



DRAWING INVISIBLE LINES: THE PROCESS OF BOUNDARY MAKING IN MARINE SPACE

A CASE STUDY OF GOVERNING FISH AGGREGATING
DEVICES (FADS) IN LABUHAN LOMBOK

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“

Kita sudah lama memungungi laut, samudera dan teluk.

Sudah saatnya kita kembali...

”

**Statement from Joko Widodo, the 7th President of Indonesia on the country's vision for being global maritime fulcrum.*

***We (Indonesian) had neglected our ocean for too long. It is time to come back.*

DRAWING INVISIBLE LINES:

THE PROCESS OF BOUNDARY MAKING IN MARINE SPACE

A Case Study of Governing Fish Aggregating Devices (FADs)

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Abstract

A Fish Aggregating Device (FAD) is a modified floating object that is intentionally placed into the sea to aggregate the fish. Since the natural and highly dynamic topology of the sea cannot be ignored, the deployment of the FAD establishes two irreconcilable spatial ontologies in ocean spaces. Here, I would like to focus more on boundary making process in FADs arrangement as main components in establishing territory. In order to better understand the context, this research takes a case study from Labuhan Lombok, Indonesia. From the field work, it is found that the first spatial form is the Jurisdictional Spaces where the State dominates the boundary work process by enforcing the Cartesian way of understanding the sea. The government topographical understanding of the ocean has resulted in ineffective state-based regulation related to FADs. Whereas, the second spatial form is the Relational Spaces in which fishers have their own understanding of looking at the sea. In the fisher's relational network, the FAD's boundary making is highly influenced by the informal authorities performed, such as the supplier or other powerful fishers. Since previous research on FADs is extremely limited in the context of boundary making, this research used data collected in the field as the primary data resource. The methodology in obtaining the data is participant observation and semi-structured interview. Moreover, through closer examination of four variables (Object, Subject, Expertise and Space) adapted from Vandergeest et al. (2015), I found that these two spatial ontologies function separately. Therefore, from the two-conflicting types of spaces, this thesis followed the emerging research on exploring the relational practice of geographical maritime worlds and applied it to the maritime policy setting. With the support of network and flows thinking, it is concluded that to better govern the FADs, the State needs to re-invent new ways of understanding the ocean territory by incorporating the fishers' relational network as a vital instrument in FAD's collaborative management.

Keywords: Ocean territoriality, boundary making, authority claiming, network and flows

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List of Acronyms and Abbreviations

FAD	Fish Aggregating Devices
MMAF	Minister of Maritime Affairs and Fisheries
WCPFC	Western & Central Pacific Fisheries Commission
MPA	Marine Protected Area
NTB	West Nusa Tenggara
PURISKAN	The Indonesian Marine Fisheries Research Institute
DKP	Fisheries Division in Provincial Office of Marine and Fisheries
TNC	The Nature Conservancy
MDPI	Yayasan Masyarakat dan Perikanan Indonesia
PSDI-DJPT KKP	Management of Fish Resources Directorate General of Capture Fisheries Ministry of Marine Affairs and Fisheries
FAO	Food and Agricultural Organization of the United Nations
CCRF	The Code of Conduct for Responsible Fisheries (CCRF)
MSC	Marine Stewardship Council
IOTC	Indian Ocean Tuna Commission
FMA	Fisheries Management Area
UNCLOS	United Nations Law of the Sea Convention
TURF	Territorial Use Fishing Rights
TPI	Fish Landing Site
DMC	Data Management Committee
UD	Regional Business
HNPN	Himpunan Nelayan Purse Seine Nusantara
ATLI	Association Tuna Long Line Indonesia
RFMO	Regional Fishery Management Organizations
UNFSA	United Nations Fish Stocks Agreement
NTT	East Nusa Tenggara
IUU	Illegal, Unreported and Unregulated



1

INTRODUCTION

CHAPTER 1: INTRODUCTION

“The sea is not a metaphor.”

— Hester Blum (2010) on *The Prospect of Oceanic Studies*

1.1 Problem Statement

Common knowledge regarding ocean space has typically revolved around the fact that the ocean covers over 70% of the Earth's surface and contains roughly 97% of the Earth's surface water. As the surface of the ocean has become the central point in understanding the geography of the ocean, the above statement from Hester Blum (2010), has triggered an emerging framework of thinking on ocean space that would go beyond the understanding of the ocean as blue tissue connected to the land. Blum starts with identifying that there is fundamental misconception in ocean thinking that resulted in inability to incorporate the ocean as a real, experienced social arena.

Since the ocean often understood only as an expansion of the land, Blum argues for ocean from a perspective that “draws from the epistemological structures provided by the lives and writings of those for whom the sea was simultaneously workplace, home, passage, penitentiary, and promise”. She believes that the ocean is more than just a container that facilitates movement – *the space across which things move* – between region nodes. By acknowledging the sea beyond metaphor, she offers an alternative view to explore the ocean as a place where human encounters with the sea are necessary through its entirety (Blum, 2010).

This sort of thinking concerning human-nature relationships is our starting point to understanding the transformation of current ocean development and the management approach that has become increasingly technologically feasible. Simultaneously, this transformation has made human interactions with ocean-space ever more intense and complex (Steinberg, 2004). One of the technology that is used extensively in the ocean space is the Fish Aggregating Device (FAD). The FAD is a modified floating object that is intentionally placed into the sea to aggregate the fish. During explorations of more productive fishing grounds, fishers in some regions noticed that schools of tunas could be found associated with objects floating on or near the surface of the ocean (Hall and Roman, 2013). This specific knowledge has been passed down through generations for centuries. Consequently, pelagic fishers have been using this floating object for more effective fishing activity.

Since 1980, the Indonesian pelagic fishing community also began to benefit from the use of FADs that were being used by its neighbour, the Philippines. The use of anchored FADs, known

as *Rumpon* in Bahasa, increases harvest efficiency. For that reason, these devices are generally employed in artisanal and industrial-scale tropical pelagic fisheries in Indonesia, seeing as they have numerous advantages, including more efficient fishing operations, e.g. reduced operational cost by saving fuel consumption; shortened fishing trips by directing boats to locations of FADs and improve fishing productivity (Jeujanan et al., 2016). Despite FAD's being commonly used among Indonesian fishers, there are two different spatial ontologies that contrast each other in relation to understanding FADs.

The first viewpoint comes from the Indonesian government with its Cartesian based management approach. For the Indonesian government, the association of FADs with many potential negative impacts, including the exacerbation of overfishing, high catches of juvenile tunas, bycatch of vulnerable species, modification of tuna habitat and the introduction of litter into the ocean (Dagorn et al., 2012) has created an urgency to better govern these devices through quota restrictions on FAD's and the allocation of FAD's based on the assigned area.

The initiative to govern the FADs is led by the Indonesian Minister of Maritime Affairs and Fisheries (MMAF) through the establishment of Minister Regulation No 26/PERMEN-KP/2014. Here, the Minister Regulation has clearly adopted traditional, spatial and cartesian approaches in managing FADs through state-based regulation. From the State's point of view, area jurisdiction and clear division across the ocean surface is required, especially on the context of FADs. Since FADs were only looked at by means of the jurisdictional and place-based approach depending on where the FAD is deployed, the access and utilisation of FADs has become rigid and authority centralised around the State.

Meanwhile, there are other viewpoints developed by the fisher's community and their fishing practice, which reveals that the topology of the sea is beyond the legal territoriality created by the Government. The fishers have diverse local circumstances in relation to their fishing practice, showing that to distribute management of the ocean based on spatiality only, may not be the most appropriate way. Given the diverse informal rules of FADs access and utilization among fishers as well as ocean characteristic that is an open space and a borderless environment, the sea and its natural topology offer a highly dynamic condition which reveals another complication in managing FADs under the Ministry Regulation.

Since the relational practice is never a fixated stage, many anthropological studies have also shown that communities are never clearly demarcated units of similar minded people but instead heterogeneous assemblages of people with complex inter-group dynamics and differentiations of power (Barth, 1969). Therefore, knowing the relational practice through boundary work in relation to FAD's application is essential to better understand the FAD's

arrangement because the management of anchored FADs has a close relationship to the informal rules of those communities in particular areas (Jeujanen et al., 2016). It is also important to note that in order to pursue FADs sustainable fishing practices without sacrificing the fisher's livelihood, a better understanding of relational networks concerning FADs is needed.

Moreover, the importance to understand the fisher relational network is also found in Jeujanen et. al's research (2016) stating that the pelagic fisher's community has developed informal rules regarding managing FADs. The research is conducted to examine the sustainability issues around FADs in the Kei Islands. It shows that since the Indonesian government did not provide clear guidance on FAD's management, the customary laws are the only source of law that is being followed in the Kei Island's community. Here, Jeujanen's finding was not only represents how the Indonesian pelagic fisher's community has continued using their informal legislation in dealing with their FADs, but also shows via empirical evidence, that current government regulation on FADs is not being successfully implemented.

However, the findings from Jeujanen's research is not the only argument that shows the existence of multiple arrangements in Indonesian marine resource management. In the broader context of marine resource management, besides the case of plural legality, the scale of rules and zoning for fisheries also regularly presents a contradiction between government provision and the fishers. This contradiction between the understanding of zoning between local fishers and the provincial government has made the legal and spatial boundaries of the defined area (in the case of Marine Protected Area) ambiguous, negotiable and highly permeable (Gunawan and Visser, 2012).

The same thinking also applied for the FADs. The rigid and inflexible FAD boundaries first understood by the State also contradict the negotiable and flexible boundaries created by the fisher's informal set up. This informal set up establishes social and network topology surrounding the deployed FADs, where social boundaries and informal access arrangements emerged by way of the users. As Bush and Mol (2015), also argue, FADs create a place in a seemingly placeless marine environment, where they have their own social and biological networks, where flows concentrate and connect.

In a placeless environment like the ocean, these FADs with its relational boundaries have successfully shaped the fishing pattern because they have the ability to include or exclude the users of FADs in utilising it. This relational boundary work has resulted in the invisible yet powerful border in FADs access arrangement which can be easily negotiate and change sometimes, but also can be very rigid and strict depending on who exercise the authorization

over these boundaries. Therefore, this different form of boundaries, jurisdictional and relational, has affect the way FADs are being govern.

Therefore, despite two-different boundary works exist in FADs arrangement, the State's concern to better manage FADs cannot be taken lightly. Together with the Indonesian government's struggle to realise its Cartesian agenda, there are also similar initiatives from many countries to better govern the FADs, as can be seen from the report published by the WCPFC. Thus, business and scientific actors are intended to collaborate with the national government to create better FADs management (WCPFC, 2015). From the WCPFC's report, it is evident that the urgency of collaborative management in the context of FADs is occurring internationally.

However, the vision towards collaborative form of management in FADs arrangement should be taken very carefully because it is essential to understand that the collaborative management notion is in fact is still a Cartesian based thinking rooted in the stationary approach. From Borrini-Feyerabend (1996), we can see that there is this common argument pertaining to collaborative management, which states that an agency with jurisdiction over an area (usually a state agency) could develop a partnership with other relevant stakeholders (primarily local residents and resource users), which specifies and guarantees their respective functions, rights and responsibilities with regard to the (area). The application of cartesian based collaborative form of management could resulted in the exclusion of the fishers relational practice in FADs arrangement from the intended collective action.

Since the existence of this dual and ambiguous boundary work has resulted in a challenging condition to establish collaborative management for FADs, the ineffectiveness of managing the FADs through state regulation may be the consequence of the absence of collective action between involved stakeholders. As Ostrom maintains, the presence of clear boundaries has consistently been identified as an important design principle for successful collective action (Ostrom 1999, 2011).

It is fully realized that there is a crucial step to examine how boundaries are made in the process of FADs territorialities before one jumps into the stage of governing or even collaborating with different stakeholders. Therefore, through the overall debate on "cartesian" versus "relational" spatial ontologies, this thesis has interested to see how these dual spatial ontologies in marine environment could enable the possibility of collaborative form of management for FADs.

1.2 Research Objectives & Research Questions

As the previous section mentioned, the main objective of this research is to examine the possibilities of establishing collaborative action between each stakeholder through dual boundary work in FADs arrangement. Although there is a common belief that the Cartesian state-based arrangement is the ultimate option in managing the ocean, exploration of the relational practice of maritime worlds is growing. Therefore, since the understanding on maritime relational practice is still being applied less in relation to maritime policy setting (Pauwelussen, 2017), this thesis will also apply relational practice in the ocean related case study.

In order to provide a contextual understanding, this thesis will present a case study of FADs in Labuhan Lombok, Nusa Tenggara Barat, Indonesia. From the selected case study, it is hoped that this research could promote the establishment of a more holistic approach in managing the FADs, while also acknowledging continued emergence and looking towards greater FADs management approach in Indonesia.

In order to be able to achieve the general objective of this study, the following research question has been generated:

“To what extent does the boundary making process in FADs fishing practice could influence the possibility of collaborative form on FADs management in Indonesia?”

The main analytical question of the research aims to present the possibilities of establishing collaborative action to better govern the FADs. Since there are two existing spatial ontology, the research question also wants to know how far these differences could influence the potential for collective action on FADs in Indonesia. The following sub-research questions are expected to support this thesis in answering the main research question:

- 1. How does the State arrange the process of boundary making in FADs management through its cartesian based understanding on ocean space?*
- 2. How does the fishers formulate the FADs arrangement and its boundary making process in their daily fishing practice through their relational network?*

The first and second question are investigating the process of boundary making in FADs fishing practice in which it will illustrate different FADs territorialities resulted from jurisdictional or relational spatial arrangement. In answering both questions, Chapter 4 will focus more on

cases related to state boundary making, while Chapter 5 will focus more on cases related to fisher's relational boundary making. In answering this sub-research question, the variables adapted from Vandergeest et al. (2015), will be used to operationalise the boundary work for both spatial arrangements in Chapters 4 and 5.

1.3 FADs Governance Regime in Indonesia

Before proceeding to the conceptual framework, this section will offer guidance in navigating the research context. The first section will give a broader understanding of the FAD as an aggregate device that is commonly used on the surface of the sea. It further outlines the history of FADs in Indonesia as well as the type of FADs that are relevant to this thesis. The second section will introduce the current government arrangement on FADs that includes the history of Indonesian FADs related to regulation in addition to an overview of the decentralisation system, especially in the context of marine governance.

Through this section, the illustration on what the FAD is and how it is currently regulated in Indonesia will be presented. The main aim of this section is to show that the current Indonesian FADs regime does not promote collaborative management between stakeholders. It introduces the various actors involved and different spatial ontology that exists, along with the context in which the field work is conducted. By setting the scene first, this thesis attempts to consider the actors' backgrounds and places that will be studied in order to consider the empirical results.

1.3.1 Fish Aggregating Devices (FADs) in Indonesia

Although there are many variations on naming this device, Fish Aggregating Devices (FAD) are popularly known as *rumpon* throughout Indonesia. In Sulawesi, FADs are known as *romping*, while in West Nusa Tenggara (NTB), where this thesis is conducted, they are called *rompoh*. For the purpose of this thesis, FADs will be used to indicate the device, while in some quotations from the interviews and observation sessions, *rumpon* will appear as the original transcription.

There is no record of when the device was first used, although Nasution et al. (1986), stated that most of the traditional fishermen fishing for pelagic fish in Mamuju, have employed floating materials for a long time to attract free schooling fish. Beginning in 1976, there was an intensive study on deep sea FADs for the skipjack tuna fisheries. The Indonesian Marine Fisheries Research Institute or *Pusat Riset Ikan* (PURISKAN) has conducted field experiments on the fisheries sector since 1980, which resulted in the success of the commercial operations

in 1985 (Yusfiandayani, 2013). The same comment was delivered by the head of the Capture Fisheries Division in NTB Provincial Office of Marine and Fisheries (*Dinas Kelautan dan Perikanan*), who stated that the first FADs were deployed for research purposes by the provincial office in 1989. Since then, the use of FADs has become embedded in Indonesian traditional fishing practice.

Therefore, in order to better understand FADs, this thesis will differentiate the types of FADs. There are two different types of FADs; specifically, drifting and anchored. Firstly, the oceanic drifting FAD is a mobile floating object deployed with advanced levels of search and sensor technology. This sort of device is typically owned by capital intensive and industrial scale purse seine vessels (Bush and Mol, 2015). Since drifting FADs are not used in the Indonesian tuna fisheries (Widodo et al., 2016), this oceanic drifting FAD is not the FAD that we will analyse in this thesis.

Rather, we will look at the latter, the anchored FAD. Anchored FADs are the most commonly used FADs, employed by all pelagic fishers in Indonesia. The anchored FAD often looks more solid than its drifting counterparts. Since they are expected to be deployed in the ocean for lengthy periods. It is made of either large styrofoam blocks, iron or bamboo, and is anchored with concrete blocks attached to ropes of several hundred metres to up to 3km long (depending on the depth of the sea).

There are two types of anchored FADs; specifically, the coastal anchored FAD and archipelagic anchored FAD. From the fieldwork, it was ascertained that the archipelagic anchored FAD (B type) is the most common FAD in Labuhan Lombok. Numerous types of vessel utilise the support of anchored FADs, such as handline vessels, pole-and-line vessels, longline vessels, besides purse-seine vessels.

All these types of vessels are found in Labuhan Lombok fishing port and influence the access arrangement of FADs fishing practice in the region. Knowing the type of vessel that use the FADs will lead us to deeper and richer information on how these FADs are utilised in the ocean. However, there is still limited information occur on the FADs informal rules, especially for the small-scale fishers' type, due to the variety of customary and informal rules as well as difficulties in accessing those fishers.

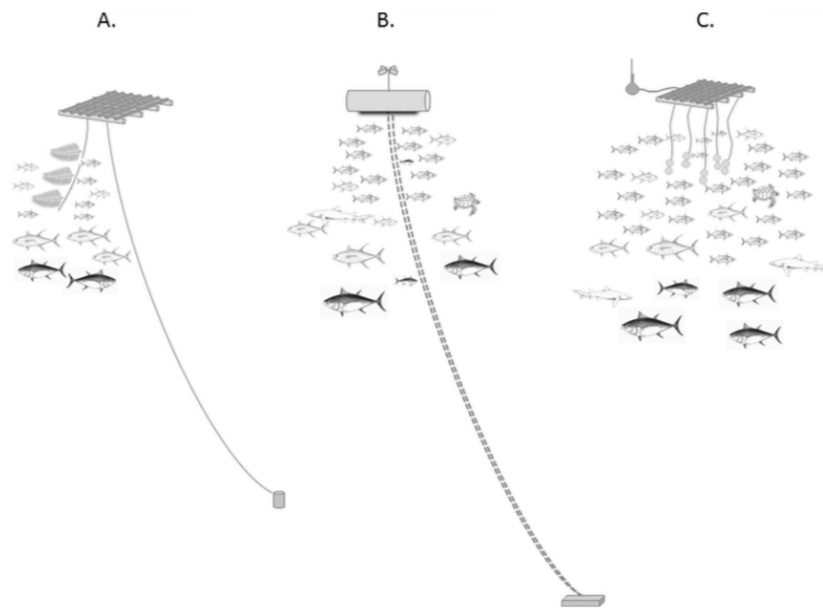


Figure 1: Schematic drawing of three FADs
 (A) Coastal anchored FAD; (B) Archipelagic anchored FAD; (C) Drifting oceanic FAD
 (Bush and Mol, 2015; Miller, 2014)

1.3.2 The Development of FADs Regulation in Indonesia

The initiative to establish FADs governance is a vision of the MMAF with which it hopes to achieve sustainable fisheries. As mentioned previously, in order to better manage the FADs on the surface of the Indonesian Ocean, collaborative management is required between the stakeholders that are involved. Since 2004, Indonesia has had a FAD policy that provides some direction regarding the deployment of FAD's (Decision from Minister of MMAF No. 30/2004).

However, to comply with more recent RFMO requirements from the WCPFC, in 2014, the MMAF in Indonesia revised the previous regulation with Ministry Regulation Number 26/2014 on FADs. This specific Regulation contains 32 articles that cover the arrangement concerning FADs fishing practice; namely, FAD types, the issuance of a licence for FADs (in letter form and termed an SIPR), the instalment and deployment process for FADs, FADs usage, in addition to where to report the misuse of FADs. As the only law in the FADs management system, Ministry Regulation Number 26/2014 reveals shortcomings in regulating the Indonesian FADs fishing practices.

In October 2017, the Directorate of Fish Resource Management (PSDI) from the Directorate General of Capture Fisheries, Ministry of Marine Affairs and Fisheries together with two NGOs; namely, the Nature Conservancy (TNC) and Yayasan Masyarakat dan Perikanan Indonesia

(MDPI) held a National FADs meeting in response to the inadequate implementation of the FADs regulation. This meeting was not the first meeting to be held in relation to FADs, in 2017. Two meetings had already been held in Bali in February of that year and in Kupang in September 2017. Even though these previous meetings were not as large as the national meeting, the significance remains the same, as both meetings stressed the need to revise the regulation on FADs.

Therefore, the success rate of current regulation on FADs is under the spotlight because pressure on governing the FADs is not just being placed internally by the Indonesian government but is also being exerted by external actors. The Indonesian government via the MMAF has realised that to pursue sustainable pelagic fishing practices, the initiative on controlling the FADs needs to be improved immediately. As the FAD is an integral part of the fishers' livelihood, any FADs arrangement issued by the government needs to be carefully designed to avoid internal political turmoil among the fisheries industries (Opening Speech from Director of PSDI in FAD National Meeting, 25 October 2017).

Simultaneously, the external pressure comes from an international level based on the FAO-CCRF and other related international standards, for instance the Marine Stewardship Council (MSC) and Fair Trade. The Indonesian government needs to develop a FADs management system wherein the owner of the FADs, type of FADs and locations are registered. Moreover, the Indonesian government is also required to have a FADs management system that is compatible with resolution IOTC 17/08 and Conservation and Management Measure WCPFC 2013-01 for bigeye, yellowfin and skipjack tuna in the Western and Central Pacific Ocean (Conclusion notes from FAD National Meeting, 26 October 2017).

Thus, by reviewing the current situation and acknowledging the urgent need for better FADs management in Indonesia, it is apparent that while some initiatives related to collaboration are arranged by the government, the current FAD regime does not promote the potential for collaborative management. Related to the multiple spatial ontology mentioned previously, the current Indonesian marine governance system excludes some different understanding or practice that does not go together with the State-based approach.

1.3.3 Decentralisation and Fisheries Management Area in Indonesia

Related to what was mentioned previously, the absence of collaborative management in Indonesian FADs management could have resulted from a different way of understanding the ocean. In managing the FADs and improving the quality of current FADs regulation, the Indonesian government had to be aware of many other related systems or conventions that

might affect this particular regulation. For instance, since the government has imposed the idea of decentralisation in managing its marine space, based on the Indonesian Law on Regional Government Number 23/2014, every province has the authority to manage the sea up to 12 miles from the shore. The provincial authority on marine space and resources will be related to the deployment of FADs and how the FADs are accessed. The decentralisation system could have been an essential guideline to promoting collaborative management up to the level of regional management.

However, since the Cartesian space in boundary making and authority claiming in decentralisation is still dominating, this system is somewhat of a dilemma for FAD's fishers' networks. Satria et al. (2004), through his research, has stated that decentralisation is the most appropriate form of fisheries governance which enables local governments to fundamentally control local fishing by informal rules set up by traditional fishing communities.

However, Satria argues that in reality, the role of these systems has been somewhat undermined by central government because political decision asserts that marine areas must be nationally owned. Therefore, in the context of FADs, the fisher's relational network could have been excluded from the system because the fisher's informal setting does not go in line with the State's agenda.

Besides decentralisation, there are also Fisheries Management Areas (FMAs). According to the Ministry Regulation Number 01/2009, the FMA within Indonesia's seas are divided into 11 FMAs with a total area of 6.387.146 km². Similar to the decentralisation system, the FMA has a Cartesian theme in relation to understanding the ocean. Through the FMA, the ocean is divided based on an area, so as to simplify the management system.

This thesis will focus only on FMA 573 and FMA 713, given that both areas are used by fishers based at Labuhan Lombok. This division of the ocean's surface will also affect how the FADs are arranged, based on each FMA. In the context of FADs, the fact that most FADs users target highly mobile, valuable pelagic fish that routinely crosses the jurisdictional boundaries of the high seas is inconsiderable via the application of FMA.

If FADs are managed under the FMA, the fishable waters that are economically viable for the fishers are limited. Therefore, as Kaplan argues, the FMAs application of the spatial management system in the pelagic realm presents distinct challenges due to the high mobility of the fish and fisher mobility, limited knowledge and significant governance challenges (Kaplan et al., 2014).

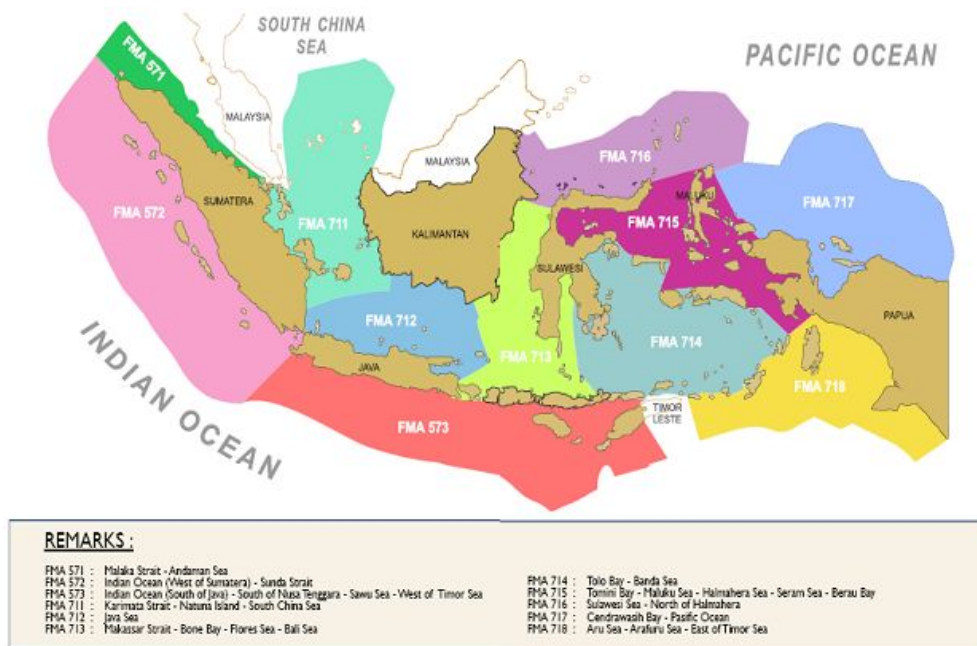


Figure 2: Indonesian Fishing Management Areas (FMAs) (FAO, 1997)

This challenging situation regarding FMA application might be the ‘bottle neck’ to establishing FADs collaborative management because the relational network of fishers does not appear to be recognised and are hindered by the boundaries created by the FMA. To conclude, from the earlier explanation on various systems applied to the governance of the Indonesian Ocean, the current Indonesian rule on FADs, clearly shows its dominance with respect to the state-based approach which leads to the inability to provide room for better collective action in managing the devices. It is obvious to see that the current Indonesian FADs regime does not promote collaborative management between stakeholders due to different way of understanding ocean spatiality.

1.4 Thesis Outline

This opening chapter is followed by Chapter 2 which provides further explanation on the conceptual framework that will be used in this research. There will be a detailed explanation on the concept of territorialisation in general and how this concept could fit into the ocean context. In this chapter, boundary making and authority claiming in marine spaces will also be interpreted in the context of FADs. Concerning the analytical part of this research, the second chapter also provides further explanation of the operationalisation of boundary work that is manifested through four variables adapted from Vandergeest et al., (2015), and why these four variables are required. Chapter 3 contains the research methodology that was used for data collection in the field work, while Chapters 4 and 5 will present the answer to the first and

second sub-research question. A different spatial ontology will be exposed through the division of Chapters 4 and 5. Chapter 4 will elaborate upon the FAD's boundary work and authority claim via a case study of the state based and jurisdictional arrangement, whereas Chapter 5 will explain the FAD's boundary work and authority claim by means of a case study related to the fishers' relational approach. Moreover, with the support of findings in Chapters 4 and 5, the possibility of FADs collaborative management will be discussed, and furthermore, the process of rethinking ocean territoriality will be presented. Finally, Chapter 7 will summarise the entire research and answers will be presented for the main research question.



2

THEORETICAL FRAMEWORK

CHAPTER 2: CONCEPTUAL FRAMEWORK

“All theories are legitimate, no matter. What matters is what you do with them.”

— Jorge Luis Borges

2.1 Introduction

There are growing alternatives for geographical understanding concerning the world that have established a certain reciprocity between ‘the social’ and ‘the spatial’, which challenge the nature of our imaginative geographies (Massey, 1999). In relation to the context of this thesis, this binary term on the social and the spatial has occurred through different boundary making and authority claiming over access to the FAD’s territoriality. Therefore, in regard to addressing the multiple spatial ontology found in the arrangement of FADs, the thesis will adopt a post-structuralism approach.

Post-structuralism offers a broad variety of perspectives and approaches to exploring deconstruction and decentring as well as interrogations of discourse and power in addressing binaries. Further, as the entire thesis draws upon political geography as the major theme, it zooms in particularly on the process of territory making in the ocean environment and how this process is influenced by different actors and their power over access. The post-structuralism uptake related to geographers has been observed to be gradually evolving since Brian Harley’s piece on Deconstructing the Map (1989). Through this thesis, post-structuralism is seen to be in line because in examining multiple spatial ontology, we may need to deconstruct some materiality of nature.

Since this chapter will provide a theoretical understanding on ocean territoriality, it is important to note that although many studies on territoriality have a close relationship with the macro and State level, this thesis seeks to come up with a micro level and show that territoriality is not always about state boundaries and jurisdictional state zonation. In this case, seeing that the hierarchical level of analytical units cannot be applied through the post-structural lens, this approach provides a research opportunity to go beyond rigid boxes in determining the unit of analysis.

Finally, to provide an overview of this second chapter, first, the general theory on territoriality will be presented by contrasting different viewpoints on territorialities. Second, as the boundary has become central to territorialisation, there will also be further explanation pertaining to ocean boundary work and its authority claim to better understand the context of the thesis. Thereafter, classic thinking on state territorialities will be present as it will lead to an explanation on jurisdictional space making. There will also be an explanation on relational

boundary making that present networks and flows as a supporting concept in understanding the empirical FADs arrangement. This chapter will be concluded by the section on how to operationalise this boundary making concept by using the four variables from Vandergeest et al (2015).

2.2 Understanding the Concept of Territoriality

In political theory, territory is an essential element of many influential definitions of the State. The best-known possibly comes from Max Weber, who asserted:

“[The state] possesses an administrative and legal order subject to change by legislation, to which the organized activities of the administrative staff, which are also controlled by regulations, are oriented. This system of order claims binding authority, not only over the members of the state, the citizens, most of whom have obtained membership by birth, but also to a very large extent *over all action taking place in the area of its jurisdiction. It is thus a compulsory organization with a territorial basis.*”
(Weber, 1978, page 54, with italic emphasis from the author)

Webber is not the only scholar that expresses the same idea. Years later, Michael Mann (1984) also stresses on the centralised territoriality of the State that explains state power. While Mann believes that territory has a close association with power, Giddens (1985), argues about the modern State that is distinguished from its predecessors by their association with sharply bounded territories across which they exercise power uniformly. Here, Giddens was not just mentioning space, he also mentions the bounded characteristic of state territory as the first concept on explaining power that is related to boundaries.

Given that state space is automatically associated with territory, the modern doctrine of state sovereignty in international law is nowadays also commonly signified by this concept of territoriality. Meanwhile, concerning natural resources management, the State is found to be the ultimate manager to set up a degree of authorities in utilising the resources by setting up particular boundaries over resource area

Despite the commonly known geographical classic thinking on space, Sassen has a different viewpoint by conceptualising territory as a capability with embedded logics of power and of claim making (Sassen, 2009). In her research, Sassen argues that there are distinct territories that are shaped and rooted by constructed values or cultures, in which continue to be construed as national territory. From Sassen, we can conclude that her argument is in contrast to state territorialities. Power is not always exercised by the State and authority is not always

given by the State. Although in the larger picture of authority, the territory is created from formal and informal jurisdictions, Sassen uses this phenomenon as lenses to see the possibilities of emerging assemblages begin to unravel the common territory process in national jurisdiction

Endorsing Sassen's thinking on territorialities, this thesis will continue by adopting Vandergeest and Peluso's understanding of territorialisation acquired from thinking on political ecology. In territorialisation, there is a process of creating a territory through the delineation of boundaries and claiming the authority to control what people do inside these boundaries by means of enforceable rules. For instance, in the context of this research, the boundaries created in marine spaces by the FADs are regularly found to have been developed by certain regulations from the state authority. However, at the same time, Vandergeest argues that a territorialised local administration and market system are not the only aspect of a much broader process of territorialisation (Vandergeest and Peluso, 1995), emphasising that territorialisation is not always related to the State.

Thus, from two contrasting concepts on territoriality, this thesis will acknowledge those two arising concepts in defining what *sort* of geography matters when we talk about boundaries. In state territoriality, borders regulate the movement of people, commodities, capital and information between state territories. In so doing, they simultaneously function as barriers to conduits movement (Wilson and Donnan, 1998). At the same time, empirical fact shows that state borders are not the only barriers that could conduct movement in the context of FADs. There is another layer in the FADs arrangement that put forward relational thinking in human geography.

In regard to relational territories, social relations are stretched to the extent that their effects are extended in space and time, being disengaged from, or lifted out of local contexts and re-articulated "across indefinite tracts of time-space" (Giddens, 1992). Similar points can be made about the functions of these social relational borders in regulating the flow of capital, commodities, information and people. Consequently, there is an increasing spatial and temporal disjuncture between social causes and effects, and moreover, between human decisions and their consequences in using natural resources, which transcend state-made borders. Since the borders are the product of boundary work, the following section will further expand on the concept of ocean boundary making and authority claiming to better understand the context of this thesis.

2.3 Ocean Boundary Making

When it comes to the definition, *Boundary* in political geography is understood to be an imaginary line between two areas, separating the imaginary rights of one from the imaginary rights of the other (Bierce, 2007). This imaginary line is performed by powerful actors that determine who has rights to access such areas inside the boundaries. As Sack argues, territoriality can be easy to communicate because it requires only one type of marker or sign – the boundary (Sack, 1986). Boundary then became a significant aspect in territory making because the boundary is the language that communicates a territory.

As a tool for territorialisation, boundary making could be defined as a process of determining territory, which requires the process of the exclusion and inclusion of actors, capitals, power and also, rights (Vandergeest et al., 2015). The process of exclusion and inclusion is a political process. Therefore, it is important to note that boundary work in natural resources is not a single work because an area can be covered by many intersecting lines and overlapping boundaries in relation to the various political purposes that control it. Painter (2010), supported the argument by stating that in today's world order, the understanding on state power highly determined on the territoriality that has impactful influence to the practice control over terrestrial and marine resources, as well as to the *authority* over individuals and populations present within state boundaries.

According to the ocean management framework, state laws and other legal authorities have been enacted over the years to govern the resources and activities on the surface of the ocean. The boundaries are made by state law which is responsible for managing fisheries activity and other business related to the sea, such as tourism and energy exploration. In his book on the Theory and History of Ocean Boundary-Making, Douglas Johnston (1988), argues that the boundaries of the ocean are the product of negotiation. The negotiation on boundaries resulted from a different understanding of ocean spatiality. As ocean management and regulation continue to develop, more ocean boundaries have taken on an explicitly administrative significance, such as in a bilateral or multilateral form of agreement. Therefore, it is essential to note that negotiation cannot always address the differences.

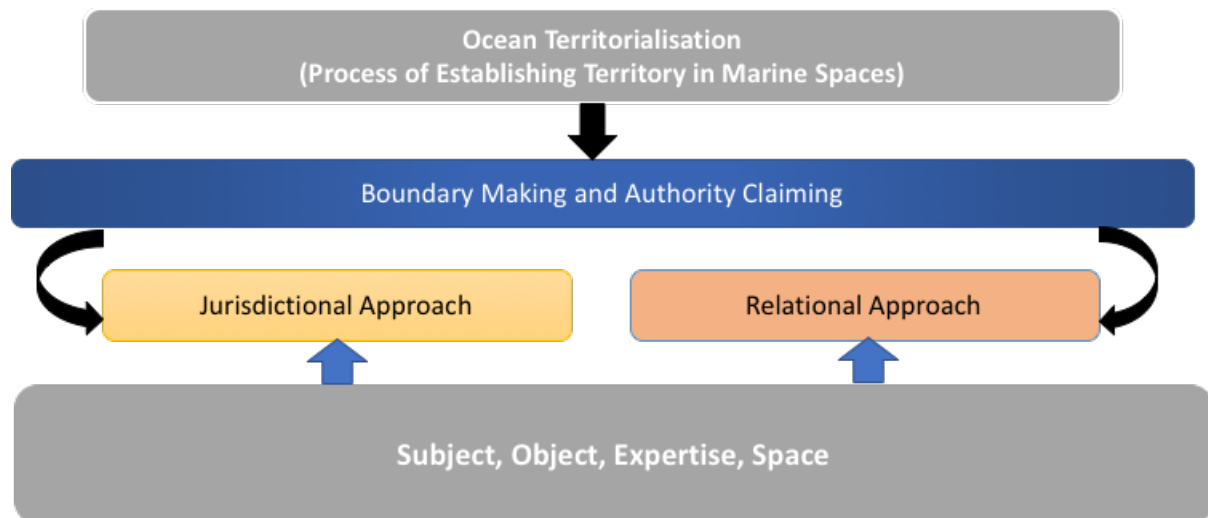


Figure 3: Logical Illustration of the Conceptual Framework (Author)

As can be seen from Figure 3, the process of boundary work in the ocean space resulted in two different approaches, jurisdictional and relational. The jurisdictional presents the administrative boundaries, where the State determined the specific area of management, while relational boundaries are the result of the user's network in managing and utilising the sea based on their customised and informal rules.

Here, the boundary making is the main process that we will look at closely in this research. However, the fact that the boundary making cannot be separated from the authority that plays the power to determine the process of boundary work, I put the authority in the same spot with boundary making. It is hope that by noticing the authorities around the FADs arrangement, we could identify the Subject, Object, Expertise and Space in wholly manner. Additionally, since relational boundaries are created based on different claims by authorities over the marine resources, further explanation on the boundary work in the jurisdictional and relational space will be presented in the following two sections.

2.3.1 Jurisdictional Approach on Boundary Work in the Ocean

As mentioned earlier, many ocean boundaries are frequently the product of negotiation. For instance, the way the State divided the sea into a particular area is based on the United Nation's Convention on the Law of the Sea (UNCLOS) that came to fruition in December 1982. As a mutual agreement between countries, UNCLOS became the States guideline in distributing the ocean surface where the rights and responsibilities of nations and their use of the world's oceans are managed, including guidelines for trade, the environment and the management of marine and open seas resources. In terms of territoriality, it was agreed that

the sea boundaries reach 12 nautical miles offshore and the exclusive economic zones are up to 200 miles offshore from each country (UNCLOS).

Further, at the national level, the area division in the management of the ocean's surface continues to be determined by the State. For instance, several countries, including Indonesia, practice the establishment of Fish Management Areas (FMA); a management initiative on protecting fishery resources that is determined by the Fisheries Management Authority (FAO, 1997). Like the FMA, some countries also have Territorial Use Fishing Rights (TURF) which are a spatial form of property rights, in which individuals or a collective group of fishers are granted exclusive access to harvest resources within a geographically defined area (Christy, Jr, 1992). Meanwhile, from the context of conservation and preserving biodiversity, area-based management was also adopted by the establishment of MPA that are extensively implemented based on State laws and legal authorities, as it has been established as an effective tool to achieve conservation goals by allowing the recovery of marine populations and ecosystems by providing certain zones in managing extraction activities (Claudet et al., 2008).

Thus, from all the cases presented earlier, it is apparent that the jurisdictional boundary work authority claims regarding marine spaces emerged from bureaucratic decisions of earlier administration processes, such as state regulations, decentralisation or even colonial administration. The core point of jurisdictional boundary work is related to the geographical set of regulations that must be followed because it is a state mandatory command on how ocean space can be accessed. Simultaneously, the highest authority is in the hand of the State's officer as policy maker and resources manager. However, in the case study of FADs, existing Cartesian boundary making appears to simplify the complexity of marine resource management and overlooked the material fluidity of the sea. Therefore, the subsequent section will present further elaboration on relational boundary making that moves beyond the Cartesian understanding of marine spaces.

2.3.2 Relational Approach on Boundary Work in the Ocean

In the context of marine spatial environment, the definition of a boundary as a line is certainly inadequate in the marine environment, where even the public right of "surface" navigation technically involves some other portion of the water column (Sutherland, 2006). The common jurisdictional approach in understanding the sea offers a limited viewpoint in ocean management thinking. The temporary and mobile people of the sea regularly use flexible and strategic notions of their social groups and the places they belong to when accessing marine resources (Visser 2004). Steinberg and Peters (2015), also highlight the distinctive qualities of the sea, arguing that 'the volume of the sea shifts very differently' to terrestrial volume

because the volume of water moves, its territory and its location cannot be pinned down just like boundary making in the land (Steinberg and Peters, 2015). It is obvious that the complexity of marine resources is the result of the spatial and temporal changeability of marine resources, where flexible resource-use patterns are created.

To address this complexity, a new approach is needed in understanding the characteristics of the marine spatial environment. In order to understand the boundary work in marine spaces beyond the Cartesian approach, one needs to avoid the possibility of a “territorial trap” (Agnew, 1994); the mistaken assumption related to the homogenous spatiality of state power and state territory. Therefore, to avoid such homogenisation, this thesis will take support from network and flows thinking in examining boundary making through the relational approach. In understanding network and flows thinking, one needs to track down the history of this theory.

Initially, networks and flows were part of a new approach in “sociology beyond society”, which covered movement and action and was termed “mobile sociology”. In his writing, Urry used the concept of mobile sociology to explain the mobility of ‘objects’, ‘images’ or ‘information’, which undermine endogenous social structures which possess the power to reproduce themselves (Urry, 2000). Castells in *The Rise of Network Society* (1996), has a similar view to Urry. For him, network society is a new social morphology that emerged to be understood as an additional layer known as the space of flows. To understand what the space of flows is, one needs to go further than the geographical definition of space. This space of flows should be understood as a new type of time-space organisation of social practices. In the network society and its space of flows, the geographical proximity is no longer a necessary element of space, because in the space of flows, space is placeless (Castells, 1996).

Even though the attempt to draw the networks has centralised at a global level, Mol and Spaargaren argue that it is essential to realise that the study of environmental globalisation and its governance arrangements does require more than just working at a higher systemic level of analysis. To second their argument, this thesis will then use the possibility of networks and flows as a framework to help analyse lower systemic levels of FADs boundary making. The idea is to follow the hybrid arrangements thinking, where it has a combination of various flows that move beyond state-market-civil society arrangements (Mol and Spaargaren, 2006).

In the context of relational boundary making in the FADs arrangement, the purpose of noticing different flows is because communities themselves are never demarcated units of similar-minded people; the territorial boundaries are continuously contested and transformed because the complex inter-group dynamics of heterogeneous groups (Barth, 1969; Eriksen 1993). Therefore, since there might be several understandings on area making, there will be

different boundary work in the process of territoriality that is shaped by jurisdictional and relational approaches. These two differences will determine the process of inclusion and exclusion in accessing and utilising the FADs and will eventually also determine how boundaries are made and authorities are claimed.

2.4 Operationalisation of Boundary Work

In order to better explain each of the FADs boundary making processes in both the jurisdictional and relational approaches, this thesis will need variables that are observable and comparable. Influenced by research conducted by Vandergeest et al. (2015), on assembling sustainable territories in seafood certification, this thesis will adopt a similar operationalisation to examine how the boundaries are made and authorities are claimed. In their research, Vandergeest et al. (2015), successfully examined how boundaries were established through the concept of boundary work by determining which variables are assembled through the certifications. In justifying the use of the same variable, this thesis understands the FADs arrangement based on the concept of territoriality. Since the FADs created artificial areas through their established fishing grounds, this area is determined by how boundaries are made and defined. This thesis will subsequently explore the process of FADs boundary making and authority claiming by focusing on four distinct kinds variables of entities; specifically, Subject, Object, Expertise and Space.

2.4.1 Defining Variables

The explanation about the defined variables that will be used in this thesis will be in sequence starting with Object and will be followed by Subject, Expertise and Space. The selection of sequences is based on the flow of thought that will be useful when looking at each entity that is crucial in influencing the FADs territorialisation. For instance, Object will start as the first entity because it has a particular role in determining the following subject, their expertise and the space that follows. However, even though the explanation of the entities is in sequence, the entire process of interaction between Object, Subject, Expertise and Space will determine territorialisation in the context of FADs.

The object is chosen to be the first variable observed because the cases found in each boundary making process will start with the “objects of concern” (Latour, 2007). Here, Latour defines the objects of concern to show that the object cannot be seen only as ‘matters of fact’ but, rather, as active participants in the assembling of FADs boundaries. Therefore, objects of concern will not only limit the tangible object like fishers or the FADs but also other intangible

material objects that are impacted by the process of boundary making. For instance, the underlying values such as sustainability and traceability might also be an object of concern.

The next variable that influences the process of territorialisation is the subject. Subject is recognised as the rights or authority holder that could manage the objects by using the rules set out by the State or non-state actors. As inspired by Vandergeest's research (Vandergeest et al., 2015), the subjects are actors whose practices need to be subjected to the boundary making process in the FADs arrangement. The subject could be the fishers, traders, processors, and/or government agencies. By using this definition on subject, there will not be any hierarchical difference in noticing which actors influence boundary making in the FADs arrangement. Both governmental officers or the fishers can be defined as the subject observed. The subject is chosen to be an observable variable because in determining the boundaries there must be different subjects in charge in deciding the inclusion and exclusion process in utilising the FADs.

Third, in deciding the process of inclusion and exclusion on accessing the area where the FADs deployed, subject has a way of knowing where it is defined as a bundle of codified and concentrated knowledge that is controlled by 'experts' (Vandergeest and Peluso, 1995). These experts include those who have exclusive capacity and the qualifications to create or apply the knowledge and produce the rules that define the central objects of concern. As the expertise gives subjects power to determine control and boundaries in the FADs arrangement, it is vital to examine territorialisation based on the various knowledge that each expert has in sustaining and performing the process of boundary making. Therefore, the understanding of experts could be different depending on which viewpoint is used. From the jurisdictional viewpoint, the expertise will be revolving around the state regulation in the relational approach, the expertise will be more taken in by the informal rules between the fishers and stakeholders involved.

Last but not the least, the fourth variable observed is space. In this thesis, borrowing from Bear, space points to the physical or relational boundaries within which objects of concern are associated (Bear, 2013). Looking back to the early definition on territoriality in this chapter, it is essential to note that there are two conspicuous spaces in the marine environment. First, the Cartesian based pointed area and the relational formulated area. These two areas are formulated because the fact that marine space can be a fixed spatially territory or a malleable area of boundaries is a matter that cannot be underestimated. Therefore, by investigating space as an entity, this variable will help to further explain how different understandings of spaces are understood in the FADs arrangement.

2.5 Conclusion

To conclude this chapter, the theoretical framework presented earlier is intended to examine the different spatial ontologies in the FAD's arrangement. It is hoped that by examining how boundaries are made and authorities are claimed, we will better understand the concept of ocean territoriality, especially in the context of the FADs utilisation. Further, the examination of the four variables by Vandergeest et al. (2015), is expected to portray how these variables could assemble the space in the ocean territorialities. Therefore, by zooming in to the boundary work and authority claim process, we will see that there are two different spaces resulting from different processes of territorialisation.

The two cases of space making will be separately explained for the purpose of analysis. These cases are first, the jurisdictional space where state boundaries and legitimation became the main elements. Second, relational space and informal rules in the form of networks and flows which are more dominant in determining the boundary and authority performed in FADs. The four variables will be employed intensively in Chapters 4 and 5, and moreover, there will be more explanation in the following chapter to establish how the Object, Subject, Expertise and Space assist the researcher in the fieldwork activity. Additionally, a further explanation on the methodology and methods obtained during the fieldwork will also be presented.



3

RESEARCH METHODOLOGY

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

In examining the territorialisation process in marine spaces, this research is conducted according to a qualitative research approach. In the social sciences domain, there have been many attempts to define qualitative research, especially to determine whether it can or should be differentiated from quantitative research (Mason, 2002). Further, qualitative research is grounded in a philosophical position which is broadly concerned with how the social world is interpreted, understood, experienced, produced or constituted.

In this way, qualitative research makes use of a more 'interpretivist' approach to perceive several of the meaningful elements in a complex, possibly multi-layered and textured, social world (Mason, 2002). The fact that there will be different sorts of qualitative approaches, this thesis then will be based on a qualitative case study design, where case studies involve studying the object of inquiry in its real-life context, allowing for a contextualised and comprehensive understanding (Yin, 2003).

Therefore, as the backbone of research, a clear research methodology is known to ensure a solid and complementary research outcome. In obtaining a solid research outcome in this thesis, this chapter will present the outline of the selected research methodology along with several methods applied in data collection. In this chapter, we will first identify the case study approach used for this thesis (3.2). Further, in Section 3.3, the fieldwork situation and the methods used for data collection will be explained. To conclude, in Section 3.4, the explanation given on data analysis will be applied to the analytical framework, based on the proposed four variables (Object, Subject, Expertise and Space) along with the arrangement of the interview questions.

3.2 Case Study

To understand the case study design, first, one needs to understand the underlying paradigm in this approach. Stake (1995) and Yin (2003), based their approach to case studies on a constructivist paradigm. Constructivists claim that truth is relative; it is dependent of one's own perspective and therefore, constructivism is built upon the premise of a social construction of reality (Searle, 1995). By using the case study approach as a methodology in this thesis, we aim to gain construct reality from the research participants by pursuing close collaboration with the participant, while enabling he/she to tell their stories (Crabtree & Miller, 2000). Since the case study methodology aims to explore and describe a certain setting to reach an

understanding, the participants are expected to share their stories. Thus, we will then be able to describe their views on reality. Eventually, this enables us to better understand the participants' actions (Lather, 1992; Robottom & Hart, 1993).

This research attempts to examine the territorialisation phenomenon found in the ocean environment by way of a case study of Fish Aggregating Devices (FADs) in Labuhan Lombok, Indonesia. As an exploratory case study, this research aims to explore territorialisation as a situation in which the intervention being evaluated has no clear single set of outcomes. However, from the selected case study, we can assume that there are two understandings, which are jurisdictional space and relational space involved in the process of boundary making, built via different social constructions of reality. Hence, through binaries, this research could be classified as a single holistic case study with embedded units (Yin, 2003)

The holistic case study with embedded units is a type of case study that can look at sub-units that are situated within a larger case. In the context of this research, the sub-units are located in the locus of jurisdictional and relational approaches where the larger case is territorialisation in marine spaces. This type of case study is valuable because it means that the data can be analysed within the subunits separately (within case analysis), between the different subunits (between case analysis), or across all of the subunits (cross-case analysis) (Yin, 2003). However, for this researcher, the classification of subunits (the jurisdictional and relational boundary making) will only be completed after all the data from the fieldwork is collected and analysed.

3.3 Fieldwork and Data Collection

The field work where this thesis set the scene is in Labuhan Lombok, Eastern Lombok, West Nusa Tenggara Province (NTB). Labuhan Lombok's fish landing site (TPI Labuhan Lombok) located in Labuhan Lombok Village, Pringgabaya District. As the only Type C fishing port in the regency, TPI Labuhan Lombok has a strategic position, given that it is sheltered within a bay and, as it is a good place for the fishers to dock. As a fishing port, Labuhan Lombok does not conduct fish auction activities because the fish landed at the port are owned by several companies maintained by the supplier.

TPI Labuhan Lombok was chosen to be the field study in this thesis, based on the potential dynamic for fisheries collaborative management. The site selection starts with an NGO named Masyarakat dan Perikanan Indonesia (MDPI) that works in the area. This organisation (MDPI) has an office in the port and moreover, it has close relationship with the local officials working in the port. The port also has various types of fishers that makes the thesis empirically inclusive by including different types of fishers in the analytical process.

The fieldwork was conducted over three months, with eight weeks field research in the Labuhan Lombok fishing port and four weeks approximately of attending meetings in Mataram and Jakarta to ensure that all the data needed was obtained. In recent years, the qualitative methods related to data collection, such as interviewing, observation and document analysis, have been included under the umbrella term of "ethnographic methods" (Kawulich, 2005). In addition, secondary data obtained from the literature study might still be required, especially for analysing the regulations and initiatives for FADs.

Since research on FADs is extremely limited in the context of boundary making, this research used data collected in the field as the primary resource. In order to understand issues regarding FADs in a more progressive way, the fieldwork was conducted via participant observations methods in several meetings and in-depth interviews with the subjects. This is line with what Flyvbjerg (2006) has said about researching 'on sites' that "the most advanced form of understanding is achieved when researchers place themselves within the context being studied". Different sorts of methods were used in order to reach triangulation. Through triangulation it becomes possible to provide a more comprehensive and complete answer on the research questions posed (Bryman, 2008).

3.3.1 Semi-Structured Interviews

The first data collection method employed in this study was the in-depth interviews. According to Oakley, the qualitative approach comprises a qualitative interview which is a type of framework where the practices and standards are not only recorded, but also achieved, challenged and reinforced (Oakley, 1998). Since in-depth interviews should be personal and intimate encounters, open, direct, verbal questions are used to elicit detailed narratives and stories (DiCicco-Bloom and Crabtree, 2006). When undertaking the semi-structured interviews, a set of prepared questions was used with the interviewees (see Appendix 1).



Figure 4: The researcher conducting an in-depth interview with a pole and line captain onboard his ship (Author)

In choosing the participants, the MDPI's field officer supported identifying stakeholders involved in the port. It all began in the field office of the MDPI in Labuhan Lombok and was followed by an introduction to several of the key informants, such as the head of the fishing port, the harbour master and one of the fishers who is head of the FAD group. Regarding the fishermen and the suppliers, the interview session commenced with a fisher who came to the MDPI's office for administration purposes. The MDPI's strong connection to those stakeholders is vital with respect to data collection. Every stakeholder required to be interviewed has a relatively good relationship with the officers of the MDPI and regularly visit the MDPI's office to unwind and relax. This situation made collection of the data easier because the participants were able to share their opinions in a comfortable environment.

Regarding those initial key informants, the interview session started, while keeping in mind that another interviewee might follow later. Therefore, the snowball sampling approach is applied in this research because the snowball approach is a form of purposeful sampling in qualitative research that "typically proceeds after a study begins and occurs when the researcher asks participants to recommend other individuals to study" (Creswell, 2003). Since the researcher speaks Bahasa, there was no technical issue in communicating with the participants. For the purpose of this thesis, participants in the in-depth interviews were divided into three categories; specifically, fishers, suppliers and government officers.

3.3.2 Participant Observation

Participant observation has been the hallmark of both anthropological and sociological studies for many years, as a tool for collecting data in qualitative research studies (Kawulich, 2005). In

this research, participant observations were employed as a method for generating data from meetings and events in relation to the arrangement of FADs being observed. Three meetings were observed: informal meetings involving fishers in Labuhan Lombok, the Data Management Committee (DMC) in Mataram and last but not least, the National Meeting on FADs held by the MMAF in collaboration with the TNC and MDPI in Bogor.

The researcher attended those meetings as an observer to acquire the most contextual and up-to-date data on current issues related to FADs in Indonesia. As Marshal and Rossman (1989) suggest, observation is the systematic description of events, behaviours and artefacts in a social setting chosen for the research study. In conducting research around FADs issues, participant observation methods were useful for this sort of research because in observing the meeting mentioned previously, the researcher was able to determine who interacts with whom, grasp how participants communicate with each other and check the gestures and facial expressions of those in attendance at the meeting (Shmuck, 1997).

The data obtained in the participant observation phase is not only more accurate because it is first-hand data, but it also offered the researcher additional insight on suitable interviewees for the in-depth interviews session. Moreover, participant observation helped to establish further methods that were needed, because being directly involved in the research subject leads us to the correct source of data. As DeWalt stated, participant observation provides the context for development of sampling guidelines and interview guides (DeWalt et al., 2002). The following section will provide more information on each meeting that this researcher observed during the study.

Informal Meeting for Fishers

The informal meeting on 6th October 2017 was initiated by Yayasan Masyarakat dan Perikanan Indonesia (MDPI) for the fishers, suppliers and local officers in Labuhan Lombok. The meeting was initially conducted to collect information on the current situation concerning FADs in Labuhan Lombok. The same meeting was also conducted in several MDPI offices because the valuable information collected during those meetings was presented as material at the National Meeting on FADs. The meeting was described as an 'informal meeting for fishers', for the reason that the MDPI wanted to make it relaxed for all those fishers that were participating. This is vital because the MDPI team found out that fishers feel unable to fully participate if meetings are held in strict conditions and tense like meetings that take place in government settings.

Therefore, the meeting followed the fisher's way, whereby they sit on the floor in a circle and are able to smoke, there was no formal record or coffee break, and they were able to chat. This was followed by lunch afterwards. The attendance at the meeting consisted of ten fishers approximately, together with four MDPI officers, two port officers and one supplier. The researcher was able to observe the entire meeting without having to participate in the discussion.

Data Management Committee (DMC)

The Data Management Committee (DMC) meeting has a special role because these meetings are a co-management initiative of the I-Fish programme (introduced by the MDPI) to gather together stakeholders from the government, universities, NGOs, industry and fishers to discuss the management of the fisheries in their region, especially regarding tuna and skipjack. The meeting aims to give the DMC members the opportunity to discuss how they want to develop data management in their region, desired reporting of the data according to the needs of each stakeholder, data ownership, the commitment of or further contribution from each stakeholder for the next DMC meeting and furthermore, to discuss the implications of newly introduced regulations (MDPI website).

The DMC meeting was not only conducted in NTB but also in every province where the MDPI operates. The DMC meeting was led by each of the Fisheries Capture Head Department from the Provincial Department of Fisheries and Marine Affairs (DKP). In this case, the MDPI played the role of collaborative partner that also support each DKP in areas where the MDPI operates to establish DMC meetings annually. Since the research site was in Labuhan Lombok, the DMC meeting was a significant event to observe for the reason that the range of topics discussed in the DMC not only focused on the data collection but also other tuna fisheries related regulations, such as issues concerning FADs. Although the DMC did not establish a specific meeting regarding FADs, the meeting comprised parts where FADs were discussed. As the researcher was able to attend the DMC for NTB Province in Mataram on 21st December 2017, she was able to observe the discussion around FADs. The attendees for the DMC in NTB primarily included relevant stakeholders from NTB, such as academics from Mataram University, local officers from Labuhan Lombok fishing port, the supplier from Labuhan Lombok and Sape, as well as the fisher's representative from Labuhan Lombok.

National Meeting on FADs

The other meeting related to FADs was the National Meeting on FADs, conducted over two days from 25-26th November 2017. The National Meeting on FADs was initiated by the Nature

Conservancy (TNC) and MDPI together with the Directorate General of Capture Fisheries, in particular the Directorate of Fish Resource Management (PSDI-DGCF) MMAF. In the two-day meeting, the agenda was principally about the management of FADs with the resource person from the PSDI-DJPT Indonesian Fish Research Centre (PURISKAN), TNC, MDPI and Tri Marine International as the representative from international industry.

The researcher was able to observe the two-day meeting and followed the agenda. Research that had been conducted before, either by NGOs or the research institute was also discussed. The overall discussion was about the upcoming research required on FADs, FADs management plan development milestones, including the initiative for FADs amnesty and the road map for Indonesian FADs. As noted, participants at the meeting varied from NGO representatives and the head of the fisher's association, to representatives of the business sector and the research institute.

3.4 Data Analysis

After the researcher return from the fieldwork, analysis of the interview data and observation needed to be performed to make sense of the data gathered. Following on from Creswell (2009), this study used a simplified version of the qualitative data analysis steps illustrated in Figure 5. The four steps mentioned below helped guide this study in analysing the data from the fieldwork. However, it is essential to note that in practice, qualitative research procedures do not always follow this strict hierarchy, seeing as there is considerable iteration between the different stages throughout the research process (Creswell, 2009). Based on the figure, this study applied the following data analysis steps, as described below:

1. The data obtained from the field was the raw data. Hence, the initial step was transcribing each of the interviews from the audio data (recorded) format into text format.
2. In order to obtain a general sense of the overall meaning of the data obtained, the researcher read through the text format. During this step, it was essential to notice the themes related to the data.
3. When the researcher examined the data, she obtained a general sense of the current situation. This is important because in this third step, the researcher had to formulate certain codes, sub-codes and themes to be used for the specialised computer software to analyse the qualitative data. The coding will be explained further in the next section (see 3.4.1 Coding).
4. After all the data was analysed by means of a software programme named Atlas.TI, the researcher was able to interpret the meanings related to the themes. Finally, according

to Creswell, “qualitative research is interpretative research” (2009). Therefore, after having structured and presented the interview data, the researcher interpreted the meanings of the coded data against the backdrop of “her or his own culture, history and experiences” that were obtained during the ethnographic fieldwork and compared these findings “with information gleaned from the literature or theories” (Creswell, 2009).

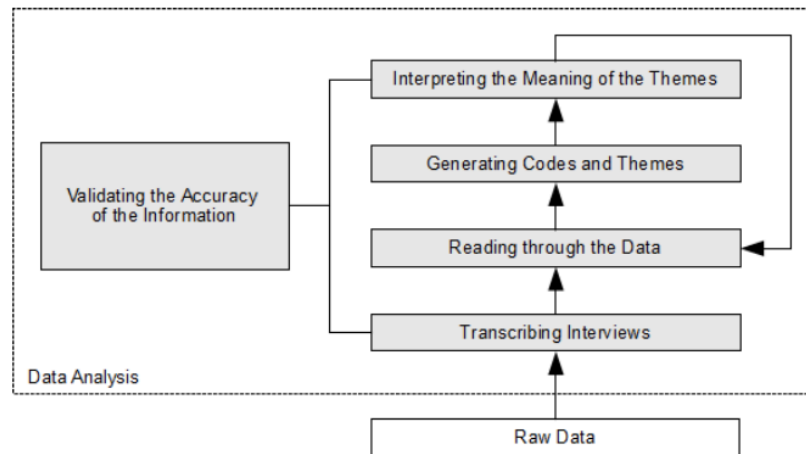


Figure 5: Qualitative data analysis steps (adapted from Creswell, 2009)

3.4.1 Coding

As the first chapter has already described the variables that guided this research, this section focused more on the coding process supported by Atlas.TI. Since Atlas.TI helps to uncover and systematically indicate complex phenomena hidden in their unstructured data, it was able to specify the complex relationships related to the findings collected in the field. Atlas.TI also helps to provide tools that allow us to locate, code and annotate findings in primary data material by consolidating large volumes of documents, keeping track of all the notes, annotations, codes and memos (Lewins & Silver, 2007).

As can be seen from Figure 5, the coding process began after all the data were sorted by re-reading and arranging all the transcribed interviews and field notes. First, the division between the data obtained from the jurisdictional (state) boundary making and relational (fishers) boundary making were present. The division between both arrangements is based on the field findings, which reveal that the Government and fishers have different territorialisation methods with respect to FADs management. In order to better understand these different framings and how each arrangement creates boundaries in the FADs, the division mentioned earlier comprising each variable; namely, Object, Subject, Expertise and Space was made. Secondly, by using Atlas.TI, we endeavoured to code both arrangements, the Cartesian and the

Fishers, according to these four variables. By separating the arrangements and coding based on these variables, the patterns began to be conspicuous.

No	Name	Position	Category
1	Nurjamil	Kepala Bidang Perikanan Tangkap DKP Provinsi NTB	Local Officials (Province)
2	Fahrurozi	Perwakilan dari DKP Kabupaten Lombok Timur, Selong, NTB	Local Officials (Kabupaten/Regency)
3	Herman Effendi	Syahbandar Pelabuhan Labuhan Lombok	Local Officials (Pelabuhan Labuhan Lombok)
4	Rio Madya	Koordinator Pengawas Perikanan (PSDKP NTB)	Local Officials (Pusat, based in Labuhan Lombok)
5	Amiril	Kepala Pelabuhan Labuhan Lombok	Local Officials (Pelabuhan Labuhan Lombok)
6	Ahmad	Fishermen (Baura)	Sinjai
7	Lalu Zakaria	Fishermen (Versace)	Sinjai
8	Mulyadi	Fishermen (Versace)	Sinjai
9	Yusril	Fishermen (Eka Tirta)	Sinjai
10	Ilham	Fishermen (Baura)	Sinjai
11	Yusran	Fishermen (Baura)	Sinjai
12	Irwan	Fishermen (Eka Tirta)	Sinjai
13	Haba	Fishermen (Baura)	Mandar
14	Mahmud	Fishermen (Baura)	Mandar
15	Rizal	Fishermen (Baura)	Mandar
16	Taullah	Fishermen (Versace)	Mandar
17	Lukman	Fishermen (Baura)	Mandar
18	Sabar	Fishermen (Versace)	Pole and Line
19	Haryono	Fishermen (Cahaya Anugerah)	Pole and Line
20	Haji Tahir	Supplier (Eka Tirta)	Middlemen
21	Haji Catir	Supplier (Erpa Utama)	Middlemen
22	Azkar Baura	Supplier (Baura)	Middlemen
23	Ida Rosida	Supplier (Versace)	Middlemen
24	Hadi	Site Supervisor (Lombok)	MDPI (NGO)
25	Juhrin	Regional Supervisor (NTB, NTT)	MDPI (NGO)

Table 1: List of Interviewees (Author)

Finally, as the fourth and the fifth chapters will elaborate upon each case in a more profound way, we will be able to map the connection within each variable. Next, the sixth chapter will present the answer for the main research question by analysing how both types of territorialisation could influence the development of management policy regarding FADs in Indonesia.



4

JURISDICTIONAL SPACE

CHAPTER 4: JURISDICTIONAL SPACE

4.1 Introduction

This chapter will utilise jurisdictional boundary making as a part of the territorialisation process in the FADs arrangement. To understand territorialisation, this chapter will explore the process of boundary work that influences the Cartesian based understanding of Indonesian FADs fishing practice. Two significant cases will be employed to illustrate how boundaries are made and authorities are claimed in the Cartesian based arrangement related to FADs; specifically, Sustainable FADs Fishing Practice and FADs Database Management. Each case has its own issue that will assist us to understand how the boundary work was formulated and where the authorisation originates from.

As mentioned previously in the operationalisation section in this thesis, there will be four variables that will be the tools employed to examine each case. It will start with the objects of concern, followed by Subject, Expertise and Space. A further explanation of each case will show that these four variables are connected to each other in building the jurisdictional FAD's boundary work process that is dominated by the State's initiative. This section will conclude with how the space in the FADs arrangement is formulated in jurisdictional boundary making.

4.2 Sustainable FADs Fishing Practice: Concerning Juvenile Tuna

The first and foremost object of concern in the process of jurisdictional boundary making is the sustainability of the FADs fishing practice. To better understand the context of sustainability in this thesis, it is crucial to understand the complete concern related to sustainable fisheries from the viewpoint of the Indonesian government. The notion of sustainability is determined to be the object of concern because it continues to be a pressing matter and as it was mentioned several times in the observation and in-depth interviews. For instance, in the National Meeting on FADs, the MMAF argues that unregulated use of FADs will have a negative and destructive impact on tuna populations. Therefore, better and sustainable FADs management is required (Opening Speech from Director of PSDI in the National Meeting on FADs, 25 October 2017).

Furthermore, in marine resource management, this negative discourse around FADs has shaped the process of boundary work into a more negative notion. As Dagorn maintains, if there is no urgency to govern the FADs and no improvement in the management and governance of FADs, this device will continue to be framed as unsustainable gear (Dagorn et al., 2013b; Leroy et al., 2013). Dagorn's statement has successfully illustrated the current

management of Indonesian FADs and illustrates that the initiative to govern the FADs began with this idea of sustainability. In order to obtain sustainable FADs fishing practice, the juvenile tuna bycatch was the biggest challenge confronting the government (Statement from the Moderator at the National Meeting on FADs, 25 October 2017). It should be noted that considerable research has established that juvenile bigeye tuna is frequently found at FADs and caught by purse seine vessels (Harley et al. 2010).

However, the juvenile bycatches are not just caught by purse seine vessels only, handline vessels are also responsible for catches of juvenile tuna. This information is obtained from the TNC which collaborated with tuna fishing companies in initiating a Captain Operated Data Recording System in late 2016. This simple analysis of data collection demonstrates that catches from handline tuna vessels around FADs have a smaller average fish length than catches from handline vessels that do not use FADs and target schools of tuna in open water (Hatfield Indonesia, 2017). As the principal strategy of the Indonesian government in sustaining the fish stock is to reduce the number of juvenile tuna bycatch by means of sustainable FADs management, it is evident that the concern about sustainable FAD's fishing practice was related to the fish stock condition.

4.2.1 Subject

It is vital to notice that the concern about sustainable fishing practice around FADs was constructed by the relevant subjects or key players. Here, in the process of jurisdictional FADs boundary making, I divided the subjects into two key roles. First, the implementers; namely, the national and provincial governments. Based on the data collection where meetings are observed, and interviews are transcribed, the implementers are all government officials attending the National Meeting on FADs and NTB DMC Meeting, as well as all the government officials at the Labuhan Lombok fishing port who participated in the in-depth interview session with me. As the implementer, the MMAF plays the role of leading all the stakeholders involved to manage the use of FADs by initiating Ministry Regulation Number 26/2014 on FADs management. It includes transferring the authority of ocean management to the provincial level via the decentralisation system.

It is vital to mention that the MMAF is not alone, the second subject which is the catalysers are also playing an essential a part. They are primarily the non-state actors that have influence in executing this arrangement. They are the NGOs, for instance TNC or MDPI, and independent research consultants, such as PT. Hatfield and companies from the business sector, such as Tri Marine International, which have all raised concerns pertaining to sustainability issues around FADs. The division between the two is significant since each subject, either the implementer

or the catalyser, has a different type of expertise that influences the boundary work in the FADs arrangement. For instance, as an implementer of FADs regulation, the Indonesian government's action and plan was influenced by input from a wide range of business actors from regional business that represent small-scale handline fishers, larger business associations that represent the purse seine and longline fishermen association, to the biggest processing company, Tri Marine International (Observation notes on attendance list at the National Meeting of FADs, 25 October 2017). The fact that the National Meeting was a combined initiative by TNC and MDPI also reveals that the sustainable management system related to FADs in Indonesia is a common aim for both the State and non-state actors.

The first non-state actor I had the chance to observe in the National Meeting of FADs and the NTB DMC meeting was a business actor. Meanwhile, the second non-state actor I had the chance to observe was a non-government organisation involved in establishing the agendas for both meetings. Aside from the NGOs, there are other non-state actors who also play roles as a catalysers. In the National Meeting for FADs, Tri Marine International together with MDPI had the chance to present findings on international market demand for sustainable tuna fisheries. The session conducted by Tri Marine explained that the company has given their full support for improved FADs regulation in Indonesia. Likewise, from here, it is obvious that the expertise from the business sector is worth noticing in jurisdictional boundary making. The business actors' expertise is following international market demand for the sustainable fishing industry.

However, not all business actors have the same idea pertaining to the FADs amnesty. The representative of the Association of Indonesian Purse Seine Fishers (Himpunan Nelayan Purse Seine Nusantara or HNPN) together with the Bali-Indonesian Association Tuna Long Line Indonesia or Bali-ATLI reacted strongly during the Tri Marine International and MDPI session. As the business association representative, they displayed their disapproval of the FADs regulation initiative because they believe that Indonesian tuna should have sovereignty which is entirely independent of international market demand. Although it is still uncertain whether both associations are involved in the international market, the observation reveals that they were against the FADs "amnesty initiative" (Observation notes, 25 October 2017).

Interestingly, another actor from the business sector was observed at the National Meeting on FADs. This was a supplier from Labuhan Lombok, who is a representative of the regional business or *Usaha Daerah* (UD). The supplier's business is called Baura. Although further discussion on the supplier's position in the fisher's relational network will be expanded upon in Chapter 5, here, the supplier was ascertained to be a significant subject in the process of jurisdictional boundary work. The observation conducted during the meetings shows that the

State always involves the supplier for additional support to impose the idea of Cartesian based regulation to their members who are fishers.

Further, besides being present as a business stakeholder that supports the government's regulation, the supplier was also representing the fishers' representative that joined their group. As the only supplier involved in the meeting, the owner of UD Baura, Hajir was actively involved in the discussion to represent the voice of their 'fisher members'. In one of his points, Hajir underlined the importance of considering fishers-based arrangements on managing FADs because the current and upcoming FADs amnesty seems unfavourable for the fisher's community. Even though it may be difficult to fully implement the pro-fisher's policy, the points were seen to be acknowledged by the MMAF and the meeting committee (Conclusion notes from FAD National Meeting, 26 October 2017)



Figure 6: Meeting situation in FADs National Meeting, the owner of UD Baura (Haji Hajir) from Labuhan Lombok delivering his points (25 October 2017) (author)

4.2.2 Expertise

As this thesis was conducted in Labuhan Lombok, it is important to note that handline fishers in NTB and Eastern Nusa Tenggara (NTT) are highly dependent on FADs as their fishing gears, which specifically target juvenile yellowfin tuna. Most of the tuna from shallow sets that were measured as samples by MDPI were found to be smaller in size (Hatfield Indonesia, 2017). By

looking at the subject's strategy in controlling the objects through research-based evidence and data, this section has identified sustainable fishing practice as the main area of expertise. However, even though sustainable fishing practice is found as the main expertise occurs in this concern, many interesting findings on the field reveal that not every subject has the same level of concern and maintains relatively the same knowledge of juvenile tuna and sustainable fishing practice.

In identifying the expertise and knowledge performed around the sustainability concern, it is concluded that even though the implementer is the subject that represents the government and its officer, there is a different level of expertise between the same entities. For instance, in the case of juvenile tuna, there was minimum concern from the in-field officers about avoiding bycatch juvenile tuna within the FADs area.

Some of the juvenile tuna that were caught were found in the database of our enumerator. However, there is not much that we can do except record the catch and report it to the port or provincial officers, because the fishers are still fishing the way they want and there is no enforcement that is strong enough in the port that can monitor the fishing practice (Interview Session with Regional Supervisor MDPI, 17 October 2017).

From the interview, it was determined that the port officers were not as concerned about the juvenile tuna. Although MDPI regularly reports the enumerator's data on fish measurements to the harbour master, the idea of pursuing sustainable FADs fishing practice is only an object of concern for the central government, while the provincial and lower level institutions were not fully aware of the significance of the agenda.

Moreover, for the local government officers in Labuhan Lombok, the sustainability aspect is not the only and the foremost way of knowing how to build the initiative to better manage the FADs, instead, social conflict among fishers as the users of FADs is the other problem worth noticing and needs to be addressed urgently.

I personally agree that the FADs need better regulation and management systems. There is an urgent need to better regulate the FADs because some areas where there is a high concentration of FADs being installed are prone to horizontal conflicts among fishers. The FADs will create tight competition among fishers where friction and social conflict are more likely to emerge (Interview with the Harbour Master of Labuhan Lombok Fishing Port, 10 October 2017).

It is evident that the different level of expertise comes from a different understanding of the urgency required to regulate the FADs. The different level is unavoidable since both the central government and the lower level of government does not have the same exposure to FADs issues. For the central government, the pressure from the international community is an absolute factor, whereas for the lower level of government, the international pressure remains indistinct. It is understandable because since FADs are close to the heart of the fishing community in Labuhan, the knowledge gained from the local officials in the port is based on their empirical experience with the fisher.

Meanwhile, the catalyser's expertise also plays a part in the concern about sustainable FADs fishing practice. Their expertise is found to support the government's vision on sustainable FADs fishing practice by promoting the FAD "amnesty". In order to accomplish a smooth transition from current to revised FAD's regulation, TNC and PT. Hatfield Indonesia recommends implementing a FAD "amnesty" during a period of grace. The recommendation is expected to provide enough time for the stakeholder to better prepare the new FAD management system to avoid a complete ban of FADs fisheries (Draft Policy Brief, 25 October 2017). The expertise performed by the non-state actor is still very much imposing the idea of Cartesian based understanding with respect to managing the FADs.

To further examine the source of knowledge and the expertise around sustainable FADs fishing practice, the Indonesian fisheries management system is backed up with several research initiatives developed around FADs fishing practice. As a member of RFMO as well as the main implementer of FADs access arrangement, the MMAF demonstrates the intention to be fully committed to establishing improved management rules for shared tuna resources to counter overfishing. Indonesia has ratified UNFSA 1995 through Act. 21 no. 2009 with the specific objective of ensuring the long-term conservation and sustainable use of straddling fish stocks and highly migratory fish stocks through effective implementation of the relevant provisions of the UNCLOS 1982 (Hatfield Indonesia, 2017).

Meanwhile, the catalyser's source of knowledge around sustainable fishing practice, especially in the policy brief made by the TNC and PT. Hatfield emerged from international bodies, such as the IOTC and the WCPFC's initiatives on tuna fishing practice. The catalyser used the reference from IOTC and WCPFC's document or statement in justifying the presented data. From a research initiative and diplomatic relationships occurring around sustainable fish management issues, it is evident that the notion of sustainability will remain in use to enforce any related regulation to control the FADs on the surface of the Indonesian Ocean. This is also supported by the increasing demand for sustainable tuna fishers that require free FADs fishing.

4.2.3 Space

Aside from the object, subject and expertise, space is the most vital entity to explore as it will determine the FAD's territory in jurisdictional boundary making. Based on the research conducted around FADs sustainability issues besides the narratives constructed in the National Meeting on FADs, I was able to identify how space is illustrated in jurisdictional boundary work.

From the concern about sustainable FADs fishing practice, it is ascertained that the sustainability discourse was focusing on the issue of juvenile tuna bycatch. While the subject and the expertise that revolve around these issues were varied, the fishers seemed to be excluded from the space making process. The State is seen to impose the idea on the ocean space, based on the appointed area and zonation. From here, it is obvious that the space in jurisdictional boundary making is extremely rigid concerning its Cartesian topographical viewpoint.

The domination of the state-based jurisdictional approach is undoubtedly seen from the priority issues that are mentioned repeatedly during meetings related to the National Plan of Action by the MMAF. Countless research was undertaken to identify the concentrated area of juvenile bycatch. Experts consider that the juvenile bycatch seems to be concentrated in FMA 572, 573, 713, 714, 715, 716 and 717, where several suggestions appear to point to the purse seine and pole and line vessels targeting the skipjack around the FADs as contributing most to the issue (Hatfield Indonesia, 2017). Here, the context of space as a spatial demarcation which divides the water column into defined zones is the ultimate way to manage the surface of the ocean.

Further, it was not just the State that imposed the idea of Cartesian boundary making on ocean space. The catalyser or the non-state actor also perform the same way. As stated earlier in the expertise section, there was one significant initiative from TNC and PT. Hatfield Indonesia which was discussed at the National Meeting. Based on intensive research on the current situation regarding FADs, these non-state actors, TNC and PT. Hatfield Indonesia were presenting a policy brief for the MMAF titled 'Opportunities for effective management of Fish Aggregating Devices (FADs) in Indonesia through regulatory and private-sector driven approaches'. The policy brief offered a recommendation to revise the current FADs regulation based on types of FADs, number of FADs installed (per vessel, per fishing gear, per area) and the area where the FADs are installed (density of FADs per fishing ground, per jurisdictional administration, per season). This policy brief has shown the particular expertise of the NGOs on conducting a research study and disseminating this knowledge-based research to influence how boundaries are made in the FADs arrangement. As can be seen in the policy brief, TNC

and PT. Hatfield uncovered a similar approach with the MMAF in determining the space in the FADs boundary work, which confirms that the initiative from the non-state actor is also based on jurisdictional administration, which is in line with the State's agenda.

Moreover, the experts on sustainable FADs fishing practice have also successfully brought several initiatives that influence how boundaries are made via meetings and focus group discussion. For a better illustration, the initiative pertaining to the FADs “amnesty” brought one common goal to better manage the number of FADs deployed on the surface of the Indonesian Ocean. However, since there is no alternative for the FADs, the FADs amnesty or strict requirements for FADs ownership will create a huge change for fishing communities. Based on the illustration, it was learnt that the State which is sponsoring the idea of the FADs amnesty and FADs policy brief through regulatory and private-sector driven approaches has established the boundaries around FADs, which are based on this restriction and reducing this sort of action.

Finally, aside from the Cartesian based viewpoint related to ocean boundary work, the nature of the pelagic fish seems to have been forgotten here. The fact that pelagic fish are exceedingly migratory in nature appears to have been disregarded in jurisdictional boundary making. The nature of pelagic fish makes them move in and out of the regulatory territories outlined above throughout their spatial range (Sibert and Hampton, 2003). The boundary work in the jurisdictional setting has placed FADs in localised settings in the marine environment where fishing occurs. The boundaries are made and sustained based on the zone and spatial arrangement. Even though FADs have the ability to create their own space by aggregating the fish, here, FADs are only seen as dots in the dividing boxes of ocean zones that harm the sustainability of the marine resources.

4.3 Database Management: Controlling the Data

The second object of concern in the jurisdictional boundary making is the accuracy of the FADs data collection that could be achieved through improved FADs Database Management. By identifying the exact number of FADs deployed on the surface of the Indonesian Ocean, the impact of the FAD's on both tuna and bycatch stocks will be better monitored and regulated. In the FADs Database Management, there was one highlighted issue that was mentioned several times in the meeting as well as the interview sessions with respondents. This prominent issue was about the need for an inventory of FADs deployed on the surface of the Indonesian Ocean.

As a realisation of the object of concern in Database Management, filling out the logbook has become an essential activity for Indonesian fishers. Here, the Indonesian fishing industry is referring to Ministry Regulation Number 18/2010 where the need to complete all the information about the vessels, the fishing gears, the fishing ground (latitude or longitude position) and the number of catch (in weight and quantity) in the logbook is stipulated. The information obtained by the logbook assists the State to monitor the fish stock besides preventing Illegal, Unreported and Unregulated (IUU) fishing practices. In relation to the FADs, the data collected on fishing activity could actually influence how boundaries are made around particular FADs. For instance, the logbook has the ability to identify where the coordinates of FADs are located on the surface of the ocean. In this case, it would also help to monitor the number of FADs being utilised in particular FMAs.

4.3.1 Subject

Regarding the same situation related to the previous concern on sustainability, the subject will be divided into two roles, the implementer and the catalyser. In this case, the implementer is the MMAF, while the NGOs and business sector act as catalysers. In this section, the role of the NGOs was apparent, particularly the MDPI, as the catalyser of better data collection not just concerning FADs issues, but also in the Indonesian tuna fisheries industry in general.

For instance, in enhancing collaboration and transparency for tuna fisher's data collection, the MDPI held an annual meeting called the Data Management Committee Meeting (DMC). The DMC has supported and collaborated with the implementer, which is the MMAF and DKP Province, in establishing the annual meeting in partner provinces. In every DMC meeting, the importance of data is being emphasised by the DKP and also by the MDPI because, as a matter of fact, although data is incredibly important to the Indonesian tuna fishing industry, data collection in the overall tuna fishing practice in Indonesia is still low in quality due to incomplete and inaccurate data completion in logbooks.

Further, even though the FADs data is one of the objects of concern pertaining to the sustainability aspect and even though the implementer and the catalyser have the same concern in achieving better data management on FADs, the data on the location of FADs on the ocean's surface is not always accessible information for these subjects. For the jurisdictional boundary making subjects, there are many obstacles to obtaining the data on FADs because there is hesitation from the fishermen to share detailed data on their FADs.

There is a common assumption among the fishermen themselves that the location of the FADs is a secret because it is their land from which they earn a living. Some of them

even analogically announce that the FADs are just like their wives. They do not want to share. So, whoever he is, whether the government or even the supplier, it will be difficult for them to get the exact location of the fisher's FADs because you can never tell whether or not they are lying (Interview Session with Regional Supervisor MDPI, 17 October 2017).

From previous statement, first, it is found that although the MMAF is the subject that requires all related stakeholders to work together in mapping all the FADs deployed on the ocean's surface (Statement from Moderator in National Meeting on FADs, 25 October 2017), the vision was not successfully combined with the recognition of the ministerial regulation on FADs. Second, in its four years since its implementation, the initiatives to manage the number of FADs in Indonesia through Ministry Regulation Number 26/2014 did not produce any satisfactory results.

Additionally, no fishers registered and no SIPR letter was issued up until the National Meeting on FADs was held (Statement from Moderator in National Meeting on FADs, 25 October 2017). Without any FADs being registered, it is impossible to know how many FADs have been deployed. During the in-depth interview with local officials from Labuhan Lombok Fishing Port, they suggest that law enforcement is at a minimum.

"In my opinion, the existing rule is already good (Ministry Regulation 26/2014). However, we are lacking in enforcement and control. For instance, let us say in the case of licensing, we do not yet know for sure how we can implement this regulation on the ground. Therefore, there is no available manpower assigned to supervise the implementation. This is why I do not know how many FADs in total have been deployed by our fishers from this port. Zero manpower exists to collect the data. We also need to have sufficient infrastructure like an adequate boat that is able to sail away to do the patrolling. Who will take the responsibility to finance this effort? Is it the provincial government? Or national?" (Interview Session with Head of Labuhan Lombok Fishing Port, 18 October 2017)

From the above statement, this section shows that data on how many FADs are deployed is still inaccessible for most of the provincial and local officers. Furthermore, even though they acknowledge the existence of Ministry Regulation Number 26/2014, they are not sure how to follow this regulation because there is no clear guidance to enforce the regulation and therefore, it makes them a powerless subject in regard to dealing with non-compliant FADs instalment.

4.3.2 Expertise

Here in relation to expertise as the third variable, I discovered that the level of expertise concerning logbook competencies plays a crucial part. However, even though the logbook is a tool that can help to promote transparency in fisheries Database Management, some research says the data obtained in logbooks is not accurate because the port staff, enumerators and operators do not have the required ability to enforce completion of the logbooks. One of the difficulties apparently is confusion about the terminology used in the logbooks (Yuniarta et al., 2017). The research statement confirmed by the observation conducted in the MDPI's field office in Labuhan Lombok shows some of the challenges faced by the fishers in completing their logbooks.

“There is no letter of assignment from the MMAF for local officers like us to discipline the unregulated FADs. (When the interview was conducted, suddenly, there was one pick-up car ready to be deployed FADs passing by towards the port). Look! Just like that, I can guarantee that the FAD does not have any permit. However, it is like a public secret, the port officers do not have any power to do anything with those FADs”
(Interview Session with Local Officers from DKP Eastern Lombok, 10 October 2017)

The uncertain regulation and passive initiative from local officials in the port has a close relationship with the level of expertise that these subjects had. The Indonesian fisheries management system is depending on the decentralisation system in which provincial authority plays an important part here. In decentralisation, central government formally transfers powers to actors and institutions at lower levels in a political-administrative and territorial hierarchy (Ribot, 2001). Additionally, when transferring power, knowledge should also be transferred too.

In the case of Indonesia, decentralisation was proceeded first by the establishment of Local Autonomy Law Number 22/1999 on Local Government. By means of this law, local government received new authority concerning marine fisheries management. However, since transferring power in the decentralisation process is a long-term process, the Indonesian government is still dealing with several agendas on how to better institutionalise and establish their marine fisheries management in decentralised ways (Satria and Matsida, 2004). This includes the improvement of capacity building for the local authority.

In order to better understand the context of decentralisation as one of expertise occurring in FADs management, one needs to realise that the process of building an improved Indonesian decentralisation system is manifested by many revisions in the decentralisation related

regulation. After Local Autonomy Law Number 22/1999, there was Local Autonomy Law Number 32/2004, which was also revised by the current Autonomy Law Number 23/2014. The changing process of transferring authority and management systems had influenced the way FADs are managed at the lower level of government. There was considerable confusion for the lower levels of authority, such as provincial level and local officers in the port in enforcing the rules related to FADs because the revision of the regulation did not come together with socialisation from the central government.

Although Satria's research (2004) on decentralisation policy has emphasised the significance of capacity building for the local government in strengthening the integrated coastal management initiative, capacity building would still be a normative agenda for the MMAF, especially regarding the issue of FAD's. From this view, it can be concluded that the expertise on FADs seems to be completely owned by the central government without giving proper reference to the provincial government to implement decentralisation, especially in fisheries management.

The absence of law enforcement in fishing ports is not the only reality in Cartesian boundary work in FADs. There is also minimum coordination of these subjects across levels and departments in relation to the FADs management spectrum. These various levels of understanding regarding the FADs database is a major concern. Moreover, the local officers in the port obviously had the most impact on uncoordinated relationships at a higher level. For instance, the provincial department of fisheries and marine affairs (DKP Province) in NTB claimed to struggle with clarifying the authority in the FADS management system that is given by the MMAF, while maintaining implementation in the ports by the local officers (Observation notes, 25 October 2017).

From the observation, it was established that the changing authority and regulations did not come together with the initiative in mainstreaming the national agenda on fisheries management. In NTB, the established meeting on data, DMC, is an initiative by the MDPI in collaboration with provincial government. Based on the observation, although the central government is in favour of the enhancement of the decentralisation system in marine resource management, there is no further commitment to realising it. This is confirmed by the absence of the MMAF's representative in the DMC Meeting in NTB Province, who came to oversee the meeting (Observation notes, DMC Meeting in NTB, 21 December 2017).

4.3.3 Space

As already mentioned, the MMAF, as the implementer, wants to develop an improved FADs inventory to recognise how many FADs are deployed on the ocean's surface. The data collection on FADs is referred to as the two elements that build the space in the Cartesian based arrangement on FADs. First, the Fisheries Management Area (FMA) or familiarly known in Bahasa as *Wilayah Pengelolaan Perikanan* (WPP) and the second one is decentralisation and provincial authority. These two elements are not only influencing the control over marine resources in which FADs are closely related but also influencing how boundaries are made.

As is apparent in Figure 2, for its national fisheries management purposes, Indonesian waters are divided into eleven FMAs. Three of them located within the IOTC area of competence, 572 (Indian Ocean – West Sumatera), 573 (South of Java – East Nusa Tenggara) and 571 (Malacca Strait and the Andaman Sea). In the context of this thesis, the fishers from Labuhan Lombok had put most of their FADs in FMA 573 (Observation notes from DMC Meeting for NTB, 21 December 2017). In supporting more detailed regulation on FADs, control measures on FADs will be planned soon that may include restrictions for spatial allocation, seasonal closures, gear allowance as well as total numbers of FADs per FMA.

These control measures on FADs will eventually influence how boundaries are made, especially in the context of FMA. In its future realisation, the MMAF will ask all stakeholders to note that the Indonesian Fish Research Centre (Puriskan) will specify a number of FADs in each area (Conclusion notes from the FAD National Meeting, 26 October 2017). This initiative to govern the FADs based on spatial allocation is also in line with the Anchored FAD (AFAD) Management Plans for the IOTC in which FADs are managed based on the applicable areas.

The applicable areas are the mooring sites if any, and also other closed areas, such as shipping lanes, marine protected areas and reserves (see Appendix for the study by PT Hatfield Indonesia, Capture of Juvenile Tuna in Indonesia, 2017). This initiative to govern the FADs based on spatial allocation and the idea on integrating FMA in the FADs management system is the manifestation of the space-based approach in Cartesian boundary making, where space is created based on the State's authority in managing their natural resources.

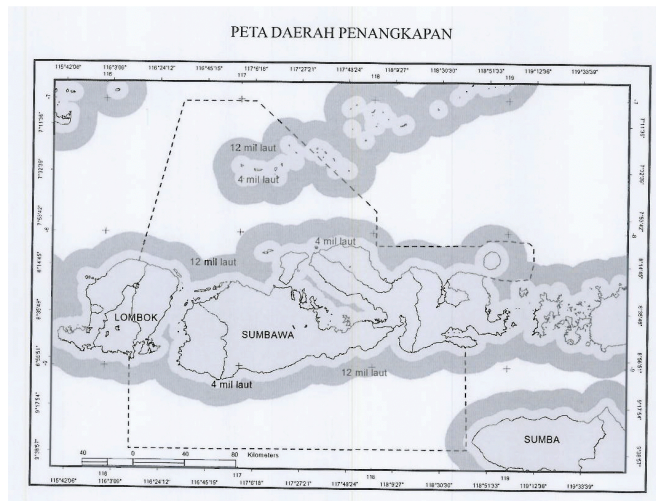


Figure 7: Map of Tuna Fishery Area for Data Management
(adopted from Djelantik's thesis, 2016; A legal provincial DMC document)

Aside from FMA, the decentralisation system and its provincial authority also influence the understanding of space in the FADs boundary work. Seeing as the Regency does not have the authority to cover four miles out into the ocean, all the authority from the shore out to 12 miles comes under provincial responsibility, whereas the ocean area more than 12 miles from the seashore is the responsibility of central government.

So now, after Local Autonomy Law Number 23/2014 was implemented, the FADs located over 12 miles are the responsibility of the central government. The reality here is many FADs are located more than 12 miles out because their target is tuna (usually found in the high seas). The truth is, those FADs are no longer the authority of the province. Right? I can just say to the central government, that it is not my authority to take care of these FADs because the location is not part of the provincial zone that became our authority. But I know it is not wise to do so because here, we are the ones who face the fishing communities (Head of Capture Fisheries, DKP NTB).

The fact that most of the FADs in Labuhan Lombok are located over 12 miles from the seashore has confused the local officials. This situation shows that in sustaining Cartesian based boundary making concerning FADs, the knowledge of who is responsible for FADs is repeatedly underestimated and uncertain. There are certain rules and regulations over marine areas that determine who is responsible for regulating and even accessing it.

The regulations can only be enforced by the authority of the State, in this case, the provincial and national government. The establishment of decentralised government tends to create a broader gap in coordination between the central and lower levels of government that is caused

by a different level of expertise in understanding the issue. Therefore, based on the previous statement from the Head of Capture Fisheries from DKP NTB, it is evident that the space in the FADs jurisdictional boundary making is performed based on the Cartesian based spatial arrangement.

4.4 Conclusion

To conclude, this section outlines FADs boundary-making in the Cartesian way of understanding through two objects of concern; specifically, Sustainable FADs Fishing Practice in FADs and FADs Database Management. Both concerns are crucial in influencing how territoriality in FADs arrangement form the process of inclusion and exclusion. Space here is primarily understood based on FMA and related provincial authority zones in which the ocean's surface are treated like boxes that can be divided into squares. The State's authority on particular area jurisdiction is dominating the boundary work around FADs, such as applying expertise only from topographical data and examining the marine space in a cartographic way.

However, from the findings I found that space can be seen as a contested concept of understanding in jurisdictional boundary making. Although the government has determined its own spatial authority, the deployment of FADs by the fishers were overlapping the assigned spatial arrangement. While the fishers appear to be excluded in the boundary work process, the inflexibility of boundary works in jurisdictional FADs arrangement has made the regulation ineffective in the management of the Indonesian FADs inventory and deployment system. Therefore, in order to understand the different ways of understanding the ocean, besides revealing another way of boundary work, the following section will explain how Objects, Subjects, Expertise and Space are formulating cases around the relational space.



5

RELATIONAL SPACE

CHAPTER 5: RELATIONAL SPACE

5.1 Introduction

After a brief explanation on jurisdictional boundary making in the previous chapter, Chapter Five will specifically explain the relational approach related to boundary work. In this chapter, there will be further description on how territories and boundaries were built, not only by the specified legal frontiers but also by the relationship of each actor in certain communities. To understand the alternative way of looking at FADs territorialities, it is essential to examine another viewpoint on boundary work. As Durkheim (1965) argues in *'Already in The Elementary Forms of Religious Life'*, many existing communities have been defined by their internal segmentation as much as by their external perimeter.

Therefore, agreeing with Durkheim's statement, this thesis chapter will stress the FADs boundary work that is influenced by the internal segmentation of FADs communities that create their own networks. 'Network' is used here not as an alternative definition of community, but as an analytical metaphor to explore relational enactment (Pauwelussen, 2017) between FADs stakeholders. The primary objective of this chapter is to use the four variables that illuminate boundary work in the relational approach through two objects established around the network. The two objects are in regard to the Fish Catch and the FADs. Each case has its own key issues that will also be explained further in this chapter. We will use similar variables to the previous chapter, which are objects of concern followed by Subject, Expertise and Space.

5.2 Fish Catch: Managing the Horizontal Conflicts

To explore the process of FADs territorialisation through relational boundary work, first, it is important to examine the four variables, Object, Subject, Expertise and Space, that assemble the territory around FADs. Through the interview and observation sessions, I discovered that the first and foremost object of concern in the relational boundary work is the fish catch. The object of concern represents the focus that influence the way FADs are managed. To the subject, which are the fishers as the FADs users, the ultimate reason for incorporating FADs in their fishing practice is because the FADs assist them to secure their fish catch.

I am using the FADs because that is where the fish are gathered. If there are no FADs, I will spend a lot of money on gasoline because we will be just wandering around looking for where the fish are gathered. FADs also help the fish to 'rest', because we can tie up

our vessels to the FADs (Interview Session with Sinjai Fisher from Baura, 9 October 2017).

FADs are like our plantations. After we plant our FAD, we can go back on other days. We can tie up our vessel and we can harvest the fish that we have there (Interview Session with Mandar Fisher from Baura, 11 October 2017)

These two interviews above confirmed that the FAD does not only act as supporting device but also assure the fisher of obtaining a larger catch. To the fishers, FADs are embedded in their livelihood, because by using the FADs, the fishers will have a sense of security. This is as if the FADs are their seeds, so that when they plant it, they can reap (gain the fish) in the following days.

In Labuhan Lombok, every fishers boat has at least one accessible FAD deployed in their fishing ground in the ocean. Although there are different sorts of fishers in Labuhan Lombok, all the fishers that dock and operate from port use FADs on their fishing trip because not only does it make fishing trips more efficient, it is also the only way possible of fishing for pelagic fish (Interview session with Head of Labuhan Lombok Fishing Port, 18 October 2017). In relation to the FADs territorialities, these fishers have created their boundaries in accessing and owning the FADs based on their fishing practice characteristics. Since each subject wanted to secure their concern over the object, there are many boundaries that exist based on each subject's interpretation and control over their FADs, which cause the horizontal conflicts.

The horizontal conflict subsequently became the main issue because there are different experts and different interpretations of space occurring between these fishers. All these differences have successfully contributed to the relational boundary work on FADs. Since this section is specifically focusing on the conflicts between fishers, the conflict often arises because of the different types of fisher's informal rules that can be interpreted differently. The conflictual relationship when these interpretations do not meet each other is unavoidable.

The rising tension in the differences in the number of fish catches is clearly found in the case of purse seine. Similar to other fishers, the existence of purse seine fishers in FADs fishing practice also places great importance on generating their own assemblage, their own network that influences the FADs boundary work. From most of the interview sessions with the fishers, the research found that there is a sense of antipathy from most of the fishers in Labuhan Lombok in the context of FADs utilisation. For instance, if there are any FADs left off guard, the purse seine regularly misuses it without the owner's consent. Although the practice of misusing FADs is not entirely done by purse seine fishers only, there are many other fishers from hand

line vessels that are also violating access to FADs. However, the sense of antipathy occurs because purse seine fishers have a particular fishing technique which uses purse wire that moves in a circular motion to catch all the fish aggregate around the FADs.

In this way, the fishes that aggregated around the FADs will all be taken out by the purse. The catch includes all types of fish without any selection process, and moreover, includes juvenile fish. The absence of these juveniles means that the FAD will be 'empty' for another one or two months. The fishers call the purse seine's fishing technique '*melingkar*', which means 'circulating' in English. Additionally, it is evident from the interview sessions, that all fishers are against the purse seine's behaviour.

In many cases during the interview session, the hand line fishers commented that they feel the need to keep the FADs regularly occupied by initiating fishing shifts within the group. Consequently, they can then go simultaneously to fish around their FADs without having to leave the FADs off guard and susceptible to the purse seine. Moreover, in establishing the FADs group, these fishers usually gather with the same types of fishers. For instance, the Penongkol only wants to be in a group with other Penongkol. The same case goes for the Mandar.

5.2.1 Subject

From the field work conducted in Labuhan Lombok, I have been able to reveal different types of fishers with distinct types of relationships that could possibly influence the FADs boundary making. In Labuhan Lombok fishing port, most of the vessels that dock in the harbour are the hand-line vessels. There might be one or two pole and line vessels but most of the time the dock was full of the hand-line fishers.

There are two types of hand-line fishers; namely the Sinjai and the Mandar. The pole and line vessels are usually just dock and unload the fish for their supplier. From the field work observation, the pole and line vessels are independent and do not have any affiliation with any groups of fishers. Regarding the hand-line fishers. As the fishers make use of self-made Fishing Aggregating Devices (FADs) to target tuna, they are generally classified based on the FADs group. The FADs group functions based on the types of vessels (Sinjai only groups with Sinjai, as well as Mandar) and is also based on the financial contribution of each vessel to buy the FADs from the supplier.

The Sinjai fishers are commonly known as Penongkol fishers because they usually catch different varieties of tuna and skipjack. Most Sinjai fishers are local residents of Lombok mixed

with the descendants of the Sinjai people (from Sulawesi). Sinjai fishers typically go out on longer trips with larger crews and target smaller tuna. Meanwhile, the Mandar fisher comes from Mandar Sulawesi. Most are originally from the Mandar tribe which is one of the oldest ethnic coastal communities in Indonesia, besides the Bajo. The Mandars do not originally come from Lombok. They only work seasonally in Labuhan Lombok area as Andon fishers (settler fishers with special permits called SIPI Andon). The Mandars have different vessels and distinctive fishing techniques in contrast to the Sinjai, which also results in fish of different quality being caught. Regarding the Mandar vessels, each vessel takes a crew of approximately eight people and carries small canoes called *sampans* or *lepa-lepa*, which are utilised by individual crew members on the open water to catch large-sized tuna.



Figure 8: Mandar vessel docked at the Labuhan Lombok fishing port (Author)



Figure 9: Sinjai vessels docked next to each other in Labuhan Lombok fishing port (Author)

In talking about the ownership status of the vessels, while several Sinjai fishers own their own vessels, some of the vessels used by the Sinjai are also owned by one of the local suppliers. In the Mandar fishing community, all the boats are usually owned by the captain of the ship.

However, both types of ownership are dependent on their supplier. Based on the observation I conducted, there are four types of fisher that can have a significant impact on FADs boundary making. During the field work, I also undertook an interview session with the various types of fishers; specifically, Sinjai, Mandar, pole and line fishers, in addition to purse seine fishers. Although the purse seine fishers could not be found in the port, this research gained substantial information on their FADs fishing practice, based on other fishers' information.

In understanding that various relationships occur in FADs utilisation, I will describe each type of fisher's access and ownership related to the FADs. Based on Table 3 (below), the types of fishers will have determined how FADs are being accessed and owned, whereby the information obtained will further define the boundary work around FADs. For instance, not every fisher owns the FADs. In the context of Labuhan Lombok, only hand-line fishers have FADs and they generally form FADs group.

Meanwhile, the pole and line fishers did not have their own FADs and frequently go to Sumbawa, Eastern Nusa Tenggara (NTT) to establish FADs cooperative relationships with the local fishers there. By way of two pole and line vessels, I was able to appreciate that the agreement between the pole and line fishers and the local fishers that own the FADs is common practice, for the reason that the pole and line fishers, are forbidden to access FADs from the hand-line fishers in Labuhan Lombok.

Although we do not own any FADs, we never fish from Labuhan Lombok's FADs because they (the hand-line fishers) do not have a profit sharing mechanism with the pole and line fishers. Meanwhile, in Sumbawa, we established a profit sharing agreement with more than ten FADs owner. The mechanism is 5:1. For every five fish that we catch, the owner of the FADs gets one fish. The agreement is profitable for me and we have a good relationship with the FADs owner because as a small-scale fisher themselves, we mutually support their catch (Interview Session with Pole and Line Fisher, 18 October 2017).

From the interview, it was determined that there are various types of access concerning FADs utilisation, which viewed from the relational boundary making lenses, reveals that there is no homogenous type of boundary work in FADs territorialities. Each subject determines their own boundaries based on their access agreement and ownership (see Table 3). Given that fishermen tend to formulate a group in accessing and owning their FADs, the fishers usually go together with the other fishers who have similar vessels and fishing techniques when they are establishing a FAD's group. This takes place because the differences in fishing technique and fishing gear will affect the fishers' fish catch quota.

Types of Fishers	Origins	FADs Ownership	FADs Access
Penongkol	Sinjai, Sulawesi or locals from Lombok	Group/community-based ownership	Limited for group member
Mandar	Mandar, Sulawesi	Group/community-based ownership	Limited for group member
Pole and Line / <i>Huhate</i>	Locals from Lombok	Do not own any FADs. Go to Sumbawa instead to fish in other fishers' FADs by means of an agreement	Based on agreement
Purse Seine	Bali or occasionally from Java	Usually one vessel owns one or more than one FADs	Based on agreement

Table 3: FADs Ownership and Access in Labuhan Lombok (author)

5.2.2 Expertise

The third variable observed in the relational network in the FADs arrangement is expertise. The power of the subject to control the fish as an object of concern is highly influential in the relational boundary work. Meanwhile, the different interpretation of accessing the fishing ground that the FADs have created is tightly linked to the expertise and knowledge around the rules. Although the fishers have the same concern about the fish, each fisher has their own expertise in creating rules for their objects of concern. The rules are reproduced by specifying how the requirements to access the FADs are made, legible, acknowledged and followed by another set of experts, which are the other fishers' rules.

One of the common rules that exists and is followed by the fishers is to respect each other's FADs and not interfere in other fishing grounds without permission. Some fishers can be more protective than others regarding their FADs, while some fishers can be more permissive about their FADs. Therefore, it has been established that expertise is closely related to the subject as the knowledge holder. As already mentioned, the subject indicated around the object is the fishers themselves.

To further illustrate, during the field work, it was ascertained that not every informal rule is enforced due to special circumstances. For instance, even though there are common informal rules saying the only fisher able to fish in the FADs is the fisher that contributes to the FADs instalment money, fellow fishers often allow the other fishers to fish in their FADs because they believe in the value of brotherhood. There is no fixed condition to enforce the rules as every situation is negotiable for the fishers. From the findings, it is obvious that the fishers have a particular specialty for performing the expertise in rulemaking that includes the enforcement or the violation of those rules.

Most of the time, we allow other fishers outside our FAD group to fish in our FAD as long as they ask for permission. I let them in because we are brothers. We have our own family on land. They need to eat and go to school. Here, we are just working to feed our family, and, on the sea, we are all family too (Interview Session with Mandar Fishers, 17 October 2017).

The interview reveals that the fishers only need informal permission to break the rules they enforced earlier, because without it, they will consider the other fisher's act to be stealing. In this case, the expertise related to rulemaking depends on the degree of another set of experts from another subject. Since the difference in performing the rules will cause conflict among the fishers, another expert is found with respect to conflict resolution.

Aside from the expertise regarding rulemaking, the expertise on conflict resolution is observed to be essential expertise obtained from the fishers in relation to their concern about the fish. As an illustration, during the interview conducted with the fishers, numerous findings showed that the fishers have their own dispute management that occurs as a result of their common knowledge on conflict resolution. Most of the knowledge obtained on conflict resolution is related to the fisher's relationship with their supplier. For instance, if there is an act of stealing (fishing in other FADs without permission), two options are available to settle the matter. First, the fishers resolve it in an amicable way, or second, they inform their suppliers. The selection of a settlement strategy will depend on the fisher's and supplier's degree of concern about the fish that was stolen from their FADs.

5.2.3 Space

Finally, the last variable in relational boundary making is Space. This variable is central to relational boundary making because here, space is not only understood based on the jurisdictional frontier but based on the exclusion and inclusion process that is developed by the subject's concern. From the previous explanation on Object, Subject and Expertise, it was ascertained that the FAD's territory determines the relational boundary work between fishers that are aiming to control the resources (fish) and the activity surrounding the resources (fishing).

This situation affects the process of boundary work in the relational fisher's network because in deploying the FADs on the ocean's surface, the fishers do not often pay attention to the coastal zone that determines the national and provincial authority over the ocean. Instead they will look at other FAD locations and deploy it based on information from fellow fishers.

Therefore, the purpose of controlling the activities over the objects of concern will create spaces which may be contiguous or topographically distant (Bear and Eden, 2011).

We usually do not know if there is a FAD nearby in our targeted location. Therefore, we need to seek information from fellow fishers before we deploy our FADs. We want to avoid the trouble that is caused by FADs attaching to each other. The common rule is the latest FADs deployed need to be discarded because the area is already 'owned' by the previous FAD (Interview Session with Sinjai Fishers, 11 October 2017).

From the interview session, it was established that the understanding of space is not just limited to the fishing practice around FADs, but it is also dependent on informational flows, such as the location and owner of the FADs. Meaning, as a floating and aggregating device on the surface of the ocean, FADs can no longer be understood – borrowing Castell's words – "on their own" (Castells, 1997). Instead, the FADs and their role should be looked at as the place and the container where the flows of fishermen, middlemen, money and the fish have a network. It is important to note that in the object of concern on fish, the FADs are treated as the nodal points and established as an existing space in relation to the fisher's relational network in Labuhan Lombok. However, in the subsequent section, I also found that the FADs are simultaneously performed as an object of concern.

Here I realised that even though a FAD can be seen as a place through its artificial fishing ground, it deserves its own spotlight in determining relational boundary work on the ocean. It can be concluded that in the relational network, the FADs can be the space entities but can also be the object of concern at the same time. The ensuing section will expand on the four variables that assemblage around the concern about FADs.

5.3 FADs: The Meeting Point

Continuing from the previous section, in a borderless environment like the ocean, FADs create their own place influenced by the relevant objects of concern and also the subject that wishes to control it. From earlier illustrations on the field work, it is evident that the FAD and its fishing ground are a point of convergence for pelagic fishing practice in Labuhan Lombok because the FADs bring together mobile organisms in fluid marine ecosystems with locally and globally networked social relations of production and governance (Bush and Mol, 2014).

As the FADs create their own network and act as actants, they require particular attention that make it desirable to be the second object of concern in FADs relational boundary making. Moreover, in understanding the concern about FADs, one needs to understand that access to

FADs is built by a certain patronage network created between the fishers and the supplier. For that reason, the subject found controlling the FADs is the supplier.

5.3.1 Subject

As the key subject in the relational network regarding the FADs arrangement, the supplier, plays a significant role. In Labuhan Lombok and in other coastal communities in Indonesia, it is common to find patron-client relationships, seeing as these are the most common type of relationship between the fisher and the supplier (Bailey et al., 2016; Kusumawati et al., 2013). The defining characteristic of the patron-client relationship is the asymmetry that exists between the two actors, who are of “significantly different socioeconomic status” (Foster, 1963).

In the context of FADs in Labuhan Lombok, all the fishers have one fixed supplier who they are in debt to for buying FADs materials like rope, foam, net or other material for the maintenance of their vessels. The fishers (the client) who are in debt to the supplier (the patron) become dependent and must pay off the debt by selling all their catches to the supplier. This research was able to conduct interviews with four suppliers in Labuhan Lombok. Additionally, via the support of the MDPI, I was able to conduct in-depth interviews directly with each supplier to establish that there are different types of access related to FADs that are influenced by their patronage network.

The first supplier was a Bugisian businessman who originally comes from Makassar, which has the oldest regional business (*Usaha Daerah*) established in Labuhan Lombok, called UD. Baura. The name of the owner is Haji Hajir, who is currently developing his business with his eldest son, Azkar Baura. Haji Hajir has the largest number of vessels under his yellow flag, with more than 150 active vessels (Interview session with Azkar Baura, 19 October 2017). The second supplier was a local Sasak lady named Rosida, or more commonly known as Ida. Ida’s regional business is known as UD Versace. Her company is also one of the oldest businesses in Labuhan Lombok. Moreover, before other suppliers moved into the area, UD Versace and UD Baura were the only businesses.

Although there is no information on how many vessels are joining UD Versace, it was confirmed that after UD Baura, UD Versace has the largest number of vessels under their flags. By way of its operation, UD Versace often contributes financial support for their fishers, so that the fishers only pay half price for their FADs (Interview session with Rosida, 19 October 2017). The third supplier was Catir with a regional business called UD Erpa Utama. He is originally from Makassar and has been a supplier in Labuhan Lombok for six years. He already has twenty

vessels. Lastly, the fourth supplier is Tahir who owns a regional business called UD Eka Tirta. These four suppliers have different access arrangements pertaining to FADs based on group culture and business reasons. Table 2 will map the supplier's concern about FADs and the expertise found around it.

Concern about FADs	Expertise	UD Baura	UD Versace	UD Erpa Utama	UD Eka Tirta
Access	Sustaining/maximising the fishing business	Closed Access	Closed Access	Closed Access	Open Access
Conflicts Resolution	Creating fisher's dependency	Escalation	Escalation	Mediation	Mediation
Loan Mechanism	Supporting the fishers to have FADs	FADs material	FADs material	FADs material	Loan fund

Table 2: Supplier's FADs arrangement (Author)

As the subject that has control over the FADs, the performance of these suppliers has created different sorts of boundaries in Labuhan Lombok's FADs network. For instance, it is apparent that UD Eka Tirta has more relaxed rules in the context of accessing the FADs. The interview session with the owner, revealed that UD Eka Tirta did not require the fishers to be in the same FADs group with fellow fishers that have also joined UD Eka Tirta. Instead, they let the fishers establish a mixed group consisting of UD Eka Tirta's fishers with other fishers from different groups. For the owner UD Eka Tirta's, as long as they pay the loan and supply their fish catch to UD Eka Tirta, the mixed group of FADs will not be a problem. Meanwhile, for UD Baura, UD Versace and UD Erpa Utama, access to the FADs group is found to be 'closed access' which requires the group's member to also be from the same supplier. From the interview session, it was also observed that the reason for having closed access for the FADs is more about securing the fish that aggregates around the FADs. As FADs are seen to be an investment tool for the suppliers, several suppliers gain expertise in maximising their investment on FADs by implementing some rules related to the FADs utilisation.

Furthermore, in conflict resolution, the settlement is more inflexible for more senior UD. During the interview session with the owner of UD Versace, one important insight was gained. Initially, it was UD Baura and UD Versace that set up the informal rules on FADs utilisation quite a while ago. The tension between them continues to this day and has become the normative rules around the suppliers and their fisher member.

If you asked me the rules about utilising FADs, I would answer that I don't have any specific rules. It all started in 2005 when it was just the two of us, Baura and Versace. Haji Hajir (the owner of Baura) set up rules that whoever was caught stealing the fish from other fisher's FADs (different supplier), all the fish they caught should be given to the owner of the FADs and the thief would get nothing in return. At that time, I felt the need to just follow the proposed rule because Baura had more fishers and therefore, is more powerful (Interview Session with Rosida, the owner of UD Versace, 19 October 2017).

The practice proposed by Baura is not just the common practice seen currently in the FADs network but is also believed to be the most appropriate way to solve problems related to FADs. For most of the fishers under Baura and Versace are encouraged to inform their supplier about any misuse related to FADs and the catch. Meanwhile, for newcomers, such as UD Eka Tirta and UD Erpa Utama, the owners set more flexible rules and encourage their fishers to settle FADs related issues in an amicable way.

In some cases, it was discovered that several fishers endeavored to protect their fellow fishermen from different suppliers to fish in their FADs. Finally, it can be concluded that the boundaries that exist in the relational FADs arrangement are extremely permeable because they depend on the fishing practice. Consequently, the fishing practice occurring on the ocean is then determined by the relationship between fishers and their suppliers. The more powerful supplier has the authority to create boundaries by way of their authority regarding such areas and resources, just as Baura did in Labuhan Lombok. Further, the hierarchy between the suppliers is found to determine how the expertise on conflict resolution is executed.

5.3.2 Expertise

Here, it is important to examine how expertise on fisher's dependency towards their supplier is developed by a sense of belonging that is carried out by the supplier. Through the interview session with the supplier and the fishers, it was evident that their patron-client relationship not only revolves around the expertise based on supporting the fishing business through financial support. In fact, social support is also important for the fishers because for the hand-line fishers principally, the supplier is not just a patron who can provide loans. The supplier acts more like the head of the community/community leader who offers advice, protection and moral support to his fishers. In some cases, the supplier is also the person that brought them to Labuhan Lombok from their village. Therefore, in the relational fisher network, I found that the expertise relies upon the idea of maximising the fishing business by creating dependency for the fishers with FADs based on the provision of loans.

It is interesting to see the role of the supplier in the FADs arrangement because, while the supplier has the authority to determine the boundary work in the FADs relational network, the supplier also has to support the State's authority on managing the FADs based on the jurisdictional viewpoint. Despite the supplier's familiarity with the fishers, the supplier also has a close relationship to the port officer and even provincial officers.

In this case, it was discovered that the supplier has chameleon like traits, which adapt to both worlds, the State and the fishers. However, I also established that the supplier tends to prioritise their position in the fishing community group first. The fact that the fishers show more respect and obey their supplier, also makes the supplier feel responsible for their fisher's. Here, their patron-client relationship is hard to break and should be seen as a strategy to control the fisher's network in FADs arrangement.

5.3.3 Space

Space is the final concern here but is still exceedingly important. Through the expertise performed by the subjects around the FADs, space is determined to be more than just a critical variable in the FADs relational boundary work. The notion that space should be understood beyond a designated area is not enough to translate the understanding of space in the FADs relational boundary work. Here, based on the examination of FADs as the object of concern, the supplier as the prominent subject and the expert on dependency in fishing business, the space in relational boundary work is noted to be the patronage network itself.

Patronage network is defined as space because it was where the flows of information, rules, capital, fish and trust aggregate around the object, which is the FAD. The patronage network has established an invisible area with its own boundaries to restrict or to allow fishers to utilise the FADs. This patronage network is noticeably indicated by the deployed FADs with different colour flags representing the supplier's group colour. The physical space that is visible to the eye might be the location where the FADs are deployed. However, the ocean and its nature limit the definition of space in the moving environment like the ocean and its stream. Therefore, in the relational approach, boundaries should be understood as the product of a permeable area, whereas the patronage network should be recognised as a new layer in the time-space organisation of FADs fishing practices that stretch across the ocean's geographical boundaries.

5.4 Conclusion

As mentioned in the first section of this chapter, the main purpose of the chapter is to present the relational approach in FADs boundary making as a contrasting reality to the jurisdictional approach. To conclude, this section seeks to present the relational boundary work around the FADs through two objects of concern. The first is regarding the Fish Catch and the second is related to the FADs. The subject that follows the object of concern is the fishers for their concern about fish catches and the supplier for his concern about FADs. Furthermore, both concerns have their own main issue that influences how the expertise and space is defined.

In analysing the following subject, expertise and finally space in both concerns, I finally found that the FAD's relational space is inseparable from the relationship between the fisher and their supplier. The entire space making process is dependent on the authority given by the supplier and the agreement with their fishers. It is impossible to understand how the boundaries are created in FADs arrangement based on the Cartesian understanding on ocean space only because the reality on the ocean does not work in jurisdictional way of understanding. Instead, the ocean territory is created from these fishers' movement. Therefore, the following section will discuss both findings from Chapters 4 and 5 to further examine this finding as well as identifying further possibilities for collaborative form of FADs arrangement.



6

DISCUSSION

CHAPTER 6: DISCUSSION

“How does our perspective change when we think not only from the sea, but with the sea?”
— Kimberley Peters and Philip Steinberg (2015)

6.1 Introduction

In this chapter, the result of the findings is discussed in the context of the scientific literature and guided by the theoretical framework presented earlier. The aim of this chapter is to discuss the two forms of spaces found simultaneously enacted in the FADs arrangement. By looking at this multiple ontology created from different perspectives in relation to ocean boundary work, I will explore the possibilities of undertaking collaborative management for FADs governance.

To better discuss on the findings, presentation will be divided into four subchapters. The following subchapter 6.2 will discuss on the contrasting data found in Chapters 4 and 5, particularly in the context of dual boundary making. The aim of this subchapter is to reveal the distinction between the two-spatial forms with the support of four variables: Space, Object, Subject and Expertise.

Thereafter, from the findings related to these two-space making in the ocean, further discussion on the process of rethinking ocean territoriality will be presented in 6.3. Here, the alternative way of looking at the ocean will be presented as a response to the absence of collective action in managing the FADs. To conclude this chapter, in the chapter 6.4, I will explore future possibilities towards collaborative form of management through different kinds of emerging applications related to ocean governance.

6.2 Main Findings: Contrasting the Four Variables in the FADs Arrangement

As shown in the Chapters 4 and 5, there are two forms of the boundary making and authority claiming process that resulted in different forms of in the ocean. First, is Jurisdictional Space where the State has imposed and enforced the idea of the Cartesian way of understanding the space in the context of FADs management. This Cartesian way of thinking has affect the way the State governs the ocean. The FADs were only seen and treated as devices floating on the ocean.

The second type of space is relational space. To understand relational space, I use the network and flows approach to understand the relationship web of different sorts of fishers with their suppliers. From the identification of two forms of spaces, it is found that these two contrasting

spatial ontologies function in parallel with each other. The process of boundary making and authority claiming in the FADs arrangement has resulted in two different layers of realities that do not interact with each other.

To further elaborate on this finding, I was supported by four variables adapted from Vandergeest et al. (2015) to examine the entities involved in formulating both spaces and how can they be different to each other. Since all variables are linked to each other and with objective to better understand its connection, I would explain the contrasting fact between two forms of spaces in sequences. First, I would explain the Space, following by the Object and later I would explain the Subject and the Expertise that followed.

Space

The space became a crucial variable that needs to be highlighted because the space is found to carry multiple interpretation of the boundaries that are created from different authorities occur in the context of FADs fishing practice. Space is also the first and foremost variable that could help us in analyzing the other three variables that follows. In looking at this dual spatial form resulted from FADs arrangement, there are already growing literature on the 'relational turn' in the spatial sciences that explores social, porous and networked understandings of space and scale (e.g Massey, 2005). However, since there is no research occur within the context of FADs, it is important to closely examine the contrasting form of spaces found in jurisdictional and relational territorial approach in the ocean space.

Further, in the Jurisdictional approach, the space is understood as a bounded and fixated area of zoning where the borders are deployed based on the coordinate points and particular allowed area around the FADs. Since jurisdiction is an aspect of sovereignty, it is coextensive with and, indeed, incidental to, but also limited by, the State's sovereignty (Buxbaum, 2009). The boundaries are made based on state's authority in enforcing their geographical understanding in managing its resources. Therefore, it is confirmed that in Jurisdictional approach, Space is understood as the spatial zonation based on the State's regulation.

The form regarding FAD's space occurring in this Cartesian spatial form is the Fisheries Management Area (or WPP) and the provincial zonation of authority. Here, the management of FADs is ruled and set as far as the applicable area where the FADs are deployed. The natural and highly dynamic topology of the sea is not counted in this Cartesian space because the State, as the highest authority, was referring to the predefined geographical map of the surface of the Indonesian Ocean.

Meanwhile in the relational way of thinking, the ocean space is seen to be a permeable and highly dynamic area that could be defined differently based on the patronage network. For the fisher, as long as their boat could reach the fishing ground created by the FADs, those deployment areas of FAD is still in their zone. Here, it is clear to see that the fisher's relational network has performed and resulted in a different realm. The space indicated in the fisher's network is first the fishing ground created by the FADs and second, the patronage network itself. Space in the relational network is determined to be always open, become contingent, emergent and depending on where the FADs are located and who is the subject that controls the utilisation of these FADs.

Network has been very influential to the concept of relation because relational space is extraterritorial (Allmendinger, 2016). In the context of FADs, it is clear that this floating device has created an oceanic space constituted with flows and network of the patron-client relationship between the fishers and their supplier. Therefore, it is clear that the space is not only understood as bounded zonation area where the FADs are located but in Relational approach, the space related to FADs is understood as constituted network social-ecological places which able to offer new insights in tuna governance (Bush and Mol, 2014).

Finally, based on each form of spaces, it can be concluded that the Jurisdictional approach formulated based on the domination on the State as the highest authority performed to manage their marine resources where in Relational approach, the fishers and the patrons are having more control in determining what kind of spaces they want to establish on FADs arrangement.

Object

The second variable to observe is the object. Earlier at the theoretical framework, we start with Object as a concern (Latour, 2007). Latour believes that Objects are born as things which at any scale, the thing gathers and makes a public symbiosis with the things itself. The Object can be related to technical entities, scientific innovations or political issues. For Latour, the Object is not limited to men or even humans. As he includes the non-human entities as Object, Latour has brought his idea of politics, a better matter of politics (Mcgee, 2014). Meaning, the Object we found in each form of spaces are the entities that gathers and affect the boundary making process in FADs arrangement.

For better illustration, the Object of concern is found to be the same in Jurisdictional Space and Relational Space. The Objects found are the Fish and the FADs itself. The Fish and the FADs became the non-human entities that is affect the formulation of boundary work in FADs

arrangement because it gathers different kind of interest, power and authorities around them. In order to better understand how these Objects are found, I will explain it one by one.

The first object of concern found to be the same is the fish. While it is clear that the Object in Relational space is concerning on the fish catch of the fishers and how it would affect their income, the subject in the Jurisdictional space were also found concerning on the fish with different motives. The State's and the catalysers were push on behalf of sustainability in fishing practice in Jurisdictional space. Here, the main concern in Jurisdictional space was found lies on the fish itself and how to sustain the marine resources productivity.

The State with its Cartesian way of understanding looks at the FADs associated with high levels of bycatch, in which it needs to be governed by an area-based strategy because the State still looks at the ocean as the extension of the land. Here, Indonesian government comes up with an idea to integrate the FMA management in measuring the sustainability notion in fisheries through the condition of fish stock in each FMA's area (Observation during National Meeting on FADs, 25 November 2017).

The same condition also occurs with regards to the second object of concern, which is about the FADs. Both Jurisdictional and Relational forms of spaces look at the FADs as the object which they can control and later determine the process of territoriality in each spatial form. The FADs became object of concern for the fisher's relational network because the FADs are their properties to achieve more productive fishing activity. The fishers and the suppliers then created certain informal rules that performing within their authorise relationship to manage this FAD as their object of concern.

Based on previous explanation, it is important to note that two objects are closely related to each other. The Fish and the FADs are two objects that cannot be analyse separately. However, I also found that the same object of concern does not always lead to the same subject as well as expertise. During closer examination of the two forms of spaces, I learned that the most tangible differences about these two spatial forms in the ocean is in their subjects and later, in the expertise within each subject. There is clearer dichotomy between the subject in Jurisdictional Space and the subject in Relational Space.

Subject

Speaking on the third variable, I found that in the Jurisdictional Space, Subject was dominated by the State, private sector and NGOs. Meanwhile, in the Relational Space, Subject was dominated by the fishers. Interestingly, although the division between two Subjects

performing in two spatial forms seems to be obvious and easy to spot on, here I found that the supplier performs in both spatial forms.

In order to see how important these supplier's presence in the process of FADs boundary work does, I will explain it based on the previous Object that we have been discuss earlier. In analyzing the Fish and the FADs as our object of concern, we would never be able to separate the findings from the role of each Subjects that control these Objects. As an entity that has the ability to control the Objects, the Subjects have different strategy, rules, authority and even power towards the Fish or the FADs.

From the participant observation and the semi-structured interview that I conducted during the fieldwork, I discovered that these suppliers play key roles in FAD's space making. The supplier is frequently included in national or provincial meetings related to FADs, where most of the invitee are state officers, NGOs or the private sector. Meanwhile, regarding the daily fishing activity, the suppliers are also leading the fishing activity by executing their authority over the fishers in their group. Since FAD is quite expensive to buy alone, the fishers performed a group of FADs under one supplier who is willing to give loan for this group. From this financial scheme, the patron-client relationship in FADs arrangement is sustain and the suppliers have important role in determining how these FADs are utilized within the groups.

It is clear that the suppliers are existing in both Jurisdictional network and Relational network developed by two different spatial forms. Since the network here refers to the similar concept of environmental regulatory networks developed by Vandergeest (2007), I have argued that the FADS network could be understood the same way. FADs network denotes a broad range of actors who are driven by different motives and goals in governing the coastal resources. Therefore, the suppliers are found to have the ability to gather and order different kind of actors with different motives related to the FADs fishing practice.

For instance, in relational network, since the fishers are often out on the ocean to fish, it makes the state-based regulation seems obscure for them. The fisher's concern about fish and FADs is only in relation to improving and securing their own livelihood. The fishers were also performing FADs fishing practice based on what they know and what benefits them. This is where the suppliers play its role because the fishers common understanding of utilizing the FADs highly dependent on how these suppliers enforce their own rules.

As the fishers are dependent on their suppliers, the fishers were not able to escape this patronage relationship because the fishers also need their supplier. Meanwhile, the State and its regulation were excluded in the fisher's Relational network on FADs because the State were

imposing different types of approaches in managing the FADs. Here, it is apparent that the supplier is the connector of the State's vision and fisher's realm. However, it is also important to note that the role of supplier seems to be less concerned in Jurisdictional network because the focus is highly dominated by the State's vision on FADs governance.

Expertise

The last variable that assemblage the boundary making process in FADs territoriality is the Expertise. There are significance differences in analyzing the Expertise in Jurisdictional Space and Relational Space. The Expertise found in Jurisdictional approach are mainly dominated by several Subjects only such as State's officer, NGOs and certain research institutions related to FADs. There is a sense of exclusivity in developing knowledge related to FADs because the expertise performed from the Subject in Relational approach seems to be less concerned. Important to note here although the discussion in the previous section shows that the supplier is the subject that holds vital roles pertaining to these different spatial ontologies, their presence seems to be just a compliment and rather powerless in the Jurisdictional space.

When I examined the expertise in a more thorough way, I observed that the domination of State's expertise made the other expertise are hinder. There is asymmetrical power among the subjects that resulted in some expertise being more influential than others. For instance, there were many establishing research project related to FADs that is initiated by MMAF, research institution or NGOs, that centralized around the idea on governing the FADs through this Cartesian based understanding on ocean space.

The State has the ambition to manage and collect the number of FADs per FMA's area and exercise the expertise around the topographical vision. However, based on my observation during the fieldwork, the State seems undermined the supplier's important role in collecting such data. The suppliers are actually the one who has more complete data on FADs deployed and owned by the fishers because they have the data of FADs in their loan scheme database where the fishers were constantly pay their installments for the FADs.

This condition confirmed my previous statement that both supplier and fisher's presence seem to be just a compliment and rather powerless in the Jurisdictional Space. Therefore, the inability of the State to recognized the Relational network and its expertise has resulted in different kind of spaces occurred in FADs arrangement. The State and other related subject performing their own Expertise in the Jurisdictional Space while the fishers and eventually the suppliers were also sustaining their own network of Expertise in other spaces.

Finally, to conclude the findings from the Vandergeest's (2015) four variables, I would like to recall my earlier statement on the contrasting spatial ontologies between the State and fishers. Based on the differences, it is true that these spatial ontologies are irreconcilable and antithetical to each other. Therefore, from the fact that these multiple spatial ontologies exist in the FADs arrangement, in the next section, I would like to discuss more on how we understand ocean territoriality and how these processes of rethinking could bring us to the possibility of collective action for better FADs management.

6.3 Rethinking Ocean Territoriality

Based on the main findings from two form of ocean spaces, it is sensible to say that these multiple ontologies have resulted in different layers of FADs arrangement occurring in the ocean. As illustrated in Figure 10 below, I have learnt that the ongoing relational network found in the FADs arrangement does not fit into this Cartesian geographical map. From the illustration, we can see that there are two layers of spatial form piled up on each other. The first spatial form is the typical topographic map with horizontal and vertical lines that divides the sea in boxes. The second spatial form is the chaotic, complicated web of relationships resulting from the fisher's everyday network. The second spatial form is certainly not Cartesian because it introduces us to new variables to explore; first, **the FAD's arenas** and second, **the flows**.

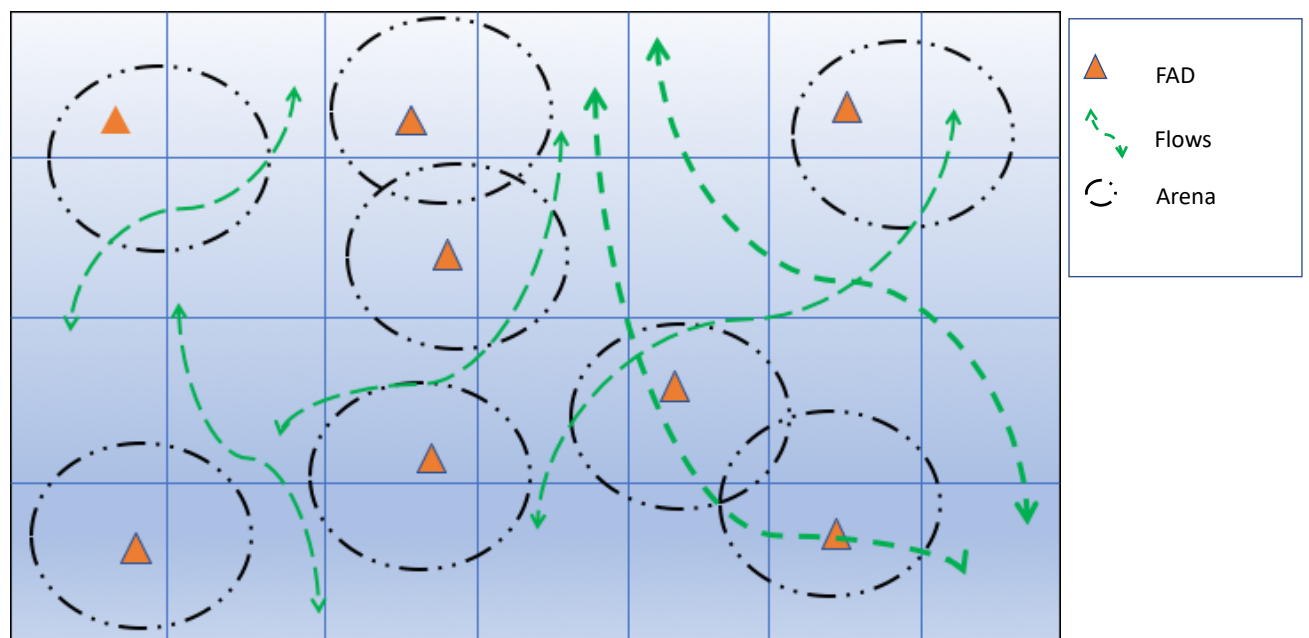


Figure 10: New Image of FADs Territoriality (Author)

To understand these newly introduced variables, I would like to explain each of them. First, as can be seen from the illustration, the FAD's arenas exist based on the fishing ground around

the deployed FADs. However, it would take a new level of imagination to look at this fishing ground beyond their ability to just aggregate the fish or disturb the fishes' migratory pattern. We should also realize these arenas exist and have successfully illustrated the social interaction around these devices. By zooming in to the arena of each FADs, we will be able to see how far the authorities of fishers and their supplier is applied to the resources.

The arena of FADs has the ability to open new imaginary arena worth to analyse because there are different kind of interaction consist of power, trust or knowledge circulated around the use of FADs. As Bush and Mol (2014) stated it already, FADs were not just aggregate the fish, but it is also aggregate the human with its social networks that concentrate and connect. Moreover, understanding the arena of FADs will give us new insights in managing the FADs that are prone to conflicts. The horizontal conflict on FADs is often found because each stakeholder may have a different understanding of the boundaries involved. Meaning, the existence of arena can be interpreted differently because it constructed differently by various subjects, in this case, the fishers and the suppliers.

Meanwhile for the second variable, I want to explain how the flows are also crucial to be concerned in order to understand new spatial form of ocean. Borrowing from Pauwelussen's (2017), flows here is understood to be a continuous fluidity that is neither static nor singular. Therefore, the flows indicated by the green dotted line can be seen as different kind of flows. It can be flows of information (of where the fish comes from), flows of capital, flows of vessel's line and even flows of power. These flows exist, and further influence boundary making in the FADs arrangement.

The flows have the ability to shape the FADs arenas but also has the ability to pass through the arena of FAD. For instance, the flows of vessels, information and capital can have affected by how the access arrangement of this FADs are done among fishers in the sea. Moreover, the FADs itself can also be defined as place where material flows of tuna fishing practices existed. By looking at these flows, we will be able to see FADs as networked places in ocean environment. As continuous fluidity of economic, capital, informational and regulatory flows, these flows have created a network where it gives us alternative governance approaches to the marine environment (Bush and Mol, 2014).

Therefore, based on the above discussion pertaining to arena and flows, it was ascertained that the everyday reality of patron-client relations, informal rules in utilising the FADs, and mobile networks of brotherhood and loyalty described here, thus remains beyond the horizon of state-based policy on regulating the FADs. Therefore, the relational dimension in FADs arrangement However, although the relational dimension remain outreach by the State, there

is still way to manage the flows. Based on the findings occur on the supplier's role, it is found that in order to able to control the flows, the government needs to pay attention to the supplier as they hold two distinct social-economic positions in FADs arrangement: as the representative of fishers group for the government and as the financial supporter for the fishers.

Actually, the notion on the importance of patron-client relationship in Indonesian coastal communities has been emphasized already by several research. For one of them is Kusumawati's research (2014) on *Networks and Knowledge at the Interface: Governing the Coast of East Kalimantan, Indonesia*. Kusumawati found that the *pongawa* (the supplier's nickname in Eastern Kalimantan) has important role in shrimp value chain certification network because it also has dual positions existed in State and shrimp farmers dimension. Therefore, through my research, since the patron or the supplier has also found shaping the boundary making process by controlling the FADs fishing practice network, I am more convinced that the role of the supplier is the key to understand and eventually integrate the relational approach in Indonesian coastal and fisheries governance.

Moreover, supplier is not the only key factor in understanding the ocean. As Bear and Eden (2008) assert, the State's spatial based understanding on fixated arena became ineffective because the material fluidity of the sea complicates the spatial control schemes of land-based policies, since fences and marks do not hold their ground in the flows of marine and intertidal life. Since we certainly cannot put fences or ropes in the ocean like establishing borders on land, the rethinking process would start with a fundamental way of looking at the ocean. There is one misconception that has been left alone for too long with respect to how we understand, utilize and govern the ocean.

The confusion lies in the idea that the ocean can be understood, used and governed the same way as we do with land. It is common that the "terrestrial solution" (Visser and Adhuri, 2010) is applied and extended to coastal and marine environments, whereas, there are some ocean characteristics that are forgotten and unseen. These marine characteristics such as the existence of waves, streams and volumes are not owned by the land. Further, this misconception is manifested in many ocean related policies that do not appear to fit with the ocean's characteristics. One of them is the current FADs regulation that is based on spatial demarcation inspired by division on the land.

This relational thinking in ocean boundary work has raised awareness of the practice of land bias policy in Indonesian marine governance. It also triggers a new way of understanding the ocean based on its specific geographic characteristic, as well as their networks. The current

regulation offered by the Government has treated the FADs as fixated and static devices that can be placed and stuck anywhere in the ocean's boxes.

Thus, the ability of FADs to float away and move because of the ocean's streams are forgotten. The FAD's relational network developed by the fishers has also become invisible because the FADs are only seen as tools for fishing. Hence, the use of the network and flows approach in understanding the existence of relational boundary work in the ocean in addition to the role of FADs in creating their own arena has significantly changed the way we look at the ocean.

6.4 Future Orientation of FADs Collaborative Form of Management

By understanding how the flows are created, it is understood that combining the relational networks with the state-based regulation is a critical step to stimulate collective action in the Indonesian FADs management. Moreover, with this recognition of the importance of space in ocean territoriality, I suggest three starting points to bring us closer to the emerging idea on relational network in the ocean. Through these three points, we will further examine on how the emerging relational ontology would bring us to the future collaborative form of management in FADs.

First, it is found that the Cartesian way of thinking does not work for FADs regulation because there is different ontological thinking on understanding the ocean space. Therefore, there is the need for an alternative type of FADs governance that should be formulated by following and complying with the fishers' way of thinking. Here I would like to raise the idea of integrating the fishermen's way of thinking about the Cartesian territorial understanding of the State.

As an archipelago, Indonesia has various sorts of community-based management systems related to ocean resources. Therefore, there is a possibility to implement fishers-based regulation based on their relational network to the context of FAD. Given the example of *Sasi Laut* as a broad set of rules and regulation that governs resource use established by *adat* (customary law), the coastal villages have enforced the *Sasi* based on the claims of de facto rights over the marine territory (Harkes and Novaczek, 2002). In relation to the FADs, the same logic in applying Territorial Use of Fishing Rights (TURF) based on the fisher's relational network as well as their communities understanding of their land/resources should also be possible, if applied here.

Second, picking up from the chance to incorporate relational thinking into Cartesian based regulation of FADs, it is noticed that the suppliers play a sizable role in the FADs boundary making process. Although many researches have gone on to study the role of suppliers (Bailey et al., 2016; Kusumawati et al., 2013), there is no research being done in the context of the

supplier's role in FAD's space making. Therefore, with this research, I will underline the importance of involving the supplier in the process of establishing FAD's regulation because they hold the key to bringing the relational dimension in the FADs arrangement. Therefore, the State could utilise the role of these suppliers to tap into the fisher's network to control the FADs in the ocean.

Third, the last starting point to create more room for FADs collaborative management lies in the role of technology. Since new boundaries are formed through informational flows, we may need an alternative viewpoint on understanding the ocean geographies. Vandergeest et al. (2015), asserts that the emerging technologies are central to the new government assemblage. Therefore, the use of technology in FAD's fishing practice, such as the geo-fence in the vessel monitoring system (VMS) or GPS will entirely change the Cartesian based viewpoint of looking at the ocean. As Bush and Mol (2014) maintain, since the FADs themselves are places which bring together information, regulation and highly mobile fish and fishing practices, the support from this virtual perimeter for a predefined set of boundaries in the ocean will enhance the clarity of relational boundaries developed by these FADs. By maximising the use of this satellite-based technology, we will create an entirely different way of understanding the FADs arrangement where the state boundaries will still remain relevant by incorporating a trackable fisher's network in enhanced data collection.

Finally, to conclude this section, I argue that the collaborative form of management in FADs arrangement is not an impossible vision to achieve as long as the marine relational thinking is taken seriously into the establishment of Indonesian marine governance. Further, the future orientation of FADs collaborative action will be better realized if the network spatial ontology could successfully show the true condition of FADs utilization in the ocean. The State's limitation to control FADs in the ocean surface in well manner will be resolved by incorporating the relational thinking into the development of regulation, technology and data collection.



7

CONCLUSION

CHAPTER 7: CONCLUSION

Since there are two types of spatial forms resulted from different kind of boundary making process in FADs arrangement, the aim of this thesis is to examine the possibilities of collaborative form of management in Indonesian FADs governance through these dual spatial ontologies existed. This thesis tried to explore the emerging relational practice in ocean spatiality as a contrast with the common jurisdictional approach in ocean boundary work. This chapter presents the conclusion of this thesis by presenting the answer of two sub-research questions followed by the answer of main research question.

Based on the four variables from Vandergeest, et. al (2015) that is applied in order to help answering the two sub-research questions, it is found that both spatial forms resulted from the Jurisdictional boundary work in ocean space making did not interact with the Relational boundary work in the ocean. There were two separate layers of spatial form in the ocean surface that did not interact with each other in Indonesian FADs arrangement. It is also found that although both of spatial form talked in the same Objects, there were still huge differences in the Space, Subjects and Expertise.

The first differences come from the Space which in Jurisdictional approach, the Space is created based on the zonation and state-area based approach where the domination is coming from State's authority. Meanwhile, on the Relational network thinking, the Space is not limited only to an existing and predefined area by State's authority but the Space in FADs arrangement is a socially constructed network where fishers or suppliers could exercise power and influence others depending on their interpretation on how FADs are utilized.

Following from the differences found in the Space, I have found that the second variable which is the Subject, also have similar dichotomy like the Space with its Jurisdictional and Relational division. Here, I have realized that the Subject on the Jurisdictional approach are more dominated by the State's officer, NGOs, research center or private sector, while Relational approach are more dominated by fishers and suppliers who put forward the fisher's network in FADs arrangement. The Expertise that followed was also different because State has their own Expertise revolves around the notion on sustainability while fishers and suppliers are usually concern more on the socio-economic condition and their livelihood status that was supported by the existence of FADs.

Interestingly, when it comes to the analysis on the supplier as a Subject, this thesis found them to be the key actor in the process of boundary making because it is existed in both spatial form. These suppliers could highly determine the boundary making process in fisher's relational

network through their patron-client relationship while at the same time, they could also influence State's boundary work process by joining the network created by the State. Despite many researchers already found that supplier has hold important key role in many aspects of coastal community's livelihood, this research shows that supplier also holds crucial place in the process of ocean territorialisation. Therefore, from this point, this thesis concludes that supplier could be one of the reliable elements to control the fishers network in FADs arrangement.

Further, in order to answer the main research question, it is realized that this dual boundary making process in FADs fishing practice has clearly shown that there is high possibility in establishing more collaborative form of FADs management by incorporating the relational thinking in understanding the ocean. Here, I argue that although both spatial forms are existed separately, the collaborative form of management is still possible to achieve if the fishers relational network is included in the process of understanding the ocean surface. FADs through its unique characteristic that floating, moving and aggregating has successfully been the starting point to understand the complexity of relational network in the ocean.

Moreover, viewing the FADs as the nodal point of relational network in the open ocean surface, it reminds us once again that the ocean is more than just the extension of the land and the FADs itself are more than just a block of floating object throw at the sea. Through the relational web of network in FADs arrangement, I have demonstrated that the study of fisheries and ocean governance must include the human interaction element with the oceanic world. The additional consideration on ocean relational thinking not only may be useful to our understanding on how fishers utilise the marine resources but it also helps us to unfold the process of space making in the ocean.

The introduction on relational thinking in FADs arrangement has provides an emerging perspective useful to understanding the connections between policy making and the space making process in the ocean. For instance, Indonesian government should not ignore the fact that common Jurisdictional policy influence by Cartesian based understanding on ocean space is not working effectively because it did not show the heterogeneous elements in ocean spatiality. Therefore, it is important to re-invent new ocean territory by imagining radically new institutional forms of representing our complicated relational network of FADs.

Finally, through this thesis, I come to the conclusion that the governance of FADs should initially start by understanding this fisher's relational network and how the boundary making process formulate in the ocean surface to establish collaborative form of FADs management. However, this relational thinking on ocean space making should not stop to only for the context

of FADs. It is hoped that the framework outlined here on different kind of boundary making process in marine space could help guide the future research assessing on how the process of ocean territorialities are made and how it would affect the governance of ocean surface and its resource. It is also hope that there will be more research focusing on the relational thinking of maritime world. Later, if the government has gradually incorporated relational thinking in the marine spatial management agenda, the marine governance in Indonesia will have more collaborative form of management as well as more holistic fisheries related policies that count every actor's practices in utilizing the ocean.

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Appendix

Semi Structured Interview Guide

- Explain who I am and what the research is about.
- Assure anonymity
- Explain I want to know what they think and why I want their cooperation and ask permission to record
- Encourage interrupting for additional information on questions

Fishers

#	Position	Questions
	Head of FADs Group / Group Leader	<ul style="list-style-type: none"> • Place of birth/ age/ years at sea etc. • Family history in fishing? • Type of vessels? • Ethnicity? • Full-time/part-time, other occupations? • What do they know about the FADs in their area? • How are the rules in using FADs? • Who makes decisions related to FADs deployment in their area?
	Fishers (FADs) User	<ul style="list-style-type: none"> • Place of birth/ age/ years at sea etc. • Type of fishing/ type of boat/ boat ownership/ main port/ main fishing grounds • Family history in fishing? • Full-time/part-time, other occupations? • How many FADs do they use or have? • Why do they using FADs? • How are the rules in using FADs?

External Agents

#	Position	Questions
	Local NGO	<ul style="list-style-type: none"> • How many FADs do they know (or in their data)? • How are the rules in managing the FADs in their area? • What are the concern of the NGO on FADs management? • Who makes decisions related to FADs deployment in their area?

		<ul style="list-style-type: none"> • Are there any forums being organized by the NGO on FADs management without waiting for the government? • Have NGOs in your area demanded to participate in FADs forums held by the government? If yes, what was the response?
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Port Stakeholders

#	Position	Questions
	Secretary of Fishery Port (Provincial Government) and other related Port Stakeholder	<ul style="list-style-type: none"> • Place of birth/ age/ years at sea etc. • Full-time/part-time, other occupations? • How many FADs do they manage? • How do they manage the FADs? Based on what rules/regulations? • How are the rules in using FADs? • Who makes decisions related to FADs deployment in their area? • Are there any forums being organized by the fishers on FADs management without waiting for the government? • Have the fishers in your area demanded to participate in FADs forums held by the government? If yes, what was the response?
	Suppliers/Middlemen	<p>Basic Questions:</p> <ul style="list-style-type: none"> • Place of birth/ age/ years at sea etc. • Type of fishing/ type of boat/ boat ownership/ main port/ main fishing grounds • Family history in fishing? • Full-time/part-time, other occupations? • How many FADs do they use? • Why do they use FADs? • How are the rules in using FADs?