Tracing a Trajectory of Transparency

A Case Study of Governing Traceability in an Indonesian Tuna Supply Chain

MSc thesis
by *Sita Djelantik*

The picture on the cover shows the mother of the supplier waiting for fishers to unload their fish in Labuhan Lombok (source: author)

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By

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ABSTRACT

As issues around the sustainability of tuna are coupled with information uncertainties, there is an increasing demand for tuna fisheries data and value chain transparency for environmental management. Acquiring fisheries data and transparency remains a challenge: tuna is a transboundary species, and once it is caught, it travels through a global and dynamic supply chain subject to different authorative spheres. This makes it difficult for both individual industries and states to address data gaps. Therefore market-based transparency interventions are on the rise, mostly initiated by non-state and non-industry actors such as Non-Governmental Organizations (NGOs). Such arrangements exemplify governance through arms-length control, which often fail to respond to the specific and contextualized needs of the ones they seek to steer with these interventions.

This thesis aims to challenge notions of interventionist modes of governance on which market-based governance tools like traceability are based, and it aims to explore alternative understandings of governance that better take into consideration embedded relations and practices. It does so through a single case study of a traceability project in an Indonesian tuna supply chain that is initiated by civil society actors. To understand in which ways they govern an intervention, I compare how traceability is prescribed and performed with the concepts of territorialization and deterritorialization. The empirical data is obtained through semi-structured interviews, participant observations and documents.

It presents that prescription draws on international and expert notions of sustainability and transparency. Next, it points out how implementation of traceability is prescribed based on business rationalities. By taking an assemblage approach to look at performance of traceability this research shows that a traceability collective comes about through situated relationships, and needs more elements to assemble than a single bounded supply chain or government regulations. Furthermore, the results suggest that both the very dynamic and very tight business relations in the supply chain influence the implementation of traceability. Yet it also reveals that a local NGO does find space to steer traceability practices, although not always through the ways implementation is prescribed. Firstly, through continuous and active efforts of bringing people together. Second, they do so by continuously maintaining, and embedding themselves in, social relations. The organization engages with such relationships in different contexts, which makes it a 'boundary subject'.

These findings suggest that processes of interventions (and their prescription) need to be embedded in local contexts with different rationalities, and take situated relations into consideration. An assemblage approach therefore complements an informational governance understanding of interventions as a matter of governing the prescription of informational flows on macro-scale. Instead it emphasizes, and provides a way to study, that sustainability interventions should be embedded in local contexts of interaction, while these contexts are still linked to heterogeneous and dynamic networks. Thereby it points at the fundamental role organizations, as 'boundary subjects', play in dynamic processes of governance.

Key words:

Transparency, traceability, tuna fishery, Indonesia, intervention, informational governance, assemblage, actor-network, territorialization, deterritorialization, prescription, performance, boundary subject

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For discovery implies, 'each time, a becoming that transforms both the person doing the describing and what is described'.

(Carolan, 2013: 427)

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ABBREVIATIONS

ANT	Actor-Network Theory
BTB	Business-To-Business
CFT	Consumer-Facing Traceability
CSR	Corporate Social Responsibility
ETP	Endangered, Threatened and Protected
EU	European Union
FAO	Food and Agriculture Organization
FIP	Fishery Improvement Project
FMA	Fishing Management Area
ICTBF	International Coastal Tuna Business Forum
IFITT	Improved Fisheries Information and Traceability for Tuna
IMACS	Indonesia Marine and Climate Support
IUU	Illegal, Unreported and Unregulated
LBH	Labuhan
MDPI	Masyarakat Dan Perikanan Indonesia
MSC	Marine Stewardship Council
NGO	Non-Governmental Organization
US	United States
TNC	The Nature Conservancy
WCPFC	Western and Central Pacific Fisheries Commission
WUR	Wageningen University and Research Centre

1 | INTRODUCTION

1.1 Problem statement

Have you ever questioned where the tuna on your plate comes from? Oceana (2013) discovered that 59% of tuna that is sold in United States supermarkets and restaurant actually is not tuna. Seafood fraud in labelling is not the only problem that is coupled with information uncertainties around tuna production. As tuna stocks are threatened (FAO, Fishery Glossery), tuna fishing is increasingly associated with slavery scandals (Hocevar, 2015) and Illegal, Unreported and Unregulated (IUU) activities (Pramod et al., 2014), there is increasing demand for information and transparency in order to manage tuna fisheries sustainably (Bush, Bailey & van Zwieten, 2013).

Tuna is highly migratory as it swims, and once it is caught it is cut in pieces and distributed all over the world. Hence, both management of this natural resource and data provision to help such management require international collaboration that can deal with the dynamic nature of tuna production. In many producing countries, especially in developing countries such as Indonesia, there is a gap in fisheries data on state level (Mous et al., 2005). Therefore, market-based interventions to improve data provision and management are on the rise, whereby new and multiple actors are mediating, such as Non-Governmental Organizations (NGOs) and universities.

Traceability, as a market-based transparency intervention, is increasingly opted and discussed as a solution for data gaps and unsustainable practices in supply chains (Bailey et al., 2016a). Such an initiative is exemplary for new modes of environmental governance that mark the shift from state-led to market-based governance (Eden, 2009). Governance through the market generally works through arms-length control, in which interventions are designed and implemented by market players, with help of NGOs, to control relations at a distance. In many cases transparency demands are posed on the producers that reside in developing countries (Mol, 2013).

These global interventions, as market-based instruments to change relations and practices, are often designed based on specific categories of actors, and make *a priori* assumptions about changing practices. As these interventions seek to abstract local realities into designs that can be standardized and up-scaled, they often overlook or undermine social relations or specific contexts in which these interventions need to be implemented (Bush & Oosterveer, 2007; Kusumuwati, Bush & Visser, 2013; Mol, 2013). Hence the designs often fail to respond to the specific and contextualized needs of the ones they seek to steer with these interventions, and therefore market-based governance arrangement do not easily succeed.

While traceability, as intervention, also works through arms-length control, it simultaneously aims to foster new relations of trust and transparency, especially between producers and consumers (Mol, 2013). This brings up a challenge between the need to intervene to change relations (at a distance) for sustainable goals, and the fact that market-based interventions as they are perceived and designed do not hold to meet these goals.

There is thus a need for re-examination of traceability as interventionist mode of governance. In the context of increasingly fluid global relations whereby existing

institutions face crises of legitimacy, linear forms of interventional governance, whereby (non-)state actors order practices through design, are unlikely to succeed. This is already acknowledged in an increasing body of literature on adaptive and reflexive forms of governance (for example see Berkes, 2009; Folke et al., 2005). Yet, the potential informational interventions, such as traceability, provide for environmental governance remains understudied (Bailey, Miller, Bush & Kochen, 2016a). In other words, not much is known about how and to what extent one can govern the sustainability of a natural resource, of which its production is prone to dynamic processes, through an informational intervention.

The changing role of information for environmental governance has been described as informational governance (Gupta, 2008; Mol, 2006, 2008). This sociological concept also acknowledges that governance processes increasingly involve multi-level and multiple actors that go beyond conventional (state) boundaries of politics. It states that information becomes an important resource herein as it is becoming part of the 'space of flows' (Castells, 1997), by dis-embedding and articulating environmental issues from localities and contexts into symbolic information that can be exchanged.

Informational governance attends to how information is increasingly used for coordination of environment, and what implications information has for governance relations, that become diverse and changeable. It also points at the issues of (de-centred) control over global information flows, as they become a resource to order. Informational flows embody these dynamic processes, and informational governance provides a way in order to understand how these 'scapes' are shaped on a global level. The way information (and its related processes of implementation and handling) is designed and prescribed then becomes an important factor in understanding relations of control (Mol, 2006; Gupta, 2008).

However, it leaves some questions open. How dis-embedded is environmental information if it is always designed, collected, performed and interpreted by certain people and materialities in certain places? If there is nobody in control over informational 'system', should we start from the notion of information as a system ('having' transformative powers) to understand relations of control? In other words, how can we understand traceability as an instrument that does not dis-embed the people and relations it aims to change into static entities, like many arms-length interventions do? Thus, how can we understand interventions as concepts alternatively, and change the design of such 'interventions' accordingly, without presuming and categorizing certain actors, rationalities and practices?

However a traceability system feeds the global imaginary (Appadurai, 2011), the activities, interaction and materialities that constitute this mechanism are always embodied and bounded to certain 'meeting' places of interaction (Massey, 2004). The implementation of a consumer-facing traceability mechanism, for instance, generates new relations, events and practices surrounding tuna fisheries and supply chains. This implies the emergence of a collective whereby old relations and practices need be broken down, or deterritorialized, and new relations and practices need to be territorialized, in order to make traceability work. Enumerators are bringing logbooks to record catch data at the pilot landing sites, data systems are designed and programmed, value chain actors need to disclose information, and students and scientists like me are coming from all over the world to see how things are going. Although informational governance attends to the control over the prescription and implications of environmental information on macro-

scale, it does not attend so much to these novel activities, actors, places and materialities that perform traceability at micro-scale, and how they are creating and influencing information in turn. In other words, informational governance does not provide a framework for understanding how informational flows are played out in a certain place or on embedded level. This brings forward the question of how can we understand international informational interventions in locally embedded contexts, that in turn are linked to global and dynamic processes?

There already are some studies that understand governance as being co-produced at different contexts (Bear, 2012; Eden, 2009; Kohne, 2014; Konefal & Hatanaka, 2011). Using post-structural approaches such as Actor-Network Theory (ANT) and Assemblage Theory, and concepts of territorialization and deterritorialization, they discovered that the ways environmental governance arrangements (like certification and multi-stakeholder initiatives) are intended or prescribed not always correspond with how they are enacted. Kohne (2014) for example, shows that multi-stakeholder initiative governance for sustainable palm oil holds a non-linear and heterogeneous process. Governance is not only performed by NGOs, but it is co-produced at different places. Bear (2012) remarks how 'deterritorializing movements' of non-humans complement territorializing policies that together assemble a scallop fishery. Hereby the fish and the seabed exceed the rigid (relational and spatial) boundaries that are set by policymakers to conserve the sea, thereby influencing governance. Thus, environmental governance arrangements are enacted by more elements than state and non-state actors at different times, at different places and in various ways: the performance of an environmental arrangement is often dynamic. Enactments are not always in line with what the arrangements are arranged for, but still influence their governance. This poses a challenge to interventionist thinking of governance that assumes an intervention can change performances through prescription.

So how can we steer interventions or change that aim at sustainability goals, when the design or prescriptions of interventions do not totally represent the enactments of these interventions? In order to reflect on this question we need to study how interventions are performed, and how these performances relate back to the design of arrangements like traceability. First, as traceability of global supply chains needs to deal with a global, heterogeneous and dynamic set of relations it tries to intervene in, traditional ways of understanding interventionist modes of governance do not seem to hold. Where traditional roles within in society are now constantly on the move, interchanged and cross borders, the ways in which these relations work depend on their specific contexts, and not on systematic assumptions (Murdoch, 2006). Second, as standardized and abstracted modes of market-based governance do not always seem to be effective, we need an approach that allows considering contextualized and social relations that are targeted for change.

A post-structural approach helps to see interventions in an embedded way, in the way they are enacted by the people that are targeted for change. It traces relations rather than presumes how they work. Hence, such an approach allows studying them in their complex, dynamic and heterogeneous contexts. That helps to understand how change can steered by taking into consideration specific relations, and therefore allows for interventions to respond to these particular contexts in order to become more effective. Moreover, a post-structural lens rejects the *a priori* notion of an 'intervention' that acts 'on' relations, and consequently allows reconsidering intervention as an instrument for change. In order to explore this conundrum, this thesis tears apart, and studies both the

prescription and performance of an informational governance arrangement in a dynamic and global context. In doing so it aims to challenge interventionist notions of governance and understand to what extent and how performance of traceability can be steered at certain places of interaction, and how these local contexts shape an informational flow in turn.

This thesis investigates such an 'international intervention' in the case study of the introduction and governance of a traceability tool in an Indonesian tuna supply chain. In order to improve information provision for environmental management, Wageningen University and Research Centre (WUR), with funding of the Adessium Foundation, has initiated an Improved Fisheries Information and Traceability for Tuna (IFITT)[1] project in Indonesia. This project aims to develop a participative, open-source and transparent system that combines catch data with effort data through a market-based traceability system in order to serve different information demands (Bush et al., 2013). Furthermore, the aim is to prove sustainability of the handline fishery that is involved in this project. Traceability is the system that is implemented in order to facilitate data collection and transparency. There are different forms of traceability that serve different goals and involve different actors and technology. This project focuses on Consumer-Facing-Traceability (CFT)[2], which will be further explained in section 1.3. As this is a relatively new tool, it remains understudied, and the concept of traceability is still in flux (Bailey et al., 2016a). Hence this project is experimental in nature.

Nevertheless such a transparency intervention involves an introduction of new practices and technology on global scale, that engages with the dynamic nature of tuna production. Many different actors at different places are involved, making informational governance a complex process with different social interactions. Although it is known that it is initiated and implemented by a group of NGOs and academia, and that the system is designed as a market-based tool, not much is known about how they can successfully govern implementation of such an intervention aiming at sustainability of tuna (Bailey et al., 2016a). Therefore, this case helps to think about more adaptive or reflexive processes of interventions that engage with multiple and dynamic actors and contexts.

1.2 Objective and research questions

The aim of this research is to challenge notions of interventionist modes of governance on which market-based governance tools like traceability are based. Furthermore it aims to explore alternative understandings of governance that better take into consideration embedded relations and practices. In this way, it is hoped to understand how change can be steered more effectively towards big sustainability goals like transparency in dynamic, contradictory and global contexts. It investigates to what extent and how such international interventions can steer practices at local places of interaction by comparing how a traceability project is prescribed and performed. Through this comparison, it is hoped to examine the prescriptive influence, or the extent to which the performance can be governed through prescription, but also how other elements influence governance, placing governance tools in the context of embedded relations.

Subsequently, the following question leads this research:

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[1] http://ifittuna.info

[2] The traceability intervention under study is a specific Consumer-Facing-Traceability (CFT) tool that is combined with data enumeration to provide information-rich traceability that serves a variety of actors. The words traceability and CFT will be used interchangeably further on to refer to this particular traceability project that includes data enumeration for public decision-making.

How can traceability be re-conceptualized as 'intervention' into a mode of governance that considers embedded relations and practices, through a case of governing traceability in a tuna supply chain from Indonesia?

The aim of this analytical question is to understand to what extent an intervention can or is governed through modes of prescription, and which other elements influence the way traceability is implemented. Prescription adheres to the intentional aspects of CFT: the goals, expectations, rationalities and assumptions of the ones that initiated or demand traceability. I interpret it as the guide, rule or discourse that dictates why and how traceability should be performed. Therefore prescription entails a narrative, the content, and an action, the intervention that aim to change practices. These practices and relations are tied to places of interactions. I use a relational understanding of place to study these multiple and diverse contexts in which traceability is performed. In order to come to the analysis of this question, the following questions are answered first.

- How is traceability prescribed, and what implications does this prescription hold for understanding interventionist modes of governance through prescription?

Since traceability in this case is an externally driven process, I look at processes of prescription first in chapter four. This descriptive question investigates why and how the traceability project in Indonesia should be implemented. Who are the prescribers? What are their concerns? Why is a traceability intervention needed? How is implementation of a traceability system prescribed? Who needs to participate with project? What expertise is needed? Which practices need to be implemented in order to facilitate structural exchange throughout the value chain? Which rationalities, expertise and assumptions define prescription? Once a clear picture of the prescription of this intervention is sketched, it can be compared to how implementation actually came about. Hence the following question focuses on the performance of traceability.

- How is traceability performed, and what implications does this performance hold for understanding governance that considers embedded relations and practices?

This descriptive question is answered in chapter five. It takes a post-structural look at the linkages and relations that emerge because of this intervention. Following Assemblage Theory, traceability in this chapter is not taken as a mechanism which connotes a static entity, but as it is enacted. I examine how people relate, and the role objects play in these relations. Furthermore, I study what practices and expertise are employed in order to understand the complex conditions and contexts of local interactions in which CFT is performed. Therefore, by taking a post-structural approach, it follows the historical and circumstantial associations that led to the implementation of this project, and are still going on. How are people enrolled into the project? Who influence(d) the course of the project? Why do people participate? What are their rationalities? Why is traceability (not) working? How is it implemented? What issues are encountered during implementation? What practices are performed, and who and what are involved?

After answering these two questions, the ways in which traceability is prescribed and performed can be compared. This comparison gives insights in the disjuncture between design and performance of an 'intervention', which challenges interventionist notions of governance. In this way it is hoped understand how traceability can be designed more effectively in a way that is more embedded in its performance.

By opposing an essential view on governance this research takes a post-structural approach, understanding the relations between prescription and performance in terms of territorializing or deterritorializing processes of a collective that emerges around traceability. The concepts of territorialization and deterritorialization will be used in order to analyse how 'smoothly' the traceability 'machine' works (Deleuze & Guatarri, 1988). These concepts refer to the degree of density and stability of a collective. Which factors contribute to processes of territorialization or deterritorialization that affect the outcome of traceability? They provide a relatively new way in social sciences to discover in which ways elements are or can be controlled (while nobody is totally in control), because it does not necessarily start from a 'controlling' centre, but emphasises controlling practices or relations (Murdoch, 2006). It further exposes a tension between two post-structural approaches, Actor-Network Theory (ANT) and Assemblage Theory, which take different stances on how a traceability collective[3] comes about. Therefore it is further aimed to provide an understanding of what a post-structural approach offers for an understanding of adaptive and reflexive processes of interventions, and what the contribution of an actor-network or assemblage approach herein is. The concepts that underpin this analysis and the variables of observations are further explained in chapter two.

1.3 Study context

Before we move on to the conceptual framework, this section provides background information that is useful to navigate through the rest of this thesis. First it dives deeper into the differences between transparency and traceability and different types of traceability are indicated in order to situate this specific case in wider notions of transparency. It further outlines the main aspects and context of the case of study. This case concerns the information-rich and fully chain traceability system that is piloted where fish is harvested: in Indonesia. It introduces the different actors involved, the context (of Indonesia) in which this project is justified and the (context of the) supply chain that is subjected to this project. It is important to consider the background of the people and places that will be studied in order to consider the empirical results and the intervention in their proper context.

1.3.1 Consumer-facing traceability, a transparency tool for governance

The intervention studied in this thesis aims at information-rich transparency for sustainable management of tuna fisheries and supply chains. The rise of informational governance is often linked to increasing (demands for) transparency in the value chain[4] (Mol, 2013). In this case, transparency is focused on value chain that is held accountable to the consumer. In the value chain, transparency tools are more and more initiated and coordinated by non-state actors and are therefore linked to transnational flows of information. In this way Mol (2013) argues, transparency becomes dis-embedded from places and part of transnational networks. Examples of such transparency tools in fisheries include labeling and the Marine Stewardship Council certification. Traceability is another transparency tool: one that facilitates structural information exchange throughout the value chain. As Bailey et al. (2015: 26) frame: "traceability is not the information itself, but rather the system or tool that makes the flow of this information possible and allows for records of production and product movement to be accessible at a future date and at distant places." Traceability embodies the infrastructure that facilitates transparency.

[3] I use the term 'collective' as umbrella term for both actor-networks and assemblages.

[4] Although the definitional difference between value chains and supply chains is acknowledged, this thesis uses these terms interchangeably to refer to the nodes that link fishers to consumers.

In this case study of a traceability project, the ambition is to implement a full chain and information rich traceability system in Indonesia. Full chain traceability implies that tuna can be traced throughout the whole supply chain, so the tuna that ends up on the consumer's plate can be traced back to its origin. An information rich system indicates that it supplies relevant fisheries information flowing to (existing) databases for different management purposes and consumers. Thus, transparency is the objective, and the form in which it is implemented is labeled consumer-facing traceability.

Consumer-facing traceability is one type amongst three different types of traceability in seafood categorized by Bailey et al. (2015), illustrated in Figure 1. First the identify traceability for management. It refers to business-to-business (BTB) traceability that already exists for a long time, aimed at assuring food safety and quality within the value chain through reduction of rejections and determination of liability. This type of traceability only requires tracing tuna products one step forward and back in the value chain, and is intended for business management. Second, they identify regulatory traceability. This type of traceability is, amongst others, mainly a reaction to IUU fishing and aims at validating the origin and species of fish like tuna by importing and exporting countries. It requires information from value chain actors flowing to regulators, like governments. The third category involves communication from the fisher to the consumer, called consumer-facing traceability (CFT). The aim is to create more transparency for the consumer through traceability. It can be used as proof for sustainability claims around tuna, for example through the use of a standard or certification. In the case of this thesis, the infrastructure of ThisFish is implemented, a dynamic information system that indeed involves (information from) the full supply chain and allows communication between fishers and consumers. In my case, the aim is to prove sustainability of the handline fishery that is involved.

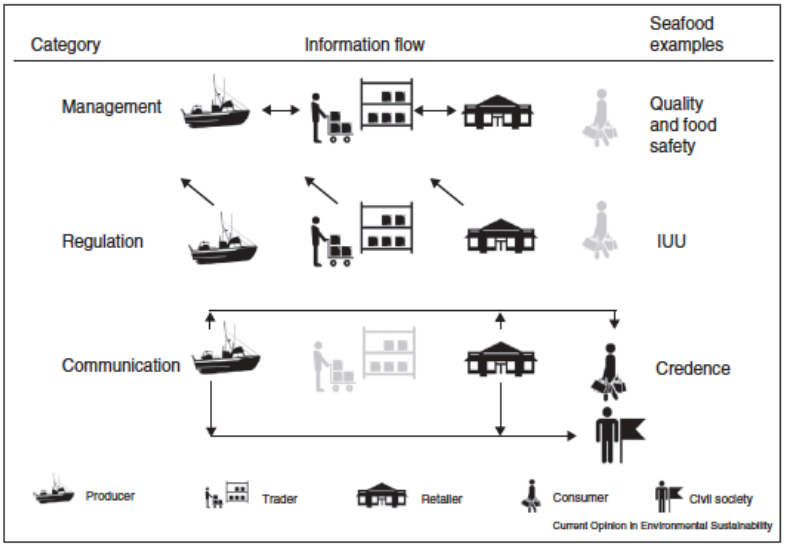

Figure 1: Traceability categories, information flows and seafood examples (adapted from Bailey et al., 2016a)

By implementing such a system and forming a more transparent supply chain, some practices and aspects of the value chain become legible. For many actors, including buyers, suppliers, governments, consumers and non-governmental organizations (NGOs), the growing demand and supply of information around the tuna supply chain is coupled with worries about access, availability and management of this information. For

supply chain actors information is critical in order to manage risks and decisions related to health, accountability, ecology and supply.

While consumers and the international community perceive transparency as a necessity for environmental governance, their information demands could have implications at the 'producing' side, mostly in developing countries like Indonesia (Mol, 2013). Whereas transparency is commonly associated with democracy, empowerment and the right to know, Mol (2013) highlights some potential dangers that question the fundamental idea of emancipation through transparency. For example, who gets empowered? For large companies in the developed world it is easier to implement sophisticated traceability than for smaller companies in developing countries. That makes them powerful in the process of design and implementation of a traceability infrastructure. Next, a related question: what becomes traceable? Mol (2013) points out that it can increase practices of monitoring, surveillance and control when practices and data become legible. Hence, crucial questions in this process are what becomes transparent, by who is traceability implemented and for who is it done? More importantly, who is steering this process? In order to explore these questions we need to understand how traceability is prescribed and how prescription influences performance. Therefore this thesis investigates a case of traceability that is implemented in Indonesia.

1.3.2 Information gaps and demands in Indonesia

This thesis investigates the governance of transparency through the Improving Fisheries Information and Traceability of Tuna (IFITT) project in Indonesia. Indonesia is the biggest tuna producing country in the world, with a water body that comprises 93.000 km2, providing rich biodiversity and marine life. Small-scale fisheries characterize this archipelagic country and form the basis of the country's tuna production. Once tuna is caught, it travels through a complex value chain, from fisher to consumer, passing traders, processors, brands and retailers. Tuna products (fresh, frozen or canned) account for the second biggest fishery exports of Indonesia, and covers 27% of the frozen and fresh tuna that is imported to the US (SFP, 2010). Even though Indonesia is a big supplier for tuna little is known about the tuna that is landed and exported from this country, due to weak data management especially at small-scale fisheries.

The IFITT project aims at information-rich transparency of the full supply chain. An interdisciplinary team of fisheries researchers (an economist, biologist and social scientist) from Wageningen University in the Netherlands initiated the project in 2013. They organized funding to pilot and research an information-rich traceability system for three years, until 2016. In order to implement such a system, they partnered with ThisFish[5]. This is a fisher-led traceability model developed by the Canadian NGO EcoTrust. In other words, ThisFish is the designer of the infrastructure that allows information exchange. Next, they partnered with a NGO in Indonesia to implement traceability practices on the ground in the supply chain: Masyarakat dan Perikanan Indonesia[6] (MDPI). As implementers, they govern most processes of this traceability intervention. Hence, they deserve a strong focus in this study. This NGO handles more sustainability projects of tuna across Indonesia, like Fair Trade and Fisheries Improvement Programs (FIP), and therefore exists from different project funders. The researchers from Wageningen University and the managers of ThisFish and MDPI are among the 'prescribers' of traceability in this research.

[5] http://thisfish.info
[6] Translation: Communities and Fisheries of Indonesia

According to the project proposal of IFITT (Bush et al., 2013), the goal of the traceability project is to respond to different sets of information demand to manage sustainability of tuna. The different types of demands from different actors that are posed on the value chain as identified by Bush et al. (2013) are illustrated in Figure 2. This is a stylized approach to introduce the actors as they are prescribed, but over the course of the research I question these actors as bounded entities, and whether these roles hold.

The first information demand comes from national and regional management groups. Indonesia is a member of the Western and Central Pacific Fisheries Commission (WCPFC)[7], a regional body that is established in 2004 to conserve and manage fish stocks that migrate through the Pacific, like tuna. Member states such as Indonesia need to comply with data demands from this body, including provision of vessel lists and stock data per fishing management area (FMA) to manage IUU practices and overfishing (WEPA OFM, 2009). Therefore Indonesia needs to improve its data collection and reporting to the WCPFC.

The second demand concerns transparency of the value chain. Importing countries, especially in the European union (EU) and the United States, are putting pressure on producing countries like Indonesia to meet import requirements through importing legislations[8]. These demands are topped with transparency concerns from the industry and consumers. Besides food quality and safety, these include concerns about IUU fishing and the sustainability of tuna. According to the different information demands outlined by Bush et al. (2013), IFITT aims to respond both to regulation and communication calls of traceability.

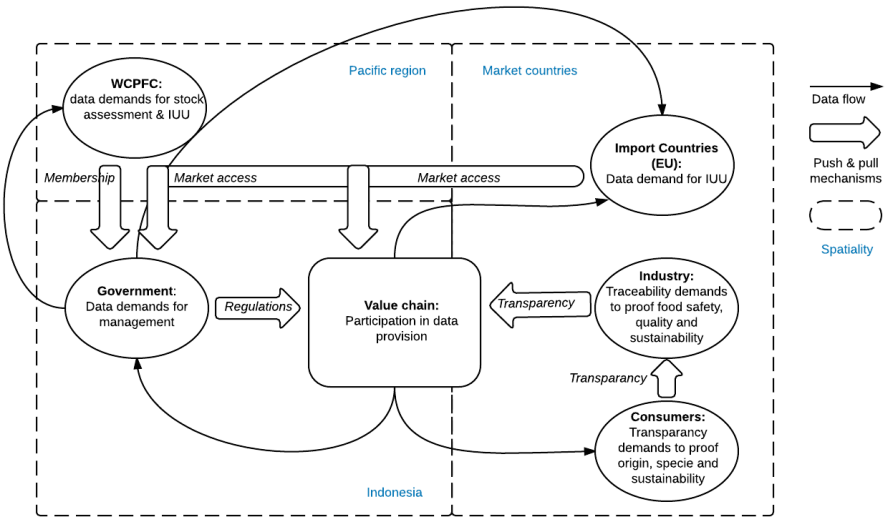

Figure 2: Information demands from different actors (author)

Currently, information from Indonesia about tuna stock, IUU fishing and the chain of custody is lacking. Worldwide there is concern about the environmental sustainability of tuna. According to the FAO (2007), the increasing demand for tuna in the last century has resulted in nearly fully exploitation of almost all tuna stocks, and overexploitation of some stocks. Despite these concerns little is known about the tuna stocks that is landed

[7] https://www.wcpfc.int
[8] for example, see European Comission (2009).

and exported from Indonesia, due to weak data management especially at small-scale fisheries (Mous et al., 2005; WEPA OFM, 2009). Compounded by illegal unreported and unregulated (IUU) fishing practices, these information uncertainties undermine the effectiveness of management, create uncertainties for science and distort competition in the industry.

In an attempt to manage fisheries more effectively, since two decades Indonesia has decentralized its fisheries management, promoting local participation and democracy (Satria & Matsuda, 2004). Management is now divided between national, provincial and district levels. As shown in Figure 3, management is organized around nine Fisheries Management Areas (FMAs). Formally, researchers from the Ministry of Marine Affairs and Fisheries perform stock assessments per area. The adequacy of both data collection and coordination between different management levels however remains questioned, and is related to difficulties in Indonesia around balancing the sustainability of fish stocks, the future of tuna as important export product and the social impacts of (managing) these in the fisheries sector (Mous et al., 2005; Dudley & Ghofar, 2006; Kalfagianni & Pattberg, 2013). In the case of tuna, information collection is rendered more difficult due to its trans-boundary migration patterns. Therefore, Bush et al. (2013) argue for improved information systems in order to enhance decision-making at the Indonesian government and regional bodies like the WCPFC.

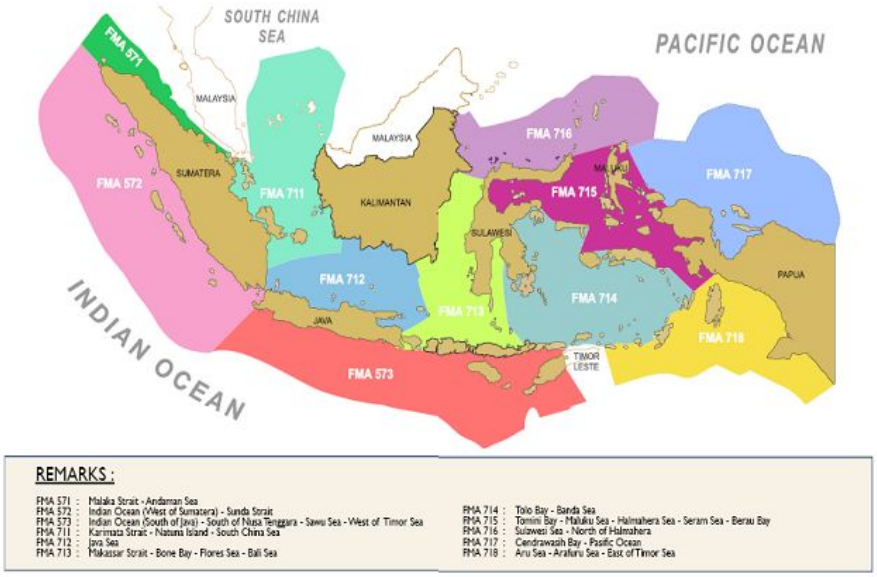

Figure 3: Indonesian Fishing Management Areas (FMAs) (adapted from FAO.org)

Thus there are different challenges facing Indonesia. There is a gap in fisheries data and the effectiveness of fisheries management is questioned. Without adequate information, Indonesian tuna companies risk access to export markets. For the Indonesia government membership of the WCPFC is at stake. Bush et al. (2013: 23) reason, "as a result, NGOs and the industry have chosen to fill in the regulatory and institutional void in Indonesia".

This approach fits in the increasing role of international networks of civil society actors in the fisheries sector, leading innovation and driving change for environmental reasons. Their relatively 'neutral' role compared to industry and governments seems to bring them in a trustworthy position to generate change. In addition, their ability to work across

national boundaries is useful in the context of complex global supply chains that the tuna industry entails. In such a context, NGOs are able to bring distant places and actors closer together (Oosterveer & Spaargaren, 2011).

On the other hand, there is a debate about the influence civil society has in leading innovation and driving social change (Vandergeest et al., 2015). Private initiatives for transparency, for example, are still driven by state regulations on catch certificates (Bush et al., 2013). Furthermore, Mol (2013) states that NGO's legitimacy is also at stake because of the increasing power position trust brings them in governance arrangements. Since transparency brings political and economic capital, and because NGOs themselves also market trust and transparency, questions are raised about what roles international civil society actors are playing in interventionist modes of governance, in whose favor, and with what consequences.

1.3.3 The case: traceability from the Lombok supply chain

Responding to the regulatory void of fisheries data management in Indonesia, academia and NGOs chose to pilot a traceability system that provides information for decision-making. Bush et al. (2013) propose an information system that combines the separate information demands outlined above. It works as follows: production data, drawn from (existing) enumeration programs is coupled to effort data that concerns where, how and by whom tuna is caught, and how it is processed. This rich information should be available for government and the value chain, where consumers can finally access information about the tuna on their plate. In this way information can be used for both private and public decision-making. Therefore the goal of this project is not to substitute public data management with a market-based system, but rather experiment and show how an industry focused traceability system can support public data management.

There already have been several (donor-driven) information system initiatives in Indonesia to address the need for data. One of them is the I-Fish database[9]. The introduction of this open source data system is an attempt to make it easier to handle data and lower the technical expertise needed for usage, compared to the former database system employed in Indonesia (Bush et al., 2013). It concerns a central cloud-based server that transfers excel data sheets into the system. This project has managed to ensure that data collection sites are established, whereby private actors like local suppliers (also referred to as investor-middle(wo)men or *pongawwa*), local processors and buyers collaborate with (local) government officials to continue enumeration. The purpose is that the data collected meets information demands from the WCPFC and export markets, including catch documentation requirements, information about by-catch and fishing ground estimates. After data collection about tuna at certain landing sites, trained enumerators fill in an excel sheet template and email or upload the data to the server. The data can be made available in different aggregated forms, tailored to the target group. In this way, the project facilitates information collection at landing sites from small-scale fisheries, that otherwise would fall outside national fisheries management.

The open source nature and private-public partnership of this system responds to the inclusive and transparent modes of governance that is called for in the global seafood movement. Despite the opportunities it provides, adoption of data into existing government databases remains limited and it has not yet reached up scaling. Since the project is funding-based, it is not certain if the project continues if funding from the private sector, NGOs or donors stops. Therefore, Bush et al. (2013: 17) argue that

[9] http://www.ifish.id

"beyond the project horizon of these programmes incentives are required that ensure that private investment is made in the collection of otherwise absent data on tuna fisheries".

Bush et al. (2013) introduce an information-rich consumer-facing traceability system as solution, in the form of ThisFish. This innovation, created by an international NGO, provides incentives for the chain actors and responds to calls at the export market for value chain transparency as well. ThisFish communicates both information about the fish stocks and the chain of custody, providing a wide range of (business) benefits for value chain actors, like empowerment for fishers, brand loyalty and reduction of reputational risks for processors and retailers. Looking at how such a model, developed in a Western country, is introduced in Indonesia may foster insights in how civil society actors are organizing globally to affect social practices and institutions around environmental performance through an intervention.

Figure 4: the ThisFish model (copied from Thisfish.info)

Practically, the model works as follows (see Figure 4). First, a producer codes the tuna with a unique ThisFish code on a tag or label. Second, the producer uploads information to ThisFish about the catch: when, where and how the tuna was caught. As this catch travels through the supply chain, other chain actors can upload information as well. Important hereby is that the chain actors keep traceable lot separated from non-traceable lot when they process it (ThisFish manager, personal communication). Loins of an individual tuna, with a unique code, cannot be packed with loins from a tuna with a different catch date, location or fishing technique. The intention is that the consumer can finally access the catch and production information based on the unique ThisFish code of its purchased tuna product on the ThisFish website. At the supply chain of this case study, enumeration for the I-Fish database already existed. Therefore the catch information that ThisFish requires can be taken from the I-Fish database. The aim of the project is to couple the two databases, serving the information-rich part of this consumer-facing tool.

In Indonesia, the traceability tool is piloted in three different supply chains, starting at different landing sites dispersed over the country. Nowadays, tuna is only traced successfully through one of these chains. This points at the experimental process of this pilot project: it is merely about discovering what makes traceability work at the producing side of a supply chain than the success of it. Each of these landing sites has its local specifics, where relations are positioned in their own context. All three sites are related nationally through the I-Fish database, and linked to different global markets.

The supply chain of this study starts on the east coast of Lombok, where tuna is landed. There are two main suppliers (also referred to as middle(wo)men or *pongawwa)* based in

town that contract fishers to supply fish. Fishers use handline gear, and fish from small Mandar or Penongkol vessels, which makes it a small-scale or artisanal fishery. The fishers make use of self-made Fishing Aggregating Devices (FADs) to target tuna. The two different vessels entail different fishing realities. Mandar stands for a Sulewesian fishers region where many skilled fishers come from. Hence many fishers sailing these boats are from this region, some of them only working seasonally in Lombok. Each vessel takes a crew of approximately eight people and carries small canoes called sampans, which are utilized by individual crewmembers on the open water catching large-sized tunas. The Penongkol vessels exist of crewmembers who predominantly come from Lombok. For many fishers, Indonesian is the second language. They go out for a trip for a longer period of time and target smaller tunas. Because Mandar is associated with skilled fishers, sailing this vessel deserves a higher status in the community, and captains of these vessels are more likely to own a boat. The reality however is that most vessels are owned by one of the local suppliers, which illustrates the patron-client relationships between suppliers and fishers that is common in Indonesia (Bailey et al., 2016b; Kusumawati et al., 2013).

Figure 5: Penongkol (above) and Mandar (below) vessels taking off at dawn (author)

One of the suppliers in this Lombok fishery community has a long-term (15-years) contract with an Indonesian processor that holds a miniplant in this town as well. The processor only buys tuna that is selected for the export market - roughly all tuna over the size of 20 kilograms. The rest is sold to others or ends up on the local market. In the miniplant first step processing occurs: tuna is cut in loins, injected with CO2 (for its color), trimmed, vacuum packed and frozen. Here tuna is coded for the first time as well.

When there is enough tuna processed for a truck load, it is The bigger processing plant on Java aggregates tuna from different mini-plants from all over Indonesia, and then processes and exports the tuna to all over the world. One of the traders (from the US) this processor had a business contract with, supported and ensured the implementation I-Fish and traceability in this supply chain. Therefore this supply chain already dealt with paper-based business-to-business traceability, which made the consumer-facing code and information 'add on' to the basic system.

In sum, this case illustrates an interventionist mode of governance that deals with a global and heterogeneous set of actors. As it is initiated from an international set of civil society actors, it helps to explore how and to what extent such an international 'intervention' can steer performance at local places of interaction, in this case in the specific context of Indonesia. Since this case considers the implementation of information exchange for sustainable goals, it also provides a way to understand how the implementation of an informational tool is governed. By investigating the ways IFITT is prescribed by the civil society actors, and performed in Indonesia, this thesis contributes to an understanding of how informational flows are created through prescription and specific performances.

1.5 Thesis outline

In order to provide a framework to analyze the prescription and performance of traceability, the next chapter elaborates on the concepts of actor-networks, assemblages, territorialization and deterritorialization. As interventionist modes of governance imply a way to change or disrupt relations, it is argued ANT is useful to explore the relative stability or instability that prescription of an intervention creates. Simultaneously Assemblage Theory provides a lens to discover other elements that steer processes of territorialization and deterritorialization as well, and influence governance in turn. It further explains the variables of comparison between prescription and performance that are linked to these theories: subjects, objects, expertise and practices. Chapter three outlines how the case is selected and data on prescription and performance is collected. Furthermore, it explains how this data is analyzed. Chapter four and five present the results. Chapter four describes how traceability is prescribed through an analysis of which subjects, objects, expertise and practices are indicated with regards to the goal and implementation of traceability. Chapter five provides alternative understandings on how subjects and objects gathered, and on the roles of subjects, objects, expertise and practices when transparency is performed. As processes of territorialization and deterritorialization are found in interactions, these variables are synthesized from three cases. In chapter six the two chapters will then be compared and discussed, as well as the role of prescription in steering processes of de/territorialization. Consequentially this will be linked to a discussion on ANT, assemblages and governance. Finally, chapter seven draws the thesis to a close with conclusive statements regarding the research questions, methodological implications for understanding informational governance, practical consequences and recommendations for future research.

2 | CONCEPTUAL FRAMEWORK

We cannot solve problems by using the same kind of thinking we used when we created them.
(Einstein)

2.1 Introduction

This aim of this chapter is to provide a theoretical underpinning to understand prescriptive and performative processes of governance. The post-structural approaches brought forward in this chapter provide a way to understand non-linear processes of governance that face dynamic social relations. Furthermore, they offer a way to explore processes of territorialization and deterritorialization, which is useful for understanding interventionist modes of governance that aim to disrupt relations for a sustainable goal. By comparing prescription with performance, I study to what extent the modes of prescription influences, or territorializes, the collectives that emerge around an intervention, and to what extent this outcome is the result of other factors or actors at work. In other words, I examine to what extent global players have influence over the outcome of transparency through prescription.

These processes are examined with the concepts of actor-networks and assemblages, both constructivist approaches that avoid essential or causal explanations of events and innovations. Therefore, I do not treat them as theories that explain why something work the way it works. They rather inform how to explore relational ties that constitute a collective. I use the term 'collective' as an umbrella term for both networks and assemblages. For this research it means that I look at the collective that emerges around traceability, whereby supply chain actors relate in new ways and NGOs are playing a role (Bailey et al., 2015). From an Actor-Network perspective, performance arises from prescription. The way something is prescribed is the starting point for the network that performs transparency. With an assemblage lens, prescription is only one component that fosters the emergence of a collective.

Actor-Network Theory (ANT) provides an approach to understand how human and non-human elements in a network relate to make it successful, to act as a whole (Latour, 1998; 2005). In governance terms, it is interesting to understand how elements are aligned to the intended outcome of the network (Callon, 1986). Both Kohne (2014) and Bear (2012) used assemblage as concept instead, to find how unintended factors and elements influence environmental governance. Broadly, assemblage refers to the gathering of things. To paraphrase Bear (2012: 23), assemblage holds an "ever-changing collective existing of heterogeneous elements that gather and disperse, through practices of territorialization and deterritorialization". The concepts of de/territorialization generally refer to the degree of stability and density of such an assemblage. The ways in which an assemblage transforms, or is increasingly stabilized and condensed or destabilized and dispersed, can be analysed through these concepts. Whereas territorialization adheres to the consistency of an assemblage, deterritorialization "enables the emergence of new properties through the inclusion of new components and subsequent relations" (Sellar, 2008: 71). It allows changing an assemblage into something else.

As this case considers steering a network that is spatially dispersed (because traceability needs to be implemented in a global supply chain), it adheres to globalized forms of governance. Both the relational and spatial components of de/territorialization help to understand transformations. Spatially, it accounts for analysing how certain (distant) places and spatial boundaries impact the coming about of a traceable tuna flow, as this global flow is still embedded in the space of places (Castells, 1997). Where there are strong spatial boundaries or is physical proximity, relations are more likely to hold. Through a relational lens, it still accounts for non-spatial processes that steer the 'internal homogeneity of an assemblage' (DeLanda, 2006), whereby density and stability are not a matter of spatial proximity but, for example, a matter of social in- and exclusion. Proximity, then, becomes relational, as is the goal with this traceability intervention: to bring consumers and fishers 'closer' together, and to distinguish them from 'other' unsustainable supply chains.

Since CFT is a tool that differs from certification and which remains understudied, that draws different and new actors together, and that is enacted at different times and places in a complex global value chain, the concepts of actor-networks and assemblages seem useful for studying performance of traceability. It points out the fluidity and shifting power relations of this process. Nevertheless, there remains a creative tension between the ways these concepts approach collectives: whereas ANT is about the functionality or the prescribed objective of a network, assemblage is about the process of gathering itself. In order to examine this tension, I use the concepts of territorialization and deterritorialization. With these concepts I explore what elements de/territorialize a collective, and whether these elements are prescriptive or not. I will further explain these concepts below.

In the next sections, this chapter elaborates on the rather abstract concepts of actor-networks, assemblages and de/territorialization. The following subchapters explain the theories that underpin these concepts. First, I clarify how assemblage differs from a structural understanding of governance as it originates from a post-structural way of thinking. Second, I explain and identify the main differences between actor-networks and assemblages. Next, I will turn to the concepts of analysis that stem from Assemblage Theory explaining de/territorialization. In the final subchapter I will clarify the variables I study to compare prescription with performance: subjects, objects, expertise and practices.

2.2 Theories of collectives

Theories of collectives (of actor-networks and assemblages) are clarified by describing what it is not. The notions of actor-networks and assemblages stem from a post-structural school that holds roots in philosophy and is fostered by thinkers like Foucault (1977) and Deleuze (1968) during the 1970s. This section explains post-structuralism as opposed to structuralism first. In the next sections Actor-Network Theory (ANT) and Assemblage Theory are explained. At first sight, actor-networks and assemblages seem very similar. After explaining both ANT and Assemblage Theory, I problematize their differences in order to give a better understanding of the way I use the notion of assemblage to understand how traceability evolves in the performance chapter.

2.2.1 Post-structuralism

In political science, environmental problems are often explained in a structural manner. The well-known paradigm is that capitalism exploits natural resources and thereby fosters environmental degradation. Structuralism holds that there are generative mechanisms underlying social life – like capitalism - that are fixed, ordered and

structured (Murdoch, 2006). In order to deal with environmental problems, we need to change the structure that underlies it. Therefore, environmental governance studies often attend to the structural dimensions of governing, arguing we have to switch modes from authoritative state-led governance to governance that includes the private sector and civil society. It ascribes authority of rule to a range of institutions and private actors.

Post-structuralism is a response to structuralism and criticizes this view. It states that structures are colored by our abstract ideas of culture and history, and therefore, we have to see structures and meanings in their context (Murdoch, 2006). There exist no essential structures. Because there are multiple interpretations possible in different contexts, struggles to establish a shared and accepted meaning can become political. Herein lies the assumption that a shared meaning has a mobilizing force, it can foster or legitimatize political actions. That is why claims of knowledge and the power relations they imply are a point of focus for analysis in post-structuralism.

The main difference between structuralism and post-structuralism is that structuralism seeks for deeper general structures to explain a variety of behaviors on the 'surface', while post-structuralism holds that these behaviors emerge from relations that can be found on the surface as well (Murdoch, 2006). The possibility of multiple relations, then, implies a much greater plurality of meanings and behaviors. The creation of meanings, or behavior, is a site of struggle, where alternative meanings or behavior can emerge or get fixed. But only temporarily: there are always possibilities for new creations.

Following post-structuralism this thesis does not aim to find a general structure that explains what is needed to govern implementation of CFT. Instead, it looks at the complex conditions and context in which relations around an intervention emerge, get temporarily fixed or break down in the case of the Indonesian supply chain. This helps to understand the aspects at play that are unforeseen, and challenges assumptions of causality and linearity from which governance is often prescribed.

Stemming from post-structuralism, ANT focuses on these relations 'on the surface' (Latour, 1998; 2005). It explores the ways things relate and come together in order to become a working whole; and thereby also rejects essential explanations about why a network around traceability works the way it does.

2.2.2 Actor-Networks

Regarding this thesis, Actor-Network Theory (ANT) could provide a framework to analyze by which means a network around traceability is built and persists. As post-structuralism refers to dynamic and non-essentialist relations, ANT provides an understanding of how relations align and become strategic. Before coupling this notion to governance, let's first dive into the concept. What is an actor-network, since this word both refers to an individual and a collective? Callon (1987: 93) describes it as follows:

> *reducible neither to an actor alone nor to a network...An actor-network is simultaneously an actor whose activity is networking heterogeneous elements and a network that is able to redefine and transform what it is made of.*

Instead of an explaining theory it is an approach to 'follow the actors' (Latour, 2005). Therefore, it takes the network builders as a starting point, through whose eyes and prescription the construction of a network can be interpreted. ANT thus assumes prescriptive relations; elements are enrolled into the network through efforts of

alignment. If an element is able to command many connections, it creates a space over which it can control these connections and normalize behaviour. Murdoch (2006) identified this as 'spaces of prescription'. It refers to the degree networks are controlled by powerful centres through territorializing practices. This thesis interprets it as an approach to understand how relations are (re)structured and subjects and objects are enrolled into a network by prescription.

According to ANT, the network thus emerges around a sort of prescriptive center. Within traceability this could be the business or NGO that designs and promotes the information structure that passes information about tuna production to the consumer. It enrolls supply chain actors to make this system work; they need to translate to the functioning of the network, or the network needs to translate to the particularities of the supply chain in order to become a working whole.

The power of this center is defined as the ability of 'actors' to enroll elements and build functional 'networks' (Latour, 2005). An actor only acquires its position (as entity that enrolls) if the network allows this entity to claim and exercise this status. However, the elements influence the working of the network, and therefore, exercise power as well. An important aspect of ANT is that these elements are not passive, nor merely human. Latour (2005) attributed agency to matter, putting humans and non-humans under the same umbrella: calling them actants. Actants are aligned within a network through action, and in order to make action effective, actants need to be mobilized. This means that all enrolled actants hold power of some kind, because if something or someone leaves the network or stops performing it, the activity of the whole network is threatened (Latour, 2005). The alignment of a network is thus a process of negotiation, but always with regards to the (prescriptive) functioning of a network. Materialities like technologies are often good examples of network consolidators according to Latour, because they are less erratic than human actions. In sum, actions, as well as actors and actants, acquire power in relation to others. In governance terms, some become prescribers of an intervention and others become performers. A network therefore, functions through its relations; agency is dispersed throughout the network.

In this thesis, ANT helps to understand how value chain actors are enrolled and aligned with the ways CFT is prescribed. In this thesis, prescription therefore, is interpreted as the way subjects and objects should be enrolled into the network and to what goal their interest needs to be aligned. From an ANT perspective, performance adheres to the processes of implementation of these prescriptions. However, not all networks are stable or built around a prescriptive center (Bear, 2012; Kohne, 2014; Konefal & Hatanaka, 2011). In these networks, performers continually negotiate with each other (instead of with the prescriptive center).

The alignment of performers becomes temporary and diverse, making it difficult to establish norms and standards that prevail. Murdoch (2006) describes these as 'spaces of negotiation'. This may be a phase of a network, or in some cases a network takes shape without a clear-cut center. The lack of a center means that there are other ways in which elements can relate to create a whole. It may also mean that a network is very dynamic. The notion of assemblage complements actor-networks and accounts for heterogeneous collectives that stick together or get fixed through conditions that are not always prescribed from a center. It also shifts the attention to external relations of collectivities that allow exploring the ways and the pace in which networks transform.

2.2.3 Assemblages

The notion of assemblages builds on ANT. The notion of assemblages resonates with ANT because it speaks of a collective, it decentralizes power and includes non-humans as affecting actors (Bear, 2012). The main difference taken in this thesis is that an actor-network gets fixed through efforts of steering, and an assemblage can also get (temporarily) fixed without steering. Instead of focusing on the intended functioning of a network, Deleuze & Guattari (1988) argue that a gathering of things can create multiple effects or emergent properties. This means Assemblage Theory treats collectivities as living organisms; they embody the processes of gathering and dispersing rather than the - envisaged or intended - end stage of the process. Moreover, assemblages are never-ending in nature; they are always in process of evolving. This means they are historical and circumstantial (Bennett, 2005). It is about the "story of changing practices and relations of heterogeneous actants in the co-production of a 'traceability assemblage'" (Bear, 2012: 22). Thus, when I speak of a traceability assemblage I rather refer to processes of emergence than the emerged form. Assemblage Theory therefore accounts for a focus on the situational and unintended aspects that move the process of this project.

One cannot identify these multiple processes when an assemblage is already perceived as the whole that acts on itself. An assemblage is neither a set of predetermined parts, nor a random collection of things (Wise, 2014). According to DeLanda (2006), who built on Assemblage Theory from Deleuze & Guaratti's (1988) philosophy, assemblages emerge because of the constant interaction of its heterogeneous components. These interactions generate emergent properties, such as density and stability. I elaborate on these emergent properties discussing territorialization and deterritorialization in the next subchapter. The elements that form an assemblage through their interactions retain a relative autonomy and can be detached and put in another assemblage, or can simultaneously be part of another assemblage; holding power of some kind like actants in actor-networks.

The whole thus emerges from the interaction of its parts, but cannot be reduced to its parts. This means that these parts become elements of various assemblages operating at different scales (Escobar, 2007). Multiple assemblages with the same elements may exist and overlap; they may relate to one other. This means that change in one assemblage is related to change in another assemblage: they are influenced by 'relations of exteriority' (Deleuze & Guattari, 1988). For this research, it could mean that an assemblage that emerges around CFT could emerge through the interaction of chain actors like the fisher and the consumer, the gear that accounts for a small-scale fishery, the individual tuna that needs to be traced, the code that accompanies the tuna on its travel and the NGO that designs the information platform. These elements are not only part of the traceability assemblage. The tuna and the gear for example also take part in the fishery assemblage. If the situation of a fishery assemblages changes, for example the supply of tuna drops drastically, this will influence the status of the traceability assemblage: fishers move and the origin of the tuna might change.

2.2.4 Between Actor-Networks and Assemblages

Whereas ANT assumes there is an enrolling entity, or center that prescribes how external entities should behave in order to be part of the network, the notion of assemblage allows having a more anarchic lens on collectives. For actor-networks, relations become functional. For assemblages, the circumstances on which elements become dense or (in)stable are not always intentional (Bear, 2012). There may be factors that are not steered, that influence processes of design and implementation of traceability. An

assemblage does not attain it status only when it is systematic. In other words, within an actor-network, the focus is on the internal working of the network, how actants gather because some actors in the actor-network prescribe this outcome. According to Deleuze & Guatteri (1988), assemblages are not about an outcome, but about the process of reconstitution itself. This lens allows for explanations and conditions that contribute to the contingent status of an assemblage that are not related to the prescription of it.

Fot this research, 'non steered factors' could account for the ways supply chain actors already interact before they use traceability. Next, relations of CFT can be disrupted by external influences, like a change in the market or international regulations, and are therefore not always systematic or networked. Third, elements could stick together and transform each other through affective relations rather than prescriptive relations (Blanco et al. 2015). Affect (Deleuze & Guattari, 1987) refers to the capacity to move something, someone or a collectivity emotionally or socially. These impacts can strengthen existing relations or alter new ones. Finally, objects can play a role in stabilizing or destabilizing relations (Bear, 2012). Although these present some examples of no-steered factors, this thesis stays open to other elements that play a role.

This research employs the concepts of actor-networks and assemblages to analyse transparency governance for the following reasons. First, it includes non-human aspects like tuna, technologies, data and gear that influence the working of traceability (Kohne, 2014; Bear, 2012). Second, it handles the implementation of CFT as a process: it is historical and evolves over time, drawing new relations while breaking with old ones. Third, since this case to transparency starts from a prescriptive 'project centre', ANT allows exploring how prescription is ordered through alignment of subjects and objects. Fourth, the concept of assemblage hints at how it could be studied alternatively as well. It does not start from a centre but focuses on how governance is heterogeneously produced at different sites (Kohne, 2014; Eden, 2009). This helps to study a 'global' concept like traceability, because it is something that involves subjects and objects that are not always spatially proximate. By combining these two ways of making sense of how a collective unfolds, I strive for an understanding that does not involve an a priori judgment of order of importance. At the same time I acknowledge that elements do not always relate in power-symmetry, like Blanco et al. (2015) do in their study to the development of a Salmon region in Chile.

In summary, from an ANT lens, studying transparency attends to the ways initiators of traceability "enrol both actors and localities into its modes of functioning" (Murdoch, 2006: 98), and attends to the alignments that are made in order to build a network. At the same time, studying performance through the notion of assemblage allows to pay attention to the irregularities and unpredictable aspects through which elements of traceability stick together. It shows how traceability is actually practiced, and which different meanings are given to it. In this way, it is not assumed that the traceability assemblage has one single starting point, but can emerge at different sites and at different times. This tension between ANT and Assemblage Theory might give more insights in how this process is governed. Are we governing a singular goal, or are we governing relationships that are constantly produced and reproduced?

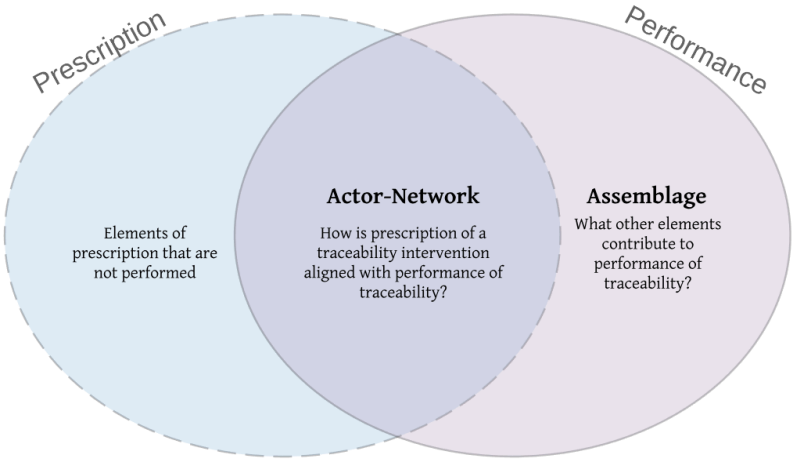

Figure 6: Actor-Network and Assemblage (author)

By looking at both prescription and performance, this thesis looks at both the ways in which CFT is systematically built, and to aspects that influence the working of traceability that are non-prescribed. Thus, we can actually assess to what extent the ways in which CFT is prescribed governs the way it is performed. As prescription can be considered as an intervention, it can also be seen as a means to disrupt existing relations in order to align them with the intended goal (of sustainability in this case). Hence, the ways in which an actor-network or assemblage becomes stable or instable becomes an issues of concern. That is analysed through the concepts of de/territorialization. These concepts both stand for the ways collectives are stabilized or become dense through more prescriptive elements, and for non-prescribed movements that affect the becoming of traceability.

2.3 Concepts of territorialization and deterritorialization

As this thesis uses a post-structural approach of ANT and assemblage, it does not assume causal or linear explanations of governance. Governance then becomes a matter of how networks or assemblages can get held more or less 'together'. This thesis examines how, and to what extent, prescription can draw and hold collectives together through the concepts of territorialization and deterritorialization. In this way it addresses how interventions can be implemented. This section explains the origin and meaning of these concepts.

For geographers and political scientists, concepts of territorialization and deterritorialization bear spatial connotations. For this thesis however, I also use a relational approach to space. The territory of an assemblage is not only expressed spatially, but also in the ways elements relate socially. Processes of de/territorialization indicate how well defined the identity and territory of an assemblage is (DeLanda, 2006). While the degree of identity of an assemblage mostly depends on expressive claims and coherence, the territorial status of an assemblage can be both relational as spatial (Sellar, 2009; Murdoch, 2006). Territorialization expresses the strength of relationship between different elements, on whose interaction the existence of the assemblage depends (DeLanda, 2006). Next, it adheres to through practices of in- and exclusion that can be both relational (being part of a group) or based on the reinforcement of spatial boundaries.

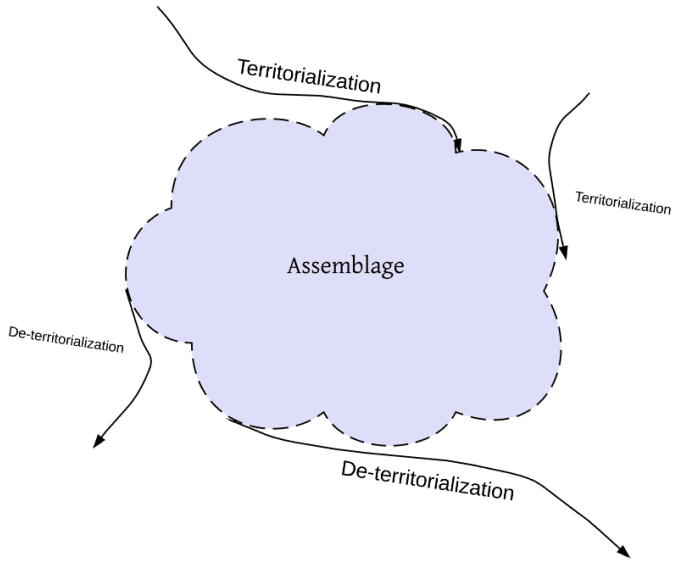

Figure 7: Territorialization & deterritorialization (author)

Thus, territorialization refers to processes that stabilize an assemblage around CFT, while deterritorialization refers to the destabilizing processes of an assemblage that increase the heterogeneity of elements (see Figure 7). It attends to the fuzziness of boundaries and takes into account the openness to relationships with other assemblages in these processes. This creates the possibility to see how global processes of transparency may or may not create friction (Tsing, 2005), or deterritorialize certain localities, whereby new relations and forms of traceability take shape. As an assemblage breaks open it opens up possibility for changes. I use the concept of 'lines of flight' that Deleuze and Guatarri (1988) developed to detect the trajectories of change through traceability interventions. It accounts for the both intended and unintended conditions and situations in which, in the case of CFT a value chain for example, transforms into something else. As Figure 7 illustrates, processes of territorialization are centripetal, while processes of deterritorialization account for space to open up relations and form new ones. In this way an assemblage is continuously subject to change. The line of flight of such an assemblage can thus be steered through territorializing or deterritorializing efforts. "Forces of (de)territorialization may come from near or far, be (co-)produced by humans or nonhumans and may involve trajectories from the past or towards the future" (Bear, 2012: 25). This makes globalized forms of governance, or the steering of processes of de/territorialization a complex issue. As interventions are seen as efforts to change practices, it could be interpreted as endeavor to deterritorialize, or disrupt, existing relations. Simultaneously, as an assemblage is constantly in formation, practices need to be maintained through territorialization in order to keep traceability working.

Vandergeest et al. (2015) also describe territorialization as the processes in which a territory is defined. They focus on the level of control that can be claimed over people's activities within the boundaries of an assemblage, such as the use and management of natural resources and ecologies like a tuna fishery. This political ecological position suggests that these territories are assembled from outside through certification by state and non-state entities. But while I agree that it is important to point out who are eligible to create rules that define objects and subjects of concern (Vandergeest et al., 2015), I take the standpoint that processes of de/territorialization can also occur from within an assemblage, like Bear (2012) shows in his case, whereby the movements of the sea deterritorializes the scallop fishery.

We have to look at which 'objects'and 'subjects'*s* of CFT perform traceability, in contrast to the 'objects' and 'subject' of concern that are prescribed from 'outside'. From an assemblage point of view, prescribers are actually part of an assemblage through their act of prescribing. Therefore, they are subjects as well. To understand the movements of subjects and objects, I look at their practices. These 'practices' stand for the continuous actualization of relationships. They can adhere to prescription and protocols, and can become habitual in other ways. Centripetal processes of territorialization can thus occur through efforts of prescription, like codification and in- or exclusion. For CFT, this means that 'expertise' that is used to legitimize and dictate the way traceability should be performed functions as an element to understand prescriptive relations. However, a performative lens shifts the focus to a wider range of 'expertises' that are involved in tuna production and information exchange, and therefore are needed to implement traceability.

Thus, processes of de/territorialization determine the degree of stability and density of an assemblage (Delanda 2006; Sellar 2008). Some indicators of de/territorialization are outlined in Table 1. To what extent an assemblage is territiorialized can firstly be assessed through the degree of identity that is homogeneously expressed throughout an assemblage. In this thesis this means that subjects identify with a traceability system. Furthermore, these expressive claims can be found in practices and objects that perform CFT, like data collection and technology. Next, it depends on the degree of relational and spatial boundaries. Relations can be temporal outcomes of in- and exclusion of subjects and objects, are consolidated in practices, or can be stimulated through affect. The lack of strong boundaries can also be found in lines of flight, where new relations are established. Therefore, the degree of mobility – the possibility to move spatially or form new relationships – determines relational and spatial boundaries as well. Spatial boundaries are found in maps where borders are drawn, but can also set the condition for interaction: they determine where events and practices take place.

Table 1: Indicators of de/territorialization (author)

	Territorialization	**Deterritorialization**
Identity	• Homogeneous elements • Aligned interests • Expressed identity	• Heterogeneous elements • Different interests • No expressed identity
Relational territory	• In/exclusion • Habitual interactions • Affective relations	• Open for new relations • Incidental interactions • Erratic relations
Spatial territory	• Dis-mobility • Clear spatial boundaries	• Mobility • Diffuse spatial boundaries

These degrees of identity, relations and spatial boundaries could on one hand be established through acts of prescription that requires expertise, including codification, categorization and mapping. On the other hand, they can be established through other means like affect or habitual relations. More importantly is to note that the status of an assemblage, and thus these boundaries, is constantly evolving through shifting degrees of identity, relations and spatial boundaries.

Vandergeest et al. (2015) examined how boundaries were established through the concept of boundary work. Hereby state and non-state actors set the boundaries of a territorial space, by determining which space, subjects, objects and expertise are assembled through certification. I choose to analyze the ways in which traceability evolves through de/territorialization rather than boundary work because I do not want to start with the assumption that these boundaries are only steered or set from a prescriptive center in the first place, like ANT suggest. As Sellar (2008: 71) phrases: "where boundaries contains the movement of component parts, it is the very movements that constitute territories". Thus, next to focusing on the boundaries that are drawn around subjects and objects (through efforts of prescription), I observe these de/territorialization processes through the ways in which subjects and objects perform certain practices and expertise.

Whereas prescription refers to intended de/territorializing efforts, performance attends to both de/territorializing aspects that are not necessarily prescribed or planned. In order to understand prescription and performance, they need to be broken down in variables that are observable. Therefore, the ways in which certain subjects, objects, expertise and practices de/territorialize the traceability project are focus of data analysis. The next subchapter elaborates on these four variables.

2.4 Variables

I compare prescription and performance through the variables of subjects, objects, expertise and practices, loosely based on the variables Vandergeest et al. (2015) use. Prescription thus explains which subjects, objects, expertise and practices together should assemble traceability. Performance looks at the ways subjects, objects enact expertise and practices. This subchapter is divided between subjects and objects, as traceability performers, and practices and expertise that can be attributed to subjects and objects.

2.4.1 Subjects and objects

First of all, this thesis focuses on subjects and objects that assemble CFT. The main difference is that subjects are human and objects are non-human. I cannot use these variables without acknowledging the difficulty of the subject-object dichotomy, which suggests that objects are passive entities defined and managed by active subjects. Instead, like Latour (2005), I attribute agency to both: subjects an objects both acquire de/territorializing capacities in relation to others. I still divide between humans (subjects) and non-humans (objects) to be able to show the active role of objects.

Following post-structuralism, instead of representing the matter, this thesis attempts to include materiality: "matter is a transformative force in itself, which does not need to be re-presented" (Tuin & Dolphijn, 2010: 164). By looking at non-human objects as actors, the role of technologies and other non-human actants in the process of traceability are explored. Bear (2012: 23) already did this in fisheries:

> *Understanding sea and fishery as assemblage also leads to the inclusion of actants such as fish and other marine wildlife, and encourages critical focus on the relationships between the stability and/or mobility of these, and the frequent rigidity of the measures and technologies that are designed to manage, protect or exploit them.*

Prescriptively, I focus on the objects of concern, based on Vandergeest et al. (2015) understanding. These are the objects of concern for sustainability for example, and therefore need to be traced. Next, I define objects that should perform CFT. This

includes the tuna that is traced, but also the gear that defines a small-scale fishery and the data that is disclosed. Performatively, I look at the ways objects consolidate or change relationships; for example data reports incentivizing practices and technology consolidating communication. I regard objects thus as bearing de/territorializing capacities in relation to others. In this way, prescriptive objects, like a data collection protocol document, are not only considered as subject of my research, in order to examine what the objects of concern are, but also as active component in assembling CFT.

Like objects, subjects need to be subjected to traceability practices and are the performers of CFT. They need to change their behavior in order to make tuna traceable. As ANT describes, they hold power of some kind because they can refuse to participate or withdraw from the assemblage, thereby also having capacities to de/territorialize relationships. But, as the section on de/territorialization describes, there are more ways in which subjects can stabilize an assemblage: for example through means of affect, their habitual relations and a shared identity.

Vandergeest et al. (2015: 3) describe subjects "who are allocated use rights and the authority to manage objects of concern". This notion brings forward a difficulty that holds the question how much agency we can attribute to objects compared to subjects. Vandergeest et al. (2015) point at a certain hierarchy between the two: subjects are able to manage objects. If we take definitions of agency it is generally defined as the capacity to intentionally intervene in the world. This fits into the active – passive dualism that is mostly ascribed to subjects-objects.

Following Assemblage Theory however, I agree with Sellar (2008) that we can only view agency through performed relations between objects and subjects. It is in their context that properties emerge. The origin of the tuna only becomes traceable in the context of a consumer that demands this information, and a website that delivers this information. From this understanding it is our task to find the relevant scale in which a collectivity has the capacity to purposefully act, without losing notion to the role of each component in its constitution. This bears the risk to speak of a fused whole that operates upon its parts (Sellar, 2008). "In order to resist appeal to transcendent entities or ideals we must distinguish a whole from its parts by scale and not ontological status" (Sellar, 2008: 69). We need to consider assemblages as Russian Matryoshka dolls: the value chain is a part of the traceability assemblage through data exchange, while the fisher is a part of the value chain assemblage in its trading relations. In turn, a person only becomes a fisher through its relation with vessels, gear, fish, buyers and fishing practices. With the performative approach, I look at the subjects and objects that are key in order to change the tuna in a traceable tuna.

2.4.2 Expertise and practices

I study the ways in which subjects and objects relate through their expertise and practices. Subjects and objects perform practices. Subjects can have expertise in relation to other subjects, objects and practices.

Traceability systems are defined by expertise. Following Vandergeest et al. (2015, referring to Mitchell 2002: 3) I regard expertise as "a bundle of codified and concentrated knowledges". Subjects that bear expertise are 'the experts'. "They have the exclusive capacity and qualifications to create or apply these knowledges" (Vandergeest et al., 2015: 3). I interpret this as the exclusive skills and knowledge with regard to other subjects,

objects or practices that are (presumably) needed in order to make tuna traceable for consumers. Due to its exclusivity I imagine this knowledge is unquestioned. Eden & Bear (2010) and Ponte & Cheyns (2013) show how non-governmental certification bodies gain legitimacy through certain alliances with science and expert groups. Experts are therefore not necessarily scientists, but can also be people that are allowed to say something about traceability, or have the legitimacy to pass on certain knowledge. The type of expertise or experts that are used to legitimate intervention in a value chain for the greater good (sustainability) therefore reveals the way power asymmetries in the assemblages are played out. Performative wise, I take this one step further; I will also focus on the expertise that may not directly relate to traceability and sustainability, but is somehow at need to strengthen relationships, identity or execute certain practices and therefore territorializes the CFT assemblage.

Table 2: Variables for observation

	Subjects	**Objects**	**Expertise**	**Practices**
Prescription	Subjects of concern with regards to the prescribed goal and implementation of traceability	Objects of concern with regards to the prescribed goal and implementation of traceability	Codified or bundled knowledge that is needed to perform CFT and that legitimizes intervention	Practices that need to change or should be implemented for traceability
Performance	Subjects bearing de/territorializing capacities in relation to others	Objects bearing de/territorializing capacities in relation toothers	Expertise that is used to perform traceability practices and relations	Practices or routined relations that de/territorialize a CFT assemblage

Practices refer to specific moments of interactions that habitually or customarily re-occur in order to make tuna traceable. Practices acquire attitude, skills, meanings and materiality to take place (Shove et al., 2012). Practices seem territorialized when their norms and behavior are articulated to the prescribed traceability (Bear, 2012). For example, one may disclose information when it agrees with the norms of transparency in order to disclose information. DeLanda (2006, in Sellar, 2008) describes how habits and routines, as re-occurring acts, contribute to territorialization of an assemblage that is continuously in process of formation. Breaking down habitual relations in turn destabilizes an assemblage. Practices could thus be seen as marks for the emergent properties of traceability, occurring through interaction. CFT prevails when value chain actors continue to pass on the code per fish as they process it, and continues when consumers keep checking the origin of the fish they eat. Habitual practices also help to explain the strength of relationships, since people that relate to each other repeatedly form a routined connection (Sellar, 2008). Through studying the difference (or similarity) between practices that are prescribed and performed, one can study to what extent practices are territorialized through prescription, and to what extent other practices are influencing CFT.

In sum, subjects, objects, practices and expertise are a defined a little bit differently from a prescriptive and performance stance. Especially when it concerns subjects, because

prescribers are subjects as well from a performance understanding. I outlined the differences in Table 2.

2.5 Framework for analysis

As linear and structural understandings of governance do not seem to hold when interventions face dynamic processes, this chapter provides a different framework. By understanding governance in post-structural ways, a framework is created that makes sense of dynamic processes of governance (see Figure 8). With help of concepts of territorialization and deterritorialization we can examine this dynamism and stability of relations, and how a collective evolves. In this way it aims to understand to what extent and how an international 'intervention' can steer performance at local places of interaction, and how these performances at specific contexts shape an informational flow in turn. The assumption of prescription as interventionist mode of governance is illustrated in the black arrow. Instead, this research investigates the relation between prescription and performance as the blue arrows demonstrate.

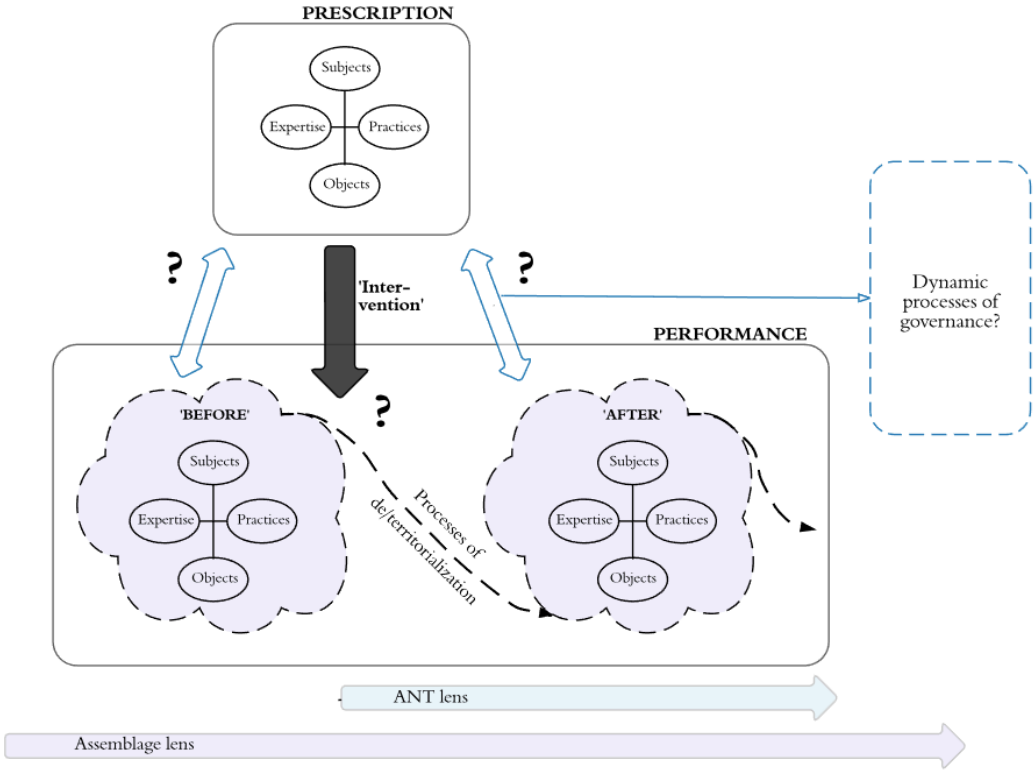

Figure 8: Prescription as interventionist mode of governance? (author)

It does so through comparing how traceability is prescribed and how it is performed. Through this comparison, it is hoped to examine the prescriptive influence of NGOs and universities that initiated this project. In conceptual words, I assess to what extent the CFT assemblage as it emerges is de/territorialized through prescription as intervention. Through this comparison, I study the relation between prescription and performance with ANT notions of enrollment and alignment: the ways in which subjects and objects that enter the network are transformed to the norms and prescriptions of traceability. In other words, to what extent does the performance of subjects, objects, practices and expertise overlap with their prescriptions. Therefore, the ANT lens only accounts for relations that evolve from the moment an intervention is prescribed. Studying performance through the notion of assemblage in turn accounts for subjects, objects, practices and expertise that are not prescribed yet influencing or taking part in

the assemblage, and for the trajectory of a collective as it evolves before intervention, and in the future.

To analyze to what extent these intended or unintended aspects influence the performance of traceability, I use the concepts of territorialization and deterritorialization. These processes refer to the degree of identity, strength of relationships and spatial boundaries of the assemblage. As these degrees are believed to be continuously on move, it is more interesting to focus on the conditions and situational aspects that fix or destabilize these. I examine how subjects and objects relate and what practices and expertise they perform in order to understand the complex conditions and context of local interactions in which CFT is performed. Next, I compare them with the subjects, objects, expertise and practices that are prescribed in order to understand the relation between prescription and performance. Thus, in order to answer the research question I follow the steps as outlined in Figure 9. The next chapter on methods explains how I gained insights into these questions.

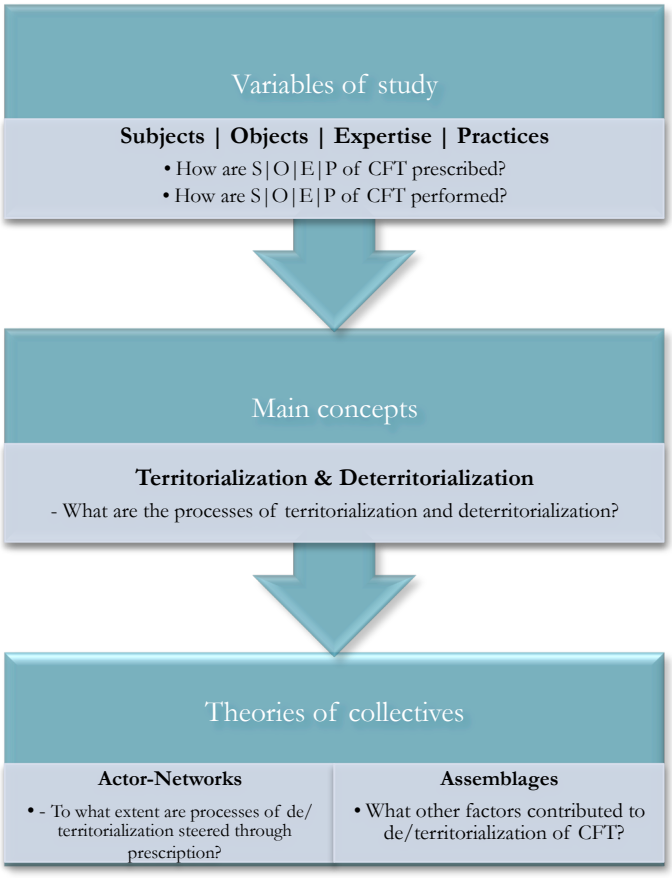

Figure 9: Progression of analysis (author)

3 | METHODOLOGY

3.1 Introduction

Since this research – with a post-structural approach – explores the dynamic relations rather than essential explanations of governance, it is based on a qualitative research paradigm (Bryman, 2015). This means that this thesis does not test a hypothesis, but rather traces and discovers the relations around governing an intervention, which are complex and contextualized. This thesis gives meaning to these relations with use of the variables and concepts outlined in the conceptual framework. The relations are explored through the case of the IFITT project in Indonesia, and its pilot fishery in Labuhan Lombok. The research therefore employs a single case study. I divided this chapter in before, during and after data collection. Discussing 'before', I first justify why I use a case study approach, and clarify my case selection. Next, I explain my approach 'during' data collection: the sites, the groups of research, the methods and my position. I conclude discussing how I analyzed my data 'after'-wards.

3.2 Before

3.2.1 A case study approach

A case study is a way to study a 'chunk of empirical reality' whereby I emphasize certain features in order to organize the knowledge I produce in a manageable manner (Lund, 2014). Subjects, objects, expertise and practices of traceability are the focus of the study, and these are always situated in real life settings. An assemblage is constituted through interaction, and the ways people (and objects) interact are significantly influenced by the setting in which they occur. Conducting a case study allows a researcher to be situated in this setting in order to understand the phenomena of study in their context, thus how they relate and interact (Flyvbjerg, 2006). Therefore, this research explores the general notion of governance of an intervention through concrete observations and interrogation of specific events in a single case study. This means that rather than comparing multiple cases, I did in-depth research through embedding myself in one context. As I did not know the outcome of the intervention of study, my approach was exploratory (Yin, 2013). This means that an integral part of the study is to discover the boundaries of the case (or 'assemblage') empirically during the process of research. Therefore, the case (of a CFT collective) is also found (Ragin, 1992).

The data generated is thus context-specific. Low representation and the bias of the researcher are among the objections of such a method. While I acknowledge it is hard to generalize to other contexts, it is still contributing to science in other ways. Flyvbjerg (2006) argues that we can generalize single cases through falsification. He argues that most researches who do single case studies find themselves with results that do not meet their prior expectations. Instead of having their assumptions influencing their results, findings often challenge existing ideas about phenomena through falsification. By looking at CFT in alternative ways (through the notion of assemblage), I found hidden links that might be taken for granted by people that are dealing with traceability on a daily basis.

> *Social scientists do not discover new events that nobody knew about before. What is discovered is connections and relations, not directly observable, by which we can understand and explain already known occurrences in a novel way (Danermark et al. 2002:91, in Lund: 2014: 227).*

This quote reveals that, although single cases are not easily generalized empirically, this thesis does so analytically (Lund, 2014). This means that I organize (and choose what belongs to) data through the concepts that are outlined in the previous chapter. By using an assemblage approach, I present different findings than someone who would use a value chain analysis alone. By focusing on prescription versus performance, I highlight different aspects of one case. These could be seen as 'sub cases' – different cases within a broader case. I distinguish these cases by scale and focus, not by ontological status.

As my interpretations influenced the knowledge that is produced from my research, in my writing I try to acknowledge and be transparent about how the data collection, analysis and reporting 're-assembled' the events I studied into knowledge by "regarding any report of research as the product of a hybrid assemblage with an affect economy deriving from both the events and the machines of social inquiry" (Fox & Alldred, 2015: 11-12). Treating the research machine as assemblage in this way helps to identify which choices and methods determine the empirical observations, and how they are translated to abstract concepts. Therefore, I went back and forward through the data and theoretical concepts of study, and explain my operationalization and analysis explicitly.

In order to limit bias, I aimed to conduct different methods for data collection, contextualise my findings, incorporate my role when of significance, report in a reflexive manner and tried to include some different representations from writing, like photographs. Being clear and reflexive about my approach enhances the replicability of this study, which makes it more plausible. Moreover, through abstraction this research builds on theory and assesses the analytical use of assemblages (Lund, 2014).

3.2.2 Case selection

In order to understand dynamic processes of governing sustainability interventions, I chose to dive into one supply chain where CFT is piloted: the Lombok supply chain. The case of the Lombok supply chain in the IFITT project is selected both for strategic and pragmatic reasons. First of all, this case is exemplary for traceability that is consumer-facing. Moreover, it is a specific case of CFT, namely one that is not linked to certification or a standard, and that is coupled to data collection for national and regional management. This study thus contributes to evaluating the potentials of such a novel type of traceability. Next, the Lombok supply chain was the first chain where CFT was piloted. Due to the length of this project I therefore expected to find rich information about its process (performance). Practically, the Lombok supply chain is most accessible of all piloted supply chains: it had the shortest travel distance from Bali and people were familiar with researchers. Next, there was the opportunity to cooperate with another research team in the fishery town where the bottom of the supply chain resided. Since this CFT tool is piloted through a project (IFITT), I researched it in this context. Especially following the assemblage approach and my focus on prescription, tracing the situations and relations around CFT, the project context proved to be very important to understand how this tool works.

3.3 During

3.3.1 Research group and sites

The research group initially consisted of the people involved in the IFITT project, and the supply chain actors in Indonesia. I did not fully determine the prescribers before data

collection, but followed the ones people and documents brought forward[10]. These included the project initiators from Wageningen University, ThisFish and MDPI. Prescribers were dispersed over the world, and interviews were sometimes executed through Skype.

For studying performance, my starting point was the MDPI office in Denpasar, Bali. This is the organisation that supports implementation of IFITT. From there, I got access to the traceability performers: obviously the supply chain actors that resided in the Lombok fishery town, but also other actors that were linked to this project emerged, like fishery associations, a range of NGOs and buyers. My main research sites were Denpasar and Labuhan Lombok, but I also attended meetings in Mataram (Lombok), Jakarta (Java) and Nusa Dua (Bali).

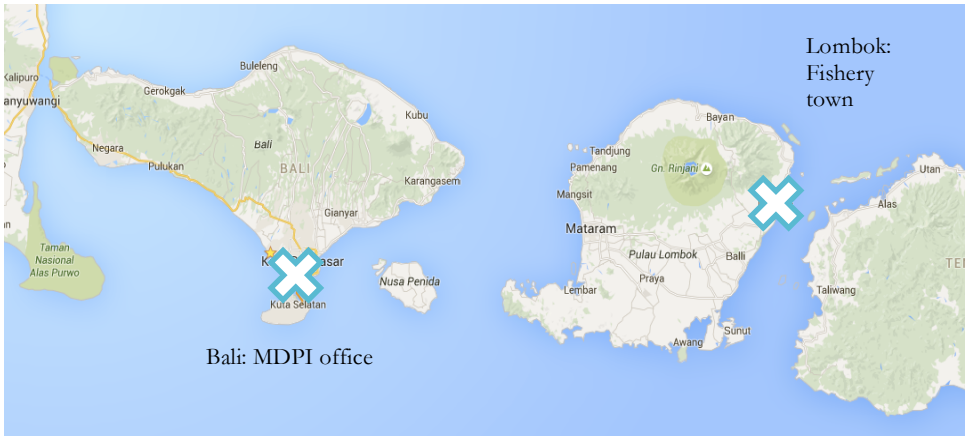

Figure 10: Map of research sites (Googlemaps)

3.3.2 Data collection

Most data is collected in Indonesia. I spent nine weeks collecting data of which I spent roughly a month in Lombok. Before I went to Lombok, I spent two weeks preparing and doing interviews at MDPI. Labuhan Lombok ('port of Lombok') is a small Islamic town where ferries from and for Sumbawa come and go. Its economy is mainly organized around a tuna fishery. Tourists do not show much here, except when they need to wait for the ferry. Besides, I visited another fishery town on the west coast, and spent some days in the capital, Mataram, where I attended a meeting about institutionalization of I-Fish and did some interviews. After my Lombok visit I went to Jakarta to join a government meeting about traceability. The last three weeks I spent in Bali, conducting more interviews and observations at MDPI and its partners. In addition I attended the International Coastal Tuna Business Forum. Back in the Netherlands I collected more data through (Skype) interviews.

For researching prescription of CFT, I used documents and semi-structured interviews. Researching performance involved ethnography-like research as well, providing insights of "concrete social fields at specific moments" (Deleuze & Parnet, 2002: 135, in Blanco et al. 2015) through participant observations and informal conversations.

Firstly, I studied documents, reports and websites in order to investigate prescriptive elements of CFT and what subjects, objects, expertise and practices are involved in the IFITT program. The main document I employed was the IFITT proposal. Following a

[10] By using the IFITT proposal as starting point, asking respondents to draw networks of CFT and the IFITT project, as well as in interviews.

post-structural approach, documents are not only treated as formal representations, but also as relational inscriptions that allow to discover what subjects and objects they dis- or enable to enroll (Nimmo, 2011). I also used documents for some background study in order to understand the context of the fisheries.

Secondly, I employed semi-structured depth-interviews with different actors that demand, design or implement traceability and actors that were involved or affected by traceability. With the interviews I aimed to understand their role, goals and expectations regarding traceability. Next, I asked questions about their past and everyday life. These interviews were not solely used to understand their subjective representations of the world, but to assess how interviewees are situated in the assemblage as well (Fox & Alldred, 2015).

Thirdly, to diversify the data I collected, I conducted participative observation including informal conversations and photographs (Creswell, 2013). Starting at MDPI I picked up a lot of information just from being there. From there I identified and traced the subjects and objects that play a role in this traceability project. Next to participative observation at MDPI, this was the most important method at the landing site where traceability is performed. I spent most time at the enumeration office, see Figure 11), from where I acquired access to other informants from the fishing community. Conducting observation helped to identify and understand the practices and interactions between subjects and objects, and to discover how these efforts are situated in their everyday life. Appendix 1 presents a list of all informants.

Figure 11: Enumeration office in Labuhan Lombok (author)

A few weeks in Labuhan Lombok was quite a short period in terms of gaining trust and deep insights in the community. This was topped with some interview fatigue from the stakeholders, especially fishers that had been interviewed many times already. To monitor access I cooperated with another research team that was introduced by MDPI. Since they had more resources for access and much experience in anthropology, this was a great opportunity to do interviews together. It also meant they affected the course and the setting of the interviews. Most of the times we were with over four people (including translators) conducting an interview, no doubt impacting comfortness of respondents. Due to the fatigue it was difficult to do follow-up interviews, which is desired in ethnography. Yet, I am not sure if a stay of few weeks more would have helped to gain deeper insights. I think one would have to stay a fair amount of time and master Indonesian to gain trust and access for more profound understandings. Nonetheless, I

interviewed a wide range of actors, representing the most important groups, and obtained a diversity of data.

3.3.3 My position

As I interacted with my research subjects, objects and events, I affected the 'assemblage' I'm studying as well, and the knowledge I produce from it. This is coupled to a dilemma all social researchers deal with: they "are part of the world they research" (Shipman, 2014: 6). As this research is based on a post-structural ontology that holds that there are multiple interpretations of reality possible, it is also important to acknowledge and be honest about my role. I cannot fully dis-embed my findings and interpretations from my background, knowledge and culture, but tried to be 'objective' with use of theoretical concepts and transparency of methods.

The interpretations of others on my appearance influenced the findings as well. The fact that I was from Wageningen University and my supervisor happened to be the project coordinator of IFITT has benefited my research in terms of access. Nevertheless his interpretations and interests as both implementer and researcher probably influenced my course of research as well. In Indonesia my position brought several reactions. "Are you part of the Wageningen mafia?" joked an informant at the International Coastal Tuna Business Forum (ICTBF). This reveals that Wageningen University is well presented in the sustainable fishery world. Also at MDPI I was regarded as another intern from this hard-to-pronounce university. The fact that I was from Wageningen but not a fishery scientist however, and that I also did research to MDPI, was sometimes puzzling. My time at the office was not regarded as 'fieldwork', and based on former experiences with interns, it was expected I was doing research through formal interviews or surveys. My 'just being there' approach was new and sometimes confusing. Nevertheless my position as intern gave me daily access to study the functioning of this NGO, which proved to be important data, as the next chapters will show. In the fishery town external partners saw me as part of MDPI. This was crucial in terms of access, but might have caused socially desirable answers. Although it sometimes brought difficulties to monitor expectations, these reactions also brought insights. Recognition of these 'affects' helped me to understand other's worlds better. They gave me insights in the (perceived) role of Wageningen University and MDPI in this assemblage, and for instance what was regarded as research or science. For this, I held a field diary next to field notes in which I wrote my opinion, feelings and analysis of the fieldwork.

Also, I had to work with translation since neither English nor Indonesian are my mother tongue. For the interviews in Indonesian I needed to work with a translator, of which availability and budget were sparse. Hence, I dealt with different interpreters with different levels and backgrounds, and sometimes without one. Some were from MDPI, carrying the needed understanding of fisheries and traceability, but maybe influencing the interviews with their knowledge. Especially participant observation was difficult to perform: many informal conversations were in Indonesian. I was restricted to my eyes and limited knowledge of Indonesian. As most meetings were in Indonesian as well, I relied on the interpretations of other MDPI attendees for my understanding. Therefore, some data is lost or transformed in translation. Nonetheless, using an interpreter for interviews also provided some benefits. In this way I had time to attend to the non-verbal language. In addition, it allowed time to note the answers and think of the next question. As most interpreters knew the culture of the people I interviewed very well, they could also filter inappropriate questions. In this way the comfort of the informants was managed.

3.4 After

3.4.1 Analysis

During, but predominantly after data collection I sorted my data. I transcribed formal interviews, typed up fieldnotes and organized other types of data like documents and meeting minutes. After the data was sorted, I organized it by re-reading and arranging the information. First, I divided my data between prescription and performance. This was not just a matter of dividing interviews, but some storylines or even sentences had to be separated, or belonged to both prescription and performance. Drawing on narrative analysis, I looked at the beginning, the middle end the end of the stories about the IFITT project to gain insights about the process (Roe, 1994). I added 'before' and 'the future' to my analysis because this project is ongoing. The beginning and the future within these stories offered understandings about prescription: how CFT was envisioned at the beginning, and how it should be in the future. The before, middle and the end of the stories presented insights in the performance of CFT, and how prescription has changed.

From here on the coding process begun. I tried to code both data on prescription and performance according to the four variables: subjects, objects, expertise and practices as outlined in Table 2 of chapter two. After separating narratives of prescription and categorizing them per variable I started to look for patterns. To do so I used a narrative policy analysis, evaluating stories and accounts of the prescribers (Roe, 1994). In order to analyze the roles of subjects and objects, I followed how the subjects and objects were characterized with regards to which narrative. Some subjects and objects faced multiple characterizations, and therefore I analyzed "why this categorization now" (Perakyla, 2004).

Next, I worked with themes that appeared per variable to develop categories. This process involved 'emic' categories instead of 'etic' variables that were drawn up beforehand, emerging from viewpoints of the informants (Bryman, 2015). Some were linked to certain variables and some appeared cross variables. Afterwards I linked different topics, themes and categories to concepts by drawing mind maps per variable. Therefore, I also strived to let data foster new concepts along the journey. For instance, the expertise variable was only found after data collection, as a re-occurring theme was the prescribed 'lack of understanding' of certain subjects. A focus on expertise showed how intervention was justified. As I still had to do some interviews after this analysis, I could collect more data on this variable. This example illustrates the iterative process of coding, conceptualization and abstraction in the process of analysis.

For performance I used a more inductive approach. Already in the field I synthesized themes from my (field) notes of interviews and observations, which I used for further data collection. One of them was the 'family' theme that already presented itself quite strongly during fieldwork. When I coded my data based on the variables (of subjects, objects, expertise and practices), I tagged those 'emic' topics and themes that appeared next to the variables. When I started to sort the data per variable, I found myself with fragmented pieces of storylines. The themes and concepts that I found earlier and linked the variables together got lost. This did not come as a surprise since, following a post-structural approach, I studied subjects and objects in relation to each other. Therefore, I chose to represent the most emergent themes and concepts and link them to variables in three storylines or cases.

After I observed and analyzed how traceability is prescribed and performed, I analyzed the processes of territorialization and deterritorialization. Without starting from (the content of) prescription I examined which elements contributed to de/territorialization of identity, spatial de/territorialization and relational territorialization with help of Table 1. Following this scrutiny I linked my findings back to both the content and the action of prescription in order to reflect on how prescription steers processes of de/territorialization. This also led to an examination of which factors contributed to processes of de/territorialization that could not be linked to the content or action of prescription. These findings contributed to the reflections on the frameworks that both ANT and assemblage provides. Moreover, these findings were discussed with the ways informational governance literature handles informational interventions. This resulted in an understanding of how more adaptive and reflexive processes of interventions aiming at sustainability can be implemented. Next, it ensued a conclusion on what a post-structural offers to analyze adaptive and reflexive processes of governing interventions that are part of dynamic and global sets of actors and objects. In order to come to an understanding of this ultimate conclusion, we need to understand what the prescription and performance of traceability entail first. The next chapter explains how traceability is prescribed.

4 | ON PRESCRIPTION

4.1 Introduction

This chapter outlines prescription in order to compare it with performance. In this way I can evaluate to what extent prescriptive efforts territorialize, or govern, performance of traceability. This leads to an understanding of how an intervention can be governed. Furthermore, it provides a means to relate back to assumed notions of how traceability is seen as a means of governing. In this way this thesis can reflect on the assumptions and rationalities that underscore these narratives, and can point out how interventions could be prescribed differently in the future.

This chapter explores the narrative and processes of prescription. The aim of this chapter is to outline the prescriptive narratives and how they are established. The reasoning and narratives both present conscious and unconscious assumptions, as well as how these are developed and reinforced. By exploring the ways and by whom CFT is prescribed, this research shows the normative governance agenda of traceability.

Prescription adheres to the intentional aspects of traceability: the goals, expectations and assumptions of the NGOs and academia that initiated this project. I interpret it as the guide, rule or discourse that dictates why and how CFT should be performed. Prescriptions materialize in the project proposal for IFITT and protocols for data collection and traceability, but are also found in the narratives and actions of the prescribers. Since I study an ongoing project, prescription has changed over the years. Therefore, this chapter also explains how prescription has changed. It roughly relates to two moments of prescription: how traceability was envisioned at the beginning of the IFITT project, according to the project proposal and the prescribers, and how it is prescribed at time of data collection (2015).

Firstly, I introduce the prescribers. Then, I use the variables of subjects, objects, expertise and practices as handholds to the story. I follow the lines that are outset by the prescribers: the lines in which they envisioned subjects, objects, expertise and practices would and should assemble to make CFT a successful tool for sustainable governance. I present the assumptions and reasoning behind them as they were envisioned, and how they have changed.

4.2 The prescribers

Let me first introduce the prescribers. In this chapter I conceptually divide the 'prescribers', as the subjects I let speak in this chapter, from the envisioned 'performers', the objects and subjects that should perform CFT. Moreover, I ascribe a 'prescribing' authority to the ones that emerge, thereby fixing their role in this chapter. The prescribers form the IFITT team; they designed the project and steer implementation of CFT. This section describes how this team came together and what their different roles are.

In 2012, three researchers from Wageningen University, a biologist, social scientist and economist, went on a global scoping tour. There was a funding body interested to fund a project in seafood about disclosure. These researches packed their bags to explore what issues in the tuna industry were related to disclosure, and what solutions were available. Travelling through Canada, Australia, the Philippines and Indonesia they tried to

understand what information was available and shared, and what was not shared. The economist from WUR (personal interview, 01-12-2015) illustrates the main issue they encountered:

> *One thing what we really identified that there is a lot of different sometimes parallel sometimes particular information around tuna in the region but they were all short term where there seemed no real effort internalizing this process of information exchange. What we decided was we wanted to try to study how we could incentivize this internalization.*

During their travels, they met many different experts and actors in the industry. One of the first people they talked to was from the Canadian NGO EcoTrust. They presented the platform ThisFish: a fisher-led traceability model. "I immediately liked the idea because they try to make this system consumer-facing and because they use technologies which allows one to follow what happens in the value chain on real-time basis, and they had a big fisheries database"[11] recalls the fishery biologist (personal interview, 07-12-2015). Since they chose to implement this CFT system, the manager of ThisFish is part of the IFITT team as well. However the fund was granted to researchers, the funder explicitly wanted to fund implementation. "While we are researchers, we are not the right people to implement anything" elaborates the economist (personal interview, 03-11-2015). For implementation they hired MDPI. From MDPI I include the director, program manager, and supply chain manager as prescribers. Every half-year these global players gather somewhere in the world to evaluate the project and discuss the way forward.

According to their position, they all play a different role in IFITT. The scientists are the project owners; they form an interdisciplinary alliance. As both researchers and implementers, they have an ambiguous role in this project: as project owners they want the project to succeed, but as scientist their objective is to do research. ThisFish is specialized in traceability and designs and sells the CFT system. MDPI is hired to support implementation of CFT along the value chain in Indonesia and monitors enumeration programs. Its approach is very practical and field-based, but their programs and protocols are backed with scientific reasoning[12].

After taking different input and advice from the scoping tour the researchers designed a project proposal. In this proposal they explained how they thought that CFT would provide a way to internalize information exchange. As discussed in the introduction, the goal of IFITT is to provide public information through the private sector. This information could be obtained through enumeration programs only. Bush et al. (2013) however introduce the ThisFish model to respond to calls at the export market for value chain transparency. This consumer-facing traceability tool communicates both information about the fish stocks and the chain of custody to consumers. By adopting ThisFish tool, the idea is to combine data collection for fisheries management with traceability of the value chain, as they both start with the same data: "which fish is caught were, when, and by whom" (Bush et al. 2013: 4). The envisioned outcome is information rich traceability system that serves both transparencies as stock assessments needs. The IFITT team thus proposed to combine two information needs that start with the same data: for national and regional fisheries management, and in terms of value chain

[11] Freely translated from Dutch: "ik was meteen verkocht omdat ze het proberen Consumer Facing te maken en technologieen gebruikten waarbij je realtime kunt volgen wat er gebeurt in een value chain. Daarnaast hadden ze een enorme visserijdatabase. Ze hadden laten zien dat het kon."
[12] See mdpi.or.id

transparency. A CFT system brings catch and effort data together in one database that would offer a wide range of benefits to all stakeholders in turn. In this way CFT was envisioned as a business case, to stimulate data collection and participation of the value chain for sustainable tuna management by private and public actors.

4.3 Subjects

This section discusses how subjects are prescribed. It reveals the different roles that are ascribed to different subjects. Throughout the research I identified different categories of subjects: the demanders, the prescribers, the implementers and the subjects of concern.

The study context already identified the prescribed subjects that demand information, such as the WCPFC and consumers (see Figure 2). The section above pointed out the prescribers: the 'subjects' that have the legitimate position to identify the subjects of implementation and concern. Because of an institutional void in Indonesia for structural data collection, the rationale is that NGOs and industry need to help the Indonesian government to manage information supply from the value chain. Also the Indonesian government deserves a special role: it needs to internalize data collection and analysis for its own decision-making. This section in turn mainly focuses on the subjects of implementation: in this case the value chain actors that need to handle subjects and objects of concern (Vandergeest et al., 2014).

This section firstly explains the focus on the production side of the supply chain actors, and how they are expected to participate in traceability. It then shows, through the strong focus on fishers, how subjects are ascribed different roles. Further on, it shows how prescription of subject has changed.

4.3.1 "First mile" participation

Since CFT considers structural information exchange from producer until the consumer, the entire value chain needs to participate in order to provide information to the consumer, and link him or her back to the fisher. Fishers, suppliers, processors and buyers need to disclose information that is accessible to other subjects of concern (like value chain actors and the government). In this sense, a whole individual supply chain is identified as 'implementer'. In narrative however chain units are identified apart (as fishers, processors, buyers). For instance, the beneficiaries Bush et al. (2013) identify in their project proposal are fishers, processors, retailers, consumers, managers and the government. Furthermore, there exists a different focus on each actor.

During the beginning of the project, the focus for enrollment was on the value chain actors in Indonesia. As there was an assumed demand from buyers in Western countries, prescription focused on how CFT should be implemented at the producing side in Indonesia. This was partly due to the expectation that it would be difficult to get the "first mile" (traceability expert, personal communication) of the value chain on board. Next, the focus lies here because of practical reasons. The tuna needs to be coded at the beginning of the supply chain in order trace it (ThisFish manager, personal communication: 12-01-2015). Here some practices needed to change: actors needed to participate in enumeration during the landing process of tuna and coding during processing. Remarkable is that suppliers (also called middle(wo)men) are often neglected in documents about subjects of implementation.

Enrollment of these value chain actors was expected to be easy. The perceived push from the industry, and envisioned benefits of traceability and catch information in turn, provide incentives for all stakeholders to participate in data collection and reporting.

Therefore Bush et al. (2013: 5) stated "…the case can be made that our consumer-facing traceability system offers substantial value to participants, thus the IFITT system also serves as a business model that incentivizes participation in information collection and transparency". It was believed that benefits not only would incentivize participation, but also "facilitate economic contributions" to the stakeholders (Bush et al., 2013: 5). The business case holds that stakeholders therefore would continue to participate and pay for data collection and reporting via CFT. The hopes were this would foster incorporation of data collection within the Indonesian government and value chain. In other words, the value chain actors are prescribed as the implementers of CFT, and the business case has to be demonstrated to government in order for them to regulate monitoring.

For the value chain, the benefits of CFT that are identified range from improved communication between fishers and consumers, reduction of reputational risks for processors and retailers and value creation through transparency, to access to markets and standards by fulfilling documentation requirements. In other words, the benefits are business related.

> *We had the idea of if you build it they will come. So here we are approaching value chain actors with a great system, that has lots of benefits and which we are going to pay for and you really don't need to do anything except for saying yes (WUR economist, personal interview 03-11-2015).*

> *Because the good feedback for traceability users has been that it creates efficiencies, it creates info that is important to make your company or part of the supply chain more effective and efficient. So what is required is basically a willingness and openness to learn to participate. I mean there is no one system fits all; you have to be willing to try and understand that. It is not that is easy but when it's there it will be beneficial (MDPI program manager, personal interview 08-04-2015).*

These views reflect a few findings. First they show how value chain actors were mainly regarded as business agents that would operate as individual nodes, responding to business related benefits. Therefore a focus within the IFITT project is to conduct cost-benefit analysis of CFT. However, some benefits for the value chain actors that are prescribed, do not directly relate to the ThisFish system (ThisFish manager, personal interview, 01-12-2015). Benefits were not always presented in a consistent way and are sometimes convoluted with benefits from other parts of the IFITT project. The different subjects and incentives show that there is a diffuse prescription of who should be involved and what traceability brings for the different partners.

Next they demonstrate the finding that there was a strong belief subjects need to learn about traceability in order to participate. They need to align their interest to the same goal. Furthermore, it demonstrates the focus on 'champions'. Throughout the research, there was an emphasis on individual pioneers within the value chain that are willing to take the risk of trying traceability. For instance, this was the reason of a successful implementation of traceability compared in one supply chain compared to the others in Indonesia (ThisFish manager, personal interview, 03-02-2016).

4.3.2 "Fishers should be able to dream"

However the whole value chain is targeted, a strong focus lies with fishers. Furthermore, the different roles ascribed to fishers provide an example of how subjects are defined in various and dynamic ways.

Already in the IFITT proposal it becomes apparent that fishers need to be subjected to regulations in order to manage fish stocks. Fishers, together with fish stocks and their ecosystems, are conceptually divided from the state, market and value chain in the IFITT proposal (Bush et al., 2013). The former represent the tuna fisheries system, and the latter are prescribed as the managers. The reason behind this separation is to examine how the managers (state, market and value chain) can accomplish behavioral change of tuna fisheries, including fishers, to reach specific targets like sustainable tuna stocks. Thus here fishers are framed as subjects of concern for management, the ones that should change their behavior in order to reach sustainability.

Whilst framed as subjects of concern for managing the sustainability of tuna stocks, the rationale behind CFT is that fishers themselves are also subject to sustainability. Their socio-economic conditions need to be improved, and ThisFish is chosen as a fisher-led system to 'empower' fishers "by allowing them communicate their story and to have market access" (the economist, personal communication, 03-11-2015). This assumption is based on the success in Canada, where ThisFish originated from fishers themselves that pro-actively responded to regulations coming. The question the researchers asked was:

> *Can we offer this [ThisFish model] to fishers in Indonesia also as a way to kind of get ahead of the game? Fishers, but also buyers and processors in Indonesia. So can we see this as a way for them to pro-actively communicate information that will be demanded of them in the near future? (WUR economist, personal interview 03-11-2015)*

This pro-activeness appears to be significant for implementation. The supposition herein is that fishers (and buyers and processors) are aware of these coming regulations and feel the pressure of them on their shoulders. The program manager of MDPI puts it even stronger. In order to change their situation, fishers must be aware and able to dream about their potentials:

> *They [fishers] should be able to dream. The same we do with our future. Unless they know what they can do, they will stay in their rot. They will continue to complain, continue overfishing. There is not going to be any progress. They need to dream in order to change things. Change their practices; change their future (MDPI program manager, personal interview 29-05-2015).*

Fishers need to be aware of their future potentials in order to empower themselves. This discourse explains the focus on interaction too. It portrays the reasoning behind the communication aspect of ThisFish: this allows fishers to know where their fish goes. This reasoning also explains the educational role MDPI claims in Lombok, as further explained in the next chapter. Besides, the MDPI program manager strikingly sums up why fishers are subject of sustainability: they are the ones that need to change their practices for environmental sustainability, but also need to get empowered for their future. They are both the villains as the victims in sustainability.

Fishers are thus discussed in various ways. The fishers of Labuan Lombok provide story for the consumers: they represent a small-scale fishery. They represent sustainability due to their artisanal practices. They need to change their fishing practices for sustainable fish stocks. And they need to be empowered for their own sustainability. However the assumption first was that fishers would pro-act, to the discourse now is that fishers

should be able to dream in order to change. In both cases they are expected to be aware of the wider information demands, and their interests should be aligned with the aim of traceability: to improve sustainability of fisheries.

4.3.3 Change in prescription

The focus on subjects for implementation has changed from 'the bottom to the top' of the value chain. Whereas fishers were expected to pro-actively respond to coming requirements, now it seems these request need to come from the top or the chain first in order to make CFT work. This focus has changed because it was found that a push from the market was needed to persuade middle chain actors during the project, as will be further discussed in the next chapter. Therefore, the market became a focus of concern.

> *Mostly the customer request it but once we implement I'm not sure, who is really the customer? Is it the trader? Is it the retailer? Or is it the real customer who directly eats the fish? (MDPI supply chain manager, personal communication 11-05-2015).*

> *I think this is important: the market. I think the market needs to request CFT. And unless they do I do not see that there is a big future for CFT. I mean the buyers [importers] and consumers when I say market. […]. So if the market or the consumer perceives the value they need to push it. And I think we need to socialize this at the market level. We need to get consumers interesting, clicking on it (MDPI program manager, personal interview 29-05-2015).*

While demand from the market was taken for granted at the start of the project, these quotes show concerns about participation from the market side now. Moreover, the quote shows that it is not defined 'who' the market actually is. This quote shows that there needs to be socialization at this side of the chain as well in order to implement traceability.

The role of the government has also changed. While government officials were invited to the launch of the project, it is no longer believed that IFITT is really useful for the government because it only considers one type op species and only a few specific supply chains (MDPI supply chain manager, personal communication, 11-05-2015). Nevertheless it is acknowledged the government plays a key role in internalizing enumeration, and is identified as important target for the data that is collected.

4.3.4 Summary

This section outlines how subjects are prescribed. It shows that there are strong ideas about how a value chain would and should perform. First, it shows that chain actors are identified as social units, as in the fisher, the processor and the buyer. Although there are some considerations about chain actors acting based on loyalty relations, they are predominantly portrayed as business agents, managing risks and responding to business incentives. In order to participate in transparency activities, value chain actors need to be aware of traceability and willing to participate. In other words, their interests need to be aligned with interest of transparency for environmental reasons. At the beginning of the project, there was an emphasis on the first mile for implementation. Over the course of the project the market seemed to become more important in order to push middle chain actors. Finally, the results show that fishers get a lot of attention. Besides subjects for implementation, fishers are subjects of sustainability both as victims (their own socio-economic conditions) and villains (with their un/sustainable practices). This demonstrates that subjects are framed in different ways, and their framing changed over time.

4.4 Objects

This section introduces the prescribed objects. Following ANT (Latour, 2005) this thesis tries to include the role of objects in their associations with subjects, to understand their de/territorializing capacities. Two kinds of objects are identified. The first group consists of the objects of concern for sustainability; information about these objects needs to be disclosed because of different environmental concerns. Secondly, it introduces objects of implementation. These are the objects that have a de/territorializing role in the implementation of traceability.

4.4.1 Objects of concern for sustainability

Like there are subjects of concern for sustainability who need to report their practices, it is also desired to disclose information about certain objects of concern. The first and foremost object of concern in this case is tuna.

> *Basically what traceability aims to do is to tell the story of the passage of fish true the supply chain in a transparent way. So to tell the story of the origin, of the production, and of the life of the fish from the vessel to the plate (MDPI program panager, personal interview 08-04-2015).*

While traceability normally is about the chain of custody, the 'information-rich' CFT that IFITT proposes includes information about the sustainability of tuna stocks and fisher practices (Bush et al., 2013). Tuna is thus an object of concern as natural resource. This concerns the catch: what species and bycatch are caught, and effort: where, when, how and by whom tuna is caught.

Concerns about tuna are translated from different demands, as described in the study context (see section 1.3). Because tuna is migratory and distributes geographically, tuna stocks need to be assessed across boundaries. Therefore regional management organizations like WCPFC aim to aggregate data from different member states. Next, standards and labels like Fair Trade and the Marine Stewardship Council (MSC) require additional information as well, for instance reporting of catches of Endangered, Threatened and Protected Species (ETPs). This means that in the context of this project, tuna is of concern for different purposes. These additional information demands around tuna that serves wider information demand is also an argument for the implementation of IFITT in Indonesia.

Tuna is not only prescribed as an object of concern that needs to be communicated, it is also the object that communicates this story itself. The tuna story can only be told if this information is "structurally exchanged throughout the supply chain" (Bailey et al., 2016a). The exchange depends on the coded tuna. Only if tuna holds the ThisFish code on its travel from producer to consumer, the consumer can finally enter this code into the ThisFIsh website to access the story. Therefore tuna is not only of concern as natural resource, but also as code carrier.

Another object of concern for sustainability is the vessel. Vessels are object of concern for three reasons. First, the type of vessel that is coupled to the fishing gear determines if fishing occurs sustainably. For instance, in 2015 the Ministry of Maritime Affairs and Fisheries (MMAF) in Indonesia introduced a regulation that prohibited trawls and seines in all fishery management areas[13]. Tuna that enter the Lombok value chain come from small-scale Mandar and Penongkol vessels that use artisanal handline gear, which

[13] see Ministerial Regulation No.2/2015: Prohibition of trawls and seines in all of Indonesia's fishery management areas (MMAF 2015)

contribute to the sustainability story of tuna, as shown in the ThisFish movie[14]. Handline fishing is considered a sustainable fishing practice because of its low rates of bycatch (MDPI director, personal communication).

Second, as tuna can only be traced once it is caught, vessels also embody the origin of tuna. "We are sampling vessels. We are doing traceability from the vessel" explains the MDPI program manager (personal interview, 29-05-2015). After every trip the captain needs to show where he has fished. The origin is then defined per Fisheries Management Area. This area is presented to the consumers as origin.

Third, vessels need to be recorded in order to monitor IUU fishing. According to Bush et al. (2013: 11), the EU requires "fisheries organizations to set up vessel registers and maintain databases of illegal activities". The WCPFC keeps a IUU vessel list and registers a Record of Fishing Vessels that are allowed to fish in the WCPFC Convention Area beyond the borders of the state of the vessel's flag. Vessels are thus of concern to verify non-IUU activities, and these concern lie with the drivers for data collection. Next to vessels, the EU has set strict regulations to only import wild catch (like tuna) that have a catch certificate (EC, 2009). Every vessel needs to have a certificate that assures that the tuna is caught according to the laws and rules of Indonesia.

In sum, the tuna and vessels of concern for traceability are interpreted from regulations, standards and industry that require certain information. These demands are mainly driven by concern sustainability of tuna stocks and IUU fishing, and come from different directions, as shown in Figure 12:

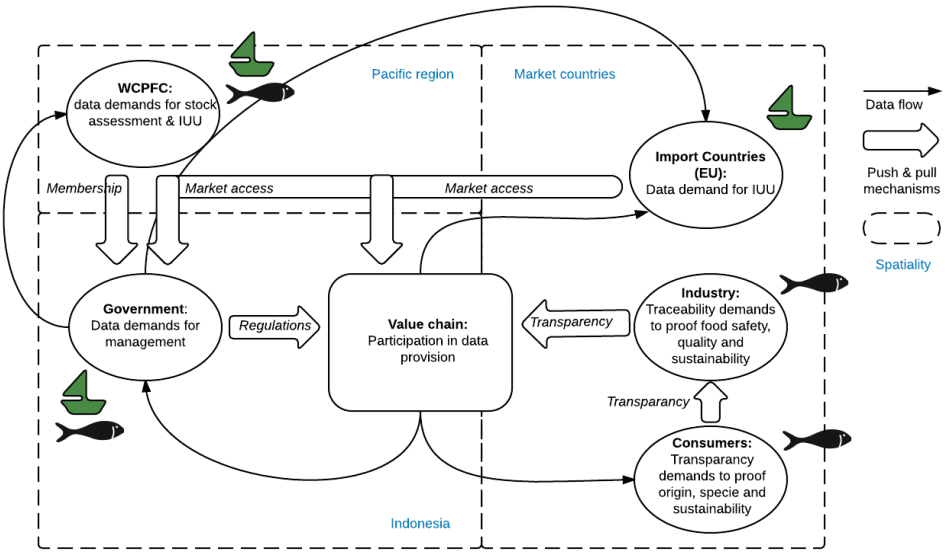

Figure 12: Vessels and tuna of concern per subject (author)

4.4.2 Objects for implementation

There are not only objects of concern for sustainability, but also for implementing traceability. As relation asymmetries in the value chain are partly due to differences in access to information, it is expected that transparency re-positions these relations

[14] see ThisFish (2014, May 23). *Artisanal Handline Fishing: Discover the story of how tuna is harvested.* Retrieved from: https://www.youtube.com/watch?v=XQ-K5F4hZ0s on 30-11-2015.

(ThisFish manager, personal interview, 01-12-2015). Therefore an important object is data. With data I mean collected, categorized and/or codified information that concerns catch information and production efforts. Data is envisioned as a de/territoriliazing object in different ways: first through communication between consumers and fishers, being available in an open source database (I-Fish) and second by allowing ownership to the stakeholders in a Data Management Committee (DMC). Important to note is that I-Fish and the DMCs are not directly related to ThisFish, but exist in the wider context of the IFITT project.

The I-Fish database is set up as an open source database to provide enumeration data to the range of stakeholders, such as the government, universities, NGOs and the value chain. It is website[15] based, which makes the data (on a certain analysis level) open source. IFITT tries to bring data from I-Fish and ThisFish together in order to have data from enumeration automatically available in the ThisFish database.

The DMC is a committee that half-yearly reports and discusses data from I-Fish about the Lombok fishery. Membership is based on the fishery; the committee exists of fishery actors (fishers, suppliers (middlemen), processors that handle tuna that is landed in Labuan Lombok), NGOs (like MDPI and IMacs), the local university that analyzes the data, and is led by the local government (DKP) that manages the fishery. If someone from without wants to use the fishery data, the head of the DMC gives a permit. In this way data is 'owned' by the members. The goal of the DMC is to raise awareness of importance of data for fishery management and to give the stakeholders ownership over the information they disclose. In this way, the DMC functions as an incentive to participate, as the program manager of MDPI (personal interview, 08-04-2015) explains:

> *Your data, depending on the area and culture, depending on how this data is taken up, this data could potentially be an incentive to continue working towards sustainability. It is an incentive to input your data. If you are like hold on, I want that data back in the form you are showing me, and in order to get that data back I have to input.*

She demonstrates how it is imagined how data could be an incentive to disclose information. In order to access information that benefits one's business, one has to input. In this way, data is regarded as being able to steer repetition or territorialization of practices. The underlying assumption herewith is that more information is better, and that information changes practices.

Finally, it is expected that, through communication with consumers, fishers might gain more information about the market. This would strengthen their bargaining position. Access to and ownership over data is thus generally believed and presented as an inclusive factor in IFITT. On the other hand, it is acknowledged that disclosing information could bring in risks for the stakeholders if they benefit from non-disclosure, or if it gages their business relationships (ThisFish manager, personal interview, 01-12-2015). This again points at the de/territorializing capacities that are ascribed to data. It could deterritorialize relationships of fishers with their supplier (in their benefit), but also deterritorialize business relationships, which is harmful for some actors. In order to manage these kinds of sensitivities, access to data is managed so it protects businesses. The program manager of MDPI explains:

[15] I-Fish database: www.ifish.id

> *So the idea is that that all the raw data goes into I-fish, and the government has access to all of that. And various suppliers have access to their data in complete detail. But the other supplier has no access to data of another supplier, but they have access to data in an aggregated form (MDPI Program Manager, personal interview, 29-05-2015).*

This shows that access to data is crucial for business (relationships), and that it is therefore of significance how I-Fish is designed. It determines what information flows to which stakeholder. MDPI consults every stakeholder for this, but retains a certain authority to decide which information is shown to whom as designer.

4.4.3 Change in prescription

While it was not a strong focus at the beginning of the project, prescription nowadays puts a strong emphasis on technology. Recently a new fund is granted to study the role of technology within traceability. There are a few benefits stated that justify this focus. Because bookkeeping in the Lombok supply chain is paper-based, technology brings a lot of opportunities according to the prescribers. First of all, it decreases the number of data entries into the database. If I-Fish and ThisFish are connected in one database, the data from I-Fish does not have to be copied manually to ThisFish. Next, technologizing the internal traceability system would save a processor a lot of time: codes do not need to be written down every time a tuna loin gets repacked. Furthermore, a real-time and dynamic book system helps to manage the quality of frozen and fresh product. In this way, technology would stipulate business benefits. This again exemplifies how subjects are being enrolled with a business rationale of efficiency.

> *So we wanted to know how can technology better incentivize participation. Given that we have a minimal buyable product that it is paper based. Lets up it and see if we can provide business efficiencies through technology platform. And also we wanted to, in terms of implementing technology between fishers and middlemen, trying to understand what that dynamic is like and if traceability can kind of help to equalize that relationship a little bit, I don't know if that's the right way to say it. (WUR economist, personal interview 03-11-2015).*

This quote reveals a few assumption and rationalities that were present in data. First, it shows that technology is seen as an object with de/territorializing capacities. It can incentivize (or territorialize) participation through business efficiencies. This assumption is based on a business rationale. But it can also change (or deterritorialize) relationships for the better. This proposition shows that technology is regarded as an effective intervention.

Technology also provides rigid means to verify information. Most prescribers argue that a paper-based system allows for cheating and errors. Scanners and electronic codes would reduce these risks. With help of a Vessel Register System, one can verify of the traced vessel is legal. With a vessel track system (a GPS that tracks where the vessel sails) one can verify if a vessel has been to a protected area. In other words, technology provides lots of benefits, especially for processors. These technologies, and related benefits are not necessarily part of CFT. Except for bridging I-Fish and ThisFish, all other technologies consider elements that can add to internal traceability for quality management purposes. The program manager of MDPI for example argues:

> *If I think about how are we developing traceability for this project, I think about what type of technology can we bring in here. At the fishing ground. At the landing side, to put a code onto the fish. And how can we follow that code throughout the system. And now I realize like that is*

your basic traceability. You can make that better and funkier, but there are so many other things that are also traceability, that can link in there. For example, vessels register system. Like the PVR project we are doing. That is, people call that traceability. I call that a verification system to traceability. It is a way of verifying that the fish came from a boat that is already registered in the following regulation (MDPI program manager, personal interview 29-05-2015)

It shows that over the process of the IFITT project, the prescribers became aware that CFT is not a system that could replace this basic or internal form of traceability for management. It rather is an attribute to a basic traceability system. Nonetheless this rising awareness, prescription of technology still tends to mingle benefits and issues of CFT with internal traceability that fosters business benefits, especially when technology is promoted.

4.4.4 Summary

This section shows how tuna and vessels are articulated as objects of concerns for sustainability. Information about these objects needs to be disclosed for different reasons. Disclosure is justified and driven by demands from different actors, especially because of information demands that are posed on the Indonesian government. This means that, although the NGOs, academia and some supply chain actors have some influence over what information (in what detail) is disclosed, subjects and objects are mainly defined by existing regulations. Next, this section outlined data and technology that are prescribed as territorializing 'performers' of traceability. Data is the most important object: it is prescribed as object that incentives participation and that transforms relationships in the supply chain. As the project proceeded, technology deserved increasing attention. The territorializing capacities of both these objects are based on business rationales: they should consolidate data collection practices. Since there is such a strong focus on data and technology, they almost become object of concerns themselves.

4.5 Expertise

As the above outlined subjects and objects need to be handled or analyzed, this requires expertise. Different kinds of expertise are brought into the project. This section presents different categories of expertise that are brought to the program, and the role these categories play in defining subjects, objects and practices. In this way I bring to the fore what is regarded as expertise.

First, this section eloberates on three categories of expertise that are identified: expertise on sustainability and traceability, on data and on technology. Further on is explained how MDPI seems to function as expert broker between the categories that are regarded as expertise and the subjects that have a perceived lack of these expertises.

4.5.1 On sustainability and traceability

The most obvious category of expertise that is brought to the supply chain is that of sustainability and traceability. As demands for traceability are driven by concerns about the social and environmental sustainability of tuna fisheries, these concerns also define most subjects and objects of concern (like fishers, tuna, vessels and catch certificates). Next, for the enumeration program most subjects and objects of concern were selected in accordance with national fisheries data standards, as well as with Fisheries Improvement Projects (FIP) requirements, since buyers turned out to be especially interested in transparency of sourcing from FIPs. Addressing these issues entailed

drawing on (fisheries) science to create data collection protocols. For this reason MDPI hired a science program manager.

Knowledge on sustainability and traceability is also required in order to implement traceability, and therefore needs to be passed on. The government and different value chain actors (especially fishers, suppliers and processors) are identified as subjects that should be aware of what traceability is. They need this in order to understand why enumeration and transparency is needed, to see the benefits, but also to use data and traceability for decision-making. According to MDPI, this kind of knowledge is yet lacking:

> *I think a lot of awareness needs to happen. Within a specific fishery, there may be a large percentage of the fishers or with the government who don't understand what is traceability, why is it important. You know there is a lack of data, we don't know how many vessels, and we don't know how much production there is. So in order for, you know assistance to be established there needs to be information […]. And then the understanding of why this info is important is lacking. So capacity building is needed (MDPI program manager, personal interview, 08-04-2015: 14).*

Understanding (the need) of traceability is essential for participation according to some prescribers. As long as subjects (of implementation) do not see why traceability is important, they will not participate. The lack of understanding at fisheries and the government is a reason for MDPI to do some capacity building. It performs socialization of what is traceability and sustainability at fisheries. In this way it passes on the knowledge of the prescribers.

4.5.2 On data

Besides knowledge on sustainability and traceability of tuna, prescription indicates that participation in CFT requires knowledge to understand, report, analyze and use [fishery] information. Information literacy does not only seem to impend participation, but determines access to data as well. If a fisher cannot read a map, it cannot report where it has fished, nor use an information rich map for its own benefits.

There already existed an internal traceability system for business management purposes in this supply chain, which entailed data collection and reporting. Therefore it was expected that suppliers and processors acquired enough knowledge to report some extra information. Moreover, enumerators of MDPI handle most data collection and reporting activities. Therefore the value chain actors do not have to gain a lot of expertise in order to become transparent during the project.

Another subject that is mentioned is the government. The purpose of the enumeration program is that the government ultimately will use I-Fish data for decision-making. Therefore expertise on data is required at the (local) government:

> *The problem is on local level [of government]: the capacity and capability need to be increased. They don't know how to use this data. What is needed to manage fisheries? First of all, we need data. Second, you need to know how to use this data. Third, you can base your regulations on this data. They need to know these steps. They only use statistics now. Before [initiatives started port sampling], Indonesia only used production data. They need to be trained. They don't care about what the data reflects. They need to be shown how this data can benefit their province (MDPI director, personal interview, 15-05-2015)*

This quote reveals that the government is a subject of concern regarding expertise on data. It does not have the level of expertise that this project aims for. This is also the reason for establishing the Data Management Committees (DMC). During the DMC meetings government and fisheries actors discuss I-Fish data. As MDPI hires and trains enumerators, designs data collection protocols and organizes the DMC meetings (wherein it presents data), this NGO is the provider of expertise on data in Indonesia.

4.5.3 Change in prescription: on technology

With an increasing focus on a technological traceability system, expertise on technology is desired (or with a lot of expertise on technology, a technological traceability system is desired). As the internal traceability system of this supply chain is paper-based, the value chain actors do not have much experience with - or knowledge on - technology yet. Therefore, different external expert groups are engaged. They originate from developed countries were knowledge on technology of traceability is well advanced. During the time of my fieldwork in Labuhan Lombok, there was an NGO from the US doing research to the uptake of mobile technology in the fishery. While sharing a cab, the manager from this NGO explains who needs to be on board in order to implement a technological traceability system in Indonesia:

> *You need a handful of [technological] traceability companies on board, you need data acquisition professionals, you need support from the government to handle and transfer all that data, you need technology companies in data warehousing, you need data architects, programmers for the first part. For the second part you need mid supply chain support both local and in the import/export market (Traceability expert, personal interview, 30-04-2015).*

This quote shows the wide variety of technology experts that are ought to be needed in order to implement technology. They are roughly separated in hardware and software experts. For the IFITT program, ThisFish provides this kind of expertise. The quote also shows the focus on mid supply chain actors, or the processors, as subjects of implementation that require this expertise. Other subjects that are mentioned are the suppliers and fishers. The economist from WUR explains how the project team is thinking of a technology intervention that is an app on the phone for suppliers to record the specie, amount of kilos and which fisher caught it:

> *Suppliers are writing down things anyways. So they are always writing in their books. So they already have the expertise to record data and we are just asking them to record it in a different way. So there will not be a huge barrier there. The barrier really is kind of about fishers. (WUR economist, personal interview, 03-11-2015).*

These quotes reveal the different levels of expertise that are ascribed to different chain actors. The main concern lies with literacy of fishers, but suppliers and processor also need to be educated. In order to do so, a lot of external experts need to be consulted and brought in. That implies a whole new field of interaction, wherein the supply chain will engage with, and be dependent on, a wide range of experts.

4.5.4 Expert broker

Since ThisFish, Wageningen University and MDPI bring in expertise on sustainability and traceability, data and technology, they create an opportunity to intervene in the supply chain. To use their own words, the scientists from Wageningen argue that "Wageningen University, with funding from Adessium Foundation, well-placed to provide the initial expertise and financial aid to develop this information system and carry out pilot tests" (Bush et al. 2013: 5). They argue that they can provide existing

enumeration programs technical assistance to "ensure continued quality enumeration". As provider and with its experience, ThisFish brings in expertise on technology to the supply chain. MDPI, in turn, is hired to translate or 'pass on' these expertises and support the supply chain to implement data collection and traceability. The program manager of MDPI (personal interview, 29-05-2015) illustrates the role of MDPI as follows:

> *Well if you have the supply chain running across the top, I would put MDPI kind of along that supply chain as a supporting role. So each part of that supply chain needs advice. Until now they are incapable of seeing the entire picture of a good and connecting traceability system. I would put MDPI, right now, as kind of, we are not really experts in traceability. We are standing back and looking at that entire supply chain. And we're taking input from technology providers, from academics, from traceability systems and we're kind of able to work along that supply chain to kind of implement a support. […]. We can only advice and suggest and develop, but we will, we can teach and train how to implement, but the real implementation will always come down to the supply chain.*

By taking over expertise from technology providers and academics, MDPI creates space to intervene in the supply chain in the form of support. Support covers teaching, training, advice, and suggestions on how to implement traceability. This again shows that the government and supply chain actors are the target for implementation and are perceived to lack the expertise. MDPI does not only socialize what sustainability and traceability is, but also brings over expertise on handling data. In this way they are standing between the so-called 'experts' and 'real' implementers of traceability, as expert brokers.

4.5.5 Summary

In sum, there are three categories that are regarded as expertise: knowledge on sustainability and traceability, on data and on expertise. These categories define different subjects and objects. Expertise on sustainability and traceability mainly identifies subjects and objects 'of concern for sustainability' (fishers, tuna species, vessels). Expertise on data and technology mainly focus on subjects and objects 'of implementation': the supply chain actors, government, phones and paper. There is a perceived lack of all three categories of expertise at these subjects of implementation. Having this expertise, this allows the prescribers to temporarily intervene. Moreover, other (technology) experts are brought into the program. These interventions become explicit in the way supply chain actors are enrolled into practices that facilitate data exchange for traceability.

4.6 Practices

As traceability entails data collection and data disclosure, supply chain actors need to change certain practices. Through support, value chain actors are enrolled in certain practices that are set up to facilitate structural information exchange. These explicit practices are necessary to provide continuous supply of data. This section explains which practices are prescribed, and which subjects and objects take part in this prescription.

4.6.1 Port sampling

The first practice that is prescribed is port sampling, or enumeration. Fishers and suppliers are supposed to participate in port sampling activities. This means that everyday data needs to be collected when tuna is unloaded from individual vessels. On a monthly basis this data is complemented with summary data per vessel. Fishers and suppliers should provide access to enumerators to collect data and take measurements; this requires trust and co-operation.

In Lombok, an enumeration program already existed at the time traceability was introduced. A 'site' is created to perform this daily practice. It exists of an office where enumerators and the site supervisor come everyday to do enumeration. MDPI designed a general data collection protocol for small-scale tuna handline fisheries with a detailed prescription of this practice (MDPI, 2015).

This practice is prescribed to be performed in a specific spatiality: the landing site. With regards to subjects, enumerators need to record data in cooperation with fishers and the supplier, who need to disclose information to the enumerator. Afterwards, a site supervisor needs to check the paper forms and upload the data to the I-Fish database. The daily practice follows a few steps or 'standard operation procedures' (MDPI, 2015). First the enumerator needs to identify in which Fishery Management Area the fishing activity occurs, and the fisher needs to point out where he has fished on a grid map. Next, the enumerator has to recognize and record the species that are caught, as well as differentiate between bigeye and yellowfin tuna, juvenile and loin. Furthermore, some bait species need to be recorded in order to assess whether the bait specie is at risk of being over-exploited. Finally, following the Marine Stewardship Council's (MSC) protocol, enumerators need to interview fishers about Endangered, Threatened and Protected (ETP) species:

> *One crew member of the unloading vessel, present on the last fishing trip, should be interviewed. Interviews should be arranged after the unloading activities, preferably at the fisher's home, or another place where disturbance by other people in the community is less likely (e.g. at the MDPI field office) (MDPI, 2015: 35).*

This detailed prescription shows the objects of concern very well: tuna species, juvenile, ETP and bait species are among the main concerns. These concerns are all linked to information requirements from elsewhere (like the MSC). Next, it shows how practices are very prescribed and fixed. They inform a standardized daily routine at a specific locality. Nevertheless, they are prescribed to occur along the existing practice of 'unloading'. Furthermore, it reveals how the enumerators and site supervisor are seen as the managing 'subjects' of this practice.

4.6.2 Tuna coding

Next to enumeration, the project entails intervention in processing practices. In the mini processing plant in Labuhan Lombok, tuna needs to get coded. If there is already a basic traceability system in place, as in the Lombok supply chain, only a few practices need to be added. This roughly entails some extra data that need to be reported and submitted to the ThisFish database. In addition, it involves adding a ThisFish code to the tuna packages. Although there is no formal protocol for tuna coding in the processing plant, during the project there is a 'traceability implementer' of MDPI that helps to internalize these practices in the plant. Thus the processer is identified as 'subject of implementation' for this practice, but MDPI remains the manager.

The manager of ThisFish (personal interview, 01-12-2015) explains that processors only need to make sure this codes sticks with the tuna along its travel. The main intervention and challenge herein is that traceable tuna has to be separated from non-traceable tuna throughout the whole supply chain. This is a challenge especially in small-scale fisheries where only a few fish are landed per vessel. If the buyer requests 20 kilo tuna per box, sometimes loins from different sources have to be mixed. This is already a problem if

these loins are fished by different vessels or in different FMAs. For these kinds of reasons, the 'origin' of tuna has to be communicated in a wider range. In the case of Lombok, 'this' fish becomes 'these' fish. This shows how (prescription of) CFT also adjusts to existing practices in the supply chain. Furthermore, it shows how the object of tuna becomes differentiated between traceable tuna and non-traceable tuna. In this way, non-traceable tuna (as object) influences existing business practices.

4.6.3 Change in prescription

While the practices to perform traceability are very prescribed, many interviewees did not think that the 'subjects of implementation' would have to change a lot of their practices. This is due to the enumerators and traceability implementer that are hired by MDPI to implement the practices.

> *We didn't envision many practices having to change, except for willingness to have your data and your name as part of a full chain information package (WUR economist, personal interview, 03-11-2015).*

Practices do not need to change much, but participation in these practices requires the willingness to disclose information. It seems to connote a perception of the supply chain actors as 'project takers'. They only need to be willing to participate in the practices that are prescribed and implemented by MDPI. Nevertheless, the hope is that these practices – and the I-Fish database – become self-sustainable over time.

> *MDPI cannot hire enumerator for a long time; it has to be from the business itself. If we do not inform it to the people, give awareness to the people, the project will not sustain if we stop. That's why we work with the government. For example the business will do the data collection and the government will hire enumerators (MDPI supply chain manager, personal interview, 11-05-2015).*

This shows how the project is prescribed as a temporary intervention. This is related to the nature of the IFITT project that is only funded until 2016. The supply chain and the government should ultimately take over these practices. Prescribing and implementing these practices, via training, data protocols and supporting staff, therefore is a means to enroll the Lombok supply chain and Indonesian government in the world of sustainability and traceability. In this way, prescription becomes an active assembler.

4.6.4 Summary

This section outlines the prescribed practices of enumeration and tuna coding. There is a strong focus on enumeration, or port sampling, and its practice is prescribed in detail. It involves a daily practice performed by enumerators and a site supervisor as data collectors, and fishers and suppliers as data disclosers. Moreover, prescription involves setting up a field site to accommodate the enumerators. In this way practices become fixed at certain places. This shows the interventionist nature of such practice in the daily tuna business of a fishery. Next, traceability involves data reporting and tuna coding at the processor plant. The prescription of these practices is adjusted to the context of the fishery and supply chain.

This shows that fisher, suppliers and processor remain the main 'subjects of implementation'. Besides, these practices (re)define some objects of concern. The prescription of practices also brings a new group of subjects to the fore: the enumerators and traceability implementers from MDPI that need to manage the implementation of practices. Despite these interventions, and due to these practice managers, it is believed

that supply chain actors do not have to change much of their practices. Nevertheless it is hoped that these practices become part of the supply chain and government's business. In this way, prescription of practices becomes a means to enroll the Lombok supply chain and Indonesian government into the intervention program.

4.7 Conclusion

This chapter reveals that subjects, objects, expertise and practices are prescribed in relation to two aspects of an intervention: its goal and its implementation. The goal of this intervention is to implement data collection and transparency for sustainability. The interest of the prescribers is to promote a sustainable product, the traceable tuna, according to concerns in the Western world. This should facilitate sustainable management of the subjects, the fishers, and objects, the tuna, of concern. The goal of the intervention thus is to steer deterritorialization (or change) of supply chain relations and practices aiming at both environmental (sustainable tuna stocks) and social sustainability (empowerment of fishers) of tuna fisheries.

For example, access to data (through an open database or communication system) should re-assemble the asymmetrical relations of value chain actors. It is thus perceived that this object has deterritorializing capacities in relation to subjects: it is able to break down old relationships. Therefore, ownership over, and access to data play a large role in prescription. Co-ownership and governance of data is promoted through a Data Management Committee, wherein public and private actors have a say over the data they disclose. Expertise on sustainability and traceability define what subjects and objects need to be disclosed to whom, and which practices need to be performed. This expertise is based on knowledge and assumptions about the information demands of consumers, import countries and regional bodies from all over the world. At the same time, the perception that 'subjects of implementation' lack this expertise justifies intervention (by the prescribers and other experts they bring to the field).

The implementation of the intervention is seen as a way to de/territorialize practices, or as a way to enroll subjects, objects, expertise and practices into the project. Data is argued to consolidate participation in this assemblage. As it may empower certain actors, this should create an incentive to disclose more data. Besides data, technologizing a traceability system is becoming a new focus of prescription, in order to 'verify' information and increase business benefits. The de/territorializing roles that data and technology deserve (in relation to subjects of implementation) are thus coupled to the expected benefits (hence incentives) they foster. Herein is acknowledged that access to data and technology is coupled with expertise over handling data. Again this seems to legitimize the (temporary) support of prescribers.

In general, the incentives are mainly based on a business rationale: they increase efficiency or enlarge market access. The perceived benefits differ a bit among the interviewees, and are not always separated from benefits of a basic traceability system or other parts of the project. This illustrates how the group of prescribers is heterogeneous itself, and that prescription of CFT cannot be separated from the context in this case: the IFITT project, and the supply chain it is implemented.

Furthermore, in order to participate, value chain actors and the Indonesian government have to (be willing to) understand the need of sustainability and traceability. Fishers for instance "need to be able to dream like we do" to change their situation. In other words, it seems that their interests need to align with the world of the prescribers in which

transparency is cherished. This resonates with actor-network assumptions of how actants are enrolled into a network by aligning interests. By passing on the 'knowledge' on sustainability and traceability MDPI appears to work as expert broker or aligner of interests.

In sum, the prescriptions reveal that traceability is seen as a process of de/territorialization. It shows how practices and relations ought to be de/territorialized (by implementation of traceability) in order to re-assemble subjects and objects of concern towards a sustainable goal. Implementation is prescribed as a matter of participation based on business incentives and alignment of interests. In order to understand which processes of de/territorialization actually steer performance or implementation of traceability, the next chapter explains how subjects, objects, expertise and practices are enacted. In this way this thesis is able to compare the modes of performance with prescription, in order to examine what role prescription plays in governance processes of informational interventions.

4 | ON PERFORMANCE

5.1 Introduction

The previous chapter explained how international civil society actors prescribe an informational intervention. In order to understand international informational interventions in locally embedded contexts (that in turn are linked to global and dynamic processes) this chapter explains how traceability is performed in specific contexts.

Until the day of writing, no piece of traceable tuna from Lombok has hit the supermarket shelves yet. Nevertheless, a variety of situations have provided a potential for the future of traceability. This chapter explores these different situations in order to understand how a CFT assemblage has emerged and evolves. While data and technology are among the prescribed drivers of change, this chapter discusses the multiplicity of situations, events and relationships that explain the (non) working of CFT.

In prescription it already became apparent that CFT is not a dis-embedded 'system' that stands for itself. The subjects, objects, expertise and practices that (should) make this system work are not always directly related to the materiality of traceability. Nevertheless, these subjects, objects, expertise and practices need to be assembled in order to facilitate structural information exchange. This chapter explores how subjects and objects actually gathered and what conditions territorialize traceability activities. It shows how the trajectory of this network is partly based on contingent and situated relationships, but also how value chain actors participate through existing, carefully built and continuously enacted social relations. These findings provide a different understanding of how traceability is governed compared to the ways in which traceability is prescribed.

The aim is to approach the performances with an open lens. This means that I did not take prescription as a starting point, but followed stories and events of the development of implementing traceability in Indonesia. In this way I also discovered implicit subjects, objects, expertise and practices that are not highlighted in prescription, but played a role in the trajectory towards transparency. Because territorialization (or deterritorialization) is based on associations between subjects and objects, I do not discuss these categories separately. They are discussed in three cases. These cases could be regarded as 'sub-assemblages' as I separate them by scale (Sellar, 2008). Each case represents different ways in which processes of de/territorialization are steered.

The first case is presented on the scale of a global supply chain. It shows, amongst others, how enrollment was first territorialized and then deterritorialized by engagement and disengagement of a trader in this specific supply chain. The next section portrays processes of de/territorialization of practices on the scale of the fishery community in Labuhan Lombok. It concludes with a section on the Data Management Committee that focuses on how government subjects and databases are enrolled.

5.2 Enrolling a supply chain

This section explains processes of engagement and disengagement on the scale of the whole supply chain that is targeted as 'subject of implementation' in the prescription chapter. It describes the relationships and situations through which upstream supply chain actors are enrolled into the IFITT program, and the important role the market plays in continuing CFT through the supply chain. It shows how the enrollment of this

supply chain is based on situated relationships. It also reveals how the former importer/trader of the Lombok tuna played a crucial role in the enrollment and disengagement of some supply chain actors in Indonesia. These stories point at the heterogeneity of subjects that need to be assembled to make CFT work and the importance of expertise on relationships. This section first presents an account of engagement, followed by one of disengagement. Meanwhile it discusses what these accounts demonstrate in terms of subjects and expertise.

5.2.1 Engagement: site enrollment

When the researchers proposed the IFITT project to their funder, this funder demanded they showed interest from the industry to implement this project as well. They asked for support from a trader, that sources tuna in Indonesia for the market in the United States. They knew that this trader, through its Corporate Social Responsibility (CSR) program, already established enumeration programs at fisheries it sourced from. When they presented the idea of improving data collection and combining it with traceability, the trader approved to collaborate. This co-operation seemed to be important to get other supply chain actors on board.

MDPI, as organization, sprung off the CSR department of this trader. Their head offices on Bali are next door. The current program manager of MDPI did her internship for her master's degree at WUR at this trader. Her assignment was to set up a site for data collection in Labuhan Lombok. She spent around two months in Labuhan Lombok to figure out how enumeration would work. She explains how that went:

> *[The supply chain manager of MDPI] and I spent about 2 months, 2,5 months in the field of literally standing in the landing site every day and trying to figure out what was the flow of fish, how would enumeration work. To build a protocol and figure out how can we do something without disrupting the work a lot. So I think we built some very good friendships. There were people who were like these people are crazy but ok; we will let them do it. We sat with [the middlemen and his wife] every day and chat. We just sat there. We spent a lot of time friendship building. [The supply chain manager] had the approach from a private company; she needed to ensure that the relationship stayed strong. You know what it means. We weren't going in as a normal NGO with the objective of conversation per se. We were going in from a private company to strengthen the partnership that was already there.*

Her explanation shows the ways in which the private company got access to implement data collection in Labuhan Lombok. This was done through building friendship-like relationships. The fact that she and her colleague were from a private company with experience in Indonesia helped in two ways. They had learned this relationship building approach from the private sector, and they could use their position as traders to reinforce relationships that were already there. Over time, this approach proved to create trust and co-operation. The private company was able to set up a data collection system in Labuhan Lombok.

This demonstrates why Labuhan Lombok is the site for data collection for IFITT nowadays: existing strategic and contingent relationships unfolded in new relationships that brought the project to this town. From a peformance perspective (Deleuze and Guatarri, 1988), the trader seemed to play a powerful role in the direction that the 'unfolding relationships', or line of flight, headed. Although it is not part of the supply chain anymore, its historical role was significant in assembling the supply chain. Both the existing business relationships and careful approach for access of this trader turned out

to be vital in order to gain co-operation at the fishery. This also shows how chain actors do not solely act as 'business agents'. As MDPI emerged from this trader, it benefits from the existing relationships this private company entails. The approach of intense relationship building is still present in MDPI's activities, as presented in the next section on Labuhan Lombok.

These stories also reveal a new kind of expertise. With their experience in building business relations in Indonesia, (individual) employees of the trader knew how to create trust in Labuhan Lombok. This expertise was also one of the reasons for the researchers from Wageningen to decide to work together with MDPI. "MDPI obviously was the group that we thought would have the expertise to implement something like this, had the relationships, had the knowledge" recalls the economist from WUR (personal interview, 03-11-2015).

Not only their social approach, but also the powerful position as trader seemed to have helped changing practices further up the supply chain. For instance, the director of the trader company (personal communication) explains how the processor allowed them to implement an internal or business-to-business (BTB) traceability system at the processing plant in the past. The next section explains how existing power relations in the supply chains influence deterritorialization, or discontinuation of traceability practices, as well.

5.2.2 Disengagement of the market side

The reason the trader wanted to invest in traceability is to dissociate itself from other companies in the market. Their interest is to prove to the customer that their product is sustainable, in terms of being non-UU, being harvested in a Fisheries Improving Program or with sustainable practices, as the director of the trader company explains (personal communication, 15-05-2015):

> *We promote handline as sustainable practice. There are companies falsifying longline fish into handline. That's why I need to proof we actually source handline.*

For these reasons the IFITT team initially assumed that other traders and buyers would be interested as well in such a traceability system (MDPI supply chain manager, personal communication). That is one of the reasons they focused on the production side of the supply chain. The importance of the trader's role however becomes explicit in its disengagement.

At some point during the project, the trader stopped buying tuna from the Indonesian processor that sources from Labuhan Lombok, because of raised prices (Director of trader company, personal communication). Since the trader stopped sourcing from Labuhan Lombok the processor discontinued traceability practices in its factory. While enumeration and traceability practices are still going on in Labuhan Lombok, the processor does not see a need to separate traceable tuna from non-traceable tuna. "Because we don't have a buyer anymore that is interested, we haven't found a market yet" clarifies the owner of the processing company (personal communication). This shows how a push from the market side is desired to persuade a mid-chain actor to change its practices. It also highlights how full-chain traceability is prone to dynamic business relations. When relations change, a bottom-up traceability system becomes easily 'deterritorialized'.

Although the processor ceased its traceability practices due to changing business relations, it also was difficult for MDPI to get access to the factory to implement CFT when it was still selling to this trader. The processor preferred to have its own staff in the processing plant to submit data. "They were like, you can pay for it but we want to hire people and we want all of it to be private" (WUR economist, personal interview, 03-11-2015). This shows that access to a company remains difficult in terms of disclosing information, even if there is a buyer that demands it.

The reasons why buyers are not eager to bring a consumer-facing traceable product on the market remain underexplored. The main issue the trader points out is the difficulty of a small traceable lot: "if you only have 5% of your volume traceable it is almost showing the rest is not worth tracing" (Director of trader company, personal communication). Disclosure of certain information is directly linked to closure of other information. Therefore, buyers remain hesitant. This may also be the reason for the processor to be reluctant to implement traceability. As it aggregates different kinds of species, both from sustainable and unsustainable sources, it may benefit from closure rather than disclosure of information (WUR economist, personal interview, 03-11-2015). However these reasons remain relatively speculative, it demonstrates that transparency not always provide (business) benefits for specific chain actors, as it creates new 'objects of concern' (such as the non-traceable tuna) for consumers. In this way tuna companies risk their credibility of sourcing all products from sustainable origins.

At a tuna business forum, another Western buyer explains that it would be interested to sell ThisFish only as a premium brand. The problem is that the buyer does feel incentives in terms of IUU regulations, but does not necessarily need CFT to proof its fish is non-IUU. He explains: "It is easy for a company to focus on IUU rather than overfishing. "That I can manage, on that I can focus", he continues. "You can put a wall around illegal fishing". Therefore, he notes that sustainability is a second concern (personal communication). In order to prove sustainability, buyers are interested in fish that come from Fishery Improvement Programs (FIPs). As this program sets high standards in fisheries and the chain of custody to move towards sustainability, a lot needs to happen in order to sell certified tuna. One of the requirements is that the processor is member of a fisheries association.

These insights show that participation of a buyer is crucial for enrolling the rest of the supply chain. Thus participation of turn depends on many factors. As most buyers' interest lie with FIPs, inclusion of a processor suddenly depends on its membership with an association. This illustrates the complexity of getting a supply chain on board, whereby a lot more elements need to be assembled than only a chain actor. Again this shows that not only the current supply chain takes part in the CFT assemblage: relations with other organizations for instance are necessary. Next, it shows that transparency of a supply chain is dependent on distant events and objects, such as IUU regulations. The impact of distant regulations and demands "helps to highlight the topological nature of regulatory systems, which are defined by relations of exterioty" (Bear, 2012: 33). This shows that we cannot perceive transparency governance in relation to a single, bounded supply chain.

Although it seems difficult to govern an assemblage that only seems to work when all pieces are in the right position, the next observation shows effort to bring these pieces together by MDPI:

During the International Coastal Tuna Business Forum in Bali I wander around the information market. This three-day event mobilizes industry, Indonesian government officials and organizations to discuss sustainability of tuna. After a while I stumble upon the program and supply chain manager of MDPI in a corner, talking excitingly to the owner of the processing plant. MDPI tries to persuade him to become a member of AP2HI, a fisheries association. Membership of a fisheries association is one of the requirements of the MSC. With arms crossed he listens a bit reticently. "It would be a waste of all the work we have done" continues the program manager. She convinces him to at least meet a fishery association and not much later we find ourselves listening to an explanation at the stent of APH2I. "What are the benefits for me" asks the owner of the processing plant. He promises to think about it, and agrees to have a presentation from the organization in the near future (Field notes, 26-05-2015).

This observation illustrates how MDPI tries to bring together separate elements that prepare the context in which transparency can be implemented. It knows many players in the Indonesian field of tuna sustainability, and its intention is to "facilitate collaboration" between them (MDPI director, personal communication). In other words, the NGO seems to actively assemble different subjects through building partnerships and facilitating interaction.

In sum, this section shows the process of how supply chain actors, as subjects for implementation, engage and disengage in CFT. It demonstrates that Labuhan Lombok is the site for data collection due to situated relationships that unfolded, wherein a particular locally embedded business approach proved to territorialize relationships. Next, the dis/engagement of the trader proves that the market side of a supply chain is powerful in terms of being able to de/territorialize CFT activities. Also, in the process of getting mid chain actors on board, distant subject, objects and events play an important role. Both these findings demonstrate that, from a performance perspective, the group of subjects within this assemblage is dynamic, not bounded and presents different power roles. In order to bring these subjects of implementation together, MDPI's expertise on relationships proves to be crucial. In this way, MDPI (as subject) is also involved in the assemblage. Its expertise turned out to be of great significance in Labuhan Lombok, where data collection still continues despite the blockages further down the supply chain. The next section shows how this plays out.

5.3 Everyday life in the fishery community

Whereas the former section explained deterritorailzing processes on the scale of a global supply chain, this section dives into everyday life in fishery community centered in Labuhan Lombok. Some explicit prescribed practices, like enumeration and tuna coding, occur in this town. It reveals how subjects and objects participate in traceability practices through relational territorialization. This section explains what conditions facilitate or territorialize interaction. It first explains how supply chain actors disclose data without much awareness on sustainability and traceability. Afterwards, it explains these interactions are ingrained in socio-cultural notions of family and loyalty. These insights bring to the fore new notions of subjects, object, expertise and practices, which are discussed along the way.

5.3.1 'Sukses'[16] without big awareness

In Labuhan Lombok, the performance of enumeration runs smoothly. Every time tuna is landed, two and the same enumerators of MDPI receive a text from the supplier. They

[16] Translation: success

put on their boots and rush to the dock. My first impressions on one of the first days present how this typically goes:

> *Today I witnessed the unloading process at the site where tuna is landed by fishers. Many people are involved. A big lady [the middlewoman] sits behind an old fashioned scale while young men with boots on efficiently take turns placing tuna on the line. Next to her another old lady [turns out to be her mother] and others are observing everything from a row of chairs. Standing next to them the enumerators are watching the whole process. One enumerator holds a clipboard in his hands with all templates he needs to fill in. After weighing, the other enumerator measures the tuna with a measuring stick at high speed. He shouts the weight while the first enumerator takes notes. This goes so fast it is almost impossible to follow. A government guy seems to experience the same problem; after a while I find him behind the back of the enumerator to check his notes. The tuna disappears in another room where someone [the manager of the processing plant] grades the fish. […]. Everything goes quickly, everyone knows what he has to do. The enumerator borrows the notebook of the middlewomen and copies the weight on his paper. There is no much informal interaction during data collection itself, but everyone seems to know each other. While waiting on fishers to arrive with the load everyone already mingles and chat. Last days I also saw people continuously walking in and out the little MDPI office, the same people I met during unloading. Lalu told me that they play badminton together as well at night (Fieldnotes, 16-04-2015).*

These observations demonstrate how the workers of MDPI run along in daily practices of the local tuna business (Figure 13). Their data collection actions are performed in a way they mingle, but do not interrupt the daily landing and processing activities. "It is very important to not interrupt the business process to not upset the supplier," points out an enumerator. They are totally accepted as part of the scene. During following landing processes, I noticed that workers and enumerators exchange roles when necessary. This becomes apparent during the CFT practices the mini processing plant as well.

Figure 13: The enumerator measures the fish during the unloading process (author)

The traceability implementer of MDPI goes to the processing plant every morning to check what is happening. His responsibility for IFITT is to make sure all bags of tuna that leave the plant have a tag attached with a ThisFish code. He cuts wires and writes the codes on the tags. The tags present the date of processing and the Lombok fleet: these are the objects of concern. Next, he observers processing and submits data to

ThisFish. But his activities are not limited to traceability. If needed he helps out in processing. The manager sometimes asks him for advice and he designed a poster that presents all the processing steps. If the traceability implementer is not there, a worker of the plant takes over his responsibility for ThisFish.

In terms of territorializing relationships between subjects this brings new insights. Because data collection occurs almost every day, interaction between enumerators, fishers, data templates and tags is fixed through practices that are set up to provide data. Places of these practices play an important role in the CFT assemblage: this is where habitual interaction is facilitated. Another insight is that MDPI enumerators and the traceability implementer actually perform the traceability practices. In this way they become 'subjects of implementation' themselves.

The habitual relations are not only present in professional practices. Professional and informal life are mixed in this fishery community. The office of MDPI functions as house for the site supervisor. Every now and then an enumerator disappears in the bedroom for prayings. At night, the traceability implementer plays badminton with government officials and the manager of the processing plant. One of the enumerators is from the same town as the middlewoman and his best friend is a loyal worker of her. He lets me know when the middlewoman is in the right mood for an interview.
The office also functions as a social hub in town. The first days I am confused about who walks in and out the office door. Fishers, government officials and workers from the processing plant and suppliers come by to chat and gossip, but also to exchange information about the weather, fuel queues, FADs and other fishing concerns (see Figure 14). "The interactive practice of sitting together and talking is what 'doing business' is all about", argues Pauwelussen in her observation of such 'informal' practices in another Indonesian fishery (2015: 335). Continuous interaction strengthens bonds and comes as handy source for information.

Figure 14: A fisher (middle) visits enumerators (left and right) for a cup of coffee, a cigarette and a chat (author).

As already described in the first section of this chapter, MDPI employees earned access to the local business through relationships. Their relations with 'locals' in town become habitual through their daily presence in professional practices. Their activities fit like oiled links in business practices, but are still perceived as being external to the business practices. This makes the enumerators actual 'subjects of implementation'. Moreover, the data collectors make sure they do not interrupt business and help out where they can, so they also mingle with business practices.

A fisher comments that he gives information because he believes it is important to the enumerators, and maybe it is important for him as well. These professional interactions thus also foster informal practices. Next to work, most of them are friends. According to the local MDPI employers, this is the way to keep good relationships with local businesses. They worked hard to earn a place in the social and work environment. And that seems to work: it allows continuous data collection to occur.

Yet, the supply chain actors of town do not show a lot of awareness (n)or interest in sustainability and traceability. When I ask fishers about traceability they do not know what it means. One fisher comments that he has heard about sustainability, but that he does not believe it is true that tuna stocks are declining. "Every odd year catches are bigger than the other years", he explains his theory. He likes to share information. Furthermore, the data collection does not change his fishing or unloading practices, but he is happy to have new friends and souvenirs (fisher, personal interview, 28-04-2015). MDPI employers that accompany us to the interviews take these opportunities to explain what sustainability and traceability mean. MDPI tries to align these interests in town. In this sense they take a role as experts on sustainability and traceability. Next, expertise on data that the enumerators have does not seem to be passed on to supply chain actors, as data collection activities remain executed by MDPI enumerators.

The supplier knows what activities are going on but explains she is too busy to be involved in traceability efforts. She grants access to the enumerators because she believes "these boys are doing good work" (supplier, personal interview, 30-04-2015). The manager of the mini processing plant, in contrast, shows his understanding and interest in traceability, but this interest is mainly based on benefits from internal traceability. He comments that the main benefit of traceability is to trace down bad quality product. He refers to traceability as raising the price of his products, because in this way he can manage to have fewer rejections. Nevertheless, bringing in CFT has extended his perception of traceability that originates from the vessel to where the fish is actually caught. It changed his perception on a fishery in relation to the fishing ground as opposed of a series of vessels. This helped him to understand where good and bad fish come from, and helps in "training the fishers" for better quality product (Manager of processing plant, personal interview, 29-04-2015). This shows that the main object of concern of the processor is rather quality of tuna than sustainable tuna.

Because data collection occurs almost every day, interaction between subjects (and objects) is fixed through practices that are set up to provide data. Places of these practices play an important role in the CFT assemblage: this is where habitual interaction is facilitated. Add to that the informal interactions and one understands how these interactions are habitually embedded in everyday life, thereby stabilizing traceability activities. Moreover, the informal interactions facilitate professional practices: they are a way of doing business, and data collectors maintain access to the tuna industry because they are believed to do good work.

Thus the supply chain actors do not share the same subjects and objects of concern. As they, as subjects themselves, have different interests, this points at a heterogeneous 'assemblage' in terms of identity. Access to these professional practices, and information that they bring about, is not based on a shared interest in the greater goal of data collection –sustainability and traceability- but on the acceptance of the MDPI employees taking part in the tuna business practices. As the traceability implementer puts frankly:

"They [workers in processing plant] do all the steps, but they do not know what the word means". Thus a perceived need in traceability and sustainability are not the reason locals participate in data collection activities. There is a discrepancy between awareness of transparency and performing transparency. Other factors play a role, as the following paragraph illustrate.

5.3.2 Family & loyalty

When I ask the fishers about sustainability and traceability, it does not often ring a bell. Nor our questions about MDPI get a great response. MDPI is confused with the trader or other NGOs or project that have been present in town. Whenever I refer to the enumerators though, a fisher's face enlightens "Yes, [the enumerators] are good friends, like family." Soon after my immersion in Labuhan Lombok it appears people value relations in terms of family. If someone from the government is like family, explains the fisher, it is easier to obtain a fishing permit. The middlewomen speaks of the fishers that work for her as "babies" in need for attention and support. Support materializes in loans for operational costs, but is also deployed in case of family sicknesses. Every 5 year, the supplier even visits hometowns of Sulawesi fishers to bond with their families and recruit new fishers for the coming seasons. It shows that relationships are continuously enacted by the supplier, and extend to distant places. Pauwelussen (2015) already demonstrated that it is these kinds of relational and mobile enactments that keep trade relationships in position in Indonesia.

These family relationships seem also important for many fishers and workers in town, exactly because most of them in the tuna business are mobile citizens that come from different islands. Most of them reside in this town (temporary) because they are married to a local. One of the favorite workers of the supplier comes from Java (and is called 'Mister Java'). He explains: "If something happens, whom else can I ask for help?" His close relationship with his boss is his argumentation for not switching employer, even though he has got good offers. The social insurance that comes with these family relationships is important to cement work relations. However, with support also come social obligations and expectations. While gifts bring bonding opportunities, relationships and coupled gifts and expectations do not always work equally well for all parties involved. The supplier uses this dependence (and her mobility, to visit hometowns of fishers) to consolidate her relationship and contracts with fishers, which makes it difficult for them to move market (Pauwelussen, 2015). This illustrates the 'patron' role of the supplier in patron-client relationships with fishers, which is well known in coastal areas of Indonesia (Bailey, 2016b; Kusumawati et al., 2013; Pauwelussen, 2015; Platteau & Abraham, 1987). These long-term relationships are based on business dependency and mutual expectations of loyalty between suppliers and fishers. The plurality and different –often subtle- ways these relationships are carried out add to the complexity of ingrained interactions in this community, which sometimes hinders transparency in the chain.

One example in which this tension became apparent was when fishers spoke of bookkeeping. They do not keep records of their operational costs, loans and revenues. This is all written down in a notebook that is kept by the supplier. After every five landings, the captain is allowed to take a peak in these recordings when he receives his payment. However fishers are interested to have more insight, they would never ask the supplier out of fear to risk the trust relationship that is built. They would feel uncomfortable and fear to embarrass their 'boss'. Sometimes they ask 'Mister Java' instead, but, even though he is aware of the price, he would always send them to the

supplier. He comments he does "not want to take care of money issues". Even he does not want to jeopardize his relationship with his boss. This results in prioritizing harmony of relationships over transparency and efficiency that might empower individuals.

Also the enumerators express caution when some technical experts bring in tablets to the field. These tablets have apps that suppose to make data collection more efficient than the clipboards with paper templates they use now. Although the enumerators showed enthusiasm, they wanted to master the app completely before bringing it to the landing site. They were worried to disrupt the smooth and fast data collection processes outlined above, thereby risking the carefully established relationship with the supplier that gives them access to do so.

Another way in which MDPIs careful approach of building relationships becomes apparent is their knowledge on gift exchange. When visiting homes or doing interviews, we often brought a tin of biscuits to the respondents, as was advised by the local workers of MDPI. The response to these little thank you gifts, called *oleh oleh*, was low-key and the biscuits were sometimes immediately shared with us to acknowledge the gesture. MDPI was aware of these gestures when they set up the enumeration program as well. "From early on whenever we went to the field, we would bring *oleh oleh* to the fishers, even if it wasn't in the budget of [the private company]," remarks the Program Manager of MDPI when she explained how she first set up enumeration in town. These gifts (in forms of t-shirts, for example) are still perceived as one of the benefits of MDPIs presence in town.

It is, among other things, the gift exchanges in which patron-client relationships become explicit. Loyalty is created through gifts that rely on expectations of reciprocity. These gifts are not only used in cultural forms. Gifts take part in the fishing business itself as well. Every year, the supplier hands out an extravagant gift as bonus to the best captain for each of the different types of vessels (Penongkol and Mandar) with the biggest production. They can choose between a full-paid trip to Mecca or a new motorbike. Until now, everyone has chosen the motorbike. These gifts strengthen relationships that are so important in tuna business, wherein contracts are often not legally binding.

These findings show that trust and co-operation to perform CFT practices are established through an immersion of the enumerators and other MDPI employees in the family space of town. The fact that these enumerators navigate well in this family space demonstrates they understand the fisher's and supplier's worlds, wherein concepts as supply chain, sustainability and traceability do not play a part. This space exists of subtle practices of loyalty and know-how of appropriate behavior, but also holds power balances (between supplier and fishers) convulsively in position. This means that transparency activities cannot bypass patron-client relationships completely (Kusumawati et al., 2013). However, the know-how of MDPI of the subtle practices that are linked to this kind of relationship proves an asset in being able to perform transparency practices. This extends a view on expertise. While MDPI still plays a expert-broker role, by teaching tuna industry players about sustainability and traceability, the site employers also demonstrate having expertise on local practices of loyalty and informal behavior. This expertise helps them to gain access.

These carefully earned relations however can also be disrupted easily. Objects like data (transparency) and technology do not play a territorializing role; they rather bear the risk of deterritorializing complex relationships that are kept stable in subtle practices of loyalty, wherein objects in the form of gifts and social insurances do play a cementing

role in turn. At the same time, these social relationships seem to territorialize traceability practices: supply chain actors disclose information because of their friend –or family- like relations with MDPI employers.

This also brings insight the heterogeneity of subjects from a performance point of view. As performers of traceability practices, local MDPI employers become subjects of implementation. At the same time they are 'experts' on traceability and data. Next they play a territorializing role when it comes to enrolling subjects into IFITT: not through aligning interests, but through their expertise on relationships. In this town the balancing game of the power relations (between suppliers and fishers mainly) shows that next to different roles, subjects have unequal power in relation to others. This points at the dynamics and heterogeneity of subjects in this assemblage, in terms of identity and power, but also in taking different roles.

5.4 The Data Management Committee

Another part of the 'traceability assemblage' takes form in the Data Management Committee. Whereas the former sections focused on engagement of supply chain actors and everyday practices, this case highlights how efforts of enrolling the government in this project (or internalizing enumeration in government structures).

The way in which this committee emerged shows, in another way, the contingent and situated aspects that contributed to the trajectory of this transparency initiative. Next, it highlights how this committee reshuffles relations between the supply chain and government. In addition, it shows how subjects and objects are fixed based on a spatial notion of a fishery. The way in which the DMC is enacted nowadays in turn brings insight in the way these relations are actually territorialized and how this differs from the notion of data having transformative powers.

As briefly noted in prescription, this committee was established based on notions of inclusiveness and an attempt to institutionalize data collection efforts in Lombok. The goal of the DMC is to make data available for management and is part of the IFITT project. This section describes how the DMC of the Lombok fishery came into existence and what are the impacts of it now. It includes reflections on subjects, objects and expertise.

5.4.1 Establishment of the DMC

The DMC (and I-Fish) emerged from a project called Indonesia Marine and Climate Support (IMACS). This four-year project, funded by USAID, aimed to strengthen fisheries management of the Ministry of Marine Affairs and local governments of Indonesia, introducing more inclusive and transparent modes of governance. This included enhancement of engagement of the private sector and local communities. IMACS had an idea to serve this objective: the Data Management Committee (DMC).

The goal of these meetings is to discuss the data from the fisheries with public and private stakeholders involved in that fishery. Although the representative of the local university criticizes the lack of knowledge on collecting and analyzing data of most members, enhancing awareness and understanding of data is exactly what the DMC is set up for. "A lot of discussions about fisheries management are not even based on data, they are not science-based in principal, so basically nonsense," comments the former IMACS consultant. 'Science-based' data thus is seen as a prerequisite for fisheries management, of which the expertise is yet inadequate. This shows that only a scientific understanding of data is regarded as expertise. The supposition justifies the DMC

initiative, and reveals the perception of the local government and supply chain actors lacking this expertise. The need for scientifically backed data for fisheries management is the rationale behind the DMC, and almost becomes the object of concern of this unit.

Following decentralized government structures in Indonesia, management over fisheries is divided into three reign zones: district (up to 4 mile from the coast), provincial (4 to 12 mile) and national areas (the rest). Accordingly, government officials are interested in data from these specific spatial territories. The philosophy behind the DMC is to look at the ecological boundaries of a fish stock instead of these administrative boundaries for data management. A former consultant of IMACS explains the rationale behind this:

> *The dynamics of a fish population often take place on a scale that reaches beyond district level, but does not cover all of Indonesia either. What we actually tried to do is to first define what a stock is, and then see which fishers participate in this fishery. So we have a stock and then there are fishers from Java and fishers from Bali participating. This means that you need something to accommodate these different fishers. And that was basically the rationale for the DMC. […]. It is unconceivable if you only work with one district government for a fishery of which you know beforehand that it is a shared fishery (personal interview, 21-04-2015).*

This rationale shows that the central object of concern is tuna as natural resource. Based on the spatiality of this resource (as stock) we need to draw boundaries for management. These boundaries, based on an ecological principles, conflict with the administrative boundaries of Indonesia. In this way, different districts, or even provinces, must collaborate. The idea behind the DMC was that everyone that participates in that fishery, demarcated on ecological grounds, should be member of the committee. It required a public-private partnership.

As always happens with projects, there was a timeline to implement this initiative. In search for private collaboration, the former trader that sourced from Lombok presented itself: "it was really a partner who wanted to participate, who engaged and thought about sustainability," explains the IMACS consultant. There was only one downside; the ecological boundaries of a tuna stock were difficult to define. Nevertheless, he gave it a go, and tried to involve subjects that participated in this fishery. He illustrates how that went:

> *The only thing that was not quite right was that it was about tuna. For tuna it is very difficult to define what a tuna stock exactly is. […]. But I thought, for tuna we also need an approach in the end, so let's see if I can point at an area that not completely aligns with the administrative boundaries, but that makes a little bit more sense ecologically. Well, [the trader] bought from a processor that had a contract with a supplier. […]. I asked the supplier at that time, could you show me where your vessels go fishing approximately. Then I drew a line around that area on the back of an envelop and said, for better of for worse, that is our area of interest, that is our management unit, while it actually can't be a management unit because it is a pelagic fish. But it went beyond the 12-mile boundary of a provincial management area; it showed, in any case, the complicating factor. Well, this was the area of interest, who else works in that area. Then you try to put these people in the committee (personal interview, 21-04-2015).*

This line of flight reflects a couple of things. First of all, it shows how some circumstances, in particular the presence of the trader in Indonesia as private pioneer in tuna sustainability, sets off a range of events through which the Lombok fishery DMC is assembled. Next, it demonstrates how spatial boundaries are purposefully drawn in order

to be able to 'manage' the objects that move within it. The tuna stock (caught by handline) is the central object of concern, and is playing a complicating factor in this attempt. Its migratory nature 'smoothens' this rigidly demarcated space (Bear, 2012). Nevertheless, this boundary is drawn based on existing resources (the knowledge of the supplier, and an envelope), which shows that this line of flight is again redirected by contingent situations. The contingent and, in greater extent, the purposeful events contributed to in- and exclusion of subjects of this DMC.

It resulted in a legal (provincial) document that presents a map, see Figure 15) where the DMC boundaries (dotted line) cross and surpass administrative 4- and 12-mile areas (light/dark grey area). Next, this 'fishery area' covers separate FMAs. This shows that the DMC supersedes governmental management boundaries, but also that boundaries for governance remain spatial in nature. In other words, spatial boundaries are deterritorialized in order to re-assemble private-public relations. The topographical area formed the basis of membership of the DMC. Since the DMC samples data from two suppliers (of Labuhan Lombok), it includes their fishers and their supply chain. Second, MDPI is included because it funds and performs enumeration. Another NGO that is present in this fishery is member as well. Next, the local university (of Mataram, Lombok) is involved because of it is expertise on handling data. In an attempt to institutionalize enumeration, the provincial government (DKP NTB) leads the committee and district level governments form Lombok and Sumbawa take part. Also the national fisheries data management body, P4KSI, is invited. This means that there are strong boundaries in terms of in- and exclusion of subjects in the DMC, which is based on the 'ecological' boundaries of the tuna fishery of Lombok and expertise. Following the inclusive and collaborative principles of the philosophy behind the DMC, the members own the data that is collected for the DMC as well. Officially, the Indonesian government owns all fisheries data that is collected in Indonesia. Therefore, the head of the DMC permits access to data. Hence, the subjects that take part in the DMC, and the coupled access to data seem very territorialized.

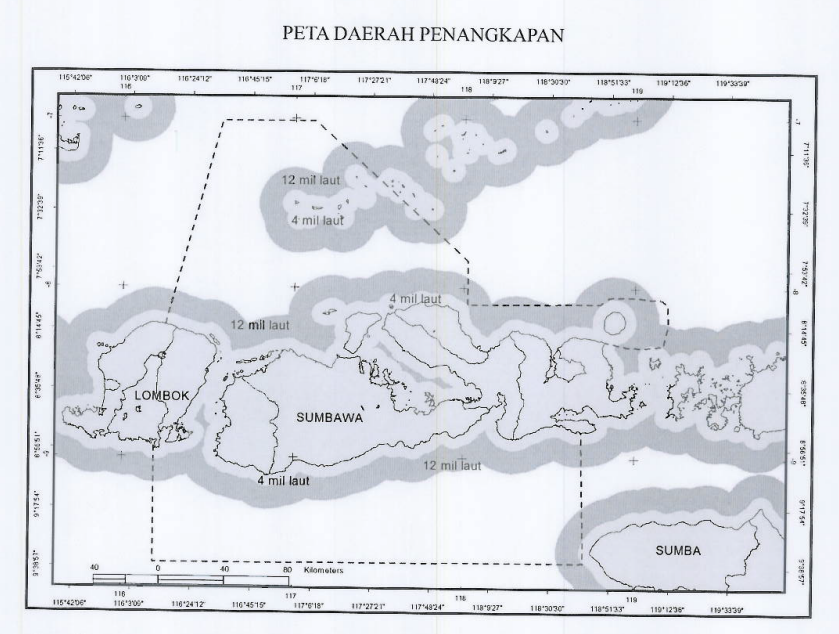

Figure 15: Map of tuna fishery area for data management (adopted from the legal provincial DMC document)

5.4.2 Meetings and data

Next to a legal document, the DMC exists of a meeting every half-year, nowadays organized by MDPI. While the representatives of the local governments are eager to participate, it is more difficult to involve the tuna business actors. For them it is time consuming, despite the compensation they get for travels, explains the former IMACS consultant. Because business players lack time, they often send representative to the DMC, which make the involved private subjects even more fluid. Meanwhile, The government officials get paid if they attend a meeting, which is an extra incentive to go to a DMC meeting. Therefore, MDPI actively tries to engage private actors:

> *I'm sitting next to the sustainability coordinator of MDPI in the taxi, on our way to Mataram where IMACS organizes a 2-day discussion on instutionalisation of I-Fish, since the project will cease. DMC members are invited. The sustainability coordinator takes his phone and rings the manager of the miniplant. He asks if he is coming to the meeting, and that he would highly appreciate his attendance. He explains that he can get compensation for his travels to Mataram. The next day, I see the manager in the audience (field notes, 05-05-2015).*

Although it was not for a DMC meeting, the efforts of this MDPI employee present active role MDPI takes in 'assembling' the private actors. The program manager of MDPI explains the value of the sustainability coordinator as he "picks up his phone to everyone". This is one of the main activities of his job: maintaining relationships with everyone in the field. This also becomes apparent when he takes me for an interview with the head of the DMC, which is also the head of the provincial fishery department in Lombok. He tells me we cannot set an appointment beforehand, but that we best can go on Friday, after praying. After some waiting, the head of the DMC walks in. He and the sustainability coordinator start chatting and tea and cookies are brought to the table. As it is in Indonesian I do not understand what they are talking about. After a while I ask the sustainability coordinator if I could ask some questions that I prepared. "Wait, wait" is his answer every time I try. As I planned another appointment I have to leave the scene after a couple of hours, without completing my interview. Whereas it frustrated me at the moment, I later realized that this way of keeping friendship-like relationships through informal gathering was how MDPI embedded itself in the 'field', which turned out to be an effective way of territorializing relationships and practices.

The DMC meetings do not have an impact on formal management yet: it stays with half-year discussions. Within these meetings data is presented and the need of data for sustainability is socialized, but comments and discussions often cover other issues including complaints by fishers and suppliers about the presence of purse seiners and comments on quality of fish. Moreover, government and private actors do not use the I-Fish data actively: not many people click on the link to the open-source webpage (MDPI I-Fish manager, personal communication). This shows that the availability of data itself does not create an incentive to participate. It is not an object of concern of all DMC members, and therefore it does not de/territorialize practices per se.

Nevertheless, these meetings facilitate interaction between private and public actors that otherwise would not take place. Although participation from the supply chain actors remains an issue, it shows a way of co-management that was not present in Indonesia yet. Next, the discussion on institutionalization showed an awareness of government officials about the importance of data, which is an improvement compared to a couple of years ago, according to IMACS.

Thus, even though the DMC is institutionalized in a legal document (a territorializing object itself), and membership is very fixed, in practice, data does not present a very de/territorializing role. Discussions at DMC meetings extend the data reports and thus far, data is not used for management decisions. Next, actors do not show a pro-active interest in data in terms of using the I-Fish website. Incompetency of this expertise among DMC members still troubles data discussions. Some information leads to different insights by some attendees, but does not necessarily lead to change in practices. MDPI still plays an active role in engaging the private and public sector. This shows that the prevalence of the DMC still depends on NGO efforts. Nevertheless the DMC "laid a set of affects that provide potential for future" (Blanco et al., 2015). Yet there is more awareness about the needs of data, and the fact that there are official discussions going on about institutionalization of I-Fish facilitates potential for "future territorialization" of data collection practices that re-assembles public-private relations in Indonesia.

5.5 Conclusion

The performance chapter aims to show how a collective around traceability came into existence, and which conditions facilitated gathering and bonding of different elements. It shows how this collective exists of different sub-assemblages which are presented in three cases. They are separated by scale and focus. The first case presents de/territorialization processes of the global supply chain. It appears that this chain is not singular and bounded, but rather seems to be dynamic, heterogeneous and influenced by 'relations of exteriority'. In the dynamic context of this wider 'supply chain assemblage' traceability seems to be easily deterritorialized. But if one zooms into the 'fishery community assemblage', one notices that subject-object associations in the supply chain are very territorialized through patrion-client relations. Expertise on these relationships by the local MDPI employees, and the fact that they are take part in this assemblage, facilitate access for implementing traceability practices and to socialize sustainability and traceability. In contrast to the former cases, the last case focuses on the enrollment of government and the de/territorializing capacities of data. Some of the supply chain actors also partake in the 'DMC assemblage'. It seems to be a fixed assemblage in terms of in- and exclusion, but one that remains fluid in terms of participation and response to data. Nevertheless, it lays potential for future territorialization in which I-Fish can be institutionalized in government's decision-making, and meetings continue to occur due to active efforts of MDPI.

Besides the differences between the 'sub-assemblages', some themes emerged from all cases. First, the ways this supply-chain is enrolled and the DMC is established show that the CFT assemblage evolves from a set of situated and existing relationships and events. This means that deterritorialization was often already set in motion before any intervention had taken place. Furthermore, the chapter shows how MDPI takes part in every 'sub-assemblage'. Although this Indonesian NGO cannot totally bypass embedded social and business relations, it proves to be an active assembler in every case. It tries to facilitate networking on the business forum, its office is a central and social hub in the fishery community and it is still the one that organizes the DMC meetings. The fact that the NGO is partaking in these different contexts suggests it can relate to different worlds. This shows the ways in which the NGO is co-governing the trajectory of this wider transparency assemblage.

The chapter also brings new kinds of subjects, objects, expertise and practices to the fore that differ from the ones that are prescribed. First, in terms of subjects it shows that some historical subjects (such as the former trader and IMACS) have a powerful role in

the trajectory of this project, and that a wider set of subjects need to be assembled than the supply chain only in order to make traceability work. Next, it shows how subject relations got territorialized based on social relationships rather than alignment with prescriber's reality of sustainability and traceability. Second, with regards to objects this chapter demonstrated a starting awareness of data (importance), but also that data does not yet play a territorializing factor in relation to practices. Furthermore, gifts play an important role in relationships in the fishery community. Third, two fields of expertise are highlighted: expertise on sustainability and traceability and expertise on data collection and analysis. Expertise on sustainability and traceability of tuna is socialized through the DMC and MDPI's presence in Labuhan Lombok. Through these events MDPI plays a role as expert broker, thereby increasing its credibility for intervention. Interventions are justified with these expertises, but it is not necessarily awareness or knowledge on these topics that fosters engagement in transparency. It is rather the expertise on loyalty and relationships of MDPI that enables to steer de/territorialization of subjects and enactment of practices. Fourth, traceability practices like enumeration; coding and DMC meetings fix interaction. CFT assemblage is not only territorialized through professional practices, but merely through informal practices that spring off from these prescribed practices, and consolidate habitual interaction.

In sum, this chapter showed alternative subjects, objects, expertise and practices in comparison with the previous chapter. This has implications for how we understand governance processes of interventions aiming at a sustainable goal. This will become clear in the next chapter, in which the subjects, objects, expertise and practices that emerged in this chapter are scrutinized against the ones that are prescribed, and wherein the implications of these findings will be linked to discussions on theory, informational governance and the role of NGOs.

6 | DISCUSSION

6.1 Introduction

This chapter analyzes the main findings and relates them to theory used. The aim is to show what a post-structural approach provides in terms of understanding how adaptive and reflexive processes of interventions aiming at sustainability goals can be implemented. This brings insights in how sustainability initiatives can deal with today's complex and dynamic world. In order to bridge the results to such an understanding, this chapter follows a few steps. First, it summarizes the main findings of prescription and performance comparing them through the variables of subjects, objects, expertise and practices. Second, it turns to the main concepts: territorialization and deterritorialization. It argues how a traceability assemblage is held stable through relational territorialization rather than spatial territorialization or aligned interests. Third, by further explaining which prescriptive elements facilitate territorialization, this chapter points out to what extent prescription governs traceability performance, and what other factors are at play. From there it reasons why a singular notion of prescription as governing force in building a network is not enough to understand how NGOs govern transparency in Indonesia. Fourth, this leads to a reflection on the use of ANT and Assemblage Theory to understand dynamic processes of governance, and fifth, how this adds to informational governance. These discussions bring insights in the role and influence civil society actors (NGOs and academia in this case) have on introducing a transparency tool in Indonesia, which the last section explains, and how we can see governance differently through a post-structural approach.

6.2 Between prescription and performance: on subjects, objects, expertise and practices

This section summarizes the main findings from the results chapters by comparing the ways subjects, objects, practices an expertise are prescribed and performed. Table 3 presents some illustrative differences. With regards to subjects, prescription mainly focuses on (the bottom of) the supply chain that is prescribed as a single, bounded supply chain existing of business agents. Performance in turn shows that the supply chain is not bounded but rather dynamic and influenced through 'relations of exteriority'. Next, it reveals historical subjects that influenced the trajectory of this project.

	Subjects	**Objects**	**Expertise**	**Practices**
Prescription	*Of concern:* fishers *Of implementation:* (upstream) supply chain actors, government	*Of concern:* tuna, vessels *Of implementation:* data and technology	Expertise on sustainability and traceability, on data and on technology	Enumeration, tuna coding
Performance	Former trader, IMACS, wider network of supply chain, enumerators	Gifts	Expertise on relationships	Enumeration, tuna coding, informal

Table 3: Illustrative differences between prescription and performance

Furthermore, it demonstrates how MDPI is also performing traceability, wherein it changes roles between expert and implementer. The main focus in terms of objects lies on data and technology. They have de/territorializing capacities according to prescription, whereas performance reveals that they do not influence practices that much (yet).

The prescribed expertises define subjects and objects of concern, and justify intervention by the prescribers. The performance chapter shows however that it is not the 'passing on knowledge', or aligning interests that territorializes relationships, but expertise on social relations that seem to give access to intervene in the supply chain. Practices seem to overlap between prescription and performance: both enumeration and tuna coding are performed according to prescription. The only difference is that MDPI turns out to be the main performer of the practices. Moreover, the performance chapter shows that these habitual interactions facilitate affective relationships that further territorializes traceability practices. Nevertheless, it also shows that practices are not continued further upstream the supply chain and are therefore deterritorialized on a larger scale.

These findings show a difference in the way traceability is prescribed and performed. A red threat throughout the results is the ambiguous role of MDPI as both prescriber and performer. What the implications of these findings are will become clear after a deeper analysis of processes of territorialization and deterritorialization, and an examination of the role of prescription herein (both as narrative and as act). An analysis through the four variables of subjects, objects, expertise and practices provide a way to observe differences between the way traceability is prescribed and performed, but did not allow to focus much on the relations between these different elements. Therefore, a further examination is needed of how relations are de/territorialized, and to the degree of territorialization and deterritorialization involved between prescription and performance.

6.3 Processes of territorialization and deterritorialization

This section provides a second, meta-analysis of the data in order to explain relations between prescription and performance. It discusses in which ways the processes of territorialization and deterritorialization occurred with help of table 1 in chapter 2. It does not systematically analyze processes through these indicators. Instead, this section looks at the themes that emerged from the prescription and (predominantly) the performance results, and what they show in terms of steering processes of de/territorialization.

In order to understand how a governance network evolves, this thesis uses the concepts of territorialization and deterritorialization (DeLanda, 2006; Sellar, 2008). The difference between territorialization and deterritorialization can be detected in the extent of the heterogeneity, porosity and pace of change of a collective. As explained in chapter 2, these processes are subject to three elements: identity, relational territorialization and spatial territorialization. This section explains how, through a comparison between prescription and performance, we can assess this imaginative 'traceability collective'. First through a discussion on how it is being subject to processes of deterritorialization in terms of identity and spatiality, but also by explaining how continuously enacted relational territorialization in certain places fosters disclosing of information. These processes are clarified in more detail below.

6.3.1. Processes of deterritorialization

In the next paragraphs I explain processes of deterritorialization that (in theory) challenge a traceability intervention. These were mainly found in processes that refer to

identity of an assemblage and in spatial elements of the assemblage. First identity processes are described, after which I highlight the challenges of a spatially dispersed supply chain that is always on the move.

It is prescribed that a traceability collective should have a strong identity in order to make the implementation of traceability successful, while the performance chapter did not show a strong identity amongst the different subjects and objects that were subjected to traceability. According to existing literature (DeLanda, 2006), three processes define how stable the identity of an assemblage is: strong expressions, alignment of interests and homogenization of elements. The results show that prescription of traceability is very expressive, in the sense that there is a strong language about why value chains should be more transparent, expressed in categorizations of subjects and objects (origin of tuna, bycatch, group of fishers) that need to become legible. The process of defining the categorizations, and what is presented to whom, is a negotiation between the traceability NGO, MDPI, value chain actors and different experts groups, wherein expertise seems to have an influencing role. Prescription is translated from different interests and (perceived) information demands from different drivers into these categories. In turn, they are materialized and stabilized in objects like data collection protocols and templates, the online database and (ThisFish) website pages.

A strong focus in prescription is that enrollment should occur through translating interests. According to prescription of traceability, subjects need to be aware of concepts like traceability and sustainability and they should be willing to learn in order to participate. These interests and goals are not shared among all value chain actors, as the performance chapter indicates. The processer in Indonesia shows an interest in sustainability, but does not feel the need to participate in this traceability project. Fishers are not aware of taking part in traceability activities, and the supplier indicates she is too busy to be involved in sustainability and traceability. The fishers and supplier in Lombok both do not have much knowledge or interest in the destination of the tuna they catch or trade. The government shows an awareness and interest in traceability and data collection, but does not feel like it is taking part in this project actively.

In other words, whilst categories of information are rather stabilized, and fixed in objects such as data collection protocols and websites, the lack of shared interests indicates a heterogeneous collective in terms of identity from a performance analysis. According to ANT this would mean that actors are not successfully enrolled, and in assemblage terms it means that subjects are heterogeneous and have incoherent identities. These are both factors that in theory deterritorialize assemblages. Nevertheless, practices are still territorialized in some places.

This brings us to spatial elements that influence territorialization. Besides these different identities or realities throughout this traceability collective, this research shows how traceability governance is enacted in distant places. In some places there is strong stabilization of practices through continuous performance, for example at the landing sites where enumeration has been established. At other places in the value chain, at the processing plant in Indonesia for example, traceability practices are deterritorialized because of business reasons. Moreover, as business relations (or fishing places) tend to shift, also the spatiality of such a supply chain becomes dynamic. The working of traceability in one place is thus affected by situations in distant places. This means that in the context of a global value chain, spatial boundaries are dynamic, and it is difficult to (spatially) territorialize a whole value chain at once. In other words, the dynamics of the

space of places affect the space of flow in which tuna information needs to be articulated and exchanged. As these places are also dynamic, it becomes even more difficult to control traceability practices.

Based on the heterogeneity of the identity and the spatially dispersed nature and dynamic relations of a supply chain, it could be argued that this traceability collective is subject to deterritorializing processes. In terms of governance these findings bring to the fore all kinds of challenges. Whereas traditional notions of governance refer to "the processes of interaction and decision-making among the actors involved in a collective problem that lead to the creation, reinforcement, or reproduction of social norms and institutions" (Hufty, 2011: 405), this case shows that different actors do not even experience a collective problem. Next, the dynamic and spatially dispersed state of such an assemblage opens up the opportunity to different actors to switch authoritative spheres, which makes it more difficult to steer territorialization. A processor can for example choose to switch export markets with different import regulations, which makes selling traceable tuna more or less desirable. It thus seems to be difficult to intervene in such a heterogeneous and dynamic context.

Yet, information is collected at the landing side and is made accessible at an open-source database. The fact that some of these local actors are participating means that other factors contribute to the territorialization of these disclosing practices. The next paragraphs illustrate how relations are (de-)territorialized in certain places.

6.3.2. Processes of relational territorialization

This research found that (de)territorialization at particular places mainly happens through social relationships. Next to identity and spatial territorialization, this is the third dimension of territorialization: processes are inherently relational (between subjects and objects). According to DeLanda (2006), relational territory increases through practices of in- and exclusion, habitual interaction and affective relationships. There are different ways in which territorializing processes of relations took and take shape in this research. These become evident, among other things, in the ways the supply chain is enrolled in Indonesia. These findings contribute to understanding how traceability can still be governed, despite the processes of deterritorialization explained in the section above.

First, the emergence of a traceability collective involved contingent and situated relationships and events, that passed through objects and subjects that are external to, or not part of the value chain anymore. The presence of a Western private trader interested in sustainability in Indonesia and the short-term character of the I-Fish project resulted in an agreement to start a DMC, despite the inconvenient migratory (deterritorializing) movements of tuna. This in turn led to the establishment of an enumeration site in Lombok. The fact that data enumeration was settled generated centripetal movements: because there already was a site in Lombok, it was attractive to pilot a traceability tool here. On top, existing relationships between the private company and Wageningen University led to collaboration for the traceability project. These 'historical' actors thus influenced the trajectory of the project.

In other words, the emergence of CFT, whereby subjects, objects, expertise and practices are prescribed, is sought and developed from the networks that were already there. This corresponds with the findings of Vandergeest et al. (2015: 14) in their analysis of territories that are re-assembled through certification: "The redefinition of the territorial assemblages is therefore also embedded in the networks it seeks to create". Prescription

results show a process of active assembling meaning that there were objects (electronic databases) and subjects (supply chains) defined and enrolled in the project. The performance findings revealed that enrollment also included contingent and situated events and relations, which were not intended. Besides it highlights how efforts of active assembling included building trust and loyalty relations.

Second, the participation of the value chain actors in Lombok is due to carefully built social relationships between MDPI and the locals. The findings suggest that trust and co-operation to perform traceability practices are established through an immersion of the enumerators and other MDPI employees in the family space of the fishery community. Here, personal and professional relations and practices are mixed. This space exists of subtle practices of loyalty, quasi-credit relations (Platteau and Abraham, 1987), social security, gifts and know-how of appropriate behavior, but also holds power balances (between supplier and fishers) in position, as also found in other studies on Indonesian fisheries (Pauwelussen, 2015, Bailey et al., 2016b). These social relationships are continued through habitual interaction based on prescribed transparency practices. Examples include daily data collection at the landing site and coding of tuna in the processing plant. Again, the prescribed 'professional' practices facilitate opportunities for interaction but it is the affective relations that spring from these habitual interactions that create trust and cooperation.

Even though a traceability system feeds the global imaginary (Appadurai, 2011), the findings show that de/territorialization occurs at the particular meeting places (Massey, 2004), like the landing site or DMC meetings. This could mean that 'space of places' (of interaction) are still very important in this case of traceability, despite the fact that proximity of relations seems to be increasingly organized through a 'space of flows', in which technology facilitates visual information exchange (Castells, 1997). An aim of information-rich traceability is to bring value chain actors closer together through transparency: allowing communication between consumers and fishers. With technology and visual information exchange, territorialization becomes a function of proximity, whether it is physically (so indeed spatial) or communicatively. In this way traceability tries to fold in distant places through a space of information flows as Castells has identified. Since traceability is not fully implemented yet, this case study was not able to examine whether increased proximity between value chain actors through transparency indeed fosters stronger relationships or territorialization, which in turn may lead to holding each other accountable for environmental performances. Thus far territorialization seems to be tied to physical places of interaction. This means that the spatial dimension of territorialization is still important, as fixed spatial boundaries contribute to clearer in- and exclusion. At some parts of the supply chain in- and exclusion becomes fluid as spatial boundaries tend to shift, but in the case of the fishery and DMC meetings, spatial settings created in- and exclusion and recurring interactions.

In sum, the case suggests that this traceability initiative exists of different places with different realities. The assemblage is spatially deterritorialized: it exists of dispersed places and events that often shift when business relations change or meetings move. In addition, there seems to exist no homogeneous identity that brings all actors NGOs, government and industry closer, despite the raising awareness about sustainability and data needs. Nevertheless, strong relational territorialization occurs between certain actors at certain places, where spatial and relational in- and exclusion is strong and (sometimes personal) interests are aligned.

These findings bring us to a discussion with regards to the indicators of processes of de/territorialization as outlined in table 1 (of chapter two). As Sellar (2008) stated, assemblages cannot be identified by their ontological status but rather by their emergent properties. "In order to resist appeal to transcendent entities or ideals we must distinguish a whole from its parts by scale and not ontological status" (Sellar, 2008: 69). On a wider scale it could be claimed that traceability is subject to processes of deterritorialization though non-alignment of interests, heterogeneity and fluidity of actors and objects and (spatially) shifting supply chains. But if we zoom in on the fishery community in Indonesia, relations and practices are tight and continuously enacted, and coded tuna is put on the truck for transport everyday. This means we cannot ascribe a de/territorialized status to 'a' traceability assemblage. More useful is to discover and explain processes of de/territorialization at certain 'sub-assemblages' or (relational) places. This makes it possible to detect ways in which certain places can be governed, whilst these places are linked to a global flow that is dynamic and contradictory.

In conclusion, while processes of territorialization are described as increasing homogeneity and dis-mobility, the continuous performance of traceability, or stability of the assemblage, seem to hinge on the ability to govern heterogeneous elements and dispersed places, rather than on fixation (dis-mobility) and homogenization of elements on global scale. These findings show that the degree that a traceability 'intervention' is successful in meeting goals of transparency in a global and dynamic supply chain, is in this case contingent on the ability to embed oneself in specific social relations at different contexts. This highlights that we need new ways of understanding governance and re-examine the role of actors that try to intervene in so-called heterogeneous or 'deterritorialized' assemblages. Besides, it is not about the de/territorialized status of 'an' assemblage, and therefore the concepts of de/territorialization "should be considered in terms of what they make possible at a particular point in time, rather than categorically imputed with negative or positive value" (Sellar, 2008: 72). The next sections explore what these analyses mean for governance as dynamic process by first scrutinizing the processes of de/territorialization that are explained in this section against prescription.

6.4. De/territorialization through prescription?

Now we know more about the processes of de/territorialization around 'a traceability intervention', we can examine the role of prescription in these processes. In informational governance literature prescription is often an assumed means of governing (Gupta, 2008; Mol, 2006), but this research shows that there are other processes through which subjects and objects come together and influence each other. This section first explores the prescriptive elements that stabilize an assemblage in order to say something about the influence prescription and the social actors that prescribe have on the ways relations take shape, when traceability lands in certain places.

Drawing upon Latour (2005), from an ANT perspective we can follow how a network is built from a prescriptive center. Non-state and non-industry actors from outside Indonesia were followed as they initiated this project, around which a network emerged. The design of this pilot project is prescriptive: the intervention in an Indonesian supply chain is predominantly designed and justified by international NGOs and academia, responding to different information demands and sustainability concerns from elsewhere. The categories subjects, objects and practices, which need to become transparent, are mainly prescribed based on expertise, but also adjusted to the characteristics of this particular supply chain. There also exist prescriptive efforts to align

interests of traceability to the 'subjects of implementation'; the supply chain actors and government in Indonesia.

In addition, open-source information and technology are identified and brought to the field as objects with de/territorializing capacities: they are able to strengthen or reshape relations. Most of the prescribed benefits of data and technology that would foster participation were based on market rationalities. The hopes are that access to information empowers fishers in their market position for example, and technology should consolidate practices through efficiency benefits. Next, practices are prescribed and implemented in detail to collect data, and they are placed alongside practices that already existed in the value chain. Habitual interaction occurs through physical meetings like the Data Management Committee (DMC) and data collection practices at certain places, with clear spatial boundaries.

In summary, the results suggest that the information that is disclosed and the practices that need to be implemented in the value chain are very prescribed. Herein lies the assumption that transparency reshapes relations, with the potential of transforming environmental governance towards something that includes the producing side of the supply chain and supports public decision-making, existing of a traceability system that is self-sustaining.

These prescriptive efforts facilitated a variety of processes of territorialization. First, prescription in- and excludes certain categories of information (about subjects like fishers and objects like juvenile tuna) that needed to be collected and disclosed, which influenced practices of traceability, and by whom they needed to be executed. This has strong consequences in terms of whom and what is involved in traceability practices, as well as what information is disclosed. Thus the designers have quite some influence over what information is disclosed. Second, these established practices allow habitual interaction and are fixed in certain places. Moreover, they set conditions for affective relationships, as they bring people together on daily basis. Furthermore, active and continuous efforts of aligning interests have raised awareness and interest in traceability in Indonesia, both with supply chain actors and the government.

From this we can learn that NGOs and academia, following global processes of the transition to transparency, do find space to steer certain lines of flights (Deleuze & Guatarri (1988) in Indonesia (by establishing an enumeration program, for instance). The ways MDPI (as NGO) and (scientific and traceability) experts perform credibility vis-à-vis the reputational vulnerability of the value chain in this case show NGOs and transparency experts (from western countries) are becoming powerful players in the organization of information. Their role is further strengthened by the perceived unawareness of the value chain actors in Indonesia. Furthermore, their existence is also linked to an increasing market and interest in transparency systems in the West. In other words, this case brings insights in how credibility is gained and maintained at the producing side in order to introduce traceability, while studies normally attend to the importance of the credible and legitimate position of NGOs according to the consumer (Mol, 2013).

Yet this research also shows that they cannot surpass existing relations in the supply chain and government structures completely. Whereas traceability entails an attempt to fix certain subjects, objects and practices in the supply chain, the dynamic and power processes of this supply chain – and its broader ecosystem – influences the way it is

governed greatly. Elements of prescription do not explain all processes of de/territorialization. An assemblage lens allowed exploring historical, circumstantial and unintended processes of territorialization and deterritorialization as well.

From the performance findings it appears that the emergence of this network did not start from prescription. Relationships were already set in motion at different moments and places that created momentum for collaboration. NGO and industry actors that are not part of the project anymore cooperated on implementing an enumeration program in Lombok, on which the traceability project is based. This also shows that governance does not only occur from distant places in space, but also through distant events in time. Some territorializing processes were a byproduct of prescription: the affective relationships that sprung from habitual interaction through enumeration for example. Furthermore, existing business relations and government structures influenced processes of (de-)territorialization as well by in- or excluding themselves. Coded tuna got spatially deterritorialized (or mixed with other lots) when traceability efforts stopped in the processing plant, due to a broken business relation. Next, not all intended efforts were prescribed. The careful approach of MDPI in Lombok created trust and access, although this approach is not part of the prescriptive narrative of traceability (which focuses more on the territorializing capacities of transparency and technology itself). Thus far disclosing information seems to proceed because of trust and acceptance of the presence of MDPI rather than as a response to the open-source data available for participants.

These examples from the results show that other processes than translation of prescription make traceability work. Moreover, they suggest that we cannot start from prescription examining how a collective emerges. Prescription, as an intended and persuasive narrative of how things should go, is rather one component in the process of territorialization, changing in accordance with the subjects and objects that perform it. Besides, it is not only the content of this narrative that dictates how things go, but also preparing the context and 'byproducts' of implementing traceability that facilitate processes of deterritorialization (in terms of creating new relationships with supply chain actors and government officials) and territorialization (in terms of stabilizing practices).

This research also brings some insights relating back to the content of prescription. First, although it changes, prescription focuses on supply chain units (the fisher, the processor, the supplier etc.) as pre-determined business agents. From a performance perspective it appears that a supply chain is dynamic as well and is embedded in a wider web of relations. Strong ties and patron-client relations between fishers and middle(wo)man prevent fishers to act as independent chain actors. At another point in 'the' supply chain, business relations appear to be more erratic and dynamic, deterritorializing traceability practices easily. This demonstrates that an explorative approach on the ways relations take shape around transparency complements a presumed notion of chain units as business agents, whereby transparency is "the result of rational institutional practices underpinned exclusively by the driving forces of capital and technology" (Blanco et al. 2015: 189). Prescription thus seems to be based on 'structural' explanations for change: transparency should be achieved through market forces. The post-structural approach of this thesis instead provides a way to frame data that exposes different associations with different rationalities that fostered processes of de/territorialization. In this case these rationalities were predominantly social, whereby relationships were sustained through gift exchanges and brought global NGOs and fishers together.

Next, this research shows that prescription of traceability indeed enables gathering of subjects and objects, but also demonstrates that the trajectory of gathering often already is set in motion before traceability is prescribed. Performance takes off before prescription: subjects and objects gather based on existing relationships, contingent, situational and purposeful events. Prescription, as a story, is challenged and reinforced continuously as well. This reveals that prescription itself is not a story in a black box, an object in itself that exists externally to practice, and is defined by expertise only. There exists no strong division between *de juro* and *de facto*, but the historical context and the experimental and practical nature of this project show that prescription and performance are intertwined. Through an assemblage lens it becomes apparent that prescription itself is a dynamic process, and actually emerges from the relations it tries to objectify. This dynamic process also entails contingent and situational dynamics that open up space for maneuvers or different trajectories of governance.

In sum, processes of de/territorialization are not (only) steered in the way they are prescribed. It appears that, in contrast to the narrative of prescription, data and technologies are not yet incentivizing, and the supply chain apparently does not exists of bounded business agents. Nevertheless, some prescriptive actions foster processes of de/territorialization. Among these are the 'byproducts' of implementing traceability practices, which included friendship-like relationships and facilitation of recurring interaction. In other words, the performance of prescriptive practices - rather than prescription itself - steers processes of de/territorialization. Besides, existing relations and factors steer processes of de/territorialization and therefore influence the outcome of a traceability 'intervention'. Examples include the tight relationships between fishers and suppliers and the erratic business relations between processors and buyers.

Moreover, from the performance results it appears that prescription emerges from the existing relations it (tries to) reproduce. Thus, prescription and performance are part of the same dynamic process, in which relations are continuously produced and reproduced. That means we cannot separate out prescription as something that acts *on* assemblages. It rather is one component in the continuous transformation of performance, as the following Figure (16) illustrates. In contrast to the diagram in chapter two, it shows that prescription is part of performance and embedded in the assemblage that transforms. It also shows that implementing prescription is not a matter of intervention in assemblages, but about interaction with the relations in which prescription is embedded.

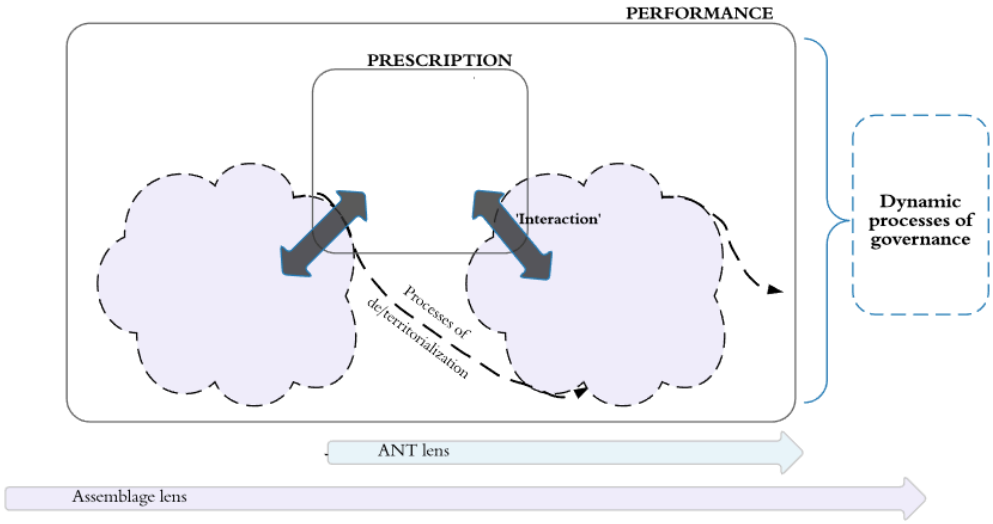

Figure 16: Governance as dynamic processes between prescription and performance (author)

So what do these conclusions learn us about prescription as interventionist modes of governance? In essence, the dynamic processes between prescription and performance challenges assumptions of prescription as interventionist mode of governance. Interventions do not come out of nowhere but are embedded in the trajectory of collectives. This thesis shows that traceability cannot be objectified as an instrument of change, as it is always constituted in the relations it aims to change. It does not mean that change cannot be steered. This thesis also shows that some prescriptive actions could still influence trajectories towards transparency. The message here is that it should be acknowledged that these prescriptive or interventionist efforts are embedded in the social relations that are already there, and therefore they need to take the different contexts and rationalities of these relations into account in designing governance tools like traceability.

Thus we cannot study dynamic processes of 'interventions' without attending to performance, since interventions are embedded in the reproducing process of performance. In order to study these dynamic relations of the performance side of governance we need an assemblage approach (rather than an ANT approach), as the next section argues.

6.5 An assemblage approach to study governance

As the former section highlights, prescription is actually part of performance, and therefore we need to see governance as a non-linear and dynamic process. In order to understand such a process, this thesis proved that a post-structural approach is desired. A post-structural approach allows leaving relations complex as they are, not trying to reduce them to a few unconditional forces (such as 'the market') on which they should operate. Instead it allows seeing the complex, diverse and contextualized situations in which relations occur (Murdoch, 2006). This helped to understand the different conditions in which subjects and objects relate, and in some cases could be de/territorialized. Such examinations were especially in the context of this case, which considers an 'intervention' that faces a dynamic, heterogeneous and spatially dispersed network. By studying these relations in their separate contexts, processes of de/territorialization were found that were not related to the ways in which this intervention was prescribed. This contradicts with the way ANT perceives the building up of a network from a prescriptive center.

As discussed in chapter two, ANT focuses on the internal working and the intended outcome of a network, while from Assemblage Theory it is argued that the gathering of subjects and objects is not always intentional or steered from a center (Bear, 2012). A focus on prescription provided a useful starting point to trace a collective and a trajectory of transparency, and discovered that traceability is indeed is prescribed from a centre. Through focusing on the process of reconstitution itself (Deleuze & Guatarri, 1987) however, this thesis found that subjects gather based on other rationalities and circumstances than for transparency reasons only, and that a trajectory of transparency is embedded in social relationships that it tries to transform. In addition, an assemblage lens helped to discover that the emergence of a traceability collectivity commenced before anything was described, and that this occurred at separate places at different times. This thesis discovered that there are multiple assemblages coming together for different reasons, which make up a heterogeneous and dynamic traceability collective, where a center is not easy to trace. It also showed that relations can still be governed, but not (always) in ways it is prescribed. Therefore, I do not reject the importance to attend to prescribed relations as ANT suggests, but I think it is relevant to stay open for other reasons traceability is assembled, which in turn influence potentials for governing

fisheries sustainably. In this case, it appeared that ANT is insufficient to account for historical and social factors that contributed to the trajectory of transparency, but are not related to the intended outcome of traceability directly.

Thus, the notion of assemblage requires a more open lens to governance and challenges explanations of cause and effect, by focusing more on the separate enactments than intentions and putting governance tools in the context of local interactions (Blanco et al., 2015). This helps to detect processes of governance in certain places while they are still tied up to a globally dispersed, dynamic and heterogeneous network that cannot be steered from singular forces only. This is in line with the small body of studies that use Assemblage Theory to study environmental governance (for example see Bear, 2012; Kohne, 2014). They also discuss distant, separate and contradictory enactments that together make up 'a heterogeneous assemblage', and that governance efforts cannot surpass existing relations. In Kohne's (2014) study they could not exceed existing power-relations, and in Bear's (2012) they could not surpass the smoothing movements of the ocean. Also this research highlights the use of an assemblage approach for studying governance in the context of intervening in a set of relations that exists of multiple actants and places.

Some could argue that, if one cannot start from an analytical distinction between the 'governor' and the 'governed' to study governance, everything becomes a possible enactment that could influence governance processes. The wide lens that an assemblage approach provides, and its abstract underpinning also bear the risk for "piecemeal appropriation" of this concept (Marcus & Saka, 2006). These facets of an assemblage approach bring methodological challenges that were also encountered in this study. From a performance point of view, it was not possible to demarcate a 'traceability assemblage' beforehand, hence, every kind of subject or object could be included. Nevertheless, it was exactly this way of studying traceability that brought up factors that emerged from performance but that were not found in prescription. From the assemblage analysis for instance, it emerged that MDPI was actually a performer as well, and that it takes part in different 'sub-assemblages'. The inclusion of MDPI as 'subject of implementation' led to the finding that social relations were very important to territorialise traceability practices in the fishery community. Herein the prescription of traceability gave a direction for studying performance and gather data, but the assemblage approach did not limit seeing performances that were not directly a function of prescription.

Thus, the concept of assemblage offered a lens that de-centers and de-containers prescription as a translating force, which provides the opportunity to consider the dynamic and non-linear lines of flights of how subjects and objects influence each other. It does not start off with categories of subjects and objects, and includes historical associations and circumstantial relations. Therefore, it brought up insights in associations that remain out of scope of established (business) paradigms on which prescription was based. In this case that showed how, despite the heterogeneous and dynamic set of relations, some line of flights could be steered by engaging with social relationships.

In sum, an assemblage lens helps to understand these dynamic and non-centered processes of steering because it allows studying how de/territorialization is steered in dispersed places at the same time, while ANT only accounts for prescriptive de/territorialization. This adds to governance literature that focuses on structural explanations of behavior, studies actors as entities and has a linear notion of interventions. It therefore is argued to be useful for understanding dynamic processes of

governance that aim at big sustainable goals, as they are likely to face a dynamic set of multiple actors, events and places. Governance then becomes a dynamic trajectory whereby steering needs to be positioned in the separate performances of implementation. The focus of a post-structural approach on separate enactments in different places also complements the focus on informational flows in informational governance literature, as is debated in the next section.

6.5 Informational governance

In informational governance literature (see Mol, 2006, 2008; Gupta, 2008) there is a strong focus on how information may reshape relations, with the potential of transforming environmental governance towards something collaborative and inclusive informational governance speaks to how "environmental protection can be and is also articulated in space of flows, (…), in which information flows play a key role", as opposed to the notion that environmental governance solely exists of place-based resistance (Mol, 2006: 500). Because environmental concerns are articulated in the space of flows this information becomes a resource for governance. Informational governance has become a matter of control in this space of flows, whereby "a diversity of interdependent actors in multi-level networks around flows of information" (Mol, 2006: 501) are involved in decision-making processes of what needs to disclosed to meet what ends (Gupta, 2008).

In contrast, this research shows that practices of environmental governance are not only 'ruled' through decision-making processes over flows of information (Mol, 2006: Hoefnagel et al., 2013), but also highlights how informational governance is actually enacted in the space of places. It shows that these practices are embedded in social relations, and these relations are also dynamic. That reveals that it is not this 'global' intervention of traceability that territorializes or deterritorializes relations, but that we need to understand how, and to what degree, traceability activities can territorialize or deterritorialize these relations that are positioned in the space of places. It then shows how these changes are enacted at certain places and moments, and that it is not information itself but the contingent relationships, approach and byproducts of implementing traceability that reshape relations. In the same breath, these 'existing' social and cultural relations may shape how (and whether) information comes about. There already has been focus on the role of producers and consumers in the space of places (Oosterveer & Spaargaren, 2011). This thesis shows that also mid-chain actors need to be positioned in the space of places and engaged with in order to steer transparency.

The space of places is thus not a site of resistance, but a site that transforms the trajectory of transparency. These findings challenge an informational governance notion of governing (global) informational flows, and point out how we should also attend to a notion of governing informational practices (at certain places), as they in this case contribute to information creation. By understanding that the way traceability comes about is affected by the space of places, this holds implications for how traceability should be designed and steered. Whilst market-based governance tools like traceability aim to abstract and standardize practices in order to steer change, this case shows that traceability is only effective when relationships are maintained with the ones that need to implement these practices. These findings apparently point to the need for a different approach of understanding what an 'intervention' is and what new roles are required to ensure that change is successfully negotiated. If we dive into the space of places, this opens up questions about the roles; scales and capabilities of NGOs facilitating these globally derived 'interventions' and ideas, through engaging in context specific relations.

The next section explains how this is a matter of performing a heterogeneous assemblage.

6.6 Boundary subjects as performing heterogeneous assemblages

This section explains how a relational approach reconsiders the role of NGOs in transparency governance, drawing on the role of MDPI that is still enacting some kind of intervention. From a structural perspective (Murdoch, 2006), governing transparency is often seen as a matter of better data management, whereby databases are owned by governments or international bodies like the WCPFC that in turn demand information from a country (see study context). Non-state initiatives, like this traceability project, are often brought under the banner of private or market-based governance, marking the shift from 'state-led to market-based governance' (Hoefnagel et al., 2013). In both cases, governance is described as shifting authorities between different entities that are able to 'govern' or 'order'. Certain governing actors deserve a pre-determined status as homogeneous entities that act as social units. As an alternative, this case suggests that with a post-structural approach, governance seems to be performed by a wider and heterogeneous collective of subjects and objects. A collective that is rather dynamic.

This research showed that instead of enrolling actors through aligning interests, actors are rather territorialized (or deterritorialized) through contingent, existing and carefully built social relationships. Especially the careful approach and habitual practices in Labuhan Lombok demonstrated that trust and cooperation are gained and maintained through a continuous enactment of relations by MDPI enumerators. This contradicts with notions of governance that attribute success of a policy or project to the ability to align the 'ontology' of the prescriber with the performer. Konefal & Hatanaka (2011) for example analyze, in their study to the prescription and performance of organic shrimp certification, that a disjuncture between prescription and performance is due to the inability of NGOs to translate interests from the prescriptive reality to local context. According to them, this explains the dis-function of shrimp certification. In contrast, this research indicates that some actors, like fishers, participate, despite a disjuncture between their reality and the global reality of the prescribers (from which a traceability intervention is derived).

This case shows how participation is (partly) established because MDPI, as a sort of 'boundary subject', enacts different positions and takes part in different assemblages at the same time. While MDPI has a prescribed role as implementer, the performance chapter shows how it takes roles as expert and as subject as well. This ambiguous role proves to be useful. Some individuals within this organization take part in the world of the local fishers, suppliers and processor, living in the same town and engaging professionally and personally. Others within the organization relate to the Western industry, academia and NGOs (in which prescription is embedded). MDPI has the ability to speak to both worlds.

Following the concept of assemblages, NGOs, as a boundary subjects, perform a network rather than are entities themselves (Kohne, 2014; McFarlane, 2011). Although there is recognition of the different types of NGOs and their governing roles (Eade, 2000), this case shows how participation is (partly) established because MDPI enacts different types of relations at the same time, at different places. This proves that a post-structural approach helps to understand dynamic forms of governing 'interventions' as it accounts for governing stability through diversity. Without denying complexity, it shows how we need to see governance differently: not as a matter of prescribing but as

performing heterogeneous relations. In order to consider this we need to re-conceptualize governance categorizations of actors like 'NGOs' from entities into heterogeneous networks themselves.

In other words, traceability is simultaneously enacted at different places and moments, and MDPI takes part in most of these. Since the practices of this organization extend to dispersed places and events, and they relate to different types of national and international NGOs, industry and government, the heterogeneity and mobility of the organization in this case proves to be an asset in performing relations. So instead of aiming to homogenize and fix relations, as many governance arrangements do, we need new ways of governing heterogeneous and dynamic relations. This is in line with assemblage literature that accounts for contradictory movements of heterogeneous elements, but in which these dispersed relations still have some kind of emergent property (DeLanda, 2006). Governance then becomes a matter of being able to enact relations at separate places and depends on the capacity of a boundary subject to move between different realities. This becomes especially important in the context of this case, wherein subjects are not only heterogeneous but also spatially dispersed.

Ethically, this brings up questions of whether participants should be aware of the consequences of disclosing information, and if it matters if they change practices because of other (economic or relational) reasons. Practically, this reveals the big role embedded organizations like MDPI play in making a project possible, by gaining trust through maintaining separate relations. Another practical consequence of the social nature of these enactments is that one could argue that you do not need market mechanisms to incentivize the bottom of the supply chain, or if you need traceability as 'business case' in order to continue enumeration. More specifically, it poses the dilemma if data collection practices will be continued if the project ceases, because then the NGO will not be there to sustain relationships.

But if we turn it around, this brings up questions of whether arm's length governance through global market relations can be effective without some kind of locally embedded organization that is able to perform heterogeneous relationships. This means that we need to reconsider transparency governance as a prescriptive instrument that steers change through the market, into something of which the design needs to take into account the role of these forms of organizations as boundary subjects, which are necessary to steer change by managing trust and facilitating connections between dispersed actors. This holds consequences of how such organizations are perceived today as project-based implementers. Instead of supporting distant market players (as governers) in introducing transparency tools, we might need them fundamentally for the longer term, as governing 'networks' themselves.

The notion of boundary subject resonates with the notion of bridging organization discussed in literature on co-management and adaptive governance (Berkes, 2009). Boundary organizations are described as "linking multiple actors through some form of strategic bridging" (Westley and Vredenburg, 1991). The focus in these studies however is on learning, and bridging knowledge vertically between 'local' actors and, for example policy makers. The focus is thus mostly translating (inter)national ideas and translate it to one community, or about community based co-management. The context of this thesis instead shows that relations need to be enacted in many dispersed places with different contexts simultaneously, and that these relations are not always enacted through adaptive learning. In order to reach a big sustainability goal that faces a heterogeneous and

international network, there is thus need for organizational forms, or boundary subjects, that can deal with way more complexity and contradictions. Therefore, we need to reconsider NGOs as social entities into a performative network that relates to different assemblages.

In short, this discussion explains how a deterritorialized, or dynamic and global supply chain, does not conform the linear notions of governing an 'intervention'. It further states that prescription is only one element in the trajectory of how subjects and objects come together under the guise of transparency, and that de/territorialization rather occurs in the space of places. An assemblage approach helps to understand these dynamic processes between prescription and performance that challenge assumptions of prescription as interventionist mode of governance. It shows that traceability cannot be objectified to an intervention for change, as it is constituted in the relations it aims to change. These relations are rather dynamic and heterogeneous; hence we need modes of governance that can deal with this complexity. Through engaging with these different relationships in different contexts, MDPI shows it is possible to govern a 'heterogeneous assemblage' in certain places of interaction as boundary subject. This means that traceability needs to be reconsidered as market-based instrument into a design that takes into account specific social relationships that influence how change towards sustainability is steered. In order to do so we need to reassess governance being market-based into governance that includes the role of locally embedded organizations for implementation. Following these discussions, the next chapter will draw the thesis to a close by answering the research questions and recommending further research.

7 | CONCLUSION

The aim of this research is to challenge notions of interventionist modes of governance on which market-based governance tools like traceability are based. Furthermore it aims to explore alternative understandings of governance that better take into consideration embedded relations and practices, in order to provide a better understanding of adaptive and reflexive processes of interventions like traceability. This helps to understand how big sustainability goals can be designed and implemented. Therefore the research question is: how can traceability be re-conceptualized as 'intervention' into a mode of governance that considers embedded relations and practices, through a case of governing traceability in a tuna supply chain from Indonesia?

This is researched by comparing the ways in which a traceability project is prescribed with the ways in which it is performed. For researching modes of performance I took a post-structural lens. By first answering the research question and then synthesizing the findings and discussions, this chapter elaborates on what the post-structural lenses offer for (informational) governance that speaks to dynamic processes. In this way it is also hoped to say something about the ways in which civil society actors, as prescribers, can steer a trajectory towards transparency, and what issues need to be taken into consideration designing and implementing an informational tool like traceability.

The prescription results suggest that subjects, objects, expertise and practices are formulated both with regards to the end goal of implementing traceability: information for better environmental governance, and with regards to implementing traceability itself. Subjects and objects of concern are formulated through Western concerns and expertise on sustainability of tuna. Transparency in this sense is seen as an intervention that would destabilize supply chain relations for the good: for more equal power relations in the supply chain and better environmental performance. At the same time prescription shows how it is expected to disrupt existing practices and territorialize new traceability practices. For instance, a network would change its practices through the territorializing capacities of data and technology that bring business benefits to the supply chain actors. This position relates to ANT notions of territorializing a network for an intended outcome, and to interventionist notions of governance.

Taking an assemblage lens the performance chapter suggests that traceability comes about and is territorialized and deterritorialized through more elements than prescription. This performance chapter shows that it is not just traceability that brings subjects and objects together. Besides, it shows that this gathering often starts before anything is prescribed. Therefore prescription only partly accounts for steering processes of de/territorialization, and ANT does not seem to hold for understanding dynamic and embedded processes of governance.

This research highlights that the 'traceability assemblage' is prone to processes of deterritorialization that bring challenges to intervene: people have different realities and different levels of expertise. Next it shows that the supply chain is dynamic and erratic itself, and how implementing traceability requires more elements to be assembled than just a supply chain and a government. For example, a processor needs to be member of an association in order to be considered for MSC, which turns out to be a condition for buyers to make the tuna they source traceable. It is hard to implement full chain

transparency if a processor shifts markets (with different demands in terms of transparency), but also when subjects do not identify with sustainability problems. These findings point at challenges of governing dynamic and global processes.

Notions of governance are often seen as stabilizing or territorializing subjects and objects over a period of time. Also governance designs, like prescription of this traceability project, often abstract (the practices of) supply chain actors from the realities that these implementers face. The performance chapter suggests however that you cannot isolate out these sets of relations that are already there, and which (at some places) are rather dynamic. This brings to the fore a tension between the fact that sustainability interventions have to deal with these existing (dynamic) social networks, but at the same time there is a (prescribed) need to be disruptive in order to transform these relations for the better.

Besides the fact that an assemblage approach provides a lens to see these dynamic processes, it also shows how processes of relational territorialization stabilize some traceability practices. Not based on the rationalities in which intervention was prescribed, but by preparing the 'context' to implement traceability, and through the by-products of implementation. In this case especially by carefully building and maintaining relationships. Rather than disrupting relationships, practices are governed through engaging with relations. In Labuhan Lombok, for example, traceability practices are subject to territorialization because of cautiously established relations between MDPI and the trader, and because of the fact that enumerators are part of this fishery community. Second, on one hand, it shows that a network evolves based on situated associations. On the other hand, it shows how, in this unfolding of relations, there are effective efforts of active assembling. In particular MDPI proves to be an active assembler by enacting relationships, but also by facilitating gathering of different subjects (and objects), for example through DMC meetings. Other people from the organization enact relationships with the government. This means that the heterogeneity and mobility of this organization, as a boundary subject, proves to be an asset, because different people can embed in different assemblages or worlds (with different rationalities).

In sum, these findings show that the degree that a traceability 'intervention' is successful in meeting goals of transparency in a global and dynamic supply chain, is in this case contingent on the ability to embed oneself in specific social relations and to speak to different worlds. This means that, the prescription of a traceability intervention does not steer processes of de/territorialization completely. Other factors that influence processes of de/territorialization include tight and dynamic business relationships in the supply chain, historical relations and social rationalities. Nevertheless there are some actions and (existing) relations that surround prescriptions instead that influence processes of de/territorialization, like building trust relationships and active assembling. Therefore traceability 'intervention' cannot be dis-embedded and objectified from the relations it aims to change. Rather, a trajectory to transparency is steered through engaging with these relationships.

Therefore, we need to reconsider interventions as performing rather than prescribing to understand dynamic and reflexive governance processes. Hence traceability should not be designed as an abstract object or instrument that functions on structural notions of the market, but as an embedded practice that also seem to become effective because of context-specific social relations. This means that we need to re-conceptualize traceability as a market-based governance tool into a mode of governance that incorporates the

important role of embedded organizations that act as boundary subjects. Such organizations seem fundamental for steering trust and relationships in different local contexts in order for change to be effective.

So let us zoom out from what is concluded about the way in which this traceability 'intervention' is and can performed in order to establish full-chain transparency from a tuna fishery in Indonesia. What can be said about what an assemblage approach offers for understanding reflexive and adaptive processes of governing informational 'interventions' through the market, in the context of dynamic processes that we are facing in todays globalizing world? This case showed how an assemblage approach allows discovering how specific interactions at specific moments or places can be territorialized or deterritorialized, while on a larger scale these interactions remain multi-sited, contradictory and dynamic. Assemblage Theory provides a way to understand how a dynamic and global process can still be governed, or more specifically, how a sustainability intervention can still be implemented in a global and dynamic supply chain. The ways in which these interactions then can be steered depends of context specific relations, as shown in the case of Labuhan Lombok.

This adds to notions of co-management and boundary organizations because it does not only consider co-management between state and community, but between a diverse and global range of actors embedded in different contexts. By linking these contexts through maintaining social relationships, boundary subjects can move beyond implementing traceability in specific and singular localities, also engage with global demands for traceable and transparent food. As many studies focus on the specific contexts of producers, or in this case fishers, for further research it might be interesting to understand the context of mid-chain actors, as this case showed challenges in steering them as well.

It remains difficult to use an assemblage approach methodologically because it does not allow separating the 'governer' from the 'subjects and objects' of concern *a priori* to understand governance. Nonetheless this non-separation actually has proved to be important to understand the embedded nature of governance in this case. The heterogeneous and ambiguous roles MDPI plays as 'prescriber', 'subject of implementation' and 'expert' that came out of the performance analysis, and the fact that MDPI takes part in different 'sub-assemblages', actually reveals that the performance of transparency is embedded in social relations. It also highlights how prescription emerged rather than simply is. In addition, that the content of prescription, that presents ways to territorialize practices, seemed to lack attendance to the different rationalities and dynamic nature of a supply chain that is influenced by 'relations of exteriority'. An objective for future research (or for prescribing interventions) in this sense could be to understand steering transparency from within these assemblages, and to take historical and contingent associations and different rationalities into consideration doing so.

Informational governance literature attends to all processes and the implications of information becoming a resource in multi-level and network governance. An assemblage approach complements the macro-scale processes informational governance points at, as it dives into performance of information on micro-scale. These performances steer, both consciously and unconsciously, the way information is produced and created. Even though this thesis remained in the scope of the implementation of an informational governance tool, or the governance of 'information production', these performances in turn have implications in terms of which information is disclosed for whom on larger

level. Thereby we have to understand how information processes are performed in the space of (relational) places, acknowledging that these places shape informational flows, and the way they are used for governance in turn. In this sense, as technology is becoming a new focus, a recommendations for further research is to study how the performance of technology, and how the expertise coupled to that, influence access to information to use for governance. In other words, in which ways technology enables or disables governance for whom. Linked to that, one can also study how the performance (or implementation) restructures power relations as it brings new actors to the field of marine governance, because expertise on technology becomes a concern.

Practically, as we need new modes of understanding governance of dynamic and global supply chain, do we also need new modes of governing? This case already showed how, in this context, an organization is able to govern performance in the 'space of places' through enacting relations and active assembling. This means that we need organizational forms, or boundary subjects, that are able to reach across borders and different realities to intervene in a global and dynamic reality that market-based environmental governance faces today. As these 'market interventions' do not seem to be effective when they are steered through arms-length or distant control only, they need to be governed through close social relationships as well, and this is the gap these boundary subjects fill in environmental governance.

What happens if these relations cannot be enacted anymore, which is a real challenge in the project-based nature of most organizations? Or do we need new organizational forms that are able to perform relations for a longer period of time? In order words, how do we sustain traceability practices (if there are no organizational forms in which relations can be continuously enacted)? This case shows already that more 'elements' need to be assembled, including (distant) regulations, associations, and government support to institutionalize I-Fish in government structures. But it also demonstrates that social elements such as trust, loyalty and, to a certain extent, 'the willingness to paticipate' need to be assembled.

This could be interpreted that civil society actors, as boundary subjects, can successfully introduce an innovation for sustainable ends in a dynamic and globalized network, but in order to internalize such a system they need legal and authority support from the state and industries. Nevertheless, as these spheres prove to be fluid, are vulnerable in terms of legitimacy, and seem not able to stretch outside their authorative space, maybe we need to reconsider the dominant governance paradigm as it is often conceptualized in the spheres of 'the state' or 'the market'.

Instead, we might need closer examination of governance in specific 'social spheres' with a post-structural approach in order to understand governance in a reflexive or adaptive manner. Therefore we cannot objectify sustainability interventions as instruments for change, as they are constituted in the relations they aim to change. An assemblage lens is needed to understand dynamic and embedded processes of market-based interventions because it allows seeing how specific interactions can be steered while these interactions are tied up to linked to heterogeneous and dynamic networks. This case shows that interactions can be steered through maintenance of social relationships by boundary subjects, as they are embedded in the contexts and relations that traceability seeks to change. Hence, we need to reconsider governance of transparency in which embedded organizations play a fundamental role. This is needed in times wherein big sustainability

goals face multiple and dispersed relations that are continuously produced and reproduced, especially where information is increasingly mediating.

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APPENDIX

List of informants

Legenda:
# = informant number
IV = semi-structured interview
IIV = informal interview
BG = background interview
1.,2.,3. = number of interview(s)

MDPI

#	Position	What
1	Director	IV: role of MDPI, data ownership, building partnerships, relationship with trader.
2	Program manager	1. IV: traceability: goals and how it works 2. IV: Network of IFITT, role of MDPI, ThisFish, I-Fish, technology
3	Supply chain manager	1. IV: Explanation/ interview about IFITT 2. IIV: about the government 3. IV: about IFITT
4	Research & development manager	IV: Explanation/ interview about IFITT
5	Head of administration & Human resources	BG: Introduction MDPI
6	Sustainability manager	1. BG: Introduction I-Fish + DMC 2. IV: about I-Fish institutionalization (meeting in Mataram), DMC
7	Traceability implementer / coordinator – based in Lombok	1. IV: IFITT, DMC, his work 2. IIV: about role of processor, his relationship with the manager of the processing plant.
8	Sustainability coordinator – based in Lombok	IV: about DMCs
9	Enumerator – based in Lombok	IV: about his life, relationships (map)

Labuhan Lombok & supply chain

#	Position	What
10	Penongkol fisher	IV: about his life, relation to supplier, data collection, relationship MDPI, Sustainability, traceability & relation to fish
11	Penongkol fisher	IV: about his life, record keeping, FADs & purse seiners, DMC
12	Penongkol fisher	IV: about his life, FADs, relationships (map)
13	Manager at the mini processing plant	IV: about his life, relationships, traceability and DMC

14	Supplier	IV: about her life, business a woman, relationships, data collection
15	Worker at supplier	IV: about his life, relationships, MDPI
16	Owner of the processing plant in Java	IV: his interest in (consumer-facing) traceability

Government

#	Position	What
17	Secretary of Fishery Port (part of provincial government)	IV: about his life, Labuhan Lombok and DMC
18	Head of capture fisheries at provincial government + Head of DMC	IV: about DMC
19	Quality & Safety manager at ministry of fisheries	IV: about traceability. Very short IV.

Prescribers (non-MDPI)

#	Position	What
20	Economic researcher at WUR	IV: about IFITT
21	Fisheries biologist at WUR	IV: about IFITT
22	Manager of ThisFish	1. IV: about IFITT 2. IV: about expertise and practices

Other

#	Position	What
23	Quality & safety manager at trader that sourced tuna from Lombok supply chain	IV: traceability for quality and safety
24	Manager director at trader that sourced tuna from Lombok supply chain	1. IIV: about relation with the processor, when traceability 'works', Msc committee 2. IV: interest and goals of (consumer-facing) traceability, relationships with MDPI, role of NGOs, opinion on ThisFish
25	Buyer at trader that sources in Indonesia	IV: about traceability, relations with Indonesian processors
26	CSR program of trader that sources in Indonesia	IV: about the business forum, traceability, CFT
27	Former consultant IMACS initiator of DMCs	IV: about DMC and governance of Indonesian fisheries
28	Manager of fishery NGO (technology expert)	IV: about traceability and the role of technology
29	Lecturer at Mataram University + DMC member	IV: about DMC
30	American buyer	IIV: about traceability goals, interest in traceability and ThisFish
31	Seafood manager at WWF	IIV: traceability (while doing the survey)
32	Representative of fishery association in Indonesia	IIV: about conversation with the processor, role of fishery associations