implementation, the additional national electricity production capacity is expected to reach 50 megawatts, which corresponds to about 20% of current peak hour needs. The program comes to its end in 2022. Awareness campaigns, rather than being permanent, end as soon as the projects that support them come to completion. The target group needs to be constantly reminded of the new behavior; hence, the need for project stakeholders to develop a schedule to ensure the dissemination of awareness messages in the press. Leaflets with the message: *"Let's always set our air conditioners to 24-25°C and close doors and windows"*; *"Don't leave lamps and air conditioners on when leaving the office. Let's switch them off"* can be included for instance as inserts in newspapers or broadcast as rolling messages on television channels to reach administrative staff. In this way, Beninese journalists will be able to drive a behavioral change among their country's fellowmen who, for lack of information, waste electrical energy. A partnership between the stakeholders and the different editorial boards could help to initiate debate programs, round tables, and surveys to raise public opinion's awareness about the topic of energy efficiency. However, it will be necessary to draw up a schedule for the stakeholders involved in the projects to avoid overlapping and tripping over one another.

8. Conclusion

At the close of this study, it was found that the administrative staff is not sufficiently aware of the energy efficiency issue. The results of this research showed that many of them develop user-doesn't pay behavior within the Beninese public administration, thus fostering the waste of electrical energy. For instance, 89.75% administrative staff, do not know that the air conditioner should be set to a temperature of 24 or 25°C. While some set it to 16°C, others opt for 18°C. Experts say that such temperatures encourage sleep. If journalists are more involved in the implementation of energy efficiency projects and if sponsors establish a partnership with editorial boards with a large audience, the information deficit that is at the root of the inefficient use of electrical energy in Beninese public administrations can be overcome. Therefore, it is desirable that projects, in their design and implementation stage, not only involve journalists but also, and above all provide for a partnership with the press to ensure the exit phase. This will prevent awareness-

raising activities from ending as soon as the projects that support them come to completion.

Appendix



Figure 4. Some of MCA-Benin II's² communication materials that could be relayed by the media to promote a genuine energy efficiency culture in Benin.

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² MCA-Benin II is an entity established by the Government of Benin by decree N°2015-603 of 29 November 2015 which is responsible for the implementation of the Grant Agreement between the Millennium Challenge Account (MCC) and the Government of Benin. After a first Compact, the MCC granted a second Compact to Benin in 2015 to support economic growth. The MCA-Benin II Programme (2017-2022), worth US\$375 million from the US Government with a contribution of US\$28 million from the Government of Benin, focuses on the development of electrical energy.

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