

THE ROLE OF LOCAL COMMUNITY IN URBAN FARMING IN JAKARTA

MASTER THESIS

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the Master Degree from University of Groningen (RUG) and
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**Double Degree Master Program
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Bless the LORD, O my soul: and all that is within me, bless His holy name.

Bless the LORD, O my soul, and forget not all His benefits:

Who forgiveth all thine iniquities; who healeth all thy diseases;

Who redeemth thy life from destruction; who crowneth thee with
lovingkindness and tender mercies;

Who satisfieth thy mouth with good things; so that thy youth is renewed like
the eagle's.

-Psalm 103:1-5, KJV-

♥ For the heart that warms my heart, I dedicate this thesis ♥

ABSTRACT

Since more than a decade urban farming answers the alarming need of the balance between urban growth, proper consumption and the need to maximize utilization of idle and under-cultivated areas. The majority of this movement developed by the society through bottom-up approach, where the initiative comes from grass-roots level. However, in East and Southeast Asia countries the urban farming communities work independently, and their role in urban farming practice is barely acknowledged by the government. Therefore, this research aimed to analyse the role of local communities and the relationship between the communities with urban farming practitioners that leads to sustainable urban farming. Case study approach is chosen as the way to communicate with urban farming practitioners in person to unearth their motives for engaging with urban farming activities. In doing so, interviews and questionnaires are conducted to find out the meaning of urban farming concept that the respondent share of. The result shows that urban farming communities act as a bridge that connect urban residents with agricultural knowledge. Moreover, the “novel” approach done by the communities to use social media as a way to engage urban residents in urban farming practice is proven quite successful to initiate the establishment of urban farm and to maintain its sustainability through constant virtual interaction. The constant information exchange is also believed able to trigger innovation of a more effective urban farming practices. However, support from the government is still needed to secure the availability of land for urban farming in the middle of land competition in urban areas.

Keywords:

Urban farming, sustainable, community, social-ecological system, social learning, social innovation, social media

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Groningen, August 2015

Linggar Purbojati

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I. INTRODUCTION

Agriculture can be considered as the prominent field of work in the world as it is related to the provision of vital life support for people, which is food. However, despite its importance, there is still a lot of issues that needs to be solved in order to ensure the sustainability of agricultural practices. One of the major issues is the place to do farming (the “where” question). Therefore, this first chapter of the research discuss about the brief concept of urban farming and its reason of emergence; it also outlines several issues related to the implementation of urban farming. The following chapter outlines the research objectives and research questions as the way to address the arising issues, also gives an explanation as of why Jakarta is chosen as a study area in this urban farming research. Lastly, this chapter provides a brief description about the structure of the thesis writing.

I.1 Background

Population growth in urban areas has become a global phenomenon (Moreno, et.al, 2010). 10 years ago the total population in towns and cities were only 40% of the world’s population (FAO, 2010). The number then vastly increase, and it was predicted that in 2030 more than half of the world’s developing population will live in urban areas (Moreno, et.al., 2010). In 2007, for the first time the number of world’s urban population was higher than in rural regions (Orsini et.al, 2013). In developing countries, this growth is mainly caused by high birth rates and migration of people from rural towards urban area (FAO, 2010). FAO also adds that the main purposes of the migration is the demand for enough food, wealth and security and in many cases migrating people perceive cities as the driver of social and economic development (FAO, 2010; Orsini et.al, 2013).

The high urbanization-rate leads to rapid land use change: free and undeveloped plots are converted to building land with higher social and economic turnovers (Brockerhoff, 2000; Freshwater, 2009; Rimal, 2013). The agricultural sector is considered less productive and interesting for city’s development: agricultural land is ousted by industrial site, settlement and other infrastructure developments (FAO, 2010; Noorsya, 2013). Furthermore, in low income countries urbanization resulted in the increase of poverty and unemployment rate, and also increased the possibility of food insecurity (FAO, 2010). Especially in developing countries the question of urban food security is crucial: FAO defines individual food security as the ability of each and every one of the urban residents to be able to plant or buy enough food for their daily healthy life consumption (FAO, 2010). It means that the most important

thing in food security is the availability of access to enough, healthy food. Urban areas form a functional unit with their surrounding regions which are the main food suppliers for the urban areas (FAO, 2010; Orsini et.al, 2013). In other words, urban government relies on the persistency of rural areas to put agriculture as its core business and its consistency as food supplier. Unfortunately, according to Orsini et.al (2013) there are additional costs that arise from this practice such as from poor infrastructure and transportation which are added to the food prices. It is feared that the additional costs will make food prices are not affordable, particularly for the low income city society. Moreover, another global threat such as climate change is effecting the climate suitability for agriculture. The impact is felt by both urban and rural area. The climate change issue and worsened by the decrease of farmer's number will eventually decrease food production and thus threaten urban food security (Obosu-Mensah, 1998; Tornyie, 2011).

Therefore, since more than one decade ago there is an increasing urge to better integrate agriculture into urban life and into the urban structure. This is done by shifting the paradigm of agriculture as a rural-related function and changing the urban people's view on farmer and farming activity (Orsini et.al, 2013). Urban farming rise as a response for the alarming need of the balance between urban growth, proper consumption and the need to maximise utilization of idle and under-cultivated areas (Rimal, 2013). This model of agriculture offers a solution for integrating multiple urban land uses in a dense urban area, and thus contributing to sustainable urban development (Lovell, 2010). This means practicing agriculture by utilizing open green space and idle land, so that it will not disturb the continuous development of urban area. By that, urban farming is considered as an efficient farming way to address city's food-related challenges by providing a good variety of food nutrition, allowing savings on food expenditures, and also generating additional income for the urban dwellers (Kekana, 2006; Koscica, 2014; Obosu-Mensah, 1998; Tornyie, 2011).

The situation leads to many questions such as: Can agriculture embedded into the culture of urban lives and still serve its purpose to produce sufficient food for urban residents? Can sustainable agriculture systems created economic, ecological and social benefits? And last but not least, according to Ferrari (1994) horticultural crops which commonly planted in urban farming are perishable and its prices are highly determined by the supply and demand fluctuations. Therefore, can urban farming help cities to strengthen its food security by improving access to locally produced food and decrease its dependency to its surrounding

areas? Hence, research regarding urban farming is beneficial to describe the current situation, also give input for the sustainability of urban farming in the cities.

I.2 Research Problem

Moreno et.al (2010) posit that spaces to share, opportunities to involve in social events, and rooms to practice rights and obligations that cities provide to urban residents will eventually create social values and systems. They also add that the values and systems enable people to have access to resources, then produce commodity and trade it with others. This principle is also applicable for urban farming practice. Urban farming can be a form of place the city offers where residents can exercise social relationships and social practises that lead to food production. Despite its existence that only serves as complementary food supply from rural areas, urban farming will become a strong anchor to urban households when unexpected situation occurs (Ali and Porciuncula, 2001; de Bon, et.al, 2010; Kutiwa et.al, 2010). Furthermore, new agricultural systems conducted within the city by either small scale/private farming plots or by larger scale of urban farming is needed to reduce city's food distribution chain and level of dependency to rural area (Viradiya, 2014).

Communities' involvement in urban farming is the most suitable way to achieve both community and environmental purposes, which are the development of social connection and gain environmental benefit respectively (Fraser, 2002). The statement implies that the society is considered to hold an important role in urban farming practices. Fraser's previous study strengthened by Lovell (2010) concludes that the majority of urban farming practices are developed by bottom-up approaches, where the initiative derive from grass-roots level. This means the involvement of the society is crucial in urban farming development. However, according to Friedmann (2001) in East and Southeast Asia countries the urban farming communities work independently, and their role in urban farming practice is barely acknowledged by the government. Nevertheless, the communities will become highly essential in the future (*op cit*). Therefore, despite the communities' influence that is still low to the metropolitan governance reforms in Asia, neglecting the existence of communities as part of the civil society and their importance in decision making in urban matters (Friedmann, 2001; Laquian, 2005).

Besides the low involvement of urban society, another hindrance to urban farming is its recognition by the government. Currently there is a different acceptance of urban farming particularly on the local level; and therefore, urban farming is often alienated from the urban

development plan and has not given sufficient supporting policy. In the end, this lack of understanding about the importance of urban farming could weaken the city's food security. According to Moreno et.al, (2010), one of the factors that hinder the cities to balance the urban current condition with the ultimate goal the cities aim to reach is inadequate information or data as the basic for policy making, whereas the knowledge is the main requirement to enhance people's participation in the field of social, political and cultural. Nowadays, there is an extensive body of knowledge about urban farming and its relationship to sustainable urban development. However, only few authors are discussing the relationship among actors involved; particularly informal organizations and community initiatives involved in urban farming practices. Moreover, research regarding how the local government manage to capture the phenomenon of those informal communities is also scarce.

Studying urban farming, particularly the actors involved in it and its spreading mechanism is important to analyse the level of acceptance and involvement of the urban residents to this coping mechanism against the possibility of food insecurity. Over the years the urban government implement agriculture programs to foster the urban farmers professionally, but often ignoring the potential role of laity urban residents by not facilitating them to actively participate in urban farming practices. Therefore, this research tries to answer the academic challenge on exploring the existence of urban farming communities in Jakarta and the possibility of its sustainability. This research analyses the influence of informal organisation to promote the urban farming through informal approach by linking the realization social learning theory with social ecological system. Knowledge gathered through the study of urban farming enables the sustainability of vegetables and other crops' production in urban areas (Obosu-Mensah, 1998). Moreover, the result of this research can become the foundation for the improvement of social and spatial quality for the cities.

I.3 Research Objective and Research Questions

The aim of this research is to analyse the role of local communities and their relation to urban farming practises by investigating urban farming in Jakarta and analyse the main reasons of Jakarta's residents to practice and organise urban farming in Jakarta. This subject of research are considered important as basic consideration for urban policy making towards sustainable urban farming.

The main research question on this research is to what extent do community engagement leads to sustainable urban farming?

The research question is elaborated into three sub questions that guide the analysis process as follow:

1. What are the driver for urban residents to become engaged in urban farming practices?
2. How urban informal organizations influence urban farming?
3. What are the types of support needed in developing sustainable urban farming in Jakarta?

I.4 An Overview about Jakarta

Jakarta is an interesting example of a city that experience vast population growth. According to Statistics Indonesia^a (2015), in 1971 the Jakarta's population was 4,579,303 inhabitants, and it drastically increased to 9,607,787 inhabitants in 2010. It means the population doubled within less than 40 years. That situation leads to rapid land use change from farms and green spaces to settlements and industries to accommodate a better living for Jakarta's inhabitants. Hence, Jakarta has a high level of dependency to its surrounding buffer areas to comply its food demand although those areas are slowly becoming urban too (Indraprahasta, 2013).

If the urbanization process in Jakarta and Jakarta's buffer areas continue, in the near future Jakarta will face food insecurity issue. Therefore, Jakarta is suitable for observing the possibility of urban farming as a way to strengthen individual and community's food security, also decrease Jakarta's level of dependency to its surrounding areas for food production. Moreover, Jakarta is the centre of governance and business in Indonesia; and therefore, suitable for the implementation of urban farming. According to Noorsya (2013), urban areas which dominated by non-agricultural land utilization have bigger potential for advance urban agriculture development compared with those which still have agricultural characteristics. This leads to an interesting question of how far the contribution of the communities to urban agriculture, to what extent the Government of DKI Jakarta capture urban agriculture initiative and what have been done by both urban agriculture practitioners and the Government to maintain its sustainability

I.5 Structure of the Thesis

This thesis contains of six chapter, with the description as follow:

1. Chapter One : This chapter presents the background, research problem, research objective, research question, case study, and structure of the thesis.

2. Chapter Two : This chapter explores theoretical review about social-ecological system, urban farming, ecosystem services, social learning theory and social innovation.
3. Chapter Three : This chapter describes research methodology and theoretical framework.
4. Chapter Four : This chapter provides the current situation of urban farming in Jakarta
5. Chapter Five : This chapter explains research result and discussion
6. Chapter Six : This chapter consists of conclusions, research limitations and future research recommendations
7. Chapter Seven : This final chapter reflects back to the whole of research process that has been done, and what should have been done to obtain a more optimum result

II. LITERATURE REVIEW

This chapter explores previous writings related to social-ecological system and social learning theory within the framework of urban farming that benefits from and serves as ecosystem services. By connecting these theories, the linkage between the social-ecological system and social learning theory will then leads to social innovation, which on this research refers to the work of local communities to bring back agriculture into the heart of urban residents.

II.1 Urban Landscapes as Social-ecological Systems

First of all, it is important to discuss about sustainability, as the word “sustainable” becomes the key issue that needs to be addressed as the key framework of this research. The concept of sustainability was first published in 1987 by the Bruntland Commission or the World Commission on Environment and Development (WCED). The WCED report defines sustainability as development to fulfil the need of present generation without violating the right and the ability of future generation to develop to fulfil their needs. According to Adams (2006), there are two things that need to be addressed within the framework of sustainability: (1) the interrelatedness of economic development with environmental degradation, and (2) the need for poverty alleviation. The dilemma with the economic, social and environmental aspects is that pursuing economic development that leads to social welfare often outweigh the willingness of conserving the environment. Fortunately, as human’s awareness increases, the effort of balancing the economic, social and environment aspects also increases (Ostrom, 2009).

Nature and society are deeply connected with each other (Becker, et.al, 1999). Therefore, it is suggested that in order to understand nature and its changes one must understand the society and its dynamics, and vice versa (*op cit*). In many cases we have seen the development of the society causes ecology degradation due to over-exploitation of natural resources, or nature demolition for settlement and other human establishment. On the other hand, repentant society tries to restore the nature into its original state as they are becoming aware that the environment’s sustainability affects the quality of human lives. Therefore, we could say that the landscape, as “territories where human and environmental processes find their integration” have shifted from only becoming the cause and/or effect to involving the dynamic process in between (Selman, 2012).

"The idea of landscape has become more encompassing, as it has extended beyond the realms of aesthetics, physical geography and human geography to include ecological processes and human well-being." (Selman, 2012). The statement above shows the awareness to create a dynamic balance between social and ecology, which perfectly brought by the concept of social-ecological system (SES). The basic thinking of social-ecological concept is the assumption that humans are able to consciously make choices, either as individual or as a part of a group, and that the choices that one made will have impact on the outcome to the ecology (McGinnis and Ostrom, 2014). Furthermore, the ultimate goal of this concept is to create a desirable environment for the benefit of people without exploiting natural resources and also involving the governance arena in the process.

The SES concept also applicable for cities. As man-made environment, cities can be seen as hybrid complex system because of its rapid and constant fundamental changes, also because of interaction among its elements (Kirchhoff et.al, 2012). The interaction between the society and the environment can easily change the cities' landscape within short period of time. A study conducted in Karachi, Pakistan shows that in heterogenic landscape of urban area it is important to integrate ecological with social structure, as the harmonious combination between the two will help to ensure the urban sustainability (Qureshi, et.al, 2010). However, Ostrom (2009) also adds that the major challenge to identify why some social practices of this social-ecological system are sustainable, while others fail to survive. By this, one can consider that sustainability is not the ultimate purpose, but rather the process.

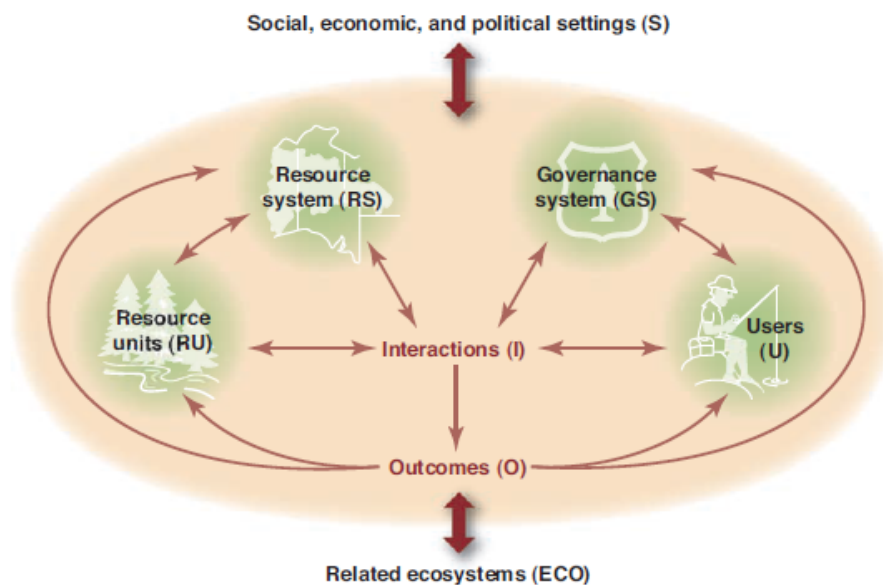


Figure 1. The framework of interconnectedness among subsystems in SES analysis

Source: Ostrom, 2009. p. 420

The SES framework describes the relationship and interaction among four core subsystems in SES, which are resource units (RU), resource systems (RS), governance systems (GS), and users (U) that produce certain outcomes (O). The framework also shows that there are causal relationships between the SES system with the certain ecosystems (ECO) it lies within and social, economic and political settings (S). RU are parts of the natural environment such as soil, trees, shrubs, plants, types of wildlife, and amount of water, etc. RS are certain infrastructure that covers a specific area or territory such as park, etc. GS is the act of managing certain infrastructure in terms of its use and organization. It can be in the form of entities the social-ecological system so that the cycle of the system keeps flowing and produces desirable outcome. While U are actors or stakeholders who gain certain benefit from the utilisation of resources. The benefit might be different for each individuals according to their perceptions, needs and desires.

<i>Social, economic, and political settings (S)</i>	
S1 Economic development. S2 Demographic trends. S3 Political stability. S4 Government resource policies. S5 Market incentives. S6 Media organization.	
<i>Resource systems (RS)</i>	<i>Governance systems (GS)</i>
RS1 Sector (e.g., water, forests, pasture, fish)	GS1 Government organizations
RS2 Clarity of system boundaries	GS2 Nongovernment organizations
RS3 Size of resource system*	GS3 Network structure
RS4 Human-constructed facilities	GS4 Property-rights systems
RS5 Productivity of system*	GS5 Operational rules
RS6 Equilibrium properties	GS6 Collective-choice rules*
RS7 Predictability of system dynamics*	GS7 Constitutional rules
RS8 Storage characteristics	GS8 Monitoring and sanctioning processes
RS9 Location	
<i>Resource units (RU)</i>	<i>Users (U)</i>
RU1 Resource unit mobility*	U1 Number of users*
RU2 Growth or replacement rate	U2 Socioeconomic attributes of users
RU3 Interaction among resource units	U3 History of use
RU4 Economic value	U4 Location
RU5 Number of units	U5 Leadership/entrepreneurship*
RU6 Distinctive markings	U6 Norms/social capital*
RU7 Spatial and temporal distribution	U7 Knowledge of SES/mental models*
	U8 Importance of resource*
	U9 Technology used
<i>Interactions (I) → outcomes (O)</i>	
I1 Harvesting levels of diverse users	O1 Social performance measures (e.g., efficiency, equity, accountability, sustainability)
I2 Information sharing among users	
I3 Deliberation processes	O2 Ecological performance measures (e.g., overharvested, resilience, bio-diversity, sustainability)
I4 Conflicts among users	
I5 Investment activities	O3 Externalities to other SESs
I6 Lobbying activities	
I7 Self-organizing activities	
I8 Networking activities	
<i>Related ecosystems (ECO)</i>	
ECO1 Climate patterns. ECO2 Pollution patterns. ECO3 Flows into and out of focal SES.	

*Subset of variables found to be associated with self-organization.

Figure 2. The explanation of the social-ecological actors in SES

Source: Ostrom, 2009. p. 421

The SES framework is useful to analyse various variables in SES application. Furthermore, the explanation of each of the framework's attribute proposed also by Ostrom (2009) as presented in figure 2 supports the understanding each SES subsystem more specifically. The position of each subsystem can help to determine how each of the attributes occur, and thus determine their level of influence to the whole system. One study from de Groot, et.al (2009) breaks the common opinion that says environment and development that could not walk together. Instead, environment and development could be a non-trade factor in the field of nature conservation and management. De Groot, et.al (2009) also stresses that making an investment in conservation, restoration, and sustainable ecosystem can bring up benefits in social, ecological and economic spheres.

II.2 Urban Farming

As mentioned in the first chapter, urban farming becomes an attempt to balance urban growth with the need of food provision and landscape management (Rimal, 2013). However, there is no fixed definition of urban agriculture, and it is often tailored with the purpose and scope of study or activity. Obosu-Mensah (1998) defines urban agriculture as “The practice of farming within the boundaries of towns and cities”, while Kekana (2006) definition covers a wider range of area, also including peri-urban peripheries in the concept of urban farming. Another definition by Van Veenhuizen (2006) is “The growing of plants and the raising of animals for food and other uses within and around cities and towns, and related activities such as the production and delivery of inputs, and the processing and marketing of products”. And lastly, definition from Klaassen (2013) adds this wide scope of definition by adding a purpose “to be more self-sufficient and making an effort to contribute to the community in any way possible”. Furthermore, urban agriculture can be divided into enclosed farming which is held on urban agriculture practitioner's private land, and open-space farming which is held on idle land in an open area that does not belong to the urban agriculture practitioner (Obosu-Mensah, 1998).

Urban farmers itself can be divided into two groups, which are those who practice urban farming as way of survival and those who practice it to generate additional income for the family or just part of a hobby (Freeman, 1991; Killoran-McKibbin, 2006). The first group consists of people who live in urban or peri-urban areas that aim to obtain profit from the agricultural products sale and thus can be called as professional farmer. The second group can also consist of people who live in urban or peri-urban areas, however do not put financial income as main orientation. This different types of farmers will highly affect the local

governance on managing urban farming practices. Furthermore, horticulture is a widely used type of plant in urban farming as it is considered as the most competitive type of urban farming due to its efficiency in land use, also water and fertilizer needed (Orsini, et.al, 2013). FAO defines urban horticulture as “The cultivation of a wide range of crops – including fruits, vegetables, roots, tubers and ornamental plants – within cities and towns and in their surrounding areas” (FAO, 2010). Linking this definition of urban agriculture with aforementioned individual food security strengthen horticulture as the most suitable crops for urban farming. Fruits and vegetables are known as sources of micronutrients and antioxidant that are important for human balanced diet (FAO, 2010; Orsini et.al, 2013)

Agricultural ecosystems are designed to maximize the provision of human needs (Zhang, et.al., 2007). In cities, the first thing to do to create this ecosystem is reserving the most crucial aspect, which is land. However, setting up an urban farm is different with sustaining it (Tornyie, 2011). In a continuous changing environment like cities, the sustainability of urban farming must be secured by the availability of sufficient land for a certain period of time (*op cit*). Why only a certain period and not a forever available? Because cities are complex and dynamic, so that the uncertainty factor is important to be put into consideration. Moreover, there is a need for constant and mutual relationship between agricultural ecosystems with natural ecosystem surround it (Tornyie, 2011). Power (2010) explains that agricultural ecosystem acts as both user and provider of natural ecosystem. As a user, agricultural ecosystem depends on soil, water, micro-organic nutrients, also pollinator insects and pest natural predator provided by nature for its continuity. Furthermore, the new ecosystem created by agricultural activities also takes part in water conservation through prevention of runoff water, amend soil structure by using organic fertilizer, and also become the sanctuary for beneficial organism.

Discussing agriculture ecosystem as a part of the whole natural ecosystem that closely related and constantly interact with other ecosystems will then leads to the kind of services that agricultural ecosystem needed and demanded from the nature. By stating the kind of services provided by an ecosystem -or known as ecosystem services- explicitly, valuable input will be made available for all parties involved in the governance arena to evaluate current policies and formulate suitable future development policies. Certainly, policies which are issued based on environmental consideration are the policies that beneficial to the sustainability of natural ecosystem. The rise of ecosystem services started in 2001 when the Millennium Ecosystem Assessment (MA) was specifically assigned to assess the impact of ecosystem

change for human, and scientifically research the conservation mechanism needed, the sustainability of those mechanisms also its contribution to human being. The ecosystem services itself basically is the benefits that human can obtain from the ecosystems. The study done by the MA produce several findings as follow:

1. There has been a massive irreversible extinction in natural resources in the past 50 years due to its extensive use for human consumption.
2. There is huge increase in economic because of the over-utilization action but followed high disparity level and rapid degradation in ecosystem services that feared to disturb the relationship between human's future generations with the nature.
3. The degradation becomes the main obstacle in achieving the Millennium Development Goals (MDG).
4. There are ways to balance the development with nature conservation. However, it needs a serious commitment in policies, institutions, and practices which now are still have ecosystem-destructive nature.

Four years after the establishment, in 2005 the MA divided ecosystem services into four categories that are more apprehensible to all stakeholders involved in politics, economy and other non-scientists (Fisher, et al, 2011; Sandhu, et al, 2010). Since then, there were growing interest to the ecological services concept that trigger the release of many publications related to the concept. The four categories are:

1. Provisioning services; this is related to variety of eco-production ranging from food, fuel to agro-biodiversity that the ecosystem produce for human consumption.
2. Supporting services; which means the ecosystem provides the support needed for other ecosystems to produce goods and services. For example, on a pepper plantation (*Capsicum* sp.) the nature has natural enemies that act as pest biological control for aphids (*Myzzus persicae*) such as gall midge (*Aphidoletes aphidimyza*) and green lacewing (*Chrysoperla carnea*) (Hommes, 1992). Another example is that nature has natural mechanisms of pollination and seed dispersal by the help of animals such as bats and birds.
3. Regulating services; this service is related to natural ecological process that the natural ecosystem has to maintain a certain optimum condition of temperature, precipitation, to the population number of plants and animals to maintain the sustainability of the ecosystem.

4. Cultural services; this is the type of service that affect human's welfare. It means that the ecosystem fulfil the necessity of human in terms of health and other well-being requirements. For example, a simple ecosystem in the form of city park provides the city residents live nearby with aesthetic and opportunity to breath a fresh air.

Among those four ecosystem services categories, provisioning and cultural services are most related with urban agriculture and of importance for this study. It is obvious that the existence of agricultural practice, in this matter is urban farming, is to produce food. However, despite its importance, in the case of urban farming it needs to be able to fight competitively in ecological and cultural factor in order to sustain and bloom in cities (Lovell, 2010).

In provisioning services, urban farm acts as both consumer and producer of ecosystem services. On the one hand, by being a consumer means that urban farm consuming the resources provided by nature, such as the sun, rain water, soil fertility and land suitability to grow plant. On the other hand, an agricultural ecosystem created in urban farm becomes a small ecosystem services when it is integrated in city's big scheme. For example, the planting of *leguminosae* (beans, peanuts, etc.) and the use of organic fertilizer can help to increase the level of nitrogen in the soil that increase the soil's fertility, also the organic way of farming could reduce the level of water contamination in city's rivers. Another advantage that urban farm brings according to Adiyoga, et.al (2014) is that urban farming can be a livelihood for urban farmers or generate additional income for households (Adiyoga, et.al, 2004). Moreover, the existence of urban farm can cut the food supply chain, and thus lower the prices of farm product for urban dwellers. Therefore, the needs of food consumption, particularly horticulture such as fresh vegetables, can be fulfilled.

Hauck, et.al (2013) explain cultural ecosystem services: urban farming provide the opportunity to indulge the beauty of man-made diverse urban landscapes that were created by the social practise of urban farming. Moreover, urban farm can also become a place where urban dwellers gather, interact, and strengthen their social binding (Van de Beek *in* Klaassen, 2013). He also adds that it can also lower the level of stress. Moreover, the existence of urban farm will enhance the urban scenery and also lower the emission brought by modes of transportation that are used to transport farm products from rural areas to urban areas (*op cit*). However, effort for further research is still needed for the integration of the concept with landscape planning and management, also decision making (de Groot, et.al, 2009).

Those positive impact are highly dependent on the management of urban farming itself. According to Power (2010), there is the possibility of trade-offs between ecosystem services and disservices of agriculture. Good agricultural management which can be evaluated within certain spatial and time scales is needed to improve the ecosystem services and alleviate the disservices from the farming activities (*op cit*). Therefore, it is important that the policy makers fully understand “the value and benefit of well-functioning ecosystems” (Fisher, et.al, 2011).

II.3 Social Learning Theory

Before the finding of the social learning theory, the framework of understanding human’s behaviour is based on the concept of pure stimulus. Scientists soon began to realise there are several human behaviour that are hardly believed to be influenced only by one external stimulus. The basic thinking of that is that human’s act is considered complex and unpredictable, as one’s reaction to a situation might be different with another’s. Bandura (1971) explains that there are three types of modelling stimuli, which are:

1. Live model; which is role model or figure who demonstrate a certain behaviour that other people find it desirable to follow.
2. Verbal instruction; which is role model or figure who verbally explain and describe a certain desirable behaviour and then invite other people to take part in the behaviour.
3. Symbolic; the act of act following occur due to media influence. By that it means people know certain behaviour through specific behaviour broadcast in one of the media such as television, radio, the internet, etc. The stimuli can use real or fictional characters.

Human action is produced by constant interaction between environmental influence, behavioural and cognitive capacity. Bandura (1971) also posits two ways of learning, firstly “learning by direct experience” where new demeanour is shaped from observation to other’s behaviour or directly experience a certain situation. This concept relies on reward and punishment as consequences to every action. Secondly, “learning through modelling” where demeanour is developed with the influence of strong figure that is set as a role model. This concept applies to situation where the concept of reward and punishment could not be implemented.

The form of reward and punishment is not in the terms of physical, but rather related to the result of a certain action that is favourable or unpleasant for the actor. Furthermore, Bandura

(1971) posits that reward and punishment are not the only reason why people are doing a certain behaviour. It can be by the influence of morals, beliefs and thoughts that successfully motivate them. In the case of agriculture, a study conducted by LaCharite (2014) shows that the initiation of agriculture project in a campus affect the way the students perceive the relationship between humans with nature, and also “develop community, personal, and natural attachments that impact students’ pro-environmental and social behaviours”. Moreover, the application of Farm to School program (FTS) at the Vermont school children improve the participants’ consumption pattern of eating food and vegetables; and therefore, positively affect their health state (Roche, et.al., 2012).

Another important thing in the social learning concept is the existence of a role model for specific action. Olsson, et.al. (2011) argue that the role of an expert in participatory process nowadays is far more crucial than in the past. An expert not only act as a source of information, but also as a facilitator for learning who possess more than just good method and personal experience. Knowledge sharing between experts and building strong network is also crucial to keep the status as a strong model figure. Eventually, this learning process driven by interaction between people and/or between people and communities which based on observation and research would connect the dots between ecosystem services and social learning by creating broader perspective on urban people about urban agriculture as part of ecosystem services in a city (Golden, 2013).

II.4 Social Innovation

Combining the social learning theory and social-ecological concept open the way to social innovation as described by Moulaert et al (2013) as “innovation in social relations”. Particularly in agriculture sector, the increase consciousness of urban farming practice not only comes from the intention of food self-sufficiency but also environmental consideration act. Related to the success or failure of implementation of sustainable social-ecological concept, in urban farming practices this might relates with the existence of urban farming as an informal activity that relies on local knowledge and technical adaptation systems (Howorth, et.al, 2001). Moreover, Lévesque (2013) states that social-ecological practices apply this innovation also governance relations for shifting coordination, regulatory and power relationships. This means the power of making changes are not only in the hand of the government, but also the society. Bottom up approach is applied, where changes are initiated by collective action from the society and completed by the support from the top (Spijker, 2014).

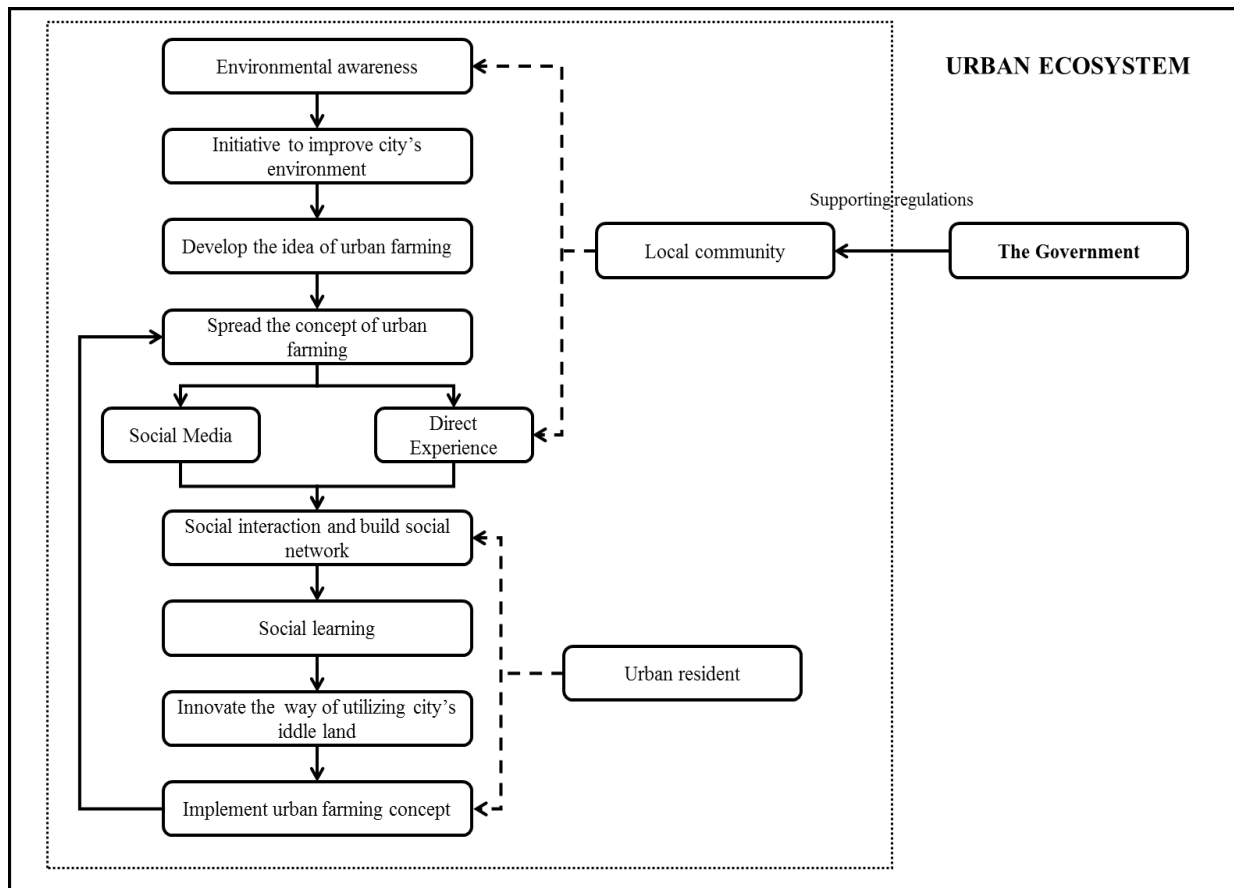


Figure 3. Conceptual model of sustainable urban farming

Source: Author

As shown in Figure 3, there are connections between actors when applying both concepts. The government and local community play important roles to create a direct experience of urban farming, and also become the role model to implement the concept of urban farm. Combining the contribution of urban farming to the urban ecology, with the economic and social value to urban dwellers will ensure its sustainability.

Furthermore, the Internet, particularly social media, as an example of symbolic stimulus can be a catalyst for innovation acceleration. Social media has changed the way the society thinks, learns, invents and cooperates by decentralizing communications and also allows people to express their thoughts to an unlimited audience (Bandura, 2002; Dickinson and Crain, 2014). Eventually, this new way of thinking will create a new behaviour (Bandura, 2002). Social media is able to bring forth the like-experiencing-by-ourselves feeling that motivates people to engage in a desirable act (*op cit*). However, Bandura (2002) also adds that it is important to note that any attempt of changing a certain way of thinking in the society must be

synchronized with local social and cultural norms, also social practices that are commonly applied in the society.

II.5 The Use of Social Media for Conducting Social Network

Nowadays, social media has gain an enormous popularity. Millions of people throughout the world are eager to take part of this phenomenon by accessing, sharing and forwarding opinions, news, blogs, comments and reviews on their social media account within a huge scale that barely even dreamed of a few years back (Ghosh, et al, 2014). If on its early existence only professionals or experts who could make social media content to share their thoughts, today ordinary people also able to create their own content to share their knowledge and experience (Paltoglou, 2014). Furthermore, according to Das and Bandyopadhyay (2014), among all social media platform exist on the Internet, weblogs and Twitter are considered as the most effective platform to discuss the current topics. This is due to weblogs and Twitter's setting which is open for public; therefore, everyone could access the information given on the platform and join the discussion if desired (Paltoglou, 2014). This openness hence cumulated in never ending posting of news, updates, opinions and comments flooding on the platform. Thus, "topic identification is also used for document ranking in information retrieved systems" (Das and Bandyopadhyay, 2014). In addition, Das and Bandyopadhyay (2014) state that providing links from a certain topic to other related information enable people to search and classify information more effectively.

In a virtual world of social media "communication relationships require exchange of information, which demonstrates shared meaning between senders and receivers and the creation of a common semantic field. Although communication relationships may take place outside communities, they can take place only within a particular semantic field, where the actors understand each other and share common meaning, semantic frames and views of the world at large." (Todeva and Keskinova, 2014). The communication relationship itself eventually creates opportunities for every social media users to conduct a so called collective actions in a social network (Gomes and Pimentel, 2014). A social network is defined as "a set of social entities (actors, points, nodes, or agents) that may have relationships (edges or ties) with one another." (*op cit*). Furthermore, the action of sending and receiving information will then trigger an interaction which is called social connectivity. Todeva and Keskinova (2014) define social connectivity as "social interactions based on the sent and received information and internalisation of this information". This means there is a possibility that exchanging

information leads to forming a thought or conducting new behaviour based on the received information (*op cit*).

Besides all its positive influence, there is a drawback of using social media as a platform of communication. Dickinson and Crain (2014) posit that collective action can be activated if all the participants are connected one with another within a virtual social network, able to witness the activity of other members, and also able to broadcast one's activity on the social "e-friendship". However, Todeva and Keskinova (2014) remind us that "in spite of the universal connectivity of the Internet, there is a difference between sending and receiving information, shared knowledge and meaning in a common semantic field (i.e knowledge community) and two or more individuals acting in accord and agreement (i.e community of practice). An observer to a community differs from a member of that community by the participation in coordinated/shared activities". Moreover, Paltoglou (2014) states that emotions play a crucial role in the creation, dissemination, survival, and dissipation of online communities and collective action of the communities' member.

III. RESEARCH DESIGN

This chapter explains the research methodology carried out for this research. It also explains why several ways of data collection are chosen and the limitation of the research. These explanations make this chapter as a bridge to the first half of the writings with the second half.

III.1 Data Collection

This research focuses on case study research and follows case study approach for data collection. The research emphasizes on answering the “why” and “how” question in relation with the engagement of informal organizations and communities in urban farming practice in Jakarta. Therefore, case study research was thought as the most suitable way to approach urban farming practitioners in person in order to unearth their motives of engaging with urban farming activities.

A. Interviews

The main source of data in this research is interviews. However, due to the limitation of time, there are several means of interviews done for data collection used in this research. Firstly, conducting person to person interview. This type of interview was done with Sigit Kusumawijaya as one of the co initiators of Indonesia Berkebun and Jakarta Berkebun. Secondly, conducted interview via Skype with Karina Shahab, the Internal Coordinations Coordinator of Conoco Philips, because person to person interview was not possible. Thirdly, sending questionnaire with open and closed questions using mail correspondence. This type of collection was done with Mrs. Puji Utami and Mrs. Ruth Oppusunggu. And lastly, to get more response from urban residents who practice urban farming, a questionnaire was spread through social media such as Facebook and Twitter and resulted in six respondent who responded to the questions given. All the data collection were done in period March-July 2015, except the interview with Sigit Kusumawijaya that was conducted at August 4th, 2014. Purposive sampling method combined with snowball method are used on this approach. This type of sampling is used when there is no specific sampling framework in the research, and the interview is conducted to find out the meaning of a concept or phenomenon that several individuals share of (Bryman, 2008; Marshall and Rossman, 2006). As the first interviewee, Sigit Kusumawijaya then recommend several reliable names that are practicing urban farming in their own community.

B. Policy Analysis/Content Analysis

Exploring the activities of urban farming is not complete without having the view from the Government's side. However, due to the limitation of bureaucracy and space, urban farming practices data in DKI Jakarta Province were collected from relevant journals regarding urban farming practice in Jakarta and also official published reports of DKI Jakarta provincial government. From these sources, the early statement of urban farming practices in Jakarta and the future development planning could be found.

III.2 Research Strategy

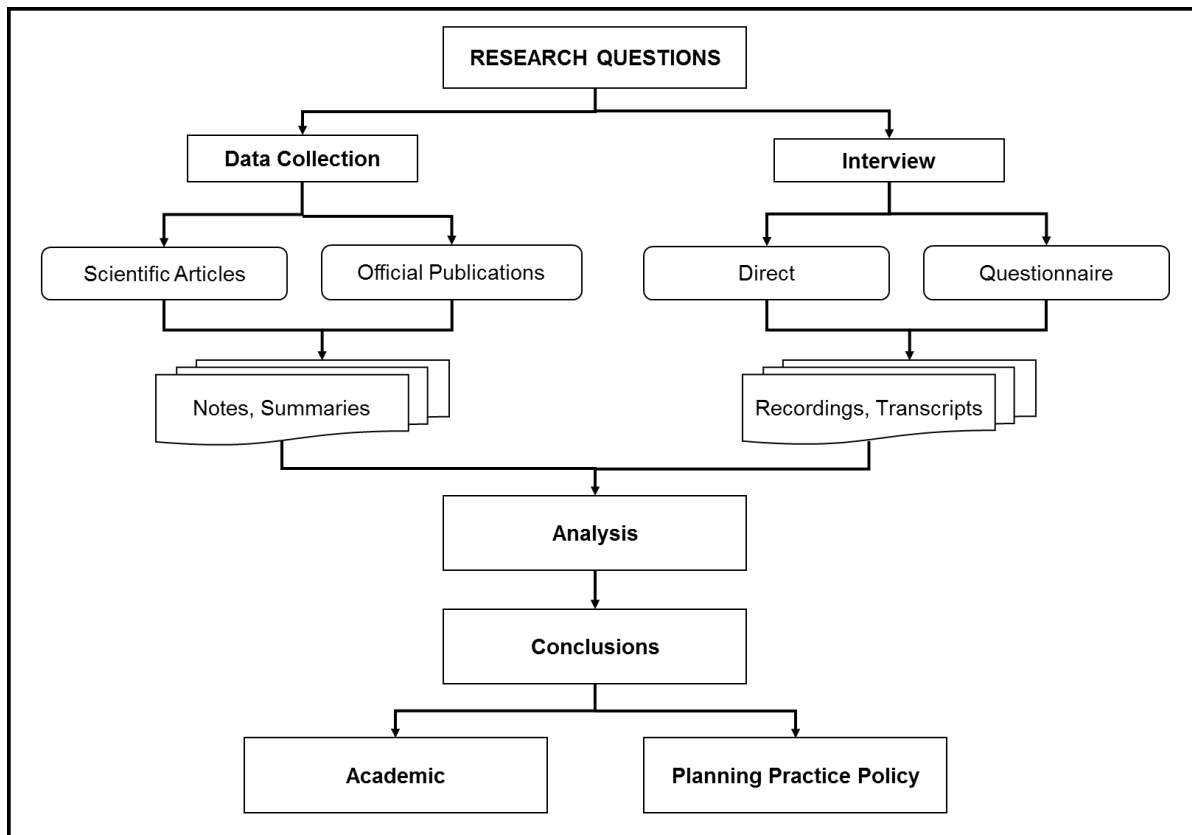


Figure 4. Research strategy illustration

Source: Author

III.3 Ethical Issues

There is potential challenge when conducting this research. Urban farming is a newly emerge “trend” in Indonesia as people begins to realize it as a form of “green” and healthy lifestyle. Therefore, not many urban dwellers religiously practice it in their daily lives and even fewer practice it in community garden. The challenge occur to locate the practice of urban farming in community level. Another challenge for this research is the limitation in conducting direct

interview with the Government representative to either confirm or negate the perception of urban farming practitioners about the current situation of urban farming in Jakarta.

Moreover, all information regarding Indonesia Berkebun and its networks are obtained from the Indonesia Berkebun website, publications, and internal data. The use of these information in this thesis is under the permission of Sigit Kusumawijaya as one of the founders and also act as the public relation of the community.

IV. INTRODUCTION TO CASE STUDY AREA, POLICIES AND ORGANISATION RELATED TO URBAN FARMING IN JAKARTA

As the capital city and the biggest city in the Republic of Indonesia, Jakarta perfectly describes the rhythm or urban area. According to Statistics Indonesia^b (2015) data, Jakarta becomes the only province in Indonesia where 100% of its dwellers live in urban areas. It also experiences vast development and relatively high economic growth that lead to rapid population growth and eventually, reduce its food production due to the growing land-use change. The growth rate of gross regional domestic product at 2000 constant market prices of Jakarta in 2013 is 6.11%, increase 0.8% within one decade (Statistics Indonesia^c, 2015). However, the 2013 Jakarta agricultural census showed a sharp decrease on number of farmers, both in food crops and livestock, up to 70%. Moreover, the remaining urban farms in Jakarta suffer from limited farm land and pastures for cattle feed. In parallel the monthly average expenditure per capita for buying food in Jakarta was increasing over the years and reach up to 39.47% in 2013 (Statistics Indonesia^d, 2015). Therefore Jakarta is more dependent on its surrounding areas on the provision of food, although at the same time Jakarta's supporting areas such as Bogor, Depok, Tangerang, Bekasi and Cianjur also face rapid agricultural land conversion issue (Indraprahasta, 2013).

In a developing country such as Indonesia small scale agriculturist hold an average amount of farmland of 0.2 hectare which makes farming less appealing for livelihood. Therefore, young generations are less interested in working in the agricultural sector. This is proven by the number of people who work in agriculture, forestry, hunting and fishery sectors that is decreasing over the years. Statistics Indonesia^e (2015) recorded that there was 43,149,598 people who worked in the sectors mentioned above in 2004, but the number was gradually decreased to 38,973,033 in August 2014. Nevertheless, despite the massive physical infrastructure development the swift of social behaviour, the Marine Affairs, Agricultural and Food Security Agency of Jakarta (*Dinas Kelautan, Pertanian dan Ketahanan Pangan Provinsi*) convinces that Jakarta is still potential to accommodate agricultural activities as stated in its Spatial Plan (*Rencana Tata Ruang Wilayah/RTRW*). The flexible form of urban agriculture is suitable for DKI Jakarta which has dense population and limited open-space area but suitable climate condition to develop various types of agricultural commodities such

as fruits, vegetables, also ornamental plants and orchids; therefore, the farming activities of those commodities have long been developed in DKI Jakarta.

Having observed on the potential and constraint, the DKI Jakarta Province directed its agricultural activities into urban agriculture which has high economic value and comparative also competitive excellence, supported by its climate condition, resources and technology. Agricultural commodities developed in DKI Jakarta have to have economic value, ecological value and aesthetic value. Furthermore, the urban agriculture product must fulfil the needs of the society of qualified agricultural products. To realize the objective of marine and agriculture development, DKI Jakarta Province has formulate strategic plan (Government of DKI Jakarta Province^a, 2013) such as:

1. Develop animal husbandry and fisheries that have high added value through diversification, increasing the quality of the product as well as human resources, and also strengthening capital.
2. Develop urban animal husbandry by utilizing small land which is managed in environmentally safe practice.
3. Develop high technology urban agriculture activities that can be functioned as buffer for the environment of the city, smoothing the distribution line of agriculture and forestry products also standardize the quality of agriculture and forestry products.

Against the strategic plan number 3, it seems like the Marine, Agriculture and Food Security Agency of DKI Jakarta province do not implement the plan seriously as the number of farmer and farm-land in DKI Jakarta province is continuously decreasing in a vast rate as shown in Figure 5 and 6.

No	Kabupaten/Kota Administrasi	Padi			Jagung			Kedelai		
		ST2003	ST2013	Perubahan (%)	ST2003	ST2013	Perubahan (%)	ST2003	ST2013	Perubahan (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1	Kepulauan Seribu	10	0	-100,00	1	0	-100,00	0	0	
2	Jakarta Selatan	0	13		84	25	-70,24	0	2	
3	Jakarta Timur	1 902	393	-79,34	248	54	-78,23	10	7	-30,00
4	Jakarta Pusat	0	16		0	4		0	0	
5	Jakarta Barat	569	120	-78,91	135	20	-85,19	56	1	-98,21
6	Jakarta Utara	539	370	-31,35	59	5	-91,53	0	0	
	DKI Jakarta	3 020	912	-69,80	527	108	-79,51	66	10	-84,85

Figure 5. The comparison between the number of household who work in food crops subsector (paddy, maize, and soybean) in 2003 and 2013 in Jakarta

Source: Government of DKI Jakarta Province^b, 2013

No	Kabupaten/ Kota Administrasi	Pisang		Peruba	Mangga		Peruba	Anggrek		Peruba
		ST 2003	ST 2013	han (%)	ST 2003	ST 2013	han (%)	ST 2003	ST 2013	han (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1	Kepulauan Seribu	222	2	-99,10	62	1	-98,39	0	0	
2	Jakarta Selatan	1 632	365	-77,63	644	105	-83,70	384	24	-93,75
3	Jakarta Timur	1 444	653	-54,78	942	67	-92,89	41	18	-56,10
4	Jakarta Pusat	312	8	-97,44	514	6	-98,83	1	1	0,00
5	Jakarta Barat	839	188	-77,59	729	78	-89,30	201	68	-66,17
6	Jakarta Utara	313	37	-88,18	379	27	-92,88	8	0	-100,00
	DKI Jakarta	4 762	1 253	-73,69	3 270	284	-91,31	635	111	-82,52

Figure 6. The comparison between the number of household who work in horticulture subsector (banana, mango, and orchid) in 2003 and 2013 in Jakarta

Source: Government of DKI Jakarta Province^b, 2013

Previous study regarding urban agriculture in Jakarta conducted by Indraprahasta (2013) shows that the development of urban agriculture in Jakarta is quite similar with those in Havana and Accra which are based on an economic crisis struck. However, there are differences in institutional mechanisms that manage this agricultural activities. According to this study, there is no synchronization between spatial planning and agricultural policies, no economic incentives, and no literal support in information. In regard to urban agriculture informal organization, there are several informal organizations established in Jakarta such as Indonesia Berkebun and Jakarta Berkebun. The activities of these communities are not only planting vegetables on idle land, but also give agriculture education to schools and establish an urban agriculture academy to educate society about all matters related to urban agriculture. Regarding the Government's regulations, there are three main regulations that govern the utilisation of urban green space: Firstly is Law on Spatial Planning No. 26/2007 which states that urban area must have open green space minimum 30% and by which minimum 20% should be a public open green space. Secondly, the Minister of Internal Affairs Decree No. 1/2007 regarding Planning for Urban Green Open Spaces which states explicitly that urban agriculture is considered as one of the form of urban open green spaces (article 6). Thirdly, the Minister of Public Works Decree No. 5/2008 regarding Guidelines for the Provision and Use of Green Open Space in Urban Areas which contradicts with the Minister of Internal Affairs decree: The decree does not mention explicitly whether or not urban agriculture can

be categorized as open green space. However, the manual guideline of the Minister of Public Works Decree No. 5/2008 does mention that open green space in the community level (*Rukun Tetangga/RT*) have to be able to serve as social gathering place, and that the open green space can also be utilised as community garden by planting herbs, fruits and vegetables that can be consumed by the community.

The combination of those three main regulations mentioned above is considered very important for the existence of urban farming. The regulations will give urban farming a strong position in city planning, that every municipality government must allocate a certain amount of its open green space to become an urban farm. If the regulations are consistently enforced, then a city will potentially have minimum 20% of its total landscape allocated as urban farm or community garden. The garden will act both as open green space for urban resident to socialize with each other, and also produce crops that can be consumed by the urban dwellers. Unfortunately, the different status of urban agriculture in the Minister of Internal Affairs Decree and the Minister of Public Works Decree makes the concept of urban farming scarcely gain full policy support to ensure its sustainability.

V. RESULT AND DISCUSSION

On the previous chapters it has been explained why studying urban farming is important in the frame of city planning and defined the overall objective of this research. I also raised several questions that leads to answering the objective. Moving forward, this chapter presents the findings of the research. The chapter starts with portraying the existence of several informal organizations that engage in urban farming, then exploring the role of social media as information-spreader, and exploring urban residents' opinion about urban farming and urban farming community they are following.

However, as a starting point to discuss the various findings in this research let us first take a look on the definition of community and informal organisation, as these two terms are used many times in this research. The Oxford Dictionary defines community as a group of people living in a particular area and considered as one collective group in the terms of social values and responsibilities who has common characteristics and shares certain attitudes and interests. While organisation is an organized people in a group who shares the same purpose. Based on the definition, one can conclude that the different between a community and an organisation is on the existence of formal hierarchical structure that steer the direction of an organisation which is not exist in a community. Thus, in the case of informal organisation, the absence of formal hierarchical structure makes it considerably the same with community. Hence, this point forward this research will continue to use both “informal organisation” and/or “community” terms when referring to urban farming informal organisations.

V.1 Urban Farming Communities

The observation result shows that there are several urban farming communities that fulfil the role as informal umbrella organizations for urban residents to practice urban farming in their neighbourhood. Firstly, the discussion is focused on the pioneer informal organization, namely Indonesia Berkebun which initiates the concept of combination of social and ecological aspect in urban farming in Jakarta. Secondly, we will discuss about Jakarta Berkebun, one of Indonesia Berkebun networks, which focuses on Jakarta as its coverage area. The history and the journey of those two organizations are taken from the Indonesia Berkebun website. And thirdly, we will highlight the urban communities which inspired by those two organisations and replicate the same movement within the smaller scale.

According to Indonesia Berkebun website, the chronicle of this community movement started from an ordinary discussion and simple idea about urban farming on *Twitter* among Ridwan

Kamil (now the Mayor of Bandung Municipality), with other initiators such as Sigit Kusumawijaya (an architect), Achmad Marendes (an entrepreneur), and Shafiq Pontoh (a social media expert) on October 2010. The spirit then incarnated to the establishment of Jakarta Berkebun, an informal organization which focuses its activities in Jakarta. The movement then spread to other cities and on February 20th 2011 Jakarta Berkebun community held the first planting activity on Springhill garden, where they chose kangkung (*Ipomoea* sp.) as the initial plant sowed in that land. That date also appointed as the date of establishment of Indonesia Berkebun that will act as umbrella organization for the networks all over Indonesia. Sigit Kusumawijaya, one of the co-initiator of Indonesia Berkebun describes the initiation as *“Jadi memang waktu kita nggak berpikir akan menjadi seperti Indonesia Berkebun sekarang gitu. Kita cuma ingin membuat sebuah gerakan dan memang kebetulan Kang Emil tuh masih profesional di arsitektur dan urban design. Dia punya kantor kan di Bandung... Nah itu mereka lagi ada project kan di Springhill. Mereka membuat master plan-nya. Mungkin Kang Emil kenal sama ownernya ya. trus di approach sama Kang Emil mungkin; “Boleh ga sih pinjam lahan yang belum dipakai –karena mereka kan pasti ga membangun serentak kan?- untuk kita manfaatkan gitu.” Kita manfaatkan sebagai area untuk publik dimana publik bisa melakukan aktivitas disitu. Yang paling mungkin kepikiran idenya ya urban farming. Menanam...Berkebun...menanam apapun lah di area perkotaan. Waktu kumpul sih ada 20 orang lah yang kita sebut sebagai co-inisiator.”*¹

Indonesia Berkebun carries three basic concepts, which are ecology, economy and education (Kusumawijaya, 2014). Restoring the soil fertility and saving the urban environment are the basic thinking of the ecological concept, while economical aspect includes creating a sustainable city food supply. The third concept, which is education, specifically aims towards urban residents to raise their awareness of environmental issues. Indonesia Berkebun website explains that to realize the education concept, Indonesia Berkebun get a help from Mrs. Ida Amal, an activist from Banten Berkebun (another one of Indonesia Berkebun networks) to develop a training class named Akademi Berkebun (Gardening Academy). In this academy, training participants are taught the basic techniques of gardening; how to plant, grow, and

¹ At that time we never thought that it will became like Indonesia Berkebun today. We only wanted to initiate a movement and fortunately, Kang Emil (refer to Ridwan Kamil) is a professional in architecture and urban design. He had an office in Bandung and they had a project in Springhill where they made its master plan. Maybe Kang Emil knew the owner, then he approached the owner; “Can we borrow a piece of unconstructed land –because it is impossible they will construct all the settlement at once- to be utilized?”. We utilized it as public space where public could do their activities there. And the activity we could think of is urban farming. Planting...gardening...planting anything in urban area. There were 20 people that gathered on that day, whom we now called as co-initiators”

harvest plants, also the basic of agriculture business (*op cit*). This academy often invites public persons as keynote speakers in their classrooms, and currently serve all urban residents that have interest in urban farming skills regardless their city of residences. Indonesia Berkebun currently has 33 networks spread in 27 cities and 5 campuses in Indonesia.

About Jakarta Berkebun, after the successfulness of its planting event, on March 26th 2011 helped Bogor Berkebun on their initial planting activity on Bogor Berkebun's land in Cijeruk, Bogor and then on April 10th 2011 Jakarta Berkebun held their first harvest activity. Organic kangkung was reap on this harvesting event as a result of cooperation between Jakarta Berkebun activist with Springhill Group, the gardeners who were watering the plants daily, and also the volunteer who grew the plants every Sunday afternoon. The abundant harvest was shared to the local people who participate in the event and those who live nearby Springhill garden area, Kemayoran. Besides planting and harvesting activities, Jakarta Berkebun also created interesting events to live up every activities they held and also to attract urban residents to join them.

Organization	Est.	Garden Location	Coverage
Indonesia Berkebun	2011	Jakarta	National
Jakarta Berkebun	2010	Casa Goya Residence, West Jakarta	Province
DAG	2014	South Jakarta	Sub sub-district
Bumi Pesanggrahan Mas Community	2014	Bumi Pesanggrahan Mas, South Jakarta	Village

Table 1. List of informal organizations in the research

The other informal organizations are Design as Generator (DAG) and Pesanggrahan Mas community. Both are informal organization which also raises environmental issue as its main concern at neighborhood level. For Design as Generator organization, it emphasizes on ecological aspect such as “save the water” movement and “green the environment” movement. This organization also works on waste management, as Mrs. Mrs. Ruth Oppusunggu explains; “...*Dari workshop² ini kami menemukan bahwa permasalahan sampah di lingkungan rumah saya bukanlah pada sampah tetapi pada nilai (value) masyarakat pada jalan lingkungan. Kesimpulan kami, apabila kami DAG bisa meningkatkan*

² “Design Thinking” online workshop from Acumen and Ideo

*nilai (kebanggaan) masyarakat terhadap jalan dan lingkungan maka masyarakat akan berhenti membuang sampah sembarangan.”*³. Urban farming is not the main core of the initiative but it still takes part as its important program. Most importantly, the organization has a solid vision to put lower income people as its main program target to improve their livelihoods, stated on DAG Twitter account page: *Menjadi ruang berbagi informasi desain aplikatif berkelanjutan bagi masyarakat khususnya masyarakat kampung & atau masyarakat menengah bawah di RI.*⁴

The vision is clearly shown in their commitment on Tatitu (*tanam sini tanam situ*)⁵ program: This program is performed in Pondok Pucung village, Bintaro. Several activities performed under this program are introduction to farming class with woman association of RW 04 Pondok Pucung village, planting activity, etc. In addition, there are other programs that are held in Pondik Pucung village beside Tatitu program, such as bio-pore program and “greening the village” program (Figure 7).



Figure 7. Preparation of a program initiated by DAG community

Source: <https://twitter.com/dagedubrag>

Whilst for the smallest scale community in this research, which is Pesanggrahan Mas community, urban farming becomes its main activity to engage urban residents on village level. The movement is initiated by Mrs. Puji Utami, Mrs. Sri Herman and members of woman association in Bumi Pesanggrahan Mas, Petungkang Selatan RW 8, South Jakarta village. The garden is currently managed by the woman association as the steering

³ From this workshop we found that the main cause of waste issue in my neighbourhood is not on the waste itself, but on the value the society give to the neighbourhood’s streets. We then conclude that if DAG can increase community’s pride of their streets and environment then people will stop littering.

⁴ To become a forum to share information about sustainable application design for the community, particularly village community and lower-income society in the Republic of Indonesia.

⁵ Plant here, plant there

committee. It utilizes idle land that has not been developed by settlement developers. Due to its character that covers relatively small area, Pesanggrahan Mas community has only about 15-30 active members. Nevertheless, the community successfully expand its activity to waste recycling and composting.

One of the characters that these four informal organizations have is that they are all applying emphasizing on building social interaction among urban residents and then channel it to a bigger scheme of interaction between urban dwellers with city's environment. This is in line with the concept of SES which tries to fulfill the role of people in the ecosystem processes and dynamics, also emphasizes the interaction between social and biophysical aspects at a certain spatial scale as Janssen and Ostrom (2006) and Waltner-Toews and Kay (2005) posit.

V.2 The Use of Social Media for Communication

Among all the similar traits that the informal organizations share, the use of social media as a tool to communicate with its members becomes the most striking feature. For Indonesia Berkebun, Jakarta Berkebun, and DAG, all of the communities' information ranging from the upcoming activity, promotion of urban farming concept, to knowledge sharing about urban farming practice are announced through social media such as Twitter and Facebook. For Indonesia Berkebun and Jakarta Berkebun, Twitter is chosen as the main media of publication besides Facebook because Twitter has become a current updated way of viral interaction used by many people from various backgrounds in Indonesia. It is also considered able to spread information faster.

"...Diawal-awal kita pakai Facebook...Ya disaat itu Twitter juga kan baru ya, dan Facebook udah mulai agak ditinggalkan orang dan kenapa ya kalau informasi di Facebook itu sekali datang langsung banyak gitu jadi ga instan. Jadi waktu itu memang lagi hype Twitternya, jadi kita pakai Twitter"⁶. (Sigit Kusumawijaya, 2014).

Cross (2011) explains this phenomenon clearly by stating that "Blogs, Twitter, and social media networks on the World Wide Web have opened up the conversation and levelled the playing field for ordinary people to express themselves without the usual gatekeepers". Moreover, twitter is easy to use and –can be considered- free, also effective for knowledge one with the others (*op cit*).

⁶ ...At the beginning we use Facebook. Well at that time Twitter was new, and people begin to leave Facebook, and a too many information on Facebook come at the same time so it is not instant. Because Twitter was hype, we use Twitter.

Organization	Twitter Followers	Number of Tweets	Facebook Page Likes
Indonesia Berkebun	108,000	95,700	4,652
Jakarta Berkebun	13,400	35,400	2,981
DAG	22	66	39

Table 2. The number of social media followers for each community

Retrieved on July, 10th 2015

The figures presented in Table 2 roughly describes the interest of the society to urban farming concept through their participation in the social media account. As the Internet is not a static media, this figure is continuously changing day to day. Table 2 shows that the level of activity on social media is declining as the scope of area is smaller. Indonesia Berkebun as an umbrella organization of its 33 networks in Indonesia successfully attracts the attention of urban residents from numerous cities in Indonesia, whether a network has established in the city or not. Whereas DAG serves subdistrict area and only provide information for less urban residents; therefore, it is understandable that the number of social media followers as well as information it has provided on their social media sites are far less than the other two communities. The only exception applies for Bumi Pesanggrahan Mas community that does not own a social media account. It might be due to its small coverage area, that the member of the community still find it effective to conduct direct person to person communication and using word of mouth to spread urban farming information. Therefore, it can be conclude that Indonesia Berkebun, Jakarta Berkebun, DAG, and Pesanggrahan Mas communities use a certain media that they thought as the most effective media to reach out to its member according to the size and the scope of the communities.

As the organizations try to break the boundaries of time and space by using social media to promote the urban farming concept targeting to urban residents, interestingly the data shows that seven out of nine respondents state that they obtained information about urban farming and urban farming community from the social media. The “target” such as Mrs. Ruth Oppusunggu, Erin Cita Rahayu and Chafidh Muslim confirmed that their early involvements were influenced by the social media. As for Mrs. Puji Utami and Karina Shahab, they admit that their involvements were based on word of mouth from their colleagues. It seems like the compatibility between the community’s visions with people’s personal interest have attract people to start joining the community. However, this shared interest seems not strong enough

to pull people to become fully committed as an active member of the community. The example of this are Dewi Ermiyati and Waluku who find it sufficient by “only” become participant and silent reader of the communities’ social media activities. Nevertheless, Dewi Ermiyati diligently join the farming activities that are organized by the Jakarta Berkebun community, and Waluku also apply the knowledge he has gathered from the social media discussion by starting to run a business as urban farming product seller. This is in line with Baborska-Narozny et.al (2015) study that social media, particularly Facebook group, have the ability to secure online presence by solving individual or collective problems, and also raise up a certain issue in the community that potentially caught people’s attention. Meanwhile, the other two respondents, who are Mrs. Puji Utami and Karina Shahab admit that they started to recognise urban farming activities through the word of mouth from their relatives. This findings can be a sign of the effectiveness of social media as a mean for spreading information and gathering interest of urban farming to urban residents.

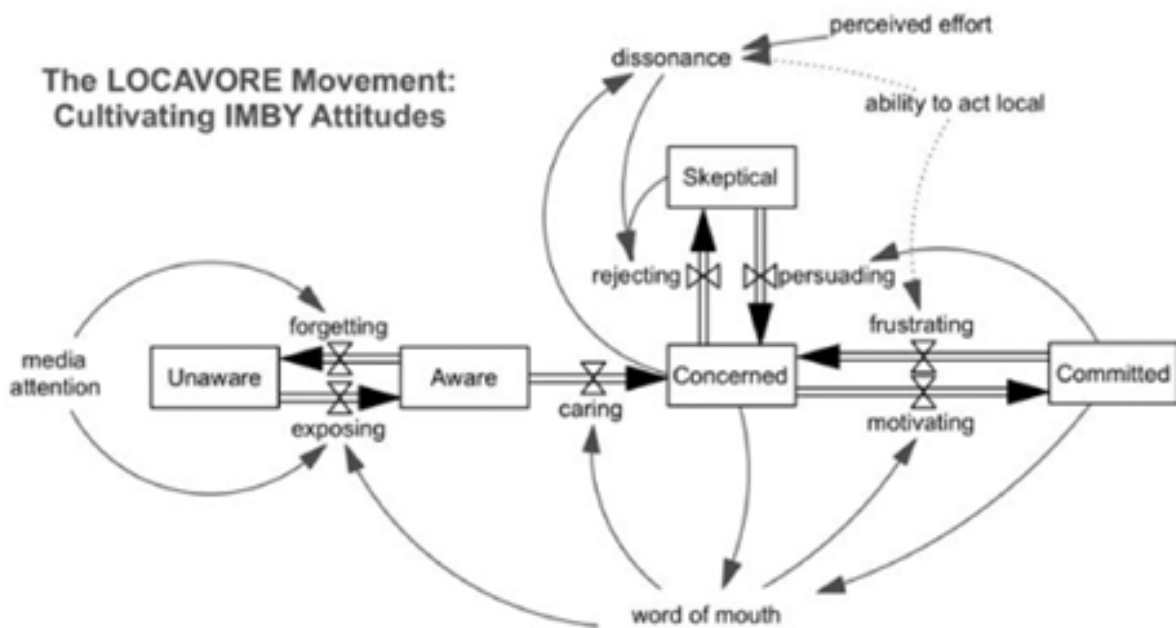


Figure 8. The concept of information spreading

Source: Reid et al, (2012)

Through the framework of information spreading presented in figure 8, we could see direct causal relationship between one behaviour with another after receiving information. (Reid et al, 2012). In the successful framework, the state of unaware can be changed by the exposure of information given through a media that raise the awareness which then leads to the act of concern and finally motivated to get committed to a certain behaviour. Reid et.al (2012) also

explains that his model is the extension of the classic Bass model of innovation diffusion in 1969, which portray far more than problems sharing by concern development, overcome scepticism, and keep the commitment to act.

The social media could play the role of connecting every expression given in figure 8. For example, exposing one specific information such as urban farming concept to raise the awareness of people to its existence. In the case of informal organization as Indonesia Berkebun and Jakarta Berkebun, they present urban farming far different than the face of farming that formerly known by urban residents; farming as main occupation, farming gives low income and practicing farming means get ready to get dirty. The approach the communities bring is that farming can be done in a fun and clean way yet still reap its full benefit and generate additional income. However, after the information is fully absorbed, it is time to choose whether it will be resolved by concrete action or the opposite, deny the information (Reid et al, 2012). Furthermore, action can leads to word of mouth as a way to spread the information further (*op cit*).



Figure 9. DAG community encourages urban residents to save water

Source: <https://twitter.com/dagedubrag>

Another use of the social media by urban farming communities is as a mean to achieve their goals. In doing so, the communities post various tagline or quote to promote the idealism of the organization. Fischer and Reuber (2011) explains this action as “communicating with stakeholders, but also as a potential avenue for seeking or making opportunities”. Figure 9 shows the encouragement given by DAG for the society to be actively involved in “Save the

Water” initiative, and also to announce one of their programs which is the making of 100 bio-pores. One distinct use of the Internet that this research find is the one managed by Waluku. He utilizes a website (www.waluku.com) for marketing the agricultural product to the urban residents. Waluku realise the extra benefit of urban farming as he conveys the reason of attraction to urban farming as “*Hobi yang menarik dan bisa jadi menghasilkan. Saya pakai apps di www.waluku.com untuk menjual hasil dari urban farming tsb.*”⁷. By doing so, Waluku has reduce the food transportation chain and increasing the accessibility of urban dwellers to its source of food. The website has not fully operated by now, but when it is completely running the urban resident will reap enormous benefit from this facility. Urban dwellers will be able to buy fresh organic food without having to go to the farmland.



Figure 10. Open invitation to join harvesting event held by Jakarta Berkebun

Source: <https://twitter.com/JktBerkebun>

Furthermore, types of the social media utilization by urban farming communities are vary, such as announcement of the activities and open invitation for urban residents to join an event, the achievement and acknowledgement of the organization, forum for socializing with other members of the community, also sharing information among members. This finding confirms Fischer and Reuber (2011) statement that social media can facilitate social interaction which

⁷ An interesting hobby that can generate (income). I use application in www.waluku.com to sell the product of urban farming.

becomes one of the key element of idea development and opportunity identification. Furthermore, the microblogging service Twitter slowly moving towards being acknowledged as “conversational interaction”, and eventually functions as informal collaborative action tool (Honeycott and Herring, 2008). By this, Twitter uses the concept of social currency, social capital, and social credit (Oatway, 2012). Story is the social currency, while the built relationship in the social media through the investment of time and effort to maintain the network becomes the social capital (*op cit*). Eventually, Oatway (2012) adds that social credit or reputation is gained if one’s is considered influential for another. However, the social credit is like a double-edged sword; at one side the influence can be positive and on the other side can be negative. Therefore, the social credit should be handled very carefully.



Figure 11. Indonesia Berkebun is appointed as an awardee in the World Summit Youth Award event, 2015

Source: <https://twitter.com/IDberkebun>

The possibility of Twitter to become a collaboration tool is because of the so called addressivity and coherence nature of Twitter (Honeycott and Herring, 2008). Addressivity

means that all of the form of conversation (giving information, asking something, etc.) are pointed directly to the addressee, and that it opens the chance of accepting the same direct reply just like person to person communication, while coherence is defined as “sustained, topic-focused, person-to-person exchanges” (*op cit*). It shows, that the within social relationship the content can be subordinated and that the focus is on the “building-conversation” and lateral trust with is a basic requirement for any collaboration (Honeycott and Herring, 2008; Oatway, 2012).

V.3 The Domino Effect that the Social Media Creates

The materials gathered in this research show that there is a follow-up action resulted from the participation in the urban farming community’s activities. The level of participation in urban farming community seems do not have big influence. Whether it is a direct experience by joining the social events or indirect experience achieved by following news and information given in the community’s social media account. As the follow up of their involvement with Jakarta Berkebun community, Mrs. Puji Utami, replicate the same concept on village level in her neighbourhood, Karina Shahab replicates the urban farming on her office front yard, while Mrs. Ruth Oppusunggu joins another community which concerns more on the whole environmental issue but still include urban farming as one of its programs. Others practicing urban farming individually in their own house yard.

Their background of engagement to urban farming also vary. However, the basic thinking is mostly the same which is to utilize idle land to become a greener space. “*Pemanfaatan lahan yang tidak terpakai*”⁸ is Mrs. Puji Utami’s reason, and to generate added value of the land “...*Dan dari workshop*⁹ *ini pula prototipe kami untuk meningkatkan nilai (value) adalah berkebun, membuat jalan dan lingkungan hijau, asri dan memiliki nilai (ekonomi) sehingga masyarakat tergerak sendiri mau berkebun karena ada keuntungan finansialnya.*”¹⁰ is the background of Mrs. Ruth Oppusunggu’s involvement. Oppositely, Erin Cita Rahayu does not associate joining urban farming community with utilizing idle land, but explicitly states that her involvement is simply based on her excitement to watch the plants grow.

“Social networks increase participation, and technology platforms can increase connections in social networks.” (Reid et al, 2012). This is due to the wide range of coverage a social

⁸ Utilizing idle land

⁹ “Design Thinking” online workshop from Acumen and Ideo

¹⁰ From this workshop we decided that our prototype to increase the value is by farming, making streets and neighborhood greener, and also has economic value so that people are moved to practicing farming because of the financial benefit.

media could have. In a so called virtual world people can be more comfortable in participating in trending topic discussion and joining whatever thread or movement that they feel fit with their likings. Oatway (2012) states that the Internet bridges people who possess the same subject of matter to share and receive each of their stories in a form of conversation. This is possible because communicating via the Internet cross all physical boundaries for people in different area to communicate with each other. “The more pervasive, accessible, and affordable the technology platforms that facilitate virtual interconnectedness, the more that people use them to influence the degree, depth, and frequency of their involvement.” (*op cit*). In the case of urban farming, the chosen social media which are Twitter and Facebook successfully facilitate the connection among urban residents that barely known each other and bring them into one public community. However, building the viral community needs a constant attention (Oatway, 2012). Therefore, story as the social currency becomes the key to start, sustain and nurture the existence of the community.

V.4 Social-ecological Practices in Urban Farming Community



Figure 12. Example of question on the linkage between urban farming with another sector

Source: <https://twitter.com/IDberkebun>

According to Kruglanski and Köperts (2009), normative goals can be a strong motivation for people to join communities and neighbourhood gardens. As shown in figure 12, there is a possibility that the goal arise from the internal curiosity of the urban residents. The question asked by one of the online conversation participants about the impact of urban farming to tourism sector shows his or her interest and might become the foundation of his or her involvement in urban farming. In the case of urban farming, this motivation can come from within urban residents themselves and from the influence of others. This is in line with Spijker (2014) findings that the absence of social interest would decrease the normative pressure to get involved in social-ecological practices. In this case, she added that the cure can be individual, group or municipal directive that become new trigger for involvement.

Related to the reasoning, normative goals found this research are circling around the people's perspective about agriculture condition, awareness of the environment and utilizing idle land. "*Keprihatinan terhadap dunia pertanian di Indonesia*"¹¹ becomes the sole reason for Chafidh Muslim to join Jakarta Berkebun community as an active member, which shows personal intrinsic reason for joining. On the other hand, Erin Cita Rahayu, one of the committees of Jakarta Berkebun community, shows the influence from others that attracts her the most; "*Dapat ilmu berkebun/pertanian dari teman sekominuitas, pengalaman, belajar bersama, bikin event bersama. Yang awalnya gak tau apa2 soal berkebun, sekarang malah jadi educator untuk teman-teman yang lain. Senang menjadi manusia yang bermanfaat untuk manusia lainnya.*"¹².

Another embodiment of social-ecological practices is balancing between the economic, social and environmental aspects. From this research, it is shown that one aspect convey different reaction from each community. It means that each community gives different emphasize on each aspect but still applying the three. For example, the economic objective reflected in post-harvesting action of the community. Bumi Pesanggrahan Mas community sells its farming production to the people living in the neighbourhood and the money gathered from the selling is taken as additional income for woman group association in the village. Later on, the money will be used as venture for leasing business. Waluku even makes a website to sell the production of urban farming. By that, the coverage of marketing area gets larger that direct sale to the consumer. This economic generation from urban farming activity could potentially become a strong reason for urban people to continue practicing it. Jakarta Berkebun tries to engage both economic and social aspects by giving half of the harvesting production to the villagers and selling the other half. However, the opposite thing happens for Mrs. Ruth Oppusunggu; "*Sampai sekarang saya konsumsi sendiri dan dibagikan kepada keluarga dan tetangga. Kelak akan dijual tapi saya perlu menata manajemen waktu saya untuk komitmen ini.*"¹³. There is awareness to roll the economic wheel on urban farming, however the limitation in commitment to fully involved in the project still constraints her. DAG, on the other hand, is fully aware of the importance of economic aspect and taking a concrete action based on the aspect; "*...dan dari workshop ini pula prototype kami untuk*

¹¹ Concern of agricultural sector in Indonesia

¹² Get farming/agricultural knowledge from community friends, get experience, learn together and create an event together. I, who at first did not know anything about farming now has become an educator for other friends. It is happy to become a useful person for others"

¹³ Until now, I consume it myself and giving it to my relatives and neighbors. Later on it _the harvesting production- will be sold but I still need to manage my time for this commitment

meningkatkan nilai (value) adalah berkebun, membuat jalan dan lingkungan hijau, asri dan memiliki nilai (ekonomi) sehingga masyarakat bergerak sendiri mau berkebun karena ada keuntungan finansialnya.”¹⁴

The social aspects shown in the urban farming community are about togetherness in practicing urban farming, and collect the benefit of it when the harvest time comes. In addition, interaction through the social media creates a sense of belonging to the community and the feel as part of it although the form of bond is weak (Baborska-Narozny, et al, 2015; Oatway, 2012). However, there is still challenge on urban farming practice as stated by Mrs. Puji Utami as “*Mengajak warga untuk mencintai kegiatan ini.*”¹⁵. The statement shows that she fully realize that stronger social reason must come from within, and in this case how to raise the attractiveness of urban farming in the eyes of urban residents. Nevertheless, the interaction between members of the community and the action of helping each other in increasing their knowledge in urban farming practice become the strong anchor for social attraction for urban farming. As stated by Van de Beek *in* Klaassen (2013), urban residents can interact and strengthen their social relationship by practicing urban farming. Furthermore, tracing back to the concepts brought by Indonesia Berkebun, the act of trading information through social media fulfil the education aspect about raising the awareness of urban residents of environmental issues.

The last aspect in social-ecological system that needs to be balanced is ecological aspect. In the practice of urban farming, this aspect highly related to the existence of urban farming as the consumer and also the producer of ecological services as explained in chapter 2. When asked about the impression of farming activities in Jakarta nowadays, the answers range vary, from limited land available to few farming practitioner. Mrs. Ruth Oppusunggu even gives her opinion as “*Jelek karena sumber air tidak jelas dan pupuk kimia.*”¹⁶. However, this point of view is calmed by the concept brought by urban farming communities. The communities bring a different way of farming by utilizing unoccupied land so that it can transform into a productive part of city’s natural ecosystem, also not using chemical fertilizer and pesticide to avoid any damage to the established ecosystem. As mentioned in the previous chapter, Indonesia Berkebun clearly states that the concept of the community is to restore the soil fertility and saving the urban environment.

¹⁴ ...and from the workshop we concluded that our prototype to increase value is by farming, which makes neighborhoods and streets become greener and also has economic value so that people will interested in practicing it by themselves because of its financial benefit.

¹⁵ To take the residents to love this (urban farming) practice

¹⁶ Not good because the source of water used is not sufficient and also because of the use of chemical fertilizer.

V.5 Social Learning in Urban Farming Community

The act of imitating other people's action based on their successfulness is also applied in the urban farming community concept. Erin Cita Rahayu explains this as; *“Sosialisasi dan publikasi, memberikan contoh kepada masyarakat. Kalau orang melihat betapa asrinya rumah dengan urban farming, mereka akan ngiler dan mau mencoba di rumahnya.”*¹⁷. This is in line with Olsson, et.al (2011) finding that a model figure or an expert which taking role as information source and learning facilitator holds an important position in the participatory process today. This is a strong proof that social media is able to re-shape the competitive landscape (Oatway, 2012). The establishment of urban farm in the middle of the city transform city's surface which once full of concrete walls to become more beautiful and yet still productive.

Surprisingly, virtual worlds are also able to fulfil the role of a mediator of social learning in urban farming. The data reveals that only half of the respondent followed training or seminar or workshop about urban farming, while the rest solely relies on the urban farming communities they are joining to obtain the practical knowledge of urban farming. The lack of actual reward and punishment action on this virtual communication still succeed to make such a strong impression that able to attract people to conduct a certain action. It is proven from the willingness of the respondent to buy their farming tools and materials from a shop, which shows their effort and commitment to really practicing urban farming. Most likely that the testimony of people who already practicing urban farming influence the cognitive capacity of others to observe that new behaviour and then apply it if the behaviour seems interesting and reasonable.

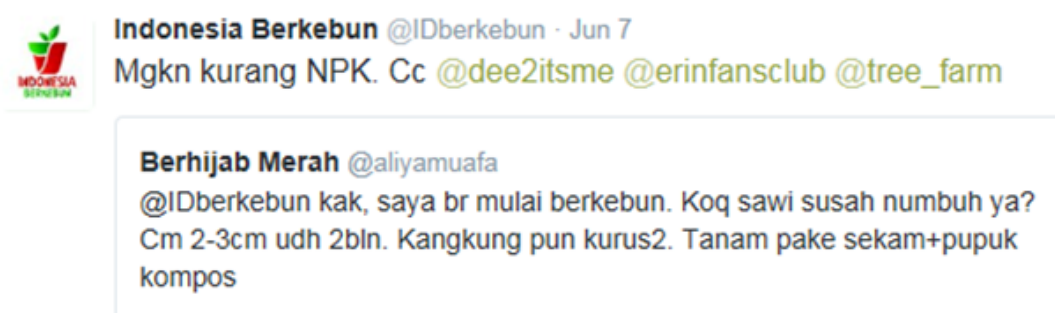


Figure 13. The example of online learning on technical guidance to grow Chinese Kale

Source: <https://twitter.com/IDberkebun>

¹⁷ Socialization and publication, giving examples for the society. If people see how comfortable a house that has urban farming is, they will be persuaded to try it at their own house.

The success of using social media as a tool of promotion then continue as experienced urban residents repeat the same pattern of spreading the information. This is shown from the fact that almost all respondents state that they are using social media as a medium for spreading information, promoting, and inviting other urban residents to practice urban farming. However, direct experience still considered important to strengthen the message that urban farming community tries to deliver. Erin Cita Rahayu describes the combination between interacting through social media and direct interaction as; “*Ya, melalui sosial media. Kita pamer hasil kebun urban farming, trus dibagikan ke mereka, bagi bibit, lama-lama mereka tertarik trus menerapkan di rumahnya.*”¹⁸. Mrs. Puji Utami also shares the same idea; “*Mengajak teman-teman, tetangga untuk terlibat dalam berkebun, menjual hasil bumi dan mengirim foto-foto melalui grup-grup sosial media.*”¹⁹. This allows urban residents to experience what Bandura (1971) states as “learning by direct experience”.

V.6 Yielding Innovation from Ecosystem Services of Urban Farming

“New forms of technology affect collective volunteer efforts towards producing a common good. These “novel” forms are not necessarily new but, rather reflect alternative ways of organizing that have always been available but only now, when technological developments have enabled more opportunities for these forms to emerge and be sustained, have the dynamics become readily apparent.” (Reed, et.al, 2014)

The findings in this research show that the learning and sharing action through the social media create new perspective and behaviour towards urban environment. There is a tendency to change the utilization of idle land in the neighbourhood from a place to simply socialize with the other resident to maximising a land’s function as both socialize and production site. Erin Cita Rahayu describes this euphoria by saying “*semakin banyak orang yang sadar pentingnya (dan serunya) urban farming*”²⁰. Dewi Emiyati even added with her personal excitement; “*Saya menjadi lebih antusias untuk bisa memiliki kebun sendiri yang ditanami dengan beraneka tumbuhan*”²¹. While Waluku notices the increase of interest through his finding of other communities which base its activity in urban agriculture. “*Menarik dan semakin maju, banyak bertemu komunitas lain, bertukar banyak ilmu*”²². The concept of

¹⁸ Yes, through the social media. We show the urban farming harvest products, and give it to them, giving seedlings, and as the time goes by they are interested to practice it in their own houses.

¹⁹ Taking friends and neighbours to be involved in urban farming, selling the products and sending pictures using social media groups.

²⁰ More people realize the importance (and the fun) doing urban farming.

²¹ I become more enthusiastic to have my own garden that can be planted with variable crops.

²² Interesting and become more developed. I met other communities to which I could do knowledge exchange.

urban farming as a new way of land optimizing is more captivating that urban residents willing to allocate some of their time to learn more about this field.

This excitement might be closely related with the existence of urban farm as ecosystem services provider. As mentioned before, urban farming performs as both user and provider of natural ecosystem (Power, 2010). As a provider, urban farming helps to provide variety of nutritious food for daily consumption to urban residents who practicing it (Kekana, 2006; Koscica, 2014; Obosu-Mensah, 1998; Tornyie, 2011). In this research, most of the respondents convey that the product from urban farming able to fulfil their daily needs of vegetables and some state that the harvest result can enrich their diet menu. This is dependent on the size of land where urban farming is conducted, as Mrs. Puji Utami says “*Jika lahannya luas maka dapat memenuhi kebutuhan hidup, tetapi jika lahannya kecil hanya bisa diambil manfaat sayuran yang sehat*”²³.

If the cycle of practicing urban farming; yielding the urban farming production and exchanging the knowledge and experience through the social media are continuously conducted, then it is strongly believed that continuous innovation on practicing effective urban farming will occur. Zhang, et.al.(2007) argue that fulfilling human needs is the ultimate purpose of agricultural ecosystem. Therefore, urban dwellers are moved to creatively optimize iddle and undeveloped land to become urban farm that is more productive and beneficial for them. The word effective in effective urban farming phrase refers to optimizing urban farming on limited idle land in urban areas that becoming rarer in the upcoming time. This is in line with Todeva and Keskinova (2014) belief that social interactions which built by exchanging information will produce new behaviour based on the information that are obtained. Thus, it can be said that ecosystem services provided by urban farming is scaffolded social innovation in urban land utilization.

V.7 Support for Sustainability

The respondents shows their enthusiasm in continuing practicing urban farming as the practice gives a lot of benefit for them. When being asked about the support needed for the sustainability of urban farming in Jakarta, the respondents give various opinion. Some emphasize on the innovation that urban farming need to do to adjust with the constantly changing city environment as Chafidh Muslim writes an interesting point for the urban farming side; “*Inovasi agar urban farming dapat berkembang di tengah kondisi Jakarta yang*

²³ If the land is wide enough, then the yield will be able to fulfil the daily needs, however if the land is small then the yield will serve as healthy vegetable producer.

tidak memungkinkan untuk bertani.”²⁴. Moreover, some pointed at an influential actor that should lead the farming concept into the desired aim. According to the materials, the actor is an authority above the communities. Jakarta Berkebun is currently utilizing idle land in Casa Goya Residence, one of the settlement projects in West Jakarta. The land belongs to the developer, and the community is free to plant there until the time comes to build houses on the land. Therefore, there is no guarantee that the community could use the land in long period of time. Thus the community hope that the developer would agree to extend the permit of using the unconstructed land, and furthermore asking for the local government’s intervention in providing one of the green open spaces in Jakarta as a living laboratory for urban farming practice. As for Karina Shahab, the most important support needed is from the company she works for because the urban farm she is involved in is located on her office’s yard. “Soalnya gara-gara ini...si iklim bisnis migas kan lagi jelek, jadi kita ada cut cost gitu-gitu trus kegiatan-kegiatan dikurangi jadi semuanya benar-benar melihat ke prioritas lah, yang yang...kalau seperti ini kan sebenarnya tujuannya jadi nice to have gitu kan kalau istilah program, jadi kalau untuk tahun ini lagi di-halt sih, lagi di apa namanya? Prioritasnya agak dibawah gitu. Tapi mudah-mudahan sih dengan membaiknya keadaan sih kita bisa laksanakan lagi tahun depan.”²⁵.

Besides the similarity of considering available land to establish urban farm, one interesting thing to observe is that none of the respondents state about the Government’s role in their social movement. It seems that the government and urban farming informal organizations still do not have relationship in every project. Therefore, it is not surprising that when asked about the kind of support that urban farming needed to continue flourish in Jakarta, Mrs. Puji Utami writes that the local government of Jakarta and social figure should be involved in urban farming practice. Lévesque (2013) explains this in the frame of social-ecological practice as the shift of role from a former traditional actors to new actors in the society who are able to control the situation.

²⁴ Innovation so that urban farming can continue to develop in the city of Jakarta’s condition which is not suitable for farming.

²⁵ Currently the situation in oil and gas business is not so promising, so we have to cut cost and only implement priority activities. Because this activity (gardening activity) is a “nice to have” program, this year we have to halt it. But hopefully, as the business is getting better, we can implement it again next year.

VI. CONCLUSION AND FINAL REMARKS

This research is aimed to analyse the role of informal organization and the relationship between the informal organizations with urban farming practitioners that leads to sustainable urban farming. Therefore, case study approach is chosen as a method to unearth the existence of urban farming communities and its relationship with urban residents in Jakarta. By that, there are several findings that provides the hint of necessity to start urban farming movement, and even more; to sustain it. Reflecting back to the research questions that are tried to address in this research, the data show that the engagement of urban residents to community urban farming is started from their cognitive capacity to observe their personal view of themselves and also their surroundings. The city's condition, as urban residents perceived, still have unoccupied lands that are potential for agriculture. Moreover, the urban residents realize that they have the capabilities to contribute to create a better, harmonious city environment. This awareness then generates the action of looking for a community which shares the same vision with them to channel their aspiration; in this case, urban farming informal organization. Thus, one can assume that in the field of urban farming, informal organizations able to answer the curiosity and bring out the hidden competency of urban dwellers.

In general it seems like there is a tendency to use social media as a communication platform for urban farming communities to persuade urban residents to engage in urban farming practice. According to Fischer and Reuber (2011), social media can be used in many creative ways. Twitter, a microblogging example, and Facebook, one of the social network site (SNS), have the capability to provide a big amount of information and a possibility of interaction in almost real time action that some people might find it interesting (*op cit*). It is shown in this research that social media has been proven quite successful in viral spread of messages about urban farming. The social media able to connect urban residents who have the same interest, help to build relationship among urban people, and persuade people to engage in a certain behaviour. Most importantly, by using social media urban farming communities offers a novel approach in introducing urban farming concept and activities to urban residents. Instead of doing a conventional way as the Government did, urban farming communities. If this continuously done, the spirit of urban farming will sustain in the lives of urban residents.

From the urban residents' side, the materials show that urban dwellers' engagement with urban farming is started from their cognitive capacity to think of a better city environment. This conscious thinking then supported by their interaction with other urban residents through

the forum created by informal organizations which been in the same vision. In this case, one can conclude that the existence of informal organization is as a trigger to start human behaviour. The existence of interest can be maintained through constant interactions using social media platform. This confirms Oatway (2012) finding that communities, particularly those that are built virtually, need consistent nurture by providing continuous attention. The attention embodies in sharing stories which can create a sense of belong to the community for the urban residents (*op cit*). Taking advantage from the embedded cognitive capacity of urban residents and combine it with constant promotion of urban farming through social media by the urban farming communities might increase the chance of sustainable urban farming in urban areas.

From the government's side, the lack of involvement of the local government in urban farming opposes Fisher, et.al (2011) and Lovell (2010) suggestion that policy makers should understand comprehensively the fully-worked ecosystems, also the value and the benefit it bring so that the government could implement novel strategies in supporting urban agriculture, for example by "designating several proportion of public green space as community gardens". Until today, it looks like the urban farming communities able to thrive without any intervention from the authority. However, as time goes by, the land competition in the cities will be getting higher and then the open space and idle land might be ousted by bigger interest, such as industry or settlement. Therefore, the local government need to step in like in Cuba to secure the availability of space for urban farm practice and also support the existence of informal organizations who are able to fill in the role which the government could not: personal approach to the urban residents like in Shanghai (Evans, et.al, 2012; Indraprahasta, 2013).

The contribution of this research has been to confirm that the initiative of urban farming can also come from the grass-root level and that the existence of urban farming communities in the society do have an influence in the establishment of urban farm. The research findings imply the application of social-ecological system in urban farming practice. It is shown that urban farming practises balance the use of community garden as a small ecological system and integrate it with the urban environment. Moreover, the utilization of garden's harvest product to generate additional income is also the manifestation of economic aspect of the system. This awareness of urban residents to balance the social, ecological, and economic in urban environment trigger their acceptance of urban farming as part of the city's ecosystem services, where urban dwellers can reap the benefit from it in the form of amenities and

agricultural products but also oblige to secure its sustainability. In addition to that, Bandura (1971) posits that the interaction between environmental influence, behavioural and cognitive capacity will highly influence human action. In the case of urban farming, the cognitive capacity that is embedded in every urban residents stimulates the eagerness to learn and practice a novel way of farming; which is through the involvement in urban farming communities. Thus, urban farming communities take role as the expert that bridge urban residents with agricultural knowledge by using social media as the catalyst for what Bandura (2002) points as the social innovation. It might be that someday the interaction between urban farming communities with urban residents create a novel way of urban farming that no one has never think of before.

Finally, “exploiting Facebook groups’ potential for efficient and long-term self-organisation of its members is challenging and highly demanding task requiring genuine involvement, good sense of when to withdraw or engage and how to deal with criticism constructively.” (Baborska-Narozny et.al, 2015). Therefore, the author humbly realize that there are limitations on this research. While its main goal highly relates to urban people’s motives, the time limitation made it not possible to conduct person to person interview with urban farming practitioners; therefore, there might be valuable information that are left behind or failed to unearthed. Moreover, further research about the concrete support needed from the city government that holds the highest authority of city landscape and the power of policy making is needed to complete the missing piece in the knowledge puzzle of sustainable of urban farming.

VII. REFLECTION

Overall this research has successfully capture the important role of local communities in raising the awareness of urban environmental sustainability, and also initiate the development of urban farming as one of the ways to utilize iddle and undeveloped land in urban areas. This is important to understand the dynamic of urban farming practice, particularly in Jakarta, that is slightly different with other cities who are already implementing urban farming. Moreover, this research also unearh the most important platform of communication used by the local communities to communicate with urban farming practitioners, which is the social media. However, Todeva and Keskinova (2014) argue that “the blog space is a dynamic configuration of the Internet with continuously changing entries and exits”, which means the participants are free to join or leave the blog whener they wanted. Combined with the nature of urban farming communities that are also open, it is still unclear of what is the strength of weak ties (open membership) that is applied by those local communities that able to maintain their social media followers to religiously stay within the communities. Evenmore, the participants loyally establish social interaction and social network that leads to social innovation. This consideration is based on Todeva and Keskinova (2014) statement that “online broadcasting of information does not trigger immediate action”.

Regarding the data collection, this research would have benefited more from person to person interview. Unfortunately due to the time constraint, it could not be conducted and online questionnaire was administered instead. Therefore, there might be some important information missing in the process and failed to be explored. This particular issue emerged in the subject of urban farming communities’ membership, as Todeva and Keskinova (2014) explain that “communication in the Internet space is evidence of a membership in a distributed intelligence system but is still not an evidence of a community relationship as it is not an evidence of shared meaning, sociability, and sense of belonging”. However, the effectiveness of social media as a platform for people to communicate one with another has been studied by several researchers. Howard (2011) studied about the contribution of social media in the emergence and proliferation of the London Riots and the Arab Spring. Both events are said to use Facebook for scheduling the protest, Twitter for coordinating the protest and YouTube for spreading the event throughout the world (Paltoglou, (2014). Another study was conducted by studying the effect of microblogging Twitter to promote a

fast food restaurant Hoka-Hoka Bento in Indonesia (Prastyo, 2013). Nevertheless, there is no prior study for the contribution of social media in the establishment of urban farming.

As far as one can analyse, the data convincingly show that the local communities have become one of the important facilities for urban residents to interact one with another and then direct it to a bigger scale of interaction between urban people with their environment. The social media which is used as a communication tool is also quite effective in giving urban residents an opportunity to experience direct involvement in urban farming discussion and practice. In addition, the social media also gives a feeling-like-real experience to urban residents who are new to the topic of urban farming. Furthermore, the result also strongly shows that the cycle of social interaction, social network and social learning through social media such as Facebook and Twitter successfully boost the interest of urban farming in the eye of urban resident, and by that, ensure the sustainability of urban farming.

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APPENDIX 1. INTERVIEW GUIDANCE

A. List of Questions to the Urban Farming Informal Organization

a) Overview of the organization

1. When did the community developed and what are the objectives of the community?
2. What is the organizational structure of the community?
3. What are the basic consideration of the establishment of the community?
4. Where are the sources of funding for the community come from and does the community is a profit or non-profit organization?
5. How many members the community have and what are the characteristics of the members?
6. Where are the land used for urban farming activities and what is the status of the land?
7. Is there any relationship between the community with the society living nearby and how to maintain the relationship?
8. Is there any form of cooperation between the urban farming community with the Government or among urban farming communities?
9. What are the benefits of development of urban farming community compared with individual urban farming?

b) Support and Challenges on Urban farming Practice

1. What are the activities done by the community?
2. How the community spread the information?
3. What is the reaction of the society to the urban farming community?
4. What do the community do to maintain the sustainability of urban farming?
5. What kind of support needed to expand the urban farming?
6. What are the possible harms of the urban farming activities?
7. How the urban farming community deals with waste from agricultural activities?

8. How is the regeneration of leadership process in the urban farming community?

B. List of Questions to the Urban farming Practitioners

a) The Background of Involvement in Urban farming

1. How long have you been practicing urban farming?
2. What is the reason to be involved in urban farming activities?
3. Where do you get the information regarding urban farming?
4. What kind of urban farming do you practice?
5. Where to get the tools and equipment for practicing urban farming?

b) The Support for Sustainable Urban farming

1. How is the current urban farming practice condition?
2. What are the benefits when practicing urban farming?
3. What are the challenges in practicing urban farming?
4. What is needed for the continuity of practicing urban farming?

APPENDIX 2. LIST OF INTERVIEW SOURCES

No	Name	Occupation	Urban Farming Community	Position
1	Sigit Kusumawijaya	Architect	Indonesia Berkebun, Jakarta Berkebun	Co-initiator, PR
2	Mrs. Ruth Oppusunggu	Employee	DAG	Active member
3	Mrs. Puji Utami	Employee	Bumi Pesangrahan Mas Community	Leader of Woman Association
4	Karina Shahab	Employee	Conoco Phillips	Internal Communications Coordinator
5	Erin Cita Rahayu	Employee	Jakarta Berkebun	Committee member
6	Chafidh Muslim	Employee	Jakarta Berkebun	Active member
7	Tri Leksono Hadiat	Entrepreneur	Indonesia Berkebun, Jakarta Berkebun	Active member
8	Ingrid Julia Bunai	Employee	Jakarta Berkebun	Active member
9	Dewi Ermiyati	Tutor	Jakarta Berkebun	Participant
10	Waluku	Entrepreneur	-	Silent reader