

# Management of Agricultural Irrigation and Non-Farm Economic Activities in Rural Areas

## *Preliminary Studies*

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**Abstract:** Most rural inhabitants rely on their livelihoods in the agricultural sector. One of the success factors of farming is the availability of water for agriculture. Generally, water for agricultural irrigation in Bengawan Solo river basin is managed by HIPPA-Himpunan Petani Pemakai Air or Water User Association with pompanisation. However, there are HIPPA who cannot manage irrigation in agriculture due to limited capital. Therefore, the water management in this village is taken on by businessmen. One of the successful impacts of managing agricultural irrigation and farming in the village is the emergence of non-agricultural economic activities in rural areas. For that purpose, the research was conducted in 2017-2018 with a qualitative approach concerning the impact of an agricultural irrigation management system and rural non-farm activities. The results concluded that the impact of success in managing agricultural irrigation and farming is that it provides opportunities for non-farming activities in rural areas. Non-farm activities in rural areas are directly or indirectly related to agricultural activities.

## 1 INTRODUCTION

According to BPS (2017), the percentage of poor people in rural areas is higher than in urban areas. In March 2017, the urban poor population was 7.72 percent, down to 7.26 percent in September 2017. The percentage of poor people in rural areas in March 2017 amounted to 13.93 percent and decreased to 13.47 percent in September 2017. There are various government programs intended to reduce poverty in rural areas. One of the development programs is to revitalise the agricultural sector. In sub-Saharan Africa, agriculture remains a centre of income and employment, making up around 34 percent of GDP and around 64 percent of the workforce (Jack, 2013). The study states that agricultural growth alleviates African poverty (Diao, James & Fan, 2012). In addition, Diao stated that an increase of one percent in agricultural growth can reduce the number of poor people living on less than US \$1 per day by 0.6 to 2 percent, and that no other activity produces the same benefits for the poor.

Similarly, one of the governments programs is to revitalise agriculture by providing adequate agricultural irrigation. For this reason, the

government made a policy outlined in the Ministerial Regulation concerning community involvement in managing agricultural irrigation, one of which is called HIPPA-Himpunan Petani Pemakai Air or Water User Association (WUAs). For example, the Regulation of the Minister of Agriculture with No.79 / Permentan / OT.140 / 12/2012. The provincial and district governments have made regulations based on the above rules related to the destruction and empowerment of these organisations. This is like when the provincial government of East Java made Regulation Number 3 in 2009 concerning agricultural irrigation in the area. In implementing agricultural irrigation management it has varied. For example, there are WUAs whose management is a part of the relevant village government, but there are also WUAs that manages agricultural irrigation with the development of the village head. This is when there is the management of agricultural irrigation by the private sector.

Paddy crops in rice fields require sufficient water from the preparation through to the harvest. For this reason, the proper management of agricultural irrigation is needed. The success of managing agricultural irrigation has an impact on increasing rice productivity. Increased productivity affects the

farmers' income and the dynamics of rural economic activities. One of the dynamics of the rural farmers' economic activities includes the growth of rural non-agricultural economic activities. Rural non-farm activities are directly related to agricultural and non-direct activities. Non-farming activities in the countryside can increase the family income and increase the livelihood portfolio of the rural residents. Therefore, this paper will describe "What is the link between success in managing agricultural irrigation and non-farm activities in rural areas?"

## 2 PROBLEM STATEMENT

In Indonesia, there are many large rivers but sometimes people are in an area with dry farms because they cannot use the river water properly. This can happen even in the rainy season, when floods occur due to overflowing river water.

However, the good management of agricultural irrigation in the suburbs of the Sungai Bengawan river helps to move economic development activities forward in rural areas. One of the rural economic activities is non-farm activities. In this paper, we want to elaborate on non-farm activities in rural areas as a result of the successful management of agricultural irrigation.

## 3 RESEARCH OBJECTIVES

The research objectives are:

- To describe the relationship between the successful management of agricultural irrigation and the emergence of non-farm activities in rural areas.
  - To describe the various kinds of non-farm activities in the villages, especially in Lamongan and Turban regencies located around the Valley of Bengawan Solo River.

The findings of this study are important because of the emergence of rural non-farm activities as part of the economic dynamics of the countryside. Several studies have shown that non-farming income as portfolio helps the farmer to earn a living in rural areas, as it contributes to the family income and is a strategy to alleviate rural poverty.

## 4 DEFINITION OF MANAGEMENT AGRICULTURAL IRRIGATION AND NON-FARM ACTIVITIES

HIPPA—*Himpunan Petani Pemakai Air* or the Water Users Association is an agricultural irrigation management organization that provides guidance in the implementation of the statutes and bylaws made by the organizers and the village government that refers to government regulations. However, each village is given autonomy to make statutes and bylaws of its own, and to implement them. However, there are times when HIPPA gives to private investors to allow them to manage agricultural irrigation. Usually in its implementation, there has been agreement between village government, HIPPA and investors.

The success of managing agricultural irrigation affects the dynamics of the physical and non-physical development in rural areas because 1) there is a rule in the statutes and bylaws that some income in managing irrigation is allocated to rural development and 2) the implementation of the irrigation management of agriculture raises job opportunities. One of its impacts on the dynamics of economic activity includes opening up opportunities for non-farm economic activities.

According to Colter (1984), non-agricultural activities consist of activities that discuss strategies to increase the income outside of agriculture and services, such as the trading of agricultural products, running small businesses and other efforts through the use of resources in farming and environmental activities. For example, open-air business activities face risks, the environment, people and others. Non-agricultural economic activities, trade and services, directly and indirectly, are related to local agriculture or small-town economic activities. Ellis (1997) further argued that livelihood diversification is a process used by rural families to make a portfolio in economic activity for survival and to raise their wage standards. The diversification of livelihood is not always synonymous with income diversification.

As well as Mukhopadhyay and Lim (1985), non-farm economic activities are stated to include all economic activities such as home industries, agricultural product processing industries, rural transport, trade, and all activities carried out for commercial purposes outside of the agricultural activities carried out in rural areas. 'Non-farm' does not refer to primary agricultural or forestry or fisheries activities. Barret and Reardon (2001) put

pressure on non-farm activities by referring to the sectoral definitions that occur in primary production, secondary (manufacturing) production and tertiary activities such as services.

Some factors that encourage non-farm activities in rural areas include first, the realisation of the implementation of integrated policies, such as the use of technology in agriculture, credit programs for productive economic enterprises in rural areas and the implementation of agribusiness programs. Non-farm activities arise because of the success of dry land farming and rice cultivation. As an example, there has been the emergence of traders of horticultural crops (chilies, vegetables) or of baskets made women in the village of Kebonrejo (Rustinsyah. 2012). Similarly, GAPOKTAN - Gabungan Kelompok Tani (Combined Farmer Group) – have opened opportunities for commercial farmers not only as a manufacturer but as they are involved in the distribution of agricultural products (Rustinsyah. 2012). Second, closeness and the ease of rural-urban relations is also an attraction to open up non-farm employment opportunities in rural areas. For example, the emergence of transportation service businesses (such as rural transport, motorcycles and taxis), stalls and rural shops that sell manufactured goods to meet the needs of the population village. Third, agricultural modernisation causes increased agricultural production and stimulates the farmers' income to allow them to diversify their offered agriculture (Mellor, 1976). The condition is certainly followed by changes in household consumption patterns that ultimately stimulate the growth of industry and the service of household needs. The emergence of food stalls, shops that provide daily necessities, beauty salons in the village, bridesmaids shops etc are examples. According to Rustinsyah. (2012), the cause of the emergence of non-farms is also due to the condition of uncertainty and the financial weakness of the rural population due to the uncertainty inherent in farming. This is due to the climate. The fastest growing non-farm activities are in the trade and food stalls, which offer a wage that is greater than that of farm labourers (Haggblade, Hazell & Brown, 1987). Therefore, non-farm activities become an important option in order to increase income and reduce poverty.

Rural non-farm activities can be carried out jointly with farm activities or during the dry season. This is like what farmers in Kebonrejo Village do. In the dry season, the agricultural land in Kebonrejo supports farming activities such as the trading of manure, slaughtering animals or trading fruits (petai, apokat fruit and others). In addition, they also trade at

home such as opening food stalls, selling goods and daily necessities, the chilli trade that is usually done by women, and trading in agricultural drugs and chemical fertilisers (Rustinsyah. 2012). Generally, farmers with non-farm economic activities are more dynamic and have more income than farmers who do not trade.

## 5 METHODOLOGY

The research was conducted in agricultural villages with agricultural irrigation management utilising the water of the Bengawan Solo River. Water management for agricultural irrigation is carried out by the private sector and is part of the village government. Generally, rice production ranges start from 10 tons per hectare. This has led to the growth of non-farm economic activities to serve the farm activities as well as the daily needs of the villagers. The study was conducted in 2017, using qualitative approaches and data collection through interviews, observation and collecting documents related to the research theme.

All of the data obtained from the interviews, observations and documents were then classified according to the research themes in order to answer the research problem. Furthermore, the data is interpreted using the non-farm concept as used in this study.

## 6 DISCUSSION

Success in managing agriculture can be seen from the high productivity, up to 10 tons per hectare. This can overcome problems related to farming such as air distribution for agriculture, pest management, implementing programs according to the statutes and bylaws, being able to build as part of a board, gaining economic benefits, increasing organisational finance, providing incentives to stakeholders and provide insights into rural development.

One of the important impacts of successful agricultural irrigation management is the emergence of non-farm employment opportunities in rural areas. The following are the non-farm activities in villages that manage agricultural irrigation:

### 6.1 Trader of Daily Necessities

The success of managing irrigation of paddy fields, the absorption of labour in the agricultural sector and

the income of the agricultural sector causes the cash to come into circulation in the villages to be larger and there is an increased ability of purchasing power for the villagers. This gave rise to the merchants of daily necessities which provide services to the villagers. The profits obtained by these traders can reach Rp 100,000 to Rp 200,000.00. This is as told by Saroh (36 years old), who opened a shop at home selling basic necessities every day (rice, sugar, soap, etc.) and selling traditional herbal medicine brings in approximately Rp 200,000,00 per day. To carry out her economic activities, he collaborates with her husband.

The turnover of the sale of staple goods has increased because the villagers hold celebrations for the animals or contribute to celebrations in the form of rice, sugar and other gifts. The amount of waste during the celebration ranges from 4 (four) kilograms of rice. In Kebalanpaleng Village, there are 20 merchants who sell basic necessities everyday by opening up a stall or a shop at home. The merchants usually also give credit to their neighbours so then the merchandise sells smoothly. Staple daily needs loans usually occur in the famine season when there is a flood in the rice fields due to the overflow of the Bengawan Solo River.

### 6.1.1 Food Traders

The farmers' income from a high agricultural sector can open up opportunities for food traders in their villages. The types of food sold varies, namely: a) those who open up a stall or shop selling dry foods made by factories or b) a coffee shop that provides local food. The turnover of the food vendors also varies. Like Munawaroh (42 years) has opened a food stall and serves catering for local villagers. To carry out the work, he is assisted by his two children. The first child has attended university in Lamongan. The daily income of the food stall is around Rp. 150,000.00, plus if there are food orders from their neighbours for celebration purposes.

There is even a shop that provides food and - drinks like in a cafe in the city. Food prices also vary from IDR 6000 to IDR 12,000 per package. Even the turnover is quite large. As the owner of the cafe said, "On a typical day, the food sales turnover ranges from Rp. 1,000,000 to Rp. 1,500,000.00. While on Saturdays and Sundays, the sales turnover can reach Rp. 3,000,000.00.

Income as a food trader fluctuates from time to time. At the time of the harvest season and when there is a high productivity of rice, then the turnover of food sales can increase. However, in the case of harvest

failure due to floods, pests or disease, then the turnover of the food traders may decrease.

### 6.1.2 Others

There are other non-farm economic activities that have become the livelihood portfolios of the villagers. First, the business of the transportation of four-wheeled vehicles is carried out by rich farmers. They rent out *avanza* cars and car carriers like small vehicles. For motor vehicle services, business is not done much because generally, villagers have their own motor vehicles. Secondly, unskilled labourers such as construction workers clean the irrigation networks. Labour to clean the irrigation networks is usually done after flooding. Irrigation networks are usually covered with mud and waste due to flooding, so it then needs to be cleaned so then the distribution of water becomes smooth again. The HIPPA budget to clean up irrigation networks is big enough. Building workers (carpenters, masons) get job opportunities in the village. Usually they build houses if they benefit from the harvest.

Third, the success of farming will certainly increase the income of the rural residents so then they have the ability to buy. The ability of the village community becomes an attraction for outside villagers to peddle in the village. For example, there are the traders of meatballs, vegetables, and traditional herbs and fruit trees peddled in the village. They, on average, have been selling in the village for more than five years. This shows that the economic condition in the village is quite good.

## 7 CONCLUSIONS

The success of managing agricultural irrigation has an impact on rice productivity. The high productivity of the paddies in the village has an impact on the income of the villagers, resulting in non-farm activities created to serve the villagers and agricultural activities. Rural non-farm employment opportunities will drive rural economic activity. Some previous studies such as Rustinsyah (2012) mention that agricultural modernisation and increased agricultural production leads to the diversification of jobs to serve the needs of rural households. Similarly, non-farm income is stable and higher than that of the agricultural sector.

Efforts undertaken to increase agricultural production needs to be done both from facilities, and it needs to include infrastructure and intensification to increase the income of the villagers.

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