

Fisheries co-management: small-scale fisher's perception of the function and impact of FCMC (*fisheries co-management committee*) on efforts to improve small-scale tuna fisheries in Buru and Central Maluku regencies

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Abstract. Co-management in small-scale fisheries serves as a strategic approach to bridge the needs of various stakeholders, especially in the complex and high-value management of Tuna fisheries. One form of co-management facilitated by Masyarakat dan Perikanan Indonesia (MDPI) is the Fisheries Co-Management Committee (FCMC). This study aims to explore fisher's perceptions of the impact of FCMC on efforts to improve Tuna fisheries in Buru and Central Maluku Regencies, Maluku Province. A qualitative phenomenological approach was chosen for this research. Data was collected through in-depth interviews with 30% representation of the total Tuna fisher involved in FCMC. The unit of analysis, fisher's perceptions, was examined using the Advocacy Coalition Framework, revealing that fisher interpret FCMC as a vital and necessary dialogue forum between fisher and relevant stakeholders in Tuna fisheries management. Overall, FCMC is considered to have a positive function as a bridge between fishers and authorities; however, there is a need for strengthening in terms of forum sustainability, consistency of policy implementation, and the genuine involvement of government parties in the field.

1 Introduction

Fisher who are classified as small-scale fisheries are very vulnerable to the influence of various factors, namely biology, technology, and the environment [1]. As an effort to tackle the challenges faced by fishers, multi-stakeholders need to be involved in the process of solving these challenges, one of the things the government does is to accommodate fishers groups in the administrative function to get a fair assistance program [2]. However, not all rules are made by involving various stakeholders, especially in this case small-scale fishery.

As an effort to bridge and facilitate the participation of various stakeholders, collaborative management or co-management is carried out, as a form of management that is carried out jointly between stakeholders from various sectors. Co-management as a form of management partnership between the government, industry, and fishers that can strengthen management and produce a good impact [3].

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Fisheries Co-Management Committee (FCMC) Tuna is an example of collaborative management involving various stakeholders in it. It FCMC Tuna was formed based on the mandate of Law No. 31 of 2004 juncto No. 45 of 2009 that fisheries management is carried out based on the principles of justice, partnership, openness and sustainable development. Thus, FCMC functions as a forum for stakeholder consultation in the fisheries sector to synergize in the development of a more resilient fisheries sector to achieve fisheries management goals which include: improving the standard of living of fisher, expanding and creating employment opportunities, ensuring the availability and consumption of fish protein sources, optimizing the utilization of fish resources, and ensuring the sustainability of fish resources [4]. FCMC is designed as a platform for stakeholders to participate in tuna fisheries management. The participation in question is a joint arrangement between stakeholders to share responsibility and authority in fisheries management practices through consultation and negotiation, including conflict resolution, decision-making, strengthening partnerships, and efficiency in tuna fisheries management [5]. This was done to reach a mutual agreement.

The potential of Maluku's fisheries is one of the highest in Indonesia [6]. Meanwhile, the largest contributor to tuna fisheries comes from small-scale tuna fisher [7]. With the exclusivity that has been attached to small-scale tuna fisher, the MDPI Foundation tries to raise not only data concerns but also issues that occur in coastal communities into a forum attended by multi-stakeholders which in this context is FCMC. The Maluku provincial FCMC has been facilitated by MDPI since 2014 and continues to run every year until now. With the consistency of the implementation, we need to see if there has been an impact perceived by small-scale tuna fisher since the FCMC was implemented. The study that needs to be carried out is an assessment of the impact of FCMC on the implementation of tuna management, especially in the Maluku area.

Research Questions

1. What are the impacts and changes felt by fishers participating in FCMC based on the Advocacy Coalition Framework?
2. What is the relevance of the impact or change for fishers to FCMC's initial goals and design?

2 Framework

The Advocacy Coalition Framework was chosen as the main framework to analyze the findings of the Respondents in this study. ACF has proven to be able to show cross-level stakeholder mapping and coalitions between actors (government, NGOs, academics, and fisher) in discussing marine protected area policies. ACF is used to identify belief systems, resources from all actors, strategies, and policy discussions [8]. The research became the basis for using ACF in identifying each dimension of belief system, coalition, policy learning, and stable parameters to describe the perception of FCMC's impact on improving small-scale tuna fisheries management. The Advocacy Coalition Framework was established with the aim of understanding collective decision-making and governance, utilizing frameworks and theories to identify what is important (and not important) in policy-building, implementation, and public policy revision.

3 Research design

Qualitative research is an approach with the aim of exploring and understanding the meaning that individuals or social groups consider to come from social or humanitarian conditions. The qualitative research process is carried out by involving the collection of natural setting data such as interviews, observations, or doctoral analysis. This study uses a qualitative paradigm with the framework analysis method as a technical data analysis. Framework analysis is a qualitative data analysis technique that is systematic and flexible. This method is used in applied research such as policy, and health services. Framework analysis was developed to encourage data analysis in a transparent, traceable analysis process, rigid based on the framework, but still flexible if other themes are found outside the framework [9,10]. This research focuses on describing the Tuna SSF's perceptions of the FCMC's impact on improving tuna management practices. The unit of analysis is small-scale fishers who serve as local champions representing other fishers in the FCMC forum. The context studied includes belief systems, policy learning, coalition direction, and stable parameters within the policy subsystem—the FCMC itself. The entire context of this research is summarized within a single framework, the Advocacy Coalition Framework (ACF), which served as the basic reference for gathering information for this study.

3.1 Participants

This research was conducted in Indonesia, specifically in Maluku Province, in Buru and Central Maluku Regencies, with a sample of 5 fisher representing a total of 30% of the participants who participated in the FCMC during 2022-2024. All participants were tuna fisher living in coastal areas, members of, and former members of, the Fair-Trade Tuna ecolabel-certified fishers in Indonesia. Given these sample characteristics, this research was conducted using purposive sampling. This sampling was chosen considering the potential for high contributions from the selected participants to understanding the phenomenon under study [11].

3.2 Data collection and instrument

In-depth interviews served as the data collection instrument, while data documentation was conducted verbatim based on audio recordings of the interviews. A questionnaire was prepared, adopting the Advocacy Coalition Framework, prior to data collection. However, during the interview process, not all questions were understood, requiring modifications to obtain equally valuable information. Due to distance constraints and unfavourable weather conditions, interviews were conducted by telephone and recorded using a mobile phone recording app. This aimed to minimize the possibility of forgetting or losing the essence of the interview process.

3.3 Research procedures and methodology

The research process begins with identifying the problem considered as the main theme of the research. This objective can be achieved by understanding individuals who have similar experiences related to meetings in the Fisheries Co-Management Committee (FCMC) forum. The individuals referred to in this study are specifically small-scale tuna fisher who have attended the FCMC either as participants or speakers. After the sample is determined and the data is obtained, all data from respondents in the form of interview results, audio recordings of interviews, and verbatim are collected. Using framework analysis, the collected data will then go through a process of familiarization, thematic identification based on the accepted

framework, indexing or coding, charting, and finally mapping and interpretation [9,10]. The use of framework analysis was chosen because of its structured, flexible characteristics, the ability to combine deductive and inductive coding, and use matrix outputs in accordance with the framework used [9]. This can reduce research bias by structuring the interview guide and discussion of results but does not rule out the possibility of including new inductive information as new theme code in the research findings.

This research was primarily conducted to understand how tuna fisher in coastal Buru Regency and Central Maluku, Maluku, perceive the impact of FCMC on improving small-scale tuna fisheries management. The following is a diagram of the research procedures:

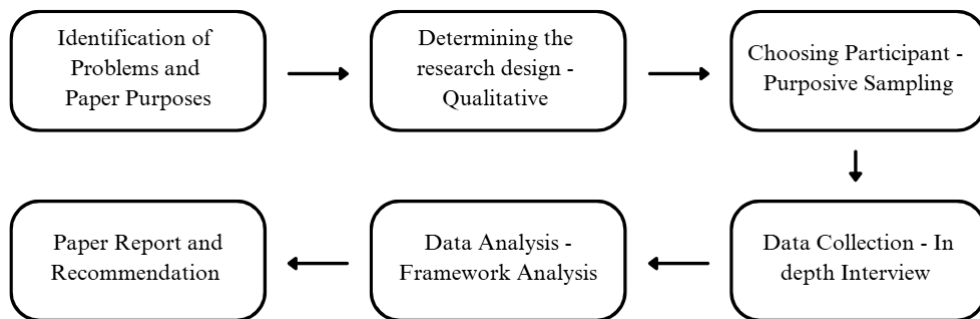


Fig. 1. Research procedures.

3.4 Data analysis

The data collected in this qualitative research were analyzed using framework analysis, which means that this research is based on a framework used as a reference for deductive indexing and provides an opportunity for inductive indexing of new themes that emerged from the respondents. The steps taken are familiarisation (reading the results of the data transcript - verbatim results of audio recordings), thematic framework (compiling themes based on the specified framework of thought and marking themes that emerge from the framework and themes that are outside the framework), indexing (coding verbatim data), charting (compiling a matrix based on the results of indexing), mapping and interpretation (compiling diagrams and mind maps of the whole charting), and validation (done with *cross-checking* Other fisher's answers about the data findings [9].

No	Main Theme - Framework	Axial Coding	Open Coding	Statement	Doc Reference
1	Outside Framework	(+) nelayan SSF	RU_62-63_Kemudahan atokasi kuota untuk nelayan SSF	penjelasan kemarin disampaikan untuk nelayan kecil ini jelas diberikan banyak kemudahan	VB_RU01
2	Outside Framework	Akses data	RU_71-74_Data mudah didapat dari nelayan yang didampingi NGO	Data ini kan sekarang ini sangat minim sekali ya banyak yang data didapatkan dari nelayan-nelayan yang memang berorganisasi dan didampingi oleh NGO memang gampang sekali untuk bisa menyampaikan yang datang karena kita melakukan pendataan, namun nelayan-nelayan skala kecil yang tidak tergabung ini jadi persolan.	VB_RU01
3	Inside Framework	Belief system - aman menyuarakan pendapat	LT_385-386_Belief system-merasa aman menyuarakan pendapat	ohh kalo dari saya tidak ada tuh, ketika memberikan masukan pemerintah tidak ada. Saya berjuang bukan untuk kepentingan saya, tapi untuk kepentingan nelayan	VB_LT01
4	Inside Framework	Belief system - belum sama melihat kebutuhan	RU_E43-648-Belief system tidak terindikasi	Ru - Kalau sepanjang ini seingat saya belum pernah ada ya Aji - Oke, jadi datang dengan kepentingan sendiri sendiri begtu ya Pak Utam mungkin Ru - ya kepentingan sendiri sendiri, tapi belum pernah kayak mereka dengan bahwa itu nelayan ya setidaknya mungkin kita coba contoh sehingga banyak lebih tahu tentang kondisi nelayan tentang keinginan nelayan lain ke depan, kondisi bagaimana di depan di mama, lanjutnya, kajanan begtu atau tidak, belum pernah belum pernah	VB_RU01
5	Inside Framework	Belief system - input didengar	LT_333-335_Belief system-merasa masukan didengar dan ada keberpihakan dari pemerintah ke SSF	ya kalo selama ini tuh kan selama saya menyuarakan FCMC itu macam di pusat itu, setiap kita punya masukan itu semuanya didengar, nah sebelumnya pemerintah juga berpihak pada nelayan kecil kan...	VB_LT01
6	Inside Framework	Belief system - input tidak didengar	HW_122-124_Belief system tidak terjalin	tidak terlalu didengar, maksudnya tidak ada ditindaklanjuti, saya baru sampaikan kepada Bapak yang saat apa yang dikatakan oleh pihak yang tidak bertanggung jawab, bahkan saya pada saat itu di SPBU	VB_HW01

Fig. 2. Data coding – indexing.

	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	Implementation of FCMC	check	ACF Framework Analysis	check	FCMC Impact and Functionings	check	Input	check					
2	Pengalaman Co-management	✓	Believe System	✓	FCMC impact - general	✓	Input for FCMC	✓					
3	FCMC Knowledge	✓	Belief system []	✓	Fungsi FCMC - menyuarakan aspirasi nelayan	✓	Saran untuk FCMC - durasi pelaksanaan	✓					
4	Sikap terhadap co-management	✓	Belief system - koordinasi dengan Kepala Bidang	✓	Fungsi FCMC - sharing informasi	✓	Saran untuk FCMC - penyusunan rumusan	✓					
5	Peran nelayan dalam FCMC	✓	Belief system - belum sama melihat kebutuhan	✓	FCMC Impact - capacity building	✓	Saran untuk FCMC - tm implementatif	✓					
6	Penilaian terhadap FCMC	✓	Belief system - keluhan didengar	✓	FCMC Impact - prioritas BBIM bersubsidi	✓	Saran untuk FCMC - strategi komunikasi	✓					
7	Positioning dalam FCMC - FT	✓	Belief system - peran implementatif	✓	FCMC Impact - legalitas nelayan SSF	✓	Input for Governance	✓					
8	Penilaian terhadap FCMC - HTL	✓	Belief system - input didengar	✓	FCMC Impact - rekomendasi kebijakan	✓	Saran ke pemerintah	✓					
9	Manfaat nelayan FT	✓	Belief system - aman menyuarakan pendapat	✓	FCMC Impact - kepatuhan aturan	✓	Peran pemerintah - pengawasan	✓					
10			Belief system - kesepakatan V realisasi	✓	FCMC Impact - Policy knowledge	✓	Peran dinas	✓					
11			Belief system - input tidak didengar	✓			Saran untuk kebijakan	✓					
12			Belief system - komunikasi 1 arah	✓			Tanggungjawab pemerintah	✓					
13			Coalition				Ekspektasi pada kebijakan	✓					
14			Coalition - neglect	✓									
15			Coalition - belum tergelin baik	✓									
16			Coalition - rumusan sesuai	✓									
17			Coalition - rumusan keselamatan nelayan	✓									
18			Coalition - terlibat dalam rekomendasi kebijakan	✓									
19			Coalition - keberpihakan pada nelayan SSF	✓									
20			Coalition (+/-) pembahasan I	✓									
21			Coalition - kebijakan sesuai kebutuhan	✓									
22			Coalition - rumusan belum sesuai	✓									

Fig. 3. Axial coding - charting process.

After going through the process of digging data through interviewing the sources, we made interview transcripts and open coding. Open coding was our first step to map the themes that emerge from the respondents. The process continued by mapping open coding into axial coding as shown in Fig.2, we group open coding into a larger, specific theme – closer to the Advocacy Coalition Framework theme. Next, we identified themes in axial coding into the charting process with the same goal, namely, to group sub-sub-themes into larger themes and can include related sub-themes.

4 Findings

As is known in the charting process, the grouping of sub-themes into main themes is carried out with the aim of mapping further results. We identified at least 22 sub-themes spread across 6 major themes, namely the challenges and conditions of fisheries faced by SSF tuna fisher, the role of NGOs-MDPI, the implementation of FCMC, ACF mapping in FCMC impact (main framework), FCMC impact and suggestions for FCMC and stakeholders involved. However, to be more focused on the research questions, here is a mind map for the 2 main themes that will be discussed, namely ACF mapping in FCMC impact (main framework), FCMC impact and suggestions for FCMC and stakeholders involved.

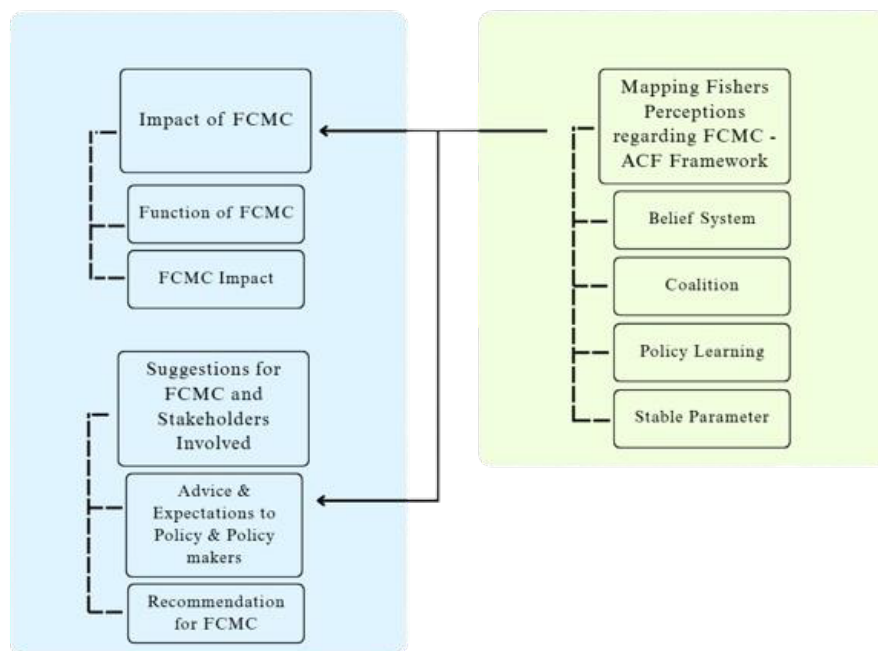


Fig. 4. Research findings diagrams.

4.1 Advocacy coalition framework – mapping fishers' perception of FCMC impact

We map the advocacy coalition framework based on its dimensions, namely belief system, coalition, policy learning, and stable parameters. In this study, we found that each respondent-fisher had quite varied and not a few contradictory answers in reflecting their knowledge and experience in each dimension, especially to view the connections, trusts, and coordination in the FCMC policy sub-system.

Table 1. Sub-theme cluster and indicators in ACF framework.

Sub-Theme Cluster	Indicators
1. Belief System - Indicated to Strengthen	Direct coordination with policy makers, inputs and complaints heard, feel safe to voice opinions
2. Belief System - Weakening Indications	There is no similarity in seeing policy needs in the field, a minimal role of policy implementers, agreements that are not entirely in accordance with the phenomenon in the field, one-way communication, and input that is not heard
3. Coalition - Strong	There is a formulation in the FCMC according to the needs of fishers (safety), fishers are involved in the formulation of policy recommendations, the alignment of policy makers with fishers
4. Coalition - Weak	There is a policy formulation that is not in accordance with the needs of fisher, the ignorance of policy makers on the needs of

	fisher, and the relationship between actors that has not been well established.
5. Policy Learning - Adaptive	Formal and non-formal coordination between actors in FCMC forums
6. Policy Learning - Resistance	Non-formal coordination between actors in FCMC forums
7. Stable Parameter	Neutral perception

4.1.1 Belief System – Strengthening and Weakening Indications

The points that we are trying to explore in the dimension of the belief system are adjusted to the accompanying indicators, namely the process of sharing trust between actors over the formulation of problems and solutions to certain policies in the FCMC forum. In this study, we found that there are indications that strengthen and weaken the belief system. As listed in Table 1, there are several sub-themes that show indications of strengthening the belief system built in the FCMC forum and felt directly by fishers, one of which is feeling that their inputs and complaints are heard during the FCMC forum. The following is one of the respondents' statements that explains that the process of sharing beliefs – belief system in FCMC is correctly felt by respondents:

yes, so far, as long as I have voiced FCMC, it's like at the centre, every time we have input, everything is heard, now actually the government is also on the side of small fisher, right... (Respondents 2)

If the office that was yesterday had a chance to see the head of the department yesterday just tell the story about the similarity, what is the name of this quota, then this data as we talk about is only not at the place of activity, but talking about it at the place of eating, in this stall in the hotel (Respondent 2)

However, each respondent also stated that not only did it strengthen the belief system felt, not a few told of unpleasant experiences related to the process of sharing trust between actors, especially between fisher and policy makers. One of them is respondents who have never been invited to discuss before the forum started or was completed. In this case, the respondent assessed that each actor brought the interests and needs of each representative in FCMC.

Never discussed or approached first, yes, at least the beta first talked to mainly about the problem, one of which is the fuel problem (Respondent 3)

Yes, their own interests, but they have never been like them with that they are fisher, yes at least we can tell a story so that we know more about the condition of fisher about the wishes of other fisher in the future, what conditions are in the future where, he continued, the policy is so or not, never (Respondent 2)

The time of the activity is (not) given time. Because maybe time is too short. And then there's the fisher who don't have the time. (Respondents 4)

4.1.2 Coalition – strong vs weak

The coalition built in FCMC is indicated by the formulation of recommendations or suggestions for policies based on needs that target the welfare of small-scale fishers and apply

the opposite, namely when policies can be socialized and implemented by fisher – as part of the context of compliance with fisheries management rules. Thus, the coalition dimension is diversified into two, namely strong coalition and weak coalition. Each of these types of coalitions is indicated by the sub-themes that have been identified. Strong coalition is characterized by the conformity of policies and recommendations submitted, involving various actors in formulation and decision-making, especially small-scale fisher in recommendations for decisions or related policies. Meanwhile, the weak coalition is characterized by decision-making and recommendations dominated by certain actors in the FCMC forum.

The strong coalition identified in this study is based on the respondents' statements regarding several decisions such as the recommendation for the sea distance for the use of ships under 1 GT is below 12 nautical miles. This is realized by the respondents as a step of concern for the safety of fisher by policy makers. Furthermore, the involvement of small-scale fishers in developing recommendations is also an indication of the establishment of positive relationships between actors (policy makers – small-scale fishers). The involvement is characterized by a sense of ownership of the recommendations discussed at the end of the FCMC session and a sense of equality with the actors and policymakers, as they feel the proposals are accepted in the forum. This is directly proportional to the perception of fisher in policy makers, for their alignment with small-scale fisher.

Yes, yesterday it was like a discussion, then we put in ah that's the secretary of the ministry made points that must be discussed if to make his work report, right, he made it in the form of points, there we also have fisher involved, right, so it means that in this case the results of our votes are included in yesterday's work program for the future, then what things can we make in these results, the government can also know that oh... This is the voice of a small fisher, he has a will like this. Ah that means we are involved in it because our proposal is accepted. (Respondents 1)

On the other hand, the respondents also showed indications of a weak coalition during their participation in the FCMC forum. Some of them are neglect and the formation of formulas that are not in accordance with needs, in this context fisher feel ignored the suggestions and challenges experienced by fisher, especially regarding the condition of fisheries on Buru Island with obstacles such as the operation of many mini-purse seine fishing nets around the Buru sea. One of the respondents explained that the challenges presented in the FCMC forum were considered not in accordance with the conditions in the field, this was conveyed by the respondent who did not accept it because the respondents considered that they understood the conditions of fisher in the field better.

The problems that we often convey to the relevant agencies, this is only a hope. (Respondents 2)

It is not yet appropriate, because the time given to us is not clear the first. Secondly, we have aspirations or suggestions that we get in the field are not used. It is as if the government is making up (Respondent 3)

In general, respondents who have experience in co-management explained that there are some recommendations that are in accordance with the needs of fisher and indicate a strong coalition, but there are still recommendations or policies discussed in FCMC that are still not in accordance with the needs of fisher. Some of the decisions or activities after the implementation of FCMC that are in accordance with the needs of fishers are the issuance of letters of recommendation to prioritize getting fuel subsidies for fishers, good fish handling

training, acceleration of the legality of small-scale fishing boats, and fishers' safety support programs – the issuance of fishers' proficiency letters. While one of the policies discussed in FCMC that has not been felt is the legality of FADs, which is due to the difficulty of managing the legality of FADs, the respondents are still registering through NGOs.

Because it was a bit of a hassle, if Mr. Karim came along, it was very troublesome. Because the letter came out for too long, or the FAD had fallen, the letter was not there yet (Respondent 4)

4.1.3 Policy learning – adaptive or resistance learning

In the policy learning dimension, we found that results have been categorized into adaptive and resistance learning sub-themes. Policy learning is driven by the exchange of information in the FCMC forum; adaptive learning, in this case, is characterized by the respondent's presentation of how the learning process unfolds through clear and formal coordination. For example, one of the respondents felt that his needs could be met if the opinion expressed in the forum was written in the results of the FCMC meeting recommendations.

He made it in the form of points there as well as we have fisher involved, right.. So it means that in this case the results of our votes are included in yesterday's work program for the future, then what things can we do in this result, the government can also know that oh... This is the voice of a small fisher, he has a will like this. Ah that means we are involved in it because our proposal is accepted... Then the discussion of the related results that participated in it was also attached, from the Maluku Provincial Office, from PSDKP and from NGOs, from small fisher, so that's it (Respondent 1)

Not only formal coordination, but also non-formal coordination experienced by respondents with policymakers was also felt by the fishers as a form of relationship established several times during FCMC activities. One of the respondents gave a testimony about the good relationship with policymakers after participating in FCMC several times. This is explained in the form of mutually beneficial relationships that seek to be built in non-formal coordination through the availability of data and possible recommendations for increasing catch quotas for small-scale fishers who report tuna catches.

Yesterday I had a chance to talk to the head of the department as well, please sir, if we can help together. So the data of fisher, from fisher, fisher to groups, can then be deposited to him, so that they can know later. (2 Respondents)

Yes, the coordination was very good yesterday (Respondent 2)

In fact, I have often discussed with the fisheries service and the head of the district. (2 Respondents)

Respondents – small-scale fishers who participated in co-management forums such as FCMC indicated that they had increased their capacity as they began to realize the importance of recording the results of discussions when discussing certain issues. This is reflected from the respondents' view of non-formal coordination, which can be interpreted as unclear coordination, and followed by uncertain decisions regarding how to follow up on the results of discussions conducted in the FCMC forum itself.

Why, the FCMC activities that I said that we have often done, but all we are talking about is that yesterday it was a problem that for next year that comes next year how in every FCMC activity we immediately decide and determine there and there must be changes there (Respondent 2)

The government wants this thing, right, but it actually has to be written, right. He wasn't just talking like that. (Respondents 4)

Yes, indeed, anywhere, if we want, if, I am from a child, from the bottom, yes, if in a group, if in this group there is a meeting, then, there is a making something, a plan, it is finished, after the meeting goes home, if the plan is not evaluated, it must be finished, it is gone. Then, at FCMC, if it is, sure, it's big, there are a lot of opinions, a lot of these suggestions, a lot of this, that's if, not implemented, evaluation too, every 3 months, or 1 month, it's the same. (Respondents 5)

4.1.4 Stable parameter – neutral perception

Stable parameters are dimensions in the ACF that are defined as external variables of the FCMC sub-system itself. They are mainly related to factors outside the FCMC that can affect the direction of the discussion in the forum – either providing an opportunity or hindering the main purpose of the discussion. We try to dig up simple information about the changes that occur during the FCMC activities, especially if there are changes in the structuring of the policy makers involved in the forum. In this study, we found that respondents tend to respond neutrally, suggesting that there are not many significant changes felt by fishers towards FCMC or in the implementation of action plans after changes in structuring, leadership, or new information introduced into the forum.

But if we talk about what is called direct change in the field, if I see it, it is not too obvious (Respondent 2)

There is no change at all, the region has no power for its own area, only the help of bodies and machines and then the fish do not want to be used, what is it? there is no change in the permits of FAD and nets, in fact it continues to increase in this Buru (Respondent 3)

One of the respondents gave an interesting answer, that there was a change felt in the discussion of the FCMC forum, after the change in the structure of the Ministry of Maritime Affairs and Fisheries, namely with the ease of carrying out one of the stages of the legality of FADs.

If it is from the ministry of KKP, now we see about the change, yes it is for the issue of ship legality, the legality of the FAD explanation is indeed not how the eee that the owner of this FAD ship can do, passing through that stage. (Respondents 2)

4.2 Impact of FCMC

The impact felt by small-scale fishers from the implementation of FCMC is categorized based on the sub-theme of FCMC function and the impact of the FCMC forum itself. This categorization is based on the context of the answers that appear inductively or deductively – based on the ACF framework.

Table 2. Sub-Theme Cluster and Indicators of FCMC Impact

Sub-Theme Cluster	Indicators
1. Function of FCMC	Voice the aspirations of fishers, a platform for sharing information.
2. FCMC Impact	Capacity building, issuance of subsidized fuel recommendations, legality of small-scale fishers, involvement and implementation of policy recommendations, rule compliance, relationship with governance, and policy knowledge.

4.2.1 Function of FCMC

Respondents in this study agreed that FCMC plays an important role and function for small-scale fishers. One of them is as a connector of aspirations and a forum to convey the challenges of small-scale fishers to policymakers. One of the respondents believes that the actors involved in the FCMC forum are committed to alleviating the challenges faced by small-scale fishers.

The function is very good, there is a symbol of fisher. The provincial government, the district government, actively voiced, actively aspired to the fisher there. I was there shouting that I voiced my aspirations, I am also one of the fisher still feeling what I feel. That voice is what I have to fight for (Respondent 1)

I think it is still necessary, first the fisher have complaints, there is still a container, and at least they are there to listen first. So that it can be solved from obstacles or problems, this is important.. (3 Respondents)

If my hope is that, FCMC should not be stopped, it should be continued. Because in my opinion, FCMC is in fact an aspiration for FCMC. If there is no FCMC, it means that fisher are a bit difficult. Because FCMC has that aspiration, he can achieve it. From within the forum, everyone is committed (Respondent 5)

Another interesting thing found in larger forums, such as regional FCMCs, is the exchange of information among fishers. Fishing methods, experience running a business with fisher groups, and motivation to be independent of the shackles of the supply chain were shared in the forum. One of the respondents stated that the benefits of sharing fishing methods can increase the effectiveness of fishing by eliminating the need to carry weights tied to the fishing hook. He obtained this knowledge from fisher from other provinces.

Then yesterday we FCMC we have a different method from other regions. Well, including my discussion with the team from Gorontalo. He didn't use a knife, but he used a knife. (Respondents 1)

4.2.2 FCMC impact

Small-scale tuna fishers perceive FCMC as an activity that presents all stakeholders in fisheries with the aim of conveying obstacles, problems, and developments that occur in their respective fisheries areas. In the FCMC forum, fishers fought for their interests and tried to find solutions to the challenges they felt. In the FCMC forum, they felt that there was active

collaboration, not only from fishers, but also from policymakers to review fishers' challenges carefully and comprehensively.

The needs that exist in this provincial area are all discussed at FCMC. So, we collaborate there, collaborate to talk about the problems that occur, and find solutions there and find an agreement (Respondent 1)

Based on the perception of FCMC from the fishers, we review how the impact of this co-management forum can be explicitly explained through the experience of the respondents in running FCMC. We do this to complement the findings of mapping fishers' perceptions and experiences of FCMC through the ACF framework. In the FCMC impact sub-theme, fishers' responses are quite varied, some feel that there have been no significant changes after the existence of FCMC related to fisheries management. Meanwhile, some others felt the positive impact of this forum, especially in combating IUU fishing by accelerating the legality of fishing boats and various capacity increases. Some of them also involve establishing relationships with policymakers since participating in FCMC activities.

Sing (not) exists in my opinion. Anyway, nothing has been fulfilled in my opinion. There has been no decision, or any kind or suggestion has not been reached, not yet (Respondent 5)

but he can also talk, he can do this... can sit together with people in office. Let's say you have the resources (Respondent 2)

New experiences. This means that there may be policies from the government or there are new changes, maybe I can know. Add new experiences (Respondent 4)

Yesterday was a small fisher's document, after all, that's it. This subsidized fuel has not been felt, but this subsidized fuel is ,, ,but before that, where is it... On average, there is none (Respondent 1)

The change yes,, the change in the rules that we feel is the first one, our boat is legal. Our boats, small fisher who are currently included in NGOs, have been legalized, this is a good thing. Then the second, we as fisher also get strengthening through the SKN program. Then there is a program program that is saved by fisher in the sea, then get a program what is called a fish handling activity, many things and many benefits that we get through FCMC activities, these are some of the benefits that we can get (Respondent 2)

5 Discussion

This study aims to discuss how the impact and changes felt by small-scale tuna fisher of FCMC participants based on the analysis of the ACF framework and what is the relevance of impacts or changes from fishers if reflected on the purpose and initial design of FCMC itself. Using ACF as a framework to analyse perceptions of the impact of co-management, we found that there are at least two main themes, namely mapping fishers' perceptions of FCMC impacts, impacts, and suggestions for FCMC. In this discussion section, we divide the discussion based on the themes found.

On the theme of mapping fisher perception, we categorize respondent information into 7 sub-theme clusters. The first is the experience and understanding of fisher which leads to the strengthening of the belief system, which in this study is mentioned as the process of sharing

information and trust between actors in the FCMC sub-system. In this sub-theme, fishers stated that they have felt safe in conveying challenges and suggestions and confirmed that there was no pressure from any party while participating in FCMC activities. The sense of security expressed by fishers is a good indication to strengthen the process of sharing beliefs with other actors involved in the forum. This is in line with the results of previous research that public involvement in democratic decision-making can increase the perception of legitimacy in related policy processes [12].

In contrast to the previous sub-themes that strengthen the belief system, the sub-theme belief system – weakening indication contains the experiences and views of fishers that have the potential to weaken the belief system or the process of sharing trust in the co-management forum. One of the indicators put forward by fishers is the lack of a policy-enforcement role for FCMC recommendations, as perceived by fishers. In this case, fishers feel that they are not involved in the policy supervision system, especially its implementation in the field. This has the potential to reduce the level of trust between actors, especially fishers, to policymakers. This finding is in line with the results of previous research, namely that public policy is lacking or meaningless in the absence of public participation. Furthermore, if the public feels that their participation is not responded to or has no impact, then trust in policy makers is more likely to decline [13].

The next sub-theme in the cluster mapped in this study is coalition. The coalition in this study is explored in the context of whether a policy recommendation formed at FCMC is in accordance with the needs of each actor, but in this case, what is emphasized is a policy that is in accordance with the needs of small-scale fishers. As with the sub-theme of the cluster belief system, the fisher's response is quite diversified into two sub-themes, namely strong coalition and weak coalition. The strong coalition felt by fishers is the formulation of FCMC recommendations that are tailored to the context of fishers' safety through recommendations for distance to sea and the direct involvement of fisher in the formulation of recommendations at the forum. This can foster a strong coalition with a sense of participation from each actor, especially actors who are directly involved with policies, namely small-scale fishers. These findings are in line with previous research, namely that management or policies prepared through the active involvement of fishers in co-design produce more relevant solutions, minimize conflicts, and strengthen coalitions between fishers and stakeholders. Participatory forums and reflective networks build trust, facilitate information sharing, and create collective commitment to policy implementation. This mechanism is effective because it combines local needs with policy objectives, creating a real incentive for all parties to work together [14].

In addition to the belief system and coalition, one of the most crucial things in mapping fishers perception of the impact of FCMC is on the policy learning dimension. The extraction of data or information about fishers experiences in the context of policy learning is reflected in the existence of formal and non-formal coordination between actors and its implications for the adaptive learning and resistance learning process. In this study, there are fishers who experience direct and formal coordination with policymakers, such as a sense of pride when their name is on the list of names of policy recommendation compilers carried out in the FCMC forum and we also found fishers who feel non-formal coordination as an effort to fulfil data compliance. This process can improve adaptive learning because trust is established based on written and formal coordination. This is in line with the results of other studies that say adaptive policy learning is most effective in the form of a formal mechanism, in accordance with written rules combined with non-formal coordination through the practice of sharing quick information outside the forum [15].

This study found that there are impacts that have been mapped using the ACF framework, especially in the context of direct coordination with policymakers and feeling safe and heard in the delivery of opinions, which is reflected as a resource for relationships built between

fishers and policymakers. Another impact that is mapped from fishers perception of FCMC is in the dimension of strong coalition, which is indicated by the involvement of fisher in policy formulation and the acceptance of fishers input. This is in accordance with the impact conveyed by fishers after the implementation of FCMC, such as the issuance of recommendations for fuel priorities for small-scale fishers. The next impact felt by fishers can also be quite identifiable from the policy learning dimension, namely the growing sense of pride in the inclusion of fishers' identities in the FCMC recommendation document which is also in line with the formal coordination shown in the FCMC forum.

The results of this study also show that the FCMC functions as intended to be formed, namely as a collaborative management forum that allows various stakeholders to share responsibility and authority in tuna fisheries management practices. Fishers' perceptions confirm that FCMC has facilitated more open consultation and aspiration, as well as providing space for them to be involved in the decision-making process and formulation of policy recommendations. In addition, the forum strengthens partnerships between actors, particularly between fishers, governments, and non-governmental organizations, which is reflected through formal and informal coordination. FCMC also plays a role in opening up a space for negotiation and conflict resolution related to fisheries management dynamics, although its effectiveness still faces limitations in the aspect of policy follow-up. In addition, FCMC contributes to increasing the efficiency and capacity of fishers through a joint learning process, both in terms of technical fishing and knowledge related to regulations. These findings confirm that FCMC is an important instrument in strengthening fair, participatory, and sustainable tuna fisheries governance.

6 Conclusion

This study shows that the FCMC plays an important role as a forum for dialogue and communication between small-scale tuna fishers and policymakers in fisheries management in Buru and Central Maluku Regencies. Through an analysis of the Advocacy Coalition Framework (ACF), it was found that fishers assessed that FCMC provides a positive function in the form of conveying aspirations, capacity building, accelerating the legality of fishing vessels, and access to policy recommendations such as fuel subsidies and safety programs. However, the effectiveness of this forum still faces challenges in the form of weak policy implementation in the field, one-way communication, and limited role of the government in following up on the results of the forum. Therefore, the sustainability of the FCMC requires strengthening the aspects of consistency of implementation, policy socialization, policy supervision, and increased attention to the socio-economic conditions of smallholder fishers so that the initial goal of co-management, namely fair, participatory, and sustainable fisheries governance, can be achieved.

7 Recommendation

The findings of this study highlight the importance of delivering knowledge to fishers in a logical and adaptive manner to enhance their understanding of the objectives behind action plans and policy implementation. This process requires direct engagement from policymakers and support from non-governmental organizations (NGOs), academics, and industry actors. Strengthening fisher capacity based on their interests—including improving communication skills—is essential to foster participation and build confidence in expressing opinions. Fishers emphasize that policy implementation must be effectively carried out, with policymakers actively involved in field-level execution. They also recommend that the authority for managing marine areas within 20 nautical miles be returned to local

governments to facilitate FAD licensing processes, alongside assistance in determining coordinate points. Furthermore, comprehensive policy outreach is needed, along with strict supervision of Fisheries Fuel Stations and transparent communication regarding the availability of subsidized fuel. Increased attention to the socio-economic conditions of small-scale fishers is also necessary, given their significant role in food security and the coastal economy.

7.1 Limitation

In this study, we applied a framework analysis to understand the perspective of small-scale fishers on the impact of FCMC for improving small-scale fisheries management, and the participants involved were Tuna fishers in Buru and Central Maluku Regency who were Fair-Trade certified and had experience directly participating in co-management activities both as resource persons and participants in activities. However, this study has several limitations that should be considered when interpreting the findings. First, we conducted the data collection process by interviewing via telephone media, this is because the distance of the respondents is far, the time of data collection coincides with the activities of the respondents to build cooperatives, the catch season, and one of them is currently switching professions to become delivery workers in the mining complex so that it is not possible to present each respondent to conduct face-to-face interviews. The limitation of using telephone media for interviews is that we were not fully able to understand the real experiences contained in the respondents' nonverbal expressions and did not describe their experiences in a complete and more in-depth way.

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