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## The potential of urban agriculture development in Jakarta

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### Abstract

One of the contemporary major problems is food security. In urban areas, particularly related to urbanization in developing countries, this problem has a clear impact to underprivileged inhabitants. Urban agriculture could be potentially re-raised as one of the answers. This study described urban agriculture development in Jakarta. The objective of this study was to identify potentials of urban agriculture development in Jakarta. Institutional perspective was used to observe the possibility, with comparison to Havana (Cuba) and Accra (Ghana). This study concluded that development of urban agriculture in Jakarta required legal support of cross sectoral stakeholders.

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*Keywords:* Urbanization problems; urban agriculture; Jakarta

### 1. The rise of urban agriculture development

The world is facing three major problems, most notably increasing food demand, population growth, and ecological degradation [1]. Furthermore, OECD [2] revealed that cities can be source of major problems and solutions as well. FAO [3] and Matuschke [4] independently mentioned that high urbanization in developing countries can increase both number of underprivileged inhabitants and food security threat. This is due to the facts that urban residents spend 30% greater than rural population for food, meanwhile urban poor spend 60-80% of their income on food [4,5]. Dutt et al. [6] and Yuen and Kumssa [7] noted that cities in Asia have the biggest challenge of three major problems mentioned previously, in comparison to other cities in developing economies. Jakarta, which has been the most populated city in South East Asia region as well as the largest city in Indonesia [8], can be an interesting representation of urban area in contemporary turmoil [9,11] (see also: [12]).

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Jakarta and its surrounding areas (Bodetabek) plays a strategic role in Indonesian development, in terms of economic as well as social structure. The growing concentration of socio-economic activities in Jakarta and its surrounding areas (these areas formed a megacity famously named as Jabodetabek) have attracted more people, particularly from rural areas. Although Jabodetabek land area is about 0.32% of Indonesia, it is constantly growing with the number of people living within from 5,917,988 inhabitants (6.10% of national population) in 1961 to 26,755,962 inhabitants (11.26% of national population) in 2010 [13]. The economic condition of Jabodetabek is undoubtedly more significant with its 26.19% GDP share to the national economy [13]. These increasing socio-economic activities have led to massive land-use changes, in particular forests, ricefields, and greenary areas conversion into settlements and other built-up areas. It was estimated that between 1972 and 2005, 40,565 ha forests area; 18,956 ha ricefields; and 180,199 ha green open spaces were converted in Jabodetabek [14] (see also: [15,10]). (Fig. 1)

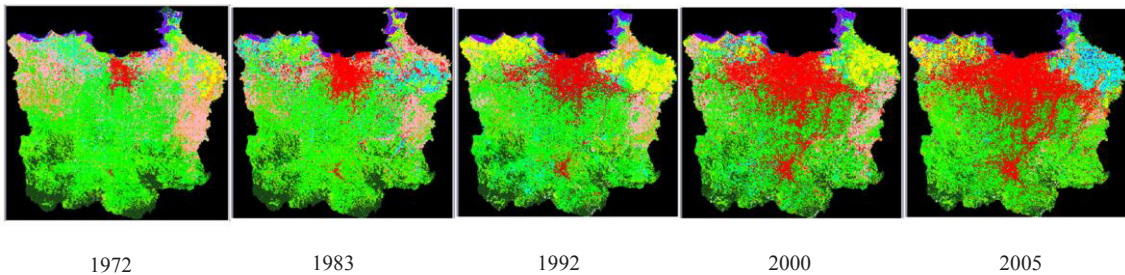


Fig. 1. Land use-cover change in Jabodetabek (source: [14])

The urbanization process experienced in Jabodetabek is likely to affect food interaction between Jakarta and its surrounding area. McMichael in Haughton and Hunter [16] implied that urbanization causes the countryside to lose its distinctive characteristics; this leads to an alienation of urban people from nature, which in turn lends itself to the adoption of environmentally unsustainable habits. Furthermore, there is a growing phenomenon related to the change of patterns of interaction between city and its hinterland. A better transportation connection and other infrastructure, cities interdependency in fulfilling their daily needs like food, energy came to rely increasingly heavily on global trading systems [16] (see also: [17]). The Jakarta's food provision, which was supplied by its surrounding areas, has changed constantly influenced by above current growing phenomenon. At the same time, the capability of Bodetabek and also Cianjur to supply food to Jakarta has been reduced due to growing land use changes, in particular food provision areas conversion. This condition will increase transportation cost to and affect food prices in Jakarta; as a result, Jakarta's underprivileged inhabitants will be affected.

Against previous problems, urban agriculture can be potentially re-raised as one of the answers (for additional information, see: [18,19,20]). A brief story of urban agriculture emergence in Jakarta could strengthen this statement. Urban agriculture development in Jakarta started after the economic crisis hit Indonesia in 1998 and had created seasonal jobs. At that time, many inhabitants occupied state-owned and Soeharto's (former President of Republic of Indonesia) lands to be used for urban agriculture activities [21]. Most of those inhabitants were migrants coming from West Java and Central Java Province [21,22]. Urban agriculture activities in Jakarta also developed by renting lands from the owners. Urban agriculture had two benefits for urban underprivileged inhabitants, most notably creating alternative jobs and creating better access to food. Sutiyo, former Governor of Jakarta, regarded these benefits and supported urban agriculture activities through several schemes. After this support, urban agriculture activities were mushrooming at several locations, i.e. land prepared for high way development in West Jakarta, land prepared for offices in Kuningan, and ex-airport in Kemayoran. [23]

Learning from several developed countries, urban agriculture becomes more developed, if it is regarded as a common and formal activity. As an example to show: in the Netherlands, 33% of total agriculture production came from urban agriculture; in the US, 10% of total urban population participated in urban agriculture activities; in Vancouver, 44% of total inhabitants participated in food crop cultivation [19,24]. As a comparison, Jakarta itself was only capable to provide 1.2% demand for rice, 0.5% demand for vegetables and 19.6% demand for fruits produced by its own territory [21]. This brief picture could give a strong suggestion that agriculture is actually not a marginal activity within urban areas, even for developed countries. Furthermore, the contemporary problems and initial emergence of urban agriculture activities after 1998 economic crisis could be a basic foundation for developing urban agriculture more intensively in Jakarta.

Against previous background, the objective of this paper was to identify potential development of urban agriculture in Jakarta. Several studies were conducted in Indonesian urban agriculture on some issues, notably urban agriculture characteristics [25], economic development [21,26,27], spatial distribution [28,29,30], ecology [31], and public perspective [32]. Most of these studies portrayed development potentials of urban agriculture in Indonesia (what question). However, none of these studies have addressed institutional problems, particularly to give answer how to bring these potentials into implementation. Pearson et al. [33] and Zasada [34] revealed that urban agriculture development would potentially be regarded as a common practice in urban development considering many benefits yielded by this activity. Unfortunately, this positive movement has not been followed by proper urban authority policies and management [5]. By focusing on institutional perspective used to explore urban authority policies and management problems, this paper could potentially fill the gap of urban agriculture potential-implementation nexus, particularly in Jakarta.

To answer the study objective, this study employed institutional mechanisms modified from Pearson et al. [33] to identify possible improvement of urban agriculture in Jakarta. Institutional mechanisms are important for sustaining agriculture in urban areas. Pearson et al. [33] suggested four mechanisms, namely (1) regulations and required actions, (2) economic incentives, (3) voluntary actions for enhanced security of urban agriculture, (4) and information, advice, support and moral suasion. Each of this mechanism consists of several instruments which seem to be more appropriate for developed countries. Therefore, to explore institutional mechanisms in this paper context, there are several adjustments which have been made. As a result, this study employed four mechanisms to analyze prospective urban agriculture development, namely: (1) regulatory support, (2) economic incentives, (3) action/voluntary initiatives, and (4) information and other supports.

## **2. The status of institutional mechanisms of urban agriculture development**

The emergence of urban agriculture development in Jakarta was fairly similar to other developing countries such as in Havana (Cuba) and Accra (Ghana), which was in response to economic crisis in their respective countries. Urban agriculture in Havana was known and developed after 1989 economic crisis [35]. The basic idea of urban agriculture in Havana was “production from community, by community, and for community” [35]. As a result, many urban gardens were emerged. In Accra, development of urban agriculture was triggered by the rising of food prices in 1972-1976 as an impact of food shortage [36]. Havana and Accra are employed for comparison to Jakarta to give an important lesson. This part of paper will explore on current status of four institutional mechanisms developed in Jakarta, in comparison with Havana and Accra. (Table 1)

Table 1. Status of institutional mechanisms of urban agriculture in Jakarta, Havana, and Accra

Mechanisms	Jakarta	Havana	Accra
Regulatory support	No synchronization between spatial planning and agricultural policies	Having both spatial planning and agricultural policy support	Having agricultural policy support, but not spatial planning
Economic incentives	No economic incentives	Moral and material incentives	No economic incentives
Action/voluntary initiatives	Initiatives came from society	Government provides land for anyone willing to produce food	Initiatives came from society
Information and other supports	No literal support	Government provides agricultural extensions, farm shops, clinics, R&D institutions	Agricultural programs from government

Havana and Accra had developed urban agriculture activities long before Jakarta. Interesting lessons from both cases are the outcome. Havana could be perceived more successful in developing urban agriculture than Accra. Despite different political and governmental system between Cuba, Ghana, and Indonesia, this study tries to explore on current status of four institutional mechanisms developed in Jakarta by comparing it with the lesson learned in Havana and Accra in following sections.

### 2.1. Regulatory support

Based on a study in Jakarta and Bandung conducted by Adiyoga et al. [32], 71.8% of people agreed that good and clear regulations and policies for urban agriculture were necessary to implement urban agriculture. Regulatory support for urban agricultural development at the national level has not been entirely uniform. Urban agriculture activity in spatial planning regulation is not considered as a formal activity, either for ecological or economic function. In addition, there has been an ambiguity of urban agriculture status in Indonesia represented by decrees of two different ministries, most notably the Ministry of Public Works and the Ministry of Interior. The Minister of Public Works Decree 05/2008 on Guidelines for the Provision and Use of Green Open Space in Urban Areas states that urban agriculture is not categorized as a form of green open space. On contrary, the Minister of Interior Decree 01/2007 on Planning for Urban Green Open Spaces declares urban agriculture as a form of green open space.

Regulation at provincial regulation level, particularly in the Jakarta Spatial Plan Document (RTRW) 2010-2030, several articles demonstrate the potential land for urban agriculture development. Although there are some inconsistencies in the document related to the link between urban agriculture land and urban green open space, development of urban agriculture in Jakarta has been accommodated textually inside this document.

For comparison, on September 1993, the Cuban Government issued Law 142 which divided majority of large-scale urban farms into a spatial unit known as "basic unit of common production" (*unidas básicas de producción cooperativa* or *UBPCs*). This regulation became a basis of integration for land use and agriculture development regulations in Havana. To support this regulation, the Havana authority established the Department of Urban Agriculture. The Department has been working with parliament to modify Havana regulations allowing all garden workers to have legal priority to manage idle lands. The effort to integrate urban agriculture into land management plan (spatial plan) started in 1987 when the Group for Integral Development of Havana was created. From 1996 onwards, urban agriculture has been formally inserted into the land management system. Urban agriculture has been expected to extend its role from food security and socio-economic safety to other objectives, most notably sustainable city

(linkage with nature and health and as a part of urban green system), tourism, industry, and environmental education. (for additional information, see: [37,35,38,39])

In Accra, urban and peri-urban agriculture activities fall under different level jurisdiction and authorities types. On spatial planning (or land use planning), development of urban agriculture is not accommodated as formal activity. This condition become worse when Accra is undergoing a crisis of land use planning. One example is when many residential developments are taking place in environmentally protected areas. Urban agriculture activities are supported by several separated programs; some of these programs and projects are Operation Feed Yourself (it was the first and most ambitious program), Ghana Poverty Reduction Strategy, Modernization of the Capital City, and Decentralization Policy. (for additional information, see: [40,36,41])

## *2.2. Economic incentives*

There are basically no economic incentives offered by the government especially in Jakarta, similar to those in Accra. Social and economic benefits of urban agriculture in Jakarta remained well-regarded and are responded by providing support to utilized land though not formally. However, submission of contribution have been made by companies for development of urban agriculture through their corporate social responsibility (CSR) scheme. This includes PT Epicentrum that gave permission to use undeveloped land to local community, coordinated by Family Welfare and Empowerment Community (*Pemberdayaan dan Kesejahteraan Keluarga* or PKK). At national level, the Ministry of Agriculture also looked at abandoned urban lands for agriculture activities. In order to implement this policy, the Ministry of Agriculture has coordinated several parties, including PT East West Seed Indonesia which engages nursery [42]. A study conducted by Adiyoga et al. [32] concluded that further support to urban agriculture form of incentives and disincentives were required to encourage communities and to assist urban agricultural development.

In Havana, direct economic incentives in urban agriculture development have not been given. Financing scheme is initially directed to community gardens through farmer's group and used for two major activities, most notably basic production inputs (i.e. tools, irrigation equipment, well-drilling equipment, windmills, seeds) and training programs for technicians and producers [39]. There is also possibility to get funding from foreign sources, carried out through government bodies and non-governmental organizations [39]. None of this foreign-source money has been used to pay salaries to technicians and specialists from government and non-governmental institutions [39]. According to Koont [43], the authority has given incentives more in material as well as moral support. At individual level, incentives are provided through creating a greater opportunity to farmers to achieve formal education and to develop more dignified working environment. At community level, incentives are allocated to raise urban agriculture and urban farmers's awareness and self-esteem. Numerous awards have pinned through a strict verification process, and are carried out every 3 month. These kinds of activity are also correlated to science and technology. Research and development institutions have contributed as focal point for introduction and dissemination of new technologies, as well as education and training.

## *2.3. Actions/voluntary initiatives*

Several voluntary initiatives were carried out by both government and non-governmental organizations (NGOs) to provide urban agricultural lands, particularly for ecological purpose; although on further development this activity may have economic value. An example of those was tree planting conducted by government in 2009. The initiative successfully planted about 50.200 fruit trees on riverbanks of Ciliwung in South Jakarta as an initial step to develop river tourism [44]. Utami [26], Oktarina [27], and Yang et al.

[45] suggested that urban agriculture could be developed as agro-tourism if it meets several criteria such as agricultural landscape, accessibility, supporting infrastructure, and public acceptance. Such tourism development could trigger economic development by increasing job opportunities

The best example of community initiative is shown by Bang Idin who has revitalized Pesanggrahan River in South Jakarta. His hard work led to several awards such as *Kapaltaru*, Water Rescue Award, in addition to several medals from Abu Dhabi, Germany, and the Netherlands. Bang Idin expects more government support in his effort to attract communities; rather than awards [46]. Learning from developed countries, urban agriculture development is not merely about food security, environmental, and economic issues, but also related to social aspects, in particular community involvement and interaction [19].

From previous explanation, it appears that Cuban government support for land provision has been sufficient. Furthermore, People's Council was established in the first half of 1990s as a grassroots government which was closer to the people and promoted local initiatives for solving problems [39]. Good political will from the government (at provincial and municipal level) combined with existence of People's Council and refocussing of existing NGOs towards urban agriculture development have made urban agriculture undergo significant progress [39].

In Accra, however, land supply initiatives are not visible and still regarded as major problem. The initiatives given in Accra purely support in form of agricultural policies which, to some extent, are not integrated with spatial planning policies. Initiatives to get involved in urban agriculture have been emerged by urban dwellers to sustain themselves. As a result, this activity has become one of the most important informal sector activities in Accra [41].

#### 2.4. Provision of information and other supports

There has been no clear evidence on additional support including market development for urban agricultural development in Jakarta. Such conditions are equivalent to Accra because land status is still informal. There is a special condition for agriculture in the peri-urban of Accra, where some farmers applied *abusa* and *abuna* system. *Abusa* system requires farmers to provide a third of their production to landowners in return for using the land, while *abunu* system requires farmers to give half of their production. Marketing, especially for vegetables, is one of the biggest challenges to urban agriculture in Accra. Price fluctuates rapidly due to supply and demand imbalance. These vegetable products are mostly bought by market women offering very low prices. Farmers have been demanding to city authority to give them stalls at existing markets to sell directly to consumers. There has been a positive progress of the authority towards urban agriculture activity, but they still do not do much to promote this activity. The Accra Working Group on Urban and Peri-urban Agriculture (AWGUPA) which was initiated by IWMI-RUAF in 2005 could potentially be an embryo for further progress of urban agriculture development in Accra. (for additional information, see: [40,36,41])

In Havana, nonetheless, there are no market and marketing constraints. Between 1989-1994, urban agriculture products were mostly consumed for subsistence; between 1994-present, these products have been distributed for commercialized trading as well. Many agricultural producers in Havana have contract with the state which means that their products contribute in the state distribution system (i.e. sales outlets authorized by the Municipal Administration Council, sales outlet authorized by the Ministry of Internal Trade, and agricultural-livestock markets). In addition to market support, urban agriculture in Havana has also received some support services, including team of trainers, farm shop, veterinary clinic, and agricultural research center (for additional information, see: [37,35,38,39]).

#### *2.4.1. Team of trainers*

Team of trainers works at community level and assists plant monitoring, identifying pests and trying to seek its pesticides, and technology transfer. Their another task is to distribute land to the growers. The extension agent also serves as community manager and encourages producers to join the network and interact with other institutions involved in urban agriculture such as farm shops, seed stores, and agricultural research centers.

#### *2.4.2. Farm shop*

The role of a farm shop, which also acts as consultant, is to ensure survival of urban agriculture. Stores are located in urban area and sell seeds, organic fertilizers, organic pesticides, forks, and so forth. Clients will be given technical advice and publications from the Ministry of Agriculture. At first, this consultant was managed by the Ministry of Agriculture officials.

#### *2.4.3. Veterinary clinic*

The role of this clinic is mainly to provide services for livestock. Livestocks typically raised in Havana is poultry, birds, and other small animals, where their dung is commonly exploited for soil ameliorants, food source, and economic investment.

#### *2.4.4. Agricultural research centers*

There are several research centers involved in development of urban agriculture, among others are the National Institute for Basic Research in Tropical Agriculture (INIFAT), Plant Protection Research Institute (INISAV), and Research Institute of Grassland and Animal Foods (IIPF).

### **3. Concluding remarks**

Learning from Havana and Accra, Jakarta's urban agriculture is likely to be developed further if regulatory support is viable at first. If this condition can be achieved, the other three institutional mechanisms' elements which are economic incentives, action/voluntary initiatives, and information and other supports would turn out well. To achieve the first condition, there should be policies coherency either at national or provincial level. Furthermore, urban agriculture should be regarded as a part of urban activities which could have several objectives, namely food security, socio-economic activity, environmental protection, education, etc.

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