

“UNDERSTANDING THE ENERGY CULTURES OF TONGAN HOUSEHOLDS: IMPLICATIONS FOR EFFECTIVE ENERGY EFFICIENCY POLICY”

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Overview

Energy efficiency is a low-cost strategy for mitigating global warming while helping reduce energy costs for households and assisting with energy security. The government of Tonga has recently developed its 10-year Energy Efficiency Master Plan and policy on minimum energy performance standards and labelling, as well as awareness campaigns and financial incentives which have succeeded to some degree in promoting energy efficiency. However the residential sector, which is the biggest energy consumer nationally, tends to revert to energy inefficient habits, failing to adopt energy efficient technologies and practices in the long term, despite the proved environmental, social and economic benefits. I hypothesise that this is because policy approaches are typically adopted from western nations and not designed around Tongan households' behaviour, attitudes and beliefs. The research draws on the energy cultures framework (ECF) which offers a structured way to examine the relationships between cultural characteristics and energy-related outcomes. I introduce the ECF and outline the preliminary findings from field research with Tongan households undertaken during 2019. The research involved interviews, household surveys and time-use diaries which together explored the ECF key variables; (i) material culture (e.g. appliances) (ii) energy practices (e.g. cooking routines), (iii) social norms (e.g. traditions, beliefs, values) and (iv) external factors (government taxes, policies, fuel prices etc.). The research ultimately aims to provide a better understanding of energy behaviour in Tongan households in order to reveal barriers to efficiency and help develop culturally relevant policies for improving energy efficiency in Tonga.

Methods

The field work in Tonga was conducted in two parts. The first part, undertaken in March 2019 involved a two-week pilot study to identify the most effective survey and interview approach. A total of 39 households were randomly selected to test online surveys, paper based surveys, and face-to-face surveys and interviews. It was identified that face-to-face surveys and interviews were the most effective methods for the research.

The main fieldwork was conducted in July-Sept, 2019. A total of 150 households were randomly selected to represent the population of Tongatapu, the main island of Tonga. A total of 96 households were surveyed. This involved interviews, household surveys and time-use diaries which together explored the ECF key variables; (i) material culture (e.g. appliances) (ii) energy practices (e.g. cooking routines), (iii) social norms (e.g. traditions, beliefs, values) and (iv) external factors (influences of government taxes, policies, fuel prices etc.). The data were analysed and compared to the households' daily electricity bills from the Tonga Power Limited smart meter records. National rainfall and temperature data were also collected for the analysis.

Results

The preliminary findings indicate that in general the locals' understanding of energy and energy efficiency is limited. Some define energy in relation to their area of expertise, for instance, biological energy in a cell, religion (spiritual energy) and health (fitness) but the majority of households define energy as electricity alone, and don't include other sources of energy such as fuel. This may relate to the way in which the government and other responsible authorities have been communicating about energy efficiency.

Climate change and clean energy initiatives are of high national priority in Tonga. The data however shows that the local communities do not share the same interests as the government. While most households understand the importance of the transition to clean energy and using energy efficiently, their family values, religion and financial security take precedence. As such, energy was the least important factor in their life, despite how reliant they are on energy for their daily living. The importance of getting the work done (*“koe ngaue ke lava”*) is significant even if it will cost them. This is why some of the households have debts and seek financial assistance from relatives overseas. Hence, the reliance on remittance is high and some households' energy bills are paid directly by family overseas. This contributes to the high number of inefficient and high energy consumption households.

Moreover, most households identify energy efficient practices as easy to perform, but most do not follow through. This is based on cultural obligations such as funerals, weddings or religious observances that use a lot of energy to cater for families and communities who turn up to show their respects. Others feel that convenience and safety is more important to them. For instance, with regards walking vs driving within one kilometre, some strongly support driving as other residents do not restrain their dogs which becomes a safety issue for them. Most households leave their exterior lights and hallway/kitchen lights on throughout the night for their children when they use the bathroom and kitchen at night.

Furthermore, households find energy costs expensive but are still willing to pay for it. When the cost of fuel and electricity drops, there is an increase in household energy consumption. The majority of the households keep track of the national energy price fluctuations. Some believe they consume a similar amount of energy despite the fluctuations, but the data shows their electricity bill increasing when electricity tariff dropped, a classic rebound effect. Energy literacy is also an issue - some households overestimated their daily consumption up to 10-fold yet were confident about how accurately they can estimate their energy consumption.

It was also evident that Tongan culture plays a huge role in the locals' daily energy consumption and activities. Firstly, the use of traditional cooking methods are still common in Tonga but there is an increasing shift to gas cooking due to convenience and improved air quality. The time use diary data shows that households carry out many similar activities to any households in the Pacific region. However, there were few cases where Tongan households differ, with energy implications, for example attending morning church services that start at around 5am during the week, and kava session for men from around 8pm till midnight. There was also a spike in households' energy consumption from cultural obligations such as funerals. The Tongan funeral runs for an entire week, where the bereaved families cater for visiting families and community, including conducting sermons from 5pm to 7am in the morning. The study also reveals intensive consumption of energy without concern for energy efficiency at big cultural events (e.g. Church conferences, King's birthday etc) that take place annually. Energy efficiency policy needs to address these traditional activities.

Conclusions

The lack of success of western-inspired energy policies in achieving a clean energy transition and energy efficiency may be at least partly due to the uniqueness of Tongan culture and resulting energy behaviours. Tongan households differ markedly from most western households, particularly with regards the close unity and collaboration within families and communities, and the strong traditional and religious underpinnings of daily life. Understanding how this translates to energy behaviour is crucial as it reveals the pragmatic barriers to energy efficiency and may help develop culturally relevant policies for improving energy efficiency in Tonga. Preliminary findings indicate a need for improving energy literacy (including what energy and efficiency mean), and developing policy that accounts for cultural factors such as the strong commitment to family, church and communal activities. While policymakers focus on the financial and environmental benefits, it is vital to bring the behavioural aspects of energy into policy planning and centre national policy on what people value rather than simply focus on technical outcomes. While this research is not yet complete, it is already evident that studying energy cultures can assist governments to develop culturally-appropriate policies to improve energy efficiency in Tonga.