

Article

Energy Usage of Residents on Offshore Islands in Taiwan

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Abstract: A field study was conducted through interviews on offshore islands in Taiwan to investigate the energy usage of local residents. A comparison of household appliance usage in mainland Taiwan with that on the offshore islands revealed that, overall, the most commonly used household appliances are steam cookers/rice cookers, water dispensers, and washing machines. For other household appliances, Levels 2 and 3 offshore isles have lower use penetration rates compared with those in mainland Taiwan and on Level 1 offshore isles, particularly for the use of computers. By contrast, the use penetration rate for chest freezers on Levels 2 and 3 offshore isles is high, and each household has one or more freezers on average. This appliance is not a commonly observed household product in mainland Taiwan or on Level 1 offshore isles. Furthermore, because of the government policy, every household on parts of Level 2 offshore isles and on all Level 3 offshore isles has a fixed monthly charge of electricity. The transportation of liquefied petroleum gas is also inconvenient, and the gas price is slightly higher, leading to the tendency of residents to consume excessive amounts of electrical energy, which does not correspond with the aim of the government to conserve energy and reduce carbon emissions; thus, the relevant authorities' review and improvement on energy consumption on Levels 2 and 3 offshore isles are required.

Keywords: Penghu; Taiwan; energy usage; subsidy

1. Introduction

Greenhouse gas emissions and their effect on global climate change have increasingly received attention, in which the Kyoto Protocol and the Copenhagen Accord were established in 1997 and 2009, respectively [1–3]. In Taiwan, the total energy consumption was 59.07 and 114.40 million kiloliters of oil equivalent in 1993 and 2013, respectively. The form of energy included electricity (48.62%), petroleum products (38.87%), coal and coal products (8.75%), natural gas (3.24%), heat (0.27%), biomass and waste (0.14%), and solar thermal (0.10%) in 2013. The CO₂ emissions were 250.3 million metric tons. For electricity production, it comprised hydro power, thermal power (coal-fired, oil-fired, and LNG-fired), nuclear power, wind power, solar photovoltaic, and cogeneration. The figures were 115.2 and 252.4 TWh in 1993 and 2013, respectively. The average annual increase was 4.0%. For electricity consumption, the peak load reached 33,957 MW in 2013. Energy and industrial sector consumed 61.41% while services and residential sectors accounted for 19.17% and 17.78% (43,567.5 GWh), respectively. The annual growth rate of per capita electricity consumption was 3.56% during the last two decades [4]. Therefore, it is important to promote emission reduction and energy conservation schemes in various sectors. Nevertheless, the Bureau of Energy under the Ministry of Economic Affairs (BEMOEA) has promoted the research and development of renewable energies [5–10], including (1) wind power generation; (2) photovoltaic energy (solar-PV); (3) solar thermal energy; (4) geothermal energy; (5) ocean energy; and (6) biomass energy. It is expected that renewable energy will reach 3% of the total energy supply by the year 2020 [4].

Taiwan proper is a leaf-shaped island straddling the Tropic of Cancer (22°–25°N; 120°–121°E). The weighted yearly average cooling degree days ($= \sum (T_i - 26^\circ\text{C})$, if $T_i > 28^\circ\text{C}$, T_i : daily average temperature) ranged from 308 to 374 during the last decade [4]. Further, the offshore islands consist of Penghu islets, Green Island, Orchid Island, Kinmen, Matsu, and Tiaoyutai Islets. The total area is approximately 36,000 km². For Penghu Islets, it is located on the Taiwan Strait between Mainland China and Taiwan proper. Ninety isles, extending around 60 km north to south and 40 km west to east, scatter between 23°12'N–23°47'N and 119°19'E–119°43'E. The utmost west isle (Hua isle) is also the utmost west boundary of Taiwan. The total land area is approximately 127 km². There are six townships and a city in the county with 37,959 households and 2.68 persons per household [11]. Its average temperature of the year ranges 16.2 °C (February) and 28.3 °C (July). In addition, the northeast monsoon during autumn and winter is a special natural phenomenon in Penghu, resulting in a decrease in winter activities and the number of tourists. Further, according the regulation by the Executive Yuan, Republic of China, the Penghu Islets (Penghu County) are classified as Level 1–3 isles, as shown in Table 1.

Table 1. Classification of isles in Penghu County.

Classification of isle	Isle
Level 1 offshore isles	Magong City, Hushi Township, Siyu Township, and Baisha Township
Level 2 offshore isles	Hoojing Isle, Tongpan Isle, Yuanbei Isle, Dacang Isle, Jibei Isle, Niao Isle, Cimei Isle, and Wangan Isle
Level 3 offshore isles	Siyu-ping Isle, Dongyu-ping Isle, Shiji Isle, Dongji Isle, and Hua Isle

Many countries have experienced various problems in rural electrification. Barnes [12] indicated grid extension to remote areas is economically impractical. Off-grid financing for small diesel systems should be adopted to provide electricity service. In general, those policy incentives can potentially minimize the fiscal burden of local residents. However, it is also known that government-funded projects have rarely been sustainable [13,14]. From a demand-side point of view, renewable energy resources are preferred in areas far from grid connections for long-term viability [15,16]. Further, global warming and climate change caused by carbon emissions are raising worldwide concern, and the carbon market is likely to grow. Thus, the low-carbon island project has been activated by the government of Taiwan and the Penghu municipal government since 2011. Promotion of energy savings (smart utility meter system and energy saving appliances), the use of renewable energy products (wind turbines, photovoltaic systems, and solar water heaters), and zero-carbon isles are among the major aspects. Since there has been no critical analysis of rural energy-usage policies on offshore islands in Taiwan, door-to-door interviews were conducted on the offshore isles in Penghu County to investigate the energy usage of local residents. A comparison of household appliance usage in mainland Taiwan with that on the offshore isles is reported. The results will be useful for policy makers to formulate a sustainable energy policy.

2. Survey Method

The surveyed participants were the residents of Penghu County. The authors conducted field interviews at Level 1, 2, and 3 offshore isles, and the period for the survey ranged from 15 May 2014 to 3 July 2014. This study adopted a simple random sampling design. When the representative research sample achieved a confidence level of 91%, and the maximum deviation of the sample was less than 0.09, number of minimum samples n was drawn. The related formula is as follows [17]:

$$n = \frac{N}{N \left[\frac{2d}{Z_{\alpha/2}} \right]^2 + 1} \quad (1)$$

where N is the number of the population, d is the deviation, and $Z_{\alpha/2}$ is the standard score obtained from the standard normal distribution. The minimum number of samples required for each level of the offshore isle for this research design is shown in Table 2.

Table 2. Required minimum and the actual number of samples.

Isle	Minimum number of samples	Expected number of households for survey	Actual number of households for survey
Level 1	89 households	100 households	100 households
Level 2	84 households	84 households	77 households
Level 3	30 households	30 households	17 households

In this study, statistical analysis software, namely SPSS 22.0 and Microsoft Office Excel 2010, was employed to conduct descriptive statistical analysis, one-way analysis of variance, and a chi-square test.

As shown in Table 2, we planned to obtain 25 samples from each of the four regions in the Level 1 offshore isles, 12 samples from each of the seven regions in the Level 2 offshore isles, and 10 samples from each of the three regions (*i.e.*, Siyu-ping Isle, Dongyu-ping Isle, and Hua Isle) in the Level 3 offshore isles. A total of 214 households were expected to be sampled. In the actual number of households pooled for the survey, the minimum required sample size for Level 1 offshore isles was achieved, whereas the sample size acquired from Level 2 and 3 offshore isles were insufficient. In the Level 2 offshore isles, Tongpan Isle contained only five households, thus the requirement of 12 households for the survey could not be met. In addition, according to the statistics conducted by the Directorate General of Budget Accounting and Statistics [11], the number of regular households in Level 3 isles accounted for 64.4% of the 214 households. However, the regular households in Siyu-ping Isle and Dongyu-ping Isle were only two and five, respectively, and the regular households in Hua Isle were less than 60. Therefore, in this survey, except for the five households in Tongpan Isle (Level 2), two households in Siyu-ping Isle (Level 3), and five households in Dongyu-ping Isle (Level 3), the remaining actual number of households in the three levels of offshore isles all met the required minimum number of samples that was originally preset. Moreover, because most of the residents living in Siyu-ping Isle and Dongyu-ping Isle lived alone or were elderly people, the obtained survey result was biased. Consequently, for the subsequent questionnaire data analysis, because Hua Isle has a more comprehensive daily living function (approximately 100 residents) compared with the other Level 3 offshore isles, and is the only isle with an elementary school, the investigation of the Level 3 offshore isles focused on Hua Isle.

3. Survey Results at Each Level of Offshore Isle in Penghu County

3.1. Electricity Pricing and Liquefied Petroleum Gas (LPG) Cost

Power supply in Penghu County is generated using independent power systems, which are produced by Taiwan Power Company (TPC) and other power plants not run by TPC. TPC operates power generators at Chienshan Power Plant, Hoojing Isle, Wangan Isle, and Cimei Isle. The Chienshan Power Plant generates electricity and transmits it to two substations, namely the Magong and Husi substations, to supply electricity to Magong City, Jibei Isle, Niao Isle, Yuanbei Isle, and Dacang Isle. The electricity for Hoojing Isle, Wangan Isle, and Cimei Isle are supplied by Hoojing, Wangan, and Cimei power plants, respectively. In addition, for the five Level 3 offshore isles (*i.e.*, Tongpan Isle, Hua Isle, Dongji Isle, Siyu-ping Isle, and Dongyu-ping Isle), the municipal government, offices at each offshore isle, and

water and electricity cooperatives are responsible for supplying diesel generator sets and operating desalination plants.

Regarding electricity pricing, no discount rate is offered to Level 1 offshore isles, and, thus, the pricing is the same as that in mainland Taiwan. Diesel power with fixed pricing is used in Tongpan Isle (Level 2): every household is charged NT\$400 per month (NT\$: New Taiwan Dollar; 1 USD \approx 31 NT\$). The power source in Level 3 offshore isles derives from diesel power with a fixed pricing: every household in Hua Isle is charged NT\$300 per month, every household in Dongyu-ping Isle is charged NT\$340 per month, and a more special measure is involved in Siyu-ping Isle because every household is charged NT\$260 per month for both running water and electricity. Regarding the LPG cost, a 20-kg LPG cylinder (The national average price for a 20-kg LPG cylinder is NT\$889 [4]) in Level 1 offshore isles costs NT\$870–890 per cylinder. In Level 2 isles, a subsidy is offered by the municipal government for the residents in Jibei Isle and Cimei Isle only, and not for those in Hoojing Isle, Tongpan Isle, and Wangan Isle. The subsidized price is NT\$900–910 per cylinder, and the unsubsidized price is NT\$980–1050 per cylinder. In Level 3 isles, except for the cost of NT\$1000 per cylinder in Hua Isle, the cost per cylinder is NT\$1050 in both Siyu-ping Isle and Dongyu-ping Isle.

3.2. Water Heaters and LPG Usage

More than 99% of the households in Penghu County are equipped with water heaters (WHs). Moreover, 50%, 47%, and 3% of the households are equipped with electric water heaters (EWHs), gas water heater (GWHs), and solar water heater (SWHs), respectively (Figure 1). In Level 1 and 2 offshore isles, some households are townhouses, and WHs are, thus, installed on different floors, resulting in several WHs installed in one house. The installation proportion of EWHs and GWHs are higher than that of SWHs. In Hua Isle (Level 3), most households have only one WH installed, and only a few households consisting of more than six family members have two WHs installed.

Most households (65% and 74% in Level 1 and Level 2 offshore isles, respectively) consume one to three 20-kg LPG cylinders per month, as shown in Figure 2. However, because of inconvenient transportation, households in Level 3 offshore isles consume fewer 20-kg LPG cylinders per month, and 88% of the households consume less than one cylinder per month. The residents living in Level 3 offshore isles have a low GWH (40%) and a high EWH usage (60%, 50% household with one EWH and 10% households with two EWHs), respectively. In addition to a high LPG price and inconvenient transport, the discount rate on electricity pricing (a fixed monthly charge) could have resulted in the residents' higher tendency to use EWH. Moreover, even though the electricity pricing is fixed and no limit for electricity usage is set in Level 3 offshore isles, most of the residents still use gas stoves for cooking. One household used an induction cooker for cooking and used no LPG; otherwise, electricity was used for most activities. The resident reported that a fixed monthly charge of NT\$300 for unlimited electricity usage is cheaper and more cost-effective than using LPG.

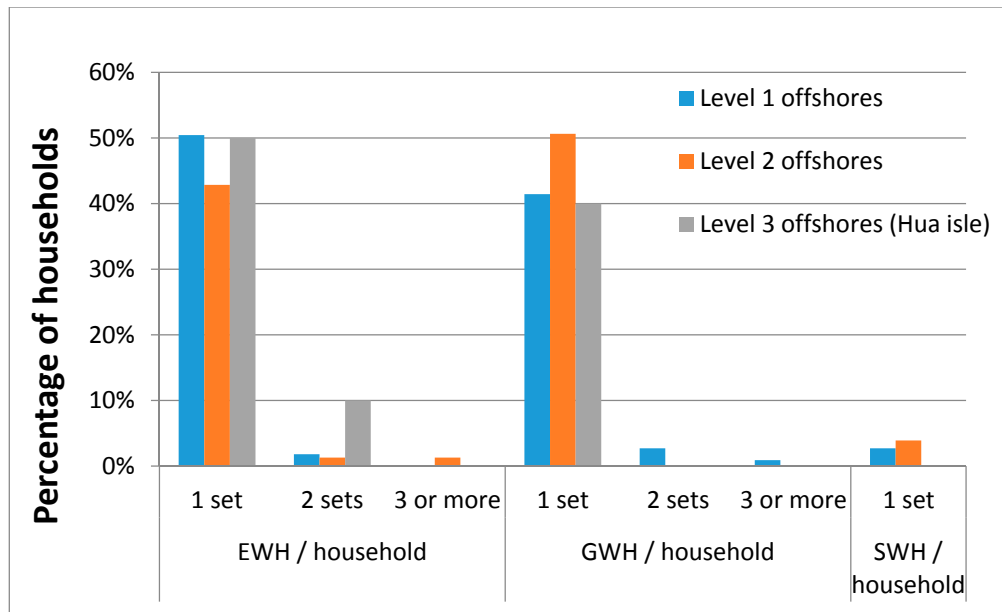


Figure 1. Water heaters per household in Penghu County.

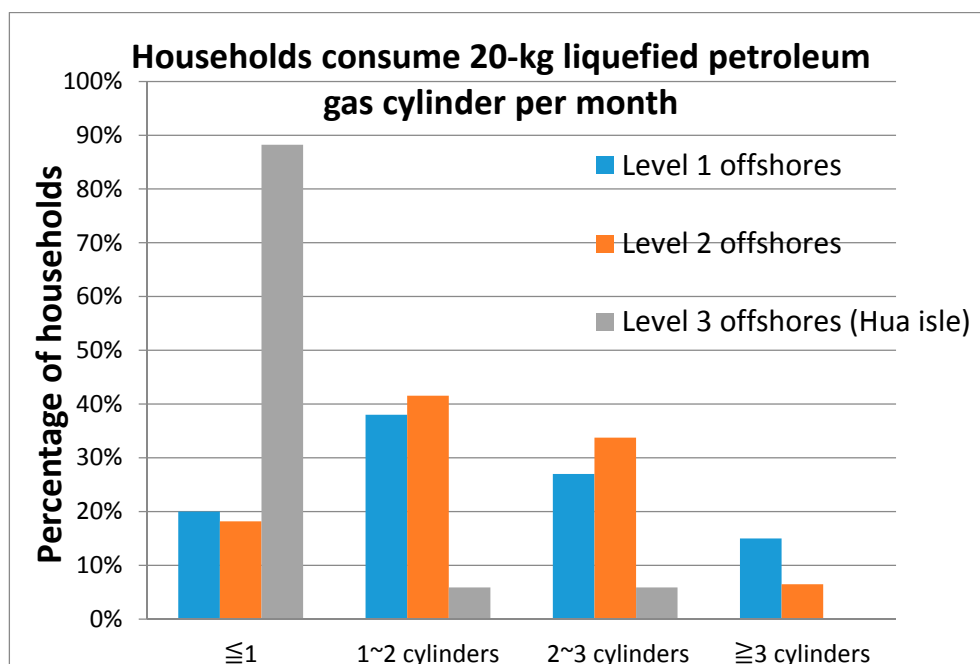


Figure 2. LPG cylinder usage per household in Penghu County.

3.3. Air Conditioner Use and Duration of Operation

Some households in Penghu County do not have air conditioners installed (12.8%), as shown in Figure 3. A total of 27.3%, 27.3%, and 32.6% of the households have one, two, and three air conditioners installed, respectively. In Hua Isle (Level 3), 90% of the households have one or more air conditioners installed. Among them, 30% of the households had more than three air conditioners. An air conditioner is an electric appliance with a high power consumption. Figure 4 indicates that, of those households in Hua Isle that had three or more air conditioners installed, the duration in which the air conditioner was in operation was extremely long. A total of 25% of the households left the air conditioners on for more

than nine hours per day. In the interviews, the residents from these households reported that, because of the fixed electricity charge per month per household, they were not concerned about the electricity price; thus, some residents wasted electricity. Generally, for those households in the offshore isles with one air conditioner installed, the average duration in which the air conditioners were in operation per day was three to six hours, which accounted for 35% of all households with air conditioners. In Hua Isle, regardless of the number of air conditioners installed in a household, the duration in which the air conditioner was on was longer than that in the households in Level 1 and 2 offshore isles. For example, in Level 1, 2, and 3 offshore isles, 6.7%, 13.8%, and 50% of the households, respectively, left the air conditioner in operation for more than nine hours. In addition to the hot weather in summer, the fixed electricity charge per month per household was relevant to the air conditioner usage and its duration of operation. The unlimited electricity usage prolonged the duration in which the air conditioner was in operation.

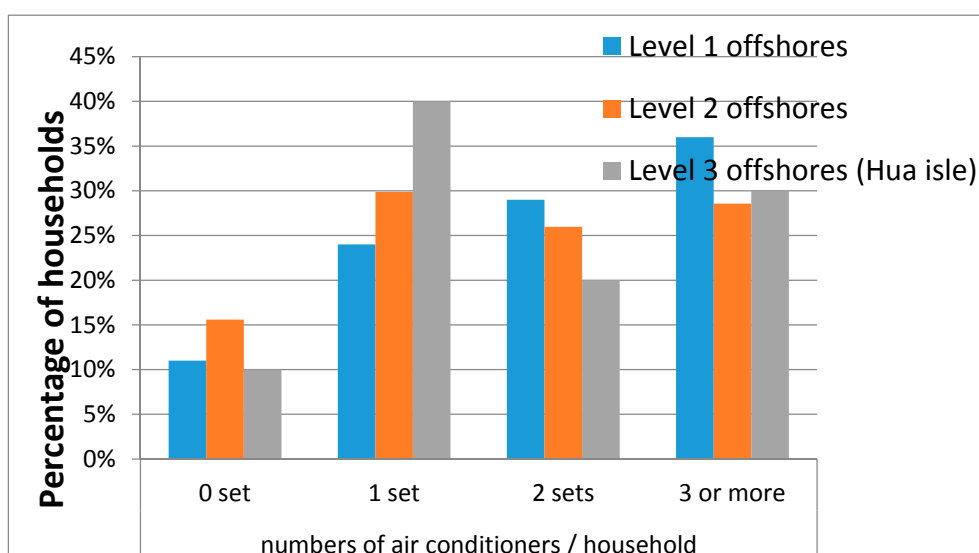


Figure 3. Air conditioner usage per household in Penghu County.

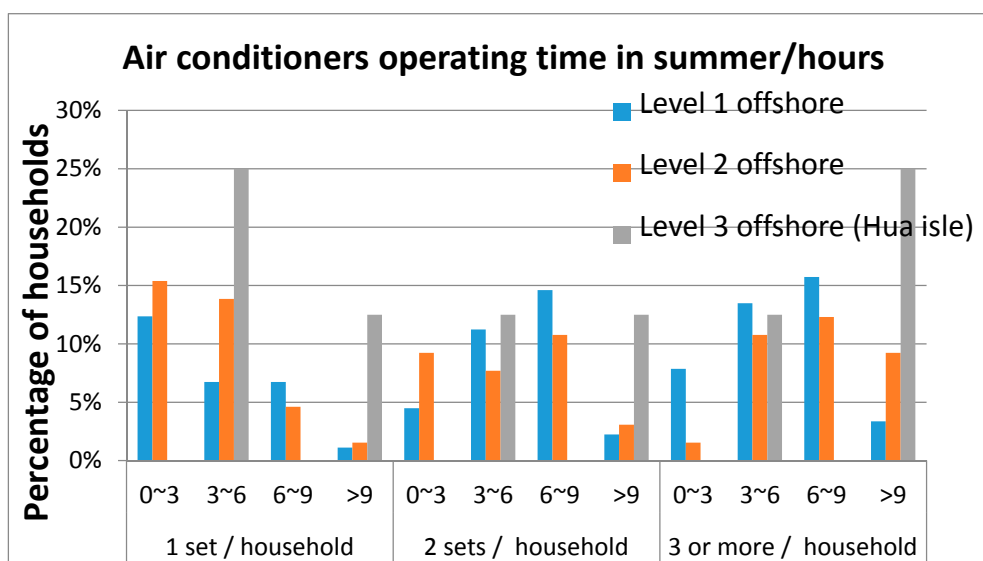


Figure 4. Survey results obtained on the duration for which air conditioners were in operation in Penghu County.

3.4. Refrigerator and Freezer Usage

Figure 5 shows that all of the households in Penghu County have refrigerators. Some households with more family members have two, three, or more refrigerators. In general, the households in Level 1 offshore isles have no freezer, and 37% and 100% of the households in Level 2 and 3 offshore isles have one or more freezers, respectively. Among them, 28% of the households have one freezer, and some households (30%) in Level 3 offshore isles have three or more freezers. The households in Level 2 and 3 offshore isles have a higher percentage of possessing freezers, which may be due to the difficulty in obtaining food supplies, particularly for the residents living in Level 3 offshore isles. The residents in the Level 3 offshore isles rely on shuttle boats to obtain food supplies; however, because of weather factors, the sailing schedules for shuttle boats are uncertain. In addition, most of the residents in the offshore isles live on fishing and thus require freezers to preserve their catch well. Nevertheless, the power consumption of a freezer is higher than that of a general refrigerator. Because the government offers a discounted rate on electricity pricing to the residents in offshore isles, the residents are not charged with a high fee for excessive electricity usage, thus causing the residents to use electricity excessively.

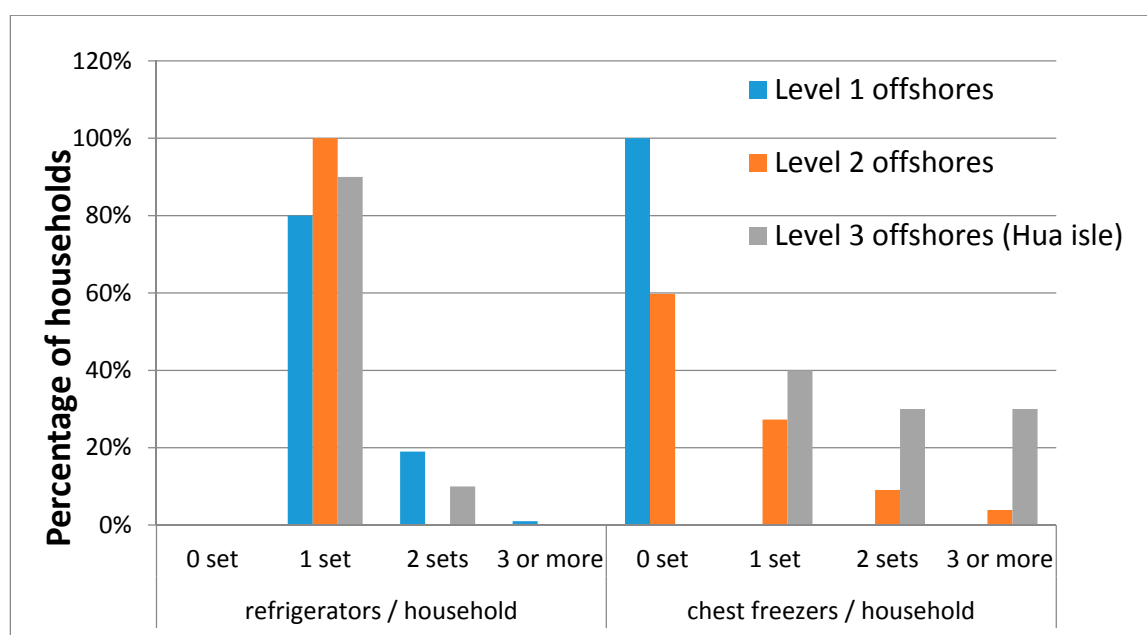


Figure 5. Percentage of refrigerator and freezer usage per household in Penghu County.

Table 3 presents the average number of members, number of electric appliances, and frequency of LPG cylinder usage in a household, and the average electricity pricing and LPG cost in Penghu County. On average, the number of refrigerators (2.5) and freezers (2.0) in the households in Level 3 offshore isles were higher than that in Level 1 and 2 offshore isles. However, in Level 1 and 2 offshore isles, except for Tongpan Isle, electricity is charged according to unit consumption. In Hua Isle (Level 3), because of the fixed electricity charge, relatively more electric appliances were used in households. The relatively higher LPG pricing in Hua Isle resulted in a lower LPG consumption. On average, the households in Level 1 isles used two 20-kg LPG cylinders per month, and those in Level 3 isles used

one 20-kg LPG cylinder every two months. In short, the residents living in Level 3 isles replaced LPG with electricity to reduce expenses.

Table 3. Average number of members, number of electric appliances, and LPG consumption in a household, and the average electricity pricing and LPG cost in Penghu County.

Level of isle	People/household	Air conditioners/household	Refrigerators/households	Freezers/household	Electricity pricing/month (NT\$/m)	LPG cylinders used/household/month	LPG cost (20-kg cylinder)
1	3.8	2.1	1.3	0.0	1519	2.0	914.5
2	3.5	2.0	1.0	1.6	1359	1.9	954.9
3	2.5	2.5	1.0	2.0	300	0.4	1000

4. Household Appliance Usage in Mainland Taiwan and Offshore Isles

4.1. Household Appliances

Table 4 shows the usage of household electric appliances in the households in mainland Taiwan and Penghu County [4], including electric fans, air conditioners, televisions (TVs), rice cookers, computers, refrigerators, water dispenser, electric thermo pots, washing machines, electric heaters, EWHs, ovens, and microwave ovens. Freezers, which are frequently used by the residents in Level 3 isles, were also included. The percentage showed that the households in mainland Taiwan and Penghu County had one, two, or more different electric appliances. Among those households with one electric appliance (over 50%) in mainland Taiwan, 60.2%, 76.7%, 53.9%, 87.2%, and 50.4% of them had a rice cooker, refrigerator, water dispenser, washing machine, and microwave oven, respectively. In Level 1 offshore isles, 50.0%, 84.0%, 58.0%, 78.0%, 68.0%, 92.0%, and 56.0% of the households had a TV, rice cooker, computer, refrigerator, water dispenser, washing machine, and EWH, respectively. In Level 2 offshore isles, 70.1%, 66.2%, and 87.1% of the households had a rice cooker, water dispenser, and washing machine, respectively. In Level 3 offshore isles, 80.0%, 50.0%, 70.0%, and 70.0% of the households had a rice cooker, refrigerator, water dispenser, and washing machine, respectively. Of those households with two or more different electric appliances (over 50%), the households in the four regions (*i.e.*, mainland Taiwan and Level 1, 2, and 3 offshore isles) had an electric fan, air conditioner, and TV. In Level 2 and 3 offshore isles, 50.6% and 50.0% of the households had two refrigerators, respectively.

In addition, according to the percentage of the households with computers, 45.3% and 24.9% of the households in mainland Taiwan, 58.0% and 11.0% of the households in Level 1 offshore isles, 16.9% and 6.5% of the households in Level 2 offshore isles, and 20.0% and 0.0% of the households in Level 3 offshore isles had one and two computers, respectively. Except for Level 1 offshore isles, the households in Level 2 and 3 offshore isles had a lower percentage of containing computers compared with mainland Taiwan. Furthermore, the number of freezers in the households according to the results obtained from the questionnaire survey was noteworthy. In Level 2 and 3 offshore isles, except for refrigerators, another frequently used electric appliance in the households was the freezer. In particular, every household in Level 3 offshore isles had freezers. In Level 2 offshore isles, 27.3% and 14.0% of the households, and 40.0% and 60.0% of the households in Level 3 offshore isles had one and two freezers, respectively.

Table 4. Appliances per household.

Appliances	One set, %				≥ 2 sets, %			
	Taiwan	Level 1	Level 2	Level 3	Taiwan	Level 1	Level 2	Level 3
Electric fan	15.2	14.0	1.2	0.0	80.2	86.0	88.3	100.0
	$p = 0.158$				$p = 0.099$			
Air conditioner	20.4	24.0	29.8	30.0	64.8	65.0	54.5	50.0
	$p = 0.202$				$p = 0.065$			
Television	38.6	50.0	48.1	40.0	59.8	47.0	50.6	50.0
	$p = 0.213$				$p = 0.065$			
Rice cooker	60.2	84.0	70.1	80.0	33.7	12.0	27.3	20.0
	$p = 0.165$				$p = 0.078$			
Computer	45.3	58.0	16.9	20.0	24.9	11.0	6.5	0.0
	$p = 0.039$				$p = 0.065$			
Refrigerator *	76.7	78.0	31.2	50.0	20.7	20.0	66.3	50.0
	$p = 0.014$				$p = 0.041$			
Water dispenser	53.9	68.0	66.2	70.0	4.5	3.0	1.3	0.0
	$p = 0.125$				$p = 0.111$			
Electric thermo pot	39.8	44.0	24.7	40.0	3.7	1.0	2.6	0.0
	$p = 0.098$				$p = 0.113$			
Washing machine *	87.2	92.0	87.1	70.0	6.1	2.0	3.9	0.0
	$p = 0.000$				$p = 0.105$			
Electric heater *	17.1	19.0	14.3	10.0	4.6	0.0	3.9	20.0
	$p = 0.005$				$p = 0.205$			
Electric water heater *	26.3	56.0	42.9	40.0	2.2	2.0	2.6	0.0
	$p = 0.045$				$p = 0.061$			
Electric oven *	44.1	19.0	14.3	10.0	1.6	0.0	3.9	20.0
	$p = 0.047$				$p = 0.261$			
Microwave oven *	50.4	36.0	27.3	20.0	0.9	1.0	0.0	0.0
	$p = 0.014$				$p = 0.183$			
Freezer *	--	0.0	27.3	40.0	--	0.0	14.0	60.0
	$p = 0.023$				$p = 0.025$			

* p (observed significance level) < 0.05 indicates a significant difference in the usage of electric appliances (based on the chi-square test).

4.2. Energy Usage

Table 5 indicates the total duration (in percentage) in which air conditioners were on per day in each household during the summer. In mainland Taiwan, 11.4%, 27.5%, 24.0%, and 37.1% of the households used air conditioners for less than 3, 3–6, 6–9, and more than 9 hours per day, respectively. In Level 1 offshore isles, 33.0%, 28.0%, 33.0%, and 6.0% of the households used air conditioners for less than 3, 3–6, 6–9, and more than 9 hours per day, respectively. In Level 2 offshore isles, 36.4%, 28.6%, 23.4%, and 11.7% of the households used air conditioners for less than 3, 3–6, 6–9, and more than 9 hours per day, respectively. In Level 3 offshore isles, 20.0%, 40.0%, and 40.0% of the households used air conditioners for less than 3, 3–6, and more than 9 hours per day, respectively. Overall, in mainland Taiwan and in Level 1 and 2 offshore isles, 23.4% to 33.0% of the households used air conditioners for

3–6 and 6–9 hours, respectively. A high percentage of the households in Level 3 offshore isles used air conditioners for 3–6 (40%) and more than 9 hours (40%).

Table 5. Total duration of air conditioner usage per household per day in summer.

Duration of air conditioner usage	Usage Percentage (%)			
	Taiwan	Level 1	Level 2	Level 3
< 3 h ($p = 0.065$)	11.4	33.0	36.4	20.0
3–6 h ($p = 0.072$)	27.5	28.0	28.6	40.0
6–9 h ($p = 0.072$)	24.0	33.0	23.4	0
> 9 h ($p = 0.023$)	37.1	6.0	11.7	40.0

5. Conclusions

By comparing the electric appliance usage in mainland Taiwan and each level of offshore isles in Penghu County, this study indicated that the prevalence rate of electric appliances was lower in Level 2 and 3 offshore isles. However, the prevalence rate of freezers in these offshore isles was higher than that in other regions. According to the survey results obtained in Penghu County, almost all of the households have either EWHs or GWHs installed, whereas few households have SWHs installed. The amount of LPG consumed by the households in Level 1 and 2 offshore isles was similar, and most of the households in Level 3 offshore isles exhibited an evidently lower consumption of LPG. Regarding electric appliances, air conditioners are commonly installed in houses in each level of offshore isles, and most of the households in Level 2 and 3 offshore isles have one or more freezers. The duration in which the air conditioners, which have a high power consumption, were in operation in the households in Level 3 offshore isles was higher than that in Level 1 and 2 offshore isles.

In Penghu County, the TPC and the Penghu County government subsidized the electricity pricing for residents in parts of the Level 2 offshore isle and all Level 3 offshore isles. Therefore, electricity pricing in these regions is evidently cheaper than that in mainland Taiwan and in other Penghu County regions. Residents in these regions do not need to pay a high charge for excessive electricity usage, thus resulting in excessive electric power usage by the residents. Therefore, the policy incentive with a fixed monthly charge of electricity should be terminated. Furthermore, to achieve the aim of carbon reduction, the government can use the budget for energy subsidies (e.g., electric power system) to assist residents by developing renewable energy (e.g., wind power, photovoltaic, and solar thermal energy) according to the different climates and natural environments in each level of offshore isles. In particular, subsidy programs by the Bureau of Energy, Ministry of Economic Affairs and Penghu County are required for dissemination of photovoltaic and solar thermal systems.

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Author Contributions

Keh-Chin Chang was the principal investigator. Szu-Cheng Lu conducted interviews and data analysis. Wei-Min Lin and Kung-Ming Chung drafted the manuscript. All authors read and approved the final manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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