

## ARTICLE

# Innovation Of Fisheries Cultivation In Pasuruan, East Java

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**Abstract:** The Indonesian government made a new policy which was stated in Government Regulation no. 38 of 2017 concerning regional innovation aims to improve the performance of local government administration. In order to achieve the objectives as intended, the target of regional innovation is directed at accelerating the realization of public welfare through improving public services, empowerment and community participation and increasing regional competitiveness. One of the regional innovations that has become a national priority is Maritime Affairs and Fisheries. This is also in line with one of the visions and missions of the President and Vice President, namely the Realization of a Prosperous Marine and Fisheries Community and Sustainable Marine and Fisheries Resources. So that the marine sector in the regions needs to be developed. One of the areas with marine and fisheries potential is Pasuruan Regency, East Java. The Pasuruan Regency Government, which knows the marine and fisheries potential of its area, needs to support this potential by making programs or innovations to accelerate the development of coastal areas. So this research was conducted to identify the effectiveness of programs or innovations carried out by the Pasuruan Regency government. The fishery innovation in Pasuruan Regency in the form of Mina has been regulated in a regional law, because it has a high potential for the welfare of its people. And from these sources, the Government has developed a number of mini innovations, such as spawning concrete pond tilapia for mass production of superior tilapia, making new mina systems or technologies, even integrating fisheries with agriculture through mina rice cultivation. These innovations are expected to improve the welfare and economy of the people of Pasuruan Regency, East Java. This study used descriptive qualitative method. The results of this study found that Pasuruan Regency has high marine and fisheries potential. The innovations and programs carried out by the Pasuruan Regency Government provide a lot of advantages and results, where it can not only produce the fishery sector, but can also get results from rice plants grown using the mina method. Suggestions in the future, it is necessary to do further research to find out other factors beyond the factors that have been done in research on the adoption of fisheries business innovation in Pasuruan Regency.

**Keywords:** Fisheries Innovation; Fishery Potential; Mina; Pasuruan Regency.

## 1. Preliminary

The Indonesian government has the task of structuring the organization of various elements related to regional government as a manifestation of regional autonomy, which is inevitable in changing the old centralistic paradigm towards a more decentralized direction, which is stipulated in Law Number 23 of 2014. ([Government of the Republic of Indonesia, 2014](#)). Especially since the existence of Government Regulation No. 38 of 2017 concerning Regional Innovation.

According to Government Regulation no. 38 of 2017, regional innovation aims to improve the performance of local government administration. In order to achieve the objectives as intended, the target of regional innovation is directed at accelerating the realization of public welfare through improving public services, empowerment and community participation and increasing regional competitiveness. Further explained in regional development, the form of regional innovation includes innovation in regional governance, public service innovation and / or other regional innovations in accordance with government affairs that fall under regional authority ([Government Regulation Number 38 of 2017](#)).

With the existence of government regulations on regional innovation, local governments will seek to strengthen public services for the public interest. One of them is by increasing regional innovation. Innovation useful for society especially in the making of social innovation. In that context, this study seeks to describe the various intervention efforts undertaken by local governments in realizing community welfare through regional innovation.

According to Tan ([2019](#)), regional innovation policies in governance have 5 national priority programs. One of them is connecting large infrastructure with people's production areas: Small Industrial Zones, Special Economic Zones, Tourism Areas, Rice Fields, Plantation Areas and fishery ponds.

This is also in line with the vision of the President and Vice President regarding Maritime Affairs and Fisheries, namely the Realization of a Prosperous Marine and Fisheries Community and Sustainable Marine and Fisheries Resources to create a Sovereign, Independent, and Personality Advanced Indonesia, based on mutual cooperation. And also has a mission to improve the quality of society through increasing the competitiveness of human resources and developing innovation as well as marine and fisheries research, to achieving a sustainable environment through increasing the sustainability of marine and fisheries resources ([Head of Planning Bureau, 2020](#)).

So it can be said that the maritime and fisheries sector is very much needed in economic growth to improve the welfare of the fishery community, including fish product processors and their families ([Kurniawan, 2014](#)).

One area that has marine and fisheries resources and potential is Pasuruan Regency. The potential of marine fisheries and coastal areas of Pasuruan Regency in the form of beaches along approximately

48 km with the condition of the coast is generally dry and muddy and overgrown by mangroves. The area of exploitation for fishing in the sea reaches 112.5 square nautical miles with a sustainable potential in the Madura Strait of 49.51 thousand tons of fish per year ([Kurniawan, 2014](#)). This condition, which tends to have a high profit value, has not been utilized by the Pasuruan City Government ([Dahuri, 2001](#)).

Currently, the fish product processing units in the coastal area of Pasuruan City include the salting / drying Fish Processing Unit, UPI Pemindangan, UPI smoking / roasting, UPI Fermentation, and other processing UPIs. The condition of fishery processing businesses has experienced a productivity decline for various reasons, including the marketing of processed products is still on a local scale without the development of an increase in consumers and the absence of a special location that supports the development of small industrial centers for processing capture fisheries products ([Business Actors, 2016 in Rini, 2017](#)). The business condition of processed products in Pasuruan City has not been able to develop optimally due to the scale of production on a home industry scale and is scattered in villages on the coast of Pasuruan City.

The Pasuruan Regency Government, which knows the regional marine and fisheries potential, needs to support this potential by making programs or innovations to accelerate the development of coastal areas. One of the innovations that has been published in the Minister of Marine Affairs and Fisheries Regulation Number 12 of 2010 concerning Minapolitan. Efforts to implement the minapolitan concept integrated with marine and fisheries industrialization activities with the Blue Economy approach in the context of sustainable resource management are one of the basic strategies to overcome problems and business efficiency and low income for coastal communities ([Rini, 2017](#)).

The implementation of this concept was developed by the Pasuruan Regency Government through several innovations such as spawning of concrete pond tilapia for mass production of superior tilapia, making new mina systems or technologies, and even integration between fisheries and agriculture through mina rice cultivation. The various innovations that have been produced are intended as a contribution of the Government in providing public services for the welfare of people's lives.

## 2. Research Methods

To obtain the data, researchers shortly NOTICE qualitative approach. The qualitative approach is an approach that provides the opportunity for researchers to do a sharp description of the subject, and gain depth of information and a wealth of interpretation (Rubin, Allen; Babbie 2011).

Research with a qualitative approach is intended to describe the case studies in the area of fisheries potential Pasuruan approach d e skriptif through the process of collecting, presenting and summarizing the various characters istik of data and draw him.

## 3. Results and Discussion

### 3.1. Mina Katon - Tilapia Spawning in Concrete Ponds UPT Fisheries Service Center for Fish Seed Arrangement of Pasuruan Regency

Tilapia (*Oreochromis niloticus*) is a type of freshwater fish that is very popular in Indonesia. This is indicated by the production of tilapia from 2010 to 2013 which has increased quite significantly with an average increase of 34.85%. Seeds are a major factor in cultivation activities. The production of Pasuruan tilapia seeds is sought after by fish farmers because of its good quality. The poor quality is due to the rapid spread of tilapia, which is supported by the speed of reproduction, causing the development of these fish to be uncontrolled. The negative impact is inbreeding which causes decreased phenotypes such as growth, survival and an increase in the number of abnormal individuals (Department of Marine Affairs and Fisheries, East Java Province 2008 in Tjahyani, 2014).

However, the high demand for tilapia seeds cannot be matched by the amount of seed production. This has prompted the Technical Implementation Unit (UPT) of the Fisheries Office, Fish Seed Center (BBI) Arrangement of Pasuruan Regency to make a technological breakthrough by implementing the Tilapia hatchery system with the concrete pond system "MINA KATON" which began in 2013. This effort has produced significant results with the increase in tilapia seed production in 2015 and 2016. Through MINA KATON technology, the Regional Original Income (PAD) of Pasuruan Regency in the tilapia seed sales sector increased between 2015 and 2016.

The utilization of MINA KATON technology has been duplicated and adopted by the People Hatchery Unit (UPR) in Pasuruan Regency. With this MINA KATON technology, tilapia seed production has increased sharply and there are more and more fish cultivators whose seed needs are fulfilled. Such

situation will further strengthen our brand as the center seed Pasuruan indigo excel in Pro v insi East Java.

The purpose of using this Mina Katon technology is to provide benefits for BBI, namely bringing up a new technology to produce tilapia seeds, improving service to consumers on the availability of seeds, being able to change the mindset (mindset) of farmers about tilapia hatchery methods, increasing the number of production from the year 2014, which was 1,312,150 head, in 2016, the production of tilapia seeds was 5,753,000, resulting in a production jump of around 338% within 2 (two) years of applying the MINA KATON method.

Mina katon technology is also beneficial for UPR and its cultivators, because it is able to make optimal use of the land, increase income and production of tilapia seeds, labor and cost efficiency, guarantee the quality of seeds, and fulfill the need for scatter seeds for enlargement cultivation. Apart from that, it is also beneficial for the regions because of the strengthening of the Pasuruan Tilapia brand as a center for quality tilapia seeds in local and regional markets, increasing Regional Original Revenue (PAD) which comes from selling fish seeds.

The UPTD BBI Tata previously conducted trials of spawning tilapia in a concrete pool measuring 3 X 6 since 2013, then continued in 2014 as many as 18 pool units measuring 4x8m. From there, the production of tilapia seeds began to increase until finally building a spawning pond of 22 units of 4x8 concrete ponds. Her productivity increases up to 60%. For example, one female parent can produce 666 larvae from the previous only 416 larvae, and other advantages. The advantage in question is the extraordinary productivity increase of up to 60%. For example, one female parent can produce 666 larvae from only 416 larvae, and other advantages (Emil, 2018).

The result of this innovation is that with the application of this Mina Katon technology, several things can be learned, such as: 1). the creation of a new hatchery system in the spawning of tilapia that is more efficient and optimal in the process of seed production; 2). Necessary to establish a seed production superior to involve the UPR which has a high commitment resulted in improved seed and the seed of Pasuruan increase of in terms of quality and quantity; 3). UPT BBI needs to carry out main development activities and provide superior broodstock that can be accessed by UPR so that the quality of the seeds produced is maintained; 4). It takes good cooperation between the District Fisheries Office. Pasuruan, UPT BBI

Arrangement, Fishery Extension and farmers so that this technology can be used thoroughly, especially in the district area. Pasuruan; 5). Tilapia and UPR cultivators receive good and quality service; 6). The stronger the Pasuruan brand as the center for superior tilapia seeds; 7). Increase public trust and participation in fisheries development; 8). For the fish cultivator community, it can improve their welfare because business activities can run effectively and efficiently; 9). Increasingly open seed markets, both at local and national levels, which can provide opportunities for the hatchery of the people to develop their business; 10). With the success of this tilapia hatchery, hatcheries in UPR will be proposed to carry out Good Fish Hatchery Method (CPIB) certification so that consumer confidence will be stronger.

### **3.2. Mina Katon "Concrete Pond Tilapia Spawning" Smart Solution for Mass Production of Superior Tilapia**

Tilapia (*Oreochromis niloticus*) is one of Indonesia's leading commodities that has the potential to be developed in support of national food security as well as economic resilience and improvement of public welfare. Tilapia is a type of fish that has high economic value, where the need for seeds and fish consumption from the year to year, it tends to increase along with the expansion of cultivation business (Darwisito et al., 2008).

According to Murniyati et al. (2014), tilapia fish production from 2010 to 2013 has increased quite high with an average increase of 34.85%. Total tilapia production amounted to 6.83% of total cultivated fish production in 2013. Comparison of total national tilapia fish production to total world tilapia production shows that in 2011 Indonesia was the 3rd largest producer of tilapia fish products with a percentage of around 20.3% to the total production of tilapia in the world.

In 2013, the need for tilapia seeds in Pasuruan Regency reached 8,337,500 heads. This amount is much higher than the seed production of the Pasuruan Regency Fish Seed Center (BBI) which only amounts to 1,249,500 heads. This indicates that the need for tilapia seed in the community is still supplied from outside the region. The impact of this is low quality seeds.

From this problem, the Technical Production Team at the UPTD BBI Pasuruan tried to find a solution in the effort to produce fish seeds. In 2013, the voluntary team used a 3x6 concrete spawning pond for catfish to spawn tilapia. From the experiments carried

out, it produced significant results. The quality and quantity of seeds are more and of higher quality.

Spawning is the process of releasing eggs by the female parent and sperm by the male parent which is then followed by marriage. Spawning as a process of reproduction is a link in the life cycle that determines the survival of species (Sinjal, 2014). Spawning behavior is closely related to synchronization when the time and conditions are right for spawning (Rahardjo et al. 2011). Therefore, in this case, the Pasuruan Regency Government spawned with concrete ponds.

The results of various MINA KATON studies in 2013-2017 obtained the maximum achievement standards for fish seed production in concrete ponds. In addition, the productivity of larvae per female parent can increase from 416 to 666 individuals. The quality of tilapia seeds can be more controlled and quality guaranteed, and the activities carried out can streamline work both in terms of cost, land, time, and energy. In addition, it can also create new technology in tilapia seeding in concrete ponds, which can also increase farmers' income by up to 90%.

### **3.3. Mina Rice Cultivation Innovation**

Aquaculture production in Indonesia is very promising, this is evidenced by the entry of Indonesia as one of the producers of aquaculture production in the world (FAO Fisheries Department, 2006). One of the aquaculture products in Indonesia is produced from the Minapadi system. Not only Mina Katon, Pasuruan Regency, which also has extensive rice fields, has made an innovation in the form of fish cultivation with Mina Padi. Cultivation of fish in paddy embankments is carried out simultaneously with rice plants in the same area to increase freshwater fish production and increase farmers' income.

Minapadi cultivation is an integrated cultivation that increases the productivity of rice fields that produce rice and fish. Minapadi cultivation is also the best solution in dealing with extreme climate changes like today. Se part of the fish dibudid sieve with cultivation methods are carp and tilapia despite the fact that not only the two commodities that can be cultivated by this method. Other commodities that can be cultivated using this method include patchouli, tawes and giant prawns (Cahyanti, 2014).

The aim of this innovation is that the cultivation of fish in paddy fields is carried out simultaneously with rice plants in the same area to increase freshwater fish production and increase farmers' income. And as a result, the cultivation of fish in paddy fields carried out

simultaneously with rice plants in the same area can increase freshwater fish production and increase farmers' income.

#### 4. Conclusion

From the research results, it was found that Pasuruan Regency is an area with high marine and fisheries potential. Knowing the importance of the marine and fisheries sector, and seeing the high potential, the Pasuruan Regency Government created a fishery program or innovation that focuses on mini systems and technology. And the fish used is tilapia because its growth is better than the fish recommended for other minas, namely goldfish.

The results of the innovations carried out by the Pasuruan Regency Government were not kidding, because there were so many advantages and results obtained. And this can not only benefit the community, but also for the government and also BBI. And of course, this policy can already comply with the Government Regulation in the Law on increasing the yield of the fishery sector in Indonesia.

Suggestions for improvement of innovation fisheries in Pasuruan this is Need to do more research to determine other factors outside factors - factors that have been made in research on fisheries business innovation adoption in Pasuruan. In addition, it is recommended to conduct further research on KLHS or AMDAL studies before the plan to develop a small capture fishery product processing industry in the coastal area of Pasuruan City.

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