

HOW DOES PUBLIC PARTICIPATION INFLUENCE FOOD-PRODUCTION IN URBAN GARDENS?



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A case study: 'Garden City' in Taipei, Taiwan

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How does public participation influence food-production in urban gardens?
A Case Study of 'Garden City' in Taipei, Taiwan

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Abstract

Garden City policy has been promoting since 2014 in Taipei Taiwan, which eagers to create more green space, containing food-producing function and improving the living quality in the city. After years of implementation, there were different food production conditions between urban gardens due to the different people involved. This study uses public participation to discover who participates, to what extent they participate and why they participate. Furthermore, the study uses Mutual Incentive Theory to examine both individual and the collectivistic incentives of joining the garden. Collectivistic incentives might have an impact on an individual to participate in the community garden. Overall, public participation can have a certain level of impact on food production in the community garden of Taipei. However, little evidence shows that the collectivistic incentive of the community will drive the residents to participate in the garden.

Keywords: community garden, public participation, mutual incentive theory, sense of community, Taipei, Taiwan.

Summary

Garden City policy has been promoting since 2014 in Taipei Taiwan, which supports to create more green space in the city, containing food-producing function and improving the living quality. After a few years of implementation, there is criticism about some urban gardens that do not contain the function of food production due to the bad condition of plants and lack of labour.

Besides food and space, people are an essential element in creating and maintaining the urban garden. In return, the benefits participants receive from the garden can become their incentive to join the garden. However, the community garden, one type of urban garden in Garden City policy, does not have many studies in the Asian context since the policy only has launched for four years.

Considering the current implementation of the policy and fulfilling the research gap, the study will focus on the community garden and the essential element: people in the garden. The goal of the study is to explore how the people involved influence food production in the community gardens in Taipei. Furthermore, with the coming up question: why the participants want to join the garden and what influences them to participate in creating and maintaining the community gardens in Taipei.

The study uses public participation to explore who participates, to what extent they participate and why they participate. Furthermore, the use of Mutual Incentive Theory can examine individual incentives to join the garden, and whether the collectivistic incentives of the community drive the people to participate. The research question is raised as “How does the participation of citizens in the planning and maintenance of the Happy gardens influences food production in the urban garden?”

The study applied a case study in Taipei. It chose five gardens and carried out 23 face-to-face in-depth interviews. Also, relevant documents and field observations were conducted to collect related information. All interviews were carried out in Mandarin and later translated into English to further do the coding to answer research questions.

As a result, the people involved will influence other participants' participation, which is related to the maintenance of the garden and steady food production. Besides, the majority of the participants are women, which is supportive of maintaining the community garden. The process of creating the garden is considered shallow because most participants follow the set-up of the garden and do not have much space for making decisions. Moreover, participants cannot force to grow as many vegetables as they wish due to limited land area, seasons, and weather conditions. The benefits they receive from the garden are mostly in line with other studies about the benefits and motivations of participants in the community garden in the western content. The cost participants encounter in the garden does not hinder them much. The collectivistic incentives are not the primary drivers to draw people to the garden since few clear shared goals or shared values are identified in the neighbourhoods in Taipei. Overall, public participation can have a certain impact on food production in the community garden of Taipei.

1. Introduction

1.1 The 'Garden City' in Taipei

With the ambition of becoming a more sustainable city, the 'Garden City' policy has been promoted in Taipei after Dr. Ko was elected as the new city mayor in the year 2014. As the capital city of Taiwan, it wished to become a more liveable city through the implementation of 'Greener' and 'Healthier' policies (Ko, 2014).

Background

Taipei is the most crowded city in Taiwan and contains lots of immigrants. The immigration wave began in the 50s and 60s, during a period of economic development, when many people from rural areas moved from the south to Taipei, seeking job opportunities (Liu & Tung, 2003). Until the year 2018, there are almost 2.7 million people living in Taipei city, and such a vast population shares an area of only 272 km² (Department of Household Registration, Ministry of the Interior, Taiwan, 2017). Each citizen has only 5.32 m² of park and green space in the city (Parks and Street Lights Office, Taipei City Government, 2017), which is far less than the 9m² per person suggested by WHO.

Today, Taipei citizens pay more attention to improving urban quality of life especially since this increased urbanization and an improved economy. Trying to maintain and increase urban green space is one way, however ensuring the quality of food is another concern emphasized especially as the city is experiencing a crisis of food safety (Caputo, 2012). In addition, the elderly - who moved from the southern part of Taiwan, and who have grown up in villages with the experience of rural life in their early ages - emphasise that living in a healthy and ecological environment in the city is essential (Farming Urbanism Network (FUN) Taiwan ! , 2017).

As an immigrant city, most residents in Taipei come from everywhere, leading to a distance between people. In the past, the rural lifestyle encouraged a close relationship with neighbours and was based upon people growing up, living, and working together in the same village. However, nowadays in Taipei, people gather from all over Taiwan to work and therefore they do not have this co-creational experience within one area; therefore, the depth of connection between people fades away.

Aims

The 'Garden City' aims to create a more suitable living environment for Taipei city through both environmental and social methods. By increasing green areas, like gardens, the city can maintain its ecological function (Middle, Dzidic, Buckley, Bennett, Tye, & Jones, 2014). In addition, unlike traditional gardening, which only uses the ornamental plants, urban gardens in the policy sought to be edible and become a supplemental food resource. Moreover, urban gardens in Taipei should be multifunctional, which not only contributes to food production but also benefits social values (Huang, 2016). Gardening

events can educate people with environmental awareness and enhance the connection between people (Huang, 2016).

To achieve the aforementioned goals, the government encourages citizens to reuse vacant areas to activate neglected space in the city and turn it into green gardens (Ko, 2014).

Types of urban gardens in ‘Garden City’

Depending on different vacant spaces in Taipei city, four categories of urban gardens are created and used by different groups of people. The following introduces the four types of urban gardens (Retrieved from Taipei City Farm platform, 2017):

1. Happy gardens: These use vacant public space owned by the public sectors to plant. Space is often from the demolishing of old public buildings. The gardens are mostly located inside a community or a hospital, and are open to citizens or communities to maintain.
2. Green roofs: These use public buildings’ roofs, such as public hospitals and local administration buildings to plant. These gardens are open to citizens or communities to maintain.
3. School gardens: These use space in every elementary school and senior high school in Taipei. The caretakers are teachers, students, and volunteers.
4. Civil gardens: These use private land from individuals or farmers in the suburbs of Taipei city. The landowners lend small divisions to citizens to plant with rewards.

Implementing methods

Taipei city government offers different strategies and facilities at different phases to support the four-year policy. During the initial phase of the ‘Garden City’ policy, the Taipei city government is a significant driver to encourage performing urban gardens. First, as the supreme authority, it collects different departments to integrate the resources from public sectors to support the policy. The governmental departments include education, public works, land administration, and economic development (Taipei City Government, 2015). Second, setting itself as an example, the government creates pioneering demonstrations to show citizens what edible gardens are in the city. In addition, the government also offers public space to encourage citizens to plant. Third, the government promotes food education in elementary schools and workshops that train citizens to acquire the skills for holding a community garden.

The website created by the government, Taipei City Farm platform, is a useful tool to accelerate the creation of an urban garden. The website is publicly accessible and contains the updated information of ‘Garden City’. It shows the locations of four types of urban gardens, responsible governmental departments, relevant regulations files, and application procedures of urban gardens (Taipei City Farm

platform, 2017). With a handful of information, citizens can find relevant documents to apply for constructing gardens and find related government departments, where they can ask for assistance to maintain the garden.

In detail, when creating the urban gardens, the fundamental rules are that the government sectors own the land of the public space, and the land is open to the public for adoption. Next, for people who are interested in adopting the public space to then transform into urban gardens, they need to sign a contract with the governmental sectors to agree on the use of the public space as an urban garden (Taipei City Farm platform, 2017). Additionally, the applicants need to have a complete plan in terms of constructing, planting, and management to apply for the urban gardens (Taipei City Farm platform, 2017).

After two years of initial cultivation, 2015 to 2016, the Taipei city government switched the role from the dominant orientation to supporting local initiatives. It wishes for the locals, either trained or inspired by the initial phase of the policy, to raise urban gardens actively themselves (Taipei City Government, 2015).

Outcomes

To date, after near four years of implementation, 545 units of urban gardens have been created, which includes: 71 Happy gardens, 55 Green roofs, 401 School gardens, and 18 Civil gardens. The total area is 145,292 m² (Huang, 2017).

1.2 Societal problem

After the four-years implementation of the 'Garden City' policy, 71 Happy gardens have been established, which mostly use the vacant land to grow and include five demonstration gardens assigned by the government. However, some news has revealed the outcomes that different Happy gardens have different planting conditions (Guo & Hou, 2016) and further judgment about the function of food production (Hou, 2016).

In the year 2016, there were different conditions between demonstration gardens raised by the government and Happy gardens built by the community. In one demonstration garden, it was suggested that due to its distance from the water, it was challenging for caretakers to take care of the plants and as a result plants withered, with people unable to remove dead branches from the demonstration gardens immediately (Hou, 2016). Furthermore, a field visit in January 2018 confirmed that one demonstration garden with plants in raised pots was not blooming (Figure 1). A lady hired by the company which oversaw the demonstration garden said that due to a lack of labour, the plants could not be watered regularly and adequately. Apart from demonstration gardens, there was less information about the maintenance problems from other types of Happy gardens, especially those located in communities. In addition, the short visit to nine Happy gardens in January 2018 revealed that all of them were flourishing.

With the criticism about the inferior status of demonstration gardens, there are further doubts about food production since the gardens have been created. Since the aim of the policy is to gain edible landscape and supplemental food in the city, some people question that too many ornamental plants and pot-plants were planted which do not provide food supplements (Audit Department in Taipei City, 2015; Hou, 2016). Additionally, the photos on the website, Taipei City Farm platform, shows that different 'Happy gardens' have different types of implementation, which ranged from several pots, to various vegetables in the soil (Figure 2). Moreover, the field visit in 2018 showed that Happy gardens had various ways of planting, such as using half of the land to plant vegetables and fruits, using many pots to plant various vegetables, or entirely utilizing the area to plant many vegetables in the soil. However, there is not much information about food production in Happy gardens.

Therefore, with the above information, the study poses the questions: why are there different conditions between different Happy gardens and how do the people involved influence the food production of Happy gardens?



*Figure 1 One of the demonstration gardens beside Taipei government building
by the author on 2nd January 2018, Taipei*



*Figure 2 Four different 'Happy gardens'
retrieved June 8, 2018, from <https://farmcity.taipei/>*

1.3 Scientific problem

Nowadays, urban agriculture gains much attention and popularity due to increasing concerns about urban resilience with two necessary basics: food and space. Since food is one of the critical elements to strategies of feeding the massive population growth in the urban area (Viljoen & Wiskerke, 2012), urban agriculture can offer fresh, seasonal, and local food by different forms of food supply (Caputo, 2012). When focusing on the city area, urban food production can happen in various spaces. The empty spaces or unused urban space, such as the irregular space, the rooftop, abandoned buildings, and neighbourhoods, can be seen as options to plant (Gasperi et al., 2016; Niwa, 2012; Rupprecht, 2017). These spaces could become a part of urban green space, like gardens and farms, with food production functions (Swanwick, Dunnett & Woolley, 2003).

Considering another important implementing element: people, the urban garden, one type of urban green space, can become a field of civic engagement beyond food production. First, from the management and governance point of view, the public could participate in improving quality of life by taking the responsibility of managing the freed spaces and wasteland and turning them into urban farms (Gasperi et al., 2016). Also, the community garden can become a symbol that is applied to discuss the switching roles of different actors in the governance of the urban green space (Ghose & Pettygrove, 2014a; Rosol, 2010). It can further be applied to examine different governance approaches (Fox-Kämper, Wesener, Munderlein, Sondermann, McWilliam, & Kirk, 2018).

Second, in terms of benefits, people could also gain other values besides food from the urban garden, for instance, the social interaction, environmental education, and the improvement of physical health (Swanwick et al., 2003). The public-access community gardens could offer space for people to reconnect with nature and to learn about the environment and sense of the place (Bendt, Barthel, & Colding, 2013). A community garden can also provide a space for locals for recreation and leisure functions (McVey, Nash, & Stansbie, 2018; Trendov, 2018). Furthermore, those benefits could be part of the motivations that drive the participants to join the garden (Draper & Freedman, 2010; Scheromm, 2015; Trendov, 2018). Therefore, people are not only the manager but also the beneficiaries of both food and other benefits from the urban garden.

Referring to the literature, the urban gardens from the 'Garden City' policy in Taipei use vacant public space (Ko, 2014). Mainly, the Happy garden uses the vacant space in the neighbourhood, which is left from demolishing old public buildings and considered as the community garden. However, although the community gardens have been implemented and discussed with various perspectives in the United States; some in Europe and Australia (Beilin & Hunter, 2011; Ghose & Pettygrove, 2014a; Guitart, Pickering & Byrne, 2012; Trendov, 2018; Scheromm, 2015; Nolan & March, 2016), community gardens have not been studied extensively in the Asian context (Hou, 2018).

Furthermore, the benefits gained from the garden could become the incentive for people to participate

in the community garden, which are widely studied in the United States (Draper & Freedman, 2010) and Europe (McVey et al., 2018; Trendov, 2018; Scheromm, 2015). However, in the Asian context, little research focuses on the factors influencing citizens to participate in the public green space and related activities. It is limitedly in Japan, referring to the natural conservation activity (Sakurai, Kobori, Nakamura & Kikuchi, 2015) and Korea, referring to the satisfaction of the participant in urban agriculture (Oh & Kim, 2017). Additionally, there is no research studying the motivation of the participant to join the urban garden in Taiwan.

1.4 Objective

Since the 'Garden City' policy has only been implemented for four years, there is very little research about urban gardens in Taipei. Considering the current implementation of the policy, to fulfil the research gap, this study will focus on the community garden and one essential element: people in the garden. In such a way, it will include a variety of local participants.

In detail, the goal of the study is to explore how the people involved influence food production in the community gardens in Taipei. Therefore, it raises the question: why do participants want to join the garden and what influences them to participate in creating and maintaining the community gardens in Taipei?

1.5 Structure of the report

The following chapters will describe the chosen theories, public participation and Mutual Incentive Theory, to analyse the involved participants and their incentives to join the community garden. Following the theories is the research question. Chapter 3 illustrates the research strategy. This includes the case study, using field observation and interviews at the community garden to collect the essential information. The results are outlined in Chapter 4, referring to five community gardens in Taipei. Chapter 5 further discusses the findings and constraints of the study. Finally, there is the conclusion, which outlines suggestions from both scientific and social perspectives. The interview questions are attached to the appendix.

2. Theoretical framework

2.1 Public participation

“Public participation can be used to evoke almost anything that involves people” (Cornwall, 2008, p. 269). Public participation is a significant approach that is widely used in various domains, trying to involve the locals in the decision-making process. Particularly in urban planning and development field, it is used in constructing community garden (Nolan & March, 2016), urban planning and development (Scott, Russell, & Redmond, 2007; Van Empel, 2008), improvement of landscape and environment (Vítovská, 2012), public space design (Dubbeling et al., 2009), and urban governance (Gustafson & Hertting, 2017; Rosol, 2010; van der Jagt et al., 2017).

The public participating in the planning process has several advantages. First, public participation can lead to a feeling of commitment. Different to the traditional ‘top-down’ planning approach, the earlier involvement of relevant actors, the more feeling of commitment they will have and the more input they can deliver (European Council of Towns Planners, 2002 as cited in Dubbeling et al., 2009; Healey 1998, as cited in Nolan & March, 2016). Second, it can increase the residents’ responsibility for the areas, such as the installation and maintenance of the gardens. If the public space uses the participatory design, involving people in the designing process, the people will feel a heightened sense of belonging to the achievement (Dubbeling et al., 2009). Third, the public participating in the planning process can determine and complete the real demands of the users (Francis, 1989 as cited in Middle et al., 2014; Mensah, Andres, Baidoo, Eshun & Antwi, 2017; Nolan & March, 2016). For instance, *“without understanding the needs of the community, the construction of the community garden would be unproductive and ineffective”* (McVey et al., 2018, p. 54). Also, without the proper involvement at the early stage of planning, it will lead to the failure of constructing the community garden (Nolan & March, 2016). Therefore, to date, public participation becomes indispensable for planning processes.

When further disassembling public participation in the practice, some fundamental questions are: who participated (Blakeley & Evans, 2009; Buono et al., 2012; Cornwall, 2008), to what extent they participated (Cornwall, 2008), and why they participated (Blakeley & Evans, 2009; Cornwall, 2008; Simoons & Birchall, 2005). Therefore, the following section will use these three concepts as the main elements to construct and discuss public participation.

2.2 Who participates

“Most participatory processes do not and literally cannot involve ‘everyone’” (Cornwall, 2008, p 276). Therefore, participants are limited to a handful of people or particular interest groups (Cornwall, 2008). For instance, when creating urban gardens, the participants must have a common interest in gardening or planting (Drake & Lawson, 2014). Moreover, while creating a community garden, the participant must be a resident of the community. With those concerns, who could represent the voice to create or perform a garden?

The lack of representativeness can be considered as a weak part of participation (Buono, Pedititi, & Carsjens, 2012). If the decision to construct the community garden is not representable, it is not convincible for participants to join the following discussions or activities related to the garden (Nolan & March, 2016). Often, participants who go to the public meetings are easily grouped by gender and age (Cornwall, 2008), while during the participation process, the under-represented or marginal groups are often women and children (Borrini-Feyerabend, 1996 as cited in Buono et al., 2012). Alternatively, those participating in urban agriculture in Seoul, Korea, are mostly elders and women (Oh & Kim, 2017). McVey et al. in 2018 claimed that the participants of the community garden would differ in age. Therefore, in Taipei, are women and children indeed the marginal group in the ‘Garden City’ policy?

The planner, who is in between the regulation and the participants, could establish the engagement framework to foster the public participation and to catalyze the building process of a community garden (Nolan & March, 2016). In Taiwan, there is a system called ‘community planners’, which was established in the 90s and aimed to enable and empower the community members to improve their neighborhoods in districts (Kuo, 2004 as cited in Hou, 2017). The community planners are citizens who are passionate about their communities and trained by the government, NPO, and experts, so they are able to make proposals and undertake projects which are financially supported by the government (Kuo, 2004 as cited in Hou, 2018). They are considered the ones who understand the community and represent the real demand of the locals, so they are able to lead the locals to improve the quality of the living environment of the community. Moreover, the planner should pay attention to the equal participation of various groups (Dubbeling et al., 2009; Nolan & March, 2016). Therefore, to form the urban garden in Taipei, will the involvement of the community planner influence the creation of community gardens?

In the Happy garden from the policy ‘Grden city’, considered as the community garden, who represents the voice to create or perform a garden, and will the community planner involved in the forming process affect the formation of the community garden?

2.3 To what extent do people participate?

The participation process contains diverse degrees of participants' involvement (Cornwall, 2008). The in-depth participatory process can involve people in every activity at different stages, ranging from identifying problems to making decisions. However, if only a small group of people with particular interests are involved, the participation process is still considered as 'narrow'. On the other hand, if a wide range of people are involved in the process only with the approach of informed and consulted, it is still considered as 'shallow' participation (Cornwall, 2008).

Furthermore, different kinds of participation imply significantly different levels of engagement (Cornwall, 2008). As Cornwall mentioned in his research, the consultation exercises could only reach a small group of people as the core representation; while, at the implementation stage, it might only involve a particular beneficiary. It needs to clarify that *"on what basis different people engage in order to make sense of what 'participation' actually involves in community development initiatives"* (Cornwall, 2008, p. 280).

In addition, when speaking of public involvement in decision-making, the decision means all and any decisions that happen during the process (Cornwall, 2008). Nevertheless, it is essential to clarify in which decision the public has the opportunity to participate and who exactly participated in that decision-making (Cornwall, 2008).

Considering 'Grden city' in Taipei, since the government claims to have both top-down and bottom-up approaches, it is necessary to discover at which levels the participants are involved in the garden. Perhaps, the participants are merely involved in the early stage of the community garden in terms of decision-making in designing the layout of the garden. Also, how does the degree of involvement influence the formation of the garden?

2.4 Why do they participate?

As mentioned above, the participants who are involved in specified projects or activities are the groups with specific interests (Cornwall, 2008; Russell et al., 2007; Blakeley & Evans, 2009; Gustafson & Hertting, 2017). To create a garden, first, people who are interested in gardening besides offering the land are required (Drake & Lawson, 2014). Second, people who joined the garden can receive individual rewards. For instance, participants in the garden can improve their health condition by increasing physical activities from gardening and taking fresh food produced from the garden (McVey et al., 2017).

Besides the personal benefits, in the community garden, it also involves mutual benefits for the community (McVey et al., 2017). Notably, the social benefit is the critical driver for the popularity of

communal urban gardens (Veen, 2015 as cited in van der Jagt et al., 2017). Since the social interaction (Middle et al., 2014) is more likely to happen in the public space with vegetation (Kou et al., 1998 as cited in Middle et al., 2014), it is believed that the community garden can improve social support and community bonds within the neighborhood (Norris et al., 2008 as cited in van der Jagt et al., 2017). In addition, producing food in the city can result in the exchange of local knowledge and skills for urban food growing (Barthel et al., 2015; McVey et al. 2017; Middle et al., 2014), as well as involve an educational function (McVey et al. 2017; Middle et al., 2014).

Besides an individual's interest, the rewards that participants receive from the community garden might become their purpose for getting involved with the garden. Since the community garden can reward participants in both individual and social ways, the reason for the individual to join the community garden may be influenced by external factors, such as social interaction from the neighborhood. Therefore, to analyze the interplay between the individuals and the community, which impacts on engaging people in the garden, the Mutual Incentive Theory can be used.

2.5 Mutual Incentive Theory

Aim

Simmons and Birchall (2005) were concerned that it was more supportive in principles of getting people to participate than in practice, and they were eager to uncover more details about the motivations to participate in one particular group: service users. The service was referred to as the public services in the UK, and the housing and community care services were selected in their study.

Simmons and Birchall (2005) focused on “*what motivates public service users to participate in terms of incentives and attitudes*” (p. 265). It considered that incentives and attitudes were the internal psychological mechanisms, explaining why some participants decided to take part in the public service, while some did not (Simmons & Birchall, 2005).

Background

Much of the literature on incentives focused on rational choices models, which proposed rational actors would not participate in collective action to achieve common goals (Olson 1695; Whiteley 1995 as cited in Simmons & Birchall, 2005) and was better in explaining why individuals did not participate (Finkel et al., 1989 as cited in Simmons & Birchall, 2005). With the argument that “*there is a need to consider a wider array of incentives...where the individual thinks collectively rather than individually*” (Similarly, Whitele, and Seyd, 1992: 59-61 as cited in Simmons & Birchall, 2005), Whiteley and Seyd (1992, 1996, 1998; Whiteley et al., 1993 as cited in Simmons & Birchall, 2005) combined social-psychological and rational choice explanations to create the General Incentives Model, which still worked within a

rational choice framework.

Main variables in Mutual Incentive Theory

Mutual Incentive Theory then, looked beyond rational choice models, social-psychological choice and General Incentives Models; furthermore, combined two more social-psychological theories of motivations, including social exchange theory and social cooperation theory (Simmons & Birchall, 2005). From the social exchange theory (Homans, 1961; 1974; Blau, 1964; Ekeh, 1974; Molm, 2000; 2003; Alford, 2002 as cited in Simmons & Birchall, 2005), the General Incentive Model assumed that individual rewards and punishments motivated people. From the social cooperation theory (Sorokin, 1954; Argyle, 1991; Axelrod, 1984; Vugt et al. 2000 as cited in Simmons & Birchall, 2005), it interpreted human behavior in various ways and assumed three variables could motivate participation, which included shared goals, shared values, and sense of community. The variables are listed below in detail (Simmons & Birchall, 2005, p. 266):

1. *Shared goals: people express mutual needs that translate into common goals.*
2. *Shared values: people feel a duty to participate as an expression of common values*
3. *Sense of community: people identify with and care about other people who either live in the same area or are like them in some respect.*

Consequently, *“Mutual Incentive Theory takes in both individualistic and collectivistic incentives”* (Simmons & Birchall, 2005, p.266).

As Simmons and Birchall (2005, pp.266-267) stated, *“the individualistic incentives are an enhanced model of cost and benefit, considering also the positive effects of habit and the negative effects of opportunity costs (whereby the individual calculates the costs of opportunities forgone) and satiation (whereby the oversupply of benefits reduces their subjectively perceived value)”*. Figure 3 shows the factors that influenced an individual’s incentives for participation. The detailed explanation of each factor is listed below. If the benefits outweigh the cost, the individual participation will be more likely to happen (Cornwall, 2008; Crossley, 2002 as cited in Blakeley & Evans, 2009).

1. Benefits: as Cambridge Dictionary defined, it is a helpful or good effect, or something intended to help.
2. Habit: as Cambridge Dictionary defined, it is something that an individual does often and regularly. Furthermore, as Simmons & Birchall (2005) stated, the effects of habit were largely narrowed to a single participant type, with unique characteristics. For example, certain participants were very active and confident in the activity they were involved.
3. Costs: as Cambridge Dictionary defined, it is something that is given, needed, or lost in order to get a particular thing.
4. Opportunity costs: as Cambridge Dictionary defined, it is the value of the action that an individual does not choose when choosing between two possible options.

- Satiation: as Cambridge Dictionary defined, it is the act of completely satisfying an individual or a need, especially with food or pleasure, so that the individual could not have anymore.

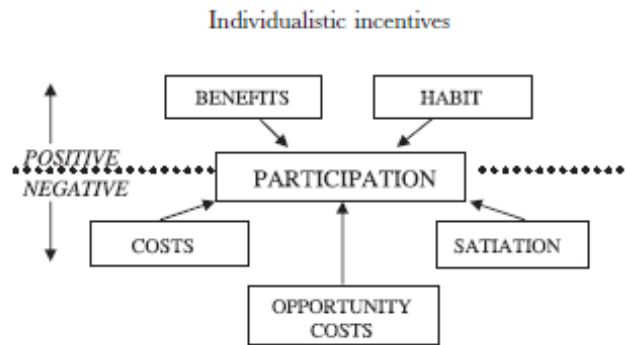


Figure 3 Individualistic incentives (Simmons & Birchall, 2005)

Collectivistic incentives as the main drivers

The collective identity that existed previously could lead individuals to participate (Blakeley & Evans, 2009). Furthermore, the collectivistic incentives were primary drivers other than individualistic ones since “*participants overwhelmingly stated that they wanted to get benefits for the groups as a whole rather than just for themselves as individuals*” (Simmons & Birchall, p.268, 2005). When the common goals in a closed group oversaw beyond the individuals’ ones, people tended to work together to fulfil the common objective. Figure 4 shows the collectivistic incentives from Mutual Incentive Theory and the details of each element are mentioned above as the three variables.

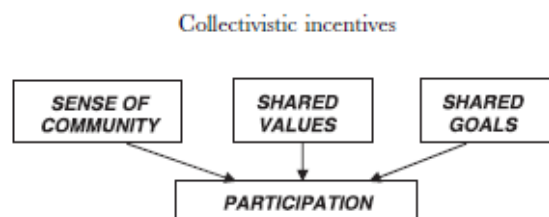


Figure 4 Collectivistic incentives (Simmons & Birchall, 2005)

Additional factors influencing individual incentives

Combined with literature of community gardens and the findings from the participants who voluntarily offered the public services, the direct cost of gardening is made up of several categories, including finance costs, time-consuming, conflicts between people and negative expression from others and participants themselves (Simmons & Birchall, 2005; McVey et al., 2017; Middle et al., 2014).

On the other hand, for the benefits of gardening, the result of Simmons and Birchall (2005) can further

subdivide into external and internal. The external benefit refers to the material and tangible aspects, such as financial reward, social life, and problem-solving, while the internal refers to affect and expressions, such as a sense of achievement, enjoyment, and valuable learning experience. From other research, the benefits gained from the community garden also include healthy food and physical condition as well as education (McVey et al., 2017; Middle et al., 2014).

Therefore, the benefits participants receive from the community garden can be categorized into external benefit: financial rewards, solving problems, and social connection; self-fulfillment: self-confidence, sense of achievement, chance to speak out, and enjoyment; gaining knowledge: agriculture or food education; healthy: food and physical condition. Table 1 lists the adjusted costs and benefits from several studies.

| Cost | Benefits |
|--|---|
| <ul style="list-style-type: none"> - Finance costs - Time-consuming: the effort of learning new skills and meeting new people - Conflicts between people - Negative expression: being unpopular and being bored or uncomfortable | <ul style="list-style-type: none"> - External benefit: financial reward, solving problems and social connection - Self-fulfilment: self-confident, sense of achievement, chance to speak out and enjoyment - Gaining knowledge: agriculture and food - Healthy: food and physical condition |

Table 1 Cost and Benefit, adjusted from the research: Simmons & Birchall (2005), McVey et al. (2017) and Middle et al. (2014)

By using Mutual Incentive Theory, the purpose of participants who joined the community garden can be analysed individually and collectively. The theory contains factors that influence the motivation of participation from both personal and communal sides. In terms of individual motivations, this includes personal interest, personal rewards, and barriers; while, the communal part considers the overall community, focusing on shared values, shared goals, and sense of community, which profoundly connect to community bonding within the neighbourhood.

By applying the Mutual Incentive Theory to Happy Gardens in Taipei, the role of the community in motivating residents and further analysing the barriers that stop the potential participant from joining the garden can be understood. For instance, the purpose for individuals joining the community gardens can be uncovered. Moreover, the theory can help to uncover the collectivistic incentives that the community has to drive the resident to stand out and participate in the garden.

2.6 Research Questions

With the theory of public participation and Mutual Incentive Theory, this study will investigate what the position of public participation is in influencing the planning and maintenance of the urban garden, especially the food production in Taipei. More specifically this includes, who, to what extent, and why the people participate in the garden. Also, this study will look at how the communal incentives of the community influence their motivation to participate. Therefore, the following main and sub- research questions are presented:

The main research question:

How does the participation of citizens in the planning and maintenance of the Happy gardens influence food production in the urban garden?

Sub-questions:

1. Who is involved in the planning and maintenance of the community garden, and what are the roles of the participants?
2. In which phase in the planning process and to what degree are the participants involved in community gardens?
3. What are the individual and collective incentives related to the food production of the participants to participate in the community garden?

3. Research Methodology

3.1 Case study: community garden

To answer the *how* question: how the participants influence food production in urban gardens in Taipei, a case study is used as an approach (Yin, 2003) to analyse participants.

In Taipei, the research focuses on the community garden from the Happy garden, which is open to being adopted by citizens or communities. Citizens adopting the community garden can respond to the study topic: public participation in the urban garden. Therefore, the study firstly excludes the hospital garden since the participants in the hospital are limited to the patient. Second, the demonstration garden created by the government is exclusive since the status of the garden to date is not good enough to produce food.

The community gardens in Taipei are diverse in size, location, and construction years. To narrow down variables, the area of the selected gardens will be between 200 and 300 square meters. Furthermore, since the participant is the centre of the study, different neighbourhoods located in various districts will be chosen to collect various participants. Consequently, the selected gardens are located in four neighbourhoods spread across four districts, including Shi-Lin, Da-An, Zhong-Zheng, and Wan-Hua.

After interviewing participants from the community gardens, considering different construction years, one more garden is added, which was built in the year 2012. By adding this garden, it is possible to compare whether there are differences between the gardens constructed before and after the policy. It is Happiness Farm located in Song-Shan neighbourhood, which was implemented before the policy in 2014. Table 2 shows the information about the selected gardens, including the neighbourhood, the population, and the cultivation area. Figure 5 shows the location of the five gardens in Taipei city.

Table 2 Selected gardens and neighbourhoods

| Name | District | Neighbourhood | Population | Cultivating area (m²) |
|---------------------|-----------------|----------------------|-------------------|---|
| Smile Farm | Shi-Lin | Tian-Shan | 3,876 | 264 |
| Schroeder Garden | Zhong-Zheng | He-Ti | 4,646 | 203 |
| Wan-Hua First Green | Wan-Hua | Fu-Fu | 6,210 | 252 |
| Margaret Garden | Da-An | Min-Zhao | 8,437 | 292 |
| Happiness Farm | Song-Shan | Fu-Jian | 4,794 | 1500 |

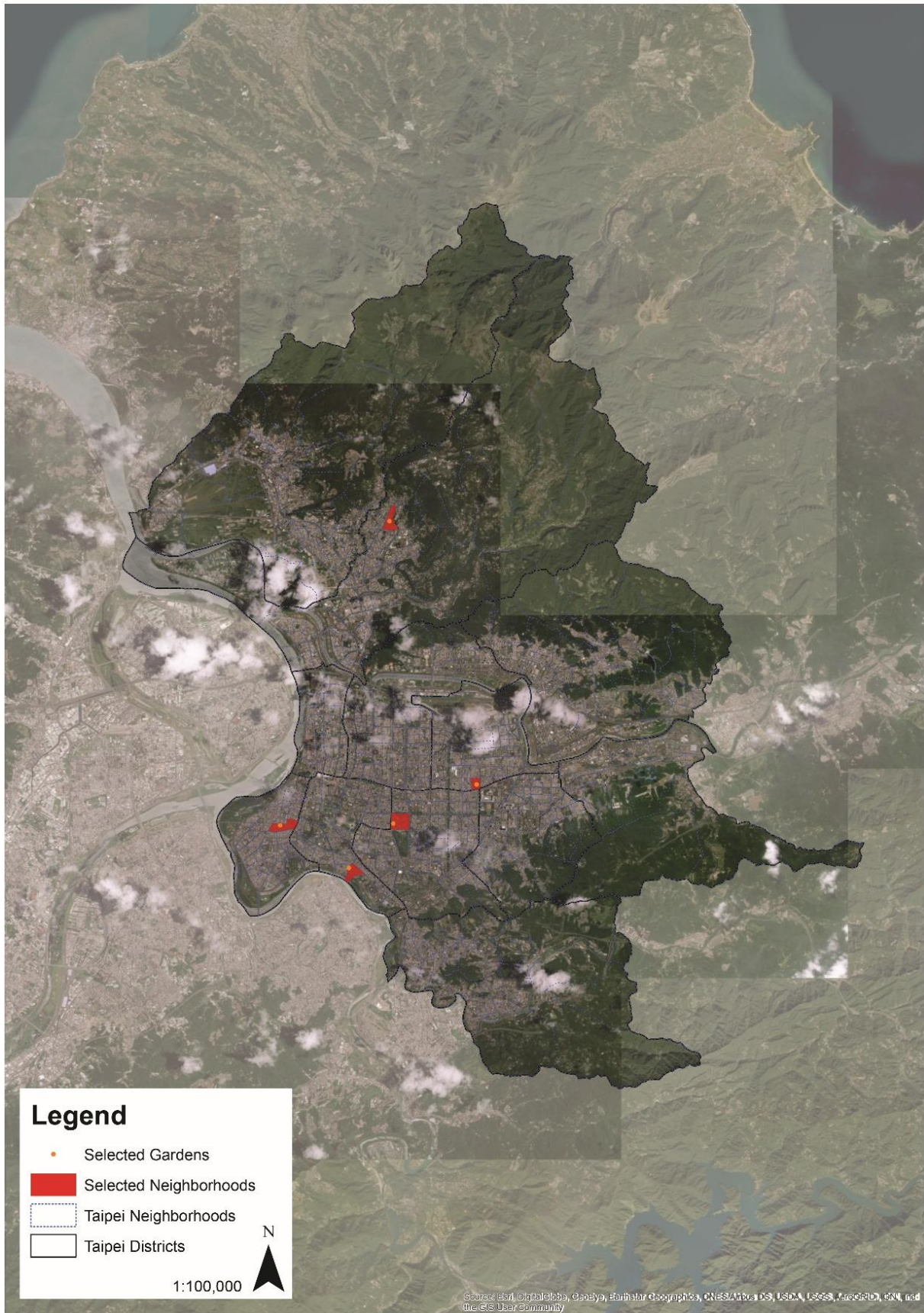


Figure 5 The location of the five gardens in Taipei city

3.2 Data collection

The case study of community gardens involved reviewing all relevant documents and undertaking semi-structured interviews with participants (Scott et al., 2007) in community gardens. Field observation and snowball sampling were both conducted to identify potential interviewees. Moreover, the field observation could also document the real practice of the community gardens in Taipei.

Interview

Interviews were used to answer the research questions. By carrying out interviews, an in-depth understanding relating to the purpose and involved phases of the participants involved in the community gardens were uncovered. A series of face-to-face and semi-structured interviews were undertaken (Creswell, 2009).

To identify interviewees, first, related research and documents were referred to in order to find recognized or engaged organizations and experts (Hou, 2018). Second, to determine the active residents in the garden, field observation was used. Based on Creswell (2009), the researcher took on the role of the complete observer, which meant the researcher only observed without participating. Third, snowball sampling which involved introducing possible interviewees by current interviewees was also considered.

In the end, the interviewees included the chief of the neighbourhood elected by the residents, the previous chief of the neighbourhood, the leader of the garden, a normal member, the case officer of the district office, the previous case officer of National Association for the Promotion of Community Universities (NAPCU), the agricultural teacher and a policy advocator. Different neighbourhood conducted different numbers of interviews, ranging from two to seven. Nearly all interviews were carried out face-to-face, except the previous case office of NAPCU, which was done by phone since she was not in Taiwan at the time.

The list below shows the number of interviews in each neighbourhood, the date of the interview and the roles of the interviewees. Further analysis of interviewees will be provided in the result section.

Table 3 The number and role of the interviewee in each neighbourhood

| Garden Name | District | Neighbourhood | Numbers of interview | Date of interview (in 2018) | Interviewee's role |
|--------------------|-----------------|----------------------|-----------------------------|------------------------------------|----------------------------|
| Smile Farm | Shi-Lin | Tian-Shan | 1 | 12 th October | Chief of the neighbourhood |
| | | | 1 | 12 th October | Leader of the garden |
| | | | 1 | 12 th October | Vice Leader/Normal member |

| | | | | | |
|------------------------|-----------------|----------|---|--|---|
| | | | 4 | 19 th and 29 th October | Normal member |
| Schroeder Garden | Zhong- Zheng | He-Ti | 1 | 9 th October | Agricultural teacher/Policy advocator |
| | | | 1 | 11 th October | Chief of Neighbourhood |
| Wan-Hua First Green | Wan- Hua | Fu-Fu | 1 | 11 th October | Leader of the garden |
| | | | 1 | 15 th and 24 th October | Case Officer from District Office |
| | | | 4 | 15 th and 24 th October | Normal member |
| Margaret Garden | Da-An | Min-Zhao | 1 | 8 th October | Agricultural teacher |
| | | | 1 | 11 th October | Normal member/Cross-section student in the agricultural class |
| | | | 1 | 25 th October | Previous case officer of NAPCU |
| Happiness Farm | Song- Shan | Fu-Jian | 1 | 30 th October | Chief of the neighbourhood |
| | | | 1 | 30 th October | Previous chief of the neighbourhood |
| | | | 1 | 30 th October | Leader of the garden |
| | | | 3 | 25 th and 30 th October | Normal member |

Documentation

Apart from the interviews, during the research process, relevant documents either from the public or private were collected (Creswell, 2009).

Since the policy has been implemented for four years, governmental departments, organizations, and private companies have cooperated to achieve a great outcome. Those sectors had valuable documents with which to consult. On the government side, policy documents, official reports, governmental press releases, and the website - Taipei City Farm platform - were all useful references. On the organization

side, the NAPCU website had a section introducing urban farming¹. The section includes an introduction to community gardens in several neighbourhoods. Other relevant project reports were considered, such as Open Green projects. When entering the neighbourhood, accessible application reports were requested from the locals. The referenced reports and relevant resources are listed below.

| |
|---|
| Governmental and Policy Report [In Chinese] |
| <ul style="list-style-type: none"> • 【Ko-P New Policy】 White Paper on Taipei Municipal • The promotion and implementation plan of Taipei Garden City • The promotion of Taipei Farm City • Garden City Taipei |
| Governmental press releases [In Chinese] |
| <ul style="list-style-type: none"> • Parks and Street Lights Office, Public Work Department, Taipei City Government. • Department of Economic Development, Taipei City Government. • Audit Department in Taipei City, National Audit Office of R.O.C. (Taiwan) |
| Facebook page information [In Chinese] |
| <ul style="list-style-type: none"> • Department of Economic Development, Taipei City Government². • Promotion Centre of Community Gardens in Taipei³. |
| Relevant projects [In Chinese] |
| <ul style="list-style-type: none"> • OPEN GREEN projects⁴, held by CNHW planning and design company. |

Field Observation

The field observation not only determined the potential interviewees but also allowed for observation of the current practice of the garden, which could further determine how the situation was in each garden. First, the field observation focused on the participants’ activities, for example, their daily tasks in the garden and their interaction with other members and neighbours in the garden. Second, it determined the situation of the plants in the garden; for example, whether the plants were withered or whether they flourished. Furthermore, it also explored what kind of green participants grew in the garden.

¹ Rural villages and Urban farming section on the website of NAPCU
http://www.napcu.org.tw/highlight_40.html
² <https://www.facebook.com/doed.taipei/>
³ <https://www.facebook.com/napcufarming/>
⁴ <http://hellogreenlife.blogspot.com/2017/03/open-green-httpshellogreenlife.html>

3.3 Data analysis

After the interviews, the transcripts were used to analyse the content. Kumar (2014) suggested four steps: first, identify the main themes; second, assign codes to the main themes; third, classify responses under the main themes; and last, integrate themes and respond into the text of the study. By doing these steps, core points were recognised from the interviews which in turn provided information to answer the research questions of the study.

All interviews were carried out in Mandarin. Firstly, interview records were transcribed in Mandarin and then translated into English to be further analysed. Based on the interview questions, codes were created. While going through line by line of the transcript, the pre-set codes were assigned; meanwhile, new codes would be defined and added. Later, relevant codes and quotes were sorted together which in turn helped to respond directly to each research question. Sub-themes were then further classified.

Every community garden had a result which corresponded with the research questions. Finally, the overall result was made to give a summary of what was found during the wider fieldwork which further raised a number of points for the discussion part of the study.

3.4 Adjust interview questions and ways of interview

During interviews, it found out that the interview questions should be more simplified. Usually, a simple question could already gather relevant information for two or three interview questions. Therefore, repetitive and similar questions were deleted. The adjusted interview questions were listed in the appendix, which was 13 questions in total.

After all the interviews, the answers showed that some questions were difficult to get a clear answer, especially about food production with timing intervention, as well as the common goal and shared value of the neighbourhood. In addition, questions about satiation and opportunity cost also needed to find an alternative way to ask.

For food production, question five asked how participants' time of getting involved in the garden, in terms of different phases of construction, influenced food production in the garden. The question adjusted to what the interviewee would do to improve the food production and further were guided by the interviewer to think of methods to raise the production, like the land extension.

The common goal and shared value were challenging to ask. Both were abstract concepts and easily misled. When being asked the questions, interviewees often needed some examples to image the situation and answer. However, they often answered based on the examples. For instance, when the interviewer gave the examples like joining the garden because of the shared goal or value like the chief

wanted to build a greener community, or of the Garden City policy, the interviewee then would answer with the agreement of the chief or the policy.

On the other hand, when asking the interviewees why they joined the garden, the first answer comes out was considered as the most important reason. Most answers were because of their interests or their aims to the healthy and safe food, which indicated the individuals were driven by their interests or the potential benefit they could receive from the garden. Therefore, the shared goal and value are were their primary consideration, so it was challenging to have the answer.

It has to stand on the hypothetical situation to ask interviewees about opportunity cost and satiation. For the opportunity cost, the question transferred into alternatively asking interviewees what they would do at the time if they were not gardening; what else activities they would do if they did not go farming. While asking about satiation, the alternative way was to ask interviewees would they want to quit farming? If they answered yes, what would be the reason?

3.5 Research Quality

Since this study uses a case study approach, this was considered as qualitative research. To increase the validity of qualitative research, multiple sources were collected to achieve the objectives of the study (Kumar, 2014). Therefore, literature review, interviews, and a desk study of relevant documents were chosen.

Next, the internal validity established the believability of the qualitative study result (Kumar, 2014). To improve the trustworthiness of the study, *“the research findings have [to be] able to reflect [participants] opinions and feelings accurately”* (Kumar, 2014, p. 219). Thus, confirming the interview content with the interviewee afterward was suggested. *“The higher the agreement of the respondents with the findings, the higher the validity of the study will be”* (Kumar, 2014, p. 219).

4. Results

4.1 Garden information

General Information

The table below contains the general information of the five gardens, including the start year of the gardens, the area of gardens, the planting type, numbers of members, and the gender ratio of the members. A brief description of the garden rules is presented below the images of each garden.

Table 4 General information about five gardens

| Garden | Start year | Area (m²) | Planting type | Member numbers | Gender ratio of members |
|---------------------------|-------------------|-----------------------------|-----------------------|-----------------------|--------------------------------|
| Tian-Shan Smile Farm | 2015 | 264 | Free choice of plants | 16 | 80 percent is female |
| Fu-Fu Wan-Hua First Green | 2015 | 252 | Set species | 45 | 80 percent is female |
| Fu-Jian Happiness Farm | 2012 | 1500 | Freely plants | 168 | Estimated 75 percent is female |
| He-Ti Schroeder Garden | 2015 | 203 | Freely plants | Unknown | Unknown |
| Min-Zhao Margert Garden | 2015 | 292 | Set species (herbs) | Unknown | Unknown |

Field observation

The following figures contain the descriptions of each garden during field visits. It mainly describes the facilities, the greens and the current situation of each garden. Additionally, two gardens are compared in terms of the figures about different phases of the developing process, which are Wan-Hua First Green and Margaret Garden.

Tian-Shan Smile Farm

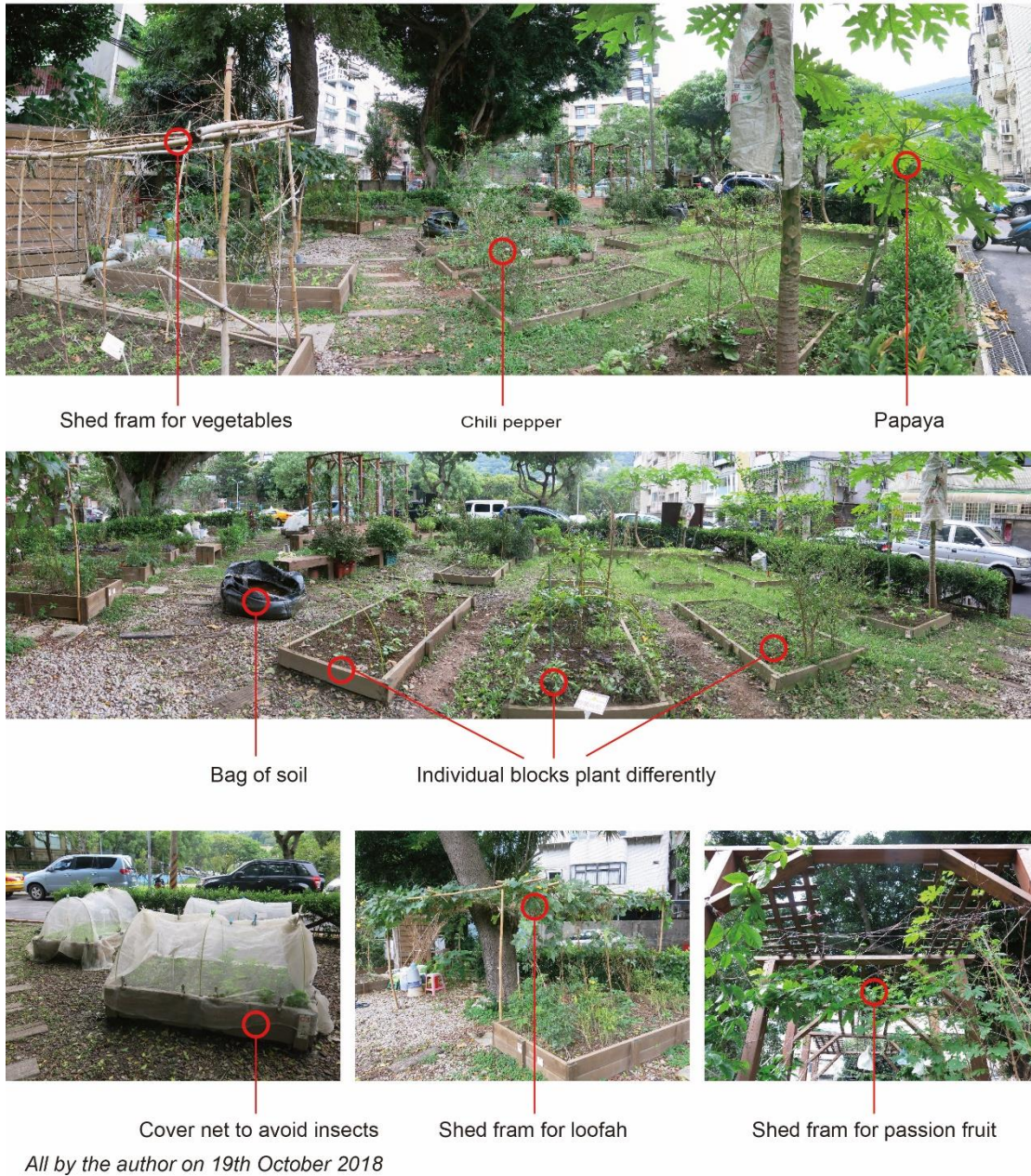


Figure 6 The field visit of Smile Farm

Smile Farm has a soil ground and has several small blocks. Each block has different and various plants, like papaya, basil, sweet potato leaf, chilli pepper, and eggplant. When randomly visiting the farm, including the morning of 12th October and the afternoon of 29th October 2019, participants were working on the farm.

The rules of Smile Farm are:

- Plant species: members decide to plant uniformly or individually.
- Testing period for new members
- Four sub-groups: seedlings, weeding & bug-catching, general affairs, and fertilizer.

- Time for public service
- Two shifts: weekdays and weekends.
- Annual fee: 1000 NTD
- Additional support for potential agricultural teachers in farms
- LINE group to communicate

Fu-Fu Wan-Hua First Green



Field visit on 4th January 2018

Circled with concrete



Field visit on 11th October 2018

Extention area

Raised brick block



Field visit on 15th October 2018

Every one plants the same:
two kinds of lettuce



Water the seedlings



Put organic fertilizer



Chat at the garden

All by the author on 24th October 2018

Figure 7 The field visit of Wan-Hua First Green

The garden has been renovated recently. Compared to the first visit in January 2018, the garden had extended, as shown as the hash area in Figure 2. This was done so that more people could plant. In October 2018, the ground was paved and it had small blocks. The block was raised with bricks to 40 cm. On the date of the second visit, 15th October, members gathered to plant the same two kinds of seedlings together. When visiting the garden in the late afternoon, there were often several people hanging around in the garden chatting, as seen in Figure 2.

The rules of Wan-Hua First Green are:

- Plant species: members decide the planted species.
- Candidate eligibility: the elderly and volunteers of the neighbourhood would be considered first.
- Drawing lots to adapt individual blocks
- Individual responsibility: take care of the greens in their blocks.
- Height limitation
- Green donation to vulnerable groups in the neighbourhood
- Operation regulations: no chemical and weird fertilizer.
- LINE group to communicate

Fu-Jian Happiness Farm



The farm is relatively large and contains many individual blocks. Individual block plants differently, using different methods.



Circled with plastic boards and hoses



Covered with net to avoid strong sunshine



Most individual blocks were casually circled by plastic boards

All by the author on 25th October 2018

Figure 8 The field visit of Happiness Farm

The farm has a soil ground and it has many individual blocks. Every block is different, having various vegetables. Some blocks even have the net covered to avoid insects. In the afternoon of field visits on 25th October 2018, around twenty people were watering, weeding, and chatting at the farm. Members were also talking about the neighbourhood trip together soon.

The rules of Happiness Farm are:

- Plant species: members decide what they want to plant.
- Candidates from the waiting list draw lots to adapt blocks
- Height limitation: 1.8 meters high.
- Operation regulations: no pesticide and chemical fertilizer.
- Management structure: three deputy heads in charge of education, administration, and performance. They supervised 11 group leaders. Each group leader managed around 15 members (URS 27, 2014).
- Time for public service
- LINE group to communicate

He-Ti Schroeder Garden



Pedestrian pavement project is running

Lots of raw materials place in the garden



Actual planting area is about a quarter of the total area.
Vegetables are planted in buckets.

All by the author on 9th October 2018

Figure 9 The field visit of Schroeder Garden

There was a pedestrian pavement project running at the time and lots of raw materials were placed in the garden. The actual planting area is around one-fourth of the total land, and the ground is paved with concrete. The vegetables are planted in small buckets; while the green condition is not in good shape and the bucket has many weeds in it. During the field visits in 2018, no people were working in the garden. Rules for this garden were not available.

Min-Zhao Mageret Garden



Original site in July, 2016
by Liu, Ming-Sheng



Site in December, 2016
Resource: https://pkl.gov.taipei/News_Content.aspx?n=43E05059F-CC72525&sms=72544237BBE4C5F6&s=3BD064D8ADA0F0B8



Overall view of Magert Garden
The planting area is about a quater of the area.

Wooden fence



Paved ground Scaffolding



Herbs wither



Half herbs wither

Rest by the author on 14th October 2018

Figure 10 The field visit of Margaret Garde

The garden has changed several times since 2016. Now, the planted area accounts for about one-third of the total area and the ground is paved with bricks. The garden consists mainly of planted herbs, while some herb plants are already withered. Although there is scaffolding, there are no climbing plants on it. After several site visits in 2018, no people were working in the garden. Rules for this garden were not available.

To summarize, four of five gardens have been built in the year 2015 and the sizes are between 200 and 300 m². The exception, Happiness Farm, has been built since 2012 and the size is more extensive, reaching up to 1500 m². Smile Farm and Wan-Hua First Green are about the same size but the member number of Wan-Hua First Green is almost three times more than of Smile Farm. Since Happiness Farm is the largest, it has the most members.

From both general information and field observation, depending on the green condition and activities of the people, the five gardens can be categorized as an active or inactive garden. The active ones include Smile Farm, Wan-Hua First Green and Happiness Farm, while the inactive ones are Schroeder Garden and Margaret Garden.

For active gardens, people working and hanging around in the gardens were observed during field visits. Those gardens have clear managing systems, which slightly diverge from each other, as shown in each garden. The managing structures of those gardens are formalized, which include lists of members, garden leaders, sub-groups of tasks, public service time, operation regulations, recruiting rules of new members, and communication group in cell phone applications like LINE. In such a formatted way, gardens have efficient ways of maintenance. Therefore, the garden conditions were excellent and the area was mostly green. Additionally, Wan-Hua First Green restricts plant species to two kinds of lettuces, while in Smile Farm and Happiness Farm, members can plant their favourite vegetables.

In contrast, in inactive gardens, the conditions of the vegetables are not so good. For example, the planting area is fragmented, and the herbs or vegetables wither in both gardens. The land is not fully covered with green, only a small part of the area is used to plant the greens. In addition, people were rarely observed in the gardens during the field visits. In Margaret Garden, the wooden fence with a lock gives an exclusive feeling for people, while in Schroeder Garden, since there is a currently a renovation project to create a pedestrian pavement, a lot of raw materials are placed in the garden, hindering the people from currently using in the garden.

4.2 Interview results

Who participates?

| Interview questions |
|---|
| 1. What is your role in the community garden? |
| 3. Does the community have a community planner? If yes, |
| 3.1 What is the role of the community planner in creating a garden? |
| 3.2 How does the community planner contribute to the function of food production in the garden? |

After all the interviews, it was discovered that there are various actors with different functions and relations to promote Garden City and to construct gardens during different phases. Actors belong to different sectors, which include city government, non-profit organizations (NPO), private sectors, and the locals. The functions can be divided into “subsidies offer” and “garden implementation”. The relations include committing, cooperating, supporting, informing, and teaching, which are explained in detail below. The structures of actors, functions, and relations are shown in Figure 6.

- Commission: since Garden City is a policy, the Department of Economic Development and Parks and Street Lights Office, commission the two actors to execute the policy and implement the urban garden.
- Cooperate: NAPCU introduces HFT to the neighbourhood, teaching the locals how to create the community garden.
- Teach and Support: NPOs offer agricultural lessons, teaching the locals about food and how to create a community garden. NPOs also offer the locals advise about applying governmental subsidies.
- Support: CNHW and NPOs assist the Neighbourhood Affairs Office to create the community garden, offering professional knowledge about agriculture and creation of the garden.
- Inform and Support: Neighbourhood Affairs Offices spread the policy information to the residents, try to find the vacant space in the neighbourhood and find intended residents to create the community garden.

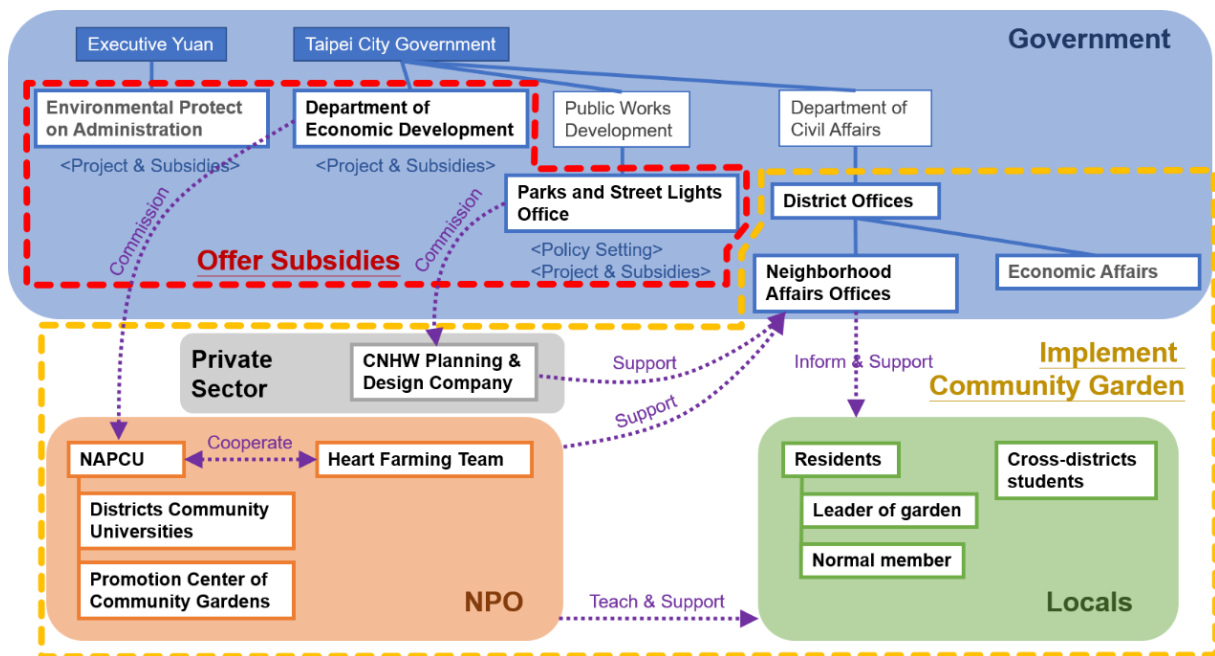


Figure 11 The structures, roles, and relations of relevant actors and participants⁵

For Garden City policy, the Taipei city government has two major departments in charge, which are the Department of Economic Development and Parks and Street Lights Office. The Parks and Street Lights Office is mainly responsible for setting and coordinating the policy (Case officer of NAPCU)⁶. It works with CNHW Planning & Design Company to set up the online platform, Taipei City Farm, aiming to offer relevant knowledge about urban farming and to match the potential land and the team to build up urban farms. They also published a report on the outcome of the policy in 2017. In addition, the company has helped to construct several gardens in neighbourhoods, like Jing-Qin First Park (Taipei City Government, 2015).

Both the Department of Economic Development and Parks and Street Lights Office have subsidies for applicants of community gardens, while the Department of Economic Development is the one that mainly supports community gardens. During the interview, it was found that other governmental departments, Environmental Protection Administration, also had similar projects, environmental education, for the application of grants. Margaret Garden used this subsidy to initiate the construction of the garden (Case officer of NAPCU).

Department of Economic Development works together with the National Association of Promotion for Community University (NAPCU) to promote community gardens. The Promotion Centre of Community Gardens is a particular section of NAPCU. It demonstrates how urban farming looks and offers courses teaching agricultural knowledge and techniques to the public (Case officer of NAPCU). Community

⁵ NAPCU stands for National Association of Promotion for Community University

⁶ The interviewees are shown in the Table 2

University in districts also offers courses about farming, helping to educate the public. Besides, in some cases, NAPCU will find other associations to cooperate with the locals to construct the garden, like the Heart Farming Team in Min-Zhao neighbourhood (Case officer of NAPCU & Teacher L).

About the implementation of community gardens, the primary sectors are the Districts Offices, Neighbourhood Affairs Offices, and the locals. The neighbourhood affairs office is the front line that informs and supports the locals of the urban gardens. Since this study seeks to understand how the participants influence the food production of the garden, in terms of actual planting on-site, interviews are mainly done with the farming people in the gardens. After interviews, it was discovered that participants who contribute to gardens play different roles. For the total 24 interviewees, there are 12 normal members, four chiefs of the neighbourhoods, three leaders of the gardens, two agricultural teachers, one vice leader who is also considered as a normal member, one case officer of NAPCU, and one case officer from the district office. Table 2 presents the roles and participation history of participants. The following table gives information about the general contribution of each role in the five gardens.

Table 5 The roles and participation history of interviewees

| Participants | Role in the garden | Year of joining | Current member | Frequency of attending the garden |
|---|-----------------------------------|------------------------|-----------------------|--|
| Tian-Shan Neighbourhood: Smile Farm, 2015 | | | | |
| Chief C | Chief of the neighbourhood | 2015 | No | (When members need help) |
| Leader S | Leader of the garden | December 2017 | Yes | 1 to 2 times/week |
| Vice leader | Vice Leader/Normal member | November 2017 | Yes | 1 to 2 times/week |
| Member U | Normal member | September 2016 | Yes | 3 times/week |
| Member H | Normal member | September 2016 | Yes | 1 to 2 times/week |
| Member Y | Normal member | September 2016 | Yes | Every day |
| Member E | Normal member | September 2016 | Yes | Almost every day |
| Fu-Fu Neighbourhood: Wan-Hua First Green, 2015 | | | | |
| Leader R | Leader of the garden | 2015 | Yes | Every day |
| Case Officer from District Office | Case Officer from District Office | 2015 | No | (2015-2017) |
| Member Z | Normal member | 2016 | Yes | Every day |
| Member X | Normal member | Beginning of 2017 | Yes | Every day |
| Member A | Normal member | Beginning of 2017 | Yes | Every day |
| Member B | Normal member | October 2018 | Yes | Every day |

| Fu-Jian Neighbourhood: Happiness Farm, 2012 | | | | |
|--|---|--------------|-----|--|
| Chief L | Chief of the neighbourhood | 2012 | No | - |
| Chief M | Previous chief of the neighbourhood | 2012 | No | - |
| Leader Q | Leader of the garden | 2012 | Yes | Every day |
| Member W | Normal member | 2012 | Yes | Almost every day |
| Member G | Normal member | 2016 | Yes | Almost every day |
| Member P | Normal member | October 2018 | Yes | Almost every day |
| Da-An Neighbourhood: Margaret Garden, 2015 | | | | |
| Teacher L | Agricultural teacher | August 2016 | No | (Once a week, lasted for two months in 2016) |
| Member C | Normal member/ Cross-section student | August 2016 | No | (Once a week, lasted for two months in 2016) |
| Case officer of NAPCU | The case officer of NAPCU | August 2016 | No | - |
| He-Ti Neighbourhood: Schroeder Garden, 2015 | | | | |
| Teacher C | Agricultural teacher/ Policy advocator | 2015 | No | - |
| Chief Z | Chief of Neighbourhood | 2012 | No | - |

Chief of the neighbourhood

Chiefs of the neighbourhood are elected by the people from the neighbourhood, representing the residents. Moreover, they are also the core channel facing the locals to spread policy information, like Garden City. At the beginning of Garden City, the district offices usually cooperate with chiefs of the neighbourhood to promote and construct Happy Gardens, in terms of community gardens (Case officer from district office & Chief C). Therefore, chiefs of neighbourhoods will search for a vacant space in the area (Chief Z), call up willing residents to clean the land (Case officer from district office) and will construct the garden with intended locals (Chief C & Case officers from district office).

In addition, one chief will distribute some of the vegetables from the garden to vulnerable groups like Genesis Social Welfare Foundation or the poor households listed at the neighbourhood office (Member Z).

Leader (Vice leader) of the garden

Leaders of the gardens coordinate relevant farming tasks happening in the garden. Tasks included the setup and execution of the garden rules (Leader Q), the announcement of gardens rules like what is allowed or forbidden to plant (Leader R), and the assignments of public service, notifying sub-group leaders to pass on tasks (Leader Q). One leader even stands as the communication channel to other cooperation groups and government (Leader S).

Furthermore, this year (2018), Leader S voluntarily proposed the future plan and attended the competition held by the city government against other community gardens. The community garden won an award and received governmental subsidies for further extension.

In addition, the vice leader is to assist the leader in sharing her workload, like helping her to contact members (Vice leader).

Normal member

Normal members have to take care of their blocks (Leader R) and attend the public service time (Vice leader & Leader Q). More specifically, in one garden, every member belongs to a sub-group with a specific task. Besides taking care of their individual blocks, they also have to do the service for all members, like offering seedling and fertilizer (Member U).

Normal members can discuss as a group to decide the method of planting for the garden, for example whether to plant them individually or uniformly (Chief C & Member B). For gardens where members plant individually, they can decide their preferable plants (Member W); while for other gardens, a unified decision is made to plant the same greens this time (Member X). Before the decision, the members have been asked what kind of vegetables they wanted to plant in the LINE group (Leader R).

Some members do not have farming experience; therefore, they are learners to gain agricultural knowledge and farming tips (Vice leader). For members who had done farming before, they are willing to share their experiences and skills (Leader C). In addition, current members can become guiders and agricultural teachers for the recruiting member, guiding them rules and providing planting tips, since they have gained experience from farming in the garden (Member U).

Within the category 'normal members' there is one individual classed as a cross-section student. As a student, she attended agricultural classes held by the government in the neighbourhood in the year 2016, which was to demonstrate and teach people how to do urban farming. However, she was not the resident of that neighbourhood holding the courses. Students in the class had not had any farming experience before, so they followed the instructions given by the teacher during the courses. The planting area was arranged by the agricultural teacher with the cooperation of the chief of the neighbourhood (Member C).

Agricultural teacher

Agricultural teachers share the basic knowledge of farming and plants, as well as the principles of

designing the garden (Teacher L & Teacher C). However, two agricultural teachers have different teaching styles and principles.

For teacher L, he teaches about the widespread plant species used the garden, the percentage of three main groups of plants in the garden, and how to reuse the current materials in the garden (Teacher L). For guiding students to design the garden, he will inspire students' creativity rather than stipulate what the students should do. Later, he will give corrections or suggestions to students (Member C). In his way, participants are divided into groups and assigned to a certain area on-site (Member C). The groups then have to discuss the proportion of the three crop types used in the community garden, the matched crops, and the planting location (Teacher L). The teacher gave students seedlings but they have to coordinate how to distribute on the area (Member C).

The other agricultural teacher focuses on technical skills. She teaches the people how to choose the right place to grow, what kind of things to put in the garden and then how to modify the place to make a better garden. She also ensures the locals to design the garden. In this way, the locals can participate and express their expectations for the place so they can create a sense for the place. As a result, maintenance work in the garden will be more comfortable (Teacher C).

In addition, Teacher C is not only an agricultural teacher but also an advocator of Garden City policy. She has started to promote things in the community since 2013. In 2014, the advocators made the policy advocacy and the Garden City policy began in 2015. The advocators have been supporting this matter until now (Teacher C).

The primary aim of the advocator is to promote citizen care. There must be some events that attract citizens to come and then they will gradually discover the environment and social affairs, so they have a chance to participate in relevant projects (Teacher C). What the advocator wants is not the request for people to plant vegetables but the follow-up effect. Therefore, it is necessary to find a reason to take people out from home and then let them have the chance to discover their living environment (Teacher C).

For Garden City, the advocator will find spaces and ask the chiefs of neighbourhoods whether they have interests and then the neighbourhood will match these places with suitable candidates to build up the garden. The advocator designs a series of trainings to educate neighbourhoods about the environment, design, as well as to mobilize the residents to do it together. In detail, it is a three-year plan. In the first-year, they train the seed teacher. For instance, people from Shi-Lin District can go back to Shi-Lin District after training to find an operational space and accompany the locals for the long-term. After the seed teachers master the local situation, they can continue to cultivate the neighbourhood. The second-year is practical, for the locals to plant. Finally, in the third year, since the people who have attended for the past two years have the experience, they can teach and lead other people (Teacher C). In such a way, the advocator wants to find someone who understands the local area well to do this

matter. He or she is the one who is really in the neighbourhood and the policy can be implemented on the ground. The advocator then takes on the guiding and mentoring roles (Teacher C).

Case officer from the district office, particularly in Wan-Hua First Green:

At the beginning of Garden City, the district offices usually cooperated with chiefs of neighbourhoods to promote and construct Happy Gardens, in terms of the community garden. Primarily, it was the neighbourhood which should propose the plan and the Department of Economic Development approved it. However, it was a bit difficult for the neighbourhood to find a manufacturer to implement since the project should have a specific scale (Case officer from district office). Therefore, the case officer had helped the neighbourhood planning, designing, and finding a manufacturer to construct the garden (Case officer from district office).

In the beginning, the district case officer set up the garden with hydroponics referenced from a community in Xin-Dian, New Taipei City (Case officer from district office). However, the introduction of hydroponic systems turned out to be negative. Since the members had not operated hydroponics before, they then suggested to try soil tillage and the case officer agreed to change to soil cultivation (Leader R & Member A). Members used the other part of the land to plant and bought cement to form a circle around the soil as a fence to grow vegetables (Leader R). After succeeding in the soil part, members turned all empty hydroponic boxes into soil cultivation (formerly, the hydroponic part was cultivated by small boxes).

Later, the district employee helped to reset the whole area with soil cultivation and applied for the governmental grants again to turn the vacant space nearby into the garden too (Leader R & Case officer from district office).

Case officer of NAPCU in Margaret Garden:

Since the beginning of the policy, NAPCU has stood as an essential driver to promote community gardens from the implementation perspective. With the help of the case officer of NAPCU, Margaret Garden received one governmental grant to start the initial construction of the garden in the year 2016. From the year 2016 onward, the Ming-Zhao neighbourhood had had two proposals applied for subsidies from two governmental departments to build the garden (Case officer of NAPCU). The case officer of NAPCU matched and assigned the Heart Farming Team association to help the Ming-Zhao neighbourhood to plan the garden from draft through the proposal applied to Environmental Protection on Administration.

To sum up, the roles of the participants are diverse in different gardens. In general, chiefs of neighbourhoods are involved in all five gardens. Agricultural teachers are involved in the two inactive gardens. Leaders of gardens appear in active gardens; while normal members appear in both active and inactive gardens. Notably, two case officers from the government and NAPUC are involved in both categories.

Three active gardens commonly have the chief of the neighbourhood, a leader, and many normal members. In the case of Wan-Hua First Green, the government employee has been cooperating with the neighbourhood for three years. On the other side, inactive gardens had the chief of neighbourhood, agricultural teachers, and normal members participated for a short period of time before. In the case of Margaret Garden, the case officer from NAPCU had helped a part of the initial construction period of the garden.

To what extent do they participate?

| Interview questions |
|---|
| <p>4. What is your participation history? Duration, intensity, and types of participation (Simmons & Birchall, 2005)</p> <p>4.1 When did you join the garden?</p> <p>4.2 How often do you attend in the garden?</p> <p>4.3 What is your type of participation; what do you do?</p> <p>5. What is your opinion about your time of joining the garden, in terms of different phases of garden construction, influence the garden, especially food production?</p> <p>5.1 If you can join earlier, what will you do to improve the garden?</p> <p>5.2 In which phase would you like to join the garden and why?</p> <p>(2. Do you state that the garden should produce more food? If yes, what will you do to increase food production in the garden?)</p> |

During the interviews, the on-going process of the community garden can be divided into three periods: the initial construction of the garden, the maintenance of the garden, and the possible extension of the garden. Interviewees participate in the garden diversely. Some participants are only involved in the garden for a particular period; for instance, one agricultural teacher only participates in the garden for two months during the construction period. The following will further indicate what different roles the participants do at different phases of the gardens.

The initiative construction part of the garden

According to the interviews with chiefs of the neighbourhoods, in most gardens the chiefs and the case officer from the district offices initiate the plan of the garden, starting from zero (Chief C & Case officer from district office). Based on the selected gardens, this can further be categorized into three groups as below:

1. The case officers from the district offices propose the plans of gardens and the chiefs ask the residents, like heads of communities and neighbourhood volunteers, to join and arrange the

land (Chief C, Leader R, & Case officer from district office). This is the case at Tian-Shan and Fu-Fu neighbourhoods.

2. The chiefs of neighbourhoods start and ask people to join in setting up the land (Case officer of NAPCU & Chief L). This is the case in Min-Zhao and Fu-Jian neighbourhoods. However, in the Min-Zhao neighbourhood, although residents and students have opinions about designing the garden, the chief of the neighbourhood does not accept and insists on his way of creating the garden.
3. The Community University has projects and approaches the chief, asking for the cooperation for the courses and to set up the land (Teacher C). The chief already knew where the vacant land is in the neighbourhood. This is the case at the He-Ti neighbourhood.

To sum up, all chiefs are involved in the construction part of the garden, as well as the case officers from the district office and NAPCU. Since agricultural teachers bring in the farming techniques and principles of designing gardens, they are also involved in the initial period of construction. Comparatively, less normal members are involved in this period.

When building the garden, the chiefs will firstly approach people who are intimately related to Neighbourhood Office affairs, like heads of communities (Chief C & Member U) or volunteers (Leader R) of the neighbourhoods. However, until now, only three participants (Leader R, Leader Q, & Member W), including two leaders of the gardens and one normal member of the 23 interviewees keep farming from the beginning. This indicates that participants change and join gardens at different periods, mostly after the construction of the garden is done.

The maintenance of the garden

After the initial construction of the garden, residents just follow the set-up to grow vegetables. Still, residents can offer ideas about changing the method of planting and ways of planting. For instance, Fu-Fu neighbourhood changes hydroponics into soil cultivation (Leader R & Member A); residents in Tian-Shan neighbourhood have space to decide whether they will grow vegetables uniformly or individually (Member H & Member U); while in Fu-Fu neighbourhoods, whilst they have to plant the same kind of greens, they can still agree with their preferable greens (Member X).

Base on Table 2, almost every current member and leader of the gardens go to the garden to water or take care of the greens every day. While in Smile Farm, four members, including the leader, vice leader, and two members, go to the garden less often than people in other gardens. They go there two to three times a week. The rest of the interviewees at the Smile Farm go to the garden almost every day. This shows participants have different time arrangement and planting methods, which reflect on the condition of individual block. For instance, during the field visit in 2018, the block of Leader S had not many greens, while the block of Member Y was quite vivid. Leader S also explained that she did not often weed, compared to other members and just let all greens grow, including weeds.

To sum up, after the initial construction of the garden, the normal members just follow the garden set-

up. Still, they have some right to decide what to plant or how to plant. Furthermore, normal members are the primary caretakers of the garden, which reflects the frequency of attending the garden, showing that most members go to gardens very often.

Possible extension of the garden, especially in Smile Farm and Wan-Hua First Green

If the neighbourhood still has vacant space, it is possible to extend the planting area. When applying the subsidies from the government, participants can propose a future plan, including the extension of the current planting area. After the proposal is approved, the garden can extend its area with the grants. This is the case in both Tian-Shan and Fu-Fu neighbourhoods.

In the Tian-Shan neighbourhood, it is the current leader who proposes the future plan and applies for the governmental grant (Leader S). They plan to extend the planting area at the rooftop farm. While in Fu-Fu neighbourhood, it is the case officer from the district office, who has been cooperating with the neighbourhood for a long while, who helps the locals to propose the extension plan and apply for the governmental grant (Case officer from the district office). The garden has enlarged during the middle of 2018, as shown in Figure 2.

To sum up, when it comes to the extension of the garden, it depends on the participants who are involved in gardens who have to apply for it. Notably, the young participants with specific positions, the leader of the garden and the case officer of the district officer, are more likely to apply for the governmental subsidies. In Wan-Hua First Green, as the case officer from the district office states, it is difficult for members to set up the regulation and to apply again for the subsidies for extension; therefore, based on his long-term cooperation with the neighbourhood and his position in the district office, he would like to assist the neighbourhood in improving their garden. On the other hand, in Smile Farm, the current leader undertakes the application for further governmental grants to extend their rooftop farm. She also states that since other members are senior, they do not know how to use the computers to write, present, and apply for the governmental grant. Therefore, she voluntarily takes over and helps the neighbourhood (Leader S).

Participants' opinions about food production

The following describes participants' opinions about food production, which can be divided into several perspectives, including the land area, the seasons, planting methods, as well as the opposite points of view: not to increase food production.

Limited land area

Eight interviewees mention that the land area is too small. Four interviewees say the overall area of all five gardens is limited to produce food (Chief C, Chief Z, Member C & Leader R). Furthermore, another four interviewees state that individual pieces are limited as well (Case officer from the district office,

Member W, Member G, & Chief L). However, both the overall area and individual pieces are difficult to increase. For the overall land, first, since Taipei city is a highly developed city, there is not much vacant space left in Taipei city itself (Chief Z & Member G). Second, it needs to consult with the landowner department to find out whether it would like to lease the land to the neighbourhood (Case officer from the district office). For individual pieces, the size of the piece in Smile Farm, Wan-Hua First Green, and Happiness Farm are fixed, so it is impossible to change or extend the current size of each block (Member Y, Member W, Member G, & Leader Q).

A later extension of the garden

As mentioned as the possible extension of the garden, with a larger planting area, more people are allowed to join the garden and plant more food, which is the case of Smile Farm and Wan-Hua First Green.

Food production depends on seasons

Nearly all interviewees state that vegetables grow based on seasons, so participants cannot grow as much as they want. However, there are still some farming tips which help to put more greens on the table. According to participants' demands and characteristics of the greens, people choose different kinds of vegetables to grow in different seasons to ensure they can have as much food and as long as possible. Two interviewees from Happiness Farm have farming tips: if the right plants are growing in the right seasons, they can grow well, so the yield will be more and can be harvested for long time (Member P & Member W).

On the other hand, natural disasters in seasons will affect the yield. For example, in Taiwan, several typhoons will pass through every year. The storm with strong wind and heavy rain will affect the plants in gardens; therefore, the green harvest will decrease during summertime (Member C).

Different ways of planting

Out of the five gardens, only Wan-Hua First Green is planted uniformly, while others are planted variously and individually. When further asking other possible ways to increase the food production in Wan-Hua First Green, like vertical farming, one interviewee answers that with vertical farming, the garden will not look pretty since bamboo should be inserted to make a vertical shed frame and to cater for climbing plants (Leader R). Also, the greens will not get sunshine nor will they grow well with two layers of potted plants (Leader R).

One interviewee from Smile Farm expresses her thought that although individual blocks plant assorted greens, the more species, the lesser vegetables are produced (Member H). On the other hand, if the garden grows vegetables uniformly according to seasons, the harvest of the food will be relatively more abundant (Member H).

Furthermore, even in personal blocks, individuals also use farming tips to obtain a certain amount of vegetables. In Happiness farm, one interviewee says that if there are too many kinds of plants, the

harvest of greens is not enough for a meal (Member P). *“You cannot finish the green all at once. If you do so, you have to replant all greens, and it takes time. Therefore, you must pick up half of the green, and after this kind finishes, you still have the other side to eat. You start to eat this side; while the other side begins to plant. As such, a small grid, planting some spice like basil and chili would be easily used by the family”* (Member P).

Do not agree to produce more food

Several interviewees have opposite opinions about producing more food. First, Chief L in Fu-Jian neighbourhood says if the land is bigger, the garden will be messier and not easy to manage. Second, the Case officer from the district office in Fu-Fu neighbourhood does not recommend increasing production. He states that the goal of the community garden is to encourage the elderly to go outside at the fixed time and in fact, they do not lack food (Case officer from the district office). They do not want or need much food from the garden and even the produced amount is not enough for them to cook a few meals. If one or two people start to trace the amount of production, others will feel the pressure and do not want to come out and grow. Growing vegetables here is more like playing (Case officer from the district office). Third, three interviewees (Member Y, Member E, & Leader Q) state that it is not better to have bigger individual blocks since farming is a robust activity, and it has to depend on individual ability and time.

The phase of joining the garden does not influence much

The vice leader from Smile Farm explains that even if she could go back in time, she could not give good suggestions to grow more food at the planning phase of the garden since she did not have the farming experiences before. Leader S thinks no matter when the participant joins the garden, people who join later should make the garden better, which is like the saying, “Former people plant trees, and the latter people enjoy the cool” (Vice leader).

To sum up, participants indicate that it is challenging to increase food production due to the limited land area, plant seasonality, and natural disasters. Different ways of planting, including planting uniformly for all or diversely in individual blocks, ensure people have some greens on the table. However, there are participants who do not suggest to increase food production because, first, the more area they grow, the messier a garden becomes; second, the feeling of competition hinders participants from joining the garden; third, farming needs to think of personal ability. In addition, the phase of joining the garden cannot influence much due to there being a lack of professional experience in terms of agriculture in the past.

Why do they participate?

| Interview questions |
|--|
| 6. Why do you want to join gardening? |
| 7. Are you interested in gardening? Or is the gardening your habit? (Drake & Lawson, 2014) |

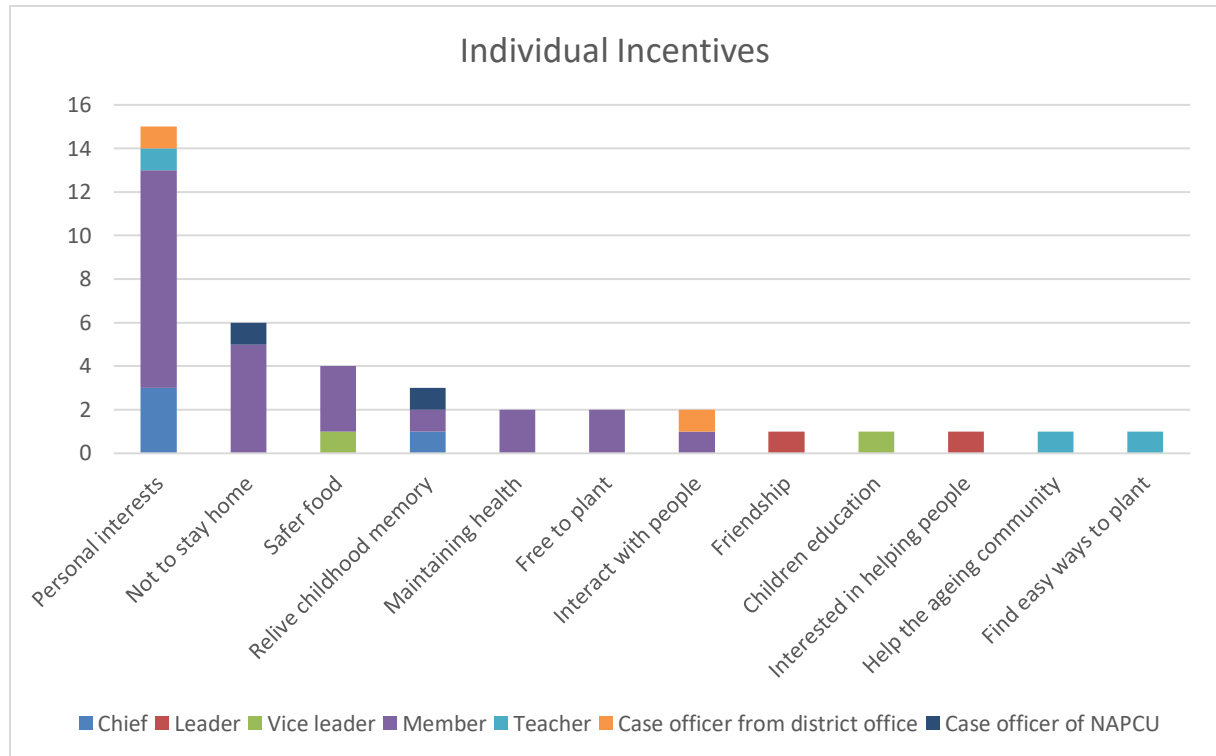


Figure 12 Individual Incentives

Figure 12 indicates the participant's incentives to join the garden. It shows that 15 participants joined the garden because of their personal interests. Secondly, six interviewees express that participants joined the garden not to stay home feeling bored. Thirdly, four interviewees express the reason to be because of the safer food harvested themselves. Fourthly, three interviewees say the participants want to relive their childhood memories. "Maintaining health," "Free to plant," and "Interact with people" are equally mentioned by two interviewees for each. Last, the rest are uniquely mentioned by each interviewee in different gardens, like friendship, child's life education, interest in helping people, helping the ageing community, and finding easy ways to plant.

From the different role's perspectives, for people who practice in the garden, normal members cover most incentives, including personal interests, not to stay home, safer food, relieve childhood memory, maintaining health, free to plant, and interact with people. The vice leader, who can also be a normal member, points out a specific reason: children's education. The leaders of the gardens express their incentives: one is for the friendship with the vice leader; the other is for helping people. One

agricultural teacher involves themselves in the gardens because he likes farming, while the other teacher is involved because she wants to help the ageing community and find easy ways to plant. For people who observe the gardening people, the chiefs share that the participants joined because of personal interests and relieving their childhood memory. The case officer from the district office observes that participants joined because of personal interests and interaction with people, while the other case officer from NAPCU observes that participants joined the garden so that they do not have to stay home and to relive childhood memories. The following describes the details of each incentive and opinions from interviewees.

Individual incentives

- **Personal interests/Interested in gardening**, seen at Smile Farm, Wan-Hua First Green, Happiness Farm, and Margaret Garden:

15 of the 23 interviewees' answers are related to the interests of gardening. For current members, 12 interviewees, including leaders and normal members from the three active gardens are interested in gardening/farming. Moreover, some participants had never farmed before. For instance, in Smile Farm, five of the seven interviewees had not experienced farming before. One specifically states that she joined the garden because she wants to fulfil the experience she has not had before. Since the participant lives in the city, she never farms nor plants anything for her own consumption before (Member Y). In Wan-Hua First Green, one interviewee says she started to learn how to farm in her sixties (Member A).

For inactive gardens, two of the three interviewees from Margaret Garden (Teacher L & Member C) are interested in farming as well; while the remaining one interviewee states that from her observation, during the construction period of Margaret Garden, people in Da-An neighbourhood have a keen interest in gardening, so participants would like to join in with gardening (Case officer of NAPCU).

- **Things to do after retirement/Not to stay home**, seen at Smile Farm, Wan-Hua First Green, Happiness Farm, and Margaret Garden:

Six interviewees' answers are related to having things to do after retirement or are related to not staying home. Three participants from three active gardens joined because they want to find things to do and not to stay home all day after retirement (Member H, Member U & Member B). One interviewee from Happiness Farm observes that the elderly in the neighbourhood have nothing to do at home; with planting, everyone comes out from their homes (Member G).

In Margaret Garden, one interviewee says she wants to find something to do after retirement, so she gets involved with the garden at the moment (Member C). The other interviewee says most participants are old and usually have nothing to do, so farming allows them to go out and have something to do (Case officer of NAPCU).

- **Safer food**, seen at Smile Farm:
In Smile Farm, four of seven interviewees indicate that due to the rule of not using pesticides in the garden, the food grown by the participants are safer and healthier compared to the green bought from the market.
- **Relive the childhood memory of farming**, seen at Happiness Farm and Margaret Garden:
Three interviewees' answers are related to reviving childhood memories. In Happiness Farm, one interviewee states that most residents feel happy that they can have a small piece of land to relive memories of childhood since they had grown up in the countryside (Chief L). One younger interviewee from another country says she had seen her parents planting vegetables on the balcony at home before, so she applied for an individual block when she saw the garden (Member G).

In Margaret Garden, one interviewee shares her observation that one current participant is a grandfather from the neighbourhood. He has farming experience, so he joined the agricultural courses to experience it once again (Case officer of NAPCU).
- **Maintain health**, seen at Smile Farm and Happiness Farm:
Two interviewees want to stay healthy through gardening. One interviewee from Happiness Farm says her starting point is to grow her own food to maintain health (Member P). While the other from Smile Farm wants to do some slight exercise because she has recovered from the surgery and wants to improve her physical condition (Member U).
- **Free to plant or to attend the courses**, seen at Happiness Farm and Margaret Garden:
Two interviewees' answers are related to "free of charge." One is from Happiness Farm, saying it is free to rent an individual block to plant. If it is free, everyone will like to plant (Member W). The other one is from Margaret Garden, who says that the agricultural courses are free to attend at the moment (Member C).
- **Interaction with people**, seen at Happiness Farm and Margaret Garden:
Two interviewees express their observations that people come to the garden to interact with others. One from Happiness Farm expresses, *"Those elderlies have nothing to do at home. While planting, everyone comes to chat, I think. From time to time, you will see other people having a spiritual position and interest- partners"* (Member G). Alternatively, the other interviewee explains that participants of Margaret Garden can do things and interact with people when coming to the garden at the same time (Case officer of NAPCU).
- **Friendship**, seen at Smile Farm:
In Smile Farm, one participant explicitly states that she joined the garden because of a friend, mentioning the other member, whom she has known from both their children. Since then, they

have become good friends. Thus, they have been joining all the garden's activities together. *"As we talk happily, I invited her to grow vegetables together, and she happy to do so"* (Leader S).

- **Children's education**, seen at Smile Farm:

One interviewee from Smile Farm notably states that she joined the garden because of her son's life education. The interviewee herself, was not interested in farming beforehand (Vice leader).

- **Interested in helping people**, seen at Wan-Hua First Green:

One interviewee from Wan-Hua First Green states that the reason she joined the garden is partly because she also likes to help people.

- **To help the ageing community**, seen at Schroeder Garden:

Especially in Schroeder Garden, the policy advocator expresses her purpose for joining the garden, which is that planting can shape the community network so that it can provide care for the elderly. *"In the beginning, I wondered there were so many seniors in the community, so what they were doing. I spent some time observing and then discovered that young people could not accompany senior citizens because of the great knowledge and habits gap. So, what could the elderly do? It is the mutual companionship, and the key is to know each other"* (Teacher C). *"So, I wondered whether there was a way for them to be closer to each other...There could be an intermediary that everyone could come because of it"* (Teacher C). If the elderly goes to the garden often, they will get to know each other and will have a chance to accompany each other (Teacher C).

The participants do not need to be old; others who also have nothing to do could also join. Therefore, the elder and the younger mix together due to the common interest, and they will naturally know and cooperate (Teacher C). *"I started to try the way here, find out it had such an opportunity, and it was indeed possible, so I have been planting since then"* (Teacher C).

- **To find easy ways to plant**, seen at Schroeder Garden:

Especially in Schroeder Garden, the policy advocator explains that "I pay attention to the planting skills because we must make the participants feel as though they have achieved something. If they do not get the sense of achievability, why will they come every day?" (Teacher C). Since most urban people have not grown greens before, the techniques used should be simple for them so that they can catch up and they can have a sense of achievement to push them to continue (Teacher C).

To sum up most participants joined the garden because they are interested in gardening, indicated by normal members and an agricultural teacher, as well as the observation from the chief and the case officer of district office. Second is for the retired people and the elderly not to stay home feeling bored, expressed by normal members, and observed by the case officer from NAPCU. The third is for the safer food harvested from the garden since using pesticide and chemical fertilizer is forbidden, indicated all by the normal members. Fourth is to relive their childhood memories, since older participants have

lived in the countryside and have experienced farming before, indicated by a normal member, as well as observed by the chief and the case officer of NAPCU. The reset incentives are to maintaining health, to plant freely, and to interact with people, which are equally mentioned by two interviewees each, mostly by normal members. The answers, the friendship, child’s life education, interests in helping people, helping the aging community, and finding easy ways to plant, are equally mentioned by one interviewee per each, mostly by the leader and the agricultural teacher.

When looking into the individual incentives related to food, there are only four interviewees who indicate that they joined the garden because of safer food than the one from the market. Therefore, the incentives of the participants to join the garden is mostly unrelated to food production and is only a small part of the incentives.

Benefits

| |
|---|
| Interview questions |
| 8. What kind of benefits you receive from the garden? |

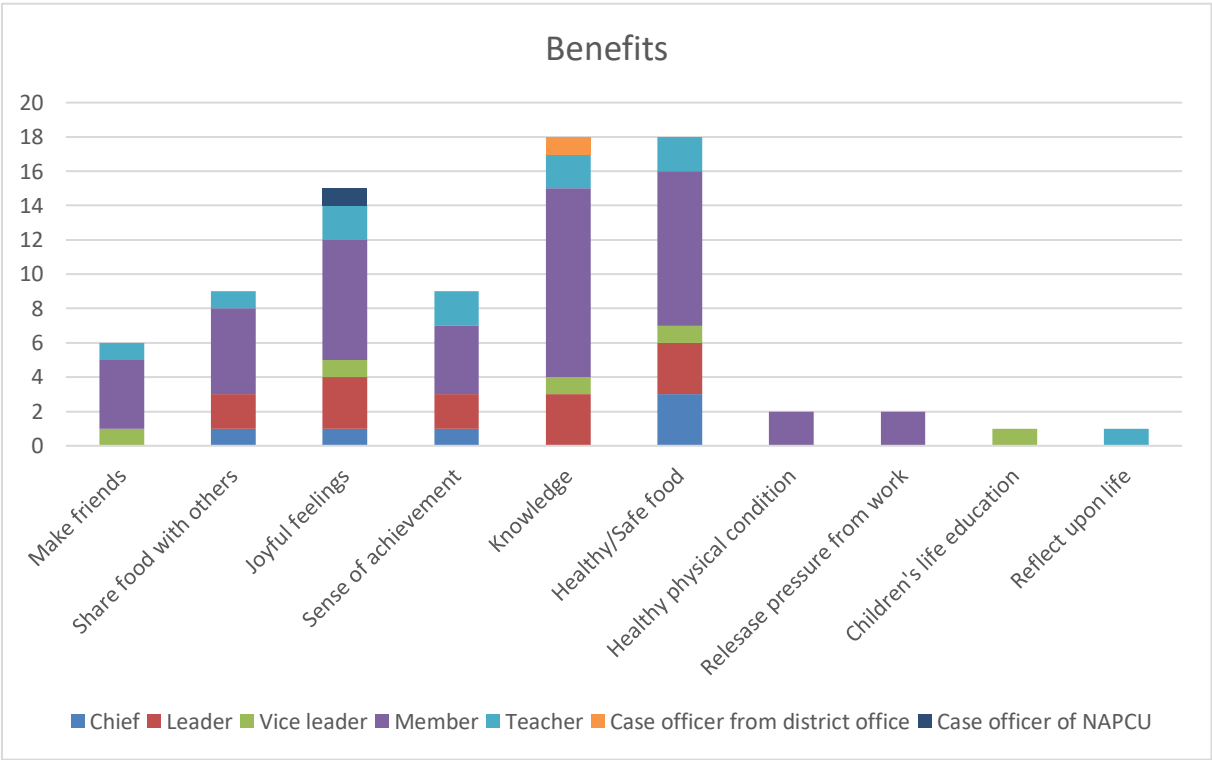


Figure 13 Benefits participants received from the gardens

Figure 13 indicates the benefits participants received from the gardens in Taipei. It shows that the benefits that participants felt the most were related to knowledge and healthy/safe food, both

mentioned by 18 respondents. The second most popular is the joyful feelings they gain from the garden, expressed by 15 interviewees. The third highest is both sharing food with others and a sense of achievement, both mentioned by nine interviewees each. The fourth highest is making friends, expressed by six interviewees. The fifth popular is related to having a healthy physical condition and releasing pressure from work, as two interviewees indicated this for each point. The remaining points are children's life education and reflection of individual life, which are mentioned by one interviewee for each.

From the different role's perspectives, for people who practice in the garden, the normal members receive almost all benefits excepting the two: children's life education and reflection upon life. The vice leader, who can be seen as a part of the normal members, receives the benefits: making friends, joyful feelings, knowledge, and healthy/safe food, which are the same benefits gained as other normal members from the garden. Whilst, the vice leader particularly mentions children's life education. The leaders of the gardens receive the benefits of sharing food with others, joyful feelings, sense of achievement, knowledge, and healthy/safe food. The agricultural teachers speak of benefits almost in the same way as the normal members excepting healthy physical condition and releasing pressure from work. In addition, one agricultural teacher indicates that she could reflect upon her life as a benefit. For people who observe the gardening people, the chiefs observe that participants receive the benefits of sharing food with others, joyful feelings, sense of achievement and healthy/safe food from the garden. The case officers from the district office emphasize the benefit of gaining agricultural knowledge, while the case officer of NAPCU emphasizes the joyful feeling that participants receive from the garden. The following will describe the details of each benefit.

Furthermore, the benefits of making friends and sharing food with others can be considered as external benefits; the joyful feeling, sense of achievement, and the reflection upon individual life can be considered as self-fulfilment; knowledge and children's life education can be considered as gaining knowledge; lastly, healthy/safe food, healthy physical condition and releasing pressure from work can be considered as health.

External benefit

- **Make friends**, seen at Smile Farm and Margaret Garden:

Six interviews mention the benefit of making friends. Particularly in Smile Farm, four interviewees mention they can make friends from gardening. One interviewee says, "*You will meet people who are more interested in the same topic. Two people who like to grow vegetables will talk about the topic and become good neighbours. Otherwise, in Taipei, it is difficult to know the neighbours*" (Member E). "*I feel that it (farming) enclose everyone's relationship*" (Member E). The other one says she is glad to meet young members with innovative ideas, leading the group to do an exciting experiment and bringing energetic thoughts (Member U).

In Margaret Garden, one interviewee feels happy to interact with students at that time (Teacher

L). However, on the other hand, the garden is adopted by residents nearby after the agricultural classes, so students from other districts do not visit the garden after the lessons (Member C). Although the secure emotional connection with the locals is built during the courses, since there is no course in the neighbourhood anymore, the interviewee personally thinks they are too embarrassed to visit the garden and the neighbourhood (Member C).

- **Share food with others**, seen at Smile Farm, Wan-Hua First Green, Happiness Farm, and Schroeder Garden:

Nine of 23 interviewees mention the benefit “share food with others”. “Others” included garden members and neighbours.

In Schroeder Garden, one interviewee says that the greens do not only grow once; sometimes, it only takes around ten days to get the vegetables, so participants can often give the out to neighbours, like eggplant and water spinach (Chief Z). In Happiness Farm, some members will give away the greens grown by themselves because they cannot finish it (Chief L). Specifically, in Wan-Hua First Green, every member has to donate three flowers of vegetables to vulnerable groups. The chief of Fu-Fu neighbourhood will take the greens to the nursery school and Hua-Shan Senior Centre (Leader R & Member Z).

From the observation of an agricultural teacher, although the harvest is limited from the garden, members will still happily and quickly share the greens with their grandchildren and friends (Teacher C).

Self-fulfilment

- **Joyful feelings/enjoyment**, seen at Smile Farm, Wan-Hua First Green, Happiness Farm, Margaret Garden, and Schroeder Garden:

15 of 23 interviewees mention the benefit of receiving a joyful feeling from gardening. Members feel happy to grow vegetables and to harvest in the garden (Leader S, Vice leader, Member U, Member Y, Member E, Leader R) and to see seedlings growing (Member W & Member P). One interviewee says, *“What I have got is an inexplicable sense of excitement and joy”* (Leader S). The other one states that the interests and the fun she receives from planting cannot be quantified (Member B). Another interviewee says she feel happy spending money on buying vegetable seedlings. *“Spending money is also a pleasure. Because the seedlings are very cheap, you can say give me 50 of them!”* (Member G).

From the point of view of an observation, Chief L says members enjoy the fun of pastoral, and Leader Q says they have fun when farming in Happiness Farm. Urban people see farming as an entertainment, not like the people from the countryside who see it as work, so they enjoy it (Chief C & Member E). Even in Margaret Garden, participants involved in the process are happy to interact with others at that time (Case officer of NAPCU).

From an agricultural teacher's point of view, helping people to grow vegetables is fun (Teacher C). While the other teacher hopes the planting and learning process is delightful to the participants (Teacher L). He also feels happy to interact with students and to see students interacting with each other joyfully (Teacher L).

- **Sense of achievement**, seen at Smile Farm, Wan-Hua First Green, Happiness Farm, and Margaret Garden:

Nine interviewees' answers are relevant to sense of achievement. Four interviewees say when seeing plants' growth, they feel a sense of accomplishment (Leader S, Member Y & Member U), similar to how parents raised their children (Leader Q). In addition, participants can also receive a sense of harvest (Chief C). Besides receiving the achievement from the food, other perspectives present a sense of achievement, like being proud of their beautiful gardens or being a popular agricultural teacher.

One interviewee from Wan-Hua First Green states that she feels very fulfilled since she sees foreigners coming to the garden to take pictures. *"People go to Long-Shan Temple to worship, to Bopiliao Historical Block to sightseeing, and they will come here to take pictures of us. We feel very fulfilled". "It (the garden) looks so beautiful; we feel very fulfilled"* (Member Z).

One interviewee from Happiness Farm proudly says that when her famous singer nephew comes to visit her, she brings him to see the greens. This indicates that she is proud of having a piece of green in Happiness Farm (Member W).

One agricultural teacher share that his students confess he is different from other teachers. No matter how old the students are, they are all looking forward to attending his class (Teacher L). This releases a sense of achievement that comes from being a popular teacher.

The other agricultural teacher states that making participants feel achieved is essential for them to go out and do gardening; otherwise, why do they come to the garden every day? Therefore, she sets up a series of lessons so participants can harvest and enjoy the food they planted after the four classes (Teacher C). Growing vegetables has successfully raised much self-worth. The participants' sense of accomplishment from self-fulfilling is very high (Teacher C).

- **Reflect upon life:**

One interviewee says, bringing the horticultural therapy of growing vegetables to the nursing home gives her a chance to realize herself or her loved ones may become one of those patients one day (Teacher C). Therefore, she appreciates the time being along with her loved ones and start to take care of herself.

Gaining knowledge

- **Gain agricultural and food knowledge**, seen at Smile Farm, Wan-Hua First Green, Happiness

Farm, Margaret Garden, and Schroeder Garden:

Nearly all participants, 20 of 23 interviewees, mention they gain agricultural knowledge from growing vegetables. *“We grow vegetables because we do not understand it. We will slowly learn the vegetables after growing it”* (Member X). The ways they receive the knowledge are via chatting, sharing, asking, and searching by themselves.

During the process of growing vegetables, people chat, and exchange knowledge (Member P & Member G). Participants share how they grow vegetables and compare with different fertilization methods, sizes, and tastes (Member X, Case officer from district office & Member B). Further, they discuss and find ways to make vegetables grow big and beautiful (Case officer from district office).

Some experienced people share where to buy better seedlings (Member G). Members also ask other farmers and seedling sellers about what greens are in season (Leader R). One interviewee states that other members are willing to help her or give her some farming tips (Member Y).

Participants also search for agricultural knowledge in other ways, like surfing the internet (Member A) or attending other classes (Member C) to learn more about planting. In Smile Farm, the garden leader also shares books about agricultural knowledge at the neighbourhood office (Leader S).

When participants joined the garden, they first learn the skill of planting and understand more about farming (Teacher C). They then realize farming is not so easy and do not dare to bargain when buying food at the market (Teacher C & Member A). They also learn about seasonal food and that when planting at the wrong time, the green will not grow well (Teacher C).

One agricultural teacher is very willing to share his farming experiences. He prefers not to be in the teaching position since some participants may be better at planting than him since they have had farming in their childhood (Teacher L). The other teacher has to learn the techniques by herself first because she has been the plant killer before (Teacher C). If she does not know, she will find someone to teach, and she will learn it while someone was teaching. After the greens grow successfully, she can start to teach others (Teacher C). She also watches and interacts with farmers in this field, so she becomes familiar with those experts. Now she even leads the ageing community and horticultural treatment (Teacher C).

As the case officer of NAPCU, the interviewee states another aspect that participants can consider alternative methods of planting beside the traditional way. Nowadays, there are different ways of farming including learning about how to be more friendly to the environment. Also, the concept of continuous circulation can pass on to more people. For example, how composts are recycled from life to become sources of food.

- **Children's life education**, seen at Smile Farm:

One interviewee from Smile Farm indicates that her son learns a lot from the garden, for example he knows about different plants and how the plants grow (Vice leader).

Healthy

- **Healthy/Safe food**, seen at Smile Farm, Wan-Hua First Green, Happiness Farm, Margaret Garden, and Schroeder Garden:

Nearly all, 18 of 23 interviewees, mention that healthy and/or safe food is a benefit they received from the garden.

Participants know what they use during the planting process, and since they do not use pesticides nor chemical fertilizer, they feel safer and healthier to eat the greens they grow by themselves. The produced food is grown without fertilizer and pesticides, so members call it organic (Chief Z & Chief C).

In addition, the greens they grow by themselves taste different and are particularly tasty (Member A). Without the pesticide, the greens attract insects, so when shopping at the market, people must choose the vegetables with holes eaten by insects since it indicates that the food is safe (Member B).

- **Healthy physical condition**, showing in Smile Farm and Happiness Farm:

As mentioned above, two interviewees want to stay healthy through gardening, so one of the two, who is from Smile Farm, considers a healthy physical condition as the benefit she receives from the garden. She wants to do some slight exercise because she has recovered from the surgery and wants to improve the condition of her body (Member U).

- **Release pressure from work**, seen at Smile Farm and Happiness Farm:

Two interviewees mention gardening can help to relax the mood. One says, *“After coming here to grow vegetables, the pressure from work can be released. It is like a kind of mood relief, which is the primary purpose of urban people who grow vegetables”* (Member E). The other says that psychology also claims that plants can help to calm and soothe the mood and so the greens can improve people’s moods (Member G).

To sum up, based on the interviewees’ experiences’ and observations, mostly the normal members, the leaders, the chiefs, and the teachers indicate various benefits from the gardens. 15 participants including normal members, the leaders, the chiefs, and the agricultural teacher express the benefits felt as external benefits which increase the interaction with other people by gardening and food; 25 participants including normal members, the leaders, the teachers, the chief, and the case officer of NAPCU as self-fulfillment that they feel cheerful from watching the plants growing up, being proud of the (beautiful) garden, being loved by the students, and successfully planting the vegetables alive; 19 participants including normal members, the leaders, the teachers and the case officer from the district

office as gaining knowledge which is by sharing, exchanging, and searching for farming tips, as well as educating children in the garden; and 20 participants including normal members, the leaders, the chiefs, and the teachers as health, which is from food, physical condition, and mental perspectives.

When thinking of food production, the related benefit is healthy/safe food and 18 interviewees indicate their perceived benefit to be food. However, participants still receive other benefits from the garden, so the food production can only be considered as a part of the benefits from the garden.

Costs

| Interview questions |
|--|
| 9. What are the costs, opportunity costs, and satiation while gardening? |

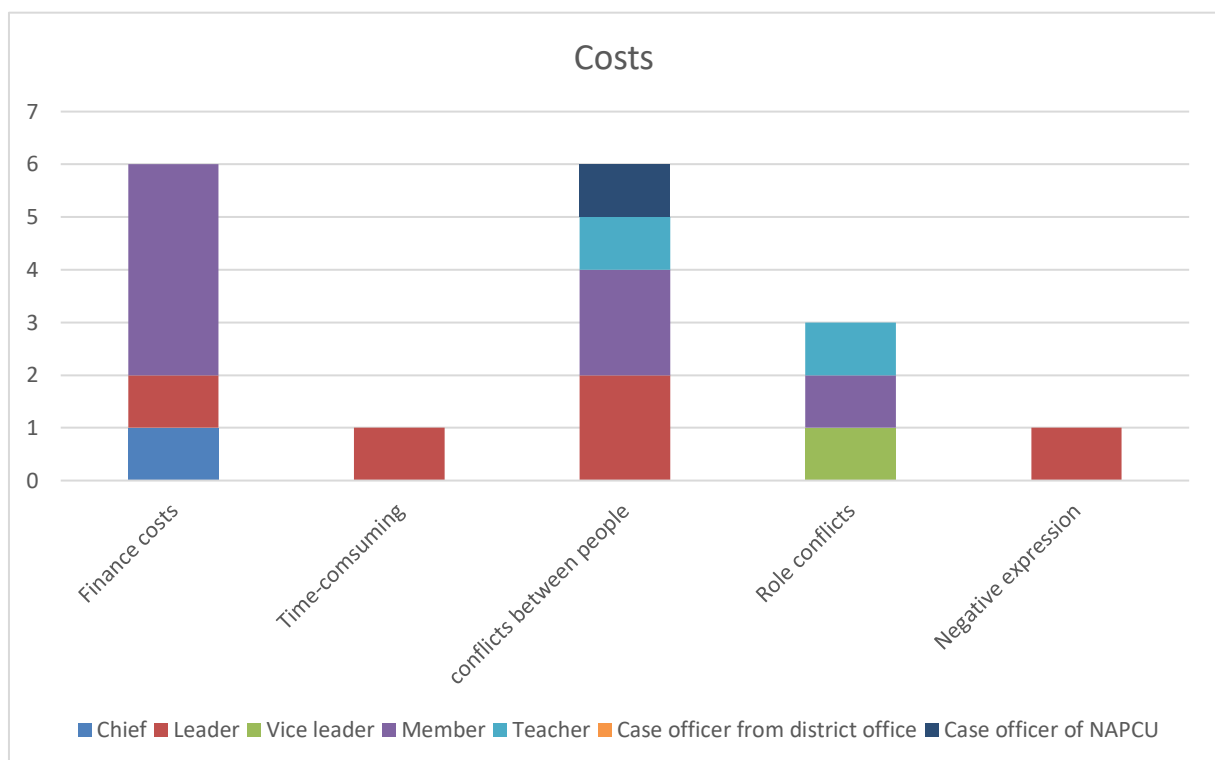


Figure 14 Costs that participants encounter when gardening

Figure 14 shows the costs participants encounter while gardening in Taipei. The same number of participants, six, mention financial costs and conflicts between people. Three interviewees mention the role conflicts, while the time-consuming aspect and the negative expression have the least mentions, with only one interviewee for each.

From the different role's perspective, for the people who practice in the garden, the normal members

consider the finance, conflicts between people, and role conflicts as the costs. The leaders of the gardens consider finance, the time-consuming aspect, and conflicts between people as the cost. However, only one leader mentions the time-consuming aspect. For people who observe the gardening people, one agricultural teacher indicates that the conflicts between participants and the role conflicts are the costs happening in the garden. One chief mentions the financial costs as participants' costs in the garden. The case officer of NAPCU confirms the severe conflicts between people as the costs in the garden. The following will describe the details of each cost.

Finance costs, seen at Wan-Hua First Green, Happiness Farm, and Schroeder Garden:

Participants from Wan-Hua First Green, Happiness Farm, and Schroeder Garden, have to buy soil, seeds, seedlings, fertilizer, and facilities by themselves. Except for Smile Farm, which has an annual fee, five members in other gardens specifically mention personal spend as a financial cost.

In Wan-Hua First Green, Leader R says after the government grants are used up, the volunteers even have to spend their own money to buy seedlings and products like cement. Two members say that it is cheaper to buy vegetables from the market than to farm from the garden (Member A & Member Z). *“After planting, the total expenditure of the potting mix and seedlings were already more than the price of a handful of vegetables from the market, which only costs NTD 10”* (Member A).

Time-consuming, showing in Smile Farm:

Leader S says some general tasks take time, like watering the greens. While the other five interviewees indicate since the individual piece of land is quite small, it does not take too much time to take care of the garden (Member E, Leader R, Member B, Member P, Member G). In addition, in Wan-Hua First Green, one interviewee indicates that the two kinds of lettuces they are planting now are straightforward to care for and can bare lots of water (Member X).

The policy advocator thoroughly contributes herself to promoting urban gardens. She does not think gardening is time-consuming since it is all she is doing now (at Jin-An neighbourhood office) (Teacher C).

Conflicts between people, seen at Smile Farm, Wan-Hua First Green, Happiness Farm, and Margaret Garden:

Some garden members disagree with other participants' ways of caring for the garden, like being laid back in Smile Farm (Leader S) and using smelly fertilizer before in Wan-Hua First Green (Leader R). Members in those gardens will then ignore their behaviours (Member H), kindly reminding them about tasks in LINE group (Leader S) or communicate with that participant not to do it again (Leader R).

In Happiness Farm, one interviewee argues about the way in which the garden rules are executed. She says the manager of the garden cuts off her papaya tree without informing or discussing it with her. This is caused by a lack of communication between the member and the manager (Member P).

In the Min-Zhao neighbourhood, the server conflict is caused by the chief disrespecting the decisions made by participants. He cuts off the original trees without communication, so the residents cannot agree with the chief (Case officer of NAPCU & Teacher L); therefore, they report to Taipei City government, questioning why the government gives the unit money to saw down the tree in their neighbourhood. The residents even blame the students and HFT, asking why they cut the tree off (Teacher L). The original intention of the project in the neighbourhood is to be good with residents but it turns out to be the contrary to residents in Da-An neighbourhood (Teacher L).

Role conflicts, seen in Smile Farm and Happiness Farm:

There are members in both Smile Farm and Happiness Farm that have internal role conflicts (Vice leader & Member G). In detail, for mothers who must take care of their young children, they have to switch roles between farmers and mothers. Therefore, the way in which they arrange their time and the chosen plants in the garden need to follow the children's school schedule (Vice leader & Member G).

In addition, the participant also has to switch the role between farmer and wife. One interviewee's family does not support her gardening activity. She explains that her husband wants her to spend the time to serve him instead of growing vegetables (Member G). Teacher L shares an example of the conflict between the husband and wife. One participant in his class chooses to join the agricultural class instead of spending time with her family, meaning that her husband has to take care of the child. Therefore, the husband questions that she could not have joined the agricultural class. Consequently, the husband goes to the residents' committee for the apartment complex, arguing about the event which resulted in his wife not taking care of the family (Teacher L).

Negative expression, seen at Happiness Farm:

Leader Q from Happiness Farm does not want to continue to be the leader but no one else dares to take the position. He further explains that being the leader is like playing bad cop, while the current chief of the neighbourhood does not dare to offend people. However, he feels exhausted and has talked about quitting as the leader several times already. The previous leader only lasted for a year. Also, the chief cannot lead the farm group. With thousands of requests from the chief, he reluctantly took over the position and has kept the role up until now (Leader Q).

To sum up, comparatively more roles including the normal members, the leaders, the teacher, and the case officer of NAPCU indicate conflicts between people happening in the gardens. One severe conflict is in Margaret Garden, happening between the chief and the participants and causing the garden to be inactive. However, in other gardens, the conflicts are solvable or minimal. The financial cost is expressed mainly by the normal members when they mention how they have to afford the cost of buying seeds, seedlings, soil, and fertilizer to plant. The role conflicts happen to the female participants, expressed by normal members and observed by one teacher. The time-consuming aspect and the negative expression are both mentioned by the leaders. The former is comparatively minor in that daily

tasks in the garden take some time to finish; the latter is the leader of the garden being unpopular by some members since the leader has to execute the regulations of the garden.

When looking into the costs related to food production, the most relevant one is the financial cost. Most participants have the burden of the cost of relevant materials to grow greens by themselves. However, most of them would still like to keep gardening.

Opportunity cost

Particularly in Smile Farm, participants identify three possible opportunity costs, including governmental competition, other knowledge, and individual agenda. The other opportunity cost is related to the result of the role conflicts.

Preparing for governmental competition costs money and time. Leader S voluntarily applies for the governmental competition. In order to apply the competition, the file forms need several criteria, including the catalogue, the goal, current status, photos, and future plans. The required files also include photos and electronic files. Therefore, the burden for the applier is massive and she puts in a lot of effort to help the community apply for the grants.

There are other things to learn besides farming. Member U says that the biggest problem in the Tian-Shan neighbourhood is integrating everyone's time. The young members have children, so they have limited time for themselves, while retired people are relatively free in terms of available time, but they arrange their schedules in advance. As a result, the time available for members to be together is limited. Therefore, in addition to spending time on the farm, she would like to learn other things.

There are agenda conflicts between individual and garden activities. Member H has her shift in the garden on weekends, so she cannot schedule travel on the weekends when she must work. However, if she knows in advance, there is a personal need on a specific weekend, she will post in the LINE group, asking for help with her shift (Member H). So, it is still flexible when it comes to arranging personal things when there is a schedule conflict.

Besides, based on the role conflicts, the opportunity cost might occur if the mother tends to attend agricultural classes. She will miss the time with the children; while on the other hand, if the father has to take care of their children due to the mother's attendance in classes, he will lose the time for himself to do the things he wants to do (Teacher L).

To sum up, the opportunity costs that the participants from Smile Farm have are additional time and money costs when applying to governmental competition and subsidies, as well as chances to attend other activities other than farming. However, the opportunity cost is not related to food production. Furthermore, there is no particular opportunity cost identified in other gardens.

Satiation

The results from the interviews do not show that there is clear satiation from the participants. However, some participants state the reasons as to whether they will continue farming in the garden. Member U from Smile Farm states that she would like to continue farming the garden, although they have many other things to do. *“After retirement, I feel that firstly, I want to find something healthier and with more sunshine. Second, I can really learn something, whether it is a teacher come over or we have the opportunity to go outside. I think farming is fine. If there are not too many problems, I will continue to participate”* (Member U).

To sum up, satiation does not appear as present for participants from the garden. Although one participant states the intention of continuing farming, it is based on her health concern and not related to food production.

Collectivistic Incentives

| Interview questions |
|---|
| 11. Do you often interact with your neighbours? |
| 12. What are the shared values of your community? For example, exchanging the local knowledge, exchange the skills of food growing or environmental and food education. |
| 13. What are the shared goals of your community? For example, making your neighbourhood more sustainable, greener and healthier in both physical and mental |

Sense of community

After the interviews, seven interviewees from active gardens commonly agree that the connection between residents is good and two interviewees indicate their neighbourhoods are very harmonious (Leader R & Chief Q). Furthermore, some residents were close as friends in the neighbourhood before the garden, while some become closer to neighbours after the garden.

The former is the case in Wan-Hua First Green and Happiness Farm. For instance, in Fu-Fu neighbourhood, residents who live nearby were close to each other and they went mountain-climbing on Sunday with a big group in the past (Member B). Leader R states that her relationship with other mothers is excellent and has never had a bad relationship with other mothers. In Fu-Jian neighbourhood, Member W has been living here for more than 60 years, and Member G says the neighbourhood is like a big family. For the latter, people become closer to neighbours after joining the

garden, which was seen in Smile Farm, Wan-Hua First Green, and Happiness Farm. In both Smile Farm and Happiness Farm, several interviewees say they had not interacted much with neighbours before (Member U, Member H & Member P).

13 out of 23 interviews indicate that growing vegetables in the gardens can result in the residents getting to know new people, making friends with the same interests, enhancing the relationship in the neighbourhood, and having a better understanding of the neighbourhood (Member B). In Wan-Hua First Green, most interviewees go to the garden every day to chat while gardening (Leader R, Member A, Member Z, Member B). They are happier when interacting with other participants after starting growing vegetables (Leader R)

The members of the farm help each other to take care of the plants (Vice leader & Member U). Furthermore, the experienced participants generously teach and share the farming knowledge as well as technics with the new members (Member Y, Member H, Member C, Member P), even their seedlings (Member P) and information about where to buy better seedlings (Member G).

Of note, gardening can also gather the elderly in neighbourhoods, giving them a place to stay and interact with others (Case officer from the district office). From time to time, it can be considered that people have a spiritual position and interest- partners (Member G). After they know the neighbours, they can expand their social range, getting to know more people (Teacher C).

To sum up, in terms of the interaction between neighbours, if the residents are close before joining the garden, it can help to efficiently construct the garden since it is easy to call up residents to join. On the other hand, if the residents are not close before, the community garden can accelerate the locals to bridge the connection between neighbours. The community garden can as well create a caring system for the elderly in the neighbourhood since the garden can become a space for people to gather, slowly getting to know each other and building up social connections.

Furthermore, after the relationship in the neighbourhood is built up, it can improve the food production in the garden since the participants can share planting tips and take care of each other's pots when it is needed.

Shared goals and values

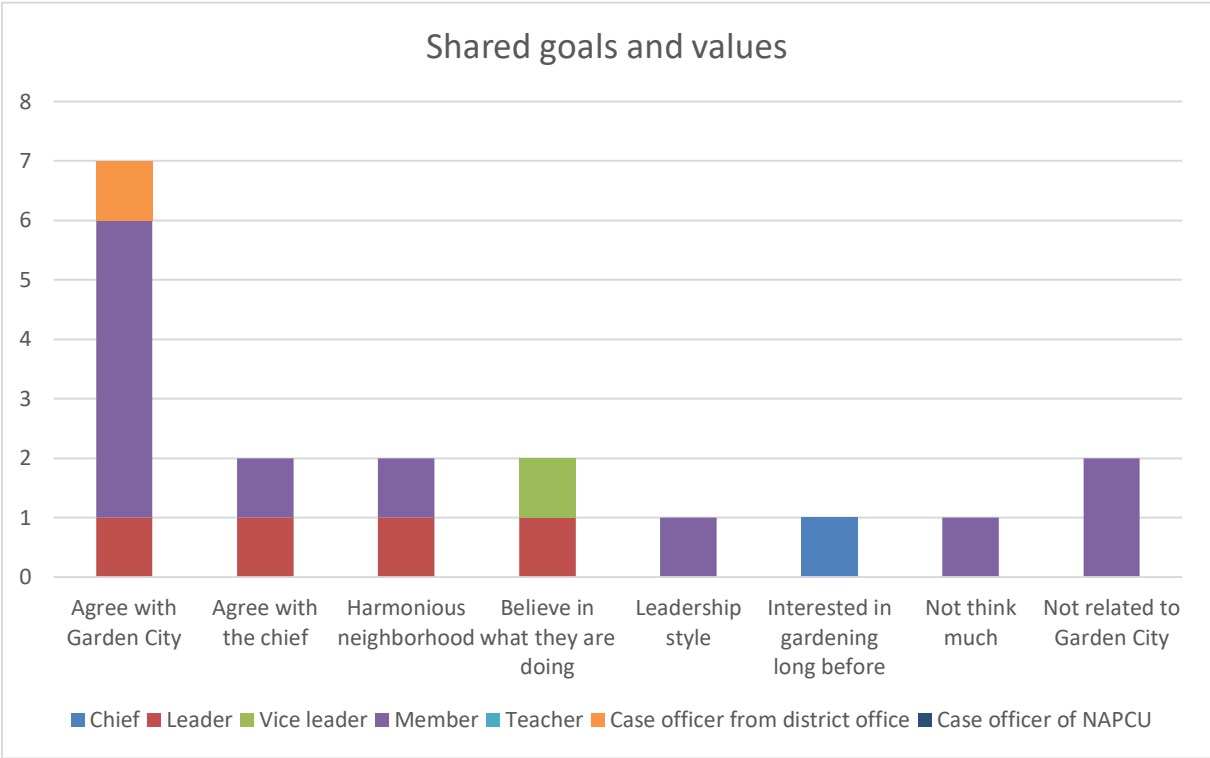


Figure 15 Collectivistic incentives mentioned by interviewees

Figure 15 shows the shared goals and shared values identified by interviewees. The most prevalent answer is the Garden City policy indicated by seven interviewees. Others, like agreeing with the chief, believing in what they are doing, and the harmonious neighbourhood, were mentioned by two interviewees. Only mentioned by one interviewee are leadership style and ‘residents had been interested in the garden long before’. The latter is particularly common at Happiness Farm. While some interviewees also indicate they do not think much about the reason they joined the gardens nor do they think of the Garden City policy.

From the different role’s perspectives, for people who practice in the garden, the shared goal and values identified by normal members are agreeing with Garden City, agreeing with the chief, a harmonious neighbourhood, the leadership style, as well as the opposite opinions like not thinking much and not relating to Garden City. The vice leader believes in what they are doing. The leaders of the gardens consider the following as shared goals and values of the neighbourhoods: the Garden City policy, the chief himself, a harmonious neighbourhood and what they are doing in the garden. For people who observe the gardening people, one chief says the residents have been interested in gardening long before, which considers as the shared goals of Fu-Jian neighbourhood. The case officer from the district office observes that participants agree with the Garden City policy. The following will describe the details of shared values and goals.

Agree with Garden City, seen at Smile Farm and Wan-Hua First Green:

Seven members in both Smile Farm and Wan-Hua First Green agree with the Garden City policy. In keeping with the idea of Garden City, every district office has the Garden City plan (Case officer from district officer) to promote urban farming in every neighbourhood (Member X) to beautify the city and provide the elderly with a place to hang out, to do activities and to get people to leave the house (Leader R).

Two members from Smile farm think that farming in the city is quite healthy for people and the environment. Member U says that since nowadays people live in the urban concrete jungle, which is unhealthy, she feels the policy is pretty good. In fact, she suggests that this is why she keeps growing vegetables. Member Y says planting organic greens can change the environment and attract butterflies, as well as contribute towards greening (Member Y). So, she is more willing to participate in the community garden with the duty of greening.

Members at Fu-Fu neighbourhood are more intent on encouraging the elderly to go outside via gardening. However, the starting point is to clean up the land because space was very messy with lots of mosquitoes and garbage that has been dropped there by people (Case officer from the district office). By growing vegetables, an area can be made to look green and beautiful (Member Z & Member A), and members plan in a way to make the garden look neat (Member A); for example, high and climbing plants are banned (Leader R) and everyone is stipulated to grow the same vegetables (Member Z).

After the garden is constructed, space is open and adopted by senior residents to grow vegetables (Member A). By doing so, the elderly can go out to the garden together and get to know each other (Member X), not staying home nor feeling bored (Leader R). Member Z feels this is an excellent initiative because if the senior people stay home, watching TV all day, they will be more likely to have Alzheimer's disease.

In addition, after the first two years, the results are so outstanding that many people want to join the garden (Leader R).

Agree with the chief of neighbourhood, seen at Smile Farm and Wan-Hua First Green:

After being given examples such as the chief wants to build a healthy and happy community, Member U from Smile Farm agree with the example and further explains that the chief is already heading to this direction, and that is the reason she becomes the volunteer of the neighbourhood. She agrees with some of his ideality; for example, people should grow vegetables without too many opinions, so they plant and harvest happily.

At Wan-Hua First Green, Leader S says the neighbourhood is active due to a kind and cooperative chief. Since the chief has the credibility and cares about the neighbourhood, residents are willing to do things together and help the chief. Besides, the neighbourhood is in harmony with each other, so people reply to the call when help is needed.

A harmonious neighbourhood, seen at Wan-Hua First Green and Happiness Farm:

Several interviews mention the neighbourhood itself being harmonious, like at Fu-Fu and Fu-Jian neighbourhoods. Fu-Fu neighbourhood has been operating for 20 years (Leader R) and is selected as a model neighbourhood. With such honour, they do not want to be defeated by others (Leader R), so the residents do their best to achieve the plans of the government.

At Fu-Jian neighbourhood, Member G says that a kind neighbourhood can persuade members to grow vegetables. A friendly neighbourhood is like a big family, and people would like to do things together. The interpersonal relationship is the foundation of a happy mood.

Believe in what they are doing, seen at Smile Farm:

After being given the examples, like building a healthier life or being kind and growing vegetables together, getting along with people, the vice leader of Smile Farm answers all the mentioned examples are included, like the establishment of a healthier life and promoting the emotional connections within the neighbourhood. Leader S from the same garden adds *“the ways and techniques of studying farming and life education.”* However, when asking further, do these shared goals and values drive them to continue participating in community farms, they answer that they keep farming due to the responsibility for the obligation since they have been assigned the position and duty (Leader S).

Leader S further states that the shared values she considers, include sharing the common prosperity since they all share the greens they grow together. Sharing the greens also becomes the reason she fights for governmental subsidies since she feels there is nothing they can do without money. Besides, she thinks that teaching children life education and learning farming technologies are shared goals.

Leadership style, seen at Smile Farm:

Particularly in Smile Farm, member H states that she appreciates the leading style of the current leader and the way the leader does certain things will influence the participant’s willingness to remain a member of the garden.

Residents had been interested in gardening long before, seen at Happiness Farm:

Particularly in Happiness Farm, before the garden was built in the year 2012, the residents in the neighbourhood had already been interested in planting. They had been planting herbs, medicinal herbs and edible plants on the corners, the side of roads and some open spaces (Chief M). They had wanted to grow more but there had been no more spaces available and it had become challenging to find such a big place (Chief M). Therefore, it was the initial incentive to turn the vacant space into a big farmyard for the neighbourhood.

Not thinking much about the shared values and goals, seen at Smile Farm:

Member H from Smile Farm looks stunned when asked about the shared values and goals of the community. Later, she states that the term community or neighbourhood is a bigger hat and she does not think that big in life. Member E from the same garden expresses that she joined the garden based

on her interests and does not think much about why she joined in with the activities in the garden.

Not related to Garden City, seen at Wan-Hua First Green:

Also, there are several interviewees who indicate that they come to the garden without the considering the Garden City policy. Member B from Wan-Hua First Green says it is not because of the mayor promoting the Garden City but because of the neighbours she comes here to plant with. Member G from Happiness Farm says that it does not matter whether the participant supports the ideal goal of the neighbourhood, like being healthier or greener, the garden is still trendy since many people are waiting in line to become a member to grow.

Additionally, Member G thinks if every neighbourhood keeps a space for residents to grow vegetables, it can increase the interaction between people and it can build a caring system within the neighbourhood. In the future, the neighbourhood will face more problems, such as the elderly living alone getting ill or suddenly dying. The caring system of the neighbourhood can prevent these accidents happening. Therefore, the garden is helpful for the whole society to be harmonious and thriving.

She further identifies that Happiness Farm has already shown the effort. For example, in the past, she had not been in the garden for a long time, and then one day, one member greeted her about being absent for a long while. This indicates that the caring system has been built. However, she states that although the mayor's Garden City has some similar ideas since the land price in Taipei is so high, it is not always possible to transform the vacant land into a garden.

To sum up, during the fieldwork, interviewees from different gardens have various answers and reactions when asking about collectivistic incentives. The most referred to collectivistic incentive is the ideality of the Garden City policy, involving greening the city and taking care of the elderly, indicated by seven interviewees, including five normal members, a leader, and a case officer from the district office.

The other collectivistic incentives are firstly related to the neighbourhood itself, being harmonious and selected as a model neighbourhood, indicated by a leader and a normal member. Second highest mentioned is the style of the leaders in terms of way of leading and heading goals, considering by both the chief of the neighbourhood and the leader of the garden, indicated by a leader and two normal members. The third ones often mentioned are to believe in what they are currently doing, like promoting healthier life and emotional connections as well as sharing the shared prosperity, indicated by the leader and the vice leader. Only the chief from Happiness Farm indicates that the residents have been interested in gardening long before. Also, normal members indicate that they do not think much why they joined the gardens nor do they think of the Garden City policy and joined the garden purely because of interests.

When thinking of food production, the applicable collectivistic incentives are from a part of the ideality

of Garden City, which is greening the city. However, from the statements of the interviewee, it does not encourage them to increase food production, instead, increasing the green area in the city touches the participants. Other incentives are not related to the improvement of food production.

Inactive Gardens

On the other hand, **for Inactive Gardens**, Margaret Garden and Schroeder Garden, since there are not many participants at these gardens, the common goal and value are depicted by interviewees who once had participated for only a short while in each. This includes two teachers, a case officer of NAPCU, a chief, and a cross-section student.

Participants should be friendly and sharing:

Teacher L states the participants should be friendly when coming to the garden. If they are not selfless at this place, how can they take care of the plants? In addition, the leader has to take care of fairness overall. Although he may hate a person, he cannot exclude anyone, because he is also a participant. Therefore, as a leader, he should not let his personal emotions get in the way of his role. If he acts upon personal emotions, other people will easily rumour since they are susceptible to an individual's behaviour upon others.

Teacher L also emphasizes the importance of sharing. Sharing with others creates a happier environment. It is not a slogan; participants should implement it by themselves. If a person starts to share, this causes others to share as well. This expansion effect is also called a ripple effect.

Besides, the other teacher says that the harvest in the garden is a significant incentive for people to attend the garden (Teacher C). She also mentions that if a participant can turn the negative thought, like the greens were stolen, into positive one, like the greens were taken because it grew well, they will not mind the food was gone. This perspective also influences people's motivation to join the garden (Teacher C).

Participants should be passionate about farming:

Member C takes the Heart Farming Team as an example, which is at Jin-Shan district, where Teacher L has rented the land. First, she indicates that growing vegetables requires passion. If students are not enthusiastic, they will be lazy and drop out quickly. Second, she agrees on the ideal value Teacher L has of taking care of the environment. Furthermore, Teacher L also takes students to the land where Teacher L has rented so that students get to know each other, form an emotional connection and keep each other company during farming. Third, she appreciates that Teacher L does not interfere with what the students cannot plant but only asks them to take care of their fields.

Community empowerment perspective:

Teacher C uses the empowerment perspective on the community garden. She agrees that if the community has specific common goals and shared values, it will affect the way the people participate in the community activities. However, at the Schroeder garden, the cohesion in the neighbourhood is not very strong and common goals and values have not yet been established. Although the Community University often approaches the chief if it has projects (Teacher C), the neighbourhood does not establish the context in the neighbourhood. This shows that the community empowerment in Da-An neighbourhood is weak, which leads to difficult gardening later on (Teacher C).

Chief should insist on the right thing:

Chief Z expresses that every resident has opinions, so the chief should decide his statement and then study how to explain this to others. The outcome is unknown without doing. After the construction, people will see the results and share them. So, the chief should keep the good and improve the bad opinions in the neighbourhood.

When the interviewer suggests to the chief that there are many events in the neighbourhood and asks what the value of the neighbourhood is the chief insists and gives examples like is it a sustainable community, a green community, or a healthy community. Chief Z answers that the first value is health. In his opinion, first, it must be harmonious within the neighbourhood. Second, the transformation and the renewing of the neighbourhood must create a sense of progress, such as the construction of the sidewalk. It is responsible for the chief to make functional improvements in the neighbourhood and let the residents feel the changes.

To sum up the answers from the inactive gardens, first, people should be kind to each other, which can improve the management and maintenance of the garden. Second, participants have to be passionate about farming, so they can keep attending the garden. Third, if the community has specific common goals and shared values, it can affect the way in which people participate in community activities. Fourth, the chief of the neighbourhood should do the right thing to improve the community. Therefore, if a community has been empowered successfully, it can attract people with or without passion for farming to join the community garden. In addition, if people are friendly to other members, this can efficiently manage and maintain the garden so the food production can be steady.

Overview of the individual and collectivistic incentives

The following two figures give an overview of all individual and collectivistic incentives from the interviews.

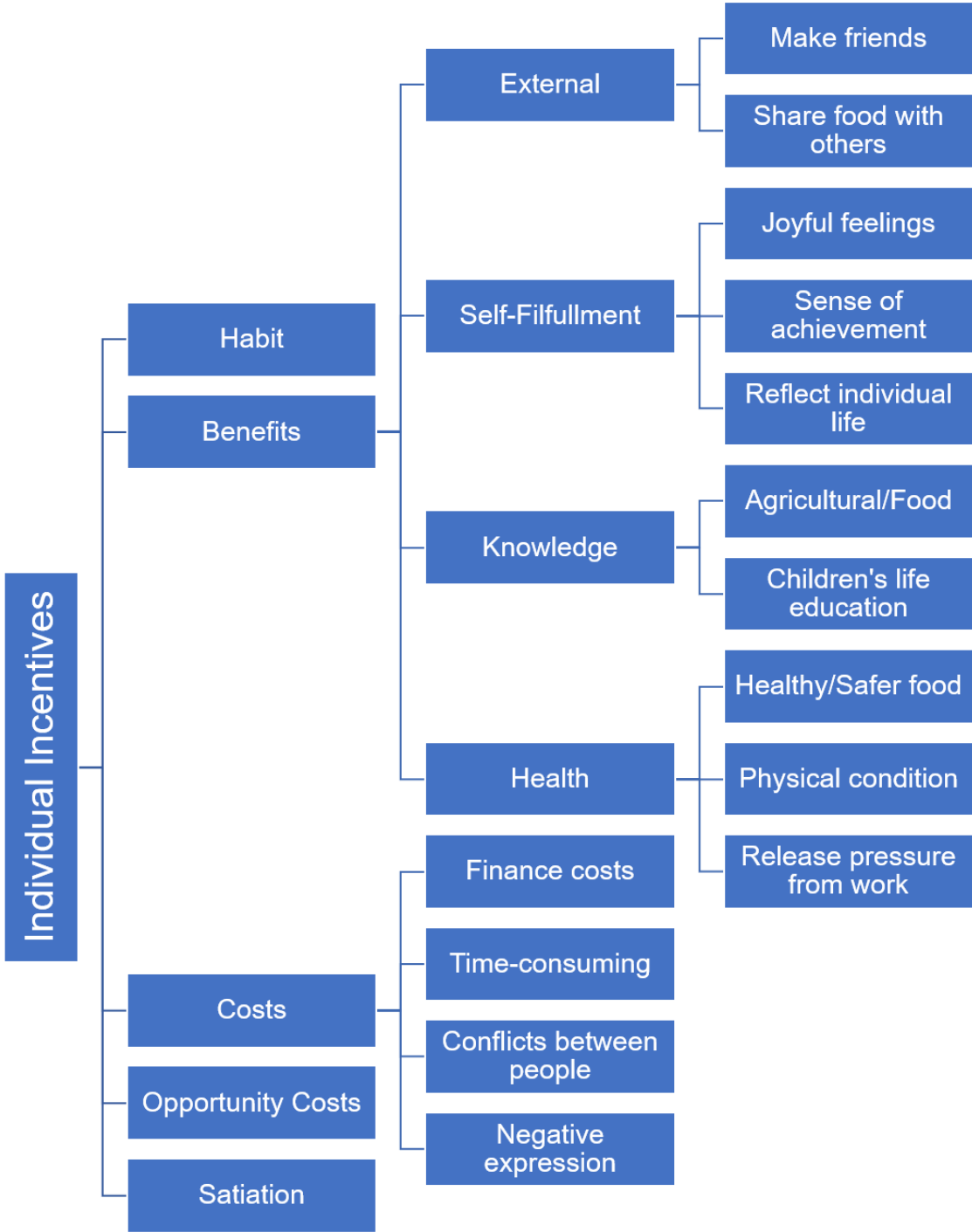


Figure 16 Overview of individual incentives

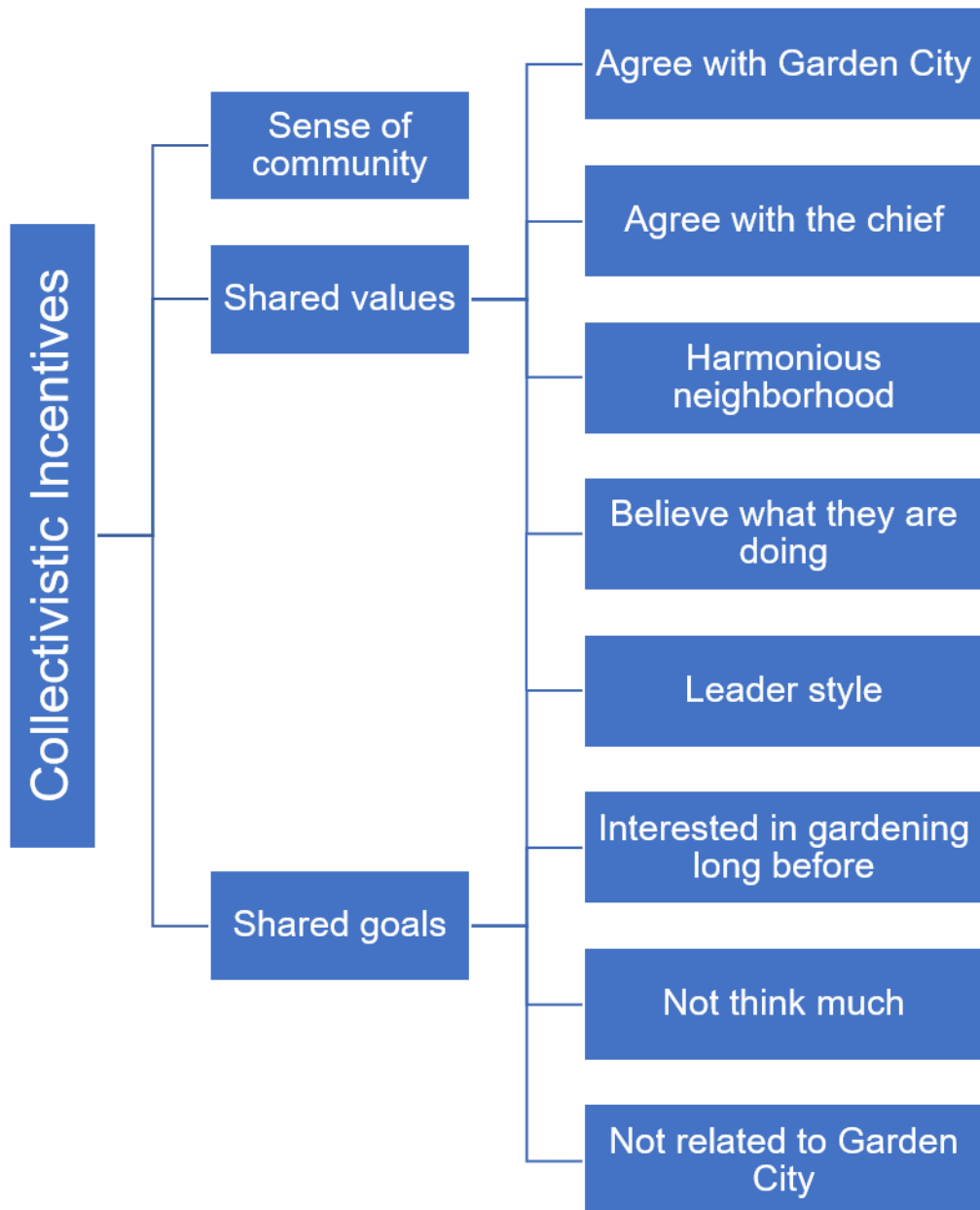


Figure 17 Overview of collectivistic incentives

5. Discussion

5.1 Who is involved in the planning and maintenance of the community garden, and what are the roles of the participants?

After the interviews, it was discovered that the roles are slightly diverse in the five gardens. In general, the selected gardens contain roles, including the chief of the neighbourhood, the leader of the garden, the normal member, and the agricultural teacher. Additionally, there is a case officer from the district office in Wan-Hua First Green and a case officer of NAPCU in Margaret Garden. However, there is no community planner involved in the gardens in the case study.

Participants with interests in gardening community

Most participants are residents of the neighbourhoods who are interested in gardening, planting, and farming. Notably, there is one cross-section student within the category normal members. As a student, this means she had attended agricultural classes held by the government in the neighbourhood, which were formulated to demonstrate and teach people how to do urban farming at the beginning of the policy. However, this student is not the resident of this neighbourhood holding the courses but still firmly intended to attend the classes from other districts.

Participants are a group of people with a particular interest to join specific activities (Cornwall, 2008). Especially in urban gardens, participants are the people who are interested in gardening or farming (Drake & Lawson, 2014). As a result, the participants who joined the community gardens in Taipei are indeed people who have a particular interest in gardening or farming.

Furthermore, the community garden contains both geographical and functional meanings (Sharpe et al., 2016, as cited in McVey et al., 2018). The former refers to the location at the local neighbourhood, while the latter refers to the community of a particular purpose, which shares an activity or project to bring people together and in this case, this is gardening. The community gardens in Taipei contain both functions since the participants are from both the local neighbourhood and cross over districts in Taipei.

However, the functional meaning of the community still needs support from the geographical location when it comes to participation in the community garden in Taipei. The cross-section student who is interested in gardening did not stay involved in the garden after the courses ended, since the garden is too far away from her home (Member C).

The absence of community planners

'Community planner' in Taiwan are considered to be the ones who understand the neighbourhood well and can empower and lead the residents to improve the quality of the living environment of the neighbourhoods (Kuo, 2004 as cited in Hou, 2017). However, when the developing the gardens in the

case study, there is no community planner involved.

The planner in Australia is considered as the person standing in between the regulation and the participants, as well as being professionals and public representatives when creating the community garden. For participatory planning, they have to arrange the participation process to ensure that there is a variety of participants involved to ensure that the public decision is for the public good (Nolan & March, 2016). The 'community planner' here in Taiwan is more likely to be a passionate volunteer of the neighbourhood and it is likely they don't have a professional background as an urban planner. Therefore, they do not have the credibility and responsibility of planners in Australia who involve many participants as possible to make decisions about the gardens.

In addition, the absence of community planners can be the result of the top-down attitude of the city government. At the initiative phase, the government eagerly forced gardens to pop up and still stood as a dominated position. On the other hand, the bottom-up approach, which the local activists use to create the urban gardens, requires a longer time to explore, cultivate, finalize, and finally decide upon gardening ideas. However, due to its four years of policy support, there is not much time to create such a process.

Participant's self-exclusion at the inactive garden

In Margaret Garden, one of the inactive gardens, the chief of the neighbourhood had insisted on his way of planning the garden and does not take other participants' opinions into account at the initial phase. After the initial phase of the garden, as the interviews and relevant documents revealed, the setting of the garden had changed several times, shown in Figure 4, and there were no locals in the garden during the field visit in 2018.

The participants may self-exclude themselves and leave the process, not wanting to keep participating (Cornwall, 2008). Even though the process claims to involve people in decision-making, the real decisions are made somewhere else. If people have been engaged multiple times and realized none of their opinions materialised into a result, they may exclude themselves to avoid wasting time (Cornwall, 2008). In Margaret Garden, although the construction phase of the garden includes various participants, the chief of Min-Zhao neighbourhood excludes other participants' opinions and decided on the final layout of the garden. Therefore, not concerning people's opinions causes other participants to exclude themselves from the later process since they have seen their previous effort as in vain.

Non-representative decision at inactive garden

In Schroeder Garden, based on the observation of the teacher, there were not many locals who participated in the construction phase of the garden since the chief did not work on calling people to join. Because the Community University of Da-An district always brought projects to the He-Ti neighbourhood, as well as the students, the chief did not need to call upon people. When the project ended, students from other districts left. If there were not many locals participating during the process,

the garden would be difficult to maintain since the local representativeness did not make the decision.

Without the locals participating in the process, requirements are not fulfilled, and the locals do not feel the commitment of attending and maintaining the outcome (Dubbling et al., 2007). Furthermore, weakly represented decisions are not persuasive enough for residents to construct the community garden (Nolan & March, 2016). In Schroeder Garden, the participants at the initial phase of creating the garden are not from the local area; therefore, it is challenging for the residents to feel responsible for the garden, so the plants die.

Women in the garden

Typically, during the planning process, the marginal groups are often considered as females and children (Borrini-Feyerabend, 1996 as cited in Buono et al., 2012). However, when counting the interviewees and analysing the participants of the gardens, it was discovered that most participants of urban gardens in Taipei are females, which is the majority group of the community garden in Taipei.

A study from Korea also shows that the participants of urban agricultural have more female participants. However, the study does not explain much and only *“highlighted the importance of women’s participation to make urban agricultural more sustainable though what it means is not women’s dominance in this field buy some positive effects UA-related measures in Seoul have on female citizens”* (Oh & Kim, 2017, p 132).

In the context of discussing the women in the allotment gardens in the UK, it was discovered that women are more willing to be involved in environmental sustainability and local food growing processes (Buckingham, 2005). The study focuses on women from two socio-economic groups and discovers that women who are economically independent and highly educated joined allotment gardens because of their concern about the environment and the quality of food available in shops. Whereas low-income women joined the allotments because they take it as a crucial chance to grow their vegetables and fruit to improve their families’ diet, what’s more they cannot afford fresh food from the market (Buckingham, 2005).

The concerns about the environment and food quality, especially the food, echo in one of the participants’ incentives in Taipei. This is safer food. Safer food for participants in Taipei means growing food without pesticides and chemical fertilizer, which is also good for the environment. Also, they believe that food grown in such an ‘organic’ way has a certain quality and is healthier. Improving the family’s diet because of being unable to afford fresh food is not the case in Taipei since most participants indicate that the amount of food received from the garden cannot make many meals.

Besides growing food, women who joined the gardens feel free and satisfied and so that they remain eager to engage voluntarily or against the wishes of their male partner (Buckingham, 2005). The result from the community garden in Taipei also reflects this find. First, the benefits participants received from the garden include a sense of achievement, which means they feel satisfied when gardening.

Second, the participants in Taipei voluntarily attend the garden because it is one of their interests. Third, several participants indicate that they have conflicts with their spouse because of joining the community garden.

Buckingham (2005) concludes that *“strategies to increase localized environmental improvements...would be well advised to consider gender as a factor in achieving these”* (Buckingham, 2005, p. 178). In Taipei, the participants of the community garden are spontaneously aligned with the conclusion from Buckingham that women become an essential factor in supporting and maintain the urban garden in the city.

The critical role in forming the community garden in Taipei

After interviews, it was found that the main point influencing all five gardens is the chief of the neighbourhood. Although the chiefs of neighbourhoods are involved in five gardens, the way they lead the construction of the garden has impacts on the success of gardens.

For the three active gardens, the chiefs of the neighbourhood cooperate closely with the locals and district offices. In both Smile Farm and Wan-Hua First Green, the chiefs call upon willing people and work with the case officers from district offices to construct the garden. However, in Happiness Farm, it is the previous chief who strived for a vacant space from the demolition of the public building and built up the garden to let the locals grow vegetables.

On the other side, for the two inactive gardens, the leadership styles of the chiefs are different; one does not have the garden in mind, while the other one is aggressive about his opinion. In Schroeder Garden, from the agricultural teacher’s perspective, the chief is not concerned about the garden nor does he have the intention to build the garden well. The interview process confirmed the teacher’s point since the chief of Da-An neighbourhood could not name out the participant who grew vegetables. In Margaret Garden, although the chief was enthusiastic about building up the garden at the beginning, he did not respect the opinions of the locals and insisted on his own way, which caused severe conflicts and led to the current condition of the garden with very few greens and no one working in the garden.

Overall, the local initiator who starts the garden construction has a significant role. In this research, it is the chief of the neighbourhood who initiates the garden in the local area. The chiefs’ methods of leading and cooperating with the residents, as well as the attitude toward the garden, both have crucial impacts on the success of the garden. If the chief has a dominating attitude, insisting on his own way, or has no intention of doing the garden well, even with the help of agricultural teachers and the case officer from NPO, the garden is likely to fail.

As the chief of the neighbourhood is a public servant, seen as the bridge between the government and the people, they can become representative of the people or the ‘megaphone’ of the government. Furthermore, they stand at the front line, as the tool to implement and reflect the policy from the city government.

However, there is no literature that discusses how public servants influence the development of the community garden. Amongst the actors in the community garden, the prelevant perspective for discussing public servants can be that the actors have different power in the network of developing urban community gardens (Ghose & Pettygrove, 2014b).

Research that Ghose and Pettygrove carried out in 2014 used *“social network theory to examine the process of urban community garden development set within the context of neoliberalization”* (p. 93). Actors' accessibility of resources, mobility, or perceived social status will influence the formation of a network (Routledge, 2003 as cited in Ghose & Pettygrove, 2014b). Consequently, the network formed between citizen groups and other actors contains unequal power relations. The social networks in the development of community gardens contain power dynamics, which would influence the information received and the material resources. It may further cause conflicts that hinder the activities in the garden. In their conclusion, the authors write, *“Networks contain power hierarchies that shape the conditions for participation in the networks. Actors with fewer resources and lesser political clout are compelled to conform to the interests of powerful actors”* (Ghose & Pettygrove, 2014b, p. 102).

The residents elect the chiefs of the neighbourhoods in Taiwan so the chief can be considered as a semi-politician and they have certain access to resources and social status; therefore, they have more power compared to average citizens. During the formation process of the community garden in Taipei, the participation of the chiefs indeed influences the involvement of the residents and the decisions related to the design the garden. In the case of Margaret Garden, the residents were forced to accept the decision made by the chief, which presents as *actors with fewer resources and lesser political clout are compelled to conform to the interests of powerful actors* (Ghose & Pettygrove, 2014b, p. 102).

To conclude, first, the participants are a group of people with an interest in gardening, so they joined the community garden in Taipei. Second, the roles of participants involved in the garden do influence the formation and the maintenance of the community garden, which further affects the food production in practice. More precisely, different roles, like the chief of the neighbourhood, will influence the participants' willingness to attend and their involvement in the garden, which further affects the decision of creating the garden, as well as the labour to maintain the garden. Without a representative decision, people have less intention to participate in the garden, so the greens die, and the gardens no longer function as spaces of food production. Third, the female participants are more likely to participate and care about the garden, since they have more concern about the environment and food quality. Thus, they become the leading supporters of the community gardens in Taipei.

5.2 In which phase in the planning process and to what degree are the participants involved in community gardens?

Diverse degrees of involvement

From the interviews, it was discovered that the planning phases can firstly be divided into two groups, before and after the Garden City policy. Secondly, the on-going process of the community garden can be split into three periods: the initial construction of the garden, the maintenance of the garden, and the possible extension of the garden.

Interviewees participate in the garden diversely at different phases. Some participants are only involved in the garden for a certain period, like two months during the construction period, while some have been participating since the stage of advocating the policy. The policy advocator in particular has experienced the whole process, from advocating the policy and educating the public, to implementing the garden.

Happiness Farm in particular, which was built in the year 2012, is the only garden that existed before the policy. Therefore, several members have joined the garden since 2012 and some have strived for the vacant space in the neighbourhood to build up the garden. The rest of the participants have been involved with the garden since the policy launched in the year 2014.

As Cornwall (2008) states, when unpacking the public participation, the process contains diverse degrees of participants' involvement. When looking into the community garden in Taipei, the participants' involvement includes formulating the policy, informing people, cleaning the space, proposing the plan, constructing as well as maintaining the garden, which all reflects Cornwall's statement.

Limited decisions made by the garden members

Most interviews are involved after the policy has launched. At first, during the initial construction of the garden, which overlapped the top-down phase, the city government encouraged the locals to promote the community garden. The chief received information and cooperated with the district office and some volunteers of the neighbourhood to start creating the garden; some cases collaborated with NPOs as well. Because the locals did not initiate the idea and because the pressure from the policy evaluation forced the implementation to be fast, the residents did not fully engage in the design part. Instead, the layout of the garden was normally done by the district office and the chief. Merely, some residents engaged in the cleaning and sorting of the space before the garden's construction.

Later, in terms of the maintenance of the garden, participants can decide the way planting occurs for the whole garden and the species for planting for either the entire garden or individual blocks. However, they will not change the established layout of the garden. In addition, the possible extension of the garden depends on the vacant space in the neighbourhood and the participants involvement in the garden. Both cases of Smile Farm and Wan-Hua First Green revealed that younger participants who are deeply engaged in gardens stand in an influential position to apply for governmental grants used for enlarging the garden.

As Cornwall (2008) states, the decision of 'involving the people in decision-making' means involving

them in all and any decisions happening during the process. Furthermore, he adds that it is essential to clarify which decision that the public has the opportunity to participate in and who exactly participates in that decision-making. In Taipei, the decision that the garden member has the opportunity to participate in now, is limited to the planting method and the species for planting. In addition, the opportunity sometimes can be the possible extension of the garden with specific conditions like having a vacant space in the neighbourhood and enabled participants. Whereas, for the decision to design the layout and setting of the garden, most of the participants did not participate due to being passively informed by the chief and other neighbours about the community garden. Furthermore, it is also related to the time participants have been involved in the garden. Most participants joined the garden after the policy was launched and therefore, they did not have the chance to decide on the layout of the garden.

Shallow participation

Cornwall (2008) considers 'shallow' participation to be when a wide range of people are involved in the process only with the approach of informed and consulted. Based on the process of the public participating in the community garden in Taipei, it can be considered that the participation was partly shallow since most members are informed but still have space to make decisions by themselves. They are informed the Garden City policy by the chief or neighbours; while they can discuss the planting ways as well as green species together.

To conclude, although various participants are involved at different stages of the Garden City, due to limited space for the residents to join at the initial phase of designing and constructing the garden, most normal members do not decide on the layout of the garden and merely follow the set-up garden. Therefore, participation in the planning process of the garden is considered shallow. However, garden members can still decide on the planting method and species for planting in the garden, which have certain impacts on the amount of food production.

5.3 What are the individual and collective incentives related to the food production of the participants to participate in the community garden?

Individual incentives

Gardening as habits

When asking the open question: why participant want to join the garden, most participants suggest that they joined because of their interests. To create a garden, first, people are needed who are interested in gardening besides offering the land (Drake & Lawson, 2014). Therefore, the community gardens in Taipei are created by the people who are interested in gardening or farming.

Other incentives

Most individual incentives correlate to the benefits. 'Interact with people' and 'Friendship' belong to 'Make friends' under the 'External benefit'. 'Interested in helping people' can be considered as the benefits of 'Self-fulfilment', 'Children's life education' belongs to the benefits of 'Knowledge'. 'Safer food' belongs to the benefits of 'Healthy/Safer food'. 'Maintain health' belongs to 'Physical condition' under the benefits of 'Health'.

Besides this, there are other individual incentives that cannot be categorized into the benefits, including 'Things to do after retirement', 'Relive the childhood memory of farming', 'Free to plant or attend the courses', 'Help the ageing community', and 'Find easy ways to plant'.

First, participants with the personal incentives of not staying at home and feeling bored and to relive childhood memory are seniors and retired people. As Scheromm (2015) states, retired persons see gardening as a simple pastime and leisure activity which requires certain investment. Second, for the reliving the childhood memory of farming, although Barthel et al. (2010) explore the urban garden as a pocket to preserve the social-ecological memory of the knowledge relating to how to grow food in the city, there is not much research about the collective memory from the urban garden, especially in the Asian context.

Third, being free to plant is mentioned in two different situations. A member from Margaret Garden had joined the garden because there were free agricultural classes held at Min-Zhao neighbourhood in the year 2016. This was during the initial phase when the city government promoted and demonstrated how to do urban farming on-site to help the locals with building the community garden. Another member from Happiness Garden states that because adopting an individual block at the farm is free of charge, people are more likely to join in with gardening. Both situations can be considered as an indirect financial reward: saving money since they do not have to pay extra and they can reduce costs.

Notably, one specific incentive is children's life education, which is mentioned by a young mother from Smile Farm. The mother herself was not interested in gardening before but joined the garden because of her son. Therefore, this unique incentive shows that due to special conditions, more participants can be attracted to join the community garden in Taipei even though they may not have been interested in gardening before.

Fourth, the agricultural teacher, who is also the policy advocator, mentions 'Helping the ageing community' and 'Find easy ways to plant' as her incentives to join the garden, which are different from other participants. As the community garden can be considered as a space for citizenship (Ghose & Pettygrove, 2014a), gardening can become a tool to gather residents together, catalysing the process of possible empowerment and innovative governance of the space (Ghose & Pettygrove, 2014a; Middle et al., 2014). As Middle et al. (2014) mentions, the community garden can offer community services, which include social networks and health improvement. The teacher uses 'Find easy ways to plant' to attract people to start planting and interacting in the same space so that residents can build the social

network and a caring system in the neighbourhood. In such way, it can 'Help the aging community' to improve the health of the elderly in the neighbourhood.

To conclude, at community gardens in Taipei, most participants are interested in gardening and most individual incentives correspond to the benefits participants received from the garden. However, having an interest in gardening does not particularly indicate that participants are eager to produce much food. Furthermore, the other incentives are related to gardening as leisure activities, maintaining farming skills in the city and using the community garden to form and offer community services. There is no particular aim to produce as much food as possible.

Benefits

Compared with the results relating to purpose and benefits in other research, most of them, like social interaction, self-achievement, education, healthy food and healthy physical condition are in line with the research of the United States and Europe (Draper & Freedman, 2010; McVey et al., 2017; Middle et al., 2014; Simmons & Birchall, 2005).

However, several benefits do not appear in the community garden in Taipei, which includes the 'Financial reward' and 'Solving problems' in 'External benefit', as well as 'Self-confident' and 'Chance to speak out' in 'Self-fulfilment'. Furthermore, other categories are added in the community garden of Taipei, which is the 'Reflection of individual life' in 'Self-fulfilment', particularly 'Children's education' in 'Gaining knowledge', and 'Release pressure from work' in 'Health'.

Absent benefits

First, lack of financial reward is confirmed by interviewees who say that farming in the garden does not save them money. The selected gardens in the case study are small, and the area of the individual blocks are tiny, too. Even in Happiness Farm, having a larger area, due to higher numbers of members, the divided area of each member is still small. Therefore, participants cannot harvest much from their blocks.

The community gardens in the United States are more extensive and they become an essential food resource or food security, whilst further involve economic development. (Draper & Freedman, 2010). In contrast, the financial reward from the community gardens in Taipei cannot be the same in the United States since the land is too small. Also, the policy regulation in Taipei clearly states that commercial activity is forbidden in the garden, which restricts the possibility of financial reward.

The other three benefits: 'Solving problems', 'Self-confident', and 'Chance to speak out' do not show up in the community gardens of Taipei and this may be the cause of different research contexts. The research Simmons and Birchall carried out in 2005 discusses user participation in public services in

the UK and the selected public services are housing and community care. They consider that first, factors that influence the service's importance to the service users, which are *"the greater the intensity, continuity, and duration of need in a particular service sector, the more likely people will be to participate"* (Simmons & Birchall, 2005, p. 264). Second, users' perceptions of the quality of the service may be influential and they generalize that if the users are happy with the service, they are more likely to participate (Simmons & Birchall, 2005). The participants of the chosen two public services thereby fit in these two considerations.

Consequently, participants of the community gardens are different from public service users. Participants voluntarily joined the community garden with interests and consider gardening as a luxury, a social activity, and a food-producing activity, without other emergency need like securing food resources. Therefore, garden participants do not think of 'Solving problems' as their benefits, since they are not triggered by any problem to then participate in gardening. Furthermore, the participants of the community garden do not mention 'Self-confident'; instead, they mention more the 'Self-achievement' received from the garden when they see the green growing to eventually be harvested. Last, the 'Chance to speak out' presents alternatively in the community gardens of Taipei, which becomes the voice of speaking out about preferable green species to plant or planting ways.

Additional benefits

Mentioned by the participants in Taipei, the 'Reflection of individual life' in 'Self-fulfilment' and 'Release pressure from work' in 'Health' are related to horticultural therapy in urban gardens. Also, it is indicated that improving health from activity in the urban garden is not only for the physical body but also for mental health.

As Lohr and Relf (2014) state, urban horticulture has essential impacts on public health, including the individual and the community. For the individual, horticulture can promote health through exercise, stress reduction, social interaction, and mental stimulation. For community, it can improve public health through interaction and the dynamics within the community. Especially for individual health, gardens benefit the reduction of depression (Lohr & Relf, 2014), which echos to the benefit of releasing pressure from work in the community garden of Taipei.

Community gardens contain an educational function (Draper & Freedman, 2010; McVey et al., 2017; Middle et al., 2014), which can also be passed on to the younger generation (Scheromm, 2015). Therefore, 'Children's education' occurring in Taipei reflects the same function of education and skill transformation.

To conclude, the benefits participants received from the community garden in Taipei are mostly in line with the research of the United States and Europe, including social interaction, self-achievement, education, healthy food, and healthy physical condition. However, due to the tiny land areas and the

policy regulation, the amount of food production is not enough to support many meals and cannot generate financial rewards as other research in the United States has claimed. The remaining beneficial aspects not mentioned are due to the different research content from Simmons and Birchalls' in 2005. For the additional benefit, particularly, horticultural therapy is mentioned, which benefits not only one's physical condition but also relaxes the mind. Consequently, food production becomes a minor part of the benefits that participants received from the garden.

Costs

Absent costs

Compared with the result of the costs within the research of Simmons and Birchall (2005), there are several costs that do not appear in the community garden in Taipei, which includes the 'Effort of learning new skills' and 'Meeting new people' in 'Time-consuming', as well as 'Being bored or uncomfortable' in 'Negative expression'. As mentioned above, the absence of certain costs may result from the different research contexts.

First, 'Time-consuming' mentioned in the study of Simmons and Birchall (2005) refers to spending time to learn new skills and meet new people. However, participants in the community garden of Taipei actually consider those 'costs' as the benefits of 'Knowledge' and 'Making friends', as well as an incentive to join the garden. Only one interviewee thinks the regular tasks in the garden sometimes costs time, while other participants do not think gardening is time-consuming since each individual block is tiny.

Second, 'Negative expression' in the study of Simomons and Birchall (2005) is related to dealing with criticism or being unpopular. At the community garden in Taipei, participants rarely mention negative aspects, and only one leader thinks that being the leader is like playing bad cop, which members may dislike. Other interviewees do not mention the cost of 'Being bored or uncomfortable'; in contrast, participants of the community gardens in Taipei have the opposite feeling, they actually enjoy gardening and use gardening to avoid being bored at home.

Additional costs

'Role conflicts' are often mentioned in the community gardens in Taipei, and it is stated by three young ladies and observed by an agricultural teacher, that the women in the community garden in Taipei are facing a conflict which disrupts their roles as a mother, a wife, and a gardener. As discussing previously in 'the women in the garden', the challenges women encounter when attending the garden often revolve around issues with their male spouse (Buckingham, 2005). The role conflicts happening in the community gardens of Taipei echo to the challenges that women face when joining allotment gardens in the UK.

Opportunity costs

Only participants in Smile Farm identify three possible opportunity costs, and the cost of 'Role conflicts' causes another opportunity cost. There is no specific opportunity cost mentioned by other gardens. As Simmons and Birchall (2005) mention in their study, the opportunity cost is what the individual calculates as the costs of opportunities forgone. In the community garden in Taiwan, no precise opportunity costs are mentioned, which might be because everyone's block is small and members do not need to spend too much time in the gardens, thus gardening does not cause high potential cost.

Satiation

For satiation, there is nothing mentioned by interviewees. Simmons and Birchall (2005) state in their study that satiation is the oversupply of benefits, which reduces the subjectively perceived value. While in the community gardens in Taiwan, people come to the garden based on their interests, and some even have to draw lots or wait in lines to adapt the blocks, so they are seen to appreciate the farming opportunity. Therefore, there are no opinions about being too satisfied and to quit gardening. On the other hand, members have been members in the gardens for only a few years or have just started to grow the greens; therefore, they have not yet experienced much, nor have they been fully fulfilled thus resulting in them quitting gardening.

To conclude, the costs participants received from the public services are not the common costs for the participants of community gardens. Instead, the cost, spending time to meet new people, becomes the benefit in community gardens. Also, negative expression is rarely seen in the community garden of Taipei; neither does the opportunity cost and satiation. Notably, the role conflicts in the community garden in Taipei when women attend the garden activities. This may influence their willingness to participate in the garden, and further influence the maintenance of the garden since the women are the primary caretakers in the community gardens of Taipei, which further influences the food production.

Overall, in individual incentives, although there are both costs and benefits that participants received during farming in the community gardens of Taipei, participants still keep farming in the garden. The study of Simmons and Birchall (2005) shows that *“direct costs do not therefore appear to provide a significant barrier to participation. The story appears to be much the same for opportunity costs...Neither does “satiation” appear to have significant effects.”* (2005, p. 267). Therefore, the result from the community garden in Taipei mirrors the study of Simmons and Birchall that the benefits still outweigh the costs that participants experience, so they keep attending the garden activities.

Collectivistic Incentives

After interviews, three factors influencing the mutual incentives, the sense of community, shared values, and shared goals do not have clear answers from the interviewees.

Sense of community

The result shows that some residents were close as friends in the neighbourhood before they joined the garden, while some became closer to neighbours after joining the garden. Therefore, the community garden becomes the means and end of the sense of community.

One theme happening in the community garden that Draper and Freedman (2010) point out is social interactions/cultivation of relationships when reviewing literature about community gardens. Many articles referenced in their study claim that social actions facilitate the establishment of the community garden and further ensure its sustainability (p. 484). In Taipei, for the neighbourhood which already has a secure emotional connection, the sense of community can become a factor to make the garden thrive and become sustainable.

The close connection between neighbours can easily promote activities in the neighbourhood. First, residents share exciting events and spread the information in the neighbourhood, so residents are more likely to attend governmental activities. Second, within a close and intimate neighbourhood, they can create a great sense of community to achieve goals. This is particularly true in Fu-Fu neighbourhood, as it has been operating for 20 years and is selected as a model neighbourhood, one which the residents are proud of. With such honour, they do not want to be defeated by other neighbourhoods, so they do their best to achieve the plans of the government, the community garden: Wan-Hua First Green.

The cultivation of relationships does not only limit the interactions between individuals occurring in the community gardens but also includes the involvement of people outside the garden (Draper & Freedman, 2010). In Taipei, for the neighbourhoods which had not built up a secure emotional connection before, the sense of community has been created since the establishment of the garden, which does not have much influential impact on creating the community garden. Instead, the garden is the catalyst to improve the emotional connection within the neighbourhood through and beyond the community garden, in terms of expanding to the whole neighbourhood.

Furthermore, the community garden can provide a social space for people to come together and the interaction between individuals result in community organizing (Draper & Freedman, 2010). In Taipei, as Teacher L states, the community garden creates a space and a common goal for residents where they can gather, offering excellent opportunities for people to interact and build up connections, further enforcing the sense of community.

To conclude, the community garden can benefit from the sense of community, presenting as the perspective of social interactions/cultivation of relationships. If the relationship has been created before the establishment of the garden, it can support the construction of the garden; while after the garden, it can improve the maintenance of the community garden. Both are helpful to steady the food

production in the garden.

Shared goals and shared values

Election influence

During the interviews, it was difficult to receive clear answers from the interviewee since the questions were too abstract. Therefore, the interviewer would give examples of shared goals and values of the neighbourhood to inspire interviewees to answer, like for example, the healthier and greener community the chief wanted to create. However, these examples did influence the answers since interviewees would agree with the examples; also, October 2018 was a sensitive time to carry out interviews about the policy with the locals. This was because the following month, November 2018, was the time when the local election, including the chief of the neighbourhood and city mayor, occurred in Taiwan.

Therefore, although the most mentioned answer is Garden City policy, this may be the result of the timing, close to the election. At the time, people would exaggerate their agreement with the Garden City policy from Mayor Ku, showing their support. One exception was Happiness Farm, which was created before the policy, so their shared goals and values were not related to Garden City but the residents had a common interest in gardening. The other answers, 'Agree with the chief', may have the same reason for the election since the residents would show their support for the chief by agreeing with what he did.

However, on the other hand, it may be the truth that the chief of the neighbourhood really does well and cares about the neighbourhood. In fact, participants from Tian-Shan and Fu-Fu neighbourhoods share their appreciation for their chiefs. The same goes for 'Agree with Garden City' that participants may sincerely agree with the idea of the policy, thus being unrelated to the city mayor.

A harmonious neighbourhood

A harmonious neighbourhood can be an excellent driver to encourage residents to promote and do things together, as participants from Fu-Fu and Fu-Jian neighbourhoods state. Also, people are more likely to take care of each other, including their greens, if the neighbourhood is cohesive. An intimate neighbourhood would be more comfortable to promote activities within communities. These confirmations respond to the sense of community in the result section and have been discussed above.

Other factors considered as collective incentives

In addition, the style of the leaders, in terms of the leadership style and heading goals, taking into account both the chief of the neighbourhood and the leader of the garden, will influence one's motivation to join the garden. The two extreme examples happened in Smile Farm and Margaret Garden. The leader of the garden in Smile Farm is appreciated, while the chief of Da-An neighbourhood

is considered as the cause of the abandoned garden. Furthermore, as the election result shows, at the end of 2018, the chief of Da-An neighbourhood had changed.

This phenomenon can respond to 'the critical position in formatting the community garden' in the discussion section, which refers to diverse power between actors in the garden which influences the development of the garden. Within the community garden network, the chief of the neighbourhood still stands as the most powerful actor when constructing and maintaining the garden.

However, there are some interviewees who indicate that they do not think much about the reason, nor do they think of the Garden City policy when joining the garden. They participate purely for their interests, which respond to the interest as individual incentives in the result section and the habit in the discussion section.

Collective incentives in inactive gardens

When looking at the inactive gardens, especially in Schroeder Garden, as the agricultural teacher observed, He-Ti neighbourhood has not yet established common goals and values. Although the Community University often approaches the chief and brings in students if it has projects, the participants are mostly from other districts. In such a situation, the neighbourhood does not create a cohesive context with the locals. Therefore, the sense of community is weak, which leads to the difficulty of garden maintenance afterwards.

Furthermore, when interviewing with the chief of the He-Ti neighbourhood, the reply from the chief did not really answer the question. For example, when asking about who else participated, he could not offer clear names of the participants; or when asking about the benefits or opportunity costs, he would emphasize the duty of the chief instead of giving clear answers. This situation is significantly different from the other chiefs of the neighbourhood who immediately introduced the leaders of the gardens after the interviews. This could refer to the policy advocator's perspective that the chief of He-Ti neighbourhood does not understand what the community garden is doing.

Considering the elements in the discussion, Schroeder Garden lacks representative decisions, so the locals have less intention to join the garden. Without people gathering in the garden, it cannot cultivate relationships in the community garden, and this halts further community organization. In addition, if the powerful actor, the chief of the neighbourhood, does not fully support the community garden, it will also hinder the creation and maintenance of the community garden, and further influence food production from the garden.

To conclude, for the shared values and goals, the answers of the interviewees might be influenced by the election, showing their admiration or preference to Garden City policy, the mayor, or the chiefs of the neighbourhoods. Other opinions, a harmonious neighbourhood and the leader style, can refer to the sense of community and the powerful actors in the garden. For the latter, this can further influence the activeness of the garden. Overall, the shared values and goals have an impact on the incentives for

the individual to join the garden, which will further influence the maintenance of the garden and steady food production.

Compared to Mutual Incentive Theory

Although the interaction between the neighbours is already good enough, there is not much evidence that shows that shared values and goals of the neighbourhood have been created and driven residents to join the garden. Only one interviewee from Fu-Fu neighbourhood indicates due to the model neighbourhood of which she is proud, residents want to create and maintain the garden well to keep up with the reputation. Therefore, the community gardens in Taipei do not show that collectivistic incentives are primary drivers. The collectivistic incentives do not oversee the individualistic incentives. Instead, individual incentives are the main reasons for the participants to join the garden.

The result of the community garden in Taipei is opposite to the finding of Simmons and Birchall in 2005. As they discover, participants of public services will keep participating without any benefits, which indicates that they might be driven by the collectivistic incentives that outweigh the individualistic ones. Some of them want to get benefits for the group as a whole rather than just for themselves as individuals. Furthermore, since the participants in their study have a strong sense of community, shared goals, and shared values, it indicates that collectivistic motivations are the primary mechanism in the motivation of service users to participate.

However, Simmons and Birchall do not explain further details or context of the three factors that influence the collective incentives. Speculatively, the study uses 30-point “scales of collectivistic motivations” during the survey, so the collective incentives are shown in scores to indicate their influence instead of the precise reason or content.

5.4 Limitation of the research

Theory of public participation is a broader concept to understand influential actors, determining the success or failure of a case from a context-based perspective. However, it cannot further analyse delicately the relationship between different actors and the degree to which participants are involved. Public participation can overview all critical actors involved in the garden, examine actors' significance and representativeness, and determine the involved phase of participants. Consequently, the role of the public servant or the powerful public representative in policy implementation, the chief of the neighbourhood in the study, was not expected before this research. Therefore, further structural theories are needed to analyse the detailed interrelation between actors and the extent the participants are involved that influence the formation and the management of the garden. Also, further research can further design a mechanism or evaluation to make public participation in creating or managing the urban garden more effective.

For mutual incentive theory, in particular the individual incentive part, especially the benefits participants receive from the garden, are mostly the same as other studies about community gardens. While for the costs participants encounter in the garden, there is a specific one about role conflicts that occur for female participants in the community garden of Taipei. Since the women are the primary caretakers of the garden, further study is needed to precisely analyse the phenomenon, which may influence the food production of the garden.

The collectivistic incentives part aims to examine whether the bond of the community is strong enough, so the cohesion of the community can form the common goal and values which drive the participants to join the community garden. However, initially, the collectivistic incentives are applied in different research contexts. Simmons and Birchall's study in 2005 explores the influential role of collectivistic incentives in driving the participation of the public services in the UK; therefore, it is not very suitable to directly apply and analyse the collectivistic incentives that affect the participants to join community gardens in Taiwan due to different research contexts.

5.5 Constrains

When doing the fieldwork, it was discovered that the real situation in Taiwan is slightly different from the information shown on the websites. For example, the planting area on the website is calculated by the land area, which is not the real practice area. This indicates that the update of the website cannot keep up with the real change and may mislead the readers.

In addition, since the time the interviews, October 2018, was close to the local election in Taiwan, which was on 24th November 2018, this research was sensitive. Interviewees' opinions related to Garden City policy, and the election might have influenced the answers of some interviewees, for example, the answers might reflect their support or dislike for the city mayor or the chief of the neighbourhood.

Also, since the sampled interviewees are the people who appear in the garden, it may exclude the opinions from the people who don't take part in gardening. Such a sample can only gather the opinions from the people who keep gardening, especially in the section exploring what motivates participants to join the garden. Non-participants who quit gardening, may be the result of the negative aspects from the garden with outweighed the positives side. However, since they do not show in the garden anymore, this research will neglect the factors that influence their incentives.

6. Conclusion

6.1 Research question

How does the participation of citizens in the planning and maintenance of the Happy gardens influence food production in the urban garden?

First, the roles of the participants will influence the involvement of other people and the creation of the management of the garden, which further influences food production in the garden. In detail, the involved may cause participants' self-exclusion as well as non-representative decision, which further influences participants' willingness to keep working at the garden. In addition, women are the main participants of the community gardens in Taipei.

Second, although various sectors are diversely involved at different phases of establishing community garden, the garden members can make limited decisions, which is considered as shallow participation. The initial layout of the garden was mostly made in a rush by the district officer and the chief of the neighbourhood; however, participants can still make decisions about the planting methods to grow the greens in the garden and apply for potential extension of the garden to enlarge the planting area. These are the minor ways in which participants can influence food production.

In addition, due to physical and natural restrictions, participants cannot grow the vegetables as much as they want or when they want. First, the land area is too limited to grow more vegetables and it is difficult to find more vacant space in the city since Taipei is fully developed. Second, the vegetables grow depending on seasons, if the greens grow in the wrong season, not as many as usual can be harvested. Moreover, the weather conditions will influence food production. In Taiwan, the heat and typhoons in the summertime are the primary green killers which will influence the growing of the greens.

Third, participants joined the garden primarily based on individual interests and the benefits they receive from the garden, which is mostly in line with other studies about the benefits and motivations of participants in the community garden in the western content. This is true for factor other than financial rewards. Consequently, producing food became one of the benefits and incentives that keep participant gardening. The cost participants encounter in the garden does not hinder them much or keep them from gardening. For women, notably, role conflicts between being a mother, a wife, and a gardener is mentioned in Taipei, which might influence their ability to keep joining in with activities in the gardens.

On the other hand, the collectivistic incentives are not the main drivers to draw people to the garden since few clear shared goals or shared values are identified in the neighbourhoods in Taipei. Sense of community can provide support and can be formed by the community garden itself as well as further

enhance the maintenance of the garden related to steady food production. Furthermore, the sense of community can be the starting point of forming the shared goals and shared values.

Overall, public participation can have a certain level of impact on food production in the community gardens of Taipei. This depends on the people involved, who influence other people's decisions and participation in the garden, which related to the maintenance of the garden regarding to steady food production. In addition, the neighbourhood that participants are from may stimulate the sense of community and further influence the formation of mutual goals and values which will in turn affect the willingness of people to participate in the garden.

6.2 Scientific recommendations

Public participation can first give an overview of who participates as well as to what extent they participate. However, for the special participant, the correlation between different actors and the factors influencing the degree of actors' participation, more detailed or structural theory is needed for analysis.

In detail, first, the majority of participants are female in Taipei, therefore research can explore the role of females involved in community gardens and how this is representational of the society in Taiwan. Second, for the correlation between different actors, further research should explore what the relationship is between the government and the local in creating the community garden, what the governance type is when creating the community garden, and what the pros and the cons are, and the improvements that the style of governance can introduce to promote the creation of urban gardens in Taipei. Third, for the factors influencing the degree of actors' participation, further research can explore what the role is of the chief of the neighbourhood (public servant) and what his contribution or obstacles are in creating and maintaining the urban gardens.

Furthermore, the situation in Taipei for implementing Garden City policy combines the top-down and bottom-up approaches. However, within a limited time, four years, the result shows that it is still under a bigger frame of a top-down approach. This means that most community gardens still rely on subsidies supported by the city government instead of thinking about self-sufficiency and a way to sustain the community garden. Therefore, further research should explore the effectiveness or the evaluation of the governmental role on transforming from the top-down attitude to support the bottom-up approach from the locals.

For mutual incentive theory, one benefit that participants particularly mention is horticultural therapy. Since there are not many studies about horticultural therapy in the Asian context, more research which explores how the horticultural therapy applies in urban gardens and how it affects the urban population could be carried out (Lohr & Relf, 2014). One cost that participants encounter in the garden

is about the role conflicts which were felt by the female participants in the community garden of Taipei. Since the women are the primary caretakers of the garden, further studies are needed to precisely analyse the phenomenon, which may influence the food production of the garden. Further, research might turn to the field of discussing the women's role transformation which happens in the urban gardens in Taipei.

For the collectivistic incentives part, there is not much evidence showing that the bond of the community is strong enough, so that the cohesion of the community can form common goals and values which drive the participants to join the community gardens in Taipei. Therefore, further research should step backward and first create a strategy to understand relevant elements which could form collective incentives for a community. The research in the future can use other concepts like sense of community, community empowerment, social capital, and network theory.

6.3 Societal recommendations

Since the amount of food is not the primary purpose of the participants to join the community garden in Taipei, the community garden cannot produce large amounts of food. The government and the community should emphasize other benefits to attract residents to join the garden. This might include things like the garden considered as a pot which collects agricultural knowledge in the urban area, social connection and a caring system inside the neighbourhood.

In order to maintain and sustainably manage the community garden, the government should change the ways it supports the garden. The participation process needs to be finely designed to include as many people as possible. Particularly the initial phase of constructing the garden should involve various people, ensuring that different voices can be heard and the locals can take part in the creation of the garden, so that they feel more committed to the garden, thus wanting to maintain the garden often.

The superficial support from the subsidies of the urban garden cannot help to empower the locals due to discontinuity. Currently, the city government offers subsidies by asking for the neighbourhood's hand in an annual plan. The plan has to explain how the citizen use the subsidies for in the garden, mostly regarding the materials in the garden, such as replacing the fence or planting pots. Due to the year-by-year project, the locals cannot create a long-term plan since they feel uncertain about the next few years. Therefore, when offering subsidies to the neighbourhood, the government should make a sustainable and strategic plan, lasting for several years, to cultivate and empower the ability of the locals.

7. Appendix

| |
|---|
| How does the participation of citizens influence the food production of the Happy gardens? |
| A. Who is involved in the community garden? |
| <p>a. What is the type or roles of the participants?</p> <p>1. For example, agriculture experts, community planners, the official manager of community, NGOs, or residents.</p> |
| <p>2. What is your role in the community garden?</p> <p>3. Do you state that the garden should produce more food? If yes, what would you do to increase food production in the garden?</p> <p>4. Does the community have a community planner? If yes,</p> <p>4.1 What is the role of the community planner in creating a garden?</p> <p>4.2 How does the community planner contribute to the function of food production in the garden?</p> |
| B. In which phase in the planning process and to what degree were the participants involved in community gardens? |
| <p>5. What is your participation history? Duration, intensity, and types of participation (Simmons & Birchall, 2005)</p> <p>5.1 When did you join the garden?</p> <p>5.2 How often do you attend in the garden?</p> <p>5.3 What is your type of participation; what do you do?</p> <p>6. (Are you an initiator, a designer, an agriculture expert, or a caretaker of the garden?)</p> <p>7. What do you think of your time in the garden influences the performance, especially food production?</p> <p>7.1 If you can join earlier, what would you do to improve the garden?</p> <p>7.2 In which phase would you like to join the garden, and why?</p> |
| C. What are the purposes of the participants to participate in the community garden? |
| <p>a. What are the individual incentives to join the garden, and does food production motivate them?</p> <p>i. What are their benefits and habits of joining gardening? Is food production their main benefit?</p> <p>ii. What are their cost, opportunity cost, and satiation while gardening?</p> |
| 8. Why do you want to join gardening? |

9. Are you interested in gardening? Or is the gardening your habit? (Drake & Lawson, 2014)

10. What kind of benefits you receive from the garden?

(first open question and then further point out the categories)

| Benefits |
|--|
| <ul style="list-style-type: none">- External benefit: financial reward, problem solved and social connection- Self-fulfilment: self-confident, sense of achievement, chance to speak out and enjoyment- Gaining knowledge: agriculture and food- Healthy: food and physical condition |

Table 6 Cost and Benefit, adjusted from the research: Simmons & Birchall (2005), McVey et al. (2017) and Middle et al. (2014)

11. Are healthy food and food production your main benefit and does it motivate you? If yes, how does the food motivate you and what do you do to get the food benefit?

12. What are the cost, opportunity costs, and satiation while gardening?

(first open question and then further point out the categories)

| Cost |
|---|
| <ul style="list-style-type: none">- Finance costs- Time-consuming: the effort of learning new skills and meeting new people- Conflicts between people- Negative expression: being unpopular and being bored or uncomfortable |

Table 7 Cost and Benefit, adjusted from the research: Simmons & Birchall (2005), McVey et al. (2017) and Middle et al. (2014)

b. Do the collectivistic incentives influence participants to join the gardens?

- i. What are the shared values and shared goals of the community, and do those encourage the residents to produce food in the garden?
- ii. What do they feel about the sense of the community, and does the sense of community drive them joining the garden?

13. Do you often interact with your neighbours?

14. What are the shared values of your community? For example, exchanging the local knowledge, exchange the skills of food growing or environmental and food education.

15. What are the shared goals of your community, for example, making your neighbourhood more sustainable, greener and healthier in both physical and mental?

8. Reference

- Audit Department in Taipei City, National Audit Office of R.O.C. (2015). The promotion of 'Garden City' project from the Department of Economic Development was unsatisfactory. The Audit Department urged it to review and improve. The implementation of the plan has revised and the management and examination mechanism has established to improve the implementation efficiency of the project. Retrived October 25, 2017, from <https://www.audit.gov.tw/files/15-1000-3483,c198-1.php> [In Chinese]
- Barthel, S., Folke, C., & Colding, J. (2010). Social–ecological memory in urban gardens—Retaining the capacity for management of ecosystem services. *Global Environmental Change*, 20(2), 255-265.
- Barthel, S., Parker, J., & Ernstson, H. (2015). Food and green space in cities: A resilience lens on gardens and urban environmental movements. *Urban studies*, 52(7), 1321-1338.
- Beilin, R., & Hunter, A. (2011). Co-constructing the sustainable city: how indicators help us “grow” more than just food in community gardens. *Local Environment*, 16(6), 523-538.
- Bendt, P., Barthel, S., & Colding, J. (2013). Civic greening and environmental learning in public-access community gardens in Berlin. *Landscape and Urban planning*, 109(1), 18-30.
- Blakeley, G., & Evans, B. (2009). Who participates, how and why in urban regeneration projects? The case of the new 'city' of East Manchester. *Social Policy & Administration*, 43(1), 15-32.
- Buckingham, S. (2005). Women (re) construct the plot: the regen (d) eration of urban food growing. *Area*, 37(2), 171-179.
- Buono, F., Padiaditi, K., & Carsjens, G. J. (2012). Local community participation in Italian national parks management: Theory versus practice. *Journal of Environmental Policy & Planning*, 14(2), 189-208.
- Caputo, S. (2012). Chapter 22 The purpose of urban food production in developed countries. In *Sustainable food planning: evolving theory and practice* (p. 280). Wageningen Academic Publishers.
- Cornwall, A. (2008). Unpacking 'Participation': models, meanings and practices. *Community development journal*, 43(3), 269-283.
- Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications.
- Department of Household Registration, Ministry of the interior, R.O.C. (Taiwan) (2017). Township land area and population density. Retrieved October 25, 2017, from <https://www.ris.gov.tw/app/portal/346> [In Chinese]
- Drake, L., & Lawson, L. J. (2014). Validating verdancy or vacancy? The relationship of community gardens and vacant lands in the US. *Cities*, 40, 133-142.

- Draper, C., & Freedman, D. (2010). Review and analysis of the benefits, purposes, and motivations associated with community gardening in the United States. *Journal of Community Practice*, 18(4), 458-492.
- Dubbeling, M., Bracalenti, L., & Lagorio, L. (2009). Participatory design of public spaces for urban agriculture, Rosario, Argentina. *Open House International*, 34(2), 36.
- Farming Urbanism Network (FUN) Taiwan ! (2017). Retrieved October 26, 2017, from <https://g0v.hackpad.tw/ep/pad/static/TD9A9QhjRHI> [In Chinese]
- Fox-Kämper, R., Wesener, A., Munderlein, D., Sondermann, M., McWilliam, W., & Kirk, N. (2018). Urban community gardens: An evaluation of governance approaches and related enablers and barriers at different development stages. *Landscape and Urban Planning*, 170, 59-68.
- Gasperi, D., Pennisi, G., Rizzati, N., Magrefi, F., Bazzocchi, G., Mezzacapo, U., Centrone Stefani, M., Sanyé-Mengual, E., Orsini, F. and Gianquinto, G. (2016). Towards regenerated and productive vacant areas through urban horticulture: Lessons from Bologna, Italy. *Sustainability*, 8(12), 1347.
- Ghose, R., & Pettygrove, M. (2014a). Urban community gardens as spaces of citizenship. *Antipode*, 46(4), 1092-1112.
- Ghose, R., & Pettygrove, M. (2014b). Actors and networks in urban community garden development. *Geoforum*, 53, 93-103.
- Guitart, D., Pickering, C., & Byrne, J. (2012). Past results and future directions in urban community gardens research. *Urban forestry & urban greening*, 11(4), 364-373.
- Guo, An-Jia & Hou, Shi-Chang (2016, October 11). 'Garden City' was suspected of disorderly chaos, the adoption of the garden was early terminated. *Liberty Times Net*. Retrieved from <http://news.ltn.com.tw> [In Chinese]
- Gustafson, P., & Hertting, N. (2017). Understanding participatory governance: An analysis of participants' motives for participation. *The American Review of Public Administration*, 47(5), 538-549.
- Hou, J. (2018). Governing urban gardens for resilient cities: Examining the 'Garden City Initiative' in Taipei. *Urban Studies*, 0042098018778671.
- Hou, Shi-Chang (2016, August 8). Gardens turn into potted plants-'Garden City' was questioned of being 'fake'. *Liberty Times Net*. Retrieved from <http://news.ltn.com.tw> [In Chinese]
- Huang, Li-Yuan (2016). The promotion of Taipei Farm City. *Learning City, Taipei*. Retrieved October 25, 2017, from <https://www.lct.tp.edu.tw/ezfiles/1/1001/img/200/658307151.pdf> [In Chinese]
- Huang, Li-Yuan (2017). Garden City Taipei. Taipei: *Parks and Street Lights Office, Public Works Department, Taipei City Government*. [In Chinese]
- Ko, Wen-Je (2014). White Paper on Taipei Municipal. Retrieved October 25, 2017, from https://doctorkowj.gitbooks.io/kppolicy/content/part_3/33.html [In Chinese]

- Kumar, R. (2014). *Research Methodology: A Step-by-Step Guide for Beginners*. SAGE.
- Lohr, V. I., & Relf, P. D. (2014). Horticultural science's role in meeting the need of Urban populations. In *Horticulture: Plants for People and Places, Volume 3* (pp. 1047-1086). Springer, Dordrecht.
- McVey, D., Nash, R., & Stansbie, P. (2018). The motivations and experiences of community garden participants in Edinburgh, Scotland. *Regional Studies, Regional Science*, 5(1), 40-56.
- Mensah, C. A., Andres, L., Baidoo, P., Eshun, J. K., & Antwi, K. B. (2017, June). Community participation in urban planning: the case of managing green spaces in Kumasi, Ghana. In *Urban Forum* (Vol. 28, No. 2, pp. 125-141). Springer Netherlands.
- Middle, I., Dzidic, P., Buckley, A., Bennett, D., Tye, M., & Jones, R. (2014). Integrating community gardens into public parks: An innovative approach for providing ecosystem services in urban areas. *Urban forestry & urban greening*, 13(4), 638-645.
- Nederhand, J., Bekkers, V., & Voorberg, W. (2016). Self-Organization and the Role of Government: How and why does self-organization evolve in the shadow of hierarchy?. *Public Management Review*, 18(7), 1063-1084.
- Nolan, E., & March, A. (2016). Remembering participation in planning: the case of the Princes Hill Community Garden. *Australian Planner*, 53(3), 187-200.
- Oh, J. S., & Kim, S. Y. (2017). Enhancing urban agriculture through participants' satisfaction: The case of Seoul, Korea. *Land Use Policy*, 69, 123-133.
- Parks and Street Lights Office, Public Works Department, Taipei City Government (2017). The park and green space system in Taipei City. Retrieved October 26, 2017, from <https://bit.ly/2XaTgCB> [In Chinese]
- Paul K. C. Liu & An-Chi Tung. (2003). Urban Development in Taiwan: Retrospect and Prospect. Taipei: *Journal of Population Studies*. [In Chinese]
- Rosol, M. (2010). Public participation in post-Fordist urban green space governance: The case of community gardens in Berlin. *International Journal of Urban and Regional Research*, 34(3), 548-563.
- Rupprecht, C. (2017). Informal urban green space: Residents' perception, use, and management preferences across four major Japanese shrinking cities. *Land*, 6(3), 59.
- Sakurai, R., Kobori, H., Nakamura, M., & Kikuchi, T. (2015). Factors influencing public participation in conservation activities in urban areas: a case study in Yokohama, Japan. *Biological conservation*, 184, 424-430.
- Scheromm, P. (2015). Motivations and practices of gardeners in urban collective gardens: The case of Montpellier. *Urban Forestry & Urban Greening*, 14(3), 735-742.

- Scott, M., Russell, P., & Redmond, D. (2007). Active citizenship, civil society and managing spatial change in the rural–urban fringe. *Policy & Politics*, 35(1), 163-190.
- Simmons, R., & Birchall, J. (2005). A joined-up approach to user participation in public services: strengthening the “Participation Chain”. *Social Policy & Administration*, 39(3), 260-283.
- Steven (2015, June). Urban farming-Green Conquest in the Cement Jungle. *GREEN Magazine*, June 2015, Vol.35. Retrieved from <http://www.ta-mag.net/green/News.php?id=750> [In Chinese]
- Swanwick, C., Dunnett, N., & Woolley, H. (2003). Nature, role and value of green space in towns and cities: An overview. *Built Environment (1978-)*, 94-106.
- Taipei City Farm platform (2017). Retrieved October 25, 2017, from <http://farmcity.taipei/> [In Chinese]
- Taipei City Government (2015). The promotion and implementation plan of Taipei Garden City. Taipei: *Taipei City Government*, Taipei, Taiwan. [In Chinese]
- Trendov, N. M. (2018). Comparative study on the motivations that drive urban community gardens in Central Eastern Europe. *Annals of Agrarian Science*, 16(1), 85-89.
- van der Jagt, A. P., Elands, B. H., Ambrose-Oji, B., Gerőházi, É., Møller, M. S., & Buizer, M. (2017). Participatory governance of urban green spaces: trends and practices in the EU. *NA*, 28(3).
- van der Jagt, A. P., Szaraz, L. R., Delshammar, T., Cvejić, R., Santos, A., Goodness, J., & Buijs, A. (2017). Cultivating nature-based solutions: The governance of communal urban gardens in the European Union. *Environmental research*, 159, 264-275.
- Van Empel, C. (2008). The effectiveness of community participation in planning and urban development. *WIT Transactions on Ecology and the Environment*, 117, 549-556.
- Viljoen, A., & Wiskerke, J. S. (Eds.). (2012). *Sustainable food planning: evolving theory and practice*. Wageningen Academic Publishers.
- Wiskerke, J. S., & Viljoen, A. (2012). *Sustainable urban food provisioning: challenges for scientists, policymakers, planners and designers* (pp. 19-35). Wageningen Academic Publishers: Wageningen, The Netherlands.
- Niwa, N. (2012). Chapter 24 Why is there agriculture in Tokyo? From the origin of agriculture in the city to the strategies to stay in the city. In *Sustainable food planning: evolving theory and practice* (pp. 159-171). Wageningen Academic Publishers.
- Vítovská, D. (2012, June). How to improve landscape and environment in Czech Republic with assistance of participatory planning. In *II International Symposium on Horticulture in Europe 1099* (pp. 977-983).
- Yin, R. K. (2009). Case study research: Design and methods (applied social research methods). *London and Singapore: Sage*.

Yung, E. H., & Chan, E. H. (2015). Evaluation of the social values and willingness to pay for conserving built heritage in Hong Kong. *Facilities*, 33(1/2), 76-98.

Zhang, Shi-Jie & Hong, Jing-Hong (2017, April 6). The leader of the Neighbors do not approve, 'Garden City' face the obstacle. *United Daily News*. Retrieved from <https://udn.com> [In Chinese]