Planning In The Era Of Uncertainty
Merging Knowledges into Urban & Regional Planning Perspective

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CHAPTER 20

Identification of Urban Farming in the Green Kampong Yogyakarta

Rita Fadholi Pasha, Sheily Widyaningstih, R. Rijanta

20.1. INTRODUCTION

Cities are defined as the center of economic activity, of government, and the concentration of settlements with heterogeneous structure and way of life its society (Lindgren, 1974, in Suharyadi, 2010). Urban areas are identical with large human populations, high density of built-up area, and heavy traffic. The kind of cities can be differentiated based on their population numbers: small cities, medium cities, big cities, metropolitan, and megapolitan (Yunus, 2004). Population growth has an impact on the growing demand for space, especially settlements that later induced the growth of built-up area. From the negative side, a city is burden for the environment and natural resources, as many causes environmental degradation from urban area, such as the high consumption of natural resources (food, water, soil, fossil fuels, etc.) that cause various forms of pollution (air, soil, and water pollution).

Urban environmental management is an effort reflecting the level of environmental concern to the forefront of city development (Inaguchi, 2003) by involving many stakeholders. So the condition or quality of the urban environment can describe the
also beneficial.

Figure 20.4. (a) Vegetable crops in Kehurahen Gambiran (b) catfish pond in Kehurahen Giwangan

Additional income (if the products are sold)

Most of the respondents who have urban farming activities do not sell their products, but they just consume and share with their neighbors. There are only 6 respondents out of 51 respondents or less than 12 percent who sell the product of urban farming. The catfish products are sold 100 thousand rupiah per month. Rambutan and mangoes are sold too, for example, in Village Serusutan.

Besides some of the advantages of urban farming have been mentioned above, there are other advantages stated by the respondents. For example, in terms of health, the products of urban farming are healthier since they do not use chemicals. Besides that, the study from Setiawan and Dwita Hadil Rahmi, in the Journal of Research News (2004), examining the urban farming located in six cities in Indonesia, Bandung, Surabaya, Yogyakarta, Cirebon, Salatiga, and Pacitan, concludes that policies should be developed to assist the development of an optimal urban agriculture to support food security in the city, to create employment opportunities, and to support the sustainability of the urban environment. Subsequent research by Boukharaba and Malote (2012) examines the importance of urban agriculture (especially in urban family agriculture / FUA) as a component of sustainable human development. The conclusion that can be drawn from these studies is that the contribution of urban agriculture (especially FUA) towards sustainable human development is very important, but the current policy does not accommodate urban agriculture. Approach to urban agriculture in FUA can provide benefits, such as food security, the transmission of knowledge and culture, and environmental function.

There is a hope that in the future urban farming development (based on interviews) will continue to be develop for additional consumption, investment, environment sustainability / green environment, additional income, as well as the new techniques, such as roof garden and vertical garden (verticulture). Roof garden has been developed

References:


in Pandeyan Village. Roof garden is widely developed in Yogyakarta, both on the road using poles and in houses.

Figure 20.5. Urban Farming Optimization(a) in Kelurahan Terban (b) in Kelurahan Bener

20.4. CONCLUSION

Urban farming activities are carried out in the green kampong of Yogyakarta, mostly plants (crops and ornamental plants), while the others also include livestock and fisheries in limited amount. Urgency of urban farming in the green kampong of Yogyakarta includes limited land use as a function of green open space, the role and participation of women and people who are not competitive against working, food needs (consumption), and environment sustainability / green environment.

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synergy of all stakeholders in environmental management, as well as how the government gives attention to the environmental sustainability to achieve sustainability of the city. Sustainable development becomes development mainstream when there was a lot of environment degradation, which pushed the issues of environmental sustainability to become a central theme in the region development. Therefore, the commitment of sustainable development must accommodate the city development, so it can create productivity, fairness, and environment-friendly city through the application of the principles of sustainable development in the function and land use of city (Imoguchi, 2003), because city and its environment is not only enjoyed by the present residents but also by the future generations.

The intensity of urban built-up area that are not offset by the availability of open space gives negative impact to the environment. Open space consists of green open space and non-green open space. Green open space is part of city spatial planning as the lungs of the city. In spatial planning of the city, each region is required to have green open space of 30 percent of total area or watershed. Green open space in the city consists of urban forest, parks, recreation areas, and yards. Green open space is designed as ecosystem protection, recreation, environmental conservation, research and education, plasma protection, microclimate improvement, and water reservation media (Munt'ali, 2012). According to the research that has been done by Fandel (1994), green open space can reduce air temperature of the city. The main problem of the provision of the green open space is the limited land in the city. Construction in the city is generally carried out extensively and prioritized on the development of built-up area to fulfill the function of city as the center of economic, governmental, and residential areas. Nowadays, extensive development in the city being out of control due to lack of land use rules. The impact is many cities cannot provide green open space due to strong pressures from the extensive growth of built-up area to accommodate large and complex urban activities.

Agriculture is an activity which includes food crops, horticulture, plantations, and farms, covering upstream farming, field farming, agro-industry, marketing and supporting services for natural resources management in an appropriate and sustainable agro-ecosystem, with the help of technology, capital, labor, and management to get maximum benefit for the society welfare (Undang-Undang Republik Indonesia Number 16 Year 2006). Agriculture is one form of green open space which is important for each region, especially cities. However, agriculture in city is displaced by urban activities (services, industry, and trade) as the rapid development of the city. In fact, agriculture is one of the important activities to support food production for consumption. Yunus (2008) states that unused land in the city can be developed as a new cultivated land without interfering with the city development. Urban agriculture is an effort to optimize land (Blätter, 1977), and can be utilized for the food production and life comfortable in the midst of air pollution, as well as the aesthetics (Agronomos, 2011). Urban agriculture can be called with the term of urban farming. Urban farming or urban agriculture is the production of food and non-food in urban and suburban areas, can be organic farming, vertical farming, roof gardening, fisheries, farms, urban forest, medicinal plant family, and so on (Young, 1990; in Mayasari, 2009), to fulfill the food needs including processing and sales of agricultural products (Anonymous, 2007). The types of urban farming activities are
divided into two main groups (Boukharaeva and Marloie, 2005), that is professional urban agriculture and family urban agriculture. Professional urban agriculture consists of farmers with a variety of income levels and perpetrators of agribusiness, focusing on urban farming for commercial outcomes. While family urban agriculture consists of people doing urban farming in leisure time as a hobby and the agricultural products for personal consumption or distributed to their relatives.

Urban farming is also found in other countries, such as commercial urban agriculture in cities in Australia developing a system of hydroponic and aquaculture, as well as the intensification of agricultural technologies (Bodlovich, 2001). The study by Maconschle, Binns, and Tengbe (2011) shows that urban farming in Freetown has grown rapidly and contributed to increasing food security. Urban farming in Indonesia, funded by Setiawan and Dwiati Hadi Rahimi in the Journal of Research News (2004), is found in Bandung, Surabaya, Yogyakarta, Cirebon, Solo, and Pekanbaru, and provides benefits to fulfill the food requirements, increasing income level, and job opportunity, by utilizing vacant land in the city.

Smit (1996, in Bodlovich, 2011) states urban farming has more benefits than in the village in terms of reducing pollutants and utilizing organic waste. According to a research conducted by Mayasari (2009) with a case study in Mantri Saron District, Yogyakarta, ornamental plants, a kind of urban farming, can add to the household income. It means that urban farming can be a job opportunity or business. On the other side, urban farming can encourage the growth of ecology implementation by the communities by the principles of “think globally, act locally”. Urban farming is a real action on local scope environmental management to create quality environment and environment sustainability for the benefit of the global society. In addition, accompanying urban citycentury with Agenda 21 (initiated in 2000) that has the concept of sustainable cities, urban farming can be an alternative to improve the quality of city life, both with ecological and economic advantages.

According to Agronomers Indonesia (2011), urban farming was initially based on the recognition of urban environment degradation, and also the issue of global warming which is increasing now. Urban farming can give its contribution to the food supply, which is to increase the amount of food for the urban population and provides vegetable / fruit / fresh meat for consumers in city. Urban farming is based on the economic and environmental value. Through the activities of urban farming, land use can be optimized through the cultivation in a limited field and selection plants with economic value according to the needs of society, such as food crops, ornamental plants, and oxygen supplier plants for the city. Indonesia has started urban farming implementation, such as in Jakarta, Surabaya, including Yogyakarta. In Yogyakarta, the regulation of the city council number 515 Year 2007 states that every new buildings should set aside ten percent for plants which can provide added value for the family. It can be the basis for the implementation of urban farming in Yogyakarta.

According to the Balai Penyuluhan Pertanian Yogyakarta in Gobangan Village, Yogyakarta residents still have a business in the agricultural sector such as farming, ornamental plants, fruits, vegetables, fisheries, and livestock.

Urban farming in Yogyakarta is in line with the idea of Indonesia Heikebun which is one of the acts of a group aimed to optimize the use of existing vacant lands in city.
by increasing their productivity through planting various agricultural commodities. The idea was started by M. Ridwan Kamil, an architect who received the International Young Design Entrepreneur Award 2006 from the British Council, who spoke about the development of urban farming. An example is urban farming in Jakarta, in Spring Hills, Kemayoran, borrowed as fields for gardening, before it was built by a developer in June 2012 (The Jakarta Post, 15 April 2012). The chief of Kanter Pertanian di Kehewanan Yogyakarta, Dr. Machmud Aswan, said that Yogyakarta still has rice fields of about 98 hectares spread in the District of Umbulharjo, Kotagede, and Tegalrejo. Rice yields are quite significant, as in Umbulharjo, the production is 8.8 tons per hectare. Regarding to the fields in Yogyakarta which reduced in amount as much as about five percent every year, Aswan advised farmers to utilize the remaining land by planting high-value crops, such as rice, sweet corn, organic fruits and vegetables (Yogyakarta Regional Information Agency, 2008). Isamuni (2010) from Balai Pusat Kementerian Pertanian (BP) in Yogyakarta, said that Yogyakarta, which consists of 14 districts have less than 160 farmer groups, both in the agribusiness sector (ornamental plants, fruits, and vegetables), as well as fisheries and livestock sectors. The activities of urban farming in Yogyakarta are controlled by Disnus Perindustrian, Perdagangan, Koperasi, dan Pertanian.

Urban agriculture or urban farming can be applied to the concept of kampong hidup (the green kampong). The green kampong has variety of sense; in this research the terms of green kampong refers to the notion under the guidance of environment department, Badan Lingkungan Hidup in Yogyakarta. Green kampong is a village which integrates every component or aspect, such as environmental, institutional, community participation, and so on. In terms of urban farming, green kampong has the land use for green yard, especially economic plants. The research of urban farming with the focus on green kampong Yogyakarta is an important study, in this case is the inventory and urgency, so it can further develop urban farming as an activity that has many advantages from various aspects, including environmental and economic aspects.

The development of the green kampong in Yogyakarta means giving space for each household forming their micro space and environment. The challenge of green kampong concept is implemented in urban areas with limited space conditions. The principles of green kampong organization are handling the environment, cultural activities, participation, action in hygiene and environmental health, conservation of natural resources, management of economic infrastructures, and public facilities (BLH, 2010). The establishment of the green kampong is based on Undang-Undang Number 32 Year 2009 about the Promotion and Management of Environmental (Perundangan dan Pengelolaan Lingkungan Hidup) which states that everyone has the right to better environment and health and are responsible to preserve the environment, control pollution and environmental damage.

Green kampong (BLH, 2010) consists of several components, physical, management, the role of the community, and culture. In line with urban farming, a component of the green kampong becomes the responsibility of the community, particularly in the environment aspects, garden optimization. The yard will have economic value to its owner if it is managed effectively and efficiently (optimized). The yard can be planted with productive perennials, herbs, vegetables, and ornamental plants. The environmental aspect of a yard is good if not only for economic purposes, but also for health.

20.2. RESEARCH METHODS

The method for this research is a question approach to investigate the concept of research. The sample was the respondents from the data that was collected. Other than that, the study is also looking at the Yogyakarta area in the kampong, population taken in each district.

Samples (n=50) were semistructured respondents, represent that respondents. The respondents importance of the respondents is important.

Interviews were conducted in two farming, with the expectations that the respondents, identifying, and triangulating the data. This means the Lingkungan Hidup component. 20.3. RESULTS

Yogyakarta has the potential sectors (DLH) in the economy that is attractive...
plants. Therefore, the yard can have a double benefit, as valuable economic assets and environmental conservation (water catchment, green open space, etc.). Therefore, one aspect of the green kampong assessment is the wide greening in the yard (said to be good if more than one-third of the yard is used for greening) and the plants with economic value (said to be good if more than one-third of the yard is used for economic value plants).

20.2. RESEARCH METHOD

The method of this study is survey. Singarimbun (1995) states a survey research method is a method of research by taking samples from population and use questionnaires as tools of data collection. The application of survey methods in the research begins with some secondary data's review obtained from the relevant institution. Secondary data is data obtained indirectly. Secondary data (Tika, 2005) is the data that has been collected first and reported by another person or an institution, other than the researchers—although it is original data. Secondary data used in this study is institutional secondary data obtained from Badan Lingkungan Hidup (BLH), Yogyakarta including the data of green kampong in Yogyakarta, components of green kampong, and others.

Population of the present study is areas with urban farming activity and samples are taken in green kampong based on BLH's criteria or target under BLH Yogyakarta. Samples (through purposive sampling) were selected to be interviewed employing semi-structured questionnaires prepared in a household with the type of urban farming represented. Interview was done to identify urban farming activities done by the respondents, both commodities, goals, and others, to understand the urgency or importance of urban farming in providing job opportunities, increasing income, and its important role in the livelihoods of households in sample locations.

Interviews were conducted using semi open questionnaires. The questionnaires contain questions on the following matters: respondent's knowledge about urban farming, land ownership, yard-land use, plant types or commodities, long run of urban farming, the offender of urban farming, urban farming product utilization, and future expectations. Interviews are directed toward finding the answer to the research goals, identification of urgency of urban farming especially in green kampong Yogyakarta. This interview is considered critical to the interpretation of the results and data triangulation. In-depth interviews are made to the relevant department, Badan Lingkungan Hidup Yogyakarta about green kampong in Yogyakarta and its component.

20.3. RESULTS AND DISCUSSION

Yogyakarta has key sectors in trades, hotels, and restaurants, started toward service sectors (Location Quotient calculation results, 2008), also GDP's growth shows the economy continues to grow over time. Yogyakarta as the education city with all its attractiveness makes it substantial to urbanization, more and more people are living in
poultry (chickens and ducks). While fisheries are in Bener Village and Giwangan Village, District of Umbul Harjo, with the types of carp, catfishes, and koi. The types of cultivated plants are also different. There are consumption plants, plants that can be consumed. Consumption plants include vegetables and fruits. Most respondents choose chilli because it can be consumed, is easy to grow, and only requires little space. While ornamental plants are also widely cultivated by the respondents. Other plants are medical plants, but these plants are still little cultivated. Some respondents in Cokroiningratan Village, Terban Village, and Pundeyan Village plant medical plants. Besides plants, some respondents also do livestock and fisheries activities, chickens, in Terban Village; ducks, carp in Bener Village, chickens, catfishes, koi in Giwangan Village. The reason for the selection of commodity or plant types is because of the trend, easy care, attractiveness, advantage, or distribution of seeds by government. Most of the respondents had carried out urban farming activities for years.

Urban farming in green kampong Yogyakarta has been done by utilizing the limited yard; because the location of this study is densely populated settlements, there is limited available land. An example is the yard area of about two meters square in Bener Village and Bumiho Village which are used for potted plants and fruits, although with less number. The yard width is varied, from two-meter square up to one-hundred meter square. Besides land yard, non-utilized land, such as tenah kas desa, also has been used for farming. The actor of this urban farming in household level is mostly female (mother) and retired male (father). This shows the role of women in developing urban farming activities, also the participation of people who are not working (no competitive work) in spending time for this urban farming activities.

Green kampong is one form of urban planning in Yogyakarta City, which is a community-based residential neighbourhood, where residents have grown and evolved awareness, thus become the driving force for action to manage the environment and achieve well-being in their life, starting from daily life and micro environment. According to the regulations (Permenristah Kota Yogyakarta, 2010), every household wanting to build a new house has to plant some shade tree in order to provide private green open space. In addition, green kampong is prioritized to be a pilot project for other kampong.

Green kampong can be applied in big cities. One example is the use of the yard in every house to be planted, especially plants with economic value. In addition, vertical planting and rooftop or roof garden can be used to optimize the use of limited space. It can be at once to increase the percentage of private-open green space in urban areas. Planting can be done also with a system of plant in pots if it is insufficient place to plant.

Every kampong in big cities can adopt green kampong by making some organization who will manage the green kampong, since without good management green kampong cannot run well.

Yogyakarta City as a cultural center and one of tourist destination area can be an opportunity for the development of urban planning. One of the opportunities is the development of good-living environment, through green kampong program. The development of the environment is one way to create a community-based mutual aid to
Yogyakarta. Conversion from agricultural land into non-agricultural land or built-up area due to human need for land and it is not supported by the availability of land. These needs are primary for residence, while the need for housing is increasing as well as the increasing population.

Land use or built-up area density gives a limited space for the availability of green open space. Although the availability of open space is limited, green space still can be operated. One of the forms is urban farming. Urban farming as a green space can also produce food and raise incomes as the plants can be commercialized. According to Boulhanegou and Marlooe (2006), the actor of urban farming can be classified into two types, professional urban agriculture and family urban agriculture. Professional urban agriculture focuses on urban farming to commercial outcomes, such as paddy fields, thecity, ornamental plants, business, fruits, cattle, and others. While family urban agriculture is mainly for hobby, leisure time activities, and the plants are for personal consumption or distributed to relative sand not commercialized. Family urban agriculture is usually performed by utilizing the limited space on the yard. Urban farming or urban agriculture is widely not only limited to farming activities, but also includes fisticular sand live stock.

Green kampung in Yogyakarta is an ideal kampung or village design which integrates several aspects, one of which is the use of the yard for economic planting, such as medicinal plants, ornamental plants, vegetables and fruits, also other uses in fisheries or farm. Although not commercialized, these plants provide some benefit for the owners. The following will describe some of the finding from the observation and interview using structured questionnaires. This is used to answer the research problem, which is identification of urban farming activities (types, commodities and urgency (importance) of urban farming activities. The totals of respondents in this research are fifty-one with different ages, gender, and profession.

The early part of interview focuses on knowledge about urban farming to lead to further questions. Most of the respondents knew about urban farming activities. This indicates that urban farming in green kampung Yogyakarta is initiative by top down and bottom up approach. Top down means instruction from the government or stakeholders, one is the regulation from the city council of Yogyakarta number 515/2007 which states that for every new buildings should set aside about ten percent of their areas for plants that can provide some added value to the family. From this regulation, then each village and other community organizations manage it. It is obtained from the interviews that the initiators of urban farming is the chief of Rukun Tetangga (RT), Rukun Warga (RW), Kelompok Wanita Tani (KWT), Pembinaan Kesejahteraan Keluarga (PKK), which is derived from higher level of government. There is also support from other government agencies, for example through the provision of seeds and socialization by Department of Agriculture. This support is in Bener Village, District of Tegalrejo. While bottom up means an initiative or awareness of the community itself, as in the Terban Village, District of Gondokusuman and Bener Village, District of Tegalrejo, in which the respondents stated that they want to make their environment better.

Most of land use in the yard is farming activities. Farm (cattle) activities are in Terban Village, Bener Village, and Giwangan Village, with the types of the cattle is...
achieve healthy environment, so it can be one of the pilot projects for eco-tourism. It is in accordance with the Yogyakarta’s development vision year 2007-2011 as written in the Medium Term Development Plan (RPJMD) Yogyakarta from 2007 to 2011. Yogyakarta is a city of education, a city based on cultural tourism and is an environmentally-friendly city.

Utilization of urban farming produces is mostly for personal consumption, with the benefit for savings. Some respondents sell their farm products, including respondents in Kedipaten Village who sell ornament plants, respondents in Muja-Muju Village who sell ornament plants, and respondents in Sorosutan Village that sell rambutan and mango. Two respondents in Giwangan Village also sell their fisheries products, such as catfish. While the other respondents in Giwangan Village sell their poultry and food plants, such as spinach, banana, mango, rambutan, and guava.

The benefits of urban farming obtained from the interviews include:

- Saving

Saving means the results of urban farming can be used for consumption, thus reducing the expense for consumption. As many as 32 of the total 51 respondents or more than 60 percent think that urban farming activities help them save their money, although it is not so significant because it is done on a small scale. Example of saving are planting herbs and planting fruits and vegetables, such as spinach, kacang, ginger, chilli, tomato, guava, mango, rambutan and others, as shown below.

![Figure 20.1 (a) banana plants in Kelurahan Terban (b) rambutan plants in Kelurahan Sorosutan](image)

- Environment sustainability / green environment

More than 60 percent of respondents also state that the purpose of urban farming is for the benefit of the environment, such as to make the environment green, to beautify the environment, to ensure environmental sustainability, to comfort the environment, to reduce pollution, and to provide cool air. Here are photos related to environmental sustainability.
Environmental sustainability is one benefit of urban farming globally. Research from Bodlovich (2001) suggests that commercial development of urban agriculture (in the case study in Australia and other industrialized countries) is beneficial to the ecological and human welfare in the city.

- **Hobby**

About 70 percent of respondents have a hobby in gardening, so they help developing urban farming in their homes. As a hobby, they usually select to plant ornamental plants, such as Bougainville, Orchids, Flamboyant, Rose, and others. The fulfillment of this hobby is not only for pleasure but also for leisure time activities, which is mainly done by women who are no longer working. In addition, a respondent states that the plants can provide beautiful scenery, and this can reduce stress level.

- **Food requirement supplier**

The results of urban farming, particularly for crops that can be consumed provide a distinct advantage. Examples of plants that can be consumed such as vegetables and fruits, yet fishery such as catfish, carp, and poultry, such as chickens and ducks are...
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This proceeding contain of 21 examined and selected paper of the International Conference: Planning In The Era of Uncertainty (ICPEU) 2013, was held on March 4th-5th, 2013 at University of Brawijaya, Malang, Indonesia.

Consist of four chapters covering several themes:
1. Living With Disaster
2. Technology for Urban Living
3. Local Action In Global Arena
4. Creative City

The wide range of discussion in this proceeding provide reference to readers on both theoretical research and empirical practice in the field.

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