

Proceedings of 2nd Conference: *People and Buildings* held at Graduate Centre, London Metropolitan University, London, UK, 18th September 2012. Network for Comfort and Energy Use in Buildings, <http://www.nceub.org.uk>

Behavioural Efficiency in Lebanon: Reasons and Incentives

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Abstract

The electrical sector in Lebanon has been facing difficulties for decades; the UNDP has created development projects through several funds towards the sustainable development of the country. The LCEC and CEDRO projects are samples that aim at promoting Energy Efficiency (EE) and Renewable Energy (RE). Several marketing campaigns have been launched for the EE initiatives put in motion amongst which: the replacement of incandescent lamps by compact fluorescent and low energy ones. Based on the most recent power cuts schedule, a user feedback has been advised to investigate the knowledge and willingness of residents to contribute to reducing their energy bills. Questionnaires were distributed targeting different social classes in different regions where different schedules of power shortages apply. Primary research completed in this paper, showed that in the case of Lebanon, a developing country, any incentive for EE measures has to have a financial part.

Keywords: Energy Efficiency – Lebanon – Behaviour –Energy Saving

Introduction

The electrical sector in Lebanon in 2010 was composed of power plants generating 1500MW compared to a demand of 2100MW (MEW, 2010). This shortage in supply has led to self generation via conventional resources, due to lack of awareness and relatively high price of renewable energy equipments. In a recent article published in Executive magazine (2011), Dr. Ghajar, advisor to the minister of electricity and water, explains that a 5 year maintenance plan for two of the available power plants is pending. When maintenance work starts, the load supplied will decrease even more. Some power generation plans are being drafted to alleviate the excessively increasing shortages that the country is experiencing.

Energy efficiency as per its definition is related to human beliefs and behaviours. Appealing to "values" may result in higher response; a common belief amongst people is that introducing energy efficiency into their day to day activities would result in "energy security, competitiveness and reduces impact on the environment". Several programs promoting energy efficiency have been created and implemented by the UNDP with the help of the ministry of electricity and water. One of the most successful campaigns: "energy efficient lighting" which aimed at swapping the energy consuming incandescent light bulbs by compact fluorescent (CFL) ones (UNDP – CEDRO, 2010). Publicity was employed to raise awareness, local celebrities that nationals can identify with have been selected to star in the short televised and radio commercial, as well as on billboards. CFL bulbs have been distributed to households in exchange for their available incandescent ones. Other campaigns include the solar water heaters, encouraging people to turn off the light in unused spaces (LCEC, 2011).

This paper aims at investigating the behavioural efficiency in several cities spread over the country; each of which has its own power shortage schedule. The questionnaires will focus on the willingness of people to change their behaviours in order to efficiently reduce their energy bills, especially in the light of the current situation.

Methodology

A survey has been designed to investigate the effect of excessive power cuts on behavioural efficiency in different Lebanese cities. Each city has its own power cut schedule, for instance, the greater Beirut area experiences 3 hours of power cuts a day, compared to 18 hours in the Bekaa. “Administrative Beirut” is favoured due to its “economic” importance. This paper will evaluate the effect of these discrepancies on the behavioural willingness and openness to energy efficiency. Initially, the author intended to complete the questionnaire with a random selection of 100 people from major cities in Lebanon: Greater Beirut Area, Metn, Jounieh, Tripoli, Saida, Bekaa. Instead the questionnaires have been distributed to people living in parts of Lebanon, as much as the current political and social situation permits. Therefore some areas have been visited and questionnaires have been filled out in the form of an interview, while others, which were too difficult to visit due to security and time constraints, have been sent via email. A total of 35 randomly selected people were surveyed covering some of the intended cities. Figure 1 below shows the available distribution.

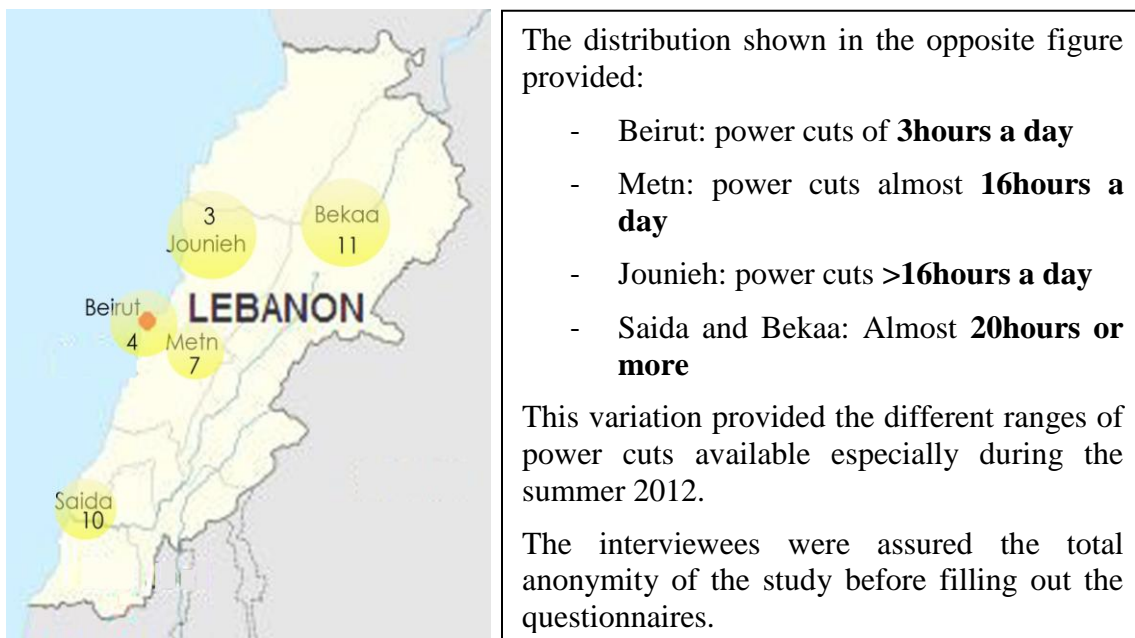


Figure 1: Distribution of interviewees over the Lebanese cities (source: Author's own)

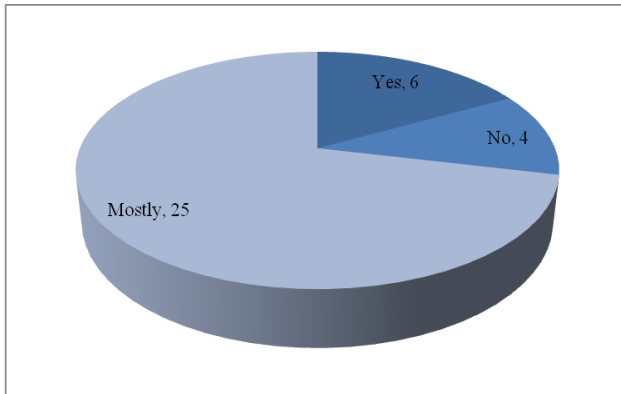
The gathered qualitative data has been analysed using excel sheets duly shown hereafter and an incentive backbone has been elaborated using people’s judgement and experiences.

Literature Review

Though action plans have been put in motion for the Lebanese market and papers have been published, there isn't still any research completed on behavioural efficiency. The Lebanese Centre for Energy Conservation (LCEC) has published a report on Energy Audits completed in the industrial, commercial and service sector, showing that a 19% energy reduction could be reached (LCEC, 2010). Most of the recommended reforms are listed under equipment and technology also referred to as energy efficiency (Oikonomou, V. et al., 2009). Economy plays a great role in influencing people's behaviour which dictates the adoption of energy efficient strategies (Mills, B. and Schleich, J, 2012). Several studies have been completed in Europe, Canada and the United States investigating the effectiveness of the incentives on the adoption of energy efficiency in the residential sector. The answers when compared have given different values; for example Mills and Schleich (2012) discusses the response difference in environmental actions rated at three quarters of the Swedish, Slovenian and Luxembourgian population as opposed to a third of the Polish, Romanian or Estonian population (Mills, B. and Schleich, J, 2012). Other factors have been investigated to assess their rate of influence on behaviour such as: age, gender, marital status and education. Younger people tend to be more environmentally aware than older ones; "[...] age is negatively correlated with the willing to contribute for additional environmental protection, since older people will not live to enjoy the long-term benefits of preserving resources" (Torgler, B. and García – Valiñas, M., 2006). Gender on the other hand has not shown any correlation to the willingness, though some people might argue that women might be more sensitive to such topics "Zeleny and Yelverton (2000) report that social desirability is not related to gender" (Torgler, B. and García – Valiñas, M., 2006). On the other hand, marital status does affect the readiness to a cleaner environment due to the "parent effect". Finally, education; literature showed that "there is a higher levels of education lead to higher preferences for environmental protection (Blomquist and Whitehead, 1998)" (Torgler, B. and García – Valiñas, M., 2006).

Questionnaire

The questionnaire was divided into three main parts: background information (shortage hours, the availability of self generation and the cost), awareness information (what energy efficiency techniques could be applied, the knowledge of awareness campaigns completed by the representative centre), and readiness to apply (possible incentives and awareness campaigns to increase involvement).

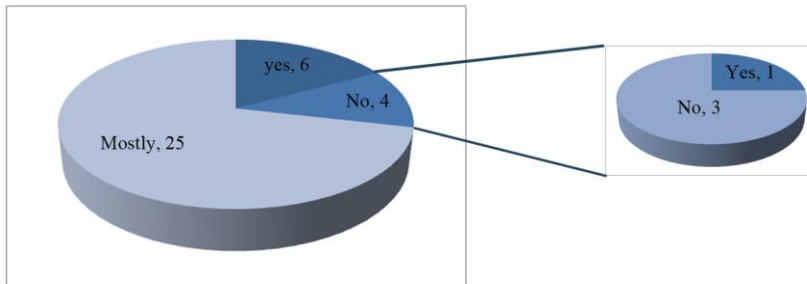


Of the 35 people surveyed only 6 people were fully aware of the Energy Efficiency strategies; mainly due to their job requirements, as they work in technology and energy fields.

The 4 people that are not aware at all mentioned strategies such as not using electrical equipments at peak times.

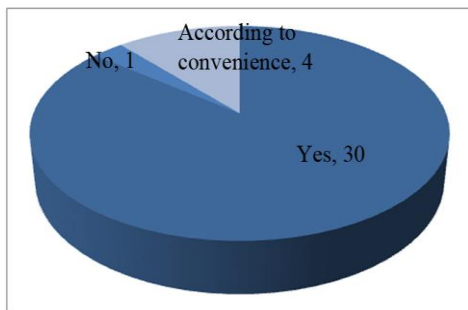
Figure 2: Chart showing surveyed people's awareness (source: Author's own)

Of the 25 people that correctly listed some of the Energy Efficiency strategies available and how to apply them, only three of them were interested in knowing what are the others available methods and how to apply them.



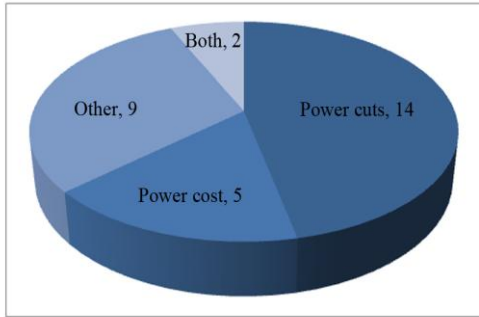
Out of the four people that were not aware of the available Energy Efficiency strategies, only one person was curious enough to ask what they are and how to apply them.

Figure 3: Chart showing curiosity of unaware people (source: Author's own)



The readiness of people to apply Energy Efficiency strategies in their homes is high, 30 of 35 people answered yes. The people surveyed belong to different social, educational and economical classes. This reinforces Mills and Schleich's theory: Behavioural Efficiency is positively correlated to the economical situation of the country; as Lebanon is classified as a Developing Country suffering from an elevated depth in the electrical sector.

Figure 4: Chart showing surveyed people's readiness (source: Author's own)



The readiness measured as 30 out of 35 is mainly due to constant and increasing power cuts. 9 out of 35 people answered “other” (alleviate pressure on the grid and reduce environmental harm) when asked about what drives their willingness to apply the strategies. It is the lack of production due to the financial strain of the electrical sector that constitutes the big reason to apply the EE strategies.

Figure 5: Chart showing the reasons of enthusiasm to apply EE measures (source: Author's own)

The last two questions were left open to interpretation by the interviewee. The first one asked about the incentives and the second was left for additional comments or questions. Almost 30 of the 35 surveyed requested more awareness through publicities and workshops, while almost all requested some fiscal remuneration or boost. All interviewed people had heard about the CFL campaign and have adapted them in their homes.

Conclusion

Establishing regulations and laws aiming to encourage energy efficiency strategies at a country level requires an in – depth understanding of the behavioural factors that motivate household owners. This paper aimed at identifying the incentives and reasons behind both positive and negative behaviours in the residential sector. From a psychological point of view, people tend to respond the most when issues appeal to “values”, making them feel responsible. Studies show that economical situation, age, education, and marital status affect environmental behaviour. The questionnaire targeted all the above listed and showed that in Lebanon, the economical situation plays the biggest role. Therefore, any incentive or action plan has to appeal to values and offer fiscal benefits. Awareness campaigns launched in Lebanon have reached most cities, but no action seems to have been taken. Incentives such as lower tax rates on energy efficient equipments and architectural elements, or providing fiscal remuneration for architecturally retrofitted residences could orient the development in the desired direction.

Finally, due to the circumstances this paper was not able to cover all intended Lebanese grounds; therefore more detailed investigations need to be completed covering a bigger sample of people from all the Lebanese cities. Those studies would provide a better insight to create policies, incentives, promote and retain interest in applying energy efficiency measures.

Acknowledgement: The author would like to thank the people interviewed for their time and cooperation. Thanks are also owned to Dr. Harajli for providing the technical support.

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