



Original research article

Green practices are gendered: Exploring gender inequality caused by sustainable consumption policies in Taiwan



Sumei Wang

National Chengchi University, No. 64, Sec. 2, Zhinan Road, 11651 Taipei, Taiwan

ARTICLE INFO

Article history:

Received 24 July 2015

Received in revised form 14 March 2016

Accepted 14 March 2016

Available online 24 March 2016

Keywords:

Sustainable consumption

Gender inequality

Taiwan

Global warming

ABSTRACT

In the context of climate change, governments and international organizations often promote a “sustainable lifestyle.” However, this approach has been criticized for underestimating the complexity of everyday life and therefore being inapplicable to households and consumers. In addition, procedures for promoting sustainable consumption seldom incorporate domestic workers’ opinions and often increase women’s housework loads. This article employs a practice-based approach to examine the “Energy-Saving, Carbon Reduction” movement, a series of sustainable consumption policies that have been advocated by the Taiwanese government since 2008. The goal of the movement is to encourage an eco-friendly lifestyle. On the basis of empirical data collected through ethnographic interviews, this article argues that existing policies unexpectedly increase women’s burdens and exacerbate gender inequality.

© 2016 Elsevier Ltd. All rights reserved.

1. Introduction

In the context of climate change, governments and international organizations often promote a “sustainable lifestyle” in order to mitigate the impact of global warming. In their report *Planning for Change*, the United Nations Environment Program [49] stated that “major environmental concerns such as climate change can be traced to the demands put on nature by contemporary consumer society” (p. 14) and urged consumers to “make governments and businesses stand up and take notice through their shopping behavior” (p. 29). The Organization for Economic Co-operation and Development [25] also reported that “changes in lifestyles have led to more individualized buying patterns” (p. 12); therefore, a shift in the structure of consumption toward more sustainability is required.

Both the UN and OECD issued guidelines on “good policies” to encourage their member countries to promote sustainable consumption, such as setting up energy efficient standards and mandatory labels, providing subsidies to improve energy efficiency, and developing communication campaigns to advocate eco-friendly individual choices [26]. Following this trend, Taiwan’s President Ma Ying-Jeou, in his 2008 inaugural address, vowed that his government would combat the problems of global warming. Soon after he came to office, the government announced the “Energy Saving, Carbon Reduction” policy (ESCR), urging Taiwanese

citizens to act immediately to change habits and achieve sustainability. Since then, the ESCR has become a major guideline for the establishment of many regulations in Taiwan.

However, the notion that policy interventions can encourage individual lifestyle changes solely through altering people’s attitudes and choices has been widely criticized. Owens [30] argued that policy makers often assume that people would be willing to change their behaviors should they have more information about, and a clearer understanding of, environmental risks. These policies are situated in theories that regard consumption as a matter of individual choice, but ignore how consumers’ choices are affected by structural factors in society [37], such as culture, class, and gender. Moreover, policies that respond to climate change have been overtly focused on scientific and economic solutions rather than on the human and gender dimensions [44]. Scholars have argued that the dimension of gender has been invisible or made silent in climate-change related policies [51,14,23]. Hemmati and Röhr [14] indicated that gender aspects are rarely addressed in climate change policy at both the national and international levels. MacGregor [22] further stated that any attempt to tackle climate change that excludes a gender analysis is insufficient, unjust, and therefore unsustainable. Both politicians and academics must pay more attention to gender in debates on climate change.

Considering social justice and the gendered dimensions of climate change policies, this study uses a practice-based theoretical approach to investigate how people’s everyday actions are affected by sustainable consumption policies from an Eastern-Asian context. Using the ESCR in Taiwan as a case study, the following

E-mail address: sw@nccu.edu.tw

questions are explored: First, does the policy underestimate the complexity of everyday practices, and if so how? Second, does the policy bring any unexpected consequences in terms of gender inequality? I begin the remainder of this paper with a discussion of sustainable policies and social justice to elaborate how daily practices are influenced by various resources, constraints, and material conditions. Subsequently, an investigation of the ESCR's policies, based on empirical evidence, is introduced. I argue that the policies, without considering differences in social roles, may have unexpectedly caused gender inequality. This study also advocates practicing procedural justice in the form of women's participation in policy-making processes, in order to avoid the wider gender inequalities caused by environmental policies.

2. Green practices and gender justice

As briefly stated previously, international organizations such as the UN and OECD encourage their members to promote sustainable consumption with measures that usually involve scientific persuasion and the provision of economic incentives. These conventional measures are based on expectations that routines would be changed once people are fully educated and informed. However, many scholars (e.g., Refs. [30,24,37,18]) have argued that the types of policies commonly underestimate the complexities of consumption, and that individuals could not immediately change their lifestyles even if the benefits of mitigating global warming were fully recognized.

In her analysis of sustainable consumption policies, Shove [43] indicated that governments often conceptualize consumers as, first, decision-makers who can exercise environmental choices, and second, citizens who have influences on the range of environmental options offered to them. Since research has shown that individual choices are constrained by social, institutional, and cultural factors, Shove [43] argued that, rather than seeing consumers as individual decision-makers, they should be understood as "practitioners." Meanwhile, having explored the driving forces behind the growth of consumption from economic, socio-psychological, historical, and social-technological explanations, Ropke [35] acknowledged that "consumption is woven into everyday life" (p. 403), and that "much of our consumption is dependent on systems that appear as conditions of everyday life" (p. 416). She further suggested that a practice theory approach that bridges the structure-actor dualism can facilitate an analysis of the interwoven relationships among systems and consumption activities [36]. Redefining consumers as practitioners draws attention to doing and using, rather than to only buying and putting on display. This redefinition can facilitate understanding people's routines and expectations in which systems of social and cultural order are revealed.

Both Shove [43] and Ropke [36] situated their arguments within theories of practice. Since the 1970s, practice theories have attracted growing interest in social theory. Reckwitz [33] summarized a useful definition for the concept of "practice", drawing on the work of several authors including Pierre Bourdieu, Anthony Giddens, Charles Taylor, and Theodore Shatzki: "a practice is a routinized type of behavior which consists of several elements, interconnected to one another, including forms of bodily and mental activities, things and their use, know-how, states of emotion and motivational knowledge" (p. 249). In other words, to understand consumers as practitioners is to investigate the consumers' routinized activities and how their state of "normal" has been attained. This suggests that practices should be considered seriously and that the complexities of how a way of life can become a sustained "style" should not be underestimated.

In viewing consumers as practitioners, the linkages between practices and structures are acknowledged. Pierre Bourdieu [1] was

one of the first sociologists to explicitly present a theory of practice. He stated that practices are related to not only the actor's body and mind but also to the structure in which she or he is normally located. The "habitus" of a person that is, her or his system of dispositions—is influenced by her or his "habitat" and positions in society, including group membership, class, gender, and occupation. The relationship between practice and habitus is like "history turned into nature" [1,p. 78], with lifestyles being the systematic products of habitus. Bourdieu argued that habitus is defined by two capacities: "the capacity to produce classifiable practices and works, and the capacity to differentiate and appreciate these practices and products (taste), that the represented social world, i.e. the space of lifestyles, is constituted" [2,p. 170]. Inspired by Bourdieu, Southerton et al. [45] stressed that research on sustainable consumption should focus on social constraints, normative regulation, and the routine aspects of ordinary or mundane forms of consumption. To this end, they suggest that an analysis of social practices allows these elements of consumption to be more thoroughly explored.

Recent research has revealed that everyday social practices, and the use of resources such as energy, transportation, and food, are highly gender differentiated. For example, Rätty and Carlsson-Kanyama [32] studied single households in Germany, Sweden, Norway, and Greece and concluded that women travel shorter distances, use more fuel-efficient vehicles, and eat less meat than men do. However, women tend to consume more energy than men do in categories including food, hygiene, household effects, and health. Lee et al. [20] used survey data to examine gender differences in energy consumption in Taiwan and revealed that households with more female than male members usually use less energy. The researchers compared energy usage between single male and single female households and determined that the latter tend to use less energy for heating, air conditioning, lighting, refrigeration, washing dishes, laundry, entertainment, and communication, but consume more energy for heating water, cooking, and drying clothes.

The differences in energy consumption between men and women are related to women's habitus and their social and personal identities as caregivers of families. The dominant notion of appropriate femininity is motherhood. This reveals the social, historical, and geographical construction of gender identities in the context of hegemonic heterosexuality, which affects policy making and individuals' daily lives. For example, many child focused policies are rooted in the understanding of 'good' mothering as the key to a child's successful development [50], and women have to adopt certain everyday practices in respond to these social expectations. Laurie et al. [21] urged the need to think about how gender discourses differ between countries and places, work and domestic spaces, and across cultures. Also, the ideology of good mothering may evolve with changing social, political, economic and global conditions. In terms of globally advocated sustainable consumption campaigns, research has shown that many of the policy measures increase women's burdens and add new standards for good mothering.

For example, German feminist scholars, including Schultz [39], have argued that policies promoting fewer individual vehicles, healthy eating, and reducing waste have actually increased women's workload and feminized responsibility for the environment (cited in Ref. [51]). Unlike a typical male breadwinner who goes to work in the morning and returns in the evening, a caregiver's mobility patterns require traveling back and forth among certain sites, such as schools, supermarkets, sports fields, friends' homes, and workplaces. However, the design of public transportation usually does not coincide with the needs of the latter. In the food sector, it is often overlooked that the advocacy of a sustainable food culture relies on women's unpaid labour because usually

the women are responsible for food purchases and preparation in families.

As mentioned by Terry [47], the U.K. media often blame mothers who drive their children to school for causing traffic congestion and carbon emissions, but ignore the fact that, in travel for all purposes, women use the car less and drive fewer miles than men do [13]. Similarly, individual carbon allowances are an example of a policy that may harm women who provide unpaid services for a family but have no money to pay off their “carbon footprints.” Schultz [39] investigated waste policies in Germany from the mid-1980s to the mid-1990s. Because unpaid labour at home, such as collecting and recycling waste, was performed mostly by women, she argued that the construction of a “waste ethic” among women actually “burden[s] women with a guilty conscience if they do not correctly sort the rubbish and bring it to proper bins” [39, p. 59]. More time, energy, attention, and planning are required to produce meals and reduce food waste, because convenient food and preserved goods are discouraged to avoid wasteful packaging. Schultz further denounced this type of policy as the “privatization of social and environmental costs” [39, p. 60–61]. However, women interviewed in her research did not act contrary to the waste policies because they felt responsible for their families’ health.

The cases provided by Schultz illustrate how women’s lives and attitudes can be altered by social-constructions of ‘good mothering’ by environmental policies. Until now, these sorts of gendered dimension in discussions of sustainability are relatively under-represented [34,44]. If gender is mentioned at all, “it is usually with reference to the particular vulnerability of poor women in the South” [47, p. 6]. Yet women in the Global North, regions that are generally economically better off, are also influenced by climate-related policies, but are seldom considered. As Laurie et al. [21] argued, the question of ‘where’ the women are positioned matters. Women in different places encounter different constraints and resources, and their lives are therefore affected in different ways. Drawing on these studies that show that climate change and sustainability are never gender neutral [5], I argue that women’s everyday practices and their social implications must be examined to investigate the uneven impact of social constraints and normative demands. To explore this crucial but rarely discussed gender perspective, I apply a practice-based approach to investigate how everyday practices are influenced by sustainable consumption policies such as the ESCR in Taiwan.

3. “Energy Saving and Carbon Reduction”

Although Taiwan is not a member of the UN, the country has committed itself to maintaining pace with the global standard. The Taiwanese government has set up several procedures aimed to reduce its carbon emissions since the announcement of Kyoto Protocol in 1997. Ma Ying-jeou was the first president to consider mitigation of global warming as a primary goal of his administration [29]. He promulgated the “Ten Declarations of the ESCR” and urged all government officials and citizens to follow the convention. The news release outlined that “the President... encourages citizens with the saying ‘one who wants to go high and far has to begin at the bottom.’ We can achieve the goal only if we start paying attention to the everyday details and completely transform the habits of life” [28].

Soon after the ESCR was announced, the Executive Yuan [11] proposed the “Ten Regret-less Measures of the ESCR” (Table 1) and invited “all citizens to respond to the action of this new life.” Consumers and industries were encouraged to “make the plan possible by doing the little things in... daily life voluntarily” [11, p. 2], and to switch to products that facilitate energy saving and carbon reduction.



Fig. 1. Locations of research sites.

The measures in the ESCR are similar to those presented in OECD reports. For example, incentive discounts have been provided to residences and schools for reducing electricity consumption. Loans, tax reductions, and funding have been offered to firms for using energy-efficient equipment. Energy efficiency standards have been established and product certifications provided by the Bureau of Energy to encourage purchases. Apart from the “Ten Regretless Measures,” the Environmental Protection Administration (EPA) developed the booklet *Tips for Low-Carbon Life*, which suggests way to be environmentally friendly in 41 consumptive activities in normal home life, including the selection of food, cooking, recycling, shopping, saving energy, and using appliances. The booklet suggests that “mass production is the result of our over-consumption... a little change in life can be a giant change for Earth, and we can do it!” [10]. It details what the government believes a sustainable life entails, and how they expect all citizens to initiate a complete lifestyle change.

4. Methodology

As argued by practice theorists, routines are sometimes adopted without deliberate awareness and therefore cannot be explained through oral expressions. Because energy is consumed through a variety of facilities, such as electronics and automobiles, that fulfill different purposes in daily life, this study employed ethnographic interviews to investigate how green practices are interwoven in daily activities. Specifically, in addition to conducting face-to-face interviews, I visited the home environment in which the interviewees lived everyday, in order to learn about family dynamics, spatial arrangements, electronic appliances, and other energy-consuming facilities. The daily activities listed in the “Ten Regretless Measures” of the ESCR served as the basis of interview questions and observations. The interviews were conducted during hot summer days in 2009, to observe the interviewees’ daily use of electrical appliances and cooling systems. Details such as how they chose transportation means, used appliances, prepared daily food, and dealt with home waste and recycling were investigated. Finally, interviewees were asked whether they had heard about global warming and how much they knew about this topic.

Qishan and Hsinchu (Fig. 1) were chosen to be the research sites, in order to reveal possible urban-rural divides in communi-

Table 1
Ten regret-less measures of Energy Saving and Carbon Reduction.

- Temperature and leak control for air conditioning: less air conditioning, more open windows; no suit or tie unless on specific occasions; temperature set at 26–28 °C for air conditioning without any leak of cool air
- Lights off and unplugs behind you: turn the lights off and unplug all electronics when not in use; review lighting demands, improve illumination efficiency and remove unnecessary light bulbs
- Saving both energy and money: replacing incandescent bulbs with energy efficient lighting; shower instead of bath to save power, water and money
- Looking at labels when shopping: choose products with energy saving, water saving labels and greater energy-efficiency for energy saving, carbon reduction and environmental protection
- Wise choice of transportation for carbon reduction: choose gasoline/LNG powered cars, hybrid cars or electric vehicles and tools; no idling
- No driving once every week: more public transportation; carpool with friends instead of driving alone; no driving at least one day every week
- Biking and walking for better health: more stairs and less elevators; bike or walk to office as much as you can as part of daily exercise
- More vegetables and less meat: eat local food; vegetarian one day every week or one meal every day; when eating at a restaurant or café, order only what you can eat for less carbon emissions
- Prepare your own chopsticks and shopping bags: when going out, take a cup, a pair of reusable chopsticks, a handkerchief and a shopping bag with you; buy less bottled water and fewer one-use-only products
- Cherish resources for the planet: use paper on both sides; choose recycled paper, water saving faucets and toilets; avoid over-packaged products; and recycle

Source: Environmental Production Administration, Executive Yuan, Taiwan [9].

ties, lifestyles, and mobility patterns in Taiwan. Because a science park is located in Hsinchu, high-tech companies offer employment opportunities in large numbers and attract people to move there. At the time of the interviews, Hsinchu had approximately 410,000 registered residents and the density of the population was 3,951.77 people per km² [15]. The actual number of residents and density were likely greater than those in the official records. In contrast to Hsinchu, Qishan, located in southern Taiwan, is a small town that has experienced net out-migration for the past two decades. Up to the end of 2009, the household registration records indicated a population of nearly 40,000 with a density of 430.39 per km² [19].

The interviewees were recruited using snowball sampling. Table 2 provides the details of the interviewees' background information. As the field study unfolded in Qishan, a local contact helped identify Family B. Family B identified Families C and D. Through Family D, Families A and E were contacted. Similarly, in Hsinchu, Families F and H were first identified, and through acquaintance with these families, the researcher contacted other families. In total, 19 informants were interviewed, with 9 families in Qishan and 10 in Hsinchu. The home visits for observation and interview each took 2–3 h. Any family members who were at home partook in the interviews. The informants' ages fell between 11 and 90 years, with educational backgrounds varying from the elementary school to the doctoral levels. Their occupations consisted of retirees, housewives, a research assistant, an engineer, two kindergarten teachers, a graphic designer, a university employee, a professor, two service workers, a hair stylist, and a cold-drink parlour owner.

5. Analysis

According to Bourdieu [3], individuals do not have complete freedom in their choices of lifestyle. Rather, the lifestyle is constrained by the forms and amount of capital that the individual owns. Capital may be fluid and changeable, because it is influenced by social positions, such as class, gender, occupation, and age. In the context of Taiwan, how women respond to the highly moralized campaigns of sustainable consumption relates to their early experiences, occupations, living environments, social roles, and so on. In the following, I describe how the promoted green practices may have gender-specific consequences.

5.1. Air conditioning

While saving energy had been strongly advised, Schultz and Stieß [38] suggested that how much energy is consumed in a household depends, in part, on how long people are at home. Those who are retired and those between jobs tend to be at home longer than those who go out to work, and thus may be likely to use more

energy. In addition, females tend to be the primary power consumers in the family, because they usually do the laundry and cooking. Cases provided by Summerton [46] revealed that families in colder countries with elderly adults or young children who spent much of their days at home were often affected by the cost of heating in winter, resulting in a decreased quality of life.

In a subtropical country such as Taiwan, the same energy divide is increasing considerably in the case of using air conditioning in the summer. Air conditioning has been viewed as a symbol of modernity in Asia [55]. As investigated by Wilhite [53,54], the rapid rise in the installation of air conditioners in residences was also found in Japan since the 1960s, and in Kerala, South India from the 1990s. In both societies, traditional buildings adopted local materials and aimed to maximize natural ventilation methods in order to stay cool. But with the westernization of practices and regulations, building contractors gradually took over house constructions. Modern homes saved space, but resulted in poor ventilation. Cement plaster or burnt bricks were favored in the capitalist building principles. This evolution therefore made air conditioners indispensable for domestic life.

Taiwan has a similar pathway of development in the normalization of air conditioners occurring alongside changing styles of housings. A national survey published by the Directorate General of Budget, Accounting and Statistics [7] showed that the percentages of households that owned air conditioning appliances surged from 3.42% in 1975 to 89.96% in 2013. I deliberately conducted the interviews in the heat of summer to observe how my participants used air conditioning, the most energy-consuming technology in Taiwanese households. The families I visited commonly had 4–6 air conditioning units in their homes. Most of their houses had flat concrete roofs and were situated amongst a row of buildings. Similar to Wilhite's descriptions of cases of Kerala, the heat gained from the roofs made the upper stories virtually uninhabitable without air conditioning in summer. No matter how warm the temperature becomes outside or how severe the air pollution from traffic is, air conditioning separates the outside from the inside of a house and keeps the comfort of the confined space under control.

Nick was a graphic designer working from home and his wife Eva worked in a kindergarten nearby. As he introduced his three-story house to me, he carefully turned off everything behind him when we left one room for another. Living in a rural town like Qishan, Nick and Eva were fuel-free in their daily commutes and often received vegetables and fruits grown by neighbours as gifts. However, they claimed that such an eco-friendly lifestyle was not for the sake of the environment but simply for saving money. Working at home made Nick realize how much they had to pay for the power. This middle-class family was willing to live a frugal life, with the only exception being for their 6-year-old daughter's comfort. Eva said

Table 2
Background of interviewees.

Family	Names	Gender	Age	Edu.	Occupation	Location	Relation
A	Ms. Young	F	50–59	Junior High	Owner of a beauty parlour	Qishan	Married, 3 children
B	Nick	M	30–39	Master	SOHO, interior designer	Qishan	Husband
B	Eva	F	30–39	Univ.	Kindergarten teacher	Qishan	Wife
B	Mr. Chang	M	90–95	Senior high	Retired	Qishan	Husband's grandfather
C	Wayne	M	30–39	College	Delivery specialist	Qishan	Husband
C	Zoe	F	30–39	College	Administration worker	Qishan	Wife
D	Mr. Zheng	M	60–69	Univ.	Retired bank manager	Qishan	Husband
D	Mrs. Zheng	F	50–59	Primary school	Housewife/work part-time	Qishan	Wife
E	Pearl	F	40–49	College	Cold drink vendor	Qishan	Married, 3 children
F	Mrs. Li	F	70–79	Illiteracy	Housewife	Hsinchu	Live with daughter's family
G	Mrs. Liao	F	60–69	Primary school	Housewife	Hsinchu	Wife
G	Mr. Liao	M	70–79	Senior high	Retired	Hsinchu	Husband
H	Mr. Chen	M	40–49	PhD	Univ. teacher	Hsinchu	Husband
H	Mrs. Chen	F	40–49	Univ.	Administration worker	Hsinchu	Wife
H	Ken	M	11	Primary school	School student	Hsinchu	Son
I	Peter	M	40–49	Univ.	Engineer	Hsinchu	Husband
I	Jane	F	20–29	College	Kindergarten teacher	Hsinchu	Wife
I	Mrs. Huang	F	60–65	Junior high	sweet drinks retails/housewife	Hsinchu	Husband's mother
J	Sharon	F	25	Master	Research assistant	Hsinchu	Single

Note: Names were changed to protect the interviewees' privacy.

to me that air conditioning may be energy consuming but is worth it if it could provide her daughter with sound sleep:

I turn [the air conditioning] on for...the little one as she becomes very uncomfortable in warm weather. We have been there before. The temperature we feel alright with may be too high for her to sleep with. Sometimes when that happens, she gets so irritated. I think, fine, just turn the air on to give her a good night's sleep. (Eva)

I interviewed Mrs. Liao, who was 70 years old, on a hot summer afternoon in Hsinchu, with an outdoor temperature of 36 °C. The ground floor was approximately 60 m² and an air conditioner showed that it was 29 °C indoors. An electric fan was running constantly to keep the air circulating. She gestured for me to sit in a leather sofa while she sat down on a bamboo stool, waving a fan in her hand. "It's very hard for me [without air conditioning]!" she said. I then asked her if 29 °C was cool enough for her. "No" she answered firmly, and then explained how hot it became when she started cooking and that it became even hotter when her grandchildren came back from school. She added that the air conditioning was virtually on all day long in summer as long as someone was home, and the power bills were very expensive. Mrs. Liao then used a charcoal-burning stove to make soup and Chinese medicines, because she "can't even bear to use an [electric] rice cooker." She blamed her aversion to heat on her old age: "I am old and fat. When it gets warm, my heart gets crazy and my temper gets irritable."

Among the interviewees, the families with young children or elderly members, or those who had to stay home for an extended period of time, were the most concerned about their electricity bills. Peter was an interviewee in Hsinchu. His father was paralyzed and bedridden as a result of severe strokes; consequently, the air conditioning had to be on all day. Working full-time from home, Nick had 12 computers running constantly and needed to keep them cool. Several interviewees mentioned that children had the first priority to enjoy air conditioning, while the adults let the machine run for only 1 or 2 h, only to slightly lower the room temperature. For Mrs. Li, who was economically dependent on her daughter, the air conditioning unit was unplugged when I arrived. While there, the fan remained spinning at the lowest speed and was turned off as soon as I said goodbye; she had used it only for the sake of her visitor and not for her self-indulgence.

It is worth reflecting on the ESCR in light of these examples. Since the launch of the ESCR in 2008, families that use less energy than they did in the same month a year prior have been offered an energy price cut. However, the policy does not fully recognize and consider the different situations of different families. The cases I have provided show that, for some, the use of energy at home is not by choice but by necessity. Differences in power pricing can aggravate class inequalities and unfairly penalize the socially disadvantaged, including women who still traditionally spend more time at home. In Taiwan, and possibly in many other countries as well, the act of women making sacrifices for their families is often considered, or self-identified, as characteristic of their "nature," or at least a "good virtue." For households who want to reduce electricity bills, women members, such as Mrs. Li, are likely to forgo the comfort of cool air so that others can enjoy more of it.

5.2. Transportation

Governments and international organizations have widely advocated the use of public transportation instead of driving, as this saves energy and significantly benefits the environment. The ESCR therefore advised that citizens should take public transportation whenever possible and, to also improve their health, employ more cycling and walking in everyday life. However, such suggestions overlook the fact that urban transportation systems are often not designed to fit women's requirements. Various research has presented a substantial difference in mobility patterns between men and women. Specifically, de Madariaga [6] reported that caregivers, who must perform both care- and home-related tasks and are generally women, require different patterns of mobility for employment-related work. A large proportion of women presently have a double workload in both the public and private spheres, and therefore require more control of transportation means to fulfill their multiple responsibilities.

Living in Qishan, the interviewed couple Wayne and Zoe drove to nearby cities to work every weekday. To reach her office, Zoe "has to drive to Fongshan, park the car, and switch to a scooter to go across downtown and bypass the congestion. It takes 2.5 h for a round-trip." This was an inevitable compromise due to the lack of decent jobs in rural areas of Taiwan. In Qishan, Zoe said that she could not have a job other than being a waitress or sales clerk, which would involve long working hours and no regular days

off at the weekend. The couple lived with Wayne's sister's family and Wayne's mother. As a family of eight in a three-story house in Qishan, they have four cars. With little public transportation means, commuting by driving inevitably became a part of their lifestyle.

In Hsinchu, although the city provides a sufficient diversity of job opportunities, taking a scooter or driving a car is far more common than taking buses. As mentioned by Sharon, a 25-year-old research assistant living in Hsinchu, buses never arrive on schedule, which causes great uncertainty and wastes time.

[Taking a bus] is much too unpredictable. What if it is delayed? I have to get up earlier, which I am reluctant to do. You have to time it perfectly. Right now I wake up at 8:15 and no later than 8:25. I brush my teeth, get dressed, get out of the door at 8:40 or 8:45, and hop on my scooter and go to the university. The timing is perfect. I may have to be at the bus stop at 7:45 just to catch one. (Sharon)

In Taiwan, a motorcycle or scooter provides self-controlled mobility at a relatively affordable price. Many women interviewed used scooters for transportation every day. A mobile vehicle, such as a scooter or car, releases people from the confinement of waiting for public transportation and provides increased control of their life. Sheller and Urry [41] revealed that "automobility permits multiple socialities, of family life, community, leisure, the pleasures of movement, and so on, which are interwoven through complex jugglings of time and space that car journeys both allow but also necessitate." As shown in the interviewees' cases, cars enable greater freedom of movement and a more flexible schedule. Additionally, cars provide air conditioning and heating, which make traveling more comfortable. For example, Mr. Chen, a university professor, had to commute between Taichung, a city in central Taiwan, and Hsinchu. Despite the flexible schedule provided to him by summer vacation, he still "could not" take a bus ride home, as his wife explained:

It takes forever to wait for a bus in Hsinchu. On top of that, it's not like the bus stop is right at your door step. He has to switch lines to get to his school. It's not as convenient as in Taipei where there is Metro. . . Just the thought of carrying lots of bags from a shopping trip and waiting at a bus stop for the next bus is enough to make me sweat a lot. (Mrs. Chen)

Not every bus stop is air conditioned. To wait for a bus in the heat means enduring the blazing sun and hot winds in addition to the anxiety and uncertainty concerning bus timing. However, the discomfort of waiting for a bus under extreme heat was only one reason why Mrs. Chen would not take a bus to work. She herself, as an administration worker, a mother, and a wife, explained how her multiple roles affected her tight schedule and limited her choice of transportation means. When asked whether she would do less driving and more biking as suggested by the ESCR, she said:

I wish I had the time, but I already have my hands full with these two [children]. I have to be on time to get these kids to school in the morning, on time to my office, on time to pick them up from school, and on time to get them in bed. I have to be on time virtually for everything every day, so, no, it's not going to happen. (Mrs. Chen)

Mrs. Chen's daily routine for a typical school day began at 6 a.m. She fixed breakfast for her children, sent them to school before 8 a.m., and arrived at the office by 8:30 a.m. After work, she had to pick up her kids from school, and arrived at home at approximately 6:30 p.m. She usually started cooking dinner by 7:30 p.m., if not later, and had to rely heavily on takeout food as she barely had time to cook. After dinner was finished, usually at approximately 8:30 p.m., "I have to keep my eyes on the kids for practicing piano and getting their homework done and, oh, let's not forget the parent-teacher

contact books." Because her daughter and son went to bed at 9 p.m. and 10 p.m., respectively, she had less than an hour for house chores before going to bed. Her husband, Mr. Chen, described his schedule as well, but did not mention taking care of his children and housework. Mrs. Chen's life represents the typical life of working mothers in Taiwan, who must alternate among their family, job, and children's school and maintain pace with the schedules of different organizations by living a "juggling lifestyle" [48]. With enormous time pressure and poor transportation for short-distance travel, they have no choice but to rely on cars.

Spitzner (1999, cited in Ref. [51]) showed that the mobility patterns of caregivers are often characterized by short, back-and-forth trips, as Mrs. Chen described. These patterns of transportation often pertain to women for they take primary responsibility for child-care. Because public transportation schedules do not coincide with women's needs of mobility, cars become the most convenient option. Cars also provide private spaces of safety and security, without the threats of male violence and sexual harassment that can exist in public spaces [31]. Because the transportation sector is dominated by traditionally masculine areas of expertise and interest such as engineering, planning, and technological development, women's requirements are usually not considered in city planning [31,51,23]. This is why de Madariaga [6] urged the full integration of gender dimensions in transportation research, as well as full acknowledgment of the mobility needs of caregivers.

5.3. Housework

Policies such as the ESCR usually involve direct instructions on how to perform housework properly to promote sustainability. In a similar context, Vinz [51] criticized "Sustainable Germany" policies that advocated models for greener living and included recommendations directed at households. Because women take major responsibility in completing domestic chores, these recommendations increased the burden of housework. As a result of gendered divisions of labour, interventions such as defining proper recycling methods entail feminizing responsibility for the environment. The 'eco-friendly' or 'green' practices suggested by the Sustainable Germany policies required more recycling, more meals being prepared at home, less energy-consumption when cooking and doing laundry, and so on. This meant that frozen food, ready meals, disposable diapers, and cars were discouraged, and women are therefore subjected to "eco-stress" in their already time-squeezed lifestyle.

In Taiwan, because of the ESCR, eco-stress has become a common experience shared by many women. According to the Directorate General of Budget, Accounting and Statistics [8], among heterosexual couples, females spent 3 h and 31 min doing housework a day on average, which is far longer than the time spent by males, who spent only 1 h and 42 min. Clearly, women take on the majority of housework. Among my interviewees, some of the elder women had to complete the chores because their daughters or daughter-in-laws worked full-time. For example, Mrs. Li in Hsinchu mentioned that she strived to save energy and resources as much as she could: "I mop the floor instead of washing it", and "opened the water faucet just to allow a slight trickle." She also fed food scraps to cats or made them into compost, kept water used to rinse rice and re-used it to wash vegetables or water plants.

One Chinese tradition is to live with sons, rather than daughters, when parents become old. That was why Mrs. Li, who lived with her only daughter, required justifying her role in the family. She considered her strictly frugal life as a means to take care of her daughter, son-in-law, and grandchildren, as well as to prove that she was useful and could contribute to the family economy. "My husband has been gone for years. I am an old woman who has no son and no place to live. I am not here by choice. So I have to save and do

as much as I can. Basically, I help them out so they have more time to rest.” Mrs. Li established her identity as a caregiver in her daughter’s home. Her practices matched what the ESCR required although she had never heard of global warming nor climate change.

The case of Peter and his wife Jane also reveals that the knowledge of global warming does not necessarily lead to green practices. At the time of the interview, Peter and Jane were newlyweds who lived with Peter’s parents. When they were interviewed, Peter said he often watched the Discovery Channel and learned a lot about green practices from various documentaries. However, when asked about details such as how to recycle, and on which days of the week the garbage trucks would accept it, he started to falter and muttered, “That is not my job.” I then asked, “Is that your mother and wife’s job?” He answered quickly: “Yes, yes, that’s it.” Although Jane did not have much knowledge about global warming, she was among the few who mentioned the ESCR on her own during interviews and explained, using Tetra Pak material as an example: “[my husband] doesn’t do anything. I am the one who picks up the packs he leaves behind and crushes them.” During the visit to their house, I asked them to show me around and demonstrate how they use domestic appliances. Jane introduced her spin dryer to me. Every day she hand-washed her clothes and collected the water drained from the machine for toilet flushing. The showering water was also reused for bathroom cleaning. Jane explained why she was willing to expend effort to save water:

The first reason is to save on the utility bills. I just save as much as I can. The second is of course energy saving and carbon reduction. One day everything on Earth will run out, so I just do whatever I can in my life. I noticed that my husband’s home only had a washing machine and no spinning dryer, so I brought one with me when we got married.

According to this example, the ESCR had become a new requirement for being a good woman, and, therefore, Jane was willing to adhere to it at all costs. As Cowan [40] reported, the introduction of new technologies into domestic spaces created new standards of cleanliness and nutrition, resulting in more work for women. Her research showed that, with the introduction of the washing machine, refrigerator, vacuum cleaner, and microwave oven to families, the demands for clean clothes, a comfortable home environment, and a diversity of food and nutrition increase dramatically. Therefore, the more home appliances there are, the more exhausted the mother is. Similarly, because domestic work is usually performed by women, the direct intervention made by the government to promote sustainable consumption has become a new moral standard, and women feel stressed if they are unable to reach it.

Bourdieu [4] described masculine domination, and the way it is imposed on and suffered by women, as the prime example of what he calls “symbolic violence”: a gentle violence that makes those who are dominated apply categories constructed from the point of view of the dominant, thus making them appear “natural” (p. 35). Men, who are often more powerful, provide women with unreasonable ideas that fit men’s interests, but because this has been occurring for so long, it has become naturalized in societies. Women, who are the dominated, have come to agree with the ideas against their own interests, asking themselves to become a good woman, good wife, and good mother in accordance with a male perspective. This, I argue, is the “double domination” that women are suffering. In Taiwan’s case, women still regard taking care of the family as their prime responsibility, despite this being an unfair division of domestic labour. The ESCR represents a new ideal lifestyle constructed by the government that all citizens are requested to follow. However, the pressure of doing so has fallen disproportionately on women. Several of my female interviewees,

who were active practitioners of saving energy, felt guilty for not doing so sufficiently. Thus, male dominance has been strengthened through the creation of the ESCR’s new model of life.

6. Conclusion

By elaborating on empirical data generated through ethnographic interviews, this paper shows that green practices are highly gendered. Compared with men, women are generally more willing to engage in green practices because of both encouragements and constraints imposed on them by traditional values, material conditions, and other structural influences. Because women are usually regarded by society as (and self-identify as) caregivers, they often consider the consequences of climate change and feel compelled to integrate green practices into everyday life when saving energy can also yield economic benefits. Despite the limitations they encountered, the women interviewed commonly blamed themselves for not being able to perform optimal sustainable consumption. This sense of guilt reflected that the feminized environmental responsibilities have made the women feel stressed.

This paper therefore claims that women under this eco-stress suffer from double domination, an unjust but naturalized domination based on the asymmetric power relations between men and women, the policy makers and the actual practitioners. Without a gendered perspective, the ESCR movement has limited effects in changing people’s lifestyles and creates a “moralization of house chores.” The new moral standard created by the ESCR has fortified the existing gender dominance and aggravated the burdens on women. In short, there was a lack of justice in relation to what Fraser [12] termed the “recognition” of the situation of women. A policy such as the ESCR may therefore aggravate the injustice related to class and gender.

Young [56] argued that if social justice is seen only as an issue of the distribution of goods, then issues of decision-making power, division of labour, and culture are neglected. She argued that this is a mistake, because these issues often underpin unjust distributions. She proposed a shift of focus to ensuring fairness and inclusion in democratic decision-making processes so that differences among social groups can be acknowledged and attended. Inspired by Walker and Day [52] called for attention to procedural justice in energy policy-making – that is, active civic participation in decision-making so that energy policy-making would not be dominated by powerful energy companies and “supply side” interests.

Similarly, in the examination of sustainable consumption policies such as the ESCR, without recognition of differentiated living conditions and constraints, measures such as price incentives for encouraging electricity saving can be ineffective and unfairly penalize certain groups. Furthermore, without the participation of affected groups in the process of decision-making, these well-intended policies can exacerbate injustice, especially gender inequality. On the basis of the empirical findings, I reiterate the requests of Vinz [51] and Skinner [44] for a greater emphasis on the gender dimension of environmental policies, and argue that women’s participation in the process of decision-making, both in the Global South and North, should be compulsory. If the debates on climate change are broadened by inviting more voices from women, the aforementioned negative consequences are more likely to be recognized and avoided.

Furthermore, a practice-based approach is required to understand where and how newly introduced green practices can be effective. New practices must fit within the contextual complexities of everyday life. For example, the use of air conditioning entails a moral obligation to prioritize children and the elderly’s needs, but the demand for cooling also comes with a significant increase of electricity costs that are rated only according to the amount

of energy used and do not consider varied family backgrounds. In addition, not driving can be suggested as an ideal way to achieve the purpose of sustainability. However, the choice of transportation often does not depend on an individual's preferences, but rather is influenced by various constraints such as the availability of job opportunities and their locations, the weather conditions, the punctuality of bus systems, and the social roles required of the individual.

As shown in the analysis, women were inclined to practice sustainable consumption but were limited by temporal, spatial, and material constraints. Especially for those who have responsibilities in both public and private spheres, who take on major loads of house chores, in addition to the work required by employment, time is a scarce resource. As revealed in the experience of Mrs. Chen, she had no alternative but to drive among the office, school, and home. Thus, to enact an effective intervention, governments should not expect citizens to alter their routines overnight, but should rather act to initiate change by, for example, making short-distance transportation more convenient or asking employers to provide meals. It is difficult – but possible – to change routinized practices and reduce energy consumption without causing injustice; however, everyday complexities must be studied so that the correct measures are implemented.

References

- [1] P. Bourdieu, *Outline of a Theory of Practice*, Cambridge University Press, Cambridge, 1977.
- [2] P. Bourdieu, *Distinction: A Social Critique of the Judgment of Taste* (R. Nice, Trans.), Routledge & Kegan Paul, London, 1984.
- [3] P. Bourdieu, The forms of capital, in: *Handbook of Theory and Research for the Sociology of Education*, Greenwood Press, New York, 1986, pp. 241–258.
- [4] P. Bourdieu, *Masculine Domination* (R. Nice, Trans.), Polity, Cambridge, 2001.
- [5] I. Dankelman, Climate change: learning from gender analysis and women's experiences of organising for sustainable development, *Gend. Dev.* 10 (2) (2002) 21–29.
- [6] I.S. de Madariaga, From women in transport to gender in transport: challenging conceptual frameworks for improved policy making, *J. Int. Aff.* 67 (1) (2013) 43–66.
- [7] Directorate General of Budget, Accounting and Statistics, R.O.C. (Taiwan), Report on the Survey of Family Income and Expenditure 2013, 2014, Retrieved 01.06.15 from <http://win.dgbas.gov.tw/files/doc/result/102.pdf>.
- [8] Directorate General of Budget, Accounting and Statistics, Time Use Survey, 2014, Retrieved 01.06.15 from <http://win.dgbas.gov.tw/dgbas03/ca/society/ebook/93/02.lib.01.htm>.
- [9] EPA, Environmental Protection Administration, R.O.C. (Taiwan), 'Energy-saving and Carbon Reduction Regret-less Measures' Action Plan, 2008, Retrieved 01.06.15 from <http://www.aec.gov.tw/webpage/other/files/co2.1-1.pdf>.
- [10] EPA, Environmental Protection Administration, R.O.C. (Taiwan), Tips to Reduce Carbon Emission in Everyday Life, 2008, Retrieved 01.06.05 from <https://record.niet.gov.tw/Epaper/09933/ecolife.pdf>.
- [11] Executive Yuan, R.O.C. (Taiwan), Action Plans for Energy Saving and Carbon Reduction, 2008 (5 June). Retrieved 14.11.15 from <http://www.aec.gov.tw/clickcount/wm-1259.html>.
- [12] N. Fraser, *Justice Interruptus*, Routledge, London, 1997.
- [13] S. Hanson, Gender and mobility: new approaches for informing sustainability, *Gend. Place Cult.* 17 (1) (2010) 5–23.
- [14] M. Hemmati, U. Röhr, Engendering the climate-change negotiations: experiences, challenges, and steps forward, *Gend. Dev.* 17 (1) (2009) 19–32.
- [15] Hsinchu City Council, R.O.C. (Taiwan), Population Census Report in Hsinchu City, 2010, Retrieved 24.11.15 from http://dep-auditing.hccg.gov.tw/web66/_file/2197/upload/download/22518/pople98.pdf.
- [16] T. Jackson, Live better by consuming less? Is there a double dividend in sustainable consumption? *J. Ind. Ecol.* 9 (1–2) (2005) 19–36, <http://dx.doi.org/10.1162/1088198054084734>.
- [17] Kaohsiung County Council, R.O.C. (Taiwan), The Statistical Abstract of Kaohsiung County, Kaohsiung County Council, Kaohsiung, Taiwan, 2009.
- [18] A.N. Lee, R.Y. Ho, L.C. Ko, Gender differences in energy consumption and energy-saving consciousness, in: Paper Presented at Energy and Economy Conference, Taipei, November 2010, 2010.
- [19] N. Laurie, C. Dywer, S.L. Holloway, F. Smith, *Geographies of New Femininities*, Longman, Essex, UK, 1999.
- [20] S. MacGregor, A stranger silence still: the need for feminist social research on climate change, *Sociol. Rev.* 57 (2009) 124–140.
- [21] G.L. Magnusdottir, A. Kronsell, The (In)visibility of gender in Scandinavian climate policy-making, *Int. Feminist J. Polit.* 17 (2) (2014) 308–326, <http://dx.doi.org/10.1080/14616742.2014.896661>.
- [22] J. Murphy, M. Cohen, Consumption, environment, and public policy, in: M. Cohen, J. Murphy (Eds.), *Exploring Sustainable Consumption: Environmental Policy and the Social Sciences*, Elsevier Science Ltd., Oxford, 2001, pp. 3–17.
- [23] OECD, Policy Brief: Towards Sustainable Household Consumption? Trends and Policies in OECD Countries, 2002, Retrieved 25.11.15 from <http://www.oecd.org/dataoecd/28/49/1938984.pdf>.
- [24] OECD, *Towards Sustainable Household Consumption? Trends and Policies in OECD Countries*, OECD, Paris, France, 2002.
- [25] Office of President, R.O.C. (Taiwan), President and Vice-President Attended the 'Declaration of Energy Saving and Carbon Reduction' Campaign, 2008 (June 5). Retrieved 01.16.15 from <http://www.president.gov.tw/Default.aspx?tabid=131&itemid=13828&rmid=514&sd=2008/06/05&ed=2008/06/05>.
- [26] Office of President, R.O.C. (Taiwan), Presidential Inaugural Address of Ma Ying-jeou the 12th President of the Republic of China (Taiwan), 2008 (May 20). Retrieved 01.06.15 from <http://www.president.gov.tw/Default.aspx?tabid=131&itemid=13752&rmid=514&sd=2008/05/20&ed=2008/05/20>.
- [27] S. Owens, 'Engaging the public': information and deliberation in environmental policy, *Environ. Plan. A* 32 (2000) 1141–1148.
- [28] M. Polk, Gendering climate change through the transport sector Women, *Gend. Res.* 18 (3–4) (2009) 73–82.
- [29] R. Rätty, A. Carlsson-Kanyama, Energy consumption by gender in some European countries, *Energy Policy* 38 (1) (2010) 646–649, <http://dx.doi.org/10.1016/j.enpol.2009.08.010>.
- [30] A. Reckwitz, Toward a theory of social practices: a development in culturalist theorizing, *Eur. J. Social Theory* 5 (2) (2002) 243–263.
- [31] U. Roehr, Background Paper for the Expert Workshop 'Gender Perspectives for Earth Summit 2002: Energy, Transport, Information for Decision-Making' Berlin Germany, 10–12 January, 2001, 2002, Retrieved 23.11.15 from <http://www.earthsummit2002.org/workshop/Gender%20%26%20Energy%20N%20UR.pdf>.
- [32] I. Ropke, The dynamics of willingness to consume, *Ecol. Econ.* 28 (3) (1999) 399–420.
- [33] I. Ropke, Theories of practice—new inspiration for ecological economic studies on consumption, *Ecol. Econ.* 68 (10) (2009) 2490–2497.
- [34] C. Sanne, Willing consumers or locked-in? Policies for a sustainable consumption, *Ecol. Econ.* 42 (2002) 273–287.
- [35] I. Schultz, I. Stieß, Gender Aspects of Sustainable Consumption Strategies and Instruments. Policies to Promote Sustainable Consumption Patterns, Institute for Social-Ecological Research, Frankfurt/Main, Germany, 2009, Retrieved 19.08.11 from <http://www.isoef.de/ftp/publikationen/ISOE.GenderWP1.pdf>.
- [36] I. Schultz, Women and waste, *Capital. Nat. Social.* 4 (2) (1993) 51–63.
- [37] R. Schwartz Cowan, *More Work For Mother: The Ironies of Household Technology From the Open Hearth to the Microwave*, BasicBooks, New York, 1983.
- [38] M. Sheller, J. Urry, The city and the car, *Int. J. Urban Reg. Res.* 24 (4) (2000) 737–757.
- [39] E. Shove, Efficiency and consumption: technology and practices, *Energy Environ.* 15 (6) (2004) 1053–1065.
- [40] E. Skinner, Gender and Climate Change, Institute of Development Studies, 2011, Retrieved 25.05.15 from http://docs.bridge.ids.ac.uk/vfile/upload/4/document/1211/Gender_and_CC_for_web.pdf.
- [41] D. Southerton, A. Warde, M. Hand, The limited autonomy of the consumer: implications for sustainable consumption, in: D. Southerton, H. Chappells, B.V. Vliet (Eds.), *Sustainable Consumption: The Implications of Changing Infrastructures of Provision*, Edward Elgar Publishing, Cheltenham, 2004, pp. 32–48.
- [42] J. Summerton, The new 'energy divide': policies, social equity and sustainable consumption in changing infrastructures, in: D. Southerton, H. Chappells, B.V. Vliet (Eds.), *Sustainable Consumption: The Implications of Changing Infrastructures of Provision*, Edward Elgar, Cheltenham, UK, Northampton, MA, USA, 2004.
- [43] G. Terry, No climate justice without gender justice: an overview of the issues, *Gend. Dev.* 17 (1) (2009) 5–18.
- [44] C.J. Thompson, Caring consumers: gendered consumption meanings and the juggling lifestyle, *J. Consum. Res.* 22 (4) (1996) 388–407.
- [45] UNEP, United Nations Environment Programme, Planning for Change: Guidelines for National Programmes on Sustainable Consumption and Production, 2008, Retrieved 01.06.15 from http://www.unep.org/pdf/UNEP_Planning_for_change_2008.pdf.
- [46] C. Vincent, S.J. Ball, S. Pietikainen, Metropolitan mothers: mothers, mothering and paid work, *Womens Stud. Int. Forum* 27 (5) (2004) 571–587.
- [47] D. Vinz, Gender and sustainable consumption: a German environmental perspective, *Eur. J. Womens Stud.* 16 (2) (2009) 159–179, <http://dx.doi.org/10.1177/1350506808101764>.
- [48] G. Walker, R. Day, Fuel poverty as injustice: integrating distribution, recognition and procedure in the struggle for affordable warmth, *Energy Policy* 49 (2012) 69–75.
- [49] H. Wilhite, Changing patterns of air conditioning in Japan, in: P. Bertholdi, A. Ricci, B. Wajer (Eds.), *Energy Efficiency in Household Appliances*, Springer, Berlin, 1999, pp. 149–158.
- [50] H. Wilhite, New thinking on the agentive relationship between end-use technologies and energy-using practices, *Energy Effic.* 1 (2) (2008) 121–130.
- [51] T. Winter, An uncomfortable truth: air-conditioning and sustainability in Asia, *Environ. Plan. A* 45 (3) (2013) 517–531, <http://dx.doi.org/10.1068/a45128>.
- [52] I.M. Young, *Justice and the Politics of Difference*, Princeton University Press, 1990.