

A SURVEY STUDY OF PUBLIC ATTITUDE TOWARD
LOW-CARBON ECONOMY IN TAIWAN

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ABSTRACT

Low carbon economy means that an economic system produces a lower carbon footprint to reduce the greenhouse effect. The utmost goal of low carbon economy is to pursue zero carbon emission. As the climate change getting worse than before, we should not ignore the issue of reducing carbon emission anymore. How to reduce carbon have become a serious issue that all of the countries in the world need to face and think of the solution. Likewise, Taiwan, as one of the members of global community, should also concern the issue and endeavor to promote reducing carbon step by step. Nevertheless, the government in Taiwan does not have much clear goal to improve the issue for Taiwan. In addition to the government's efforts, the public effort to resolve the carbon issue is also not clear. Although Taiwan is a small country, it is still part of the global village. Every small changes can accumulate help to the earth gradually.

This research used quantitative research method to process data collection and analysis. Questionnaire is the major way to collect firsthand information. The research has collected 300 questionnaires aiming to explore Taiwanese people's point of view regarding the issue of promotion low carbon economy in Taiwan. It applied SPSS to conduct data analysis. Within the research, it has demonstrated the response of the public attitude on the low carbon issue from government's perspective, corporations' perspective, as well as the populace's perspective.

Keywords: Greenhouse effect, Low Carbon Economy, Energy transition, Net Zero Emissions

摘要

低碳經濟是指經濟體系產生較低的碳足跡，從而減少溫室效應。目的是追求零碳排放。隨著氣候變化越來越嚴重，我們不應再忽視減少碳排放的問題。如何減少碳排放已成為世界各國都需要面對、思考解決方案的嚴峻問題。同樣，台灣作為國際社會的一員，也應該關注這個問題，努力推動減碳。然而，台灣政府並沒有太多明確的目標來改善台灣的問題。除了政府之外，大眾對於如何減少碳排放也沒有很明確的方向。台灣雖然是一個小國，但它仍然是地球村的一部分。即使是微小的變化也可以累積起來幫助這個世界。

本研究採用量化的研究方法進行數據收集和分析。在設定研究問題後，發問卷以收集數據資料，旨在探討台灣民眾對台灣推廣低碳經濟的看法。該研究著重於政府、企業和民眾對低碳問題的公眾態度的反應。研究顯示了台灣民眾對低碳經濟的態度。

關鍵字:溫室效應、低碳經濟、能源轉型、淨零排放

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INTRODUCTION

Background

In recent years, as the increasing development of technology, the problem of pollution has become another threatening factor of our planet. There is only one Earth. If we do not cherish it, one day we will bring us in a situation of terrible destruction. Many countries began to discuss how to reduce carbon emissions. Many countries have involved promoting the issue by signing, for example, Kyoto Protocol, Copenhagen Accord, Paris Agreement.¹ The agreement started in December 1997 at the National Kyoto International Center in Kyoto, Japan, where participants of the United Nations Framework Convention of the issue of climate change had held three times. Its goal is to stabilize the greenhouse gas content in the atmosphere at an appropriate level to ensure the ecosystem become better, safe food production and sustainable economic development. Kyoto Protocol had been expired in 2012.² In Copenhagen Accord, the United States and China did not really want to face the problems of climate change, so the Copenhagen Accord was failed³. In Paris Agreement, it have more clear goals. The agreement is not binding on most of the world's developing countries and territories to invest in renewable energy sources, but is driven autonomously under the current framework⁴. It also stated that it will re-

¹ For Kyoto Protocol, please refer to “KYOTO PROTOCOL TO THE UNITED NATIONS FRAMEWORKCONVENTION ON CLIMATE CHANGE” (<https://reurl.cc/W1qMgZ>); for Copenhagen Accord, please refer to “U.N. Framework Convention on Climate Change” (<https://reurl.cc/oQZ4bv>); for Paris Agreement, please refer to “Paris Agreement” (<https://reurl.cc/0X6lGo>).

² https://unfccc.int/kyoto_protocol

³ John Vidal, "Low targets, goals dropped: Copenhagen ends in failure," *The Guardian* 2009, <https://www.theguardian.com/environment/2009/dec/18/copenhagen-deal>.

⁴ "The Explainer: The Paris Agreement," 2021, <https://unfccc.int/blog/the-explainer-the-paris-agreement>.

negotiate by reviewing emissions reductions every five years. Through the conference, we can know that it is still hard to improve the climate change issues.

The European commission propose a new policy called European Green Deal⁵. In 2030, European countries have to reduce 50% to 55% of carbon emissions. Furthermore, in 2050, they will try to achieve carbon neutrality. The issue of “Net Zero” is a megatrend and has become our responsibility⁶⁷. Taiwan is part of the global community, it cannot ignore the issue either. Taiwan also need to make an effort to improve this problem. Not only the government should fight for Net Zero, but also the citizen.

However, Taiwan’s government has not been very serious enacting laws to handle the issue. Currently, only some laws are related for dealing with the problems of Low-Carbon economy. For example, Taiwan have enacted the law, naming *Green House Gas Reduction and Management Act*⁸. It is the principle law to reduce and manage Greenhouse Gas. *The Electricity Act* is to develop the electric power resources to reduce the carbon emissions⁹. *The Energy Administration Act* is to ensure the stable and safe supply of energy¹⁰. Also the purpose of *the Renewable Energy Development Act* is to encourage the public to use renewable energy. The Act is specially formulated to promote energy diversification, improve energy structure, reduce emission of greenhouse gases, improve environmental quality, assist relevant industries, and enhance sustainable development of the country¹¹. Although these

⁵ "European Green Deal: Commission proposes transformation of EU economy and society to meet climate ambitions," 2021, https://ec.europa.eu/commission/presscorner/detail/en/IP_21_3541.

⁶ By reducing all greenhouse-gas emissions, net zero means near-zero greenhouse-gas emissions.

⁷ 黃昭勇, "什麼是淨零、碳中和、氣候中和?," *天下雜誌*, 2021, <https://csr.cw.com.tw/article/41933>.

⁸ "Greenhouse Gas Reduction and Management Act," 2018, https://adapt.epa.gov.tw/eng/TCCIP-1-D/TCCIP-1-D-5_en.html.

⁹ "電業法 ", 108, <https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=J0030011>.

¹⁰ "Energy Administration Act," Laws & Regulations Database of The Republic of China (Taiwan), 2022, <https://law.moj.gov.tw/ENG/LawClass/LawParaDeatil.aspx?media=print&pcode=J0130002&bp=1>.

¹¹ 務部全國法規資料庫, "電業法 ".

laws and acts have enacted and will amend in the future, it is still far enough to deal with the issue of carbon emissions and related environmental problems.

Not only the government should think of the resolutions to solve the environmental problem, but also all of the resident. Meanwhile, the corporations are also important players. It is a long-lasting issue but has been brought to the discussing table in most recently years. Companies have to consider how to make money one the one hand, while consider how to reduce negative impact on our environment on the other hand. Everything that we consume is related to Carbon Footprint. It cannot be avoided, so what we can do as responsible citizens are to calculate how to reduce the Carbon Footprint. For sure, it is hard because every company is in the primary stage of learning how to change the business model to eco-friendly way.

Inspiring by the above, this research aims to find out what and how people in Taiwan think about the issue of the Low-Carbon Economy.

Not only the government should think of the resolutions to solve the problem, but also all of the resident. The corporation is also important. It is a new issue that companies have to consider how to earn money while do not hurt the environment at the same time. Even though the Covid-19 has affected the whole world for a long time, the corporation still has to work to earn money. Almost everything that we consume daily will be tracked the Carbon Footprint. Because it cannot be avoided, so what we can do is to calculate to the way to reduce the Carbon Footprint. It is hard because every company still in the stage of learning how to change the business model to eco-friendly way.

This research expects to find out what are Taiwanese people's thoughts on the issue of Low-Carbon Economy in Taiwan.

Motivation

Everyone has heard about terms of “environmental protection”, “reduce carbon”, “energy-saving”, and etc..., but very few people can really carry out actual efforts to deal with the issues. A rise in temperature by one degree may raise the sea level by more than two meters¹². Thus, countries with low elevations will gradually disappear. And the nature will be destroyed and the world is under threat. We need to face the environmental problems. All type of industries is more or less related to carbon emissions, such as Manufacturing Industry, Transportation, Construction, and even Services Industry.

Many Taiwanese companies have begun to develop carbon reduction strategies. For example, Yushan bank promotes carbon footprint certification; Taishin Bank has created green energy points to encourage consumers to concern the importance of the issue. Communities, such as the European Union offers Carbon Border Adjustment Mechanism. The European Union has already regulated a plan of carbon border tax¹³ effected in 2023¹⁴. According the aforementioned plan, to export products to the EU, you will have to prepare CBAM Certificates to sell products in the European market.

It seems that many countries have already start to enact laws for reducing the carbon, but Taiwan is far behind many of those countries. To improve the situation, it is not only the government, but also corporations and all of the resident should help to tackle the problem. We do not have much time to hesitate. The world will not wait for us.

¹² CORVALLIS, "地球每增溫 1°C 海平面升 2.3 公尺," 2013, <https://e-info.org.tw/node/87373>.

¹³ "What is a carbon border tax and what does it mean for trade?," 2021, <https://www.weforum.org/agenda/2021/10/what-is-a-carbon-border-tax-what-does-it-mean-for-trade/>.

¹⁴ "Carbon Border Adjustment Mechanism: Questions and Answers," 2021, https://ec.europa.eu/commission/presscorner/detail/en/qanda_21_3661.

Research Purpose

Low-Carbon Economy have affected everyone nowadays. The purpose of the study is to analyze how people understand and think about the Low-Carbon economy in Taiwan. It expects that the research can submit a whole picture of the issue and the way how we can deal with the issue of Low-Carbon emissions as well as promote low-carbon economy in Taiwan.

Research Questions

1. Can government's policy help to improve the development of low carbon economy in Taiwan?
2. Do Taiwanese people think that companies that join RE100 will contribute to a low-carbon economy?
3. Will Taiwanese people willing to make change through daily life?

Contribution

The contribution of this study is to provide information to the public about Taiwanese people's attitude toward the Low-Carbon Economy in Taiwan. With this research, it can provide information to help more people to understand how serious this issue is. Meanwhile, through this research, it can also make more people follow the interests of Taiwan. No matter Laws, or simple Acts that use to regulate carbon emissions or low-carbon economy, they can all help to achieve the goal of Net Zero in Taiwan gradually.

Limits

This study will use questionnaires to collect first-hand data of the public attitude toward Low-Carbon Economy. Nevertheless, it is not possible to delivery sufficient questionnaires to cover all citizens in Taiwan. Thus, the research will use internet to delivery questionnaires which can ensure respondents are randomly chosen. Nevertheless, by so doing, it is impossible to collect the people who do not use the internet.

Delimits

Because the range of low-carbon economy is too large, so this research will only focus on the government, company, and community. This study will only use questionnaires as a major data collecting tool. Thus, the research will do effort to collect more questionnaires to ensure sufficient data to confirm analysis reliability.

LITERATURE REVIEW

As the global population grows rapidly and the economy continues to develop, global warming is getting worse.¹⁵ Scientific research has shown that greenhouse gases such as carbon dioxide, which are produced by human economic and living activities, are the main causes of climate warming. In the face of worsening environmental conditions, there is a global call to reduce CO₂ emissions.¹⁶ Against this background, the Low-Carbon Economy has become a hot topic worldwide, with some scholars¹⁷ even calling it another major advance for humanity following agricultural and industrial civilizations.

The Definition of Low-Carbon Economy

The Low-Carbon Economy was first introduced in the 2003 British energy white paper, "Our Energy Future: Creating a Low-carbon Economy"¹⁸. "Low carbon means lower greenhouse gas emissions. Broadly speaking, "carbon" includes six types of greenhouse gases proposed in the Kyoto Protocol, naming carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. In a narrow sense¹⁹, "carbon" refers to the carbon dioxide that causes the current global climate problem, especially the carbon dioxide produced by burning fossil fuels.

¹⁵ United States Environmental Protection Agency, *Climate Change Indicators: Greenhouse Gases* (2022), <https://www.epa.gov/climate-indicators/greenhouse-gases>.

¹⁶ United Nations, "For a livable climate: Net-zero commitments must be backed by credible action," (2022), <https://www.un.org/en/climatechange/net-zero-coalition>.

¹⁷ McKinsey Quarterly, "Reimagining industrial operations," (2020), <https://www.mckinsey.com/capabilities/sustainability/our-insights/reimagining-industrial-operations>.

¹⁸ The Department for Business Energy and Industrial Strategy, *Energy white paper* (2003), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/272061/5761.pdf.

¹⁹ Sarah Fecht, "How Exactly Does Carbon Dioxide Cause Global Warming?," 2021, <https://news.climate.columbia.edu/2021/02/25/carbon-dioxide-cause-global-warming/>.

Because of high carbon strength and low carbon productivity due to the current fossil fuel-dependent energy production system, the ultimate goal is to reduce carbon strength to natural resources and environmental capacity. Therefore, a low-carbon economy is based on the energy development and efficient use; with low energy consumption, low pollution and low emissions as basic economic characteristics, the earth can be sustainable. Development of socioeconomic development models require ideology and control of greenhouse gases.

The Role of the Government

Energy conservation and carbon emission reduction, development and utilization of new and renewable energy sources are the basic requirements to achieve a low-carbon economy. First, save energy and reduce emissions. In order to save energy and improve the efficiency of energy utilization, the government should change the way to use resources²⁰. Tactics, such as resource utilization method, reducing high energy consumption, high pollution and low efficiency products, accelerating industrial restructuring and technology development, reducing energy consumption and carbon dioxide emissions, are needed. For now, reducing energy consumption and strengthening the utilization of low-quality energy sources are good ways to save energy.

Generally speaking, conservation of energy and resources will inevitably reduce greenhouse gas emissions, thereby protecting the environment and mitigating the greenhouse effect. Second, develop and utilize new and renewable energy sources. The use of fossil energy in economic production is responsible for greenhouse

²⁰ 宋孟珩, "Target Year Energy Supply-Mix Planning with Renewable Energy Substitution - In The Case of Taiwan" (2015).

gases²¹. Therefore, it is essential to change the different energy. Nuclear energy, solar energy, wind energy, bio-quality energy, and hydrogen energy are currently being developed and used by countries around the world. But it is inevitable that new and renewable energy sources have many shortcomings that are detrimental to development and utilization. So, through government guidance to increase investment in new and renewable energy development, it is an effective way to raise the level of new and renewable-energy technologies. At the same time, the government should play a market role in calculating the social environmental benefits of energy into the cost of energy development and utilization, and make fossil energy more expensive than new energy and renewable energy.

The government must take on the responsibility of educating the people about environmental issues, and adopt different methods to raise the level of environmental awareness and raise the society's green consciousness. The government should enact the policy about renewable energy resources because we cannot deny that government have power to make people follow the rules. If government enacting the laws faster, it will be helpful to promote Low-Carbon Economy.

The Role of the Company

Low-Carbon Economy, with the lowest carbon emissions, ecological costs, and socioeconomic costs for economic development, is a sustainable economy that can improve the planet's ecosystem's ability to self-regulate²². The low carbon economy has two basic features: low carbon dioxide (CO₂) emissions are minimized or zero, and the energy consumption is Eco logicalized to produce, exchange, distribute and

²¹ 蘇珮甄, "台灣地區溫室氣體排放量預測與減量策略" (2008).

²² 陳冠齡, "企業提升碳聲譽的因素與企業價值之關聯性" (2020).

consume. Enterprises are the leading forces in social production. Developing a low-carbon economy is not only a social responsibility that enterprises should take on, but also a major strategic choice. Among the many strategic choices of enterprises, how to adapt the enterprise marketing strategy to the requirements of low carbon economy is a question that enterprises should carefully consider and practice in the new economic situation. The low-carbon marketing model will be a new trend in enterprise marketing model, and it will also be an important guarantee for sustainable development in the context of low-carbon economy.

The low carbon economy is to build a win-win economic development of society and environmental protection through technological innovation, institutional innovation, industrial transformation, and new energy development. In order to adapt to the new economic model of low carbon economy, enterprises should constantly introduce new methods and theories from the direction of industrial development and the scale and mechanism of production. The company can guide customers to low carbon consumption. The essence of marketing is to create and satisfy demand. In the process of guiding, excavating and creating consumer needs, low carbon marketing is to identify customer needs from the general "customer needs" and focus on encouraging, excavating and satisfying the customer's "reasonable needs. The "reasonable demand" of customers is to encourage consumers to consume sustainably, low carbon, encourage multiple consumption, reduce one-off consumption, gradually eliminate environmentally threatening consumption patterns and consumption habits²³.

²³ 郭芬, "低碳經濟係企業社會責任審計研究" (2011).

The Green Economy

As climate change getting more and more serious, it has become a major topic of discussion for the United Nations and international economic organizations in recent years. According to the United Nations Environment Program (UNEP)²⁴, a green economy is about low carbon, climate-resilient, resource-efficient, and socially inclusive economic models.

Green Industry

Since 2010, The United Nations Industrial Development Organization (UNIDO)²⁵ has proposed green industry proposals, established green industry platforms, implemented green industry initiatives, and sought international partnerships. UNIDO defines green industries as a sustainable and economically viable future. We need to ensure that our industries do not harm the environment before we can call them green industries. When protecting the environment, we also create the new opportunity of works.

Green Finance

Green finance refers to financial services provided by financial institutions to support environmental improvement, cope with climate change and efficient use of resources, such as environmental protection, energy conservation, clean energy, green transportation, green construction, etc. Green consumption is defined as financial instruments and services provided by financial institutions to encourage consumers to

²⁴ 倪貴榮, "The Status of Taiwan in International Environmental Law," *臺大法學論叢*, 31, no. 2 (2002), <https://doi.org/10.6199/ntulj.2002.31.02.03>.

²⁵ "Resilient, carbon neutral growth and circular economy," <https://www.unido.org/our-focus-building-better-future/resilient-carbon-neutral-growth-and-circular-economy>.

purchase new energy-saving products or improve existing equipment and equipment. At present, many banks have participated in green consumer finance and finance, such as the Yushan ETC Tour Co-branded Card and World Card²⁶, which promote carbon footprint certification. The Green Life Card of Taishin Bank has created green energy points²⁷ to encourage consumption. Yongfeng Bank offers preferential project financing to companies that are interested in establishing solar photoelectric power generation equipment in the Hsinchu Industrial Zone. Cathay Pacific Bank incorporates the concept of green finance into the loan value chain, guiding enterprise customers to reduce pollution and impact on society and the environment.

Circular Economy

One of the ultimate characteristics of the green economy is "zero waste," or "circular economy"²⁸. The EU is the founder of policy implementation of the concept of a circular economy, so far, it is the most comprehensive and advanced politician in the history of circular economic policy. The cyclical economy is not only the economic transformation that the EU is now pursuing, but also the most important policy path for the EU to achieve the UN's 2030 Sustainable Development Goals. The World Circular Economic Forum (WCEF), founded in 2017 by Finland's parliament. In recent years, the Finnish Innovation Fund, has seen the world's most aggressive cyclical economies, the countries include: Japan, Finland, China, Belgium, the Netherlands, France, Italy, Italy and the United Kingdom.

²⁶ "玉山卡減碳愛地球," <https://www.esunbank.com.tw/bank/personal/credit-card/ecofooter#1>.

²⁷ 齊瑞甄, "強調綠色生活投資 台新為卡友種樹、消費享回饋," *經濟日報* 2022, <https://udn.com/news/story/7239/6190725>.

²⁸ 賴泳卉, "循環經濟模式與案例探討" (2019).

RE100

RE100 is a global renewable energy project that have led by the Climate Group and the Carbon Disclosure Project (CDP), bringing together the world's most influential companies to work together to improve the use of green electricity from the perspective of electricity demand. To create a friendly environment, participating companies must publicly commit to reach the schedule of 100% use of green electricity between 2020 to 2050, and they have to report the use progress year by year²⁹. There are many enterprises already join RE100, including apple, Google, Facebook, Delta Electronics, Cathy Financial Holdings³⁰, etc. Through participating in RE100 the enterprises can have a better image.

²⁹ 李澤明, "企業永續發展策略探討——以台達電子為例" (碩士 2022).

³⁰ 孫文臨, "蘋果供應鏈美律宣布加入 RE100 2050 年 100%使用再生能源," (2021), <https://e-info.org.tw/node/232484>.

METHODOLOGY

Research Design

The overall research process has been illustrated by the Figure 1.

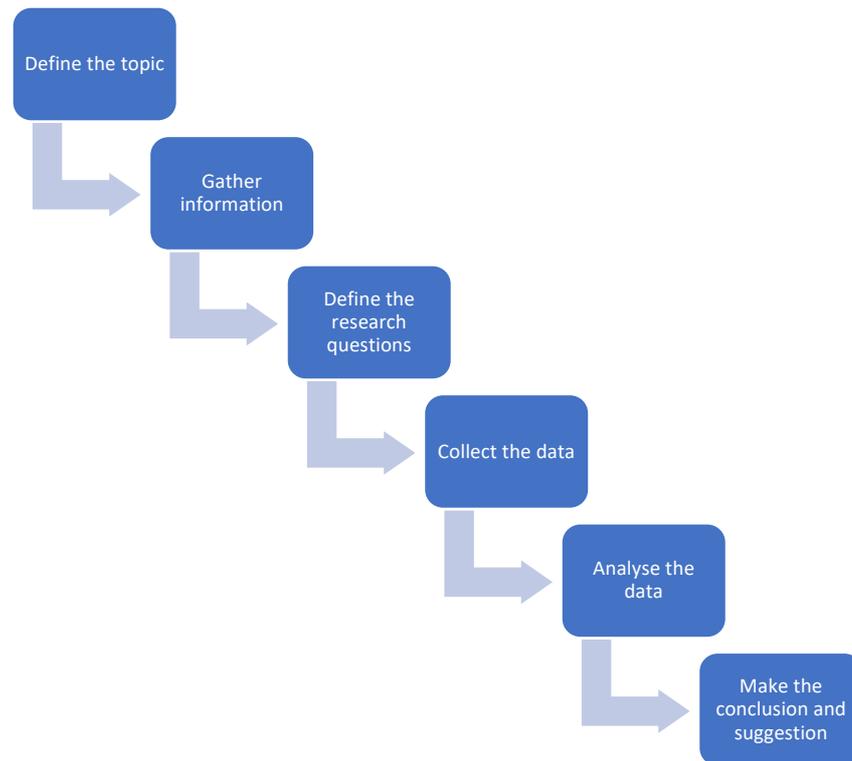


Figure 1 Research Process

This research analyzed the public attitude of low carbon economy in Taiwan. To complete the research, the author has collected many papers related to low carbon economy and green economy. Periodicals, newspapers, and journals that are related to low carbon economy are also reviewed. The research aims to investigate public attitude toward low carbon economy in Taiwan, this an online questionnaire has been delivered to collect firsthand data. In this way, more Taiwanese people can see the

questionnaire and give feedback. To cope with problems, such as location, time, accessibility of the questionnaire, convenience of responders, , online questionnaire is the best option that is adopted to collect data. The questionnaire used “Likert Scale” to make responders rank it more easily. After questionnaires been collected, the SPSS has been utilized to analyze the data.

Data Collection and Data Analysis

In this research, quantitative research has been applied to explore the public attitude toward low carbon economy in Taiwan. A questionnaire has been carefully designed basing on research questions and designed research framework. Questions of questionnaire have been divided into four parts. First part is regarding Taiwan government’s policy. Second part is company’s rules related to the low carbon economy. Third part is about public and related to the daily life that small change can reduce the carbon. The last part is personal background information. According to these four groups of questions, the research used SPSS to analyze the collected data. Most of the questions in the questionnaire is single choose so as to analyze the result more precisely. The “Likert Scale” is applied to most of questions in the questionnaire. The responder can rank what they thought in five level. The option includes “strongly agree”, “agree”, “neutral”, “disagree”, and “strongly disagree”.

I will use online survey to collect the data. The questionnaires were sent to social media, such as Facebook, Instagram. The survey doesn’t have too much limit, every people live in Taiwan could fill in this survey. The feasible way to send the questionnaire was going through the private messages and line groups for friends and classmates to fill in. I predict to collect at least three hundred questionnaires.

Except questionnaire, this research has also reviewed periodicals, journals, and news as the basic knowledge to raise degree of credibility of research. Those literatures have been searched from libraries, think tanks, databanks, and so on.

DATA ANALYSIS

The online survey was designed to explore how people living in Taiwan's attitude of low carbon economy. It was delivered through google form. In total, 305 frequent Taiwanese respond my questionnaire. After checking each respond of the survey, 305 valid responses were used for data analysis.

Government's Policy

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Taiwan's zero-carbon energy needs to increase (such as renewable energy, hydrogen energy, etc.)	Male	123	4.15	.865	.078
	Female	182	4.20	.724	.054

Independent Samples Test

Levene's Test for Equality of Variances		t-test for Equality of Means									
		F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						One-Sided p	Two-Sided p				

Taiwan's zero-carbon energy needs to increase (such as renewable energy, hydrogen energy, etc.)	Equal variances assumed	4.086	.044	-.562	303	.287	.574	-.051	.092	-.232	.129
	Equal variances not assumed			-.543	230.028	.294	.587	-.051	.095	-.238	.135

According to the research, the female respondents were more than males in government's policy part. An independent- samples t-test comparing the means of female's and male's support to Taiwan's zero-carbon energy need to increase. The T-test should know the significant difference between males (4.15) and female (4.20). Its t value was -0.562 and p was 0.574 which was higher than 0.05. Thus, there was no significant effect for gender.

ANOVA

By 2050, Taiwan can use 100% green electricity and carbon-free energy

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	31.405	4	7.851	7.211	<.001
Within Groups	326.641	300	1.089		
Total	358.046	304			

There were significant differences of Taiwan can use 100% green electricity and carbon-free energy in 2050 between different jobs. A one- way ANOVA was performed to compare the effect of job in Taiwan can use 100% green electricity and carbon-free energy in 2050. It showed that ($F(4, 300) = 7.211, p < .001$).

Turkey's HSD Test for multiple comparisons found that the Taiwan can use 100% green electricity and carbon-free energy in 2050 for respondents of unemployed (2.33) is significantly lower than respondents of homemaker (3.42). The public service and private enterprise, student and private enterprise, student and homemaker, student and private enterprise have significant differences. (Appendix 1)

ANOVA

Except the Greenhouse Gas Reduction and Management Act, I think adding more regulations will make Taiwan more stable towards net zero emissions.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.294	4	.824	1.374	.243
Within Groups	179.768	300	.599		
Total	183.062	304			

Except the Greenhouse Gas Reduction and Management Act, adding more regulations will make Taiwan more stable towards net zero emissions. However, did people with different jobs agree adding more regulations will make Taiwan more stable towards net zero emissions? A one-way ANOVA was performed to compare the effect of Location on a3 (Except the Greenhouse Gas Reduction and Management Act, adding more regulations will make Taiwan more stable towards net zero emissions?), and it revealed that there was no statistically significant difference in mean a3 scores between respondents of the unemployed, student, public service, and private enterprise, homemaker (3.33, 3.75, 3.82, 3.95, 4.05 respectively; $F(4, 300) = 1.374, p = .243$).

ANOVA

Except the Greenhouse Gas Reduction and Management Act, I think adding more regulations will make Taiwan more stable towards net zero emissions.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.010	5	.802	1.339	.248
Within Groups	179.053	299	.599		
Total	183.062	304			

Except the Greenhouse Gas Reduction and Management Act, adding more regulations will make Taiwan more stable towards net zero emissions. However, did people with different age agree adding more regulations will make Taiwan more stable towards net zero emissions? A one-way ANOVA was performed to compare the effect of Location on a3 (Except the Greenhouse Gas Reduction and Management Act, adding more regulations will make Taiwan more stable towards net zero emissions?), and it revealed that there was no statistically significant difference in mean a3 scores between respondents of the age under 20 years old, 21-30 years old, 31-40 years old, 41-50 years old, 51-60 years old, over 61 years old (3.71, 3.74, 3.92, 4.00, 3.77, 3.93, respectively; $F(5, 299) = 1.339, p = .248$).

ANOVA

If the government increased the subsidies of electric vehicles will make me willing to switch from petrol to electric.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.854	4	.463	.514	.725
Within Groups	270.494	300	.902		
Total	272.348	304			

If the government increased the subsidies of electric vehicles, will make me willing to switch from petrol to electric or not. However, did people with different

incomes agree if the government increased the subsidies of electric vehicles, will make them willing to switch from petrol to electric? A one-way ANOVA was performed to compare the effect of Location on a4 (If the government increased the subsidies of electric vehicles, will make me willing to switch from petrol to electric), and it revealed that there was no statistically significant difference in mean a4 scores between respondents of the income below NT\$10,000, 1 NT\$0,000-30,000, NT\$30,000- 50,000, NT\$50,001- 70,000, and income over NT\$70,000 (3.68, 3.72, 3.87, 3.86, 3.87 respectively; $F(4, 300) = .514, p = .725$).

ANOVA

I think the government should make the public more able to implement low-carbon life through schools, social networking sites, etc.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.768	4	.942	1.796	.129
Within Groups	157.314	300	.524		
Total	161.082	304			

I think the government should make the public more able to implement low-carbon life through schools, social networking sites, etc. However, did people with different jobs think the government should make the public more able to implement low-carbon life through schools, social networking sites, etc. A one-way ANOVA was performed to compare the effect of Location on a5 (I think the government should make the public more able to implement low-carbon life through schools, social networking sites, etc.) , and it revealed that there was no statistically significant difference in mean a5 scores between respondents of the unemployed, student, public service, and private enterprise, homemaker (4.00, 4.08, 4.13, 4.29, 4.47 respectively; $F(4, 300) = 1.796, p = .129$).

Enterprise

ANOVA

I trust companies that join RE100

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.936	4	.734	1.466	.213
Within Groups	150.277	300	.501		
Total	153.213	304			

I trust companies that have join RE100. However, did people with different jobs trust companies that have join RE100? A one-way ANOVA was performed to compare the effect of Location on b1 (I trust companies that have join RE100.), and it revealed that there was no statistically significant difference in mean b1 scores between respondents of the unemployed, student, public service, and private enterprise, homemaker (3.67, 3.56, 3.64, 3.77, 3.89 respectively; $F(4, 300) = 1.466$, $p = .213$).

ANOVA

I think big business driving small business can accelerate the drive for carbon reduction

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.856	4	.714	1.288	.275
Within Groups	166.305	300	.554		
Total	169.161	304			

I think big business driving small business can accelerate the drive for carbon reduction. However, did people with different jobs think big business driving small business can accelerate the drive for carbon reduction? A one-way ANOVA was

performed to compare the effect of Location on b2 (I think big business driving small business can accelerate the drive for carbon reduction), and it revealed that there was no statistically significant difference in mean b2 scores between respondents of the unemployed, student, public service, and private enterprise, homemaker (3.67, 4.01, 4.01, 4.10, 4.37 respectively; $F(4, 300) = 1.288, p = .275$).

ANOVA

I think it would be more competitive in the market if the enterprise gets RE100 certification

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.793	4	1.698	3.159	.014
Within Groups	161.253	300	.538		
Total	168.046	304			

I think it would be more competitive in the market if the enterprise gets RE100 certification. Were people with different job think it would be more competitive in the market if the enterprise gets RE100 certification? A one-way ANOVA was performed to compare the effect of income on b3 (I think it would be more competitive in the market if the enterprise gets RE100 certification). It revealed that there was a significant difference in mean b3 score between at least two income subgroups ($F(4, 300) = 3.159, p = .014$).

Turkey's HSD Test for multiple comparisons found that the mean b3 score for respondents from student (3.61) is significantly lower than that of respondents of private enterprise (3.98), $p = .015$. There were significant differences between public service and private enterprise, student and private enterprise. (Appendix 2)

ANOVA

I think companies that join RE100 can improve their social image and trust

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.133	4	.033	.076	.990
Within Groups	131.395	300	.438		
Total	131.528	304			

I think companies that join RE100 can improve their social image and trust.

However, did people with different jobs think companies that join RE100 can improve their social image and trust? A one-way ANOVA was performed to compare the effect of Location on b4 (I think companies that join RE100 can improve their social image and trust.), and it revealed that there was no statistically significant difference in mean b4 scores between respondents of the unemployed, student, public service, and private enterprise, homemaker (4.00, 4.03, 4.05, 4.02, 4.11 respectively; $F(4, 300) = 0.76, p = .990$).

ANOVA

I think companies that join RE100 can improve their social image and trust

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.839	5	.768	1.798	.113
Within Groups	127.689	299	.427		
Total	131.528	304			

I think companies that join RE100 can improve their social image and trust.

However, did people with different age agree that join RE100 can improve their social image and trust? A one-way ANOVA was performed to compare the effect of Location on b4 (I think companies that join RE100 can improve their social image and trust.), and it revealed that there was no statistically significant difference in mean b4 scores between respondents of the age under 20 years old, 21-30 years old, 31-40

years old, 41-50 years old, 51-60 years old, over 61 years old (4.06, 4.03, 3.95, 4.20, 3.91, 4.07, respectively; $F(5, 299) = 1.798, p = .113$).

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						One-Sided p	Two-Sided p			Lower	Upper
I am willing to cooperate with enterprises to use carbon reduction products (such as decomposable materials)	Equal variances assumed	.059	.808	-2.563	303	.005	.011	-.181	.071	-.320	-.042
	Equal variances not assumed			-2.464	225.336	.007	.014	-.181	.073	-.326	-.036

According to the research, men were more active in cooperate with enterprises to use carbon reduction products (such as decomposable materials) than women. An independent-samples t-test comparing the means of male's and female's level of support to b5 (I am willing to cooperate with enterprises to use carbon reduction

products (such as decomposable materials) confirmed this general observation. The difference between the mean of the 123 males' support level to b5 (M = 3.98, SD = .677) and that of the 182 female (M = 4.16, SD = .552) was significant, $t(303) = -2.563, p = .011$.

People's Livelihood

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						One-Sided p	Two-Sided p			Lower	Upper
I don't waste food usually.	Equal variances assumed	.124	.725	2.752	303	.003	.006	.271	.098	.077	.465
	Equal variances not assumed			2.828	284.669	.003	.005	.271	.096	.082	.460

According to the research, women were more active in I don't waste food usually than men. An independent-samples t-test comparing the means of male's and female's level of support to c1 (I don't waste food usually.) confirmed this general observation. The difference between the mean of the 123 males' support level to c1 ($M = 4.28$, $SD = .771$) and that of the 182 female ($M = 4.01$, $SD = .889$) was significant, $t(303) = -2.752$, $p = .006$.

ANOVA

I don't waste food usually

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	31.872	5	6.374	10.078	<.001
Within Groups	189.112	299	.632		
Total	220.984	304			

Were people with different age in Taiwan don't waste food usually? A one-way ANOVA was performed to compare the effect of income on c1 (I don't waste food usually). It revealed that there was a significant difference in mean c1 score between at least two age subgroups ($F(5, 299) = 10.078$, $p < .001$).

Turkey's HSD Test for multiple comparisons found that the mean c1 score for respondents from 21-30 years old (3.57) is significantly lower than that of respondents of over 61 years old (4.43), $p = .003$. There was significant difference between respondents of age over 61 years old and 21-30 years old, 51- 60 years old and 21-30 years old, 21-30 years old and 41-50 years old, 31-40 years old and 21- 30 years old. (Appendix 3)

ANOVA

I don't waste food usually

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	28.772	4	7.193	11.227	<.001
Within Groups	192.211	300	.641		
Total	220.984	304			

Were people with different job in Taiwan don't waste food usually? A one-way ANOVA was performed to compare the effect of income on c1 (I don't waste food usually). It revealed that there was a significant difference in mean c1 score between at least two age subgroups ($F(4, 300) = 11.27, p < .001$).

Turkey's HSD Test for multiple comparisons found that the mean c1 score for respondents from student (3.61) is significantly lower than that of respondents of homemaker (4.53), $p < .001$. There was significant difference between respondents of homemaker and student, private enterprise and student, public service and student. (Appendix 4)

ANOVA

I don't waste food usually

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	14.681	4	3.670	5.337	<.001
Within Groups	206.302	300	.688		
Total	220.984	304			

Were people with different income in Taiwan don't waste food usually? A one-way ANOVA was performed to compare the effect of income on c1 (I don't waste food usually). It revealed that there was a significant difference in mean c1 score between at least two age subgroups ($F(4, 300) = 5.337, p < .001$).

Turkey's HSD Test for multiple comparisons found that the mean c1 score for respondents from 10,000- 30,000 (3.78) is significantly lower than that of respondents of 30,001- 50,000 (4.32), $p = .017$. There was significant difference between respondents of 30,001- 50,000 and below NT\$10,000, NT\$50,001- 70,000 and below NT\$10,000, NT\$30,001- 50,000 and NT\$10,000- 30,000, 5 NT\$0,001- 70,000 and NT\$10,000- 30,000. (Appendix 5)

ANOVA

When purchasing, I prefer products with a lower carbon footprint

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	29.294	4	7.323	12.032	<.001
Within Groups	182.595	300	.609		
Total	211.889	304			

Were people with different income prefer products with a lower carbon footprint when purchasing? A one-way ANOVA was performed to compare the effect of income on c2 (I prefer products with a lower carbon footprint when purchasing). It revealed that there was a significant difference in mean c2 score between at least two age subgroups ($F(4, 300) = 12.032, p < .001$).

Turkey's HSD Test for multiple comparisons found that the mean c2 score for respondents from below 10,000 (3.00) is significantly lower than that of respondents of 50,001- 70,000 (3.71), $p < .001$. There was significant difference between respondents of income NT\$30,001- 50,000 and under NT\$10,000, over NT\$70,001 and under NT\$10,000, NT\$30,001-50,000 and NT\$10,001- 30,000, under NT\$10,000 and over NT\$70,001, NT\$50,001- 70,000 and NT\$10,001- 30,000. (Appendix 6)

ANOVA

When purchasing, I prefer products with a lower carbon footprint

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	47.239	4	11.810	21.518	<.001
Within Groups	164.649	300	.549		
Total	211.889	304			

Were people with different job prefer products with a lower carbon footprint when purchasing? A one-way ANOVA was performed to compare the effect of income on c2 (I prefer products with a lower carbon footprint when purchasing). It revealed that there was a significant difference in mean c2 score between at least two age subgroups ($F(4, 300) = 21.518, p < .001$).

Turkey's HSD Test for multiple comparisons found that the mean c2 score for respondents from student (2.79) is significantly lower than that of respondents of homemaker (3.84), $p < .001$. The respondents of homemaker and student, private enterprise and student, public service and student have significant differences.

(Appendix 7)

ANOVA

When purchasing, I prefer products with a lower carbon footprint

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	53.213	5	10.643	20.054	<.001
Within Groups	158.676	299	.531		
Total	211.889	304			

Were people with different age prefer products with a lower carbon footprint when purchasing? A one-way ANOVA was performed to compare the effect of income on c2 (I prefer products with a lower carbon footprint when purchasing). It

revealed that there was a significant difference in mean c2 score between at least two age subgroups ($F(5, 299) = 20.054, p < .001$).

Turkey's HSD Test for multiple comparisons found that the mean c2 score for respondents from age below 20 years old (2.59) is significantly lower than that of respondents of over 61 years old (3.93), $p < .001$. The respondents of 31- 40 years old and 51-60 years old, 41- 50 years old and under 20 years old, 51-60 years old and under 20 years old, over 61 years old and under 20 years old, 31- 40 years old and 21-30 years old, 41- 50 years old and 21-30 years old, 51- 60 years old and 21-30 years old, over 61 years old and 21-30 years old have significant difference. (Appendix 8)

ANOVA

Compared with the current annual electricity bill, how much more are you willing to spend to install more environmentally friendly power (storage) equipment, such as solar panels.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	29.377	4	7.344	4.161	.003
Within Groups	529.541	300	1.765		
Total	558.918	304			

Were people with different job compared with the current annual electricity bill, how much more are you willing to spend to install more environmentally friendly power (storage) equipment, such as solar panels? A one-way ANOVA was performed to compare the effect of income on c3 (Compared with the current annual electricity bill, how much more are you willing to spend to install more environmentally friendly power (storage) equipment, such as solar panels). It revealed that there was a significant difference in mean c3 score between at least two age subgroups ($F(4, 300) = 4.161, p = .003$).

Turkey's HSD Test for multiple comparisons found that the mean c3 score for respondents from public service (1.84) is significantly lower than that of respondents of unemployed (4.67), $p=.003$. The respondents of unemployed have significant difference with the other job. (Appendix 9)

ANOVA

Compared with the current annual electricity bill, how much more are you willing to spend to install more environmentally friendly power (storage) equipment, such as solar panels.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	9.168	4	2.292	1.251	.290
Within Groups	549.750	300	1.833		
Total	558.918	304			

Compared with the current annual electricity bill, how much more are you willing to spend to install more environmentally friendly power (storage) equipment, such as solar panels or not. However, did people with different incomes agree compared with the current annual electricity bill, how much more are you willing to spend to install more environmentally friendly power (storage) equipment, such as solar panels.? A one-way ANOVA was performed to compare the effect of Location on c3 (Compared with the current annual electricity bill, how much more are you willing to spend to install more environmentally friendly power (storage) equipment, such as solar panels.), and it revealed that there was no statistically significant difference in mean c3 scores between respondents of the income below NT\$10, 000, NT\$10,000-30,000, NT\$30,000- 50,000, NT\$50,001- 70,000, and income over NT\$70,000 (2.07, 1.97, 2.26, 1.87, 1.80 respectively; $F(4, 300)= 1.251, p= .290$).

ANOVA

Your main transportation

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8.072	4	2.018	3.738	.006
Within Groups	161.980	300	.540		
Total	170.052	304			

Were people with different income effect different transportation? A one-way ANOVA was performed to compare the effect of income on c4 (Your main transportation). It revealed that there was a significant difference in mean c4 score between at least two age subgroups ($F(4, 300) = 3.738, p=.006$).

Turkey's HSD Test for multiple comparisons found that the mean c4 score for respondents from NT\$10,000- 30,000 (1.34) is significantly lower than that of respondents of income below NT\$10,000 (1.95), $p= .002$. The respondents of NT\$10,000- 30,000 and income under NT\$10,000, income over NT\$70,001 and NT\$10,001- 30,000 have significant differences. (Appendix 10)

ANOVA

Your main transportation

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	16.352	5	3.270	6.362	<.001
Within Groups	153.700	299	.514		
Total	170.052	304			

Were people with different age effect different transportation? A one-way ANOVA was performed to compare the effect of income on c4 (Your main transportation). It revealed that there was a significant difference in mean c4 score between at least two age subgroups ($F(5, 299) = 6.362, p<.001$).

Turkey's HSD Test for multiple comparisons found that the mean c4 score for respondents from age 21- 30 years old (1.55) is significantly lower than that of respondents of age below 20 years old (2.47), $p < .001$. The respondents of age 21 to 60 years old have significant difference with the age under 20 years old. The respondents of age over 61 years old have significant difference with the respondents of age 21- 30 years old. (Appendix 11)

ANOVA

I would like to reduce non-essential transportation activities through telemedicine, work, or school

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.136	4	.534	.795	.529
Within Groups	201.451	300	.672		
Total	203.587	304			

I would like to reduce non-essential transportation activities through telemedicine, work, or school. However, did people with different jobs would like to reduce non-essential transportation activities through telemedicine, work, or school? A one-way ANOVA was performed to compare the effect of Location on c5 (I would like to reduce non-essential transportation activities through telemedicine, work, or school.), and it revealed that there was no statistically significant difference in mean c5 scores between respondents of the unemployed, student, public service, and private enterprise, homemaker (3.67, 3.73, 3.74, 3.82, 3.93 respectively; $F(4, 300) = 0.795$, $p = .529$).

ANOVA

I would like to reduce non-essential transportation activities through telemedicine, work, or school

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.373	5	.475	.705	.620
Within Groups	201.214	299	.673		
Total	203.587	304			

I would like to reduce non-essential transportation activities through telemedicine, work, or school. However, did people with different jobs would like to reduce non-essential transportation activities through telemedicine, work, or school? A one-way ANOVA was performed to compare the effect of Location on c5 (I would like to reduce non-essential transportation activities through telemedicine, work, or school.), and it revealed that there was no statistically significant difference in mean c5 scores between respondents of the age under 20 years old, 21-30 years old, 31-40 years old, 41-50 years old, 51-60 years old, over 61 years old (3.69, 3.77, 3.82, 3.86, 3.88, 3.95, respectively; $F(5, 299) = .705, p = .620$).

CONCLUSION

The purpose of this research aimed to understand the people living in Taiwan's attitude of low carbon economy. I divided my research to three parts to investigate how public attitude of low carbon economy in Taiwan. The first part is government's policy, second part is enterprise, and the last part is community. Although most of the people think that adding more regulations will help to be more stable towards net zero emissions, people in different job and age do not have significantly difference of it.

According to the research question 1, "Can government's policy help to improve the development of low carbon economy in Taiwan?", it found that homemaker and private enterprise felt more possible that Taiwan can fulfil 100% using green electricity and carbon-free energy by 2050. Taiwan's government also sets a goal to stop selling fuel vehicles in 2040. If increasing more subsidies, people will be more willing to buy electric vehicles. The government should promote more low-carbon economic goals to make people more aware of the issue.

The research question 2 is asking "Do Taiwanese people think that companies that join RE100 will contribute to a low-carbon economy?" Due to only big business join RE 100, so big business should help and leading small business to accelerate for carbon reduction. Homemaker and the private enterprise think that getting RE100 certification is more competitive in the market than student. According to the research, men were more active in cooperate with enterprises to use carbon reduction products, such as decomposable materials, than women. If large-scale companies can lead the small-size companies to conduct carbon reduction mission successfully, once there are more and more companies able to join RE100, the public will get to know more about RE100 and more secure.

Research question 3 is “Will Taiwanese people willing to make change through daily life?” According to the research, women were usually more active in the issue of not wasting food than men. The income groups of NT\$30,001- 50,000 and NT\$50,001- 70,000 are more agree that they won’t waste food in daily life than the group whose income between NT\$10,000- 30,000. Carbon emissions are generated in every link of food production, transportation, consumption, and even food waste disposal. People work in private enterprise, and homemaker are more agree that that won’t waste food than students. People in the age of group Over 61 years old agree that they will not waste food than people in the age group of 21-30 years old. People are older and working have more awareness of the issue of not wasting food. Except the age group below 20 to 30 years old, people in the age over 31 years old, and income over NT\$30,000 would prefer products with a lower carbon footprint.

Suggestion

People living in Taiwan do not have too much knowledge about low carbon economy. This research would suggest the government to make some policy advocacy to lead the public to know and to implement low-carbon life, for example through schools, social networking sites, etc. Although we cannot change immediately, we still can make the change from small things through our daily life. For example, stopping waste food, turning off lights while leaving the room, using public transportation, and etc.

APPENDIX

Appendix 1

Multiple Comparisons

Dependent Variable: By 2050, Taiwan can use 100% green electricity and carbon-free energy

Tukey HSD

(I) job	(J) job	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
private enterprise	Public service	.569*	.148	.001	.16	.98
	Student	.662*	.165	<.001	.21	1.11
	homemaker	-.278	.265	.832	-1.01	.45
	unemployed	.810	.613	.679	-.87	2.49
Public service	private enterprise	-.569*	.148	.001	-.98	-.16
	Student	.093	.152	.973	-.32	.51
	homemaker	-.847*	.257	.010	-1.55	-.14
	unemployed	.240	.610	.995	-1.43	1.91
Student	private enterprise	-.662*	.165	<.001	-1.11	-.21
	Public service	-.093	.152	.973	-.51	.32
	homemaker	-.941*	.267	.005	-1.67	-.21
	unemployed	.147	.614	.999	-1.54	1.83
homemaker	private enterprise	.278	.265	.832	-.45	1.01
	Public service	.847*	.257	.010	.14	1.55
	Student	.941*	.267	.005	.21	1.67
	unemployed	1.088	.648	.449	-.69	2.87
unemployed	private enterprise	-.810	.613	.679	-2.49	.87

Public service	-0.240	.610	.995	-1.91	1.43
Student	-.147	.614	.999	-1.83	1.54
homemaker	-1.088	.648	.449	-2.87	.69

*. The mean difference is significant at the 0.05 level.

Appendix2

Multiple Comparisons

Dependent Variable: I think getting RE100 certification is more competitive in the market

Tukey HSD

(I) job	(J) job	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Private enterprise	Public service	.296*	.104	.038	.01	.58
	student	.366*	.116	.015	.05	.68
	homemaker	.081	.186	.992	-.43	.59
	unemployed	.310	.431	.952	-.87	1.49
Public service	Private enterprise	-.296*	.104	.038	-.58	-.01
	student	.070	.107	.966	-.22	.36
	homemaker	-.214	.181	.760	-.71	.28
	unemployed	.014	.428	1.000	-1.16	1.19
student	Private enterprise	-.366*	.116	.015	-.68	-.05
	Public service	-.070	.107	.966	-.36	.22
	homemaker	-.284	.188	.554	-.80	.23
	unemployed	-.056	.431	1.000	-1.24	1.13
homemaker	Private enterprise	-.081	.186	.992	-.59	.43
	Public service	.214	.181	.760	-.28	.71
	student	.284	.188	.554	-.23	.80
	unemployed	.228	.455	.987	-1.02	1.48

unemployed	Private enterprise	-.310	.431	.952	-1.49	.87
	Public service	-.014	.428	1.000	-1.19	1.16
	student	.056	.431	1.000	-1.13	1.24
	homemaker	-.228	.455	.987	-1.48	1.02

*. The mean difference is significant at the 0.05 level.

Appendix3

Multiple Comparisons

Dependent Variable: I don't waste food usually

Tukey HSD

(I) age	(J) age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Under 20 years old	21-30 years old	.493	.213	.193	-.12	1.11
	31-40 years old	-.283	.232	.826	-.95	.38
	41-50 years old	-.220	.211	.903	-.83	.39
	51-60 years old	-.266	.214	.816	-.88	.35
	Over 61 years old	-.370	.287	.791	-1.19	.45
21-30 years old	Under 20 years old	-.493	.213	.193	-1.11	.12
	31-40 years old	-.776*	.158	<.001	-1.23	-.32
	41-50 years old	-.713*	.125	<.001	-1.07	-.35
	51-60 years old	-.759*	.130	<.001	-1.13	-.39
	Over 61 years old	-.863*	.231	.003	-1.53	-.20
31-40 years old	Under 20 years old	.283	.232	.826	-.38	.95

	21-30 years old	.776*	.158	<.001	.32	1.23
	41-50 years old	.063	.155	.999	-.38	.51
	51-60 years old	.018	.159	1.000	-.44	.47
	Over 61 years old	-.086	.249	.999	-.80	.63
41-50 years old	Under 20 years old	.220	.211	.903	-.39	.83
	21-30 years old	.713*	.125	<.001	.35	1.07
	31-40 years old	-.063	.155	.999	-.51	.38
	51-60 years old	-.045	.126	.999	-.41	.32
	over61 years old	-.150	.229	.987	-.81	.51
51-60 years old	under 20 years old	.266	.214	.816	-.35	.88
	21-30 years old	.759*	.130	<.001	.39	1.13
	31-40 years old	-.018	.159	1.000	-.47	.44
	41-50 years old	.045	.126	.999	-.32	.41
	Over 61 years old	-.104	.232	.998	-.77	.56
Over 61 years old	Under 20 years old	.370	.287	.791	-.45	1.19
	21-30 years old	.863*	.231	.003	.20	1.53
	31-40 years old	.086	.249	.999	-.63	.80
	41-50 years old	.150	.229	.987	-.51	.81

51-60 years old	.104	.232	.998	-.56	.77
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*. The mean difference is significant at the 0.05 level.

Appendix4

Multiple Comparisons

Dependent Variable: I will not waste food.

Tukey HSD

(I) job	(J) job	Mean Differen ce (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Private enterprise	Public service	.152	.113	.666	-.16	.46
	student	.747*	.126	<.001	.40	1.09
	homemaker	-.169	.203	.921	-.73	.39
	unemployed	.357	.470	.942	-.93	1.65
Public service	Private enterprise	-.152	.113	.666	-.46	.16
	student	.595*	.117	<.001	.27	.91
	homemaker	-.321	.197	.481	-.86	.22
	unemployed	.205	.468	.992	-1.08	1.49
student	Private enterprise	-.747*	.126	<.001	-1.09	-.40
	Public service	-.595*	.117	<.001	-.91	-.27
	homemaker	-.916*	.205	<.001	-1.48	-.35
	unemployed	-.390	.471	.922	-1.68	.90
homemaker	Private enterprise	.169	.203	.921	-.39	.73
	Public service	.321	.197	.481	-.22	.86
	student	.916*	.205	<.001	.35	1.48
	unemployed	.526	.497	.828	-.84	1.89
unemployed	Private enterprise	-.357	.470	.942	-1.65	.93

Public service	-205	.468	.992	-1.49	1.08
student	.390	.471	.922	-.90	1.68
homemaker	-.526	.497	.828	-1.89	.84

*. The mean difference is significant at the 0.05 level.

Appendix 5

Multiple Comparisons

Dependent Variable: I will not waste food.

Tukey HSD

(I) income	(J) income	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Under NT\$10,000	NT\$10,000-30,000	.035	.182	1.000	-.46	.53
	NT\$30,001-50,000	-.501*	.140	.004	-.88	-.12
	NT\$50,001-70,000	-.460*	.141	.010	-.85	-.07
	Over NT\$70,001	-.250	.164	.545	-.70	.20
NT\$10,000-30,000	Under NT\$10,000	-.035	.182	1.000	-.53	.46
	NT\$30,001-50,000	-.536*	.172	.017	-1.01	-.06
	NT\$50,001-70,000	-.496*	.173	.035	-.97	-.02
	Over NT\$70,001	-.285	.192	.571	-.81	.24
NT\$30,001-50,000	Under NT\$10,000	.501*	.140	.004	.12	.88
	NT\$10,000-30,000	.536*	.172	.017	.06	1.01
	NT\$50,001-70,000	.041	.128	.998	-.31	.39
	Over NT\$70,001	.251	.153	.472	-.17	.67

NT\$50,001-70,000	Under NT\$10,000	.460*	.141	.010	.07	.85
	NT\$10,000-30,000	.496*	.173	.035	.02	.97
	NT\$30,001-50,000	-.041	.128	.998	-.39	.31
	Over NT\$70,001	.210	.154	.647	-.21	.63
Over NT\$70,001	Under NT\$10,000	.250	.164	.545	-.20	.70
	NT\$10,000-30,000	.285	.192	.571	-.24	.81
	NT\$30,001-50,000	-.251	.153	.472	-.67	.17
	NT\$50,001-70,000	-.210	.154	.647	-.63	.21

*. The mean difference is significant at the 0.05 level.

Appendix 6

Multiple Comparisons

Dependent Variable: When purchasing, I prefer products with a lower carbon footprint

Tukey HSD

(I) income	(J) income	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Under NT\$10,000	NT\$10,000-30,000	.000	.171	1.000	-.47	.47
	NT\$30,001-50,000	-.682*	.132	<.001	-1.04	-.32
	NT\$50,001-70,000	-.711*	.132	<.001	-1.07	-.35
	Over NT\$70,001	-.556*	.154	.003	-.98	-.13
NT\$10,000-30,000	Under NT\$10,000	.000	.171	1.000	-.47	.47
	NT\$30,001-50,000	-.682*	.162	<.001	-1.13	-.24

	NT\$50,001-70,000		-0.711*	.162	<.001	-1.16	-.27
	Over NT\$70,001		-.556*	.180	.019	-1.05	-.06
NT\$30,001-50,000	Under NT\$10,000		.682*	.132	<.001	.32	1.04
	NT\$10,000-30,000		.682*	.162	<.001	.24	1.13
	NT\$50,001-70,000		-.028	.120	.999	-.36	.30
	Over NT\$70,001		.127	.144	.904	-.27	.52
NT\$50,001-70,000	Under NT\$10,000		.711*	.132	<.001	.35	1.07
	NT\$10,000-30,000		.711*	.162	<.001	.27	1.16
	NT\$30,001-50,000		.028	.120	.999	-.30	.36
	Over NT\$70,001		.155	.144	.819	-.24	.55
Over NT\$70,001	Under NT\$10,000		.556*	.154	.003	.13	.98
	NT\$10,000-30,000		.556*	.180	.019	.06	1.05
	NT\$30,001-50,000		-.127	.144	.904	-.52	.27
	NT\$50,001-70,000		-.155	.144	.819	-.55	.24

*. The mean difference is significant at the 0.05 level.

Appendix 7

Multiple Comparisons

Dependent Variable: When purchasing, I prefer products with a lower carbon footprint

Tukey HSD

(I) job	(J) job	Mean	Std. Error	Sig.	95% Confidence Interval	
		Difference (I-J)			Lower Bound	Upper Bound
Private enterprise	Public service	.038	.105	.996	-.25	.33
	student	.910*	.117	<.001	.59	1.23
	homemaker	-.140	.188	.946	-.66	.38
	unemployed	.036	.435	1.000	-1.16	1.23
Public service	Private enterprise	-.038	.105	.996	-.33	.25
	student	.872*	.108	<.001	.58	1.17
	homemaker	-.178	.183	.866	-.68	.32
	unemployed	-.003	.433	1.000	-1.19	1.19
student	Private enterprise	-.910*	.117	<.001	-1.23	-.59
	Public service	-.872*	.108	<.001	-1.17	-.58
	homemaker	-1.050*	.190	<.001	-1.57	-.53
	unemployed	-.874	.436	.266	-2.07	.32
homemaker	Private enterprise	.140	.188	.946	-.38	.66
	Public service	.178	.183	.866	-.32	.68
	student	1.050*	.190	<.001	.53	1.57
	unemployed	.175	.460	.996	-1.09	1.44

unemployed	Private enterprise	-.036	.435	1.000	-1.23	1.16
	Public service	.003	.433	1.000	-1.19	1.19
	student	.874	.436	.266	-.32	2.07
	homemaker	-.175	.460	.996	-1.44	1.09

*. The mean difference is significant at the 0.05 level.

Appendix 8

Multiple Comparisons

Dependent Variable: When purchasing, I prefer products with a lower carbon footprint

Tukey HSD

(I) age	(J) age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Under 20 years old	21-30 years old	-.320	.195	.576	-.88	.24
	31-40 years old	-1.228*	.213	<.001	-1.84	-.62
	41-50 years old	-1.098*	.193	<.001	-1.65	-.54
	51-60 years old	-1.128*	.196	<.001	-1.69	-.57
	Over 61 years old	-1.340*	.263	<.001	-2.09	-.59
21-30 years old	Under 20 years old	.320	.195	.576	-.24	.88
	31-40 years old	-.908*	.145	<.001	-1.32	-.49
	41-50 years old	-.778*	.115	<.001	-1.11	-.45
	51-60 years old	-.808*	.119	<.001	-1.15	-.47
	Over 61 years old	-1.021*	.212	<.001	-1.63	-.41

31-40 years old	Under 20 years old	1.228*	.213	<.001	.62	1.84
	21-30 years old	.908*	.145	<.001	.49	1.32
	41-50 years old	.130	.142	.943	-.28	.54
	51-60 years old	.100	.145	.984	-.32	.52
	Over 61 years old	-.113	.228	.996	-.77	.54
41-50 years old	Under 20 years old	1.098*	.193	<.001	.54	1.65
	21-30 years old	.778*	.115	<.001	.45	1.11
	31-40 years old	-.130	.142	.943	-.54	.28
	51-60 years old	-.030	.116	1.000	-.36	.30
	Over 61 years old	-.243	.210	.858	-.84	.36
51-60 years old	Under 20 years old	1.128*	.196	<.001	.57	1.69
	21-30 years old	.808*	.119	<.001	.47	1.15
	31-40 years old	-.100	.145	.984	-.52	.32
	41-50 years old	.030	.116	1.000	-.30	.36
	Over 61 years old	-.212	.212	.918	-.82	.40
Over 61 years old	Under 20 years old	1.340*	.263	<.001	.59	2.09
	21-30 years old	1.021*	.212	<.001	.41	1.63
	31-40 years old	.113	.228	.996	-.54	.77

41-50 years old	.243	.210	.858	-.36	.84
51-60 years old	.212	.212	.918	-.40	.82

*. The mean difference is significant at the 0.05 level.

Appendix 9

Multiple Comparisons

Dependent Variable: Compared with the current annual electricity bill, how much more are you willing to spend to install more environmentally friendly power (storage) equipment, such as solar panels.

Tukey HSD

(I) job	(J) job	Mean Differen ce (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Private enterprise	Public service	.370	.188	.286	-.15	.89
	student	.292	.210	.632	-.28	.87
	homemaker	.004	.338	1.000	-.92	.93
	unemployed	-2.452*	.781	.016	-4.59	-.31
Public service	Private enterprise	-.370	.188	.286	-.89	.15
	student	-.078	.193	.994	-.61	.45
	homemaker	-.366	.328	.797	-1.27	.53
	unemployed	-2.822*	.776	.003	-4.95	-.69
student	Private enterprise	-.292	.210	.632	-.87	.28
	Public service	.078	.193	.994	-.45	.61
	homemaker	-.288	.340	.915	-1.22	.65
	unemployed	-2.745*	.782	.005	-4.89	-.60
homemaker	Private enterprise	-.004	.338	1.000	-.93	.92
	Public service	.366	.328	.797	-.53	1.27
	student	.288	.340	.915	-.65	1.22

	unemployed	-2.456*	.825	.026	-4.72	-.19
unemployed	Private enterprise	2.452*	.781	.016	.31	4.59
	Public service	2.822*	.776	.003	.69	4.95
	student	2.745*	.782	.005	.60	4.89
	homemaker	2.456*	.825	.026	.19	4.72

*. The mean difference is significant at the 0.05 level.

Appendix 10

Multiple Comparisons

Dependent Variable: The main transportation.

Tukey HSD

(I) income	(J) income	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Under NT\$10,000	NT\$10,000-30,000	.606*	.161	.002	.16	1.05
	NT\$30,001-50,000	.244	.124	.283	-.10	.58
	NT\$50,001-70,000	.203	.125	.479	-.14	.54
	Over NT\$70,001	.128	.145	.903	-.27	.53
NT\$10,000-30,000	Under NT\$10,000	-.606*	.161	.002	-1.05	-.16
	NT\$30,001-50,000	-.362	.152	.125	-.78	.06
	NT\$50,001-70,000	-.403	.153	.066	-.82	.02
	Over NT\$70,001	-.478*	.170	.041	-.94	-.01
NT\$30,001-50,000	Under NT\$10,000	-.244	.124	.283	-.58	.10
	NT\$10,000-30,000	.362	.152	.125	-.06	.78

	NT\$50,001-70,000		-.041	.113	.996	-.35	.27
	Over NT\$70,001		-.116	.135	.912	-.49	.26
NT\$50,001-70,000	Under NT\$10,000		-.203	.125	.479	-.54	.14
	NT\$10,000-30,000		.403	.153	.066	-.02	.82
	NT\$30,001-50,000		.041	.113	.996	-.27	.35
	Over NT\$70,001		-.075	.136	.982	-.45	.30
Over NT\$70,001	Under NT\$10,000		-.128	.145	.903	-.53	.27
	NT\$10,000-30,000		.478*	.170	.041	.01	.94
	NT\$30,001-50,000		.116	.135	.912	-.26	.49
	NT\$50,001-70,000		.075	.136	.982	-.30	.45

*. The mean difference is significant at the 0.05 level.

Appendix 11

Multiple Comparisons

Dependent Variable: The main transportation.

Tukey HSD

(I) age	(J) age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Under 20 years old	21-30 years old	.918*	.192	<.001	.37	1.47
	31-40 years old	.865*	.209	<.001	.27	1.47
	41-50 years old	.785*	.190	<.001	.24	1.33
	51-60 years old	.646*	.193	.012	.09	1.20

	Over 61 years old	.256	.259	.921	-.49	1.00
21-30 years old	Under 20 years old	-.918*	.192	<.001	-1.47	-.37
	31-40 years old	-.053	.142	.999	-.46	.36
	41-50 years old	-.133	.113	.845	-.46	.19
	51-60 years old	-.272	.117	.189	-.61	.06
	Over 61 years old	-.662*	.209	.020	-1.26	-.06
31-40 years old	Under 20 years old	-.865*	.209	<.001	-1.47	-.27
	21-30 years old	.053	.142	.999	-.36	.46
	41-50 years old	-.081	.140	.992	-.48	.32
	51-60 years old	-.219	.143	.645	-.63	.19
	Over 61 years old	-.609	.224	.075	-1.25	.03
41-50 years old	Under 20 years old	-.785*	.190	<.001	-1.33	-.24
	21-30 years old	.133	.113	.845	-.19	.46
	31-40 years old	.081	.140	.992	-.32	.48
	51-60 years old	-.138	.114	.829	-.46	.19
	Over 61 years old	-.528	.207	.112	-1.12	.06
51-60 years old	Under 20 years old	-.646*	.193	.012	-1.20	-.09
	21-30 years old	.272	.117	.189	-.06	.61

	31-40 years old	.219	.143	.645	-.19	.63
	41-50 years old	.138	.114	.829	-.19	.46
	Over 61 years old	-.390	.209	.425	-.99	.21
Over 61 years old	Under 20 years old	-.256	.259	.921	-1.00	.49
	21-30 years old	.662*	.209	.020	.06	1.26
	31-40 歲	.609	.224	.075	-.03	1.25
	41-50 歲	.528	.207	.112	-.06	1.12
	51-60 years old	.390	.209	.425	-.21	.99

*. The mean difference is significant at the 0.05 level.

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