

國立臺灣大學理學院氣候變遷與永續發展國際學位學程

碩士論文

International Degree Program in Climate Change and Sustainable Development

College of Science

National Taiwan University

Master's Thesis

地方官僚如何協助家戶換燈泡？臺灣縣市政府能源弱勢關懷

措施之評估

How can bureaucrats help change light bulbs? Evaluation of  
pro-poor energy initiatives in Taiwan

陳禹嫻

Yu-Hsien Chen

指導教授：劉仲恩 博士

Advisor: Chung-En Liu, Ph.D

中華民國 113 年 7 月

July, 2024



# 國立臺灣大學碩士學位論文 口試委員會審定書

National Taiwan University Master Thesis  
Oral Examination Committee Approval

地方官僚如何協助家戶換燈泡？

臺灣縣市政府能源弱勢關懷措施之評估

**How can bureaucrats help change light bulbs? Evaluation of pro-poor  
energy initiatives in Taiwan**

本論文係\_\_\_\_\_陳禹嫻\_\_\_\_\_ (R10627009) 在國立臺灣大學氣候變遷  
與永續發展國際學位學程完成之碩士學位論文，於民國 113 年 6 月 20 日承下列  
考試委員審查通過及口試及格，特此證明。

This master thesis is finished by \_\_\_\_\_Yu-Hsien Chen\_\_\_\_\_ (R10627009) at  
International Degree Program in Climate Change and Sustainable Development on 20<sup>th</sup> June, 2024  
of the Republic of China, passed the oral examination by the following examination committees.

口試委員 Oral examination committee：

劉仲恩

(指導教授 Advisor)

趙家綺

黃建賓

吳靜文

## 誌謝



「我為簡短的回答向龐大的問題致歉。」——辛波絲卡〈在一顆小星星底下〉

收集文獻、挖掘問題、進行訪談、整理資料、重塑論述，並重複這個循環。在研究的過程中看到的愈多，就明白自己知道的甚少。儘管這本論文相較於龐大的問題而言，僅僅是簡短的回答，但它的完成，仰賴許多人的協助，我為所有的指導、建議、關心和陪伴向師長、家人、朋友致謝。

感謝我的指導教授劉仲恩老師。記得老師最初給了指導學生們一份小叮嚀，第一點就是要我們帶著好奇與熱情踏上研究之路，「老師是嚮導、教練、不是老闆」。在後續的各項討論、訪談、課程、論壇、以及論文的來回修改中，老師也確如嚮導和教練，引領我更深入思考現象背後隱含的意義、成因、影響，以及更重要的，我們可以如何試圖解決問題。老師總提供我充分的資源和指引，從日常的文獻分享、各種研究領域相關的資訊，到做研究的方法和心態，大幅減少我在摸索時的無助感和撞牆期；也透過論壇、分享會給了我許多展示階段成果的機會。更感謝老師總尊重我的想法，給予最大程度的支持，不同於研究生梗圖說和老師開會完要花大把時間療傷，恰好相反，每次討論完，我都更有信心了一點。

感謝我的受訪者。在每一場訪談中，我都像開啟新世界大門。每個人的經驗共同刻畫了對台灣能源貧窮與治理議題，透過訪談，我更加理解各位所面對的難題，以及決策背後的邏輯或者糾結。也謝謝協助我聯繫這些受訪者的專家們，沒有您們，要獲得寶貴資料實在道阻且長。

感謝 IPCS 和 TCAN 的趙家緯老師。在 TCAN 研究中心所接觸到的議題前沿但又實際，讓我學習非常多。探索新解方、找資料和寫作的過程痛並快樂。謝謝老師在研究上給我許多鼓勵、指正，以及完成各項任務的彈性。

感謝我的家人朋友。爸爸媽媽時常關心我又去了哪個縣市，雖然很想問論文進度但後來都忍住了，給我無條件的支持和相信。姊姊最常聽我說煩惱，在壓力最大時接住我、給我建議，並帶著我吃吃喝喝、分享有趣影片，是最有效的排憂解難方法。謝謝 IPCS 的同學們，尤其是烘蛋小隊的 Bon、Mark、崔崔，你們是可以一起上山下海的好旅伴，更是可以一起窩圖書館努力、共同分析問題，並鼓勵彼此的研究夥伴。

我會繼續銼磨這份回答，直到它發出光澤。

## 摘要



為實現公正的淨零轉型，臺灣逐漸將「不遺落任何人」的理念融入能源政策，其中也包括節電相關舉措。2018 年，地方政府的節電政策中有數個縣市提出了「能源弱勢關懷措施」，透過協助弱勢家戶汰換家電，減緩能源貧窮。然而，在臺灣，能源弱勢從未被完善的定義，能源貧窮的實際情形也因較國際為低的電價、不夠完整與公開的家戶用電數據而難以量化。本研究透過基層官僚的視角，討論臺灣的能源弱勢關懷措施如何成型與被執行。透過政策報告盤點和半結構化訪談，我發現地方基層官僚在提出政策選項時，傾向依賴過往經驗、其他縣市先行者做法、以及具有專業知識的委辦公司的提議。因此，能源弱勢的定義往往限縮於經濟弱勢家戶，多數措施也都是汰換家電，並未真正因地制宜、也無法明確指認能源弱勢。因此，我建議加強自上而下的基層官僚能源教育，以補足缺失的專業知識；同時賦予更多自下而上的決策權，使基層官僚更能跨部門合作並嘗試創新解方。更重要的是，將能源貧窮議題納入更高階的議程，而不只是置於節電脈絡，地方政府才能夠更好地整合資源，制定有效的行動計畫。

**關鍵字：**能源貧窮、基層官僚、能源政策、能源治理、政策執行

## Abstract

To achieve net-zero and just transitions, Taiwan has integrated the concept of “leaving no one behind” into energy policies, including energy-saving initiatives. Since 2018, the “energy-vulnerable care measures” have been introduced to tackle energy poverty in several cities and counties. However, low electricity prices and insufficient household data make it difficult to identify and alleviate energy poverty, reflecting ambiguities in policy targets. This study aims to bridge the gap between Western-centric energy poverty discourse and Taiwan’s pro-poor energy initiatives efforts. Through policy documents and semi-structured interviews, I investigate how frontline bureaucrats identify the energy poor, and empower them through home appliance replacement measures. The findings reveal a dual dependence: local bureaucrats seek guidance and resources from the central government and emulate successful local peers. Consequently, the energy poor are often narrowly defined, policy options are limited, and bureaucrats rely on commissioned companies with superior expertise. This approach fails to fully identify the energy poor and address their diverse needs, leading to a one-size-fits-all implementation that is not effective enough. I thus advocate for strengthening top-down bureaucratic energy education while empowering bottom-up decision-making. More importantly, integrating energy poverty into a broader agenda beyond energy conservation, enabling local governments to better coordinate resources, and develop effective action plans.

*Keywords: energy poverty, street-level bureaucrats, energy policy, energy governance, policy implementation*

## Table of Contents



|                                                                        |           |
|------------------------------------------------------------------------|-----------|
| 口試委員審定書 .....                                                          | i         |
| 誌謝.....                                                                | ii        |
| 摘要.....                                                                | iii       |
| Abstract.....                                                          | iv        |
| Table of Contents .....                                                | v         |
| List of Figures.....                                                   | vi        |
| List of Tables .....                                                   | vii       |
| <b>1. Introduction.....</b>                                            | <b>1</b>  |
| <b>2. Literature Review .....</b>                                      | <b>8</b>  |
| 2.1 Addressing Energy Poverty Under Transition .....                   | 8         |
| 2.2 Street-Level Bureaucrats and Their Roles in Energy Poverty .....   | 11        |
| <b>3. Pro-Poor Energy Initiatives Under Power-Saving Policies.....</b> | <b>17</b> |
| <b>4. Methods.....</b>                                                 | <b>23</b> |
| 4.1 Policy Document Stocktake .....                                    | 23        |
| 4.2 Interview Participant Selection and Data Collection .....          | 24        |
| 4.3 Data Processing and Analytical Framework.....                      | 26        |
| <b>5. Results .....</b>                                                | <b>28</b> |
| 5.1 Problem Position and Agenda Setting .....                          | 28        |
| 5.2 Policy Options and Decision-Making .....                           | 32        |
| 5.3 Implementation and Evaluation .....                                | 36        |
| <b>6. Discussion.....</b>                                              | <b>40</b> |
| 6.1 Boilerplate Strategies Under the Lens of Energy Conservation ..... | 40        |
| 6.2 Resource Fragmentation and Funding Challenges .....                | 44        |
| 6.3 Expertise Gaps in Vertical and Horizontal Cooperation.....         | 47        |
| 6.4 Frontline Bureaucrats' Dilemma.....                                | 52        |
| <b>7. Conclusion .....</b>                                             | <b>59</b> |
| <b>Reference List.....</b>                                             | <b>62</b> |
| <b>Appendices.....</b>                                                 | <b>65</b> |

## List of Figures

|                                                                  |    |
|------------------------------------------------------------------|----|
| <b>Figure 1</b> <i>Energy Conservation Policy Timeline</i> ..... | 2  |
| <b>Figure 2</b> <i>Organizational Relations</i> .....            | 39 |



## List of Tables

|                                                                                                          |    |
|----------------------------------------------------------------------------------------------------------|----|
| <b>Table 1</b> <i>Local Governments' Pro-Poor Energy Initiatives Under Central Power-Saving Policies</i> | 21 |
|----------------------------------------------------------------------------------------------------------|----|



## 1. Introduction

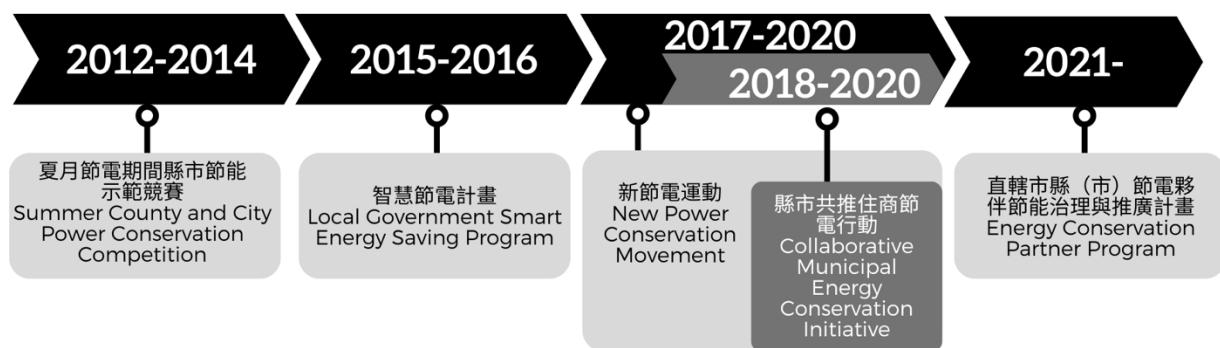
In 2016, The United Nations proposed the “Shared Framework on Leaving No One Behind: Equality and Non-Discrimination at the Heart of Sustainable Development”, which listed “leaving no one behind” as a universal principle of sustainable development. This principle is also reinforced within the agenda of “just transition”. Beyond the objectives of eradicating poverty and eliminating discrimination, the essence of this principle lies in the ability to identify those who may be affected during the transition process. This is pivotal to prevent new inequalities from emerging, while simultaneously rectifying existing disparities. In adhering to this principle, countries commit to pursuing a balance of policy goals, ensuring fairness in social distribution, and fostering inclusiveness of interests throughout the process of achieving net-zero transition.

In response to the international race to net-zero, Taiwan has introduced and revised various policies and laws in recent years. Apart from legally enshrining the net-zero target, the original energy policy has evolved to include more diverse issues. This includes pursuing equity in the transition process and facing up to the needs of marginalized groups, acknowledging the importance of identifying and assisting energy-vulnerable individuals during the transition to net-zero. Among them, the energy conservation policy for the residential and commercial sectors, which has been implemented for a comparatively long time, stands out as an example (Figure 1).

Since 2012, the central government, in collaboration with local authorities, has initiated a series of energy conservation programs, beginning with the Summer Energy Saving Campaign (夏月節電期間縣市節能示範競賽). This was followed by the 2015-2016 Smart Energy Saving Program (智慧節電計畫), the 2017 New Power Conservation Movement (新節電運動), and the 2018 Collaborative Municipal Energy Conservation Initiative for the Residential and Commercial

Sectors (Collaborative Initiative) (縣市共推住商節電行動), as well as the 2021 Energy Conservation Partner Program (Partner Program) (節電夥伴節能治理與推廣計畫). Over time, these policies have expanded in scope, encompassing various initiatives such as replacing energy-inefficient equipment, conducting energy conservation education, and deploying energy management systems. Notably, by the time of the 2018 Collaborative Initiative, several counties and cities started to incorporate “energy-vulnerable care measures (能源弱勢關懷措施).”<sup>1</sup>

**Figure 1** *Energy Conservation Policy Timeline*

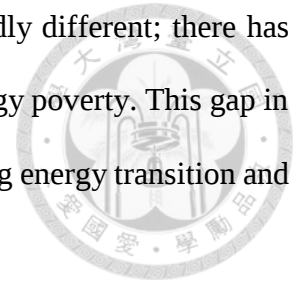


Note: This timeline outlines the various energy conservation initiatives promoted by local governments in collaboration with the central government since 2012. In 2015, Taipei led the way by incorporating measures to care for energy-vulnerable groups, and since 2018, this has become a thematic plan proposed by many counties and cities.

The emergence of these energy-vulnerable care measures in Taiwan is intriguing. Globally, energy poverty has long been a significant issue, gaining increased attention in recent years due to the push for just energy transitions and the energy crises sparked by regional conflicts. On the

<sup>1</sup> This article mentions several program names, ministry names, and titles. Appendix A provides their original Chinese names alongside the English names used in the text.

contrary, however, Taiwan's engagement with this issue has been markedly different; there has been a lack of comprehensive studies or public information analyzing energy poverty. This gap in recognizing the issue becomes particularly dire as the country faces ongoing energy transition and electricity price adjustments.



In the process of phasing out fossil fuels and increasing the use of renewable energy, Taiwan is also raising electricity prices to a reasonable level to fully reflect the cost of electricity. However, this adjustment also poses a challenge for poor households, as their energy burden may be exacerbated. This makes supporting policy measures particularly crucial. The coverage and effectiveness of these policies directly impact whether vulnerable households can minimize negative impacts and potentially benefit from the energy transition. Poorly designed or implemented policies can lead to an uneven distribution of resources, further deepening energy poverty.

Energy poverty is a novel but urgent issue in Taiwan, for it directly affects the daily lives of vulnerable populations, especially under extreme weather conditions and the changing climate. In the meantime, those affected are often the most vulnerable and least able to advocate for themselves, requiring targeted interventions to meet their needs. Moreover, energy poverty is inherently complex because it intersects with various other sectors, including energy, health, housing, and social welfare.

The energy-vulnerable care measures introduced under the 2018 energy conservation policies are therefore an interesting case. Despite their earlier introduction, these measures received little attention and lacked complete explanations and instructions in the policy framework. This raises important questions about how these policies are formulated and implemented, and what difficulties have led to insufficient attention.

I posit that the causes for this situation are twofold. Firstly, Taiwan's unique characteristics differ significantly from the conventional discourse on energy poverty based on Western experiences: the emphasis on cooling demand, comparatively low electricity prices, and insufficient household energy survey data. Therefore, it is harder to apply the canonical quantitative indices to capture the energy poverty group.

Secondly, the situation is intricately related to Taiwan's policy positioning and bureaucratic considerations. Taiwan's energy-vulnerable care measures are embedded within the framework of the broader energy conservation policy, setting it apart from other national energy strategies. Unlike centralized approaches seen in other aspects of national energy policies, each local government is responsible for independently planning, executing, and assessing the outcomes of these measures. However, various residential and commercial energy conservation policies initiated by the central government exhibit differences in structure and funding, posing a challenge to the local government's capacity to consistently promote these measures. This also accentuates disparities in resources and capabilities among different counties and cities. Furthermore, in terms of planning measures, there seems to be a tendency to adhere to the status quo, with organizers leaning towards maintaining alignment with central government directives. Energy vulnerability, which requires more local knowledge and frontline experience, highlights the potential resistance stemming from the rigidity of the bureaucratic system.

Furthermore, there exists a research gap regarding Taiwan's energy vulnerability from the standpoint of frontline bureaucrats. Numerous studies now delve into local climate governance and energy transition in Taiwan, spanning from governmental organization management to energy practices within communities. For example, Lin (2016) identified several challenges in Taiwan's climate governance: unclear central and local authority, regulatory delays, chief ministers' wills,

insufficient cross-departmental coordination, financial limitations, and knowledge gaps. Institutional reform and transformation of political inertia, as well as cross-departmental governance, remain the keys to transforming local governments in Taiwan. On the other hand, Fan (2024) explored energy injustice in the Thao Tribe's lives and their efforts to foster communication and cooperation with NGOs for intra-tribe energy independence and sustainable transition. However, the significance of frontline bureaucrats, who are the intermediaries between top-down policy implementation and bottom-up citizen action, has received limited attention in Taiwan's energy governance literature. Building upon the context, the effectiveness of policies in aiding vulnerable groups for a just net-zero transition remains a topic for exploration. My study aims to dig into and compare the supportive measures for energy-vulnerable groups implemented by local bureaucrats. The objective is to understand both the support and challenges faced by frontline bureaucrats in implementing these policies, with the hope that the findings contribute to the well-being of energy-vulnerable groups and inform future government policy planning and implementation. The research questions are as follows:

- a. How is energy poverty framed, designed, and implemented in local policies?
- b. How do frontline bureaucrats and street-level bureaucrats demonstrate their influence when addressing complex, cross-disciplinary problems?
- c. What support do they receive, and what challenges do they face?

To answer these questions, I first undertook a thorough review of energy-vulnerable care measures adopted by each county and city through publicly accessible project reports. And then I conducted 9 semi-structured interviews with 20 bureaucrats from local governments involved in

those pro-poor initiatives<sup>2</sup>. An additional 5 interviews were held with 15 non-governmental experts to gain insights into the energy conservation policy and energy poverty campaigns in Taiwan.

The findings reveal various forms of dependencies: vertically, local governments in a subordinate position rely on the central government for resources, guidance, and support; horizontally, they tend to adopt measures implemented by other local governments; and historically, if a path taken in the past proves cost-effective, there is a likelihood of it being adopted again in the future. Moreover, frontline bureaucrats play a pivotal role in these policies. Their expertise, local knowledge, and day-to-day interactions with citizens significantly influence how policies are enacted and modified at the ground level. However, notwithstanding their critical role, these bureaucrats often operate within a constrained framework defined by higher-level mandates and limited by insufficient resources and support.

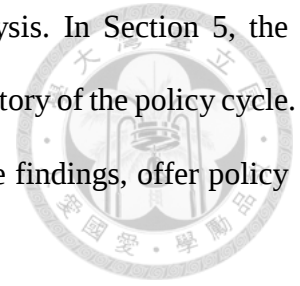
Within the energy conservation policies, addressing the issue of energy vulnerability hasn't yet become mainstream, and remains insufficiently localized. However, given the impact of escalating energy costs and the ongoing energy transition, addressing energy vulnerability will inevitably become an integral aspect that must be confronted in the future.

The remainder of this paper is organized as follows. Section 2 provides an overview of energy poverty within the context of the net-zero transition, examining its global implications and specific challenges in Taiwan. Following this, the discussion turns to the strategies employed by street-level bureaucrats in addressing these multifaceted issues. Section 3 traces the evolution of pro-poor energy initiatives in Taiwan. Section 4 outlines the methodology utilized for policy inventory

---

<sup>2</sup> In this article, I interchangeably use "pro-poor energy initiatives" and "energy-vulnerable care measures". The former more accurately reflects the essence of the measure, while the latter aligns better with the direct translation from Chinese.

and interviews, along with the framework for data processing and analysis. In Section 5, the findings from both reports and interviews are presented, following the trajectory of the policy cycle. Lastly, Sections 6 and 7 present the analytical insights and, based on these findings, offer policy recommendations and conclusions.



## 2. Literature Review



### 2.1 Addressing Energy Poverty Under Transition

Despite the global consensus on energy transition, its economic and social costs inevitably impact the end users. This situation can even be worsened by widespread infectious diseases and regional conflicts, with their impacts varying across different societal groups. Lower-income countries, communities, and households find themselves on the periphery of today's energy framework, which is rife with disparities that impede access to affordable energy. IEA (2024) revealed the stark statistics: globally, 750 million people live without electricity, and over 2 billion lack access to clean cooking technologies and fuels. In advanced economies, while the poorest 10% allocate nearly 25% of their disposable income to residential energy and transportation fuels, the richest 10%, who consume twice as much of these resources, only allocate a negligible 5% of their income to them. Let alone the emerging and developing countries. Energy security, energy equity, and environmental sustainability thus formed the global energy trilemma, posing challenges for the global community to pursue net zero emissions (Grigoryev et al., 2020). The energy-poverty nexus, intertwined with socio-energy systems, might perpetuate energy and economic insecurity. As such, just energy transitions should aim to dismantle these systems so as to foster equitable and sustainable outcomes (Biswas et al., 2022).

Policies are no doubt at the heart of untangling this knot. Many countries have begun to provide policy solutions to disadvantaged groups in the energy transition process. Besides typical fuel subsidies, there are also subsidies available for low-income households to upgrade from oil heating systems to energy-efficient heat pumps in Canada and the UK; grants given to the social house residents to renovate buildings in Mexico; as well as in the US, community solar model, in which solar panels on public or unused land are reserved a portion for low- and moderate-income

households to benefit without the upfront cost of rooftop installation. Nonetheless, we should still carefully evaluate the potential impacts of these policies—in spite of the good intentions. Belaïd (2022) analyzed the impact of the recent increase in energy prices after COVID-19 on energy poverty in Europe, pointing out that if climate policy is not designed properly, it will destroy individual capabilities and create an energy poverty trap, emphasizing that climate policy must go hand in hand with reducing inequality and energy poverty. Axon and Morrissey (2020) investigated the introduction of a biomass energy system in a deprived community near Liverpool, UK, finding that despite aiming for benefits, top-down decision-making can exacerbate social inequalities. Therefore, it is important to consider the impacts on vulnerable residents and provide comprehensive support for a just transition.

It should also be recognized that energy vulnerability and poverty can be context-specific (Willand et al., 2021). In Western-centric literature, energy poverty has often been synonymous with fuel poverty. Driven by winter heating needs, the key driving factors are energy prices, energy efficiency and household income (Bouzarovski, 2018). Many indicators are hence created to capture the phenomenon using the proportion of energy and fuel expenditures in income. For example, the well-known 10% threshold proposed by Boardman (1991) suggested that if the household's fuel expenditure exceeds 10% of its income, it is considered fuel poverty. Or the Low-Income-High-Cost (LIHC) index adopted by the UK government: a household is in energy poverty if its fuel costs are higher than the national median, and its remaining income is below the official poverty line of 60% of the median national income. Although these measurements are easy to understand, they fail to consider energy consumption patterns in different geographical regions. Bouzarovski and Tirado Herrero (2017) discussed the spatial and temporal changes in energy poverty in Hungary, the Czech Republic, and Poland, and found that over the past decade, the

growth in energy prices and expenditures didn't offset the increases in purchasing power or the improvements in energy efficiency, leading to the persistence of energy poverty. Moreover, energy poverty has an obvious geographical distribution. It is then of little significance to use income-based indicators to measure energy poverty; priority should be given to identifying the vulnerability related to housing and population.

The circumstances in Taiwan differ even more significantly from the aforementioned studies. Firstly, Taiwan's climate presents a distinct challenge. Unlike higher-latitude countries where heating demands dominate energy consumption during the colder months, Taiwan experiences intense heat during summer, leading to a substantial demand for cooling. This reliance on air conditioning systems, powered predominantly by electricity, sets Taiwan apart in terms of energy expenditure patterns.

Secondly, Taiwan's electricity market is monopolized by the state-owned company, allowing for long-term control of electricity prices. This centralized control diminishes the likelihood of energy price fluctuations directly affecting consumers immediately. However, it introduces a political dimension to the energy transition, stacking the barriers particularly when it enables keeping fossil fuel prices below their market value.

Thirdly, the availability and transparency of household energy data in Taiwan remain insufficient. Without comprehensive data, accurately assessing the extent of energy poverty and identifying at-risk populations becomes challenging.

With the unique challenges stemming from the climate, electricity market structure, and data availability, before we can quantitatively measure Taiwan's energy poverty issue, we need to understand the current situation and existing practices. Taking a qualitative approach to analyzing

administrative capacity and existing policies targeting energy poverty is therefore a valuable stepping stone, and this is what this paper seeks to contribute.



## **2.2 Street-Level Bureaucrats and Their Roles in Energy Poverty**

In this study, it is vital to underscore the role of bureaucrats in policy implementation. While energy poverty falls within the domain of environmental governance policies in Taiwan, the effective execution of energy-vulnerable care measures is closely intertwined with both social welfare practices and energy management initiatives. Dealing with the intersection of social equity and energy demand necessitates an interdisciplinary approach. The bureaucrats overseeing these endeavors must adeptly navigate multifaceted policy objectives, engage with a diverse range of stakeholders, and make crucial decisions in spite of resource constraints. However, insufficient attention has been paid to the disconnect between policy intentions and on-the-ground realities. Frontline bureaucrats are at the forefront of these complexities, highlighting the need for a more nuanced understanding of their role in shaping policy outcomes.

In public policy analysis, scholars tend to focus extensively on policy itinerary and design, emphasizing the critical roles of high-level governmental bureaucrats in shaping and guiding policy directions. This emphasis highlights the strategic decisions and frameworks established at the upper echelons of government, where policies are conceptualized, debated, and formulated. These stages are vital as they set the agenda, outline the goals, and determine the resources and approaches to be employed. However, Pressman and Wildavsky (1973) argued that there are often gaps between policy intentions or plans and their actual execution or outcomes, referring to this situation as the “implementation deficit”. The recognition of implementation deficits has led to an increased focus on bottom-up approaches, highlighting the pivotal role of frontline bureaucrats in

effectively translating policies into practice. It is during the implementation phase that the key players—street-level bureaucrats—come to the forefront.

The idea of the street-level bureaucrat (SLBs), proposed by Lipsky (1980), refers to those frontline bureaucrats who have substantial discretionary power when providing public services or practicing public policies, and who in the meantime need to frequently and directly interact with citizens. These individuals—such as social workers, police officers, teachers, and other public service workers—are responsible for executing and enforcing policies on the ground. The decisions they make are often related to the (re)allocation of resources, especially when policies do not, and often cannot, regulate and standardize all situations in detail. Brodtkin (2011) indicated that they are “de facto policymakers in the sense that they informally construct or reconstruct their organizations’ policies”.

Then, how do SLBs exert their influence? According to Lipsky (1980), four factors expand the discretion of SLBs. First, when in institutions where the regulatory scope is broad or involves multiple rules, these SLBs will selectively comply with existing regulations to exercise discretion. Second, when organizations lack clear goals, need to compete for resources, or do not have clear procedures for solving complex tasks, SLBs may be given greater discretion. Third, when the workload is too heavy, personnel is insufficient, or financial resources are cut, they will use their discretion to simplify bureaucratic procedures to improve efficiency. Last but not least, they can also expand their room for discretion through assertive communication or by bending or manipulating rules.

On the other hand, they also face several key constraints. Their autonomy and discretionary power are frequently limited by their lower position within governmental hierarchies, leading them to navigate contexts where conflicting demands from superiors and clients are commonplace, often

within resource-scarce environments (Lipsky, 1980). Based on the same reason, SLBs typically have limited access to critical information and decision-making channels enjoyed by higher-level officials, and are seldom engaged in policy formulation and design (Hupe et al., 2014; Lavee & Cohen, 2019). Moreover, their discretion is shaped by various influences, from the volume of regulations, organizational objectives, workload pressures, and budgetary constraints, to the political climate and public scrutiny (Yang & Holzer, 2005).

In addition to the above discussion of SLBs' discretion, literature on SLBs has also studied their behaviors, and how their personal attitudes affect the behaviors. O'Sullivan (2016) argues that SLBs are guided by their own values when determining the order of work and deciding which individuals receive services first. When SLBs perceive the provision of specific client services as valuable, their commitment to implementing these services increases. Consequently, the ideology, professional knowledge, and skills of SLBs become crucial determinants of the success or failure of policy implementation.

On top of that, SLBs' values and attitudes may also be influenced by their work environment. Zacka (2017) argued that the daily pressures faced by SLBs often lead them to unknowingly adopt simplistic and harmful views of their duties amidst a complex reality. He believed that two inherent characteristics of public agencies: resources that are always in short supply, and conflicting and irreconcilable work goals make public agencies a workplace environment where people fall into high-intensity cognitive dissonance. To avoid such psychological pressure caused by such cognitive dissonance, SLBs tend to narrow their understanding of work, along with moral sensibility. Hupe and Hill (2007) proposed that street-level bureaucrats operate within a complex network consisting of both vertical and horizontal relationships. Vertically, these bureaucrats are closely linked to their organizational hierarchies, maintaining functional connections with their

department chiefs or superiors. Horizontally, they interact and collaborate with colleagues within their departments or with peers in neighboring organizations. This horizontal engagement often involves consulting with professionals from both their own and other fields, fostering a dynamic exchange of information and strategies. Such a network web again highlights the role of SLBs as both policy implementers and co-makers, and emphasizes the importance of these relationships in shaping their actions and accountability.

Research on SLBs predominantly concentrates on professions like social workers, police officers, and teachers, with a gap in studies focusing on public servants in environmental governance. Among policy domains, social welfare garners the most attention, analyzing how social workers navigate complex bureaucratic environments and utilize their discretionary power to deliver services effectively. Followed by education policy, focusing on teachers' interactions with students and their capacity to influence educational outcomes. Significant research exists as well on law enforcement, primarily concerning police officers' interactions with citizens but also extending to immigration officers and prison guards. Only a small body of studies focuses on health, urban, and environmental regulations (Chang & Brewer, 2023).

The same holds true for research conducted in Taiwan. Huang (2021) investigated the inefficacy of welfare policies aimed at aiding the homeless in Taiwan. He studied how the frontline social workers employ three strategies — “horizontally shuffling the burden,” “downwardly co-opting,” and “upwardly realigning” — to facilitate what he terms as a “false escape from homelessness,” thereby bolstering the social work profession.

Police officers are another frequently discussed group in Taiwan. Chiu (2007) revealed that the discretionary actions of police officers in policy implementation are influenced by various factors, including subjective norms, behavioral inclinations, interactions with violators, agency policies,

attitudes of agency leaders, mass media, and social environmental factors. Among them, interactions with the violators and performance pressures have the most significant impact. Lin (2023) researched the administrative assistance imposed on police officers. She argued that these non-routine tasks placed within the police performance system contributed to deviations from their duties and conflicted with their roles.

Sun (2020) examined the participatory budgeting projects promoted by SLBs in Taoyuan, Taiwan. He noted that the project was implemented primarily by the commissioned companies, and the bureaucrats exercised discretion in setting and overseeing the performance of these companies. The reason why there was a tendency towards outsourcing was because of SLBs' lack of professionalism. This aspect resonates with my own findings, which I will revisit later in the discussion. Overall, there has been minimal analysis of SLBs responsible for implementing environmental and energy management policies.

Environmental SLBs, who serve as key intermediaries between the state and citizens, are frequently undervalued in the governance process (Holstead et al., 2021; Sevä & Jagers, 2013). This may be because environmental management often has the characteristics of “a wicked problem”. In other words, such problems are often complex with the driving forces intertwined, making them constantly iterating and therefore difficult to identify or define, and other problems may arise while trying to solve them (Rittel & Webber, 1973). The multifaceted nature of environmental governance and the diversity of stakeholders involved further complicate the assessment and recognition of SLBs' contributions.

At the same time, environmental frontline bureaucrats, unlike other major subjects of discussion, do not necessarily face the crowd directly. Sevä (2013) compared the fish stocking practices between Finland and Sweden, based on regional frontline bureaucrats' political beliefs,

understanding of formal rules, and implementation resources. The author highlighted that the bureaucrats studied should only be called frontline instead of street-level bureaucrats, primarily because they lack face-to-face contact with their clients, making them more anonymous. Also, they are diverse in educational backgrounds and less specialized. In this study, the same goes for frontline bureaucrats responsible for energy poverty initiatives. They face wicked problems that are even more complex than pure energy management and regulation policies; they do not necessarily have relevant majors; and sometimes, they do not have to directly interact with clients. This is why their influence, challenges, and decisions in addressing energy poverty merit investigation.

In the following content, I mainly use frontline bureaucrats or their positions such as sector chief, project manager<sup>3</sup>, village chief, etc. to refer to workers in the public sector. If they meet the analytical characteristics of being face-to-face with the people, having a certain degree of discretion, and/ or playing an important role in the policy process, they will be identified as SLBs. Additionally, although commissioned companies or institutions are considered a broader category of SLBs, to distinguish them from public sector workers, they will be referred to as external agency positions in the subsequent discussion.

---

<sup>3</sup> They are called 承辦人 in Chinese; a word-to-word translation could be "person-in-charge". They are the contact persons of the projects. However, in order to emphasize their discretionary power over the specific energy conservation policies, I chose to use "project manager" instead as a sense-for-sense translation. It should be noted that despite the term "manager", they are all frontline bureaucrats.

### 3. Pro-Poor Energy Initiatives Under Power-Saving Policies

The introduction of pro-poor initiatives, labeled as “energy-vulnerable care measures” in Taiwan, commenced in 2018 within the framework of residential and commercial electricity conservation policies, spearheaded by the Energy Administration<sup>4</sup> under the Ministry of Economic Affairs. Regardless of the poverty-alleviation objective intuitively aligning with the Ministry of Health and Welfare, and emission reduction goals typically overseen by the Ministry of Environment, the policy agenda at the central government level was not directly coordinated by these ministries. Consequently, when the policies and programs were delegated to local governments for project proposals and implementation, the responsibility typically fell under the Economic Development Bureau, rather than the Social Affairs Bureau or the Environmental Protection Bureau. This interconnected nature of the energy-vulnerable issue, coupled with the delineation of policy agendas and funding sources, posed challenges for local bureaucrats in designing and implementing these measures.

To understand how local governments respond to energy poverty issues within the framework of electricity conservation, it is imperative to trace the evolution of local electricity conservation policies (Table 1).

The cooperation between the central and local governments began in 2012, when the Ministry of Economic Affairs promoted the local “Summer Energy Saving Campaign”. This initiative took the form of competitions focused on reducing peak electricity consumption during the summer

---

<sup>4</sup> The Bureau of Energy underwent an upgrade and was rebranded as the Energy Administration in September 2023. During the project period being studied, it was officially known as the Bureau of Energy. However, during interviews, most participants referred to it as the Energy Administration. Hence, for consistency, the entire article adopts the term Energy Administration.

months, with lighting and air conditioning energy saving as primary objectives, and dissemination and subsidies as major means.

Following three years of competition, the Ministry of Economic Affairs started the “Local Government Smart Energy Saving Program” in 2015, expanding the time and funding scale as well as the tasks covered. This program mainly included the replacement of lighting systems in public sector institutions and schools, as well as various power-saving measures for the residential and commercial sectors developed by each county and city. At this time, Taipei’s Environmental Protection Bureau proposed the “Energy Welfare Service Project for Vulnerable Households”, marking the first instance of a local government specifically addressing energy poverty. In this project, the bureau assisted 1,500 low-income households in replacing LED lightbulbs. Although this project wasn’t continued into the Collaborative Initiative, it highlighted the ongoing promotion of lighting system replacement as a key measure.

Only until 2018, the previously annual energy conservation programs transitioned into a longer-term series of projects, spanning three years— yet only those three years. This program called the “Collaborative Initiative” was structured into three main categories of actions: basic work for energy conservation, equipment replacement and smart electricity use, and adaptive measures to local conditions. It was precisely under the category of adapting measures to local conditions that 10 out of 22 counties and cities proposed projects for “assisting energy-vulnerable households to replace electrical appliances”. Coincidentally, six of the counties and cities among them set the replaced appliances as “more energy-efficient LED lights”, while others opted to help change air conditioners, refrigerators, and heat pumps, among other appliances. In addition, according to the definition of “energy-vulnerable” by these local governments, the targeted poor were all low-income and middle-low-income households or social welfare institutions. Six counties and cities

started relevant measures in the first year of three years, and the remaining four proposed them in the second and third years. Although the energy-vulnerable care measures were not explicitly outlined in the program guide of the Energy Administration of the Ministry of Economic Affairs from the central government, some counties and cities endeavored to propose the above-mentioned “adaptive measures to local conditions” project. However, it is observable that the identified energy-vulnerable households and the corresponding measures may not fully reflect local circumstances. This situation shifted three years later when the central government’s program underwent further modifications.

Starting in 2021, the central government introduced the “Partner Program”, which significantly reduced the funds allocated to local governments, once again reverted to a one-year program period, and adopted a competitive funding allocation approach. Content-wise, subsidies for replacing electrical appliances were taken back as central government business, and the focus at the local level turned to power-saving promotion and education. It is worth noting that in the power-saving governance strategy here, the Energy Administration directly incorporated “energy-vulnerable care” into the program directions, which resulted in a key change in the proposals put forth by local governments.

In this ongoing project, the content proposed by local governments has gradually shown diversity. Apart from continuing past initiatives, some counties and cities have introduced new measures such as power-saving volunteer training, power consumption diagnosis, and electrical appliance replacement for energy-vulnerable households, as well as power-saving education in rural schools, among others. While the definition of energy-vulnerable primarily includes low-income and middle-low-income households, some jurisdictions have expanded the criteria to encompass individuals with physical and mental disabilities, elderly individuals living alone, and

households facing precarious circumstances. Reflecting the project's title, "Partners", there is an increased involvement of stakeholders in energy-vulnerable care measures. This includes local social welfare organizations, enterprises, and schools. Local governments have partnered with these entities in various capacities, such as securing funds from enterprises, collaborating with schools to integrate energy conservation training into student curricula or volunteer programs, and leveraging social welfare organizations to reach more marginalized households through home visits and support services.

From the policy evolution outlined above, it is evident that Taiwan's energy poverty issue diverges from energy poverty in Western contexts. Unlike traditional frameworks where addressing energy poverty falls within the purview of the social welfare system, Taiwan's approach centers on economic development and "power-saving" logic—— although vulnerable households may already have minimal electricity to save, and may even be practicing self-rationing. The rationale behind this approach lies in the fact that many of these households utilize second-hand or donated electrical appliances with low energy efficiency and extensive usage history. Hence, subsidizing appliance replacement can effectively achieve energy-saving outcomes.

Nonetheless, it is apparent that the definition and scope of "energy-vulnerable" are not clearly delineated in either the central or local plans. This ambiguity places local bureaucrats at the frontline in a position of greater uncertainty, requiring them to exercise more independent discretion when designing and implementing projects.

**Table 1** Local Governments' Pro-Poor Energy Initiatives Under Central Power-Saving Policies

| Project Name                                                                      | Period                 | Content                                                                                                                                                                                                                                                                                                                                                                                                                           | Funding Allocation Method                                                                                                                                                                                                                                               | Total Amount Cap                | Source of Funding                                        |
|-----------------------------------------------------------------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|----------------------------------------------------------|
| Summer Energy Saving Campaign                                                     | 2012-2014<br>Jun.-Sep. | Replacement of lamps, installation of timers on electrical appliances, increase in air-conditioning temperature, shutdown of electrical appliances, light clothing in summer, etc.                                                                                                                                                                                                                                                | 1st place: Up to NTD\$10 million subsidy.<br>2nd place: Up to NTD\$7 million subsidy.<br>3rd place: Up to NTD\$5 million subsidy.<br>Other excellent participants: Up to NTD\$3 million each.                                                                           | Not specified in the directions | Energy Research and Development Fund (能源發展研究基金)          |
| Local Government Smart Energy Saving Program                                      | 2015-2016              | 1. Energy-saving measures including equipment replacement, energy-saving counseling, etc.<br>2. Strengthening the transparency of electricity consumption information.<br>3. Promoting energy-saving education through the website and volunteers.<br>Mostly promotional activities.                                                                                                                                              | Calculated based on each county and city's commitment target and electricity saving rate during the implementation period, but the upper limit is different for each county and city.                                                                                   | NTD\$ 3 billion                 | Allocation of Centrally-Funded Tax Revenues (中央特別統籌分配稅款) |
| Collaborative Municipal Energy Conservation Initiative (Collaborative Initiative) | 2018-2020              | 1. Basic work on energy conservation(節電基礎工作): energy conservation audit guidance, research on local energy usage, organization and cooperation of energy conservation volunteers, energy conservation education and promotion, etc.<br>2. Equipment replacement and smart electricity use (設備汰換與智慧用電): subsidize indoor parking lots in residential complexes, office buildings and service industries to replace them with smart | The Basic Work on Energy Conservation is allocated according to the categories of special municipalities, main island counties and cities, and outlying island counties. Equipment Replacement and Smart Electricity Use, and Adaptive Measures to Local Conditions are | NTD\$ 7.326 billion             | Taipower Company                                         |

|                                                       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                       |                                 |                                                                                     |
|-------------------------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------|
|                                                       |       | lighting fixtures; subsidize service industries to replace old, low-efficiency ductless air conditioners and old office lighting. Lamps; subsidize the service industry to introduce energy management systems.<br>3. Adaptive measures to local conditions (因地制宜): Strengthen the promotion of local power-saving affairs and create an atmosphere of power-saving.                                                                                                                                                                                                                                                                    | calculated based on the proportion of electricity consumption in each county and city.                                                                |                                 |  |
| Energy Conservation Partner Program (Partner Program) | 2021- | 1. Setting of energy-saving goals, establishment of dedicated organizations and manpower, energy consumption surveys and research, implementation of energy-saving laws, such as energy-saving audit guidance, and private participation or consultation meetings and other local energy-saving basic work promotion matters.<br>2. The cultivation of electricity-saving volunteers, education and promotion, demonstration and promotion, care for energy disadvantaged people, etc. can help research and promote matters in the residential and service industries to improve electricity efficiency according to local conditions. | High Distinction (特優): Up to NTD\$10 million subsidy.<br>Excellent (優等): Up to NTD\$7 million subsidy.<br>Grade A (甲等): Up to NTD\$5 million subsidy. | Not specified in the directions | Energy Research and Development Fund                                                |

## 4. Methods



### 4.1 Policy Document Stocktake

Initially, I conducted a review of the policy regulation content and project final reports. I accessed regulations on local energy conservation from the Ministry of Economic Affairs website. Despite the discontinuation of the first two policies, namely the Summer Energy Saving Campaign and the Local Government Smart Energy Saving Program, their instructions remain accessible on the website. Conversely, the two programs I primarily analyzed, the Collaborative Initiative and the Partner Program, are still active. Policy guides for these programs outline key details such as funding amounts, expenditure scope, application methods, and allocation methods for each promotional action, facilitating a comprehensive understanding of the policy-design framework and limitations for local governments.

Subsequently, I obtained reports from each local government to assess their proposals and implementations under these policies. My focus centered on reports from the Collaborative Initiative and the Partner Program, both of which incorporate measures addressing energy vulnerability. For completed projects, I scrutinized annual project final reports, while for ongoing projects, I reviewed their project proposals instead. These reports were readily accessible on the online platform “Save My Own Energy”, as referenced in the policy guide.

With the contextual resources, I inventoried the evolution of pro-poor energy policies across various counties and cities, comparing the periods when local governments initiated relevant strategies. By doing so, I got to indicate local governments that potentially possessed more comprehensive information on the subject.

## 4.2 Interview Participant Selection and Data Collection

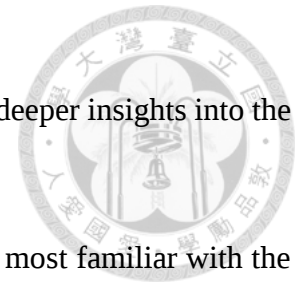
Following the document stocktake, interviews were conducted to glean deeper insights into the practical aspects of policy implementation.

The interview attendants were those in charge of the projects and those most familiar with the issue, to be specific, two distinct categories of interviewees were identified: public sector project managers from each county or city, and non-governmental experts who were familiar with energy governance and energy vulnerability issues in Taiwan.

For the public sector, project managers documented as the contact persons in the project reports were initially selected. They included division chiefs, section officers, or contract employees. In cases where there was a change in personnel or the primary person in charge differed from the one stated in the report, the current person in charge became the primary interviewee. Initial invitations and interview outlines were sent via email, followed by a phone call to further explain the interview's purpose and confirm their willingness to participate. Through purposive sampling and snowball sampling combined, 20 people from 9 cities or counties were recruited.

Interview formats varied depending on the preferences of the contacted manager. In some instances, managers were interviewed individually, while in others, they felt it was beneficial to have unit supervisors and the commissioned or stationed agents present. I adapted the interview scale accordingly, resulting in two formats: one-on-one interviews with the researcher and a single manager, and mini focus group interviews involving the researcher, the manager, the unit supervisor, and the commissioned agents.

For the second category, 15 interviewees were selected through purposive sampling, representing organizations deeply involved in energy vulnerability and local energy governance. These 15 individuals participated in five separate interviews. Among those interviews, two were



focus group interviews and the remaining three were one-on-one in-depth interviews. These organizations included research institutions, NGOs, B-corporations, and private sector individuals who often collaborated with county and municipal governments. The Appendix B provides the code names and blurred information for the interviewees. In the results and discussion sections, quotes from interviewees will be referenced using these code names.

Semi-structured interviews were conducted with both governmental and non-governmental participants. An interview guide with open-ended questions was pre-designed and sent to the interviewees beforehand (see Appendix C). During the interview process, flexibility in question order and the inclusion of follow-up questions were allowed to explore responses fully and uncover unexpected insights. This mechanism facilitated the extraction of detailed information and unexpected discoveries.

Interview topics were selected to cover various aspects of the interviewees' experiences and perspectives, as well as the details of the policy cycle. These topics included the roles of the interviewees in the program, the decision-making processes for energy-vulnerable care measures, collaboration with stakeholders, challenges faced during project implementation, feedback received, and methods for evaluating outcomes.

To gain a comprehensive understanding, specific questions inquired about the job scope and responsibilities of the interviewees, and their attitudes towards the energy poverty issue along with the energy conservation program. The interviews also delved into the decisive factors for continuing to promote energy-vulnerable care in the future and the methods used by county and city governments to determine the recipients of subsidies or assistance.

The interviews sought to identify the common characteristics of the proposed pro-poor energy measures, and the patterns of the bureaucrats dealing with them.

### 4.3 Data Processing and Analytical Framework

For policy documents, I used a spreadsheet to record all the energy-vulnerable care measures from the Collaborative Initiative (2018-2020) and the Partner Program (2021-2023) across all counties and cities. This included the title, content, and responsible government unit for each measure, enabling clear comparisons of the timing and content of measures across different regions.

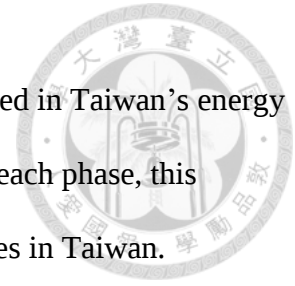
For semi-structured interviews, I took notes and observations during the interviews, cross-referenced them with recordings afterward, converted them into transcripts, and summarized them into interview notes. First of all, I employed open coding to document interviewees' explanations, decision-making processes, and the implementation status across various policy stages. Subsequently, I used axial coding to categorize the open codes. This involved identifying horizontal and vertical dependencies and collaborations in policy formation and implementation. Also, the diverse attitudes, ideas, and implementation methods of the three types of bureaucrats were revealed through this process.

Finally, a comprehensive analysis was conducted by integrating government reports and interview data, so as to examine the policy formation and implementation of each local government. I first presented the policy documents and interview content using the policy cycle framework to understand the context and current state of pro-poor energy initiatives from policy generation to implementation and evaluation. A policy cycle generally includes problem position, agenda setting, policy options and decision-making, implementation, and evaluation (Lasswell, 1951; Brewer, 1974; Brewer & deLeon 1983). This cycle allowed for a detailed examination of the interactions between the policies and bureaucratic systems. Based on these results, I dug into the policy design and bureaucratic system respectively, discussed observed patterns and their underlying meanings, and provided suggestions for both aspects. Policy-wise, I used the lens of policy change and

learning to identify trends in dependence and diffusion not captured by policy stage theory, highlighting current policy shortcomings and potential areas for improvement. Bureaucracy-wise, I applied Hupe and Hill's (2007) theory. By linking street-level bureaucracy to broader governance concepts, Hupe and Hill (2007) provide a framework that can analyze the interplay between policy implementation and governance structures. It emphasizes the importance of the environment in which street-level bureaucrats operate, arguing that accountability is not merely vertical, from street-level bureaucrats to their superiors, but also horizontal, involving relationships with peers and clients. The framework highlights the role of discretion that street-level bureaucrats possess and how it can enhance the meaningfulness of policies for clients. As a result, I chose this method to better demonstrate the larger canvas of the pro-poor energy initiatives painted by the frontline bureaucrats.

## 5. Results

This section provides an examination of the stages and processes involved in Taiwan's energy poverty policy through a policy cycle. Through an in-depth exploration of each phase, this section elucidates the dynamics inherent in addressing energy poverty issues in Taiwan.



### 5.1 Problem Position and Agenda Setting

Although the issue of energy poverty involves social welfare and environmental aspects, it is a cross-cutting and complex issue. In Taiwan, it is placed in the context of electricity conservation and is the responsibility of the Energy Administration of the Ministry of Economic Affairs at the central level. The reasons should start with electricity prices. In Taiwan, the electricity market has long been monopolized by the state-owned Taipower Company. Although the Electricity Industry Law was revised in 2017, it is expected to move towards liberalization of the electricity industry, splitting the three businesses of power generation, transmission and distribution, and electricity sales, and opening up market competition, but the actual progress is slow. The current situation is that the Taipower Company still dominates the electricity market. This has allowed Taiwan's electricity to be controlled at a price lower than international prices for a long time. However, this also resulted in the “user pays” principle not being implemented, as one interviewee said, “Taiwan should normalize energy burdens and implement the user pay principle. Based on this condition, you will save electricity.”

Take a look at Taiwan's electricity consumption structure data in 2023, the industrial sector is the largest consumer, accounting for 55.33%, followed by the residential sector at 18.63% and the service sector at 17.51%. Among them, in the residential sector, household and non-business electricity consumption accounted for 94.61% (Energy Administration, 2024). As a result, household energy conservation has always been a concern of the government. The cooperation

between the central and local governments began with the Summer Electricity Saving Plan in 2012. In interviews, it was also mentioned by some organizers or commissioned companies who have participated in the plan for many years and compared it with later plans. One project manager (GB1) said:

*“In fact, electricity saving has not been a major focus of the Ministry of Economic Affairs, but as they later allocated more funds to local governments for “energy transition”, our county began to implement electricity saving plans. However, if you apply in a single-point and single-year manner, it will be difficult to extend knowledge and talents. Only by starting with a three-year plan for the Collaborative Initiative can you more clearly propose a complete local plan.”*

And a commissioned company agent (CA1) revealed:

*“It was first launched in 2014 by the Energy Administration to save electricity in the summer months (competition). There was a lack of incentives, so fewer counties and cities participated. The Collaborative Initiative began to be more institutional. Residential and commercial energy conservation was more concentrated, and there was a certain amount of funding every year.”*

While an agent from another county (CD1) said:

*“The ‘Smart Energy Saving Office’ sign hanging on the door of the office is from an earlier energy-saving plan, around 2015. But at that time, no one knew what to do, so they just did whatever came to mind. Then comes the jointly promoted three-year plan.”*

These energy-saving plans gradually included the “energy-vulnerable care measures”, when the central government began to promote the Collaborative Initiative for residential and commercial sectors. Through “adaptive measures to local conditions (因地制宜)” projects, local governments can make proposals based on local characteristics. Some counties and cities have begun to promote

measures to help poor households replace home appliances bottom-up, combining existing policies and their concerned issues.



An agent from the commissioned company (CD1) explained:

*“In the year 2017, when promoting a new power-saving plan, the Public Security Utilization Section of the Urban and Rural Affairs Department was working on a green building project, which involved the renovation of energy-saving building envelopes and the replacement of lamps. We combined this project with care for the poor, which was a perfect match.”*

While the project manager of one county expressed that it is the issue she personally wanted to devote to, “I have always wanted to work on this topic, and I just happened to have the funds to do it” (GB1), the other city discussed and decided through an inter-bureau meeting (GG1):

*“Inter-bureau meetings were held based on local conditions, and we realized that the needs of the disadvantaged must be taken into account in the energy transition, so we started planning like this. Although the energy-saving benefit may not be great, I think it is meaningful.”*

Although this plan did not explicitly include “energy poverty/ vulnerability” in the policy agenda, after three years of promotion and management by local civil servants, it officially appeared in the next round of central policies, allowing other local governments that have not yet adopted the policy to also started related plans. “The Energy Administration directly stated the energy-vulnerable care measures in the program directions. It is not mandatory, but it is an option, the county or city can decide itself whether it is feasible,” said the project manager GF1. Taking this path, we can see that local and central policies actually shape each other, and to some extent, it can be seen as a bottom-up approach, which also shows the local nature of the energy poverty issue. More to the point, policy implementation is proved a process of mutual influence between policies and actions. Not only do policies generate subsequent actions, but actions also respond to

and shape policies, creating a dynamic cycle that allows for continuous revision and adaptation of policies over time (Barrett & Fudge, 1981).

It is worth noting that since these two central plans addressing energy poverty are under the responsibility of the Energy Administration of the Ministry of Economic Affairs at the central level, at the local level, they are usually directly undertaken by the Economic Development Bureau, and only in a few cases are assigned to Environmental Protection Bureau.

An expert (EK2) pointed out that energy poverty in Taiwan is in “no man’s land”. This business should be at least related to the Economic Development Bureau, Environmental Protection Bureau, and the Social Affairs Bureau, but the tasks and funds are scattered: “The total budget is between the Economic Development Bureau, the Environmental Protection Bureau, and the Social Affairs Bureau. The energy conservation business is in the Environmental Protection Bureau, and the social welfare business is in the Social Affairs Bureau. They do not have high enough roles to integrate everyone’s resources and sort out the issues.”

A subdivision chief (GC1) also mentioned that not only is energy poor, but the energy itself is unclear as to whose business it belongs to:

*“Who owns the energy business? It is worthy of discussion. It is like the matter of the economic and development system, but also like the matter of all agencies: if the Social Bureau has sufficient energy awareness, it can have more policies with the energy poor; the Labor Bureau can also integrate solar energy knowledge and energy conservation in vocational training. It can also be combined with social housing development in the Metropolitan Development Bureau. But now we are fighting alone, with limited strength.”*

As mentioned above, the central government’s policy positioning is not very clear. Although the Energy Administration’s energy-saving plan has taken the lead in raising concerns about

energy poverty issues, at the local level, the professional backgrounds of these frontline bureaucrats are not necessarily related to energy, and there are no corresponding resources to the social welfare system. Under such circumstances, the management of energy poverty issues highly relies on the organizers' own issue sensitivity and professional knowledge, and this also affects the program selection and decision-making at the local level.

## **5.2 Policy Options and Decision-Making**

It can be seen from the project's final reports that 20 of Taiwan's 22 counties and cities have at least mentioned "energy-vulnerable care measures", and the plan proposals of these local governments do not depart from the following content: Replacement of household appliances and energy-saving diagnosis for poor households, replacement of electrical appliances in rural schools, educational promotion in rural areas, and replacement of electrical appliances in social welfare institutions. Among them, the first item has been adopted by most counties and cities.

Behind these policy options, it involves how the local planning team is formed and how they think about energy poverty. Based on semi-structured interviews, I learned that most local governments that undertake this central project only have one or two persons in charge: usually the section/subdivision chief and a project manager, who is often a contract employee, but serves as a frontline bureaucrat, and typically takes more responsibility for project details. This kind of frontline bureaucrat can be roughly divided into two categories: one is because (s)he has professional knowledge or enthusiasm for the business of the position, so (s)he especially hopes to contribute to the issue; the other is someone who does not necessarily have expertise or enthusiasm for the business of the position, so (s)he is inclined to rely more on external experts,

that is, commissioned companies. This constitutes the key roles in local policy formation: local government section/subdivision chief, project manager, and commissioned companies.

They all have different imaginations about the “energy-vulnerable care measures”. First, who are the energy-poor? For most counties and cities, these people are low-income and middle-low-income households, rural residents, and people with physical and mental disabilities. All counties and cities that have proposed relevant policies include low-income and middle-low-income households within their jurisdiction, showing that this is still the most intuitive target group setting. Regarding the reasons, a subdivision chief (GC1) who was interviewed alone and was familiar with the plan mentioned:

*“Residential energy conservation is difficult to achieve (because the city government does not have household electricity consumption data) and it is difficult to capture large users. Therefore, most of the current efforts are aimed at communities, with few targets and relatively large power consumption. For general housing, you would want to target low-income and middle-low-income households. Because our subsidized items like air-conditioning and refrigerators for all the households look like a promotion. However, low-income and middle-low-income households may not be able to replace them even if they receive subsidies, so many buy second-hand refrigerators. We feel that those who really need help are low-income and middle-low-income households. Rather than distributing the subsidies evenly, I prefer to help families in need improve their quality of life thoroughly.”*

An organizer (GE1) who was interviewed alone and whose county has a large area and low population density mentioned:

*“In our county, due to the diverse ethnic makeup, even though we think it is necessary to turn on the lights and live in concrete houses, it is not necessarily the case for local residents, it is*

*their chosen lifestyle, that makes the definition of disadvantage even more complex. In this case, it is difficult to identify the identity and actual needs of the power-saving plan.”*

Regarding the opportunity to carry out energy-vulnerable care measures, another organizer (GF1) said bluntly: “The plan was developed through discussions with commissioned companies because they have more experience and have received cases from other county and city governments.” A commissioned company agent (CD1) from another county replied: “Because other general subsidies are also targeted at low-income and middle-low-income households, they are set this way.”

In the absence of a clear definition from the central government of what constitutes “energy vulnerability”, local governments have to define the problem themselves. These targets may not necessarily have the same origin, but they all coincide with the “economically disadvantaged”. The same tacit understanding is also shown in the outline of the solution. As mentioned previously, most counties and cities set these care measures for appliance replacement, helping the disadvantaged to replace inefficient appliances with more energy-saving or energy-efficient options. So, what appliances should be replaced? The most common ones are lightbulbs, followed by air conditioners and refrigerators. Regarding lightbulbs, several interviewees revealed that due to cost considerations, replacing LED lightbulbs is cheaper than replacing other electrical appliances. It can also serve more households and the results look more “flashy”. Some interviewees also mentioned the health considerations: Insufficient illumination may affect school children’s vision and learning, and for the elderly, it may increase the possibility of falls and injuries. One project manager (GG1) further mentioned the feeling of “illuminating life through installing lightbulbs”, which shows that in addition to practical considerations, lightbulbs also

seem to be endowed with positive images. An interviewee (EL4) who originally replaced LED lightbulbs but later changed to replace refrigerators said:

*“Many of the poor households in our city rent houses, so replacing the lightbulbs is equivalent to replacing them for the landlord. In addition, there are many specifications of luminaries and they require construction, which may be more troublesome, and this is the main cost. Refrigerators are open 24 hours a day. Many households’ refrigerators are broken and consume huge amounts of electricity, while many renters use second-hand refrigerators.”*

Although they did not mention the consideration of renting a house, other interviewees who chose to replace their refrigerators also mentioned that the energy-saving benefits of refrigerators may be greater than that of lightbulbs because every household has one and is plugged in 24/7. Some counties and cities stated in their project reports that lightbulbs, air conditioners, and refrigerators should be replaced according to household needs, but refrigerators are rarely chosen alone. Interviewees pointed out that this is because many households do not have air conditioners at all, or if they do, they rarely use them.

Connecting the above-mentioned objects and roles, we can see the general form of energy-vulnerable care measures: going to low-income and middle-low-income households and rural areas to replace light bulbs, air conditioners, or refrigerators. The details of the plan are usually initiated by the commissioned companies or a frontline bureaucrat with greater awareness of the issue, and are written into a project proposal. After being reviewed by the unit chief, it is then submitted to the central government for review and implementation.

### 5.3 Implementation and Evaluation

After the project was approved, the real challenges for these frontline bureaucrats were revealed. The first is the screening and contact of households. Some organizers will ask the Social Affairs Bureau for a list of low-income and middle-low-income households, but many of them say that there are too many on the lists, and it was actually hard to filter them. For this reason, some counties and cities cooperate with the township offices and village chiefs of the civil affairs system to recommend households in need of assistance within the jurisdiction. In this regard, a subdivision chief (GC1) mentioned:

*“It is difficult for such a policy to draw lots fairly or do first-come-first-serve, because the information of low-income and middle-low-income households is not very timely and developed, and they are more defensive. We just trust the village chief’s understanding of the residents, and we also feel that these families trust the neighborhood chief more than us. So I asked them to help recommend it. However, the mechanism for the first period was not ideal because the village chief was busy with elections at the time. We later asked social welfare organizations for recommendations.”*

After determining the target households, they still face the problem of contacting them. These frontline bureaucrats in the economic development system are different from social workers in the social welfare system. They lack experience in interacting with households and lack a basis for trust in each other. They revealed that when contacting these households, if they contact them directly with written documents or by phone, the rate of rejection is high. However, if they are referred by the village chief or accompanied by a social worker, it is easier to enter the household. However, some interviewees said that many of the implementations at this stage are handed over to the commissioned company, and the actual door-to-door visits are mainly conducted by the

company's personnel, and the organizers of the local government may not necessarily follow the visit. A project manager (GG1) said:

*“There are tens of thousands of households on the list. We have set a target to reach out to a certain proportion of households in each district and ask the commissioned team to call each household one by one ...There are 8-10 stationed agents from the commissioned company... We will have weekly meetings with them to understand the progress.”*

The preset number of households to be assisted is often not as good as expected. In some places, it took several periods to reach the number of households set in the first year, and in some places, 150 households were originally set, but only 7 households were successfully visited that year. This may indicate that the issue of energy saving is not something that poor households are aware of or concerned about. On the other hand, it is also related to the way of contact and door-to-door visits. In the actual visit experience mentioned by these interviewees, some mentioned that these vulnerable households are very defensive. Sometimes they are reluctant to open the door even if they have been contacted in advance, and sometimes they are absent. But some interviewees mentioned that most families would welcome them if they were accompanied by the village chief, or if they were directly contacted and recommended by the village chief.

During the replacement process, these interviewees also said that the living environment of poor households is sometimes very crowded, and even requires a clean-up to have space to replace electrical appliances. When most counties and cities implement replacement, they will also tidy up messy lines to reduce the risk of electricity consumption. As for the appliance itself, the refrigerator received the most descriptions from the interviewees: the refrigerator door does not close tightly, there is too much stuff inside squeezed together, insufficient cooling, it has been used for more than ten years, it is damaged and second-hand, etc. Such characteristics have greatly

reduced the efficiency of the refrigerator, while increasing the risk of the household's health. One think tank researcher (EM2) mentioned:

*“For low-income and middle-low-income households, energy conservation is not the most important thing. There have even been cases in which households have resold the subsidized items. Accordingly, how to help improve their living conditions is the key: this entry point may be ‘health or safety’ or ‘insufficient lighting’.”*

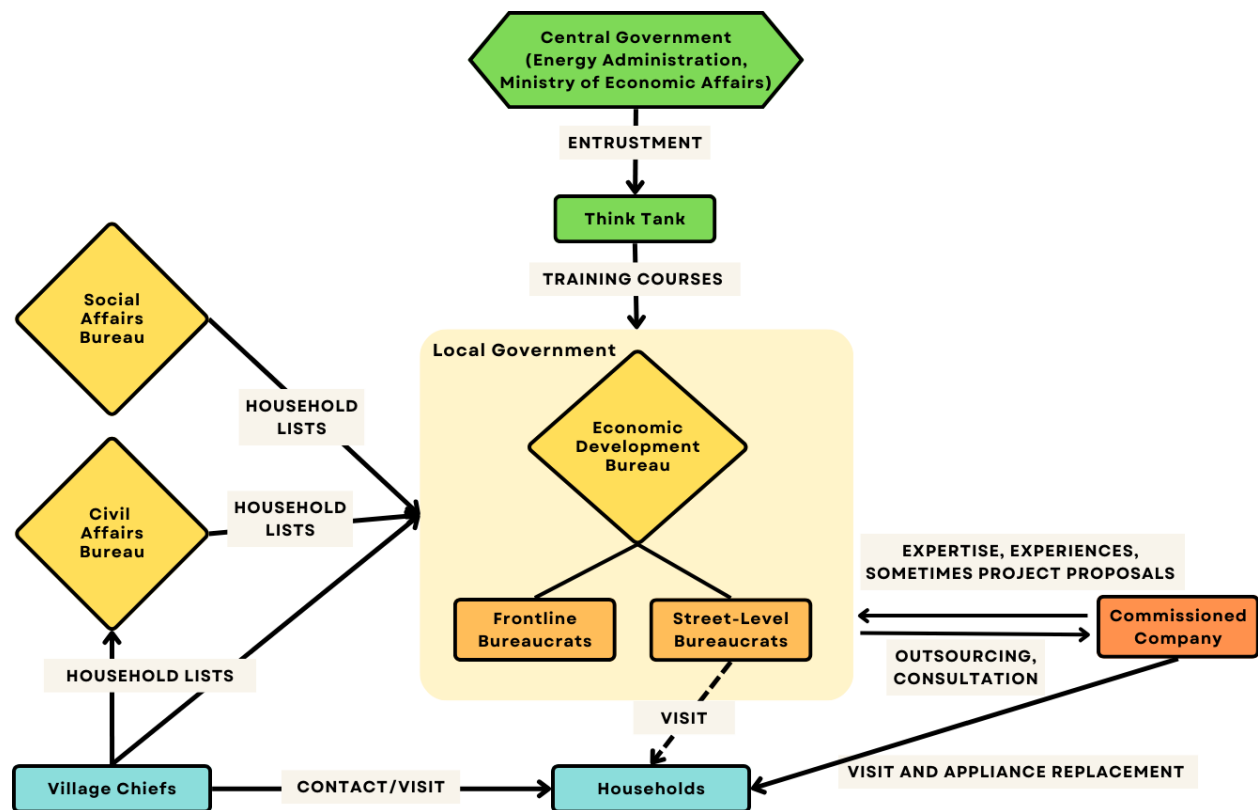
Almost all frontline bureaucrats who implement energy-vulnerable care measures mentioned that changes in central policies, including planning periods and funding scales, have caused a lack of continuity in their planning and implementation of plans. Also due to limited funding and planning specifications, it is impossible to make longer-term commitments to households or stakeholders in the cooperation, and it is not conducive to the establishment of trust.

As for the effectiveness of these measures? Each county and city interviewed calculated the energy savings after replacing electrical appliances. None of the plans conduct return visits to households, and the feedback from these households can only be felt through the immediate reactions during implementation. However, this does not seem to be the primary consideration in policy evaluation of policy effects.

Interestingly, a few counties and cities have presented more cutting-edge, comprehensive and detailed policy plans than other counties and cities. Through actual interviews, we found that although these frontline bureaucrats do not necessarily need to, they still choose to become SLBs who face households, and even become policy entrepreneurs who can expand their discretion power to policy design. In interviews, these bureaucrats talked more about their understanding of the issue of energy poverty and their ambitions to take action, as well as their detailed observations of households. They also pointed out the shortcomings of the central and local governments in

promoting this issue. But at the same time, some of the interviewees also mentioned the imbalance between their ability, business burden, and salary, which led to the erosion of their enthusiasm for issue management. Figure 2 below shows an organizational diagram illustrating the relationships and directional actions discussed thus far.

**Figure 2** *Organizational Relations*



Note: This figure illustrates the agencies involved in implementing energy-vulnerable care measures by local governments. Arrows indicate the flow of resources and services among these entities.

## 6. Discussion

After examining the policy cycle, I analyze the observed dynamics in this chapter. The first two sections focus on policy design and resource allocation, detailing the insights gathered on these aspects. The subsequent two sections discuss the role of frontline bureaucrats, exploring their cooperation methods in implementing policies and the challenges they encounter. At the end of each section, I offer recommendations for potential improvements.

### 6.1 Boilerplate Strategies Under the Lens of Energy Conservation

Placed within the context of energy conservation, the landscape of energy poverty issues at the local level was restricted, reflecting vertically inherited and horizontally diffused policy options. It is observed that when the policy agenda and directions were ambiguous, the local governments were inclined to sustain what had been done in the previous periods; path dependence was shown.

In terms of policy options, there is a noticeable tendency to draw upon the content and strategies of previous energy-saving initiatives. This often includes subsidizing home appliance replacement, specifically LED lightbulbs and energy-efficient air conditioners, and energy-saving diagnosis and education. Most of the interviewees were in charge of the Partner Program, and many of them pointed out that the idea of those pro-poor energy measures stemmed from the projects implemented in the previous Collaborative Initiative; few of them engaged in the Collaborative Initiative, on the other hand, suggested that the idea came from the earlier energy saving programs initiated by the central government, as early as the Summer Energy Saving Campaign. While these measures are imperative within the broader context of electricity conservation for the household sector, they tend to overlook the nuanced needs of marginalized groups.

This inertia is also evident in the setting of the target group. In most of the cities and counties, the concept of “energy-vulnerable” was narrowly defined in the energy conservation programs, primarily targeting economically low-income and middle-low-income households. Interviewees highlighted that this approach stems from past experiences, where subsidies were typically directed at these economic groups. One interviewee (CD1) stated, “General subsidies are also targeted at low-income and middle-low-income families, so they are set this way,” while another (GF1) remarked, “We can only find those households by their economic conditions, and the list must be given by other bureaus. If there is a more specific definition of energy vulnerability, we may be able to find them ourselves.” It seems intuitive for the local governments to equate the energy poor with the economic poor, although there’s an understandable overlap, limits the scope of support, and fails to address the broader spectrum of energy vulnerability.

Fortunately, there is a growing recognition among a few jurisdictions of the need to expand the definition of energy vulnerability. This broader perspective includes elderly individuals living alone, near-poverty-line families, immigrants, and other marginalized groups who may face unique challenges in accessing and affording energy resources. Despite these efforts, there remains still a pressing need for local and central governments to implement pre-treatment impact analyses, as well as policy interventions that are more responsive to the diverse needs of all segments of society, particularly those who are most vulnerable to the impacts of energy poverty.

The second type of dependence appears in the form of horizontal diffusion. According to the final reports, the same type of projects had increasing records in the Collaborative Initiative and the Partner Program. In other words, these policies expanded to other counties and cities over time. The interview results suggest the transmission paths include two main types: peer learning among project managers and recommendations from commissioned companies. Some project managers

pointed out that they would refer to the practices of counties and cities that are geographically nearby or with similar conditions. Sometimes it was through phone calls, sometimes through open-access publications or news. On the other hand, some project managers pointed out that their commissioned company sometimes undertook projects in several counties and cities, so they were also an important source of information for them to learn about the experiences of other counties and cities.

Interestingly, the diffusion of policies appears to be limited to the initial adoption phase—from having no pro-poor energy measures to implementing them. This may be because the unique characteristics of each jurisdiction constrain the possibility of completely replicating successful models. For example, one interviewee (GI1) mentioned “We (the two outlying islands) encounter the same situation, but their essence is different. They dare to subsidize on a large scale because they have the Winery as the local government’s funding source.” In another example, one county indicated that “Although we want to leverage the funding from companies as the other city does, the reality is that we don’t have such big companies that meet our needs in our county.” (GE1)

These examples highlight a critical concern: while horizontal diffusion facilitates the initial adoption of pro-poor energy measures, it does not necessarily ensure their long-term success or suitability across different contexts. The reliance on practices from other jurisdictions can lead to a mismatch between policy measures and local needs, resources, and capabilities.

Hence, a one-size-fits-all approach to policy-making is unlikely to be effective. Instead, tailor-made measures should be developed to address local needs while recognizing specific constraints. By doing so, policies can be more responsive and effective in meeting the unique challenges faced by different jurisdictions. This tailored approach ensures that energy-poor measures are not only adopted but also adapted to local contexts, leading to more sustainable and impactful outcomes.

Besides, the need for context-specific solutions raises the issue of capacity-building among local bureaucrats. Effective policy adaptation requires that local officials have the knowledge and skills to assess their unique conditions and modify existing strategies accordingly. Without this capacity, there is a risk that well-intentioned policies may not achieve their intended impact or may even exacerbate existing issues. This will be analyzed in greater detail in the following section.

Reflecting on the formation of the previously mentioned dependences, it seems to be linked to how energy poverty is framed. As noted earlier, energy poverty has not yet been extensively studied in Taiwan. While policy documents touch on the subject, they lack clear definitions and practical guidelines. More importantly, energy poverty is treated as a minor aspect within the broader energy conservation context and does not sufficiently interact with other related issues due to a fragmented agenda. Under these circumstances, local bureaucrats responsible for energy conservation policies then tended to adopt policy options that had been promoted by the central government without considering their timeliness or local relevance. Once some counties and cities implement these policies, others often follow suit. As a result, the practice of “assisting the economically disadvantaged to change light bulbs” has become a boilerplate strategy for supporting the energy poor, and continues to be reinforced. An interviewee from the private sector (EJ1) echoed this point by stating:

*“Energy conservation, energy creation, and high-level policies should not be separated... Nowadays, every program has to have its own complete plan, so of course, they (the bureaucrats) just copy and paste it to different programs, that’s why you see them lame.”*

More to the point, he suggested that an ideal process for local energy governance should be to first take stock of the region’s background, and then clarify the key issues. And based on the key issues, think about what strategies can be implemented. After planning the strategy, prepare the

budget needed. Following up, there will be a review mechanism that allows them to go back and see if the KPIs have been reached or improved. Energy poverty, then, should be incorporated into the larger canvas of local governance, and be aligned with the central long-term goal.

The above suggestion the expert gave is for overall environmental and energy governance. As for energy poverty policies specifically, I believe the governments need to move beyond the narrow focus on “energy saving” to better integrate resources from various programs and departments. The poor living conditions observed in many households—such as inadequate lighting, tangled cables, and outdated appliances—implied that energy conservation alone cannot resolve the issues. Instead, energy poverty is multifaceted, and a more holistic approach is needed, encompassing energy security, health management, and living condition improvements. This requires the policymakers to move beyond the mindset of energy conservation at the problem position and agenda-setting stage, and avoid self-limiting the policy options to merely home appliance replacement.

## **6.2 Resource Fragmentation and Funding Challenges**

Unclear agenda setting and policy guidance resulted in boilerplate strategies, and the fragmented resources further reinforced the phenomenon.

First of all, local governments don’t have self-financing resources for the energy poor, that is, all of the existing energy-vulnerable care measures depend on the program funds from the central government. Interviewees frequently mentioned that the funding scales and program periods differed greatly between initiatives. The Collaborative Initiative, a three-year program supported by Taipower Company, had a substantial budget of 7.326 billion NTD, while the Partner Program, supported by the Energy Research and Development Fund from the Department of Economic

Affairs, was a one-year-per-period program that had only 10 million, 7 million, 5 million NTD for each city or county according to the ratings of their proposal. The shrink of funds accordingly limited the scale of the projects and crowded out the already little money for the pro-poor energy measures, as the interviewees highlighted. “There is no self-funding by the local governments, and then when the central government reduces or deletes the budget, they stop running those projects. Local governments should try to raise funds themselves or try to reach out to the corporations for funds.” one interviewee (EM5) who works at a think tank said.

A notable exception was a city that funded its energy-vulnerable care measures through revenue generated from municipal solar energy projects. They implemented appliance replacement programs for disadvantaged households twice. The first attempt was under the Collaborative Initiative, while the second was through renewable energy promotion policies other than electricity conservation, supported by the municipal budget. During the interview, the project manager mentioned that the pro-poor energy initiatives had not been implemented consistently in the past, but they hope it can become a permanent plan in the future, with the city budget derived from solar PV revenue providing the foundation. They also plan to cooperate with solar PV companies to conduct charity activities, while simultaneously allocating some funds from the Partner Program.

The interviewee emphasized: “The focus is not on how many kilowatt hours of electricity can be saved, but on improving the lives of disadvantaged households and enabling their participation in the energy transition.” (GC1) This self-financing model is beneficial for local governments, as it allows them to retain autonomy and control over their resources. Furthermore, this case highlights the importance of sustainability funds, long-term planning, and thinking beyond energy-saving to expand and access more resources.

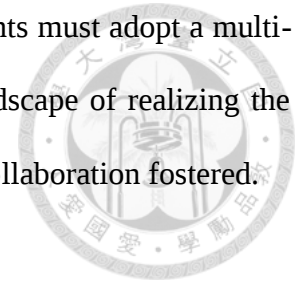
Resources are not only about money. As many interviewees noted, engaging and visiting targeted households is more successful when involving trusted figures like social workers and village chiefs. These individuals have established relationships and trust within the community, making them more effective in overcoming resistance or skepticism from the households. Therefore, resources from the health and welfare system should be integrated into the implementation stage. There are at least three ways that they can be leveraged.

First, examine the resources in the social welfare system, such as the Public Assistance Act and the Social Welfare Fund, to identify provisions for assisting energy-poor households. This could provide a foundation for broader support. Second, introduce energy diagnosis social work training. Since social workers frequently visit disadvantaged households and are trusted more than economic development system bureaucrats, including basic household energy diagnosis in their training or work projects could be beneficial. Third, on the issue of energy poverty, there can be more experience exchanges and data sharing between the health and welfare system, the economic and industrial development system, and the environmental protection system. This would enable more thorough and detailed planning and implementation of energy poverty policies.

Incorporating resources from the health and welfare systems also allows for a more comprehensive support network. This can include follow-up visits to assess the impact of implemented measures, provide ongoing support and education, and adapt strategies as needed. Such an approach ensures that the interventions are not only implemented but sustained over the long term, leading to more significant and lasting improvements in the lives of disadvantaged households.

Ultimately, addressing energy poverty requires a paradigm shift from isolated efforts to a cohesive, strategic framework that prioritizes the well-being of all citizens, especially the most

vulnerable. As such, to effectively tackle energy poverty, local governments must adopt a multi-faceted and integrated approach: not only does it include a broader landscape of realizing the issue of energy poverty, but also diverse resources leveraged, and wider collaboration fostered.



### 6.3 Expertise Gaps in Vertical and Horizontal Cooperation

The effectiveness of energy-vulnerable care measures is heavily influenced by the roles and capabilities of the bureaucrats involved. The following two sections focus on the individuals who drive these projects, including sector chiefs, project managers, and commissioned companies and their agents. These actors exhibit varying characteristics and behavioral patterns in implementing pro-poor energy initiatives.

In all of the cases, sector chiefs and project managers lack backgrounds specifically in energy-related fields, instead holding degrees in economics, engineering, architecture, and business management—in a strict sense, they are not professionals for energy. This reflects the nascent essence of energy issues within the public sector. Consequently, energy projects are often managed by bureaucrats with diverse, non-energy backgrounds, leading to a high dependency on external knowledge and a significant staff turnover rate.

Several interviewees noted that their energy-related knowledge primarily comes from training courses provided by the Energy Administration and its affiliated think tank. Such training courses are provided twice a year with different themes, including but not limited to energy poverty, energy management, and energy conservation. While most of the interviewees found it useful, still one interviewee (GE1) pointed out:

*“The Energy Administration provides power-saving training courses and various small projects for county and city governments, so that those of us who do not come from relevant professional backgrounds can get into the situation relatively quickly. However, in fact, when*

*we conduct energy-saving projects, we rarely apply what we have learned. Sometimes the courses provided are relatively basic and not sufficiently tailored to local conditions.”*

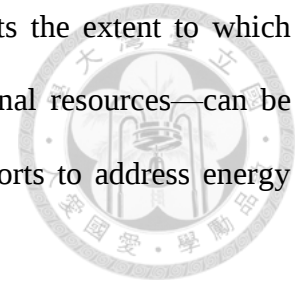
Meanwhile, frontline bureaucrats expressed a desire for clearer guidelines and stronger implementation mandates from the central government to better promote energy-vulnerable care measures. This dependency on central directives underscores a vertical dependence, irrespective of the locality of energy poverty and the original name of the sub-program “adaptive measures to local conditions”.

This highlights a significant challenge: the balance between centralized oversight and local autonomy. The ambiguity in current policies has led to inconsistent implementation and varying levels of commitment among local governments. Without clear, enforceable mandates, some regions may lack the impetus to prioritize energy-vulnerable care measures, resulting in a patchwork of efforts with uneven outcomes. This situation could be aggravated by the high turnover rate among project managers, leading to a loss of institutional knowledge and continuity in program implementation. Nevertheless, excessive reliance on central mandates can also stifle local innovation and responsiveness. Local bureaucrats, who are more familiar with the unique needs and contexts of their communities, may feel constrained by rigid guidelines that do not account for regional variations.

Horizontal cooperation highlights another facet of bureaucratic challenges, which involves interactions among various bureaus within local governments, and between these bureaus and their commissioned companies.

First of all, cross-bureau meetings do exist. Typically chaired by deputy mayors, the sessions are intended to facilitate cross-departmental cooperation. However, interviews reveal that these meetings predominantly involve progress reports from individual bureaus rather than fostering

joint agenda-setting or strategic planning. This task-based division limits the extent to which resources—whether human resources, financial resources, or informational resources—can be effectively mobilized and integrated across bureaus. As a result, the efforts to address energy poverty lack cohesion and are often fragmented.



The limited scope of horizontal cooperation reflects a broader challenge in public administration: the siloed nature of government departments. Each bureau operates within its own mandate, budget, and operational framework, making it difficult to coordinate efforts seamlessly. For instance, while the Social Affairs Bureau is adept at identifying and engaging with disadvantaged households, the Economic Development Bureau may lack the social work expertise to effectively manage these interactions.

As reported by the interviewed cases, within local governments, the Economic Development Bureau often cooperates with the Social Affairs Bureau to obtain household lists and with the Civil Affairs Bureau to mobilize village chiefs for community outreach. However, due to project funding and design, their involvement is typically limited to specific tasks rather than comprehensive, collaborative planning. This suggests a model of horizontal dependence where project managers rely on other bureaus for specific inputs but do not engage in integrated, cross-functional planning.

It is worth mentioning that one interviewee reported back on the interaction with the local township offices: “Some offices directly provided us with the list of households they referred, while others said they posted on community bulletin boards, but no one applied, so the list cannot be provided.” (GF1) This reflects that the information delivery path set by SLBs plays a decisive role in deciding whether households can receive relevant assistance.

Analyzing this further, it becomes evident that the effectiveness of horizontal cooperation is heavily contingent on the quality and reliability of information exchange. When township offices

provide the household lists, though streamlined and efficient, it implies that access to resources depends on who these bureaucrats know better. However, reliance on passive methods like community bulletin boards can lead to significant gaps in outreach. This disparity reveals the flaw of inconsistent communication strategies, where some communities receive holistic support while others are left unaware of available resources. Meanwhile, it again highlights that these frontline bureaucrats, acting as gatekeepers, can either bridge or widen the gap between vulnerable households and the services designed to assist them.

Outside of the public bureaucratic departments, reliance on commissioned companies introduces another layer of horizontal dependence. These companies, while bringing specialized knowledge and skills, also create a dependency that can undermine the capacity-building of local bureaucrats. Through interviews, it becomes apparent that these company agents contribute significantly to discussions, offering insights and practical solutions based on their deep involvement in project implementation. Notwithstanding their efforts, it is evident that frontline bureaucrats often lack the specialized knowledge needed to effectively address energy-related issues. One interviewee from a think tank (EM5) said:

*“(The central government) does not force every county or city to participate (in the training courses), so the project organizers are not very active. However, in order to serve the owners, the commissioned companies will be more active in attending classes. They are also the ones we nurture.”*

On the other hand, one interviewee from the local government (GE1) revealed that:

*“In terms of resources and support, the think tank plays an assisting role, but in fact, when it comes to understanding the difficulties faced by other counties and cities, the information obtained from the commissioned companies may be more useful.”*

In the SLB literature, although these commissioned companies are not formal civil servants under the public sector system, their functions are the same as those of SLBs, and are called policy co-workers or implementing agents (Sager et al., 2014). However, comparing and contrasting the contents of the interviews and reports, I found that in some cases, these commissioned companies not only participated in project implementation, but also wrote the plan and final reports. More critically, it appears that local governments have outsourced the entire management of energy poverty issues, including their communication responsibilities, to these companies. In this sense, the role of these companies actually goes beyond merely policy co-workers or implementing agents. This delegation can diminish the opportunity for frontline bureaucrats to develop the necessary expertise and understanding of energy issues, perpetuating a cycle of reliance on external entities.

To address the identified challenges, the following are some recommendations. First and foremost, it is essential to strengthen professional development programs for frontline bureaucrats. Ongoing training and certification in energy management and policy will equip these officials with the skills and knowledge required to handle energy-related projects effectively. This education and training should not only be provided to policymakers twice a year but should also be offered more frequently and broadly to civil servants in different units. Since workers in different professions often have a strong sense of identity in their specific field, breaking down these barriers is paramount for fostering cross-team collaboration. Education and training programs can facilitate this process by promoting understanding and cooperation among professionals from various disciplines (Ellis et al., 1999). Moreover, regular workshops, seminars, and online courses can also ensure continuous learning and adaptation to evolving energy policies and technologies.

Promoting intersectoral collaboration is vital for a holistic approach to tackling energy poverty. Greater collaboration between departments responsible for energy, economic development, and social welfare can be fostered through interdepartmental committees, joint funding schemes, and shared goals. The elements essential for successful cross-sector collaboration include jointly setting and agreeing on policy goals and directions, sharing responsibility for achieving these goals, and leveraging the expertise of each participant to work together effectively. These elements should complement the policy recommendations mentioned above, including longer-term and large-scale policies and expertise building, as they are more conducive to comprehensive horizontal cooperation.

#### **6.4 Frontline Bureaucrats' Dilemma**

In the context of energy poverty in Taiwan, the issue of short-staffed professionals with relevant expertise constitutes a challenge. Energy-related projects are often distributed among various bureaus and managed by frontline bureaucrats, the majority of whom are contract employees rather than formal civil servants. As a project manager in a county government noted, “Formal civil servants often feel that ‘the less you do, the fewer mistakes you make’; it is easier to outsource it.” (GE1)

These project-hired specialists coexist with the central government's programs. If the central government no longer has related plans next year, they may be automatically disbanded. This leads to a lack of continuity and expertise in managing energy projects. The transient nature of these positions contributes to a cycle where new hires often repeat past mistakes or fail to build on previous initiatives due to insufficient long-term planning and organizational continuity. An interviewee highlighted this situation, stating, “Experience cannot be accumulated, it is always

starting over.” (GE1) The complexity and protracted nature of addressing energy poverty intensify these organizational challenges, creating a vicious cycle. For most of the frontline bureaucrats, energy poverty is not even close to their core business, but it takes a relatively long time, especially when contacting households and paying visits to them.

Due to the aforementioned complexity of the issue, the time-consuming effort, and the large number of other tasks involved, many frontline bureaucrats said that they would follow commissioned companies to conduct household visits “randomly or when they have time.” This creates opportunities for them to interact face-to-face with the households, and to transform into SLBs. However, some frontline bureaucrats, including formal civil servants and some contract employees, said that they only did this to get a general understanding of the situation; most of the time, the visits were still conducted by the commissioned company. Interestingly, the other group of frontline bureaucrats— many are contract employees— said that these interactive experiences inspired their understanding of the issues, so they would like to further explore the needs and possible solutions of disadvantaged households.

The characteristics of frontline bureaucrats responsible for energy business are therefore polarized: Some rely heavily on commissioned companies to manage the projects, while others show a greater effort to interact with the households and take it upon themselves to expand their expertise. According to Lipsky’s (1980) analytical definition, SLBs are frontline bureaucrats who directly interact with their clients. I found that using this direct interaction as a criterion reveals significant differences between general frontline bureaucrats and SLBs in implementing pro-poor energy initiatives. More specifically, even within economic development bureaus, where direct public interaction is typically not required, some frontline bureaucrats actively choose to become SLBs. This proactive approach sets them apart from their peers who participate in household visits

only out of obligation. Also, this contrasts with Sevä's (2013) observation that environmental frontline bureaucrats should be considered merely frontline rather than street-level bureaucrats due to the lack of face-to-face interaction with their clients. Consequently, the role of SLBs in my research case takes on a more positive meaning, which is slightly different from the literature, emphasizing a commitment to understanding and addressing the needs of vulnerable households.

Those SLBs often exhibited a high degree of concern for energy poverty during interviews and could articulate the details of their plans, the rationale behind them, and their implementation strategies. And beyond implementation, some of them even frequently participate in front-end decision-making and in setting the agenda for the policy cycle. These inclinations were demonstrated during the interview by highlighting ways to enhance policies and showcasing adept management of obstacles through flexible resource utilization from other projects or potential external partners. The plans they propose often become pioneering cases and sources of policy diffusion.

These differences seem to be closely related to their individual backgrounds and the environments in which they operate. I found that those who are more willing to engage directly with households often have backgrounds involving frequent contact or negotiation with stakeholders. Some have experience in social advocacy, providing them with a deeper understanding of issues and stakeholders; others have worked in the private sector, where meeting client needs is a priority; still, some have rotated through various public sector units, giving them a better grasp of available resources and an understanding of actual needs and constraints. Their rich experience in public interaction equips them with a nuanced understanding of the real situations and needs of the communities they serve, enabling them to devise tailored solutions.

On the other hand, in the vertical hierarchy of local governments, they typically gain higher trust from their supervisors, who are more willing to transfer discretionary power to them. This delegation of authority not only empowers the SLBs but also fosters a more collaborative and innovative working environment. It is likely that this trust and willingness to delegate are partly responsible for the emergence of SLBs, as supervisors who are open to cooperation and empowerment create a fertile ground for entrepreneurial behavior among their subordinates.

The empowerment of the proactive SLBs is particularly notable in smaller administrative units within certain non-special municipalities, where there is typically only one sector chief and one project manager responsible for the programs. This streamlined structure allows for more direct interaction and cooperation, fostering a culture of innovation and enhancing flexibility. In these smaller units, the absence of multiple layers of bureaucracy enables quicker decision-making and a more agile response to emerging issues, further supporting the development of SLBs.

However, in my interview experiences, SLBs often conveyed a sense of helplessness at the end, noting that the initial enthusiasm for actively working on this issue was more or less worn away. One of them (GE1) explained that the demotivation stemmed from the burdensome process of dealing with various documents, and the imbalanced workload:

*“It is tied to the shortage of human resources within the system. It is not that there’s a scarcity of bureaucrats per se; rather, there’s a scarcity of bureaucrats actively engaged in tasks. Consequently, those proficient in tasks end up breaking their backs shouldering a heavier workload, and those capable of performing tasks are penalized if they fail to do so.”*

Two interviewees added that given those heavy duties, the salaries they got were fixed and not align to their capabilities. One said: “Companies compete for talents. If you have a major, the company will give you a better salary. But the public sector pays the same, and those who continue

to stay may have a compelling reason (like me).” (GH1) Coincidentally, another interviewee said, “State-owned enterprises offer much better benefits than local governments, let alone the competitive job market.” (GF2)

Mistrust from the auditing units further adds fuel to their burnouts. A vicious relationship appears between audit agencies and administrative agencies. More than one interviewee mentioned that many proposals or plans would be blocked in the audit unit, as a result, the project design depends highly upon their attitudes. As one interviewee mentioned, “The audit unit makes it difficult for administrative units to function potential projects. When planning, they often have to consider whether they will be challenged by the accountant in the future. If it is difficult to explain, they may not do it.” (GH1) Such a system makes frontline bureaucrats not only face the triple dilemma of unclear goals, limited resources, and complex issues, as the pressures that Zacka (2017) indicated, but also face the pressure of doubts from the audit units. Frontline bureaucrats may spend considerable time seeking approvals and clarifications from those agencies, delaying the implementation of urgent measures. This back-and-forth not only hampers the efficiency of programs but also diminishes the morale and initiative of local bureaucrats, who may feel their efforts are undervalued or overly scrutinized, and sow a seed among them to outsource tasks to avoid potential mistakes and challenges. After the initial enthusiasm wanes, they might seek to transition out of the position or tender their resignation, leading to yet another change in leadership for these projects.

In navigating the cross-cutting, interdisciplinary wicked problem of energy poverty, the involvement of proactive bureaucrats in front-end decision-making ensures that programs are responsive and grounded in the lived realities of those they serve. However, the reliance on such individuals highlights a vulnerability as well: the sustainability of initiatives is often contingent

upon a few people's presence and engagement. This creates a fragile ecosystem where the departure or reassignment of an SLB can significantly disrupt program continuity and effectiveness. The challenge is further compounded by systemic issues such as bureaucratic inertia, the burdensome approval processes of audit agencies, and a general culture of risk aversion among formal civil servants, who may prefer to outsource responsibilities to avoid potential pitfalls.

To address these challenges and foster a more resilient and adaptive policy environment, it is crucial to institutionalize the practices of those bureaucrats. This can be achieved through targeted training programs, mentorship, and the establishment of collaborative networks that facilitate the sharing of best practices and knowledge. By embedding these practices across all levels of local government, the system can reduce its over-reliance on individual bureaucrats and enhance overall capacity.

Moreover, effective delegation guarantees the distribution of responsibilities and enables projects to persist regardless of personnel fluctuations. This necessitates frontline bureaucrats to uphold greater accountability. Each project should not only maintain searchable records over time but also possess a thorough understanding of the implementation specifics of commissioned companies. Here I reiterate the need for project managers to possess a certain level of expertise in assessing the efficacy of outsourced tasks, while the foundation for these endeavors remains rooted in clear policy objectives.

Finally, to create a more flexible and autonomous climate, the rigidity and distrust of the audit units should be tackled. This necessitates transparent and well-defined guidelines that strike an equilibrium between accountability and flexibility. By doing so, frontline bureaucrats can be empowered to devise and implement customized solutions tailored to the specific needs of their constituencies without the looming specter of bureaucratic impediments. Such a proactive

approach not only enhances the efficiency and effectiveness of public service delivery but also fosters a culture of innovation and responsiveness within government agencies, thereby ultimately benefiting the broader community they serve.



## 7. Conclusion

This study has examined the complexities and dynamics of pro-poor energy initiatives in Taiwan, focusing on the policy process from the central government to local frontline bureaucrats. Utilizing a combination of policy documents and semi-structured interviews, I mapped out the evolution of energy-vulnerable care measures across various jurisdictions from 2018 to 2023.

The findings highlighted several key issues. Vertically, local bureaucrats exhibit a strong dependence on central government resources and guidance, which often results in the replication of previous policies rather than the development of tailored, context-specific solutions. Horizontally, the diffusion of practices among pioneer cities influences other jurisdictions, but this influence is often limited to initial policy adoption rather than sustained implementation and adaptation.

The bureaucratic analysis further revealed that SLBs play a critical role in the policy process, especially during the implementation phase. Those who opted for conducting in-person visits with households acquired deeper local insights, potentially leading to the development of more effective and adaptive pro-poor energy measures. Nevertheless, although all frontline bureaucrats encounter challenges such as the dearth of expertise, cross-bureau collaboration, and self-financing mechanisms, SLBs contend additionally with workload imbalances and distrust from audit units. These factors collectively curtail the potential for innovation and sustainability within local initiatives. This study introduces a scenario not extensively covered in prior literature: the problems that the frontline bureaucrats grapple with are complex, cross-domain, and cross-professional; they don't always have corresponding expertise. It is found that under this situation, SLBs may experience quicker erosion of enthusiasm and accelerated turnover rates.

To effectively address energy poverty, several recommendations are provided. First, it is crucial to move beyond a narrow focus on energy conservation to include broader aspects, such as energy security, health management, and living condition improvements. By addressing multiple facets of vulnerability simultaneously, policymakers can create more robust support systems for affected populations.

Second, integrating resources. Not only should the health and welfare systems join to address energy poverty, but enhanced collaboration and experience exchanges between different government departments are also essential. On top of that, local governments should explore self-financing options, such as leveraging revenue from municipal projects, to decrease the dependence on central funds, allowing for autonomy and tailoring spending to local needs.

Lastly, strengthening the capacity of frontline bureaucrats. This can be achieved through in-depth training programs, adequate resource and power allocation, and supporting networks. Empowered and well-equipped SLBs are crucial for the sustainability of these initiatives, as they play a key role in executing policies to meet the specific needs of their communities.

This research encounters the following limitations. The format and number of participants of each interview vary, and when frontline bureaucrats or agents from commissioned companies are interviewed in the presence of their supervisors, they may not fully disclose the challenges and biases they have encountered. Furthermore, only current project managers are interviewed, which means that the experiences of their predecessors are absent, resulting in a lack of cross-referencing to corroborate the obstacles addressed in prior projects. Meanwhile, as mentioned earlier, the one-year project period causes the scale of funding and project content to vary each year. During the interviews, many local governments had already submitted their plans for the next phase, which are under review by the central government. As a result, these changes might not be reflected or

recorded in time. In addition, only nine cities and counties were included in the interviews, despite efforts to reach out to all jurisdictions. This may lead to omitted patterns and insights from the non-interviewed cities and counties, as the process of policy formation and implementation difficulties are context-specific.

In conclusion, addressing energy poverty in Taiwan requires a multifaceted strategy that combines robust policy frameworks with effective bureaucratic practices. By recognizing the obstacles of current approaches and embracing innovative, context-specific solutions, policymakers get to develop more responsive and sustainable initiatives. This study provides a foundation for future research and policy development, aiming to enhance the well-being of energy-vulnerable populations and promote sustainable energy practices in Taiwan.

## Reference List



- Axon, S., & Morrissey, J. (2020). Just energy transitions? Social inequities, vulnerabilities and unintended consequences. *Buildings & Cities*, 1(1), 393-411. <https://doi.org/10.5334/bc.14>
- Barrett, S., & Fudge, C. (1981). Examining the policy-action relationship. *Policy and action: Essays on the implementation of public policy*, 3-34.
- Belaïd, F. (2022). Implications of poorly designed climate policy on energy poverty: Global reflections on the current surge in energy prices. *Energy Research and Social Science*, 92, 102790. <https://doi.org/10.1016/j.erss.2022.102790>
- Biswas, S., Echevarria, A., Irshad, N. *et al.* (2022). Ending the energy-poverty nexus: An ethical imperative for just transitions. *Science and Engineering Ethics*, 28(36). <https://doi.org/10.1007/s11948-022-00383-4>
- Boardman, Brenda (1991), *Fuel Poverty. From Cold Homes to Affordable Warmth*, London/ New York: Belhaven Press.
- Bouzarovski, S. (2018). *Energy poverty: (Dis) assembling Europe's infrastructural divide*. Springer Nature.
- Bouzarovski, S., & Tirado Herrero, S. (2017). Geographies of injustice: the socio-spatial determinants of energy poverty in Poland, the Czech Republic and Hungary. *Post-Communist Economies*, 29(1), 27-50. <https://doi.org/10.1080/14631377.2016.1242257>
- Brodkin, E. Z. (2011). Policy work: Street-level organizations under new managerialism. *Journal of Public Administration Research and Theory*, 21(suppl\_2), i253–i277. <https://doi.org/10.1093/jopart/muq093>
- Chang, A., & Brewer, G. A. (2023). Street-Level bureaucracy in public administration: A systematic literature review. *Public Management Review*, 25(11), 2191-2211. <https://doi.org/10.1080/14719037.2022.2065517>
- Fan, M. F. (2024). Reclaiming energy justice in Taiwan? Insights on deliberation democracy from the Thao Tribe's renewable energy initiative. *Energy Research & Social Science*, 111(8), 103485. <https://doi.org/10.1016/j.erss.2024.103485>
- Grigoryev, L. M., Makarov, I. A., Sokolova, A. K., Pavlyushina, V. A., & Stepanov, I. A. (2020). Climate Change and Inequality: How to Solve These Problems Jointly?. *International Organisations Research Journal*, 15(1), 7-30. <https://doi.org/10.17323/1996-7845-2020-01-01>
- Holstead, K., Funder, M., & Upton, C. (2021). Environmental governance on the street: Towards an expanded research agenda on street-level bureaucrats. *Earth System Governance*, 9(5), Article 100108. <https://doi.org/10.1016/j.esg.2021.100108>

- Hupe, P., & Hill, M. (2007). Street-Level bureaucracy and public accountability. *Public Administration*, 85(2), 279-299. <https://doi.org/10.1111/j.1467-9299.2007.00650.x>
- IEA (2024), Strategies for Affordable and Fair Clean Energy Transitions, IEA, Paris <https://www.iea.org/reports/strategies-for-affordable-and-fair-clean-energy-transitions>, Licence: CC BY 4.0. <https://www.iea.org/reports/strategies-for-affordable-and-fair-clean-energy-transitions>
- Lavee, E., & Cohen, N. (2019). How street-level bureaucrats become policy entrepreneurs: The case of urban renewal. *Governance*, 32(3), 475-492. <https://doi.org/10.1111/gove.12387>
- Lipsky, M. 1980. *Street-level Bureaucracy: Dilemmas of the Individual in Public Services*. New York: Russell Sage Foundation. <https://doi.org/10.2307/2392554>
- O'Sullivan, D. (2016). Power, politics and the street-level bureaucrat in Indigenous Australian health. *Journal of Sociology*, 52(4), 646-660. <https://doi.org/10.1177/1440783315575170>
- Pressman, J. L., & Wildavsky, A. B. (1973). How great expectations in Washington are dashed in Oakland. *University of California: Berkeley, LA, USA*. [https://doi.org/10.1007/978-3-030-21325-1\\_11](https://doi.org/10.1007/978-3-030-21325-1_11)
- Rittel, H. W., & Webber, M. M. (1973). Dilemmas in a general theory of planning. *Policy sciences*, 4(2), 155-169. <https://doi.org/10.4324/9781351179522-6>
- Sager, F., Thomann, E., Zollinger, C., van der Heiden, N., & Mavrot, C. (2014). Street-level bureaucrats and new modes of governance: How conflicting roles affect the implementation of the Swiss ordinance on veterinary medicinal products. *Public Management Review*, 16(4), 481-502. <https://doi.org/10.1080/14719037.2013.841979>
- Sevä, M. (2013). A comparative case study of fish stocking between Sweden and Finland: Explaining differences in decision making at the street level. *Marine Policy*, 38, 287-292. <https://doi.org/10.1016/j.marpol.2012.06.004>
- Sevä, M., & Jagers, S. C. (2013). Inspecting environmental management from within: The role of street-level bureaucrats in environmental policy implementation. *Journal of environmental management*, 128, 1060-1070. <https://doi.org/10.1016/j.jenvman.2013.06.038>
- Willand, N., Middha, B., & Walker, G. (2021). Using the capability approach to evaluate energy vulnerability policies and initiatives in Victoria, Australia. *Local Environment*, 26(9), 1109-1127. <https://doi.org/10.1080/13549839.2021.1962830>
- Yang, K., & Holzer, M. (2005). Re-approaching the politics/administration dichotomy and its impact on administrative ethics. *Public Integrity*, 7(2), 110-127. <https://doi.org/10.1080/10999922.2005.11051274>
- Zacka, B. (2017). *When the state meets the street: Public service and moral agency*. Harvard university press.

- 林子倫（2016）。台灣城市氣候治理的困境與挑戰：多層次治理的觀點。載於劉小蘭、葉佳宗（主編），因應氣候變遷從地方做起：台灣推動氣候變遷調適的過程、經驗與知識，121-153。台北：詹氏出版。
- 林威妤（2023）。初探基層官僚之績效行為影響因子：以我國警察人員行政協助作為非例行性績效業務為例（碩士論文）。取自  
<http://tdr.lib.ntu.edu.tw/jspui/handle/123456789/89150>
- 邱毓玫（2007）。基層官僚政策執行裁量行為之研究——以基層員警執行交通違規舉發為例（碩士論文）。取自 <https://hdl.handle.net/11296/93es5w>
- 孫煒（2020）。臺灣地方基層官僚推動參與式預算的治理模式：桃園市案例研究。政治科學論叢，85，139-177。取自 [https://doi.org/10.6166/TJPS.202009\\_\(85\).0004](https://doi.org/10.6166/TJPS.202009_(85).0004)
- 能源局（2024）。能源統計月報 電力消費。取自  
<https://www.esist.org.tw/newest/monthly?tab=電力>
- 黃克先（2021）。台灣遊民社會福利體制的運作及效果：從基層官僚治理取徑切入。台灣社會學，41，51-94。取自  
<https://toaj.stpi.narl.org.tw/index/journal/volume/article/4b1141f983a7873e0183ac2950a600a5>

## Appendices

### Appendix A

#### Translation of Proper Nouns



| Category                | Chinese              | English                                                                           |
|-------------------------|----------------------|-----------------------------------------------------------------------------------|
| Project Name            | 夏月節電期間縣市節能示範競賽       | Summer Energy Saving Campaign                                                     |
| Project Name            | 智慧節電計畫               | Local Government Smart Energy Saving Program                                      |
| Project Name            | 新節電運動                | New Power Conservation Movement                                                   |
| Project Name            | 縣市共推住商節電行動           | Collaborative Municipal Energy Conservation Initiative (Collaborative Initiative) |
| Project Name            | 直轄市縣（市）節電夥伴節能治理與推廣計畫 | Energy Conservation Partner Program (Partner Program)                             |
| Project Name            | 能源弱勢關懷措施             | energy-vulnerable care measures                                                   |
| Title                   | 科長                   | section chief                                                                     |
| Title                   | 股長                   | subdivision chief                                                                 |
| Title                   | 科員                   | section assistant                                                                 |
| Title                   | 承辦人                  | project manager                                                                   |
| Title                   | 專員                   | specialist                                                                        |
| Title                   | 約聘僱人員                | contract employee                                                                 |
| Title                   | 委辦廠商                 | commissioned company                                                              |
| Title                   | 村里長                  | village chief                                                                     |
| Agency                  | 國發會                  | National Development Council                                                      |
| Agency                  | 環境部                  | Ministry of Environment                                                           |
| Agency                  | 衛福部                  | Ministry of Health and Welfare                                                    |
| Agency                  | 經濟部                  | Ministry of Economic Affairs                                                      |
| Agency                  | 能源署                  | Energy Administration                                                             |
| Agency                  | 經濟發展局/處、產業發展局/處      | Economic Development Bureau                                                       |
| Agency                  | 社會局/處                | Social Affairs Bureau                                                             |
| Agency                  | 民政局                  | Civil Affairs Bureau                                                              |
| Agency                  | 環保局                  | Environmental Protection Bureau                                                   |
| Administrative division | 直轄市                  | special municipality                                                              |

|                         |            |                                             |
|-------------------------|------------|---------------------------------------------|
| Administrative division | 村、里        | village                                     |
| Fund Name               | 中央特別統籌分配稅款 | Allocation of Centrally-Funded Tax Revenues |
| Fund Name               | 能源研究發展基金   | Energy Research and Development Fund        |
| Website Name            | 自己的電自己省    | Save My Own Energy                          |



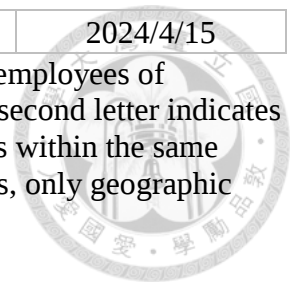
**Appendix B**  
Interview Participants List



| Code | Geographic Region | Position Category | Gender | Interview Date |
|------|-------------------|-------------------|--------|----------------|
| GA1  | Northern          | section assistant | Female | 2023/10/12     |
| GA2  |                   | section assistant | Female |                |
| GA3  |                   | section chief     | Female |                |
| CA1  |                   | manager           | Male   |                |
| CA2  |                   | agent             | Male   |                |
| GB1  | Northern          | contract employee | Female | 2023/10/26     |
| GC1  | Northern          | subdivision chief | Male   | 2023/11/20     |
| GD1  | Southern          | contract employee | Female | 2023/11/21     |
| GD2  |                   | section chief     | Male   |                |
| CD1  |                   | manager           | Male   |                |
| CD2  |                   | agent             | Female |                |
| CD3  |                   | agent             | Male   |                |
| GE1  | Eastern           | contract employee | Female | 2024/1/30      |
| GF1  | Eastern           | contract employee | Female | 2024/2/22      |
| GF2  |                   | section chief     | Male   |                |
| GG1  | Southern          | section assistant | Female | 2024/2/5       |
| GG2  |                   | subdivision chief | Female |                |
| GH1  | Central           | section chief     | Male   | 2024/2/23      |
| GH2  |                   | contract employee | Female |                |
| GI1  | Southern          | section chief     | Male   | 2024/2/16      |
| EJ1  | Northern          | researcher        | Male   | 2023/11/15     |
| EK2  | Northern          | founder           | Female | 2024/1/11      |
| EL1  | Central           | manager           | Male   | 2024/1/18      |
| EL2  |                   | specialist        | Female |                |
| EL3  |                   | specialist        | Female |                |
| EL4  | Southern          | manager           | Male   |                |
| EL5  | Central           | manager           | Female |                |
| EL6  |                   | specialist        | Male   |                |
| EL7  |                   | specialist        | Male   |                |
| EL8  |                   | specialist        | Female |                |
| EM1  | Northern          | manager           | Male   | 2023/11/30     |
| EM2  |                   | manager           | Female |                |
| EM3  |                   | researcher        | Female |                |
| EM4  |                   | researcher        | Male   |                |

|     |          |            |        |           |
|-----|----------|------------|--------|-----------|
| EM5 | Northern | researcher | Female | 2024/4/15 |
|-----|----------|------------|--------|-----------|

Note: In the code, “G” represents public sector employees, “C” represents employees of commissioned companies, and “E” denotes non-public sector experts. The second letter indicates the organization/city/county, with the same letter signifying the participants within the same organization/city/county. Additionally, to obscure specific counties or cities, only geographic regions are used to indicate their locations.



## Appendix C

### Interview Questions



#### 一、關於受訪者職務

1. 請問您的職務範圍、負責的項目？（以及負責能源弱勢關懷的團隊規模）
2. 在能源弱勢關懷的推動中，您會需要和哪些科、局處、或其他單位合作？

#### 二、縣市共推住商節電政策規劃

1. 請問能源弱勢關懷在節電政策中被納入的契機為何？
2. 又，什麼會是後續是否繼續推動的決定因素？
3. 請問縣/市政府如何決定誰是受補助、協助的能源弱勢對象？
4. 又，如何決定受助對象的優先順序？

#### 三、縣市共推住商節電政策執行

1. 根據您的經驗，從聯繫、申請、評估到施作的過程，可能遭遇哪些困難？
2. 就您的觀察，這些受協助能源弱勢有哪些共同特徵？
3. 在您的經驗中，拒絕家電汰換的家戶可能是出於哪些考量？若拒絕更換，下期仍會在協助對象名冊中嗎？

#### 四、成效評估及後續推動

1. 縣/市政府如何評估共推計畫的成效？
2. 對於這些受協助家戶，是否有後續追蹤或滿意度調查？
3. 請問除了縣市共推住商節電政策，縣/市政府還有哪些措施是能夠為能源弱勢提供幫助的？
4. 您是否知道當地有哪些社福機構、企業或其他組織也投入能源弱勢關懷，或其弱勢關懷措施涵蓋能源使用？