

# Urban Farming in Pandemic Covid-19 and How the Economic Impact Analysis for Communities Kauman Village, Malang City

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**Abstract.** Urban farming is a sustainable and adaptable farming alternative. Especially during the COVID-19 pandemic, urban farming is an efficient alternative since it does not require high mobility. This study examined the efficacy of implementing urban farming with the Community's Economic Impact Analysis (EIA). This type of research is qualitative research with deep interview techniques by the 7 participants. The participants are the people of Kauman Village, Malang City, East Java, Indonesia. The results showed that the impact of urban farming in Kauman significantly increased the community's Economic Impact Analysis (EIA). The public's perception of the application of urban farming is quite good. Most people perceive the benefits of implementing urban farming, including using green land around their houses. According to Economic Impact Analysis, implementing urban farming can increase well-being in terms of food security. Community participation in implementing urban farming looks quite effective and enthusiastic so that people, individually and in groups, perceive the benefits of implementing this farming system.

## 1 Introduction

Urban farming or urban farming is the practice of growing, raising, and harvesting crops and livestock in urban areas [1,2]. The practice of urban farming is increasingly popular in big cities for various reasons, [3] such as increasing public awareness of the importance of consuming healthy and sustainable food, food crises, increasing food prices, and the desire to reduce negative environmental impacts caused by long-distance transportation and the use of raw materials. chemistry. In many cities around the world, there is limited land available for conventional agriculture, so urban farming is an alternative for producing fresh and healthy food for urban communities. Urban farming can also provide social and economic benefits, such as creating new jobs and building gardening skills for city dwellers [4,5].

In addition, urban farming can reduce pollution and carbon dioxide emissions due to long-distance transportation used to deliver agricultural products to cities [6,7]. Urban farming can

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also improve the quality of the urban environment by absorbing carbon dioxide and reducing the number of surfaces covered by concrete and asphalt. However, urban farming also has challenges, such as limited space, poor soil quality, and climate change which affects plant growth [6]. Therefore, technology and innovation in urban farming need to be continuously developed to ensure sustainable and efficient production in urban areas [8,9].

Economic impact analysis is the process of assessing and measuring the economic impact of a policy, project or event on an area or the economy [10]. This analysis aims to understand the effects of these activities on various aspects of the economy, such as economic growth, job creation, income, investment, and other related economic sectors. The COVID-19 pandemic has caused widespread economic disruption around the world and changed economic dynamics in many sectors [11,12]. It also influences the way we do economic impact analysis.

Economic impact analysis can be measured quantitatively to obtain data in providing an analysis of the impact of a thing on the economy. In this study, an in-depth analysis of the economic impact will be discussed qualitatively in order to find out how the economic impact is after implementing urban farming in the Kauman sub-district, Malang City. In addition, this research will also provide an overview of the economic impact during a pandemic, which is resolved by carrying out urban farming activities. At its core, economic impact analysis is an analytical tool used to understand and measure the economic impact of a policy or practice, with the aim of informing decisions and planning related to economic growth and development.

Currently, urban areas with various challenges are problems that have an impact on the declining socio-economic conditions of the community [13]. The rapid population growth, the growing industrial revolution, and the change in the function of urban areas has caused the population density to get out of control [14]. Over time, this will become a threat that will have an impact on the socio-economic conditions of the community. With this threat, it will encourage a weakened condition of food security from the community. Therefore, for urban areas that are growing rapidly, the city will depend on the surrounding area in order to meet food needs such as agricultural products.

Especially in the era of the COVID-19 pandemic, where population mobility will decrease, purchasing power will decrease, and the aftereffect will be a decrease in the level of food security [15]. Based on observations made in the Kauman Village, decreased mobility causes the community to receive less variety in terms of nutritional adequacy. Meanwhile, during a pandemic, it is very important to provide adequate nutrition to strengthen the body's resistance to avoid viruses. However, during a pandemic with limited mobility, the community did not carry out other activities such as upgrading knowledge. Coupled with increasingly narrow urban land, residential communities living in narrow alleys, is a new problem. Therefore, by looking at these problems, urban farming can be an alternative solution to community problems.

Kauman Village is located in Klojen District, Malang City, East Java Province, Indonesia. This village has an area of around 14.14 hectares and has a population of around 7,000 people. Kauman is one of the villages with a rich history and is the center of Islamic culture in Malang City. There are several historical sites in this village, such as the Jami' Kauman Mosque in Malang, the Tomb of Prince Diponegoro, and the Brawijaya Museum. Besides being a cultural center, Kauman is also a trade and service center. There is a traditional market which is a place to market local products and is the center of the residents' economic activities.

Residential conditions in Kauman Village are in a narrow alley that can only be passed by bicycles or motorbikes. Narrow land also provides less space for people to carry out farming activities. There is no fertile land that can be planted even in the homes of residents who do not have land. What residents do for farming is to buy land at the flower market which of course will increase costs. Seeing these conditions, this is in accordance with the

concept of urban farming, namely the use of narrow or untapped land around the house, riverbanks, road edges, and small alleys. The use of planting media can also be adjusted to household equipment such as used plastic. For the use of technology in urban farming, you can use vertical farming to overcome the problem of limited agricultural land.

## **2 Method**

This research method was explorative qualitative to understand the meaning of several individuals or groups of people who experience problems that are the topic of researchers. In this case, the problems described in the background are the benefits of urban farming and the economic analysis of the people of Kauman Village, Malang City. Data collection in this study used an in-depth interview technique for 7 (seven) participants with residents in the Kauman Village, Malang City. The researcher used a triangulation technique to check the data's validity. The stages in this research were:

### **2.1 Observation of research locations**

Observations in this study are based on researchers' observations of community activities and housing phenomena in Malang City. At the observation stage, an analysis of the problems faced by the community is also needed and raised as a research topic.

### **2.2 Analysis of the results of observations**

Based on the results of observations made by researchers, problems experienced by the community and phenomena observed by researchers were found. Data was collected using in-depth interview techniques by 7 participants and documentation for collecting data from the local government and like total population. Interviews were conducted by researchers with residents of the Kauman Village. Interviews were conducted using interview guidelines that had been prepared based on field needs. Data analysis was carried out by compiling the results of interviews, recapitulating, and analyzing the results of the interviews into narratives of research results. Triangulation was carried out to recheck the data that had been obtained from several sources. This study's triangulation was done by checking data from different sources, namely the community leaders.

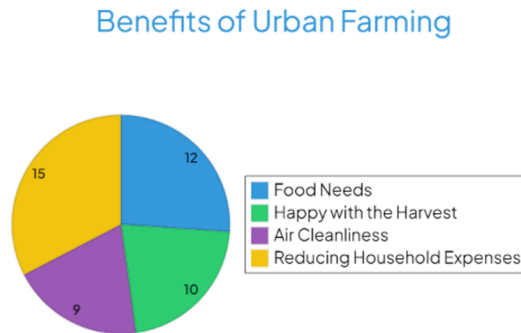
## **3 Results and Discussion**

### **3.1 Overview of Environmental Conditions in the Kauman Village**

Kauman Village is one of the villages in the heart of Malang City. The city center is close to the City Square, with many shops, grocery shopping, malls, playgrounds, and the city hall as the center of Malang City government. Seeing the condition of this area, there are rarely new housing developments, but it is more common to find residential areas in alleys with no access to cars. Under these conditions, the land around the residents' houses is very narrow, and many do not have land to hold for reforestation around the house. This becomes a problem when residents want to implement small-scale land farming systems around their homes. Therefore, urban farming is one of the solutions to agricultural problems on narrow land.

Based on the results of the researchers' observations, not many residents have implemented an urban farming system in their home environment [16]. According to residents, one is due to a lack of knowledge in starting urban farming. Analysis of the results of observations made by researchers shows that the community, especially housewives, is very motivated to carry out urban farming activities. The motivating factor is to increase

household food needs, be happy with their own crops, increase the cleanliness of the air in the home environment, reduce household expenses (Figure 1).



**Fig. 1.** Responses to the Benefits of Urban Farming

With the responses given, it is known that most agree that urban farming can reduce household expenses. This can be seen from the residents' response that they do not need to buy food outside but take from the harvest. Most agree that applying urban farming can provide food needs for the family. The reason put forward was that the harvested food became healthier because the residents knew how to grow their plants. In addition, urban farming also makes the air condition in the home environment cleaner and can reduce dirty air [17].

### 3.2 Analysis of Interview Results

In accordance with the data collection technique in the field, researchers conducted in-depth interviews with Kauman Village, Malang City residents. The interview results, the researcher analyzed through the description of the following interview results and present in Table 1.

#### 3.2.1 Residents' Knowledge of Urban Farming

Based on the analysis of the interviews, residents of the Kauman Village have understood the concept of urban farming which is currently one of the solutions to agricultural problems in narrow areas. This knowledge is one of the main assets driving motivation in urban farming activities. An indicator reinforcing that residents already know the concept of urban farming is the existence of examples of urban farming activities, namely hydroponic farming and farming using media other than soil. Seeing this knowledge capital, it is suitable to apply coaching to residents. Even though the implementation of urban farming is considered to have challenges in its implementation, the will is the primary motivation in mobilizing the community through community empowerment programs [18,19].

Based on observations made by researchers to strengthen residents' responses, researchers have seen small-scale utilization of narrow land use with butterfly pea plants. Butterfly pea flowers are not used for food but for healthy drinks. Thus, it can provide health benefits for the community. The following describes the narrow land in the Kauman sub-district used on a small scale (Fig 2).

#### 3.2.2 Environment Suitable for Urban Farming

Narrow environmental conditions, with settlement patterns mostly located in narrow alleys, so applying urban farming through hydroponic techniques is very suitable. Based on the results of the interviews, the community is aware of the cramped conditions around their

environment, and it is necessary to carry out a movement for reforestation using narrow areas with various techniques, one of which is through the hydroponic system.

**Table 1.** Results of Interview Analysis

No	Focus of Questions	Analysis Result from the Answer
1	Do you know about urban farming?	Urban farming is an agricultural system on narrow land often developed in urban areas with narrow land.
2	Is your area suitable for urban farming?	Our residential area's narrow land conditions make it very suitable for urban farming.
3	What do you think about the land around residential areas?	Due to the many rapid developments in urban areas, the land for settlements is also increasingly narrow. Not only infrastructure development, but also the construction of residents' houses.
4	How is the quality of land in residential areas? Is it eligible for farming?	As for the quality of the soil, if it is used for small farming such as vegetables, it is pretty good. However, the condition of the land is relatively small, so if residents are interested in developing agriculture in a narrow area, they must buy land which is indeed quite expensive, the price of land is around IDR 10,000. - for 5 kg of soil.
5	Can the availability of water sources support farming on narrow land?	For small farms, we still have good access to water, but in narrow areas, we don't use the well system, only with PDAM Malang City, which adds to costs.
6	Do residents have difficulty obtaining seeds for farming in narrow areas?	Seeds are not a problem for residents because the seed market for narrow land farming such as hydroponics is available and relatively cheap.
7	Do residents have skills in starting agriculture to take advantage of narrow land?	As residents, we are motivated to add knowledge about overcoming problems, especially narrow land farming. So far, we have only taught ourselves by watching videos and thinking about implementing farming such as hydroponics. However, the results are less than optimal. Therefore, residents need training in increasing knowledge in the field of narrow-land agriculture in order to get maximum results.
8	Does the pandemic affect socio-economic conditions?	From a social perspective, the impact of the pandemic has caused a lack of socialization with other residents. Minimal mobility also affects the range of motion in adding new knowledge related to science upskilling. From an economic perspective, because the main source of income for most residents is entrepreneurship, the pandemic has reduced residents' income.
9	Is urban farming suitable for overcoming the problems mentioned?	In meeting daily food needs, urban farming is very influential on the food security of residents and the fulfillment of daily nutrition. Make residents have new activities. Increasing the creativity of residents, greening the land, and increasing the cleanliness of the air.
10	Do you know about Economic Impact Analysis?	How does the economic impact of a matter or policy.
11	How to analyze the economic impact of urban farming activities in your area?	a. Increase employment. b. Increase food availability c. Save on food costs d. Reducing external dependence, especially from the food side e. Stimulate the local economy



**Fig. 2.** Utilization of narrow land for butterfly pea plants

### **3.2.3 Food problems during a pandemic**

The Covid-19 pandemic that occurred has changed the lives of all people in the world, including in terms of citizen mobility [20,21]. Concerns about the spread of the virus have caused residents to be reluctant to carry out activities outside for long periods of time. Therefore, various convenience systems in various activities have become a daily trend. For example, online shopping. Under these conditions, the expenses will increase while the income of residents will decrease. In this case, the pandemic will affect the social conditions of the community, including lifestyles and increasing spending.

Meanwhile, looking at food problems according to residents, it is one of the things that affect people's lives, including the decline in production and productivity in producing food ingredients [22]. In general, the impacts of the covid pandemic on food problems are: (1) The supply of food becomes unstable; (2) limited access to food; (3) decreased nutritional resistance. Because of this, a movement is needed that can help residents' food security, one of which is through the implementation of urban farming in urban areas.

Seeing the condition of the problems that occur, the economic impact is increasingly visible when the impact of the pandemic is associated with reduced income and lack of food security. Solving the problem of food security with urban farming is in accordance with economic impact analysis indicators, namely: (1) economic growth; (2) job creation; (3) changes in income and expenses; (4) investment and industrial growth; (5) economic diversification; (6) social welfare. Through the achievement of the EIA indicators, it gives an illustration that the activities or policies implemented provide better influences and decisions, and sustainable planning is needed [23,24]. In this case, sustainable planning can involve the community through community empowerment towards sustainable development goals.

### **3.2.4 Benefits of Urban Farming on social and economic conditions**

In particular, based on the results of the interview analysis conducted, urban farming has social and economic benefits [25]. The social benefits are Increasing local food security, increasing food awareness for local residents, public awareness of Health improvement, and providing green space that starts from the environment around the house. Economic benefits of urban farming are Creating new Jobs, increasing revenue, and assisting local economic development, this is in line with the EIA indicator, namely economic development.

## 4 Conclusions

Urban farming as a solution to the problem of narrow land farming has benefits and socio-economic impacts on the people of the Kauman sub-district, Malang City. Based on the results of interviews and observations, benefits are increasing food security and color health. Increasing community empowerment to create urban farming areas. Maintaining food security will provide sufficient nutrition for the community, especially during the COVID-19 pandemic. Increasing employment is also one of the focuses of EI in the economic sector. Providing a stimulus for development is also one of the EIA indicators. By implementing urban farming, Kauman Village can optimize the available land, improve people's welfare, and create a more sustainable and healthy community. It is essential for the government, community organizations, and local residents to work together in encouraging and supporting the development of urban farming in Kauman Village, Malang City.

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