















Stakeholders in quadrant I are Floating Net Cage cultivators and Cirata Reservoir Fish Cultivation Association. They have no influence on the process of implementing Floating Net Cages reduction, but their characters and behaviors will affect the process of floating net cages reduction. Cooperative Floating Cage cultivators can help simplifying the process of the reduction, while the non-cooperative Floating Net Cages cultivators can obstruct the process of reducing Floating Net Cages.

Stakeholders in Quadrant II are Indonesian National Armed Forces (KODAM, KODIM, KORAMIL, and BABINSA), Cikalongkulon Sector Police, Cirata Reservoir Management Agency, Department of Marine, Fisheries and Animal Husbandry of Cianjur, youth organization, community leaders and Cirata Care Communities. These stakeholders have a direct effect on the floating net cages reduction. The Indonesian National Armed Forces, Cikalongkulon Sector Police, Cirata Reservoir Management Agency play a role in monitoring and assisting the process. They go to the ship and conduct negotiations. The community leaders, Cirata Community Care, and youth organization play a role in mentoring the cultivators. As Cirata Reservoir is very wide and the data held by the task force team is only the owners' name and the location of the Floating Net Cages, the task force team is assisted by the local community leaders. The data of the owners' name and the Floating Net Cages location can help showing the targeted Floating net cage cultivators places. In Floating Net Cages reduction activities, the experienced surrounding communities carry out the demolition process of the Floating Net Cages.

Stakeholders in Quadrant III are Cianjur Fisheries and Water Conservation Center and village officials. They do not participate in the demolition process, but they do the supervision. Cianjur Fisheries and Water Conservation Center and village officials are the government institutions closest to the farmers in Cikalongkulon, so the farmers' complaints or suggestions will be submitted to them. They will be the first government institutions taking over in resolving the conflicts.

Stakeholders in Quadrant IV are Department of Tourism, Youth and Sports of Cianjur, Department of the Environment of Cianjur, and academic parties. These stakeholders have no direct or indirect influence in the implementation of Floating Net Cages reduction. They will only get the progress report of the reduction activities and have an impact on the next management plan if the reduction has been completed.

### **Post Implementation of Floating Net Cages Reduction**

The number of Fishery Households that utilize Cirata Reservoir to carry out cultivation with the Floating Net Cage system is 5139, with 540 Fisheries Households in the Cikalongkulon (BPWC 2018). This number does not include laborers; each owner with more than 5 Floating Net Cages units has at least 3-4 workers. The reduction affects not only the Floating net cage cultivators, but also all elements who work and do business in Floating Net Cages scopes, such as food entrepreneurs, feed workers, fish transport workers, and so on. In short, the reduction will



increase the number of unemployed people in Cianjur and will affect fish production in West Java and Jakarta

According to Sudrajat (2009), if reduction of fish floating cage farming is conducted, the government needs to provide solution for its substitute business field. Some alternative business fields related to fish floating net farming are: (1) fish hatchery business, (2) fish nursery business, and (3) feed making business, (4) fish processing business (fish fillet). Points (1), (2), and (3) can develop in Cianjur because until now, the input from this sector is largely imported from outside Cianjur.

The solution offered by the government to overcome the economic problems of the citizens and the fish production problem is by choosing the alternative businesses. The alternative businesses offered by the government are as follows:

A. Fisheries Sector

- Cultivation using the bioflok method
- Ground pond catfish
- CBF (Culture Based Fisheries)
- Hatchery and enlargement business (especially those who own land)
- Fish processing (smoked catfish, shredded catfish, smoked pagasius, fish jerky, etc.)
- Ornamental fish farming

B. Non-Fisheries Sector

- Entrepreneurship training
- Duck husbandry
- Quail husbandry

Stakeholders who will influence the business transfer plan are Department of Marine, Fisheries and Animal Husbandry of Cianjur as the coach for the cultivators and Cirata Reservoir Management Agency as the manager to develop the economic potency around the reservoir. The government has prepared the budget for developing the business transfer plan given to the Department of Fisheries in each regency. The budget funds come from the Provincial Government budget, District Government budget, and Special Budget Fund with the total number of 21.1 Billion for 3 regencies (BPWC 2018).

### **Floating Net Cages Reduction Strategy by Stakeholders**

The initial strategy carries out by stakeholders in the reduction program is pulling up the unused Floating Net Cages. After that, regulating the ownership of Floating Net Cages is conducted. People who are allowed to have Floating Net Cages are only the native people of Cianjur proven by Citizens' Identity Cards. From the total of 540 Fisheries Households in Cikalongkulon, 301 of them own by foreigners or migrants (BPWC 2018). After that, the number of Floating Net Cages ownership is limited. Each Family Card (KK) is only allowed to have a maximum of 5 Floating Net Cages units. 1 unit consists of 4 plots. Therefore, each Family Card (KK) is only allowed to

have 20 floating net cages. Those who have more than 5 units should dismantle the excrescent number of their Floating Net Cages. However, the above strategy was canceled because there was a lot of fraud in the field. Fraud was done by owning more than 5 units using the name of another person in the ownership process, either the name of the worker or another family member. Another fraud done is making false Cianjur Identity Cards and false Family Cards. The cheating was initiated not only by the Floating Net Cage cultivators but the individuals in the licensing circles both in the related departments and others. Those frauds cause the overcapacity of Floating Net Cages in Cirata Reservoir.

Frauds cannot be avoided, so the stakeholders decide to form a new strategy, namely percentage strategy. Stage 1 is carried out in July-December 2018. Those who have 0-20 plots of Floating Net Cages should reduce 0% of them. Those who have  $> 20$  up to  $\leq 100$  plots should reduce 20% of them. Those who have  $> 100$  up to  $\leq 200$  plots should reduce 25% of them and those who have  $> 200$  plots should reduce 30% of them. Stage 2 will be implemented in January-December 2019. Floating Net Cages will be equally regulated with the target of zero Floating Net Cages in 2023. Floating Net Cages reduction is carried out every day with the target of withdrawing 100 Floating Cages every day (BPWC 2018).

The percentage strategy is used so that the Floating Net Cage cultivators do not experience sudden economic changes while thinking about alternative businesses done when their Floating Net Cages business has completely ended. The zero floating net cage decision also creates pros and cons. This decision can make Cirata reservoir cleaner and support the activities of hydroelectric power plants since the water quality will be better. On the other hand, this decision can also eliminate the livelihoods of the people involved in the Floating Net Cage farming business.

According to Sudrajat (2009), the activity of freshwater fish farming with floating nets develops the economy of the area around the reservoir. The economic around the reservoir develops not only in the fish farming with floating nets sector, but also in other related and supporting sectors, such as the provision of fish seeds, good transportations, floating net infrastructures, and other sectors needed related to the existence of floating net pool. The development of those sectors has both direct and indirect linkage among the production sectors, which in turn results in the multiplication of floating fish aquaculture sectors to other sectors related to fish floating net farming.

According to Suryana (2013) Reduction of Floating Net Cage units that operate will affect the amount of production produced. The production produced by the sector itself will contribute to the value of Gross Regional Domestic Income. Therefore, the rationalization of the Floating Net Cages number will affect the amount of contribution to the Gross Regional Domestic Income of West Java fisheries.

## **Operational Recommendations**

### **Socialization Recommendation**

Recommended socialization activity that can be done is distributing invitation letters to attend socialization activities to all Floating net cage cultivators with the help of Cirata Community Care, community leaders, village officials and Cirata Reservoir Fish Cultivation Association. If the proper place is not available, socialization activities can be divided into some different days. It aims to do in-depth discussions between stakeholders and farmers, so that the purpose of the reduction can be understood by all related parties. By distributing invitations, every Floating Net Cage cultivators will feel involved in the activity and get the information directly from the related parties without any intermediaries that can cause misunderstanding in the information delivery process.

### **Implementation Recommendations**

The decree on 2023 zero Floating Net Cage needs to be reviewed. According to Governor Decree No. 41 of 2002 article 2, a way to optimally improve the function and usability of the reservoir for variety possible interests without disturbing the main function of the reservoir itself is by providing opportunities for the local community to conduct fish cultivation with a quota of 12,000 plots.

The decision of 2023 zero Floating Net Cages is likely to be accepted if after zero number, Floating Net Cages are rebuilt with the following considerations:

- Floating Net Cages renewal: Currently, there are many environmentally friendly floating net cages. For example, Aquatec created by PT. Gani Artha Dwitunggal, a two-tier Floating Net Cages or layered Floating Net Cages, and other updates may be applied in Cirata Reservoir with the aim of minimizing pollution in Cirata Reservoir.
- Licensing in accordance with the rules
- Obeying the requirements for floating net cage cultivation as determined by Governor Decree No. 41 of 2002

### **Post-Implementation Recommendations**

Alternative business offered by the government can be carried out well if there is seriousness from all related institutions with the aim of returning the economic status of the farmers and there is sufficient funding to carry out the business transfer. It is expected that there will be cooperation between all parties involved to create business transfers that are in accordance with the interests of the surrounding community. Other efforts that might be developed for affected people are managing fisheries in Cirata Reservoir, developing Cirata Reservoir as tourism area, and empowering community by processing water hyacinth into something that can generate rupiah and others.

## **Prospective Analysis of the Floating Cages Reduction Strategies in Cirata Reservoir**

Three steps needed in prospective analysis are; identifying the future determinants, determining the strategic objectives and main actors' interests, defining and describing possible future evolution (Bourgeois 2004).

The determinant factors that will make the Floating Net Cage reduction program success are as follows:

Table 2. Prospective Analysis of Floating Net Cage Reduction Strategies

Determinant factor	Interests	Strategy in the future
Cirata Reservoir Management Agency	Managing, maintaining, and developing economic potential in Cirata Reservoir.	Socializing with the community and having an active role in the business transfers planning that will be carried out by the farmers as well as supervising the Cirata Reservoir utilization
Department of Marine and Fisheries of West Java Province and Cianjur Regency	Absorbing labor in their regions as well as planning, organizing, implementing and monitoring / evaluating fisheries activities	Being able to plan the next fishery management, coaching, providing financial assistance and supervising management of fishery resources in Cirata Reservoir after the reduction of Floating Net Cage is conducted.
Public Fisheries and Water Conservation Center	Handling technical activities in Floating Net Cage cultivators management and coaching activities	Being the closest information source for the cultivators. Being expected to be able to provide clear information so that there is no information gap causing conflicts between stakeholders and farmers
Indonesian National Armed Forces and Cikalongkulon Sector Police	Guiding, protecting, and supervising the community in terms of safety and security	Being fair, act without using violence and not pushing the farmers in all floating net cages reduction activities
Kamurang and Gudang villages officials	Managing, developing rural areas, protecting and guiding the community of Kamurang and Gudang villages	Helping other stakeholders in providing infrastructure for all activities done for the people of Kamurang and Gudang villages, supporting business transfer activities planned by the government, and assisting other stakeholders in supervising fisheries activities

Determinant factor	Interests	Strategy in the future
Cirata Community Cares	Realizing the implementation of the Cirata Reservoir management master plan, and optimizing the role of stakeholders, entrepreneurs and the community in Cirata Reservoir utilization	Being a good information bridge between stakeholders, especially BPWC, and farmers and being expected to make the reservoir management and supervision easier
Floating Net Cage cultivators and Cirata Reservoir Fish Cultivation Association	Livelihoods in fisheries activities	Being cooperative in all government activities and being expected to follow the government guidelines in carrying out the prepared business transfer activities and to save the environment

According to Ummah (2015), better Cirata Reservoir management can be realized by strengthening the coordination among the involved stakeholders. The existing regulations have sufficiently covered the needs in Cirata Reservoir. However, there are lack implementation and enforcement of the regulations. Clear tasks division between reservoir management, related departments, and local community groups is needed in managing the reservoirs. The existing sanctions also need to be more enforced.

## CONCLUSION

The most influential stakeholders in reducing Floating Net Cage number in Cikalongkulon are the stakeholders in quadrant II. The influential stakeholders in the socialization activity are Cirata Reservoir Management Agency. In the implementation of the Floating Net Cage reduction, Indonesia National Armed Forces (KODAM, KODIM, KORAMIL, BABINSA) is the most influential stakeholder. Meanwhile, in the post implementation of the Floating Net Cage reduction, Department of Marine, Fisheries and Animal Husbandry of Cianjur is considered as the most influential stakeholders.

The strategy for Cirata *Zero* Floating Net Cage in 2023 needs to be reviewed as it affects fish farming with floating nets sector and other supporting sectors. The strategy for reducing the Floating Net Cage number can refer to the Governor's Decree No. 41 of 2002 by developing new Floating Net Cage technology to minimize the pollution in Cirata Reservoir. Strict monitoring should also be done in order to avoid overcapacity by strengthening coordination between the involved stakeholders.

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