

# Conceptual Framework of Urban Farming: A Case Study in Denpasar-Bali-Indonesia

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## Abstract

Urban farming plays an important role to support an economic of urban communities and also serves to maintain the balance between environment and ecosystem through the existence of green open space. But most of them are not well organized so the results are less optimal. The government policy has not shown any partiality to the existence of urban agricultural land, that evidenced from the more land conversing from agricultural to housing. Therefore it is feared that the urban agricultural land will be less and will disappear in the future. This paper aims to develop a framework or the urban farming policies, that used for evaluation of the policy in order to develop and enhance prosperity of the community. The literature review method is used to create an ideas, and synthesize the related researches which have been done previously. The result from the literature review concerning are presented, and a conceptual framework of urban farming is developed.

**Keywords:** Urban farming, policies, framework

## Introduction

Most cities in developing countries have great difficulties to resolve the problem of an urban development, that unable to create employment opportunities both in formally and informally sector. Urban agriculture is a complement of rural farming, therefore can support the efficiency of the state food system. Rural agriculture cannot provide production easily (egg friable vegetables, goods requiring fast delivery after harvest), hence the transformation is needed on commercial and subsistence farming systems, because in agrarian countries where agriculture is important, and become the foundation of economic activity. In addition, smallholder transformations forms are important not only for food security, but also for climate change mitigation (FAO, 2010).

The island of Bali has a total area of 5,635.86 km<sup>2</sup> or 0.29 percent of the total archipelago of Indonesia. Administratively Bali is divided into eight regencies and one city, and 53 sub-districts. Denpasar City has an area of 127.78 km<sup>2</sup> with 788,589 population, and its density 6,171 per km<sup>2</sup> in year 2010. On 2015, the population of Denpasar city will be 881 with 6.892 density per km<sup>2</sup> (Biro Pusat Statistik, BPS, Bali Provinces).

Further BPS of Bali Province state that is a significant decrease of agricultural land users households and smallholder farmers. This phenomena occurs almost throughout Bali, and the most one occurred in Denpasar. This caused by an uncontrolled tourism growth, and the conversion of agricultural land to tourism facilities, competition of drinking water and the irrigation. This is lead a shiftment of human resources from agriculture to tourism (Post Bali, 2015).

The area of Denpasar is limited so that the concept of traditional agriculture is very difficult to do in urban areas. Meanwhile, land conversion from agricultural to non-agricultural can not be dammed in cosequence of the development needs of the citizens. There are not enough rules of spatial planning and protection of sustainable agricultural in all regions. It is actually necessary to regulate the two things so that the allocation of each region becomes clear. Moreover, Law No. 26 of 2007 on Spatial Planning and Law No. 41 of 2009 on Sustainable Land Farming Protection, and the derivation of Government Regulation No. 1 of 2011, has declared sustainable agricultural land as a national strategic area.

## Literature References

### Urban Landuse

City is a relatively large, dense and permanent settlement composed of heterogeneous groups of individuals from the social view. From Law on Spatial Planning No.26 of 2007, urban areas have the primary non-agricultural activities with their functions as a place of urban settlements, centralization and distribution of government services, social services and economic activities (Zahnd, 1999).

City development in Indonesia are poorly managed and tend to be out of control. Various problems arise as a result of poor management such as traffic congestion, lack of infrastructure services, lack of green open space (RTH), slums, and land conversion. According Irawan (2005), agricultural land conversion is basically due to competition in land use between the agricultural sector and non-agricultural sector. Competition in the utilization of the land arises due to economic and social phenomena, limited land resources, population and economic growth.

The Government of Indonesia also issued a definition of green open space with the term Green Open Space Urban Area (RTHKP). Referring to Regulation of the Minister of Home Affairs No.1 of 2007 concerning of Green Open Space in Urban Area, the Green Open Space is part of open space of an urban area filled with plants to support ecological, social, cultural, economic and aesthetic benefits. Open space green is divided into two types, namely Public RTHKP and Private RTHKP. Public RTHKP is RTHKP whose provision and maintenance is the District / City Government. One of public RTHKP is the Green Open Space Protected Area (RTHL) is a wider space or area, with longitudinal form or grouped areas, where its use is more open and dominated by naturally grown plants or cultivated plants. Protected green areas consist of nature reserves on land and islands, protected forests, tourist forests, agricultural areas, rice fields, mangroves etc. While private RTHKP is RTHKP where its provision and maintenance is the private parties /individuals, individuals and communities controlled by permit of spatial use by regency/municipal government, except for DKI Jakarta Province by provincial government.

The population of Denpasar is increase every year that bring impact on the decreasing of agricultural. This is very difficult to overcome, but it is necessary to think together between the government and farmers in finding solutions and the efforts should be done in addressing these issues to increase agricultural production that has an impact on the welfare of the community. Based on the population census in 2010, the total population in the city of Denpasar is 788,589 thousand people, and based on the projection, in 2015 is expected to increase to 880,600 thousand people (BPS Bali, 2010). Agricultural development is not only needed by people who live in rural areas but also by people who live in urban areas as part of Indonesian society. Unfortunately the potential coaching for urban is more often directed to the ornamental plant commoditiesdevelopment, because most of the consumers are often found in urban areas.

According to Porter et al, (2010), currently 50% of the population is concentrated in urban areas, by 2050 it is estimated that 80% of the population is in urban areas. One way to achieve food security is by doing agricultural activities in urban areas (Grewal, 2012, Ayalon, 2014). Urban agriculture provides a complementary strategy to reduce food insecurity and urban poverty and improve urban environmental management.

### **Urban Farming**

The phenomenon of urban agriculture with limited area will grow in various regions in Indonesia. The phenomenon is indicated by the average growth rate of small farmers in Indonesia 2.6% per year and in Java 2.4% per year (BPS, 2004). In urban areas or at the itsborder, such as in Jabotabek, narrow farming activities can provide employment and income opportunities for the survival of farmers (Siregar et al., 2000). Although the State is in a crisis condition, farmers with small land and urban areas are still farming (generally vegetable commodities), able to capture consumers in urban areas, have a relatively continuous market, and earn a continuous income.

Kaethler (2006) state the Urban Potential for Urban Agriculture in the City of Vancouver, divides urban agricultural activities into two types: (1) small-scale urban agriculture, ie urban agricultural activities with an area of less than 1,000 m<sup>2</sup>, (2) large-scale urban agriculture that is urban agricultural activity that has an area of more than 1,000 m<sup>2</sup> or 10 acres.

According to Mazeereuw (2005), agriculture in the city affects the economic, health, social and environmental aspects of the city. Thus there will be benefits of increasing welfare, justice, togetherness, comfort, quality of life and environmental sustainability.

According to Baikley et al. (2000) state that urban agriculture is the growth (manufacture), processing and distribution of food and other products through intensive cultivation of crops and livestock around the city. It is mentioned that urban agriculture is not only in the dimensions of horticultural crops, but also in livestock activities.

According to FAO International Agency (2003) urban agriculture positioan as; (1) one source of food supply and

urban household food security options; (2) one of productive activities to utilize open space and urban waste; and (3) one source of income and employment of the urban population. Therefore, urban agriculture has good opportunities and prospects for agribusiness-based and eco-friendly farming development.

### **Urban Farming Policies**

Land use changing in suburban areas are caused by socio-economic factors and government policies. The higher of poverty in a region, especially rural and suburban areas, the greater of the conversion of agricultural land. In addition to social and economic aspects, the regulatory aspects or laws governing the existence and sustainability of agricultural lands are currently unable to stem the conversion of agricultural land to non-agricultural. The increased of land builds, especially land for settlements, impacts on the existence of agricultural lands, where agricultural lands have been largely converted into settlements, which will have an impact on the reduction of water catchment areas.

According to Sostenis (2012), formulating the urban agriculture development policy, need to consider some determinant factors, namely: (1) the existence of the yard; (2) Development of productive crops with the application of environmentally friendly technologies with increasing food crops and non-food populations; (3) Increasing the guidance of farmers by technical supervisors of related institutions so as to become more effective; (4) Incentives for farmers and agricultural land tax exemption.

According to Setiawan and Rahmi (2014), there are lacked support from the government, and lack assistance to urban farmers, especially in finance, skills and knowledge. Besides, agricultural planning and policy have not given clear direction to the existence of urban agriculture. This suggests that policies should be developed to assist urban agriculture in order to optimally contribute to improving food security, to create employment opportunities, and to support urban sustainability. The policy could include: land use planning, credit access, training for urban farmers, and networking among urban farmers.

### **Theoretical Framework**

Urban development should consider the comparison between residential and green open areas. The phenomenon that occurs in urban areas is the lessening of green areas or agricultural areas, because the function switch to a residential area, industrial area etc. Governments in urban areas should seek to suppress land conversion and also continue to maintain and increase green open space, through spatial policy. Therefore the existence and sustainability of urban agriculture can be continuously maintain. In the other hand government policy should be able to empower urban farmers through counseling activity ie training of farming technology, plan diversity, and provide a capital access. Hence model development of urban agriculture can support a farmer welfare through an enhancement of their business volume. Furthermore, by improving of urban farmers welfare, will contribute to urban development. The Urban farming Framework shown in Figure 1.

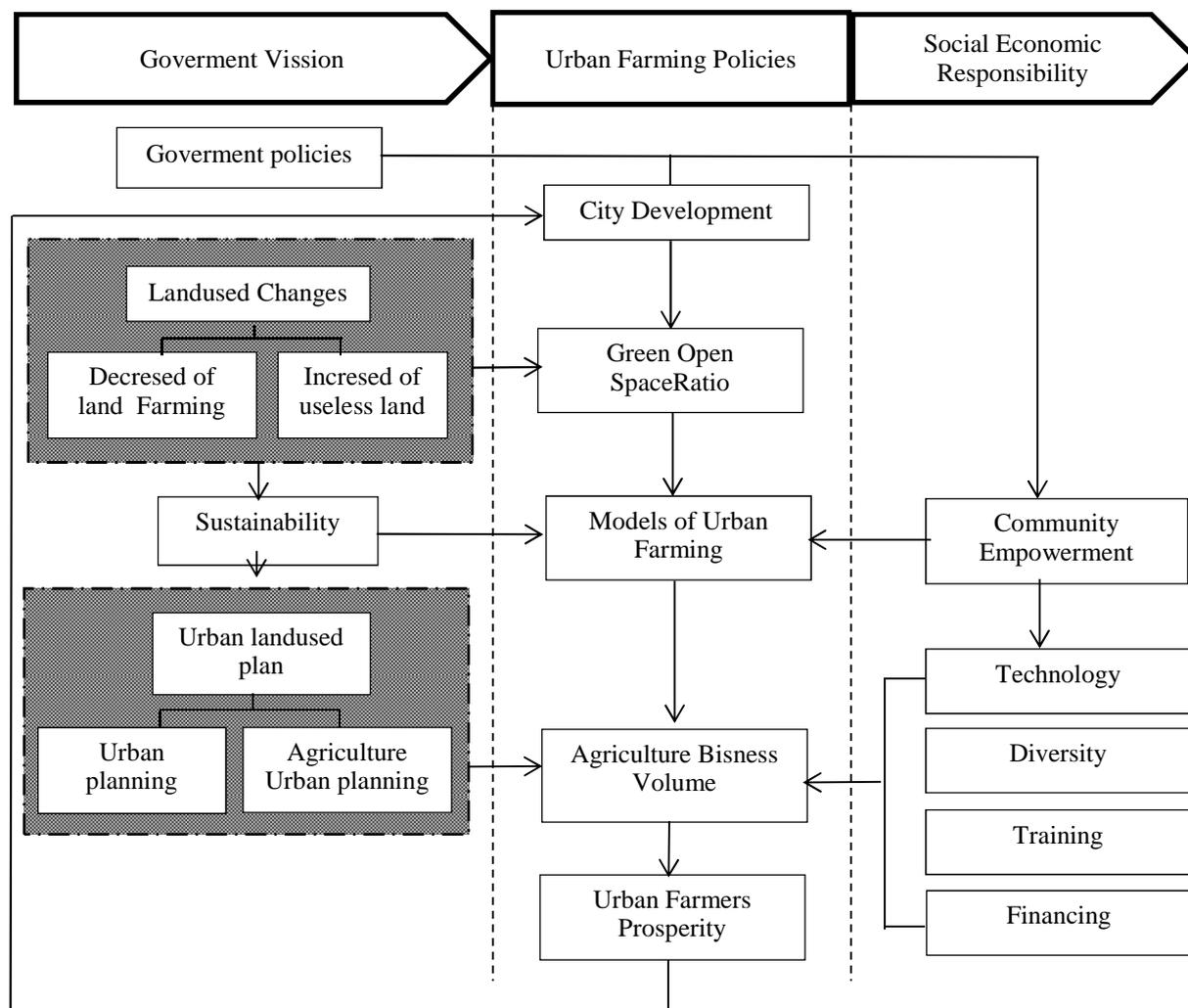


Figure 1. Conceptual Framework Of Urban Farming

### 3.1 Government Vission

The government has a vision of urban farming for welfare and food security. In general, the targeted urban farming program can be successful for all levels of society. Urban farming becomes part of the city's political policy. The political policy of urban farming is based on dynamic city's land changes. The dynamics of urban farming are influenced by the decline of agricultural land and increased urban land use. One way to overcome problem of food security, the city government by applying Food Oriented Development. Consideration of food security is expected to support urban sector development, oriented towards sustainable development.

### 3.2 Urban Farming Policies

Case studies of urban farming have been tested in several cities in Indonesia. In West Java known as Bandung gardening (*Bandung Berkebun*). Bandung gardening led by the Mayor of Bandung. Minister of Agriculture welcomes Indonesian Gardening (*Indonesia Berkebun*) community applying the concept of urban farming. With the implementation of this system, is expected to provide economic benefits for households.

The government has implemented the concept of urban farming with the Lestari Food House model (*Kawasan Rumah Pangan Lestari*). Lestari Food House is a household based food security. Lestari Food House based on the use of yard land declared by Mr. President in 2012. Initially the program started from the Women's

Movement for the optimization of village gardens in 2011. Village garden optimization continues to be the Lestari Food House Area (*Kawasan Rumah Pangan Lestari*). The concept is to use the smallest yard for family plants with planted crops such as vegetables, including raising fish, chickens, and rabbits. This program has been conducted in 12,000 cities and villages in Indonesia. There are already areas that become models of family farming, such as in Bandung, Jakarta, Surabaya, Medan, and Pekalongan. When the program was launched, the government provided nurseries in village and urban areas. There are vegetable seeds like chili, mustard, eggplant, and beans.

Indicators of Urban Farming Policies :

- a. The existence of policies from the city government encourages the implementation of urban farming
- b. The existence of mentoring-monitoring activities from the government (Department of Agriculture)
- c. The existence of marketing opportunities of horticultural cultivation is very broad in the market

### 3.3 Social Economic Responsibility

The government has implemented programs to reduce urban poverty. In addition to direct assistance, poverty reduction program implemented various empowerment of society that is urban farming. There are still many obstacles faced in the implementation of urban farming activities. In general, the various problems become 2 parts, namely technical and non technical constraints. Technical issues related to land constraints, pest attacks, climate change, citizens' knowledge of good cultivation techniques. These technical constraints have implications on the difficulties in the field as well as the quantity and quality of crops that are not as expected. Non-technical issues related to the enthusiasm and response of poor urbanites. Especially in the low mentoring program from the government. This has implications for the sustainability of future program activities.

Urban farming can be successfully implemented, influenced by three major interrelated factors, namely environmental, social and individual. These three factors become the basis for identifying the potentials and problems of urban farming in Denpasar. Potentials and problems collected in this study are classified based on technical and non technical aspects. Technical aspects include factors of production facilities and infrastructure, financing, and environmental (climate) conditions. Non technical aspects include social factors, and government (institutional) factors.

Indicators of social urban farming communities :

- a. The response of the poor and non-poor communities in participating in the urban farming program.
- b. The community is serious about implementing urban agriculture, initiating additional commodities in the cultivation of horticulture.
- c. Yields from horticulture cultivate meet the nutritional needs of a good society for consumption.
- d. The harvest of urban farming community has a good quality.
- e. Farmers are able to market the results of cultivated products that are harvested.

About 70 percent of urban farming programs have been successful. The success of urban farming program for the active role of the community, especially the volunteers assigned to assist the community in the village. The success of urban farming program because of the active role of the community. Especially the role of volunteers who accompany the community in the village. There is still an unsuccessful urban farming program, as a result of people who are not enthusiastic about the program. Urban farming is less successful due to low citizen participation. Consequently village officials have not been able to utilize assistance for urban farming program.

### Summary

The success of urban agriculture is determined from several factors such as the presence of land, farmers professionalism, and the government's alignment as the policy holder in maintaining the existence of the farmers. Urban agriculture not only serves to fulfill of adequate food needs, but also contribute to the availability of green spaces which indispensable in urban areas. The existing problem is a reduction of most green open space in various cities, cause by the switching its function into housing and industry. This is required the role of government in determining the policy of suppressing the transfer of functions while maintaining the sustainability of urban agriculture. The framework provides an overview of stakeholder relationships and engagements involved, so they can take roles according to their authority. This framework would be a new contribution to extend the body of knowledge in this field and significantly improving the the perspective of government and stakeholders to improve the sustainability welfare of urban farmers.

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