

Cambio de prácticas e institución de una economía circular: un caso de cooperativas de consumo en Taiwán

I-Liang Wahn
Tunghai University (Taiwan) 

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ES Resumen. Construir una economía circular para los plásticos de un solo uso es un desafío fundamental para las sociedades de consumo de Asia Oriental y su posición como centro global de producción de plásticos. Aunque este reto suele abordarse mediante innovaciones tecnológicas y de mercado, la Economía Social y Solidaria (ESS) y el consumo sostenible enfatizan las transformaciones lideradas por la ciudadanía. Este artículo ilustra cómo una cooperativa de consumo contribuye a la economía circular mediante un estudio de caso de la Cooperativa de Consumidores Unión de Amas de Casa (HUCC) en Taiwán y su experimento de reciclaje de envoltorios plásticos de vegetales para fabricar nuevos productos. El trabajo utiliza la teoría de los procesos económicos instituidos de Karl Polanyi para comprender cómo el reciclaje se instituye mediante la recolección, distribución y producción. Asimismo, aplica la teoría de las prácticas sociales para analizar la organización del reciclaje en el hogar y en las estaciones locales de la cooperativa. El estudio analiza informes, grupos focales con líderes y miembros, así como entrevistas con organizaciones colaboradoras. El análisis concluye que la cooperativa funciona como un "laboratorio de acción ciudadana", creando un espacio protegido para que sus miembros debatan estrategias, coordinen con investigadores y proporcionen ejemplos para reformas institucionales. Estos hallazgos destacan vías para que la economía solidaria en Asia Oriental trabaje con comunidades y alianzas para vincular nuevas prácticas y procesos económicos con el apoyo político necesario para escalar la economía circular y el consumo sostenible.

Palabras clave. Plástico, consumo, sostenibilidad, procesos económicos instituidos, Asia Oriental.

Claves Econlit. B55, D16, P13, Q56.

ENG Changing practices and instituting a circular economy: a case of consumer cooperatives in Taiwan

ENG Abstract. Building a circular economy for single use plastics has been a major challenge for East Asia's emerging consumer societies and its position as a global hub for plastic production. The challenge is often addressed through technology and market innovations, while the study of Social and Solidarity Economy and sustainable consumption both stress the role of citizen initiatives in changing everyday practices and economic institutions. This paper aims to illustrate how a consumer cooperative can make significant contributions to sustainable consumption and circular economy. It does so through a case study of the Homemaker Union Consumer Cooperative in Taiwan and its experiment in recycling vegetable plastic wraps and reuse for producing new products. The paper uses Karl Polanyi's theory of instituted economic processes to understand how recycling is instituted with collection, distribution and production. It also applies social practice theory to understand the organization of recycling practices at home and in the consumer cooperatives local stations. The case study analyses reports, conducts focus groups with the cooperative's leaders and local members, as well as interviews with its collaborating organizations. The analysis found that the consumer cooperative served as a citizen action lab that created protected space for committed members to debate strategies and communicate new practices, to coordinate with market and research organizations, and to convey examples for institutional reforms. The findings highlight avenues for East Asian solidarity economy to work with communities and alliances to link new practices, economic processes, and political support to upscale the circular economy and sustainable consumption.

Keywords. Plastic, consumption, sustainability, instituted economic processes, East Asia.

Summary. 1. Introduction. 2. Instituted economy and social practice theory. 3. Research Design: The Homemaker Coop and the food wrap project. 4. Analysis. 5. Concluding Discussion. 6. References.

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1. Introduction

Facing challenges of climate change, East Asian governments increasingly recognize the urgent need to transform their fast-growing economies towards a more sustainable path. For example, Taiwan government rolled out a circular economy promotion plan in 2019 followed by net-zero transition policy in 2021. Extensive efforts have been made to reduce carbon emissions and invest in renewable energy, with particular emphasis placed on industrial and technological innovations. While lifestyle as well as social norm changes are included in net zero strategies, little attention has been paid to sustainable consumption or to the role of civil society organizations in the transition.

Circular economy is a contested field with different emphasis on incremental reform or radical system transformation, different approaches between social and technological changes (Calisto-Friant, Vermeulen, and Salomone, 2020). For instance, Bartl (2014) argues for a transition from a recycling-focused system toward waste prevention and reuse through policies and product design. Lang, Minnucci, Müller, and Schlaile (2023) argue that consumers are not passive end-users but drivers of business model innovation that enables sustainability transitions. Indeed, the role of consumption and consumers in facilitating social change around circular economy can be further examined.

Existing consumption studies emphasized the roles of citizens and social groups in transforming public understanding of wellbeing, experimenting with new practices in everyday life and in demanding policy changes (Warde, 2017; Sahakian, Zhan, Epp, Liste, Nilsen, Schibel, Reusswig, Aalto, Haider, Kirchler, and Kollmann, 2024). More recently, a study pointed to the need to examine the agency of consumers in and beyond a circular economy (Greene and Hobson, 2025). Similarly, studies in social and solidarity economies stressed the importance of citizen initiatives in fostering alternative values, networks and common resources for a sustainable transition (Lavile, 2025; Allard, Davidson, & Matthaei, 2008; Gibson-Graham, 2006). However, there is room for further exploring the specific processes and dialogues through which solidarity economy organizations work with other actors and facilitate circular economy.

Moreover, there is also a need to understand the importance of sustainable consumption in solidarity economy in rapidly growing East Asia. Existing studies have noted how consumer cooperatives in East Asia promote collaborative consumption and influence producers and policy makers (Wahn, 2021; Wahn, 2023). Given the growth of the region, consumer cooperatives provide a critical community for consumers to rethink consumption and explore their capacities for collective actions. As such consumer cooperatives in the region can help us fill the gap in understanding consumers' agency in the circular economy.

This paper aims to illustrate how consumer cooperatives can make significant contributions to sustainable consumption and circular economy, through innovation and experimentation in a consumer community, collaboration with businesses and advocate for policy changes. It does so through a case study of a consumer cooperative's experiment in constructing a circular economy for vegetable plastic wrap. It is the Homemakers Union Consumer Cooperative (HUCC) in Taiwan, and I will introduce the organization and its circular economy initiatives in more detail in section 3. For now, it is sufficient to highlight the process of constructing a circular economy involved internal debate and mobilization, external collaboration and innovation, and policy advocacy.

As plastic reduction became an issue in Taiwan since 2018, the HUCC sought to reduce the use of plastics and found that some plastic use such as vegetable wrap is unavoidable. The HUCC members debated about different approaches for plastic reduction and in 2023 the HUCC launched the vegetable wrap recycle project (VWR, or the project) as an experiment. It developed campaigns mobilizing members to recycle the plastic film wrap for vegetables sold in the cooperative and organized its local offices for recycling collection and transportation. In addition, the HUCC collaborated with a research center, Plastics Industry Development Center (PIDC) for technical and industrial consultation and a producer, TYC Environmental Technology (TYC), to produce tote bags and file folders using recycled plastic materials. The project eventually established a viable mechanism for collection, transportation and production, and produced good quality everyday products. Encouraged by the achievement, the project is used as an example to advocate for policy changes. The HUCC urged the government to require vegetable wrap be made by a single type of material and included in the official Articles Announced for Recycling. The HUCC also hopes to stimulate major retailers and producers to use recycled plastics for making new products.

The VWR project is a good example for exploring the contribution of a solidarity economic organization to sustainable consumption and circular economy. The case illustrates how a consumer cooperative guides its members into adopting new practices of recycling. Moreover, it illustrates how the consumer cooperative collaborates with market and non-market actors to reorganize economic processes and to advocate for policy and industrial changes.

In the next section, the paper reviews recent consumption studies and studies of cooperatives in Taiwan to develop a framework to analyse the circular economy and the recycling practice. This is followed by an account of the project, data collection and analysis. The analysis section examines the circular economy, recycling practices and the collaboration between the HUCC and other organizations. The final section reflects on the contribution of HUCC to sustainable consumption and circular economy.

2. Instituted economy and social practice theory

The circular economy should be understood as a multi-layered, imperfect system of practices that reduces resource consumption and optimizes cycles (Figge, Thorpe, & Gutberlet, 2023). Bathula and Burman (2025) reviewed the literature on circular economy and found that research on the role of cooperatives in circular

economy began to gain momentum after 2016, with a significant increase in 2023-2024. Circular economy is the most prevalent research framework, followed by industrial ecology and sustainable business model theory. Most of the research focuses on the US and European countries.

Some studies have emphasized the importance of social context, organizational structure and governance. Ziegler, Bauwens, Roy, Teasdale, Fourrier, and Raufflet (2023) argue that cooperatives may help embed a circular economy in society. Cooperatives prioritize member needs, operate through democratic governance, and emphasize mutual assistance and community development. These values and characteristics enable the circular economy established by cooperatives to reduce consumption, balance the distribution of benefits, foster cross-sectoral collaboration, and maintain local roots.

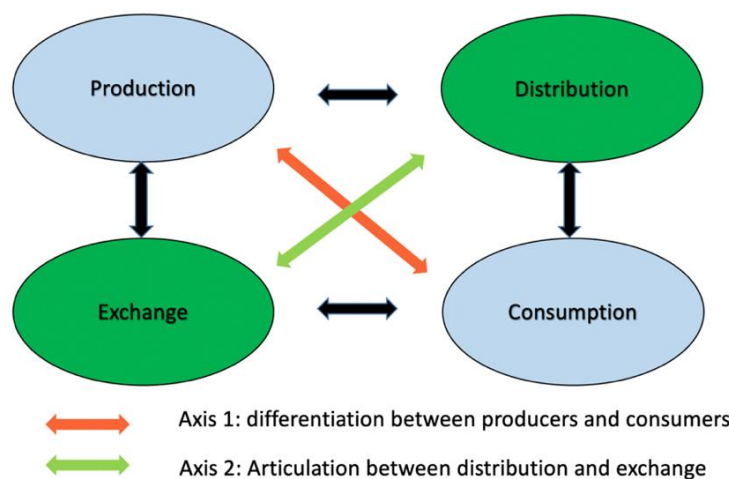
In another study, Ziegler, Rey-Sierro, Novkovic, Buendia Martinez, Ballon, Teasdale, and Roy. (2025) established a multinational database of cooperatives and conducted a questionnaire survey to investigate how cooperatives develop circular economies. They found that small, medium-sized, and emerging cooperatives are more likely to develop circular economy through upstream strategies, and they often relied on the technical and experience support of larger cooperatives. Thus, Ziegler et al. (2025) argue that intra-sector cooperative networks and cross-sector networks have the potential to encourage more cooperatives to adopt circular strategies.

Novkovic and Martins Rodrigues (2025) agree with Ziegler et al.'s view that the circular cooperative economy should be embedded within a social context, emphasizing the need for cooperation and collaboration among stakeholders. Novkovic and Martins Rodrigues believe that cooperative networks with diverse stakeholders are best suited to developing a circular economy. Circular economies typically span multiple economic sectors or industries. These diverse networks can bring together systematic data and diverse knowledge, internalizing social and ecological costs to achieve resource optimization and carbon reduction.

To analyse the circular economy and the recycling practices in the VWR project, the paper integrates Karl Polanyi's (1957) economic approach with Alan Warde's (2017) social practice theory. This framework treats recycling as a practice in the consumption process and situates recycling as part of a circular economy. Through this framework the paper examines the way a consumer cooperative works with different actors in building a circular economy.

Let me illustrate the Polanyian framework for analysing different components of the circular economy. Many studies on the solidarity economy have utilized Karl Polanyi's economic analysis to examine how economies can be organized differently according to different morality and the relation between economy and society (Mendell and Neamtan, 2010; Neamtan, 2002; Laville, 2025). Karl Polanyi (1957) draws on anthropological research to highlight that market exchange is just one form of economy, with redistribution from an authority, reciprocity between equals and householding also common in history. Polanyi (1957) stressed that the varied modes of economy are shaped by social and political contexts and institutions.

Harvey, Ramlogan, and Randles (2007) have further developed Polanyi's economic approach and formulate an analytical framework of instituted economic processes. Later, Harvey and McMeekin (2010) use Figure 1 to illustrate that the economy consists of four economic processes with the differentiation of production and consumption articulated by distribution and exchange. The processes are instituted through sociopolitical processes. The framework enables researchers to focus on how each process is organized in specific ways and how the overall configuration of the economy can be distinctively instituted.



(fig.1) The instituted economic processes (Harvey and McMeekin, 2010: 189).

This framework is suitable for analysing a circular economy project as the emphasis on economic processes highlights the possibility to reorganize economic activities to form a circular configuration. In addition, the framework incorporates consumption in the economy, allowing the paper to explore how consumption may feed back into new production, a theme at the centre of circular economy (Wheeler and Glucksmann, 2015). Moreover, by examining how processes come together, the framework helps examine

how a consumer cooperative works with other actors to institute a circular economy.

Consumption studies can help us further open the consumption process to examine acquiring, the use of goods and the organization of everyday practices. Alan Warde (2017:82) defines consumption as:

a process whereby agents engage in appropriation and appreciation, whether for utilitarian, expressive or contemplative purposes, of goods, services, performances, information or ambience, whether purchased or not, over which the agent has some degree of discretion.

The definition aligns well with the instituted economic processes framework by highlighting consumption as a process and the varied ways consumption can be organized. Furthermore, Warde (2017) draws on Schatzki's (1996) social practice theory to propose analysing everyday practices by examining the links between these three elements: understandings, procedures and engagements. This three-element framework is widely adopted in the sociology of consumption and can help us study the organization of recycling as a practice.

Studying consumption through social practice theory allowed researchers to explore the roles of communities, policies normalizing sufficiency values while meeting basic needs equally, as well as the importance of changing ideational, material and political economic structures in radicalizing consumption (Fuchs, Bodenheimer, and Dütschke, 2025). The studies highlight the need for collective actions to push for structural reforms. For example, Sahakian et al. (2024) discussed the various practices of citizen action labs in deliberating and experimenting with new ways for producing and consuming energy. These studies share with our study the view that economic organization and communities are crucial structural conditions for supporting sustainable consumption.

In 2025, a special issue published by the journal *Consumption and Society* explores the theme *Everyday Circularity* (Greene and Hobson, 2025). This special issue criticizes the overemphasis on technological and market solutions in current discussion of circular economy, such as product redesign and industrial efficiency (Calisto Friant, Vermeulen, and Salomone, 2024), and positioned consumer as passive end users (Lane, Kronsell, Reynolds, Raven, & Mannich, 2024). The special issue argues that circular transformations need to be understood through the lens of everyday practices (Greene, Hobson, and Jaeger-Erben, 2024) and raised five key cross-cutting themes:

First, systems of practice and provision examines how households' participation in circularity is shaped by broader infrastructures and institutional arrangements, as well as how interconnected practices, such as food storage, repair and plastic reuse, are embedded in everyday routines. Second, relationalities and affectivities foreground the role of social relations, emotions and care in shaping circular practices, highlighting tensions between sustainability ambitions and everyday responsibilities, as well as the labour and gendered dimensions of repair and maintenance work. Third, materialities explores how objects, infrastructures and material flows shape, and are shaped by, circular consumption, drawing attention to systemic inefficiencies and unintended consequences such as material rebound effects and accessibility barriers. Fourth, spatialities considers how digital and physical infrastructures influence circular engagement, revealing uneven geographies of accessibility, spatial frictions and the contrast between local and global circular provisioning systems. Finally, the theme of inequalities asks how socioeconomic, political and institutional structures create differentiated capacities for circular participation, both within and across societies in the Global South and the Global North (Greene and Hobson, 2025: 160-161).

While these studies look at the adoption of recycling practices by consumers, this paper examines how circular practices extends their impact beyond people's homes and reform larger systems. It investigates a solidarity economy shaping circular practices with care responsibilities, connecting circular practices to economic re-configuration and policy advocacy.

The study of Social and Solidarity Economy (SSE) has recently emerged in Taiwan, bolstered by a series of conferences and the establishment of a dedicated academic society. The field can be categorized into three overlapping themes. The first focuses on institutional innovation for community development, ranging from agricultural town revitalization (Chung & Shieh, 2021) to credit unions within indigenous communities and universities (Wu, 2011; Pei & Chang, 2021) and collective natural resource management in indigenous tribes (Shih, Chang, and Tsai, 2006). The second theme examines alternative welfare provision, including indigenous community kitchens (Huang, 2022), community-based elderly care (Cheng, Hsiung, Lin, and Yang, 2020), and time banking (Fang, 2025). Finally, research revolves around sustainable development across sectors, highlighting social innovations driven by NGOs and social enterprises (Chen & Chou, 2023), alternative food movements (Wahn, 2020), and the rise of citizen power plants (Ting & Ho, 2022).

Emerging after rapid economic growth and democratization, SSE in Taiwan rethink the meaning of development, explore the agency of communities in facilitating new forms of economy and social institutions addressing overlooked needs and people. Some organizations play a critical role in shaping consumption and exploring alternative forms of economy. For example, Wu and Wang (2007) studied the community of practice in HUCC and Jen and Wang (2009) argued that the consumer community challenges consumers to become environmental citizen. My work compared the different ways for organizing consumption in the HUCC, a farmers' market, an exchange platform and a food magazine (Wahn, 2020). More recently, I traced the traveling of a consumption morality that consumption can drive economic and societal change from the Teiki movement in Japan to the HUCC in Taiwan and consumer groups in China (Wahn, 2023). These works

highlighted different ways solidarity economy organizations use moral discourses to shape everyday practices, form communities and moralized markets. This paper can advance these works by examining how the HUCC reorganizes the consumption process to construct a circular economy and works with research and market actors to advocate for policy and industry change.

The paper integrates instituted economic processes with social practice theory by analysing the VWR on three levels. It first follows how recycling is configured with distribution, exchange, and reproduction to form a circular economy. It then zooms in to examine how the HUCC promotes and how members recycle as an everyday practice involving specific understandings, procedures and engagements. Finally, the paper explores the role of the HUCC, its collaboration with research institute and recycle businesses, and its work on policy makers in instituting the circular economy.

3. Research Design: The Homemaker Coop and the food wrap project

The paper uses a case study design to understand the instituting of the circular economy and recycling practices around the VWR project by the HUCC. The HUCC is an influential organization in Taiwan's SSE and its development reflected wider political economic transformations in the past decades (Wahn, 2015). In the wake of Taiwan's democratization in the late 1980s when civil society organizations mushroomed, a group of urban housewives established the Homemaker Union Foundation (HUF) for environmental advocacy. In the 1990s, the HUF staff encountered representatives from Japan's consumer cooperatives (Sekatsu Club) and inspired by them, created The Homemaker Union Consumer Cooperative in 2001 in the capital city Taipei. The HUCC aimed to complement the HUF in practicing everyday environmentalism. Soon it established branches in north, central and south regions of Taiwan with each branch coordinating many local stations for distribution and social activities. The HUCC is a pioneer in supporting domestic organic agriculture and sustainable consumption, and supported the HUF in advocating for policy changes. Currently, the HUCC has more than 70,000 members, three regional branches and more than 50 local stations. With this nationwide network, it can reach and mobilize a wider range of consumers which is crucial for experimental initiatives like the one we analyse in this paper.

Plastic reduction became an issue around 2017 when Greenpeace Taiwan published a report on plastic pollution in the ocean. In the same year, China banned the import of waste, including plastic waste and disrupted plastic waste trade. However, Taiwan is a global hub for petrochemicals thus there is strong resistance from the industry for plastic reduction. Subsequently, the Ministry of Environment focused on everyday plastic use, announced restrictions on disposable plastic shopping bags, straws and cups in 2018 and plans to ban their use by 2030. The policy set targets for resource efficiency and recycling, encourages industry and social initiatives to gradually replace plastics through green manufacturing. Then Greenpeace Taiwan published another report in 2019 on the use and reduction of plastic wraps for food products in supermarkets, which created pressures for retailers including consumer cooperatives to assess their plastic use and plan to reduce. The issue of plastic reduction thus is framed as about everyday consumption habit and a responsibility of retail business rather than a challenge for industrial and technological change. The policy presented an opportunity for the consumer cooperative at the same time helped us understand why the HUCC later advocated for policy incentives for industrial change.

In response to this trend the HUCC formed a 'plastic reduction committee' to explore the possibility to go plastic free. After removing many plastic products and packages in their products and shop floor, the committee also tried to remove plastic covers from vegetables. However, the committee found that vegetables and fruits quickly go dry and soft and increase the risk of food contamination. The committee concluded that some plastic uses are indispensable for food safety and for minimizing loss, so it turned to explore ways to recycle indispensable plastics.

The HUCC took advantage of its long history of promoting and practicing recycle in everyday life, and started four initiatives (food product nets, 2+5, VWR and rPET) to explore how it can create a circular economy of plastic packages. It started by recycling food product nets, which is relatively straightforward. Once members are familiar with this the HUCC initiated the 2+5 project in 2019 to recycle plastic bottle number 5 and number 2 used for milk and soy milk in its north branch. The HUCC worked with a research center, Plastics Industry Development Center (PIDC) to analyse the plastic materials, design new products and help the HUCC find a company to process the recycled plastics and produce laundry detergent bottles and sanitizer bottles during the Covid-19 pandemic. The HUCC won a Buying Power award from the Ministry of Commerce for the project.

From the food product net and the 2+5 project the HUCC learned how to guide its members to recycle "in the right way" and collect recycled materials "in an efficient way" in local stations and worked with a recycle business. Based on the experiences, it devised the VWR to try to mix the recycled materials from vegetable wraps with materials from other sources to make reusable bags. Following this, in 2024, the HUCC launched the rPET project to develop a new product bottled black tea, using local black tea and 30% plastics from recycled PET bottles.

The HUCC uses the experiences of these 4 projects: food product nets, 2+5, VWR and rPET, to influence state policies and industry practices. It held press conferences to publish its results, its leaders took part in state policy consultation meetings and in workshops with NGOs and retailers. Through these activities, the HUCC shares with policy makers, activists and retailers how it expanded the scope of recycling, scaled up its circular economy by working with external actors, and how industries and the state can create incentives for scaling up the circular economy of plastics.

The paper examines the processes and collaborations in the VWR project. In total, I collected three types

of data: documents and podcasts, interviews, and observations that provided multiple angles to the contexts, processes and collaboration of the Project. Data collection was carried out in 3 stages. In the first stage, the focus is on the project and the wider policy and organizational contexts. I collected 4 documents from HUCC, including a slide explaining the project and the project report, a slide summarizing the results of 2+5 project and a slide for a meeting with the Ministry of Environment to advocate for circular economy policy. These documents contextualize the project in a series of works on circular economy conducted by HUCC, provided planning rationale and a summary of VWR project development, while also explaining how the project contributed to policy advocacy.

In the second stage, data collection aims to understand processes and practices in the project. The HUCC helped the researcher to organize two focus groups. Table 1 shows the two focus groups as well as interviews with external actors, described in the following. Group A focuses on the planning and coordination of the project, and took place at the headquarter of HUCC. The four participants offered complementary accounts of the project from the Coop leaders and from the management team. Group B focuses on the role of local stations and everyday recycling practices and took place at a local station in downtown Taichung City. The four participants offered experiences from two different local stations. Both group discussions lasted two and a half hours and were recorded. The researcher took notes and took pictures when participants showed their posters and recycling cabins.

Table 1. Participants of focus groups and interviewees

interviews	Number	Gender	Title/Role
Focus group A	1	F	Chairperson (HUCC)
	2	M	General Manager (HUCC)
	3	M	Project Manager (HUCC)
	4	F	Secretary General (HUCC)
Focus group B	5	F	Director (HUCC Taichung)
	6	F	Chairperson (Sanming station)
	7	F	Member rep. (Sanming station)
	8	F	Member rep. (Tunghai station)
Interviews with collaborators	9	M	Research Section Chief (PIDC)
	10	F	Assistant Manager (TYC)

Source: created by the author.

In the third stage, data collection focused on HUCC's collaboration and advocacy. I collected two podcasts, conducted two interviews, and followed a press conference. The podcast 'one basket of vegetables and voices from our hearts' is presented by the HUCC to communicate with the public about their ideas and activities. I use two episodes. Episode 116 (58 minutes) is an interview with a researcher from PIDC to talk about trends in plastic industry, circular economy, and the VWR project. Episode 123 (40 minutes) is an interview with deputy director of Dept. of Cooperatives and Civil Associations in the Ministry of Interior, to discuss government policies and the development of cooperatives in Taiwan. Based on these podcasts, I conducted interviews with the PIDC researcher and TYC manager to understand their collaboration with the HUCC. I also followed the press conference held by the HUCC to launch its rPET bottled black tea. The press conference invited Minister of the Environment, Circular Administration director and a senior official from Food and Drug Agency, allowing the researcher to observe how the HUCC engages with state agencies.

The researcher discussed with participants about anonymity of the organization and the participants. Each of them consented to take part in the interview and to be named, because they would like the story to be shared with other researchers and the world. For instance, the researcher from PIDC hopes to list my presentation and publication as impact of his work with the HUCC. While the organization is identified, the participants are anonymized, data access restricted only to the author in compliance with common research ethical practices. This research is thus a collaboration for a sociologist to help prompt the work of HUCC and argue for the active participation of solidarity economy in building circular economy and guiding sustainable consumption, when the government focuses more on technology and market fixes.

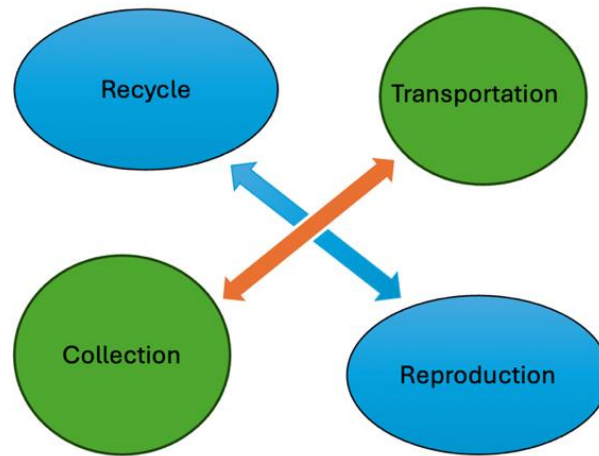
The analysis first conducted open coding and axial coding using the research framework to identify the configuration of both the circular economic processes and the recycling practice. Then the analysis conducted selective coding to analyse the instituting process, the cooperation between actors, and the dynamics between circular economy and society.

4. Analysis

4.1. The CE: recycle, collection, transport and reproduction

The VWR project successfully instituted a circular economy as presented in Figure 2. Unlike the economy in Figure 1 starting from production to consumption, the four processes here start from recycle to reproduction, articulated by collection at the local stations and transportation from local stations and warehouses to a reproduction factory. Collection is the new exchange process while transportation is the new distribution process. I now explain each process in turn, highlighting that linkages are stabilized when each process is

formed in specific ways and the whole configuration can function smoothly.



(fig.2) Instituted circular economy

Reproduction is the aim of the VWR project, with managers and chairperson both stressed the importance to find “a mechanism that is feasible and profitable to use recycled plastics to produce things that are useful for people”. But the PIDC researcher (Interviewee 9) emphasized that for a business to accept recycled material and to produce new products, “their main concern will be how stable and reliable the recycled materials are, so they can be used for reproduction”. The researcher remembers how he explained this to the HUCC when they came to PIDC for help. The researcher (Interviewee 9) recommended TYC to HUCC as he had advised TYC before. Although TYC was reluctant at first, the researcher (Interviewee 9) helped convince TYC that the VWR project may add another material source for them. PIDC helped TYC to analyse the recycled materials and designed the tote bags and file folders to be produced from recycled materials.

The PIDC researcher (Interviewee 9) stressed that in forming the circular economy “the key is recycling. That needs to be done right. This involves separating different materials and clean and arrange them effectively.” As Pickering (2024) noted consumers’ understanding of recycle revolve around the materiality of recycles and their everyday practices. The HUCC turned PIDC’s analysis into a communication campaign, explaining the need to remove sticker labels from plastic wraps, wipe away vegetable residues and water on the wraps to ensure the purity of recycled material, otherwise it will contain different kinds of materials that not only darkens the recycled plastic but also increases the ratio of new plastics to be mixed with recycled materials. Similarly, the HUCC requests members to fold recycled wraps neatly to increase the density of the materials and reduce transportation costs. The HUCC uses 2+5 project’s experience, to design the VWR campaigns and mobilize an existing community of devoted members. The next section will further discuss the recycling at local stations and at homes.

Once the reproducer is decided and recycling sorted, the HUCC needed to arrange the collection and transportation for the recycled plastics. Local stations play a crucial role in the collection process. Members need to take cleaned and folded wraps, along with product nets, to the local stations as the collection point where a specific cabinet is designated for collecting recycles and a clear label is used to show the specific drawer used for storing recycled wraps. The recycled wraps will be stored at the back of the local station for weekly pick up. The process collects the wraps from dispersed homes and in the process turn them into a resource before shifting ownership to reproducers.

Finally, the transportation process revolves around three regional warehouses, north, central and south. The PIDC researcher (Interviewee 9) explained that transportation is a significant proportion of the reproduction cost so efficient arrangements required careful planning. The reproducer TYC is located closer to the central warehouse, so the HUCC negotiated with their distributor to arrange two step transportation. The trucks delivering food products from warehouses pick up recycled wraps every week to the three warehouses and specific trucks are arranged to collect these to the central warehouse and then to the reproducer TYC. Specific large bags were required by the reproducer to collect, and transport recycled wraps, so that the wraps stay still and pressed and so can be stacked during the whole process.

Figure 2 highlights the multiple processes constituting the circular economy and the challenges around the materiality of plastics and cost calculations. As the PIDC researcher (Interviewee 9) stressed

different actors in the circular economy have different concerns. For the reproducer, their main concern is how stable and reliable the recycled materials are, so they can be used as an input. For the retailer, the HUCC in this case, the storage and transport are the main concerns. The reproduction technology is available, is not hard, but the core challenge is to make a feasible and profitable economies of scale.

The purity of recycled material, their volume and weight, their location and the value of the new product are shaping the possibility and the configuration of the circular economy. Too much contamination, too small the scale, too expensive transport all affect the willingness of businesses to take part in the circular

economy. This is why the way the plastic wraps are recycled, stored and collected is of pivotal importance and why the HUCC had an advantage.

4.2. Games, practices, and collection

The HUCC local stations help organize the collection process and use their own budget to encourage members to recycle. As Wu and Wang (2007) and Jen and Wang (2009) argued HUCC local stations have created a community of practices as members learn from each other about cooking, reading, parenting, and making things. They also have experiences of recycling product nets, bottles, and paper bags. These became important assets in organizing the recycle and collection processes.

Group B participants include member representatives and director of a regional branch, and they described how local stations promote vegetable wrap recycling. The HUCC produced YouTube video, posters, blog and newsletter articles to explain the projects as well as the five steps for doing the recycling: Wipe (clean), Cut (label), Fold (neatly) and Bag to the local station. The local stations use member meetings and social media platforms to discuss the projects. However, the first month into the project, they noticed that their stations ranked low in recycle rates and they designed games to drive the rate up. Interviewee 7 (group B, coop member) explained that 20% of HUCC members are devoted practitioner of sustainable lifestyle, while 60% are ‘food safety refugees’ who joined HUCC after food safety scandals and are less enthusiastic about sustainability. There is another 20% indifferent members who can be motivated to act. The games are designed to motivate them and support devoted members (see Figure 3).



(fig.3) Prizes for recycle posters by local stations

The poster in the left came from Tunghai station and it reads ‘product nets & vegetable wraps: recycle in exchange for prizes’. The poster invites members to trade recycled nets and wraps for prizes, 10 for a bottle of soy milk or a pack of Wolong noodles or plum flavored gummies, 30 wraps and 50 wraps for another two sets of selected HUCC products. Interviewee 8 (group B, Coop member) said that they wanted to

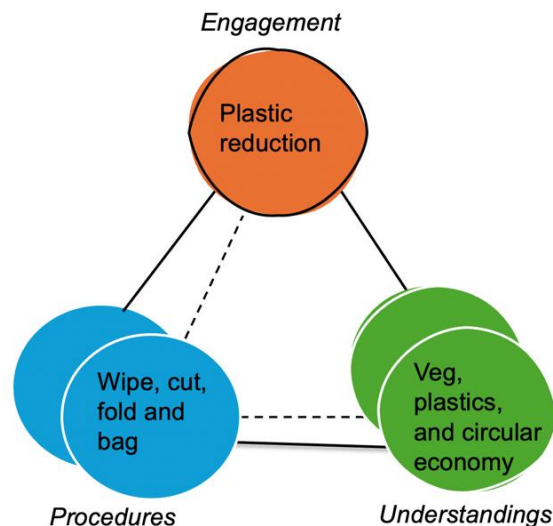
make it fun and not too hard to play. But we underestimated our fellow members’ activeness. It turns out it was too easy to gather 10 wraps, so we doubled the standard. You need to have at least 20, 30 and 100 to select your prizes. Still, the prizes went out quickly, in two weeks.

The picture in the right is a wheel of luck, a game introduced by the Sanming station. Limited to once a month, members are invited to trade 20 cleaned recycled wraps or nets to turn the wheel for a prize. If the wheel stopped at the orange section, the player gets a bottle 100% carrot and fruit juice. They get a bottle of thick soy milk if the wheel stops in any other sections. Interviewee 7 (group B, Coop member) agrees with Interviewee 8 (group B, Coop member) that the games are to encourage members to have fun while recycling, and this strategy has encouraged 20% indifferent members. Moreover, both games connect the product nets recycle with vegetable wrap recycle, as the former is already widely practiced so can serve as an anchor to establish a new habit of recycling wraps.

Group B also provided stories of how recycling is practiced at home, negotiated with family members and fitted into other daily or weekly routines. For Interviewee 8 (group B, Coop member), recycling vegetable wraps is “the work of her 5-year-old boy”. Once a week, he will gather them from the kitchen floor and follow the instructions provided by the HUCC to cut open each wrap, wipe it clean, hang it to dry and bring them back to the local station to exchange for a bottle of soy milk. It is his favorite drink and so he is very serious about this weekly task. For interviewee 6 (group B, member), recycling wraps is “added to cooking and

collecting orders". She would clean and hang the wraps as she washes vegetables and cook dinner. She would then put them in her shopping bag so she would not forget them as she collects her vegetable order at the local station. For interviewee 5 (group B, coop member), recycling is her weekend "self-healing". She would put the wraps under a heavy item when she washes vegetables for cooking. During weekend, she would take all the wraps, sit on the sofa to cut off product labels and clean them while listening to her podcast. The negotiations show the work of care and responsibility plays an important role in enacting recycling practices (Tölg and Fuentes, 2025).

The stories members shared show how understandings of the practice, procedures of doing the practice, and the engagement (the purpose and meanings) of doing the practice are configured in specific ways. In figure 4 the orange circle represents the engagement element, while the green circle represents the understandings about the recycling practice, regarding the nature and qualities of vegetables, plastic wraps, and how recycling constitutes an important starting point for the circular economy. The blue circle is the procedures in doing recycle.



(fig.4) Configuring the plastic wrap recycling practice

The campaigns help prepare member understandings as well as procedures for doing. The games contributed another layer of engagement, making recycle a fun and interactive endeavor. They were built on previous works in the 2+5 project, illustrated by the background green and blue circles in figure 4. The aim to reduce plastics in the HUCC constructed through the plastic reduction committee since 2018 offered an anchor as a shared element across different recycling practices. The shared engagement formed a foundation for new procedures and understandings elements to form and links with each other to construct the wrap recycling practice.

The local stations also organize the collection process, requiring members to bring back the recycled wraps along with recycled nets. In the local station, a specific cabinet is used for recycling and a specific drawer is labeled for recycled wraps. The wraps are then put into basket used by the distribution company when they deliver food products from warehouses, and now they use the trucks to bring back recycle to the warehouses. In the warehouse, recycles are put into bulk bags (flexible freight bags) as required by the reproducer and which helps the transport company to transport those bags from north and south warehouses to the central warehouse and from there to the reproducer TYC. Whereas the recycling practice conditions the quality of the material, the collection is constituted by a series of practices that bring together dispersed recycles, accumulate sufficient quantity of materials and shift control from consumer to reproducer.

4.3. A citizen lab for economic and policy innovations

This project can be understood through the concept of citizen action lab. In studying consumers' sociotechnical agency in fostering energy transition, Sahakian et al. (2024:13) found that it is important to have a specific community or space that they call citizen action lab:

'action labs' created a space and time that encouraged reflexivity and deliberation around the role of citizens in the energy transition...they encouraged people to hone skills in 'dispersed practices' (such as planning, communicating, organising), and to imagine ways of moving beyond the level of individual action, to work at the level of collective action and increased complexity in an energy transition.

The concept of citizen action lab highlights a space for reflexivity and deliberation, skills in planning, communicating and organizing, and collective action for systematic transition. These are important for developing collective agency as well as building alliances and scaling efforts. We can find all these characteristics in the VWR Project which also highlights the advantages of a consumer cooperative.

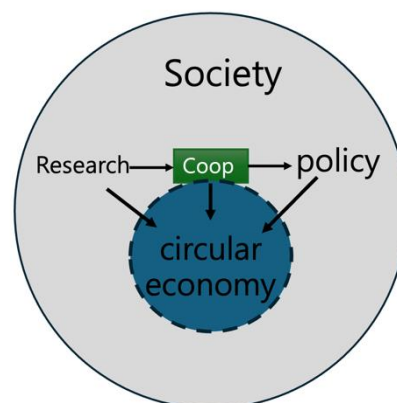
The VWR and other projects illustrate how a consumer cooperative reflects on and deliberates its role in the economy and society. The HUCC's "plastic reduction committee" debated radical plastic free or incremental recycle and re-use, whether to focus on everyday practices or to create an experimental circular economy. The leaders and members of the HUCC remember how some members criticized that "the Homemaker is not the same cooperative anymore" and "lost its original spirits", as they argue that the HUCC should avoid the use of plastic packaging, buying fresh and directly from local producers. The process from trying to get rid of all plastic packages, then realizing some plastics are indispensable, to trying to reuse recycled plastic involves a long process of dialogues and even debates among cooperative members about activism and strategy.

Furthermore, the initiatives that use games, videos and competition between local stations demonstrated skillful communication while the collection and transportation of recycled materials demonstrated good coordination of different stations. In other words, the initiatives sought to organize collective actions

Moreover, the deliberation and organizing are not practiced only internally, but the consumer cooperative discussed and worked with partners, including researchers, market actors and policy makers in the process of instituting the circular economy. The HUCC already is a community of sustainable practices, but the HUCC discussed with researchers about industrial trends and technologies, with distributors about costs and scale, and with manufacturer about sources and designs.

The dialogues and debates extend beyond the creation of this circular economy of vegetable wraps, to how to grow the circular economy in the wider society. On the one hand, the HUCC discussed with the PIDC researcher about a window of opportunity for the plastic circular economy as many plastic product manufacturers are eager to find new sources of materials after China banned waste imports while EU will require imported plastic goods to increase the rate of reused materials. On the other hand, the HUCC is talking to the Ministry of Environment, Circular Administration and Food and Drug Agency to lobby support for green product design, expanding the list of recyclable materials, and set material requirements for plastic food wraps so they can be reprocessed more easily. The HUCC argues that these policies can create the conditions for growing the plastic circular economy. Finally, the HUCC is talking to major retailers about the viability of recycling to support reuse and encourage them to follow their footsteps. In short, the experiences of these circular economy projects and the partnership developed during the processes helped the HUCC to try to engage with more actors and to try to institute a wider circular economy.

The citizen action lab in these projects also shed new lights on how economies are instituted from a Polanyian perspective. Polanyi's instituted economic processes highlight how the state, research and development, and society shape the economic configurations (Polanyi, 1957; Harvey et al., 2007). The study highlights the role of a consumer cooperative and its capacity to coordinate other actors. Figure 5 shows the multiple actors in the instituting process, the collaborations for shaping the economy and the advocacy needed to grow the circular economy.



(fig.5) The HUCC action lab on circular economy and society

The HUCC's general manager stressed that the HUCC is perfect for this experiment as the HUCC has a "sustainability DNA", that members are committed to sustainable everyday practices and willing to change and bear additional costs. The PIDC researcher (Interviewee 9) also praised the HUCC as "a miraculous organization" for it is flexible enough to not be restricted by making a profit (it is a cooperative) and persistent enough to make changes (it is an environmental organization). Thus, the HUCC can use the recycle projects as a foundation to configure the circular economic processes.

However, there is a challenge for the HUCC management to educate and mobilize consumer members. The general manager of the HUCC explains

How to help members know about the (retail and recycle) industries, technologies, and costs? If we are aiming to change just our members, we don't need to do this. But if we are to impact the wider society, the Coop needs to lead the industries. (group A, HUCC general manager)

For the HUCC management, it is crucial for members to learn about plastic, recycle technology and industry for appreciating and supporting the VWR project. This challenge is also an opportunity for dialogue. The researcher from PIDC was invited to give several talks to HUCC members regarding the plastic

technology and industry, which became important input in its campaigns and coordination.

The collaboration between the consumer cooperative and the research institute is crucial. It is also through PIDC that the HUCC found a plastic product manufacturer and was able to design a product. Figure 5 shows the link from research to the Coop to shape the circular economy. In addition, the HUCC realizes that its scale and volume is limited, so the project is used as an example to inspire major retailers like Carrefour and Pymart. The HUCC uses the VWR project to demonstrate that recycling practice is critical for ensuring the qualities of recycles, that collection and transportation can be coordinated and that manufacturers have the technology to reuse plastics to produce everyday products with good quality. So, Figure 5 also shows arrows from research and the Coop to the circular economy.

Lastly, figure 5 shows an arrow from the HUCC to policy makers to institute the circular economy. The HUCC stressed that, based on their experiment, the quality of recycled material and effective collection and transportation are critical for turning waste into stable supply of inputs. Another critical component in growing the circular economy is scale, the volume of recycle. The HUCC recommends government policy requiring vegetable wraps to be made by single type of plastic and to be included on Articles Announced for Recycling. These measures are believed to create a sizable and stable recycle market for the circular economy.

In the process of engaging with the state, the HUCC leaders noticed how government agencies have different priorities regarding plastic reduction. For instance, the Department of Agriculture is concerned to protect farmers' income and reduce loss when produces are not protected by plastic wraps and trays, while the Department of Environment aims to reduce all unnecessary plastic use and is eager to find a workable solution. This knowledge led the HUCC to explore a common ground for policy change in the subsequent project. When the HUCC released its tea bottle made from recycled plastic bottles in 2025, the project that developed after the VWR project, the HUCC brought together the Resource Circulation Administration and the Food and Drug Administration to find a way to satisfy food safety while encouraging the use of recycled materials. The process of policy advocacy then involves a different kind of deliberation and communication, one that the data in this research cannot fully capture.

The instituting of the circular economy illustrates its being conditioned by policies and consumers' everyday practices, while a consumer cooperative can serve as an action lab that encouraged member reflexivity and deliberation around the role of citizens in the economic transition, at the same time institute a circular economy as an example to demonstrate the reorganization of collection and transportation, and create conditions for growing the circular economy.

5. Concluding Discussion

The key practical lesson from this analysis is that consumer cooperatives can be a citizen action lab that can contribute to circular economy on three different levels. Consumer cooperatives allow individual consumers to engage with each other in debating, planning and experimenting with different consumption practices, coordinate different units as a form of collective actions. Consumption is not just product choice or habit, but a series of everyday practices that can and need discussion and coordination to change. Moreover, there is also the potential for collaborating with market and non-market actors to link consumption to other economic processes in new ways, taking advantage of scale to exert the influence of consumption and adjust consumption for new economic configuration to form. It is thus crucial for consumer cooperatives to realize the limits of a single organization and to think how the circular economy is instituted and the roles of the state and different industries from production to distribution and research and development.

These practical lessons are linked to theoretical contributions regarding the relation between circular economy, sustainable consumption and the cooperative as an action lab. The instituted economic processes framework helps us approach the circular economy not as a closed circle directly from consumption back to reproduction (Calisto Friant et al., 2024), but in fact requires the organizing of material collection and transportation. These two processes shape the quality and quantity of the recycled materials collected from dispersed homes and the stability in shifting materials' control to reproducers. Hence, the circular economy is not the extension (adding a few more steps) but the reverse of the original economy. This project then highlights the crucial role of some material devices from cabinets in local stations, the storage area to the bulk bags in supporting the collection and transportation processes.

It also allows us to take consumption more seriously, examining the relation between consumption (and recycle or disposal) and other economic processes, and how each can be organized in specific ways. The circular economy thus requires organizing effort and reflects institutional contexts, not just supported by state policies, market arrangements, households and consumers (Lane et al., 2024; Pickering, 2024) but can also be instituted by solidarity economic organizations, research organizations and their interaction with the state and other market actors. Future studies can further explore how solidarity economy works with the state to institute economic processes.

The case study contributes to our understanding of everyday circular practices (Greene and Hobson, 2025), by examining how practices interact with multiple structures (family, retail, transport, production), and how recycling and new production can be organized by solidarity economic organizations. A consumer cooperative collaborating with a research organization or experts can generate knowledge and turn it into elements of a new recycling practice. Moreover, this consumer community provides an example to think about how to radicalize consumption (Fuchs et al., 2025). The HUCC uses 20% devoted members to deliberate and plan action projects that motivate and encourage another 20% of indifferent members to fit

recycle in everyday practices. This is not accomplished in one project in a short period of time but built on organizational history and learning from a series of projects.

Finally, the case serves as an example of how the solidarity economy can serve as an action lab for circular economy and sustainable consumption (Sahakian et al., 2024). The action lab is protected space with committed members to reflect on their actions and deliberate new strategies. But the project is a more complex example of 'dispersed practices' (planning, communicating, organising). While Greenpeace raises the issues and engage in public campaigns, the HUCC devised a three-level strategy: innovation in everyday practices, collaboration with other research and economic actors for economic innovations and use those innovations to advocate for policy changes. Current discussions of sustainable development in general and circular economy in particular should document the strengths and contributions of such action labs and find ways to strengthen these labs for transformation more rooted in everyday life.

This dynamic and the learning from a series of projects can be seen as a new form of collective action that contributes to the study of solidarity economy in Taiwan. The rapid growth and socioeconomic transformation in Taiwan generated the context for consumers' organizing and critique of development (Wahn, 2015), which gradually led to the formation of practice communities (Wu and Wang, 2007; Jen and Wang, 2009), consumer governed alternative markets (Wahn, 2020) and the diffusion of a particular morality of consumption in East Asia (Wahn, 2023). The ability to use everyday practices to stimulate economic reconfiguration and advocate for policy change can set an example for other solidarity economies.

This paper is also a collaboration between the HUCC, PIDC and a sociologist, to account for the sociological significance of the project. The research is thus limited by the small group of interviewees and the support by HUCC and PIDC. These limits present directions for future research regarding internal negotiations and tensions in external organization collaboration and internal member coordination. Despite these limits, the collaboration sheds light on how HUCC and PIDC hope to share this experiment with other cooperative researchers and practitioners, encourage others to engage in similar innovations in circular economy and policy. The paper hopes to be the starting point of this discussion.

Conflict of interest

The author declares that this research was supported by The Homemaker Union Consumer Cooperatives. The author has maintained full independence in the research design, data analysis, and interpretation of results to ensure the academic integrity of the study.

Data availability

The data that support the findings of this study are restricted and not publicly available. However, the data will be made available by the author upon reasonable request.

Statement on the Use of Generative AI:

During the preparation of this work, the author used Gemini (Google) for the purpose of assisting with the technical translation of sociological concepts and the linguistic review of the Spanish title and abstract. After using this tool, the author reviewed and edited the content as necessary, assuming full responsibility for the content of the publication.

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