



Media and environmental conflict over salmon aquaculture: Investigating the local and the transnational

by

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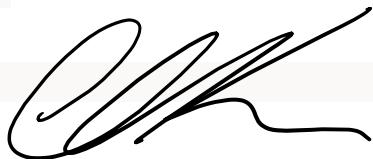
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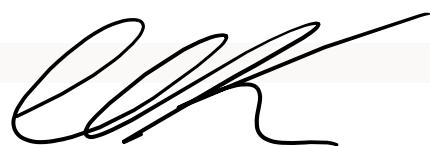


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Undertaking a PhD incurs many debts and this one is no exception. Firstly, I would like to express my gratitude to be in the privileged position of having the opportunity to undertake education in a world where many are considerably less fortunate. To that end, I would like to extend an enormous thanks to my supervisors Libby Lester, Aysha Fleming and Emily Ogier, you have been a truly amazing team to work with. The wealth of knowledge I have had at my fingertips has been a privilege and I am humbled to have had the opportunity to work with such an insightful and supportive team of researchers.

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I would like to express my immense appreciation to my family and friends for always making me see my worth, always believing in me and always, without fail, giving me gusto when I most need it.

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Finally, my late Nana Patsy for whom I dedicate this thesis to.

PREFACE

This thesis was born from my personal interest in how humans use and manage natural resources and the processes by which society decides how this happens. With a background in environmental science, I began my journey in understanding how the natural world works. Having worked as an environmental scientist, I became acutely aware that while I could contribute to the understanding of environmental processes and impacts, and provide recommendations based on this, change happens with people, and so I sought opportunities in the social dimensions of natural resource management. As a researcher and practitioner, I have enjoyed operating at the nexus of environmental and social science to provide holistic contributions to understanding and managing complex socio-ecological systems and interactions.

This journey has raised questions for me around the societal mechanisms and processes for which we, as a global society, negotiate what we are willing to accept. There are many roles that one can play in these negotiations and learning about where one fits is important. While I identify as pro-environment and I am ardent about protecting the environment for its intrinsic value, my interest most strongly lies in the generation of possible solutions, or being involved in conversations with this end goal in mind, rather than direct action or protest. Here I see myself assisting the bottom-up movement by facilitating (what I have grown to consider) useful and productive top-down action to meet somewhere in the middle, where a range of knowledge, interest and information is understood and transparently negotiated. Nonetheless, during my time as PhD candidate I did need to acknowledge my biases that were, in the beginning, potentially more likely to favour environmental outcomes and needed

to manage these throughout my research. I feel comfortable that my ability to be reflexive and understand the problem from multiple perspectives has been shaped by working for environmental consultancies, research organisations and NGOs whereby I have been required (and lucky enough) to have engaged numerous sectors, clients and operating environments. This has facilitated and strengthened my desire and ability to approach any given problem from a range of stakeholder perspectives and understand the role that shared knowledge plays in problem identification and solution and working through contentious issues. This has also afforded me the ability to put aside my personal opinions in my professional life. Nonetheless, I did take actions while doing this research to remain as separate as I could from public debates. For example, while monitoring conversation on social media I did not engage in discussion of any kind and refrained from giving personal opinions in discussions with friends and family. I look forward to continuing my endeavour of facilitating negotiations regarding natural resource management and am forever open to expanding my knowledge and to change.

LIST OF PAPERS

Cullen-Knox, C., Fleming, A., Lester, L., & Ogier, E. 2019. Publicised scrutiny and mediatised environmental conflict: The case of Tasmanian salmon aquaculture. *Marine Policy*, 100, 307-315. doi:10.1016/j.marpol.2018.11.040

Cullen-Knox, C, Fleming, A, Ogier, E, Lester. 2021. Perceiving environmental science, risk and industry regulation in the mediatised vicious cycles of the Tasmanian salmon aquaculture industry, *Social Epistemology*, DOI: 10.1080/02691728.2021.1913661

Cullen-Knox, C., Fleming, A., Lester, L., and Ogier, E. 2020. Tracing Environmental Sustainability Discourses: An Australia-Asia Seafood Case Study. *Front. Mar. Sci.* 7:176. doi: 10.3389/fmars.2020.00176

Statement of published work

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LIST OF ABBREVIATIONS AND KEY TERMS

ABBREVIATIONS

ASC: Aquaculture Stewardship Council

DPIPWE: Department of Primary Industries Parks, Water and Environment

EPA: Environmental Protection Authority

ENGO: Environmental Non-Government Organisation

NRM: Natural Resource Management

WWF: World-Wide Fund for Nature

KEY TERMS

Deliberative democracy: Interested or effective individuals have the right and are given the opportunity to participate in government decision-making.

Governance: Comprises the social system encompassing process, actors, rules, norms and relationships that control and regulate the actions of organisations.

Media: Platforms for communication (such as broadcast television and radio, newspapers, podcasts, social media, websites) which are used to disseminate news, entertainment and information.

Mediated: A process whereby information is presented and negotiated via media.

Mediatised/mediatisation: A process whereby the power and effects of media infiltrate every aspect of contemporary life.

Publics: Groups of individuals that have an interest or are affected by an action or decision.

Public sphere: The communicative space where individuals discuss societal problems and ideas, which creates political will or influence political decisions.

Politicisation: Whereby an action, activity, decision, or idea becomes an object that is discussed in a way that becomes political in nature and exposed to subjective debate.

Socio-ecological: The interaction between society and the natural environment.

Sustainability: To maintain or sustain an activity indefinitely.

Transnationalism: The interconnection of society that is not constrained by political and jurisdictional boundaries.

ABSTRACT

As human pressure on the environment and natural world increases (Geldmann et al., 2014, Jones et al., 2018), conflicts over resources and landscapes have become a part of contemporary political life. Public debate, societal conflict and polarisation occur over the use of common pool natural resources (Colvin et al., 2015, Lucas and Warman, 2018). Some of the greatest contestation over natural resource use focuses on the coastal zone, where a range of interests often diverge regarding use and preservation of resources (Le Heron, 2019). Global environmental change amplifies the complexity of these contestations, with causes and effects transcending local to global scales (Cash, 2006).

The overarching aim of the thesis is to investigate and critically analyse how environmental risks are publicly constructed and debated locally and transnationally through processes of media and communications. It considers how environmental conflict is mediatised (Hutchins and Lester, 2015: 337) – that is, where media play a constitutive role in the enactment and experience of these conflicts and political outcomes – and the chain of actions and interactions that can result. This research places environmental risk negotiations at the nexus of science information, community interests, industry expansion and impacts and government decision-making within a critical assessment of media roles, politics and power. It gives active consideration to how discourses work to shape reality and different agendas. The thesis builds upon the overall understanding of the mediatisation of environmental conflict, the politicisation of knowledge and information and the flow of environmental governance and risk discourses at different temporal and spatial scales.

The research utilises the case of seafood, specifically Atlantic salmon aquaculture in Tasmania, Australia's southern island state. The case study offered the opportunity to investigate environmental conflict in a context of evident competing politics of the environment, and to further explore the cross-scale dimensions of how these conflicts interact at local, transnational, and international scales. The Tasmanian mediatised conflicts provided the local context for which the research expands to understand transnational flows of environmental risk, with particular attention to major Asian export markets and salmon production in Norway. This identifies narratives that transcend political borders and physical geography and those that differ between local sites of production. In doing so, it explores how mediatised environmental conflicts are placed and manifest within a global community of concern.

Because the research aims to examine how environmental risks are constructed publicly at the discursive level, it draws on media analysis, expert interviews, direct observation and peer reviewed literature review. This provides insight into the complex and multi-directional nexus between media, public and policy across time and scale. The thesis expands both empirical and theoretical understanding of how environmental risk is negotiated within local and international communities and across political and cultural borders.

1

THESIS INTRODUCTION

1.1 How are we negotiating acceptable environmental risk of natural resource use publicly? and what are the consequences?

As we find ourselves in the Anthropocene, an unprecedented period of human impact on the natural environment, we (as the human species) are beginning to experience the realities of the “planetary boundaries” (i.e. fisheries collapse, climate change, species loss, degradation of physical environments) (Steffen et al., 2015). Therefore, how we as a global society negotiate environmental risks of natural resource use is increasingly important to meet requirements for the human population. Environmental movements that promote protection of the natural values of ecological goods and services (e.g. food, water, fuel and building materials) are prominent in the discussion about sustainable resource use (Jacquet and Pauly, 2007). The values held by these environmental movements are made visible and carried through media and are portrayed through environmental campaigns, protest and lobbying. Media – as a means of communication reaching publics via mechanisms such as internet, television, radio and newspapers – is a common vehicle in raising awareness and discussion about natural resources. The interaction between different forms of media, referred to as ‘media ecology’, identifies the shift where once it may have been appropriate to refer to ‘*the media*’ – “a bounded entity in which media companies hired journalists, editors and camera operators to produce information in the form of news and entertainment what was circulated via newspapers and broadcast outlets to readers and viewers” (Lester and Foxwell-Norton, 2020). However, Lester and Foxwell-Norton explains that the use of ‘*the*’ before ‘*media*’ is now as erroneous as using ‘*the*’ before ‘*nature*’. This paints the picture that media are entwined in everyday lives, political decisions, how we negotiate shared challenges and how the world is understood. Media are no longer able to be neatly separated from society (Deuze,

2012). Mediatised communications – in which media play more than a neutral role in politics and societal debates – and public debates over environmental risk are often prompted by events, activities, decisions and/or developments (Tiller et al., 2012). Once claims and statements enter contemporary media and communications networks, what Thompson (2011a: 61) calls the “destabilized space”, they produce meaning and provoke counter responses.

How risks are socially constructed is determined by how they are communicated in the public sphere (Cottle, 1998). The public sphere encompasses the “constellation of communicative spaces in society that permit the circulation of information, ideas, debates – ideally in an unfettered manner – and also the formation of political will (i.e. public opinion)” (Dahlgren, 2005: 148). Media are core to the enactment of the contemporary public sphere. Contestation over these risk definitions are the result of competing information and knowledge, values and interests (Maeseele, 2015a, Hansen and Cox, 2015). To explore the public interaction of these competing claims, the thesis leans on the notion of ‘mediatised environmental conflict’ as theorised by Hutchins and Lester (2015: 337), which in turn builds on Cottle’s ‘mediatised conflict’. ‘Mediatised environmental conflict’ acknowledges the “political significance of the environment, and the pivotal role of media in contests over the definition and understanding of environmental risks and impacts” (Hutchins and Lester, 2015: 341). These theories depict a political reality which “involves complex interactions between (i) activist strategies and campaigns, (ii) journalism practices and news reporting, (iii) formal politics and decision-making processes, and (iv) industry activities and trade” (Hutchins and Lester, 2015: 337). Here, media forms are not only avenues for information dissemination but

resources for a variety of actors (victims, bystanders, government agencies, commercial actors, activists and the scientific community) to convey their knowledge, opinions and interpretations to private and public networks (Cottle, 2006). The information which flows through these networks enters the political and news discourse of the conflict. Therefore, theory acknowledges that media are entrenched in the construction of conflict and how the conflict is conducted. Lester (2016c: 1) argues media provide an “arena in which resource allocation and environmental outcomes are politically negotiated and contested”.

Harnessing conflicting interests and values and utilising different forms of knowledge and information is fundamental to a deliberative democratic society (Schirmer et al., 2016, Brooks et al., 2020, Pellizzoni, 2001), most often found in western-style politics. This thesis takes the macro view of deliberative democracy focusing on the contestation of polarising views and the associated “ebb and flow of public debate carried on in media, in private conversations, in formal and informal settings, from pubs to parliaments and back again” (Parkinson, 2004: 380). How this public debate is enacted through media, and the consequences this has for social-ecological systems, is central to how sustainable futures are defined and implemented. This begs the question: how are we publicly negotiating the environmental risks of natural resource use through media? And what are the consequences?

How complex media and communications processes construct environmental risk discourses defines what knowledge and interests are considered legitimate. By analysing media discourses related to environmental governance and industrial expansion, this thesis investigates how environmental risks are perceived, articulated, responded to and potentially resolved through complex media and communications processes. It does this by following

environmental campaigns that seek to influence political, corporate and consumer behaviour and mediatised public debate. To this end, the thesis approaches environmental risk governance as a social construct (Hajer, 2009: 10, Hajer and Versteeg, 2005: 175, Dryzek, 2013).

Media constructed discourses of environmental risk governance are the subject for this research and therefore require a working definition. The term governance (henceforth including market mechanisms) moves away from the traditional top down regulatory mechanisms of government, capturing the shift from government to governance whereby government is simply another player in governing the commercial use of public resources (Colvin et al., 2015). This is in response to rising prominence of new actors and agents and complex relationships in natural resource management (Vince and Haward, 2017). Now a range of actors are engaged in environmental governance including, but not limited to: consumers and markets, individuals or communities, NGOs, experts and scientists, transnational corporations, intergovernmental agencies and media. Here I draw on Lemos and Agrawal (2006:298) to refer to environmental governance as “the set of regulatory processes, mechanisms and organisations through which political actors influence environmental actions and outcomes”. Thereby, governance captures a greater array of stakeholders and management mechanisms such as market mechanisms and community interests alongside state regulation. In this thesis, importance is placed on how those responsible for knowledge dissemination define the problem and information flows between stakeholders and across political and cultural boundaries. Particularly, who is getting what information and why (Beck, 1992, Little et al., 2012).

When considering media in the context of how it is placed within the literature of policy change there are two lines of thinking: media-as-conduit or media-as-contributor. The prominent literature on, and scholars in, policy change acknowledge and portray media as having an important role in political agendas and in the policy change arena (e.g. Sabatier and Jenkins-Smith, 1993, McCombs and Shaw, 1972, McBeth et al., 2005, Stone, 2012). Notable, however, is that while media are acknowledged in such literature as a factor, they are often not addressed as a key *actor* in policy change (Shanahan et al., 2008). Additionally, environmental conflicts are increasingly being conducted across political borders via complex media and communications processes. Environmental campaigning, and its responses, at the transnational level is likely to continue to become more prominent in world politics as the international trade of natural resources increases and the environmental risks are shared by both the locally affected and the global community (Hutchins and Lester, 2015). However, complexities arise as transnational definitions and negotiations of environmental sustainability and acceptable environmental risk cross political and cultural borders and local and global discourses interact (Jacquet and Pauly, 2007). These negotiations occur in a globally connected society whereby information, capital, trade and personnel flow across political and cultural borders (Tarrow, 2005, Castells, 2011, Cottle, 2009). Beck's (1996) 'global risk society' and 'cosmopolitanism' encompass world-wide communications and global environmental risks, whereby political borders are transcended boundaries. With this backdrop, mediated environmental conflict occurs in a constantly evolving 'transnational public sphere' (Fraser, 2007).

While scholarship presents evidence of the mediatisation process, some researchers are cautious of the term ‘mediatisation’ because it places too much weight on the influence that media have on political and corporate decision-making (Deacon and Stanyer, 2014, Hepp et al., 2015). This view argues that by emphasising media roles one reduces the holistic reality whereby multiple and wide-ranging elements sway how an issue unfolds. In contrast, Kriesi (2013: 155) explain “media and mediated communication are of central relevance for contemporary societies due to their decisive influence on, and consequences for, political institutions, political actors and individual citizens”. While media are only one component of the governance framework, they have “a crucial responsibility as a source of information and opinions” (Carvalho, 2007: 223) and are a significant influencer in how environmental decisions are made and communicated.

To explore these theoretical tensions and contribute to theory globally, in **Chapter 2**, I utilise the case of seafood, specifically Atlantic salmon aquaculture in Tasmania, Australia’s southern island state. This case provides the local context for which the research expands to understand transnational flows of environmental risk, with particular attention to major Asian export markets, especially China, and the largest and oldest salmon producing country, Norway. The Tasmanian industry (consisting of three main companies) emerged from a collaboration between the State Government and Norwegian company in the 1980s. During the time of this research the industry was experiencing considerable growth, relying on access to the publicly owned waterways which was accompanied by publicised societal debate. While the industry has provided regional towns with reliable economic stimulus, controversy over the environmental impact of and use of public waterways was gaining considerable

momentum, entrenched in a rich history of environmental conflict in Tasmania. These conflicts remained locally contained until 2017 and the airing of ‘Big Fish’ on *Four Corners*, the flagship investigative journalism program of the Australian Broadcasting Corporation (ABC), Australia’s publicly funded national broadcaster. Tensions were exacerbated by changing international trade conditions within free trade agreements negotiated with China in 2015, Tasmania’s largest export market for farmed Atlantic salmon (along with other seafood products) (FRDC, 2018, Fabinyi, 2007).

In the context of intensifying pressure for resource access, market opportunities and evolving media practices, it has become critical to examine how competing environmental claims are mediatised, and how this mediatisation influences public debate and governance of natural resources. Providing evidence-based analysis of local and transnational conflicts as they emerge and travel and how they interact, this thesis will inform understanding of how Australia’s seafood sustainability is constructed and the role of media. By bringing together the literature on environmental governance and mediatisation in the context of Tasmanian salmon aquaculture, and seafood more broadly, it is evident that conceptualisation of the dynamics and dimensions of environmental conflict and governance would benefit from considering mediatisation and its transnational dimensions.

1.2 Objectives and Research Questions

This thesis makes a novel contribution to critically examine how and by whom environmental risks are perceived in a context of increasing pressure and conflict over natural resources. Specifically, it investigates media constructions of environmental risks and how these flow locally and transnationally with regard to regions of trade and production. The interaction

between claims and counter-claims is explored with attention given to legitimacy (Fraser, 2007) and power (Affolderbach, 2011), in the context of environmental communication and governance in a transnational world. These aims are realised through the following four research questions (RQ), which are used to synthesise the approach and findings of the research:

RQ1) What are the dominant claims and counter-claims being mediated in relation to environmental risk?

Because media constructs what counts as an environmental risk, the first task is to see what is being presented by media, how it is framed, and the consequences of this, looking at the case of salmon aquaculture. This question is predominantly explored in **Chapter 5** and further developed in **Chapters 6 and 7**.

RQ2) How and by whom are environmental risks being negotiated publicly?

Building on ideas of legitimacy and power, this question acts to uncover what stakeholders are present and absent in environmental conflicts and how they interact. It examines how environmental activism seeks to change political, corporate and consumer behaviour and how industry and government attempt to manage the risks of environmental campaigns. Importantly, it exposes how interests, knowledge and evidence is contested within debates of environmental sustainability and risk. Again, this question is predominantly explored in **Chapter 5** and further developed in **Chapters 6 and 7**.

RQ3) How do local mediatised environmental conflicts and transnational discourses of environmental sustainability interact?

Once the discourses of environmental risks are understood in a local context, mediatised environmental conflicts are then placed within transnational discourses of environmental sustainability. This research question examines how debates of environmental sustainability and risk are constructed in different world regions, highlighting trends in environmental risk conflicts across spheres of influence and scales. Specifically, this question seeks to understand how environmental sustainability is negotiated within an international community and across political and cultural borders. It uncovers how institutional design of production at local sites interact with transnational discourses and vice versa. This question is answered in **Chapters 6 and 7.**

RQ4) What are the roles of media and what are the processes of mediatisation in communicative governance in cases of environmental risk?

This question allows the thesis to empirically link environmental conflicts with governance processes and communication strategies to understand the capacity of mediatised public debate to identify opportunities to support sound and just collective environmental governance and decision-making. It considers how associated media practices and logics might influence outcomes of complex common pool natural resource-use conflicts. By doing so it probes the theorised struggle between media-as-conduit or media-as-contributor to policy change. It seeks to uncover the implications for the governance of environmental risk in the context of common pool natural resource use. While this question is answered across all results chapters it is the key guiding question for the discussion in **Chapter 8.**

1.3 Scope of thesis

The aim of the thesis and the subsequent research questions are empirically investigated through three results chapters (**Chapters 5, 6 and 7**) which all focus on different spatial scales – local, transnational and international respectively – using the case of Tasmanian salmon aquaculture and seafood more broadly. The contribution of looking at mediatisation across these scales is highly novel but also highly specific and therefore cannot represent all environmental risks and issues occurring.

The geographical focus of this thesis spans three levels (see further elaborations in sections 3, 3.3, 3.4 and 4.4.1):

- 1) The environmental risk discourses regarding salmon farming in Tasmania, Australia and how they are placed within media communications, causing regionally contained tensions and contested claims,
- 2) How these local claims and counter-claims interact and flow transnationally with respect to market mechanisms – this focus being on the Australia-Asia region, specifically China. This explores if and how local and transnational environmental discourses interact, and
- 3) Lastly, the thesis draws on the Norwegian salmon aquaculture industry – exposed to the same global demands and trade conditions as Tasmania. This aims to understand how mediatised environmental debates over the production of Atlantic salmon are presented and enacted in both Australia and Norway. This identifies narratives that transcend political borders and physical geography and those that differ between local sites of

production. In doing so it explores how environmental conflicts are placed and manifest within a global community of concern. The findings from Tasmania are tested against the trajectory and lessons from Norway (Figure 1).

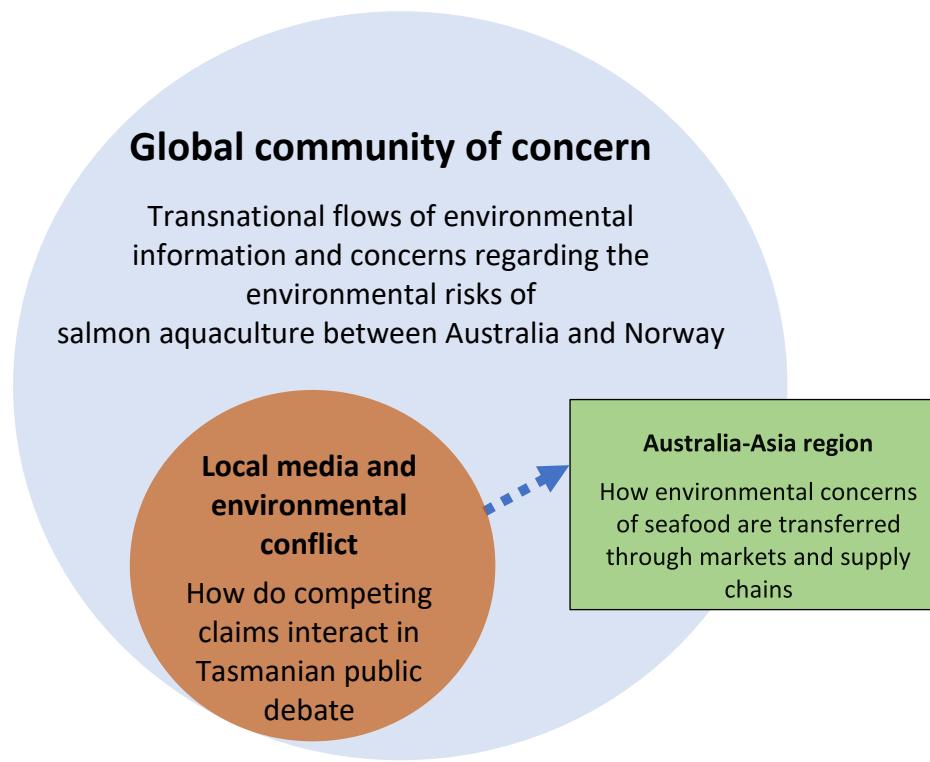


Figure 1: Three spheres at which environmental risk are negotiated. Local tensions of Tasmanian salmon aquaculture interact within a global community of concern and markets. International supply chains partly sit within transnational flows of information and local tensions feed into markets and supply chains.

The scope of this research includes news coverage of the Tasmanian salmon aquaculture industry between 2015 and 2017. During this time, two key events occurred in the case timeline – the Senate Inquiry into the regulation of the fin-fish aquaculture industry and the *Four Corners* episode ‘Big Fish’ – which are outlined in Section 2.5 and guided the collection of news media. The scope excludes the 2019 Tasmanian Legislative Council lead Inquiry into fin-fish farming in Tasmania (Dennien, 2019).

It is beyond the scope of the thesis to complete a comparative dataset of news coverage of the Norwegian salmon aquaculture industry (limited by access and language ability). Instead, a systematic review of academic peer reviewed literature was conducted to collate and synthesise literature which documented media analysis of social conflict regarding environmental risks of salmon aquaculture in Norway.

For this analysis of environmental risk discourses in media, I apply the lens of ‘mediatisation’, particularly ‘mediatised environmental conflict’, whereby environmental disputes are approached as interactions between various actors and how these interactions come together to change the course of the discourses and outcomes of the conflict (Hutchins and Lester, 2015). This follows Carvalho's (2007: 226) approach to examining news media, which focuses on “challenges to discourse constructions of the issue”. It allows for organisation of data that captures, to the greatest degree possible, the various actors and arguments that are present in the discourse. The thesis addresses the construction of environmental risk discourses and flows of claims and counter-claims in environmental conflicts across time and scale, rather than the physical environmental risks. The research is placed to contribute to understanding media roles in framing environmental debates as having important consequences for policy and resource management, how it influences the operating environment for claims-makers and decision-makers in environmental governance and how different stakeholders engage as political actors. Here I draw on Leith et al.'s (2014a: 163) description of the ‘operating the environment’ as the “dynamic and cumulative interactions between actors, values, stakes, and the institutions, processes, discourses and objects that mediate such interactions”.

Underpinning this work is the intention to make visible communication strategies and mechanisms that inflate environmental conflicts. Through this, the thesis aims to make explicit the underlying reasons for conflict in media and even reflect on a new paradigm for claims-making, counter-claims making, the communication of decision-making processes, interests and values, and how different information and knowledge is communicated and considered in the negotiations of acceptable environmental risk. It proposes practical considerations for a range of stakeholder groups and contributes to media and communications theory in hope of enhancing further research into public conflicts of environmental risk. It does this in the context of increasingly complex and expanding networks of communications, commerce and environmental governance.

See Table 1 below for an overview of the scope of the results chapters in relation to the research questions.

Table 1: Overview of results chapters and how they relate to the research questions.

	Chapter 5 (Local in scope)	Chapter 6 (Transnational in scope)	Chapter 7 (International in scope)
RQ1) What are the dominant claims and counter-claims being mediated in relation to environmental risk?	This results chapter identifies the themes and discourse frames present within news media following two critical moments in the contemporary history of salmon aquaculture debates in Tasmania.	This results chapter identifies the transnational claims made in local news media. It explores how environmental best practice is defined and negotiated across scales and how these definitions interact.	This results chapter compares scholarly accounts of how environmental risks of Australian and Norwegian salmon aquaculture are portrayed in mediatised environmental conflict
RQ2) How and by whom are environmental risks being negotiated publicly?	The prominent actors are identified, including those that are absent. The results chapter explores how they are portrayed, the dominant risk framing they represent and how they interact. The results chapter correlates the key stakeholders with the themes identified to answer RQ1 to identify those that were mentioned in the same newspaper articles.	This results chapter identifies the key actors and relationships that carry transnational discourses and how these local and transnational actors interact in the context of trade and transnational environmental governance.	This results chapter compares scholarly accounts of the stakeholders that are present and absent in the mediatised environmental conflicts of Australian and Norwegian salmon aquaculture.

RQ 3) How do local mediatised environmental conflicts and transnational discourses of environmental sustainability interact?	N/A	<p>The results chapter presents a discussion of how environmental sustainability concepts are developed within an international community. It focuses on how these are articulated in ecolabeling standards and interact with local mediatised environmental debates. Likewise, how local issues influence international discourse regarding the environmental sustainability seafood is explored.</p>	<p>This results chapter contributes an understanding of the narratives that transcend political borders and differ between growing regions. It also compares narratives of two countries across time and how transnational flows of information contribute to how similar or different their trajectories are.</p>
RQ4) What are the roles of media and what are the processes of mediatisation in communicative governance in cases of environmental risk?	<p>This results chapter explores how mediated environmental debate influences the operating environment for claims-makers and decision-makers in environmental governance and how different stakeholders engage as political actors.</p> <p>The chapter explores under what circumstances and to what extent deliberation concerning environmental risks associated with Tasmanian salmon aquaculture is conducted virtuously or viciously in the public sphere.</p>	<p>In the results chapter the importance of addressing both local and global factors in communication and governance strategies are identified. This includes some of the implications when local and global contexts of mediated environmental conflicts are not considered in communications of key stakeholders.</p>	<p>This results chapter presents a synthesis of the lessons from the previous three chapters, tests it against scholarly accounts of mediatised conflicts in Norway, and contributes to the theory of mediatised environmental conflict. It explores how two salmon aquaculture industries have evolved over time, why they might have different local risk discourses and public spheres and the role of different institutional designs.</p>

1.4 Statement of significance and contribution

This thesis draws primarily upon the research fields of environmental communication and environmental governance by traversing areas of media studies and policy change (Shanahan et al., 2008, Sabatier and Jenkins-Smith, 1993, McCombs and Shaw, 1972, McBeth et al., 2005, Stone, 2012, Wolfe et al, 2013, Kenis and Schneider, 1991, Keck and Sikkink, 1998: 95, Hutchins and Lester, 2015, Habermas, 1991), including across scale (Fraser, 2007: 15, Lester, 2014). A research agenda at the nexus of media, policy and publics across local and transnational scales is important as the international trade of natural resources increases and the environmental risks are shared by both the locally affected and the global community.

Environmental campaigning at the transnational level is likely to continue to become more prominent in world politics (Hutchins and Lester, 2015). Hence, the notion of the 'locally affected', 'global risk' and 'distant aware' (Lester, 2014) is increasingly relevant. However, as a research community our understanding is still in its infancy regarding how this plays out in relation to media roles and environmental campaigning in environmental governance, particularly how this occurs transnationally. The most difficult part of any issue is arguably the 'switch from a campaigning to a solutions phase' (Braun and Judy, 2004: 183).

By addressing these gaps, this thesis contributes to three fields of research: 1) environmental conflict and media, 2) transnational public spheres and 3) environmental governance of seafood and natural resources more broadly. It builds on the current literature on media roles in environmental conflicts and transnational negotiations of environmentally sustainable use of natural resources by placing these discussions within the context of 'socio-ecological systems' (Ostrom, 2009). While there have been invaluable studies into media's role in

framing aquaculture, particularly salmon, in the U.S. (Amberg and Hall, 2008), Germany (Feucht and Zander, 2017), and Norway (Olsen and Osmundsen, 2017), this thesis conducts the only known media analysis dedicated to the Australian salmon aquaculture debates. Since conducting the research for this thesis Haas et al. (2020) has also produced valuable research exploring how seafood certification is represented in Australian media, featuring the ASC certification of the Tasmanian salmon industry.

The main conceptual contribution is the expansion of the theory of mediatised environmental conflict by considering the role of scientists and science information in mediatised environmental conflicts (Hutchins and Lester, 2015), discussed in **Chapter 8** (Synthesis and discussion). In the context of salmon aquaculture, scientists are those that conduct research, development and/or monitoring of fish health and growth and environmental impacts and conditions of producing salmon for food.

The thesis contributes to understanding the interpretation and communication of environmental sustainability through international seafood supply chains and to audiences at different spatial scales. By traversing local and global scales, this research contributes to understanding the mechanisms for which information regarding the mediatisation of environmental risk flows locally and transnationally. In doing so it also identifies some of the risks of not addressing both local and global factors in communication and governance strategies and the implications for local discourse, market access, and governance.

1.5 Thesis structure

Chapter 1 presents the research objectives and questions, rationale, and scope of the thesis.

Chapter 2 provides an overview of existing knowledge and theory in environmental communications and environmental governance including transnational environmental conflicts. This chapter also describes some background of global fisheries and aquaculture.

Chapter 3 introduces the case of salmon aquaculture in Tasmania, Australia. These chapters place the thesis in the existing knowledge and theoretical contexts and explicate its relevance and importance. **Chapter 4** explains the research approach and methodology including research assumptions, application of qualitative methods and description of data collection, generation and analysis. It also offers reflection on the research limitations and addresses measures for assessing quality. Following this, the findings of the research are presented in

Chapters 5, 6 and 7. **Chapters 5 and 6** develop ideas presented in three journal manuscripts published in peer reviewed academic journals (see appendices for copies of the publications).

Chapter 5 analyses the news media representations of the Tasmanian salmon aquaculture industry to understand how and by whom are the environmental risks placed in the discourse.

Chapter 6 uncovers how local environmental risk discourses interact with transnational environmental sustainability debates and governance mechanisms. This chapter focuses on the Australia-Asia region. **Chapter 7** compares how environmental risks of salmon aquaculture are framed in Australian and Norwegian news media. This examines how risk discourses traverse different scales of physical geography and public spheres.

Chapter 8 synthesises the research findings across the results chapters by relating back to the thesis aims and research questions. This chapter considers the implications of the mediated

claims and counter-claims across scale, media roles in environmental conflict and contributes to the theory of mediatised environmental conflict by extending it to include science and science communication. The thesis contribution to society more broadly is considered along with and future research recommendations. To conclude, **Chapter 9** offers an overall reflection on the thesis.

2

THEORETICAL, ANALYTICAL AND KNOWLEDGE CONTEXTS

2.1 Introduction

This chapter summarises the existing literature that explores the nexus between media, publics and policy in environmental governance both locally and transnationally. It pays particular attention to seafood and aquaculture – the case used in this thesis to address the research questions. This field of research is critical in a future of mounting pressure on resources and an increasingly transnational approach to their production/extraction, use and governance. These issues and their related environmental communications theories have not been explored extensively at the case level, to understand empirical examples, nor in seafood sectors specifically. The rationale for selecting seafood as a sector and aquaculture as a case within this sector to explore these issues and theories is then described in detail in **Chapter 2**.

Environmental issues are increasingly global in terms of not only some issues themselves (climate change) but also the ways in which goods, services, resources, people, and information move and flow. Media are key to how environmental messages flow across scale and have undergone considerable changes in how messages are communicated. Digital communications are having an increasing role and influence on the conditions under which shared futures are negotiated. The rise of the internet in the 1990s facilitated intense global debates initiated by pursuits for environmentally sustainable development (Díaz-Pont et al., 2020). NGOs are active in this transnational trend, using media to share information and exert influence in widening public and political spheres. Responding to environmental campaigns is important for governments and industries to remain legitimate (Emtairah and Mont, 2008; Morrison, 2014).

What knowledge and information are shared and by whom influences how socio-ecological issues are framed in public debates. Following these information flows can illuminate areas of governance processes and private and public activities that cause societal tensions. Politics and media are increasingly intertwined (Juric et al., 2013) and there is still a lack of consensus around the implications of this relationship. Wolfe et al (2013) acknowledge the lack of knowledge sharing and integration of media functionality and policy agendas. He identifies the resultant gap in understanding how policy agendas and international markets are shaped by media, how publics participates in transnational governance, how information is being shared transnationally and what this means for decision-making in an increasingly transnational world.

2.2 Environmental governance and environmental conflict

Accompanying the increased pressure on natural resources to sustain the human population is the awareness of the notion of ‘sustainable development’. Sustainable development encompasses the concept that human life is sustained within the limits of earth’s carrying capacity so that future generations are unimpacted (IUCN, 1980). Sustainable development was first defined at the 1992 Earth Summit (Agenda 21), where it was agreed that the integration of social, economic and environmental factors is required to ensure inter-generational equity. Conceptually, sustainable development has continued to receive international priority. Agenda 21 also identifies the necessity to “reverse the tendency to treat the environment as a “free good” and to pass these [environmental] costs on to other parts of society, other countries, or to future generations” (United Nations Division for Sustainable Development, 1992). The environmental sustainability construct is both widely used and

widely disputed (Seghezzo, 2009). Environmental sustainability can be approached from either the perspective of how best to protect environmental attributes or how to use an environmental resource most optimally. Also variously interpreted is how these perspectives fit with the construct of sustainable development. As the definition of ‘sustainability’ is constantly evolving, so is the debate concerning the governance processes that promote sustainable outcomes (Cash et al., 2003).

The Organisation for Economic Co-operation and Development (OECD) discusses the benefits and challenges of the globalisation of markets for seafood as a sustainable resource stating that management frameworks must “accommodate globalisation without undermining resource sustainability” (OECD, 2010: 18). The OECD explains globalisation “as a process towards closer economic integration of markets” and that “there are no compelling reasons...to suggest that, spurred by new information and communication technologies as well as by business strategies and public policies, the process will not continue to evolve” (OECD, 2010: 18). Although globalisation has empowered corporatisation, corporations have also been restricted by environmental limits and environmental movements creating considerable tensions at this interface. This growing tension between globalisation and environmental sustainability suggests that debate regarding how we use our natural resources will continue to be a prominent component of global politics, making both transnational and local flows of information and people a cornerstone area of research as we move forward in an increasingly transnational world.

The traditional top down regulatory approach to marine resource management has been challenged by the rising prominence of new actors and complex relationships in the past few

decades, creating various forms of hybrid or network governance regimes (Vince and Haward, 2017). These network style approaches to governance allow great adaptability to different, and often competing, attitudes, values and beliefs that are highlighted in the public sphere. The developments in information and communication technologies have given societal actors a more prominent role in environmental governance by providing a communication pathway for greater reach of information and interaction with other publics, interest groups and corporate targets (Cullen-Knox et al., 2017a, Lester, 2016b, Wallis and Given, 2016). Capturing this evolving power of community and ENGOs, the concept of ‘social licence to operate’ is having increasing sway in environmental governance (Kelly et al., 2017, Cullen-Knox et al., 2017b, Edwards et al., 2019).

To explain why industry or government respond to ENGO activity and negative media coverage, some scholars apply legitimacy theory (e.g. Emtairah and Mont, 2008, Morrison, 2014). The legitimacy of an organisation or group is largely built around perception whereby “the actions of an entity are desirable, proper, or appropriate within some socially constructed systems of norms, values, beliefs and definitions” (Suchman, 1995: 574). Usually, this refers to the perception of relevant publics and society, as they are usually either the consumers or voters. Losing legitimacy, or a social licence to operate, makes an organisation more vulnerable to its surrounding environment.

King (2008: 395), uses the loss of organisational legitimacy as an explanation for how social movement activists, “a relatively powerless group of individuals” are able to shape the decision-making of the elite and “more powerful counterparts” and activate internal change. Research conducted by Arenas et al. (2009) suggests that the role ENGOs play in society is

perceived as influencers of corporate social responsibility and notes the conviction with which they do this. Deegan and Islam (2014) investigate NGO and media influence in global supply chains by applying the notion (also supported by Ader, 1995) that changes in corporate practices are a result of changes in community expectations. Therefore, the extent and the nature of media activity, by influencing these expectations, will determine corporate practices. Deegan (2014) applies this approach to media agenda setting theory along with legitimacy theory to conclude that NGOs rely on news media to help create a 'legitimacy gap' or 'legitimacy crisis' for an organisation for which the said organisation responds in attempt to regain support, and subsequently NGOs achieve their desired outcomes.

If we explore the literature specifically looking at the role of environmental campaigning in natural resource governance there are generally two lines of thought. These present environmental campaigning as; 1) the barrier to collaboration and productive conversation; or 2) an indicator for internal barriers to collaboration, management failure and/or poor communication of the management process. For example, van Huijstee and Glasbergen (2010) research identifies that once environmental campaigns utilise a symbolic damage strategy, a constructive setting is difficult to achieve. Arenas et al. (2009) highlight the difficulties in building shared understanding between ENGOs and their corporate targets. Alternatively, King (2008) argues that 'extra-institutional tactics' (e.g. protest) as a means to exert influence are often used when 'legitimate channels' (legal or collaboration) are blocked. By this understanding, extra-institutional tactics could be an indicator of internal blockages for more legitimate or collaborative approaches. Leadbitter and Benguerel (2014) suggest that environmental campaigning could be an indication of the failure of management regimes,

which lack a holistic approach to managing the use of, and impact on, marine resources. Alternatively, it could also indicate poor communication of the trade-offs and benefits of management decisions in a way that could help promote informed and accountable discussions. This captures the shift from government to governance whereby government is simply another player in managing the commercial use of public resources (Colvin et al., 2015). Now a range of actors are engaged in environmental governance including, but not limited to: consumers and markets, affected individuals or communities, NGOs, experts and scientists, transnational corporations, intergovernmental agencies and media. This signposts the role for public participation and involvement of a wider network in complex new processes of governance (for more detail see section 2.3.1).

Theories such as ‘mediatised environmental conflict’ (Hutchins and Lester, 2015), ‘bargaining power’ (Affolderbach, 2011), ‘legitimacy’ (Fraser, 2007) and ‘switching points’ (Castells, 2004) highlight the interaction of multiple interest groups involved in environmental conflicts and how these interactions play out in the public sphere via media and communications processes. Power exchange between actors or groups often occurs around ‘critical discourse moments’ (Carvalho, 2005) where key events in the conflict timeline can change the course of the conflict or reaffirm the existing trajectory of the discourse. With regard to how public problems materialise, authority “should always” be realised in the communications of such problems, hence the importance of developing “an understanding of the mechanisms that are at play in the mediatised world of governance” (Hajer, 2009: 10). In an age of ‘mediatised politics’ (Meyer and Hinchman, 2002) defining authority and who has that authority is challenging, particularly in complex issues of sustainability or resource use and even more so when these

issues transcend international markets. Another key challenge is the scale and cross-scale dynamics of global environmental change whereby the causes and effects transcend local to global scales (the most common human-environment interactions being temporal, spatial and jurisdictional) (Cash, 2006). In an effort to address this multi-scale socio-ecological system, market-based mechanisms have been developed to create global benchmarks for environmental standards (Eden and Bear, 2010).

When debates centre around issues concerning complex socio-ecological systems (Ostrom, 2009), there is potential for disagreement between different sources of knowledge and information and what constitutes evidence. Public communications of fisheries and marine aquaculture environmental governance, as a focal case of this thesis, is a combination of information and persuasion, which is constantly underpinned by scientific uncertainty. There is growing evidence in the marine sector that a middle ground between public attitudes, environmental campaigning and marine science is proving difficult to achieve (Mazur et al., 2014). As Beck (1992) explains, although as a global society we are generating greater knowledge, consensus appears to be less and less attainable.

In considering this contestation of knowledge and public conflict as productive or unproductive in terms of environmental governance, Martin (2005) defines unproductive conflict as “resource use competition accompanied by governance failure...where conflict leads to non-corporative outcomes”. The author is acknowledging a gap that exists in understanding the communications circumstances under which unproductive conflict is fostered. However, this raises questions of what constitutes productive and unproductive conflict and for whom? While social conflict plays an important role in encouraging

corporations and governments to act in the public interest and adjusting power distribution, making sure both claims-making and decision-making are not reactive can help ensure conflict is productive.

Identifying and assessing environmental ‘risks’ (including acceptable level of risk) occurs at the nexus of the legal system, scientific knowledge and media. This interaction was coined ‘relations of definition’ (Beck, 1992). Similarly, the risk conflicts perspective (see Maeseele, 2015a: 280, Hansen and Cox, 2015) embodies “contestation between various social actors over competing risk definitions, which are based on the confluence of competing: (a) scientific rationality claims; (b) values; and (c) interests”. Therefore, how risks are socially constructed is determined by how they are communicated in the public sphere (Cottle, 1998). Little et al. (2012) applies ‘relations of definition’ identifying how those responsible for knowledge dissemination define the problem, exploring information flows regarding who is getting what information and why. Importantly this acknowledges the risks of publicly contesting knowledge and the difficulties this creates for identifying the ‘truth’ in a mediatised problem.

2.2.1 Science in environmental governance and conflict

Traditionally, the role of science is to advise government decision-making (Scheufele, 2014) – what Habermas (1970) called ‘scientisation’ – whereby citizens have little influence and technical experts and bureaucracy control government. Here, those who hold ‘expert knowledge’ are empowered while lay people are marginalised. Industry also undertakes its own research – referred to as the “science-industrial complex” which “enjoys the benefits of largely promotional institutional science communication channels to foreclose any debate over the problem of known and unknown risks” (Maeseele, 2009: 70). Activists attempt to

counter this by generating their own research – referred to as “democratising science movements...the process through which lay understandings are taken into account when scientific knowledge production is used to make political decisions” (McCormick, 2007: 610).

With media and wider society influencing the governability of environmental challenges, problem definitions become a construct of social interactions, moving away from a pure scientific understanding (Osmundsen et al., 2017, Bocking, 2012, Maeseele, 2009). Social movements are seen to rise into the role of “alternative science communicators” (Maeseele, 2009).

The involvement of scientists in controversial debates – as actors or as sources of information remote from the public sphere – is still up for debate. If scientists are actors in public debate, they require the necessary communication skills or expertise to usefully contribute, particularly if the issue is political or controversial (Besley and Tanner, 2011). While training in the communication of science is becoming increasingly common, scientists can be hesitant to participate because of the inherent risk of getting involved in controversial and political issues (Dunwoody, 2015). While some scientists see themselves as separate from the public sphere, “a messy space of negotiation and contest that has a clearly troubled relationship with fact” (Lester, 2019). In the case of climate change we can see that the authority of science can be publicly challenged (Sarewitz, 2004), potentially making it even less appealing for scientists to engage publicly in controversial debate.

The expectation that science is considered “relevant, legitimate and accountable... illustrate the essential dilemma of science advisors: to serve as a constructive and trusted partner to policy makers, while maintaining professional independence” (Bocking, 2013: 154). Science

and scientific advice become inherently politicised if the research problems being explored are used to advise policy and the boundaries between science and society becomes blurred.

I draw on this definition of politicisation and its twin, depoliticisation:

a discursive logic that frames an issue as involving key political choices between alternative (sustainable) futures, by revealing competing sets of claims, values and/or interests underlying opposing demands. Depoliticization is defined as a discursive logic which frames an issue in terms of a social consensus about an inevitable, natural development best left to technocratic or market considerations. (Maeseele 2017:169)

The nexus between science and publics is commonly mediated via news, entertainment and social media, across broadcast, print and the internet. As media increasingly make available science information, the nexus between science, public and media is becoming more prevalent. However, the relationship between science and media is described as “tumultuous” (Besley and Tanner, 2011: 241). This is particularly due to the misinterpretation and misinformation of science information in media, often due to the difficulty of communicating complex science information according to journalistic norms. Increasingly, journalists need to have a scientific understanding, and scientists in turn need to understand journalistic processes. There has been a call amongst scientists to curb misrepresentation by improving their capability and capacity to contribute to policy debates through direct public engagement and media (Besley and Tanner, 2011).

The framing of science in environmental controversies in media is determined by a range of external factors such as competing newsworthy events, economic and political conditions and

the perceptions of credibility (Bocking, 2012). It is not only scientific information that is being mediated but the scientific process:

As researchers have noted, the media do not present merely scientific knowledge, but also ideas regarding the practice of science (Gregory and Miller, 1998: 90). This reflects not only curiosity about what scientists do, but concerns regarding science in its social context: scepticism regarding the relations between science and political or economic interests; demands for guidance in evaluating the credibility and trustworthiness of science and scientists, or in understanding the meaning of controversies between scientists; and a lack of clarity regarding scientific uncertainties such as those encountered in relation to climate change (Zehr, 2000; Mooney, 2005; Carvalho, 2007; Weingart, 2007; McGarity and Wagner, 2008; Michaels, 2008). One consequence has been the emergence of an image of science as less a pathway to objective truth, than a social institution akin to that described by historians and sociologists of science, in which scientific practice and knowledge are shaped by the diverse values, interests, and ideologies of its practitioners, patrons, and audiences – in short, a view of knowledge as a contingent phenomenon (Bocking, 2012: 706).

Carvalho (2007: 237) emphasises the significance of how “facts” and “truth claims” are selected and presented in media and who is considered “experts and counter-experts” or presented as authorised “agents of definition of scientific knowledge” that are given voice in political action. Carvalho (2007: 239) argues that the “representation of scientific knowledge has important implications for evaluating political programs and assessing the responsibility of both governments and the public in addressing” these programs (in this case climate change).

2.3 Mediatisation and mediatised environmental conflict

The importance of media in social-ecological systems was highlighted in McGinnis and Ostrom's (2014) revised version of Ostrom's (2009) original social-ecological systems framework. Media roles within social networks (social interactions and structures between a set of actors) of environmental governance and interfaces between NGOs, local communities, export markets, government, industry and environmental science and scientists at local and global scales is evidently multifaceted and multi-directional. The outputs of these social interactions inevitably (and at times significantly) affect the physical and living environment (Barnes et al., 2016). Environmental feedbacks are subsequently reacted to and absorbed by the social system, and so on. To contribute to the understanding of this complex whole (that is the social-ecological system), specific knowledge regarding each variable must be obtained and consistently re-evaluated. In such intrinsic systems complexity must be analysed and harnessed rather than eliminated (Ostrom, 2009).

Hutchins and Lester (2015) acknowledge that common pool environmental resources attract conflict, which is difficult to solve due to the varying multitude of actors involved and under global trade conditions (Lester, 2019). 'Mediatised environmental conflict' as theorised by Hutchins and Lester (2015) captures how power is played out in the public sphere regarding how we use – and impact – the environment and natural resources. This emphasises problems such as "who is affected, who is responsible [and] who should respond, and how?" (Lester, 2016a: 1). The contemporary 'mediatised environmental conflict' builds on Cottle's 'mediatised conflict' and depicts a political reality which "involves complex interactions between (i) activist strategies and campaigns, (ii) journalism practices and news reporting, (iii)

formal politics and decision-making processes, and (iv) industry activities and trade" (Hutchins and Lester, 2015: 337). Hutchins and Lester acknowledge the significance of Cottle's (2006) 'mediatised conflict' which identifies media forms as not only avenues for information dissemination but more so as resources for a variety of actors (victims, bystanders, government agencies, commercial actors, activists and the scientific community) to convey their knowledge, opinions and interpretations to private and public networks. The information which flows through these networks enters into the political and news discourse of the conflict. Therefore, this theory acknowledges that media are entrenched in the construction of conflict and how the conflict is conducted. Hutchins and Lester's theory builds on this by acknowledging the "political significance of the environment, and the pivotal role of media in contests over the definition and understanding of environmental risks and impacts" (Hutchins and Lester, 2015: 341). Lester (2016c: 1) argues that media provides an "arena in which resource allocation and environmental outcomes are politically negotiated and contested".

The 'mediatised conflict' theory, Cottle (2006), identifies media and media practices as much more than simply the process for which news regarding conflicts is relayed to audiences. In this sense, 'media' take the form, for example, of websites, blogs, social media, YouTube, radio and television broadcast. These forms of media are available to actors outside of the news and political spheres with their content flowing into news and political discourses surrounding the conflict (Hutchins and Lester, 2015). Additionally, media can be thought of as not only communications pathways (e.g., social media) but as actors (news media). By selecting who and what is in the public domain, identifying those with interests, who are affected, and the issues that are visible in online, print and broadcast media forums play a central role in

determining what is being contested and who participates in the negotiations (Lester, 2016a) as well as how the issues are framed, constructed and thus, how they are likely to be interpreted.

Mediatisation captures a large-scale transformation in everyday life, society, culture and contemporary politics, a process where media have infiltrated into all domains of society (Krotz, 2017), and one to which decisions over salmon aquaculture are not immune. Likened to the processes of globalisation, society cannot escape mediatisation where the power and effects of media shapes and frames communication as well as the society for which communication occurs. Such social transformations are referred to as “meta-processes” (Lundby, 2009). Mediatisation has become systemic over the last two decades and mediatisation theory and ‘media-centered’ research “involves a holistic understanding of the various intersecting social forces at work at the same time as we allow ourselves to have a particular perspective and emphasis on the role of media in these processes” (Hepp et al., 2015: 316).

2.3.1 The multi-directional role of media and environmental campaigning in environmental governance

Well-established concepts such as ‘policy networks’ (Rhodes, 2006) and the ‘advocacy coalition framework’ (Sabatier, 1988) identify that policy change is the result of formal and informal interactions between government and other actors around negotiated values and interests. They identify that actors can no longer be considered in isolation of each other. The policy network approach provides an analytical toolbox to uncover the interaction between and among public and private actors leading to policy change. How to define what constitutes

a policy network (or who to include and exclude) varies in the literature depending on where researchers decide to put the boundaries of those involved in policy change and why. Kenis and Schneider (1991) emphasise the informal and horizontal relations driving policy change. The structure of the policy network, Kriesi et al. (2006) explain, is the main determinant of policy change noting the distribution of power among participants (fragmented or concentrated) and the main type of interactions between them (conflict, bargaining or cooperation) as significant elements in policy networks. The authors note that policy change is less likely if power is concentrated within a few actors of the policy network, and more likely if power is fragmented because of the greater chances of the status quo being challenged. The basic idea behind policy networks and the blurring of boundaries between public and private spheres reinforces that governmental organisations, the actors formally responsible for policy decisions, no longer dominate the policy formation and implementation or control policy direction. Rather, this process is conditional on the increasing social interactions in a given policy subsystem (Adam, 1999). The pace and scale at which policy change occurs will be determined by the policy networks capacity and desire to allow for, or challenge, change.

While media are only one component of the governance framework they are seen as having “a crucial responsibility as a source of information and opinions” (Carvalho, 2007: 223) and as a significant influencer in how environmental decisions are made and communicated. The prominent literature on, and scholars in, policy change acknowledge and portray media as having an important role on political agendas and in the policy change arena (e.g. Sabatier and Jenkins-Smith, 1993, McCombs and Shaw, 1972, McBeth et al., 2005, Stone, 2012). Even so, there are two lines of thinking concerning media roles in policy change, media-as-conduit or

media-as-contributor. Shanahan et al. (2008) tested these two theories, with their research suggesting that if news outlets support a particular political agenda then this form of media does in fact assist in driving policy change and could be seen as contributors to the process. Most notably, however, is that while media are acknowledged in political communication and policy change scholarship, they are often not considered a key actor in policy change (Shanahan et al., 2008), nor does this scholarship question how actors obtain, use and interpret different types of mediated information. In the context of environmental governance, it is therefore pertinent to explore how media constructs public knowledge about the environment including who and what ‘counts’ as key actors, key issues, acceptable and unacceptable risks, and core values. To understand and analyse how environmental campaigns and communications affect natural resource governance it is not only important to identify the actors involved but also their relationships and types of interactions and how this occurs in the interaction between policy and the public sphere.

Generally, policy studies focus on media influence on elite decision-making while media studies focus on the effect of media on the mass public, with the former area of research being less prevalent than the latter. Political communication studies often fail to link media effects on policy change. This could largely be explained by the often difficult and problematic act of identifying a causal relationship between any one factor and policy change in complex policy systems. The influence between media, public opinion and policy change does not constitute a linear causal relationship but rather this interaction is multidirectional with complex feedback effects. In this sense, a media role is “one of highlighting attributes in a multifaceted political reality” (Wolfe et al., 2013: 186). Wolfe promotes that “the media agenda is

simultaneously an input and an output of the political system”, arguing that a media agenda setting theory which does not acknowledge the actions of government is therefore futile. To further address this divide between policy and media, Wolfe advocates a research methodology that “focuses on evaluating the media’s role in how political institutions process information” integrating a media-as cause and media-as-effect approach.

Similar to the literature on media’s role in policy change, the literature on media and public opinion also lacks consensus regarding whether media expose community expectations or plays a significant role in shaping community expectations. Additionally, monitoring media for how an issue is represented (i.e., how solutions or policy alternatives are defined, how issues and sources of information are being framed, what events are being emphasised) can provide governing bodies with indicators that assist in revealing, understanding, sorting and prioritising information in media that is relevant to policy decision-making (Wolfe et al, 2013). This could also be used by a range of different stakeholders as an indication for how to improve their communication strategies to ensure a balanced and informed discussion in the public sphere.

To account for the contemporary role of media, communications and environmental campaigning in natural resource governance (market mechanisms included), an array of theories and approaches have developed in political sciences, media and communications studies to the corporate business literature from which a research approach could be built. However, links are still required incorporating media, public and policy change, particularly in a transnational world. Additionally, media’s role has been underplayed in existing theories and needs to be more explicitly unpacked and foregrounded considering it provides a critical

communication link between claims-makers, decision-makers and publics. I suggest (and further attempt to do so through the arguments in this thesis) that the concept of governance, coalitions, networks and the public sphere should underpin further theory development concerning natural resource governance and mediatised environmental conflict.

2.4 Transnational environmental communication

The study of world politics occurs at a “level at which norms, values and discourse operate in the global scale outside the domain of states” (Wapner, 1996: 42). Ideas and discourses, around, for example, sustainable production of seafood, are engaging global communities, transnational organisations, and international policies. This section identifies the major theories and existing research concerning localised environmental conflict within a transnational world and for which transnational environmental campaigns and governance can be understood. The complexities and difficulties around how we are to approach the complex problem that is environmental conflict in the ‘transnational public sphere’ is highlighted when ‘legitimacy’ and ‘efficiency’ of public opinion “is not addressed to a sovereign state that is capable in principle of regulating its territory and solving its citizens’ problems in the public interest” (Fraser, 2007: 15). In the context of considerable and rapid social, political and technological change, Dahlgren (2005) asks how ‘public’ is defined and the cause and effects of public conflict over environmental futures is increasingly complex.

2.4.1 Transnational environmental campaigning

Transnational activism is commonly seen as the product of the globalisation of markets. While globalisation is the ‘what’ or the cause of contention, it cannot explain the ‘when’, ‘why’ and ‘how’ individuals and groups participate in transnational activism (Tarrow, 2005). Concepts

such as ‘transnational advocacy coalitions’ (Keck and Sikkink, 1998) and ‘transnational social movement organisations’ (Smith et al., 1994) were introduced to describe structured organisations with members in at least two different countries. While embedded within their own regions, activists may participate in protest activities in another country but retreat back to their domestic setting or with international contacts. While protest across the world is often embedded in a place, there are numerous examples of these protests being enacted globally or interacting with global mediated politics (Lester, 2019).

Wapner (1996) claims that on the global scale environmental activists’ function to heighten the ‘ecological sensibility’ of vast numbers of the global population awareness of environmental problems. Murphy (2012: 480) suggests that “NGOs should be considered as highly strategic, entrepreneurial actors, not just norm-disseminators, in attempting to impact international policy deliberations” (specifically the World Trade Organisation). From this, Murphy’s research concludes that within global policy networks, NGOs are considered important actors in setting agendas in international negotiations. Alternatively, Jespersen et al. (2014) captures the challenges of transnational campaigns in relation to international trade as he identifies that the negative publicity by NGOs and media campaigns in importing countries can either go two ways; it can promote more stringent standards for environmental sustainability, food safety and transparency in exporting countries (via market mechanisms); or these suppliers will seek alternative export markets which impose fewer demands. These implications are important considerations in the interaction between local environmental conflicts and transnational discourses of environmental sustainability.

2.4.2 Localised environmental risks: Foregrounding the local in a transnational world

Transnational communications, governance, knowledge, investment and trade (among others) are pronounced influences in natural resource management. However, as Hutchins and Lester (2015: 358) state, investigating these complex aspects of media, public and policy in local environmental governance in an increasingly transnational world is challenging:

To study conflict in this way and at this scale is no small task, encompassing intricate networks of environmental concern, strategic webs of media and political influence, public policy debates, and bi- and multi-lateral trade negotiations and deals. Nonetheless, it is imperative that this research challenge is met, as this is the arena in which global environmental futures are set to be determined (Hutchins and Lester, 2015: 385).

The scholarship on global communication, policy and trade emphasises the role of the local in the global and the importance of maintaining a sense of equality between the two scales when first examining a case. When considering transnational flows and the interaction between local and global discourses of environmental risks, terms such as 'glocalisation' encompassing how economic, political and social dynamics occurring at the global scale influence processes on the local scale and vice versa (Ramutsindela, 2004) and indicate a keen sense of the local in the global. Local threats and global risks are amalgamated to play a role in the decision-making of each (Lester, 2016a). Similarly, Ertör and Ortega-Cerdà (2015) state that high-level regional and national policies should never discount local community attitudes and interests because the local level is the level of implementation. If local preferences and values are disregarded, coupled with the growth of a sector, it becomes a recipe for disaster (Ertör and Ortega-Cerdà, 2015). They argue that lessons from these conflicts should underpin the future

management of this food production sector. When national and international networks or coalitions are formed, local and global conflict discourses are intertwined and subsequent arguments are the product of a glocal process (Swyngedouw, 1997).

Exploring how different stakeholders obtain and process information regarding the sustainability of seafood is inherently complicated as transnational supply chains are becoming central to natural resources use and production. Scholarship on global communication, policy and trade emphasises the role of the local in the global and the importance of maintaining a sense of equality between the two, both being as important as each other. Furthermore, literature regarding transnational communications clearly advocates the importance of foregrounding local discussions and social interactions when undertaking research into transnational communications (Lester, 2014: 169, Kraidy and Murphy, 2008). Kraidy and Murphy (2008) suggest that the local is the ‘linchpin’ of global communication studies. In understanding that the local is intrinsically ‘dynamic and dialogical’, Kraidy and Murphy advocate an approach to the local that acknowledges its accessibility for studying meaning, power relations and negotiation as it emerges between ‘contextually situated social agents’. Lester (2014: 169) also highlights the link between localised concerns and global discourses of risk by suggesting “in seeking to empirically investigate emerging conditions of transnational public...it is necessary to foreground the local as a dominant critical reality within environmental politics”. Lester justifies this by explaining that “local individuals and communities carry the anxieties and lived realities of damaged environments” from resource extractive or production activities (e.g. communities in the vicinity of salmon farms) to provide goods and services to distant markets (e.g. Asia). Local threats and global risks are

each synthesised into symbolic discourses to play a role in the decision-making of the other (Lester, 2016a).

Urkidi (2010) makes the connection between the scaling-up strategy and glocalisation as strategic schemes to access political opportunities and forces the opposition to engage in such discourse. For example, the importance placed on the localised environmental impacts of fin-fish aquaculture in international discourse of global consumption of sustainable seafood is promoted by supralocal actors (those which transcend location or are associated with more than one location). Illustrating this, Olsen and Osmundsen (2017)'s media analysis of salmon aquaculture in Norway highlights that perceptions of aquaculture and the associated environmental risks might be influenced to a greater extent when these risks are associated with global environmental discourses compared with actual or experienced reality at the site of production (see also Bocking (2012) who investigates transnational flows of scientific information concerning salmon aquaculture across news media between Europe and Canada).

Forming a global definition for best practices or environmental sustainability is challenging considering the local and regional context is a fundamental component in the definition and application of sustainability in global standards (Mithöfer et al., 2017). For example, disagreements between activists and global private governance mechanisms such as third-party certifications create tensions around defining acceptability and confusion for corporations when two seemingly similar stakeholders have different views about how to achieve sustainability. These ideological differences create heated debates and remain unresolved, making transnational environmental conflicts new battlegrounds (Auld, 2020). There is a lot at stake with these types of conflicts risk for a company such as loss of reputation

and brand damage. The complexity of transnational debates regarding environmental risk is summarised by Lester (2016: 1):

‘How can responsibility be allocated and appropriate responses determined and demanded when the arenas for politics, law, communications and risks themselves now cross state boundaries; when the relationship between citizens, corporations and decision-makers is further complicated by transnational networks of economics and trade, governance and law, and media and communications?’ (Lester, 2016: 1)

Highly resourced and influential environmental campaigns are increasingly alerting distant buyers and consumers about the local impacts of the goods and materials they have access to. Despite the market-focus of these campaigns they have direct consequences for public policy processes which, as Kenis and Schneider (1991) explain, have experienced; an increase in scope, decentralisation, blurring of boundaries between public and private actors; and, transnationalisation of domestic politics. As Ruggie (2004: 504) adds, there is an “increasingly institutionalised transnational arena of discourse, contestation, and action concerning the production of global public goods, involving private as well as public actors”. This creates an atmosphere of “shared risks and responsibilities” within a global community (Lester, 2014: 168). For transnational networks of NGOs and grass roots lobby groups to influence the operations of large transnational corporations, they seek to mobilise support at various locations and distances from the actual site of contention. This puts local issues on the political agenda of other countries thus turning local conflicts into transnational ones, therefore their influence on policy formation should not be underestimated (Holzer, 2001). Adding to this, Beck’s (1996) ‘global risk society’ and ‘cosmopolitanism’ encompass world-wide

communications and global environmental risks, whereby political borders are transcended boundaries. This risk “can be dramatized or minimized, transformed or simply denied according to the norms that decide what is known and what is not.” (Beck, 2011: 1349). Furthermore, Hutchins and Lester (2015) explain that campaigning at the transnational level is likely to continue to become more prominent in world politics as the international trade of natural resources increases and the environmental risks are shared by both the locally affected and the global community.

In the context of aquaculture, Ertör and Ortega-Cerdà (2015: 209) warn against the insufficient regard for local attitudes in a growth industry. The authors identify the need for further investigation into an “effective participatory decision-making mechanism ... ensuring access to transparent information and an equitable social distribution of burdens, benefits and risks resulting from aquaculture activities” (Ertör and Ortega-Cerdà 2015: 209). Yet, there has been limited research that investigates the transnational elements of environmental conflicts, with this gap particularly evident in aquaculture studies, and how this affects local environmental governance. For instance, we do not fully understand how campaign messages are transmitted from the local conflicts into target markets and what this means for resources, such as salmon, that already experience a significant level of conflict, or are already under pressure from current market pressures. The current scholarship is only beginning to explore how these global dimensions affect local discourses and governance and how these changes in local discourse and governance in turn affect global discourses and governance. This research agenda becomes increasingly important as the transnational dimensions of seafood grows, with progression in, for example, global third-party certification (Foley and Havice,

2016), international markets (Fabinyi, 2007) global environmental campaigning (Baird and Quastel, 2011), and sharing of information (Bocking, 2012).

2.5 Seafood as a critical case

Seafood products are some of the most highly traded food commodities globally (FAO, 2018). Seafood plays a critical role in the food security and employment of millions of people around the world. Seafood is made up of wild capture fisheries and aquaculture. While wild capture is the capture of marine animals, generally using nets or hook and line, aquaculture is essentially marine agriculture where aquatic species are farmed in marine and freshwater environments. Worldwide demand for seafood and fish products is increasing (Figure 2). This demand for seafood, driven by a growing population, particularly the Asian middle class, requires the increased use of natural resources globally (Cao et al., 2017). The value of fishery and aquaculture products entering international trade doubled from 1998-2008, with nearly 40% of production entering the international market as various food and feed products in 2008 (FAO, 2010). Global fish production reached its peak in 2016 with a total of 171 million tonnes from both wild capture fisheries and aquaculture with a total value of USD 362 billion (first sale value) (Figure 3). Aquaculture accounted for 47% of the volume and USD 232 billion (FAO, 2018). As demand and trade increase, wild capture fisheries have a limited capacity to provide seafood into the future. Wild capture production has remained relatively steady since the 1980s (Figure 3) but is expected to decrease. Concerns of overfishing have been present, and contested, in the academic literature for decades (Froese and Kesner-Reyes, 2002, Edgar et al., 2018, Sumaila and Tai, 2020). Worm et al. (2006) predicted that by 2048 all fish stocks will have collapsed. Overfishing has long been acknowledged as a prominent environmental

and socioeconomic problem with an array of solutions now at the forefront of the debate of fisheries management. Such solutions often stipulate the need for reduced capture rates. For example, closing the high seas (international waters) to wild capture fishing has been proposed to allow for fish stocks to recover (Peñalosa Martinell et al., 2020).

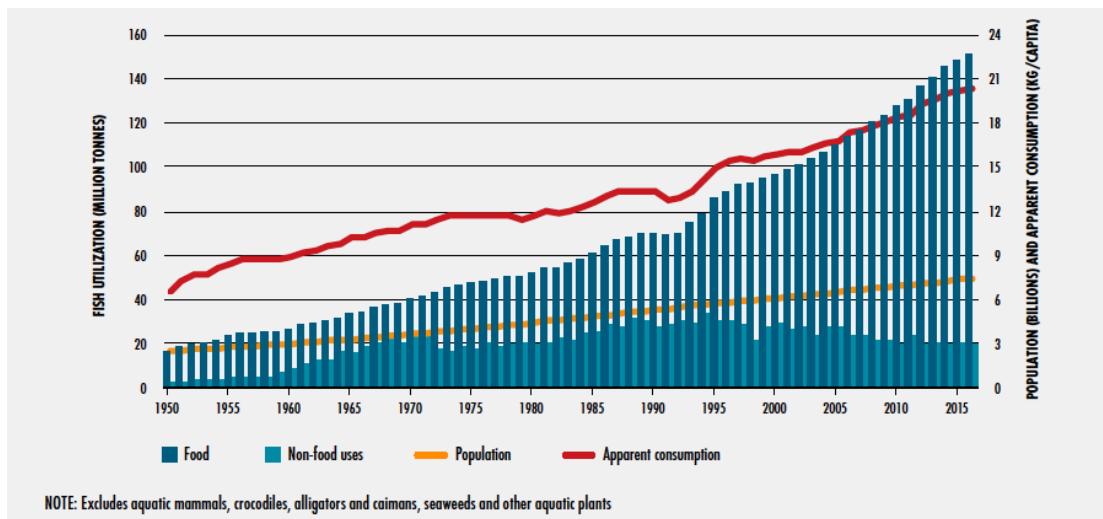


Figure 2: World fish utilisation and consumption (Source: FAO, 2018)

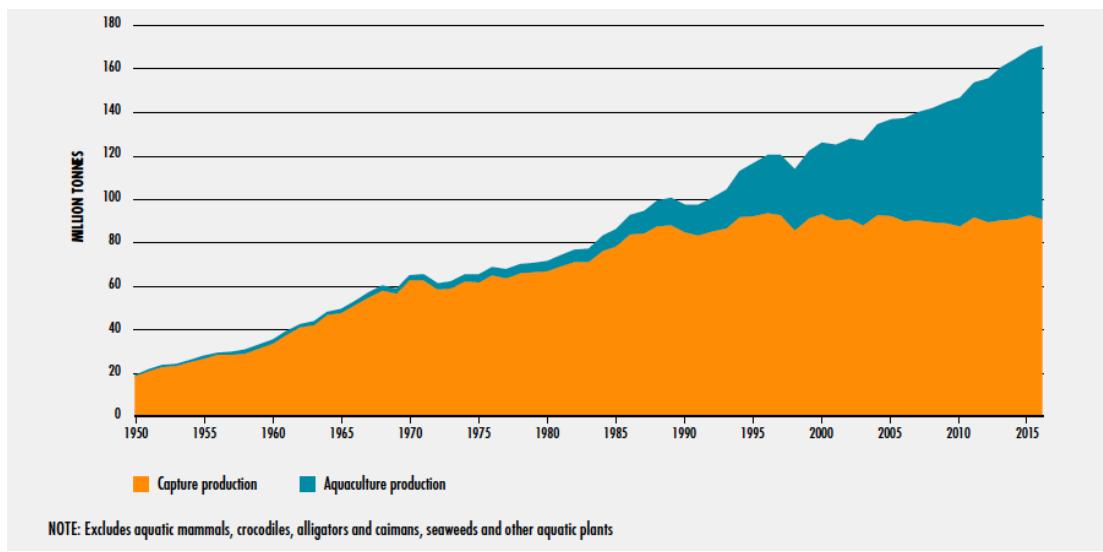


Figure 3: World fish production from wild capture fisheries and aquaculture (Source: FAO, 2018)

Comparative to the decline in wild capture, seafood production from aquaculture is continually increasing and technologies advancing (FAO, 2016). Aquaculture is fast becoming the most stable source of seafood to meet increasing demand with a 19.6% increase in production from 2000-2015. Of this production, over half was consistently made up of fin-fish. Meanwhile, wild capture production remained relatively steady over this 15-year period (FAO, 2017a, FAO, 2017b) (Figure 3). Aquaculture has allowed for consumption reaching a record high of 20kg per capita fish supply annually (FAO, 2016) (Figure 2) and any significant increase in fish supply in the future is expected to come primarily from aquaculture production (Godfray et al., 2010). With fish continually being one of the most traded food commodities globally, the world per capita annual fish consumption is expected to go beyond 20kg. This growth in demand combined with wild stocks expected to decrease due to environmental pressures of over-fishing means aquaculture is expected to expand to fill this gap in supply (FAO, 2014). However, as with wild capture fisheries, aquaculture is not immune to environmental and social issues and limitations; for example, impacts on the surrounding water quality and benthic substrate, the use of wild fish in fish feed, pathogens and disease and animal welfare (Cottrell et al., 2018). Often the farming practice relies on continued and growing access to highly contested multi-use common pool marine coastal waters to ensure continued supply for desirable fish products. Some of the most contested debates over natural resource use occur regarding the coastal zone, where a range of interests, information and knowledge often diverge regarding use and preservation of resources. This makes development and implementation of coastal policy and management schemes particularly difficult (Foxwell-Norton, 2018).

Controversy regarding aquaculture is said to be increasing despite scientific and engineering advances in mitigating environmental impacts (Young and Matthews, 2010). While science plays a key role in understanding and managing the effects of aquaculture on the natural environment, research by Osmundsen et al. (2017) finds that much of the public debate concerning salmon aquaculture is value laden. Osmundsen and co-authors explain that the problem “becomes a social construct interpreted in political and moral terms...moving away from purely scientific understanding... and both the scientific debate and discussions on how to manage and govern the industry become politicized”. Maeseele (2015b: 280) suggests that “conflicting (and contested) claims to knowledge are found to be selectively adopted by various social actors as a material and discursive resource in pursuing broader social, economic or political agendas”. In the case of an environmental campaign against a large fishing trawler in Australia, Tracey et al. (2013) argues that selective and potentially misinformed environmental campaigns failed to acknowledge the full process of fisheries management and yet were successful in gathering a national following and provoking the federal Environment Minister to alter national environmental laws and disregard previously adopted scientific advice to ban the vessel from fishing in Australian waters. Cash et al. (2006: 466) write that the act of linking science and technology to decision-making in ways that are more “socially embedded and that attempt to balance economic, cultural and social needs” is a critical shortcoming and a challenging aspect of environmental governance. This combined with the increasingly complex transnational flows of information and resources is evidence of an urgent need for more work to be done regarding the construction and flow of information within environmental politics and how this influences marine resource governance (market mechanisms included).

2.6 Salmon aquaculture as a seafood case

Aquaculture is seen as the future for seafood production and an important economic contributor to regional communities, however it has environmental and social impacts just as wild fisheries do (Newton and Little, 2018). The livelihoods and environments of regional communities surrounding aquaculture development have also been profoundly impacted by globalisation. Salmon aquaculture has been a source of contention in many countries that farm fish in their coastal waters (e.g. B.C. Canada, Chile, Norway and Denmark) forming a global discourse of local risks. The industry is no stranger to mediatised public conflict, with a number of scholars exploring how the industry is represented in media in different growing regions (Amberg and Hall, 2010, Olsen and Osmundsen, 2017, Sha et al., 2015). Amberg and Hall (2010) analysed news content for environment and human health within the U.S. and found that negative coverage of salmon aquaculture was more prominent (Amberg and Hall, 2008). In Germany, the most frequent attributes of salmon aquaculture evident in the news media were the economy, environment, human health, animal welfare and regulation respectively (Feucht and Zander, 2017). In Norway, industry, politics and environment were common topics in media (Olsen and Osmundsen, 2017).

Aquaculture is a growth industry and will continue to supply the rising demand for fish for human consumption while capture fisheries remain relatively stable. By 2030 the aquaculture sector is predicted to supply 62% of fish for human consumption (World Bank, 2014). Global aquaculture production in 2016 comprised mostly of food fish (73% or 80 million tonnes) with the remaining being aquatic plants (30.1 million tonnes), as well as a very small amount (37 900 tonnes) of non-food products. Of the farmed food fish 68% is fin-fish. Since 2013, salmon

has been the largest fish commodity globally by value with trade in salmon increasing by 10% per year since 1976. Salmon has become a popular product in global markets with international marketing campaigns causing a rapid rise in demand. Yet the limited availability of appropriate farming sites and regulatory constraints due to disease, pathogen and environmental impacts have meant that production has not increased with the same vigour as the demand. This demand and supply ratio have meant the price of salmon has rapidly increased (FAO, 2018).

Salmon aquaculture provides a unique, timely and important opportunity to explore how local and transnational how mediated environmental conflicts unfold across scale for five main reasons: 1) salmon consumption globally has tripled since 1980 with salmon aquaculture being the fastest growing food production system in the world accounting for over 70% of the market (World Wide Fund for Nature, 2020); 2) farming salmon relies on access to publicly owned common pool coastal resources; 3) the sector is experiencing rapidly evolving advancements in environmental monitoring and farming technology (Asche et al., 2018); 4) the marine open-pen farming practice has environmental (Ross and Macleod, 2017) and social (Pitchon, 2015) impacts; and 5) because of these impacts the sector's expansion has instigated considerable public debate and conflict (demonstrated by heightened media attention and targeted environmental campaigns) over the management of the environmental and social impacts on local though to global scales (Tiller et al., 2012, Adler, 2002, Young and Liston, 2010, Osmundsen and Olsen, 2017).

As with many industries, salmon aquaculture has shifted from an industry traditionally characterised by small, often family owned, farms and local markets to the corporatisation of

the industry, transnational companies, international investment and growing export markets. As of 2015, salmon aquaculture occurred in 13 countries with five of these accounting for 95.5% of global production: Norway (55.3%) along with Scotland (7.6%) and Faroe Islands (3.3%) in Europe, Chile (25.4%) and Canada (6%). The other eight countries produce the remaining 4.4 % (Iversen et al., 2020). Countries that lack indigenous stock rely on imported eggs. Chile is one of these countries and therefore Norwegian companies have a considerable presence in Chile, making Norway a key player in the global Atlantic Salmon industry. Of the 20 largest salmon aquaculture companies, 11 of them are headquartered in Norway (Berge, 2017). Mowi (formally Marine Harvest) is the largest producer of salmon operating in 22 countries and supplying salmon to over 50 markets. The limiting factor to further global expansion is the availability of appropriate sites and therefore any shortage in production in one country cannot be easily compensated for by another. This means the global market can be considerably affected by the production of a few countries.

Technologies are advancing at a rapid rate to resolve challenges of producing large amounts of fish for food consumption within acceptable limits of social and environmental impact. More recently, the salmon industry globally is advancing technology in order to move to higher energy sites (which are generally characterised as further offshore with deeper water, strong currents and higher wave energy) and grow smolt to a larger size on land to limit their time in the marine environment (Ramsden, 2018). However, until these technologies successfully meet societal expectations the industry and its regulatory mechanisms are the source of considerable public criticism and debate.

As the industry has expanded, the farming practice has been a source of contention around the world, made visible in media (Schlag, 2011, Amberg and Hall, 2008, Olsen and Osmundsen, 2017). The controversy over salmon aquaculture is complex with a multitude of competing claims from a range of stakeholders across scales. This has been characterised as the “salmon wars” (Beckett, 2012) and dubbed “the most divisive and intense struggles over industrial development to have ever taken place in Canada” (Young and Matthews, 2010: 3). Environmental and industrial conflicts have become increasingly complex and multidimensional as society has become less tolerant of risk and uncertainty (Young and Matthews, 2010). However, there are common themes in salmon aquaculture debates summarised by Young and Matthews (2010) as “axes of controversy”: environment, human health, rights (and access) and rural development. Much of the ongoing public debates are centred around sustainability, particularly environmental sustainability. At the site of production these debates are related to a range of risks including: negative impacts on the surrounding water quality and biodiversity of a marine farm, fish escapes and impacts on wild fish populations, for countries that have native wild Atlantic salmon genetic impacts on wild stocks, for countries that experience parasite problems (lice) and their treatments and animal welfare (of both farmed fish and surrounding marine life) (Olsen and Osmundsen, 2017).

In order to continue to grow and maintain its position as a major player in global food production, the salmon aquaculture sector depends on a positive public image (Schlag, 2010, Amberg and Hall, 2008), broad public acceptance, and a social licence to operate (Leith et al., 2014b). To enhance the industry’s public image and address environmental externalities at the global scale, the Global Salmon Initiative was founded in 2013 by salmon farming

companies from Norway, Chile and Scotland in an effort to improve environmental reputation by facilitating discussions to “look at ways they [the industry] could break down barriers to environmental improvement in the salmon aquaculture sector” (Global Salmon Initiative, 2020). The industry group brings together 14 salmon farming companies from eight countries (Australia, Canada, Chile, Faroe Islands, Ireland, New Zealand, Norway, and the United Kingdom), representing ~50% of the global salmon aquaculture sector. This initiative frames the sector as united in its role in producing a healthy source of protein for a growing population. Collaborative efforts are promoted between salmon farming and feed companies, veterinary organisations, the Food and Agriculture Organisation (FAO) and Worldwide Fund for Nature (WWF). This includes co-hosting a “thought leaders discussion at the World Bank” with WWF. It represents shared goals of environmental sustainability, corporation and transparency in three key industry areas to achieve global outcomes: third-party certification, sustainable salmon feed and biosecurity. Third-party certification (specifically Aquaculture Stewardship Council) is endorsed as the key mechanism for measuring progress and communicating commitments to such endeavours.

A third-party certification label is one of the few ways for customers to determine what is considered to be sustainable seafood and for producers to inform purchasers and consumers regarding sustainable practices (Hatanaka et al., 2005). It is expected that these standards and benchmarks will eventually be determined under circumstances where scientific experts are one of many contributors of information, knowledge and interests (Rice, 2014). Despite efforts to standardise the definition for sustainable seafood, ‘sustainability’ has been so overused as a marketing tool that some argue it has become meaningless and lost its value

and impact (McEwan and Bek, 2009). There are also concerns that external sustainability assessments could undermine government authority (Crona et al., 2016). In the case of aquaculture exports from Asia, some Asian suppliers have adopted third-party certification schemes in order to export to EU and US markets that have strong NGO and media presence, while others have sought out new market destinations such as Russia and the Middle East which impose lower sustainability requirements.

WWF and the Sustainable Trade Initiative co-founded the Aquaculture Stewardship Certification (ASC) in 2010 with the aim of providing global standards for environmentally and socially responsible seafood farming (Aquaculture Stewardship Council, 2020). The ASC was an output from the Aquaculture Dialogues, a series of multi-stakeholder roundtables lasting over a decade starting from 2004 in cities around the world, coordinated by WWF. The dialogues were promoted as an open and transparent process focussed on “minimising the key environmental and social impacts of aquaculture” by developing standards that are “science-based, performance-based and metrics-based and globally applicable to aquaculture production systems, covering many types, locations and scales of operations”. Each dialogue developed standards for one farmed seafood species, with initial species (which included salmon) being chosen based on their level of environmental and social impact, market value and the extent to which they are traded internationally (Aquaculture Stewardship Council, 2020). This highlights that the environmental management of salmon aquaculture has been prominent in global governance agendas. The contestation over industrial growth, trade, knowledge and who carries this knowledge and governance approaches makes salmon

aquaculture an ideal case study to examine mediatised information flows and local and transnational interactions.

3

SALMON AQUACULTURE IN TASMANIA, AUSTRALIA: THE CASE STUDY

3.1 Introduction

The impact of global growth and related controversy in aquaculture has been reflected in Tasmania, Australia, where the salmon aquaculture industry experienced considerable growth, accompanied by publicised societal debate at the time of this research. Tasmanian salmon aquaculture has a long history of contention since industry conception through the 1980s-1990s. The initial venture in the 1980s was between the Tasmanian State Government and Noraqua, a Norwegian company. The development of a large hatchery using European technology accelerated the Tasmanian industry. By 2018, the Tasmanian salmon aquaculture industry (which also comprises a small amount of rainbow trout) was worth \$838.3 million, with a 17% increase in production volume in 2017-2018 and was Australia's most valuable aquaculture product (Department of Agriculture Water and the Environment, 2020). Three main companies now farm salmon in Tasmania: Tassal, the largest of the three, is a publicly listed company; Huon Aquaculture, a family founded company that floated 30% on the ASX in 2014; and Petuna, the smallest of the three is family founded and has not publicly listed.

Tasmanian salmon farms have traditionally been located in estuaries and sheltered marine waters on the west and south coasts of the island state. However, since recent plans to significantly expand the industry (Fleming et al., 2017), the industry has been the focus of various environmental conflicts (see Vince and Haward, 2017, Leith et al., 2014b, Murphy-Gregory, 2017). In 2009, the industry announced its target to double by 2030 to a \$1 billion a year industry (DPIPWE, 2017). This growth agenda is shared and supported by the Tasmanian Government (Tasmanian Government, 2013). Both the Australian federal government and the Tasmanian government have remained committed to the expansion of the industry despite

being criticised for their perceived unwavering support for the exploitation of the environment and public waterways to support economic growth, and profit for particular companies (Tiller et al., 2012, Vince and Haward, 2017). The government and industry assured the expansion was supported by ‘the science’. However, for the affected coastal communities that “may not know the coast in science and technology, but they do know where they live” (Foxwell-Norton, 2018: 2), the claim of scientific support provided little reassurance and conflicts became increasingly visible on social and news media. Protests characterised by fleets of boats have become a feature of the social debate over Tasmanian waters and were readily organised and attended by NGOs and recreational fishers. The alliance between these two typically polar groups was first established from previous protests against the FV *Margiris* ‘super trawler’ (Cullen-Knox et al., 2017b, Tracey et al. 2013).

Australian identity, lifestyle and livelihoods are strongly linked with the coastal landscape, with 80% of the country’s population living within 50km of the ocean. This identity is firmly engrained in Tasmanian culture whereby its remoteness and relatively poorer economic conditions compared to the rest of Australia is compensated for by the affordability of ‘shack’ (holiday dwellings) ownership, easy access to the oceans, lakes and estuaries with one in every 17 Tasmanians owning a registered boat (ABC News, 2014a). Additionally, the island state has a rich, antagonistic history of environmental politics cultivated over decades (see Schirmer et al., 2016, Lester and Hutchins, 2009). Tasmania, about 20% of which is listed as wilderness World Heritage and 135,100 ha of Marine Protected Areas, is home to the world’s first green party and renowned campaign against the Franklin Dam (Lester, 2006); a long history of transnational forestry ‘wars’ (Lester, 2016a); and increasing conflict in the marine sector,

including the national campaign against the FV *Margiris* ‘super trawler’ (Cullen-Knox et al., 2017b, Tracey et al. 2013). The island state now has generations that have experienced this conflict, which has entrenched the discourse of economic growth versus environmental impact in almost all aspects of Tasmanian culture and society (see Figure 4). Most notably, regional environmental groups have formed both local and transnational coalitions and networks and this expertise is now being applied to the salmon industry. However, Lester (2019: 109) explains the changes in the conflicts between forestry and salmon including: “the visible alliances between key actors; in the explicit representation of local–global tensions; and in science’s role in mediated debate”.

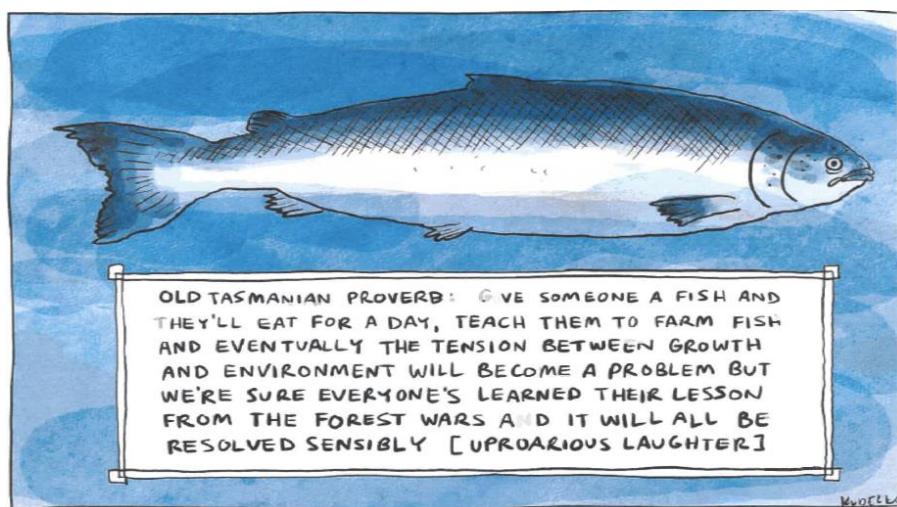


Figure 4: Cartoonist Jon Kudelka illustrating the legacy of “tension between environment and growth” and apparent resentment of this prevalent and re-occurring discourse in Tasmania (Kudelka, 2017).

The intractability of environmental conflict in Tasmania was exemplified by the Hobart *Mercury*:

There are those who, regardless of the science presented, will never, ever accept the practice. Likewise, opponents are too easily dismissed as agitators or extremists. In our

experience many are not. They are people with valid concerns. Their views need to be listened to. Too many issues in Tasmania are divided into streams of black and white. Forestry is a key example. You are with us or you are against us. But so much of the community operates in the grey space in between. (The Hobart Mercury, 2017)

These conflicts are reinforced by “vicious cycles of distrust” concerning use of science information and claim-making, stemming from “cherry-picking, secrecy and misinterpretation” (Leith et al., 2014b:290). In this cycle, “reputational capital is traded away by all parties in costly, unproductive, and acrimonious processes” destabilising the ‘social license to operate’. By contrast, virtuous cycles are “deliberate, slow and considered” and are characterised by shared “goals and language” creating trust between and among stakeholder groups (Leith et al., 2014b: 291).

The conflict reached new heights of contention in 2015-2017 between and among the salmon industry, political decision-makers, NGOs, local community and other recreational and commercial users of coastal waters and science providers. During this time, the Tasmanian salmon aquaculture industry appeared to lose what it had previously referred to as its enviable ‘social licence’ (Sams, 2015). The industry had earned this (perceived) ‘community acceptance’ (at the local level) and ‘socio-political acceptance’ (at the broader level) (Wüstenhagen et al., 2007) over previous decades by bringing a new industry to the otherwise economically struggling southern island state of Australia. Importantly, it had done this with few visible impacts on the much fought over Tasmanian environment.

The conflict largely became visible through two events – a Senate Inquiry in 2015 into the “regulation of the fin-fish aquaculture industry in Tasmania” and a piece of investigative

journalism broadcast by the Australian Broadcasting Corporation (ABC) in 2016 on its flagship current affairs program *Four Corners*, the episode titled ‘Big Fish’ (see sections 3.2 and 3.3 respectively). Following these events, the conflict was further entrenched by and continues as key legal and political actions are undertaken between key actors. Leading up to this there has been a chain of events that intensified the conflict (Table 2).

Table 2: Timeline of critical moments in the discourse of Tasmanian salmon aquaculture.

Year	Events
2009	<ul style="list-style-type: none"> ▪ Industry announced it intended on doubling production by 2030
2012	<ul style="list-style-type: none"> ▪ Expansion in Macquarie Harbour, adjacent to Tas. Wilderness World Heritage Area
2013	<ul style="list-style-type: none"> ▪ The Australian Government released a white paper ‘Tasmania’s place in the Asian Century
2014	<ul style="list-style-type: none"> ▪ Huon Aquaculture and Petuna leaked emails to The Greens’ raising concerns regarding Macquarie Harbours carrying capacity ▪ Huon Aquaculture floated 20% of the company on the ASX
2015	<ul style="list-style-type: none"> ▪ Australia signed free trade agreement with China (ChAFTA) ▪ Japan-Australia Economic Partnership Agreement (JAEPA) ▪ Senate Inquiry into the “Regulation of the fin-fish aquaculture industry in Tasmania” this received 103 submissions from local business, all levels of government departments, local through to transnational ENGOs, local business, and community members
2016	<ul style="list-style-type: none"> ▪ The stocking limit of Macquarie Harbour was increased ▪ Tassal announces expansion intro Okehampton Bay on the East Coast of Tasmania, a previously unfarmed region ▪ A new opposition group formed called Marine protection Tasmania ▪ The environmental regulation responsibilities were transferred from the Marine Farming Branch of DPIPWE to the Environmental protection Agency (EPA) ▪ <i>Four Corners</i> episode ‘Big Fish’ aired nationally
2017	<ul style="list-style-type: none"> ▪ Huon Aquaculture took the state and federal government to court for not adequately and fairly managing Macquarie Harbour ▪ The Tasmanian State Government released a ‘Sustainable industry growth plan’ stipulating ‘grow’ and ‘no-grow’ zones ▪ Tassal opened an office in Shanghai, China
2019	<ul style="list-style-type: none"> ▪ Tariffs on all Australian seafood exports will be eliminated progressively by 1 January 2019

In 2012 the industry's application to expand the farming practices in Macquarie Harbour was approved. As a precaution, the proposed expansion was staged. Following increases in the stocking limit, initial concerns regarding the environmental carrying capacity of the harbour were identified in 2014 (Huon Aquaculture, 2017). At this point the State Government at the time changed the management scheme in the harbour from biomass limits to a percentage given to each company, resulting in a larger allocation to Tassal. The conflict and lack of unity between companies was observable from this moment and lead to the Senate Inquiry (see section 3.2) and followed the *Four Corners* Episode (see section 3.3).

These localised tensions were amplified and complicated as the Australian federal government signed free trade agreements with Asian export markets in 2015. The Australian Governments enthusiasm and commitment to these markets is highlighted in reports such as the government's 2012 white paper, 'Australia in the Asian Century' and the subsequent 2013 white paper 'Tasmania's place in the Asian Century'. These high impact papers predicted that the transnational flow of personnel, investment, resources and information would increase and congregate in the Asian region. The impact is exemplified by Tassal opening an office in Shanghai in 2017.

In mid-2016, responsibility for environmental regulation of the Tasmanian salmon industry was transferred to the Environmental Protection Authority (EPA). This was in response to concerns regarding the independence of the Tasmanian State Government (acting as both the proponent and regulator of the salmon industry) identified from the Senate Inquiry. At the same time, Macquarie Harbour's stocking cap was further increased (Environmental Defenders Office Tasmania, 2018).

Following conflict over allocation and environmental capacity in Macquarie Harbour, expansion into new, previously unfarmed areas, characterised as more oceanic sites, was proposed by all three salmon companies farming in Tasmania. In early 2016, Tassal applied to expand its operations into Okehampton Bay on the island's East Coast, a previously unfarmed region. The company applied to take over an existing aquaculture lease originally granted in 1999, which was put to the Marine Farming Review Panel to assess its suitability to farm salmon. This Panel comprised government-appointed experts in marine science, marine farming, marine resource management, environmental management, local government and planning.

Expansion into new lease sites instigated "conflict in terms of different values for different stakeholders concerning the same resource, such as recreational, cultural, commercial and ecological values" (Fleming et al., 2017). In February 2017, the then sustainability manager for Tassal, Tasmania's largest salmon farming company, wrote an article in the Hobart *Mercury* stating:

In recent months, however, Tasmania's nearly \$700 million-a-year salmon aquaculture industry has been facing unprecedented scrutiny in the media — locally and nationally. We're being challenged by some — but not all — environmentalists, politicians, scientists, community members and other waterway users to prove that our industry is sustainable — and if not we should slow, redirect or even halt its growth. (Sams, 2017)

Okehampton Bay is a favourite holiday destination for Tasmanians and an area new to salmon farming making it one of the more controversial expansion proposals. Community opposition to Tassal's expansion was made increasingly apparent in early 2016. Local opposition groups,

Marine Protection Tasmania and Let's Grow Tasmania's Future, were formed in response to Tassal's expansion into Okehampton Bay. The latter group was responsible for an advertisement distributed on television, their website and Facebook page, beginning its online presence approximately two months after the *Four Corners* program.

Tassal was the first company in the world to gain Aquaculture Stewardship Council (ASC) certification across all of its sites (ABC News, 2014b). This was later also achieved by Petuna in 2016 with Huon Aquaculture gaining ASC certification for one of its sites in 2017 (World Wide Fund for Nature, 2018). However, Tassal forfeited ASC certification for leases in Macquarie Harbour in 2016 and was ordered by the EPA to destock their lease closest to a World Heritage area by February 2017.

During this time, local NGOs inaccurately assumed Tassal retained ASC certification. Key lobby group Environment Tasmania made claims that the ASC audit process, along with Tassal's partnership with the World Wide Fund for Nature (WWF), was faulty and corrupt. Environment Tasmania initiated a petition "demanding that all certifications for Macquarie Harbour be suspended and a full and transparent review of just how Tassal has retained ASC certification while breaching key ASC standards for more than 18 months" (Environment Tasmania, 2016b). However, an auditor's report found that the ASC standard was correctly applied in the case of Tassal's Macquarie Harbour leases. Any non-conformities were correctly classified and closed out according to the ASC methodology during surveillance audits (see SCS Global Services, 2017). However, the report acknowledges that the ASC standard is globally applicable and local conditions might require a different approach. The auditors state that the standard may require changes, based on further scientific monitoring and potentially

a change of monitoring methods, to address local environmental impacts (SCS Global Services, 2017):

The ASC standards have been developed to be globally applicable with international multi-stakeholder engagement over many years. Local conditions may vary greatly from one site to another and, in some cases, a different approach might be necessary to deliver more accurate assessments. Identifying these and feeding them into the standard review process is important for the development of the standard. The audit team has committed to do that and will provide all standard specific issues to the ASC for their consideration. (SCS Global Services, 2017: 86)

The ABC's 'Big Fish' was a turning point. In the program, Huon Aquaculture (the second largest salmon producer and Tassal's major competitor) was portrayed as environmentally conscious. By February 2017, the company had broken industry ranks by leaving the state's seafood industry organisation and beginning unprecedented legal action against the state and federal governments for "fail[ing] to manage and protect the environment in Macquarie Harbour" (Meldrum-Hanna, 2017). While, if successful, Huon Aquaculture's biggest rival, Tassal, would have been impacted the most, the court case represents a remarkable move for a company to legally fight for tougher environmental regulations. Tassal, represented as a "Corporate Juggernaut" in the *Four Corners* episode, joined the proceedings in support of the government. This deepened the conflict between salmon aquaculture companies. While Huon eventually lost the court case (Shine, 2018), it was said to have won a social licence by being seen to care about the environmental sustainability of the plundered Macquarie Harbour when no other authority appeared to (Thompson, 2018).

Later in 2017, the Tasmanian State Government released the ‘Sustainable industry growth plan’ stipulating ‘grow’ and ‘no-grow’ zones in an effort to “achieve growth in a sustainable, transparent and accountable way” (Tasmanian Government, 2017b, Tasmanain Government, 2019). However, lack of transparency in the process of producing this map was expressed in a submission by the lead marine environmental campaigner for Environment Tasmania during the public consultation period, arguing that the processes by which government had taken to produce “go” and “no go” zones were ambiguous. This followed years of media debate regarding what was considered adequate approaches to transparency regarding the sustainability of industry. These media narratives regarding environmental risks of industry expansion, adequacy of regulation and governance mechanisms and the communication of these processes provide the backdrop for this research.

3.2 The Senate Inquiry into the regulation of fin-fish aquaculture industry in Tasmanian

A string of events leading up to the Senate Inquiry began with an email written in 2014 by Huon Aquaculture and Petuna addressed to the then Tasmanian Premier and Minister for Primary Industries and Water detailing concerns of high stocking rates, environmental impacts and inadequate regulatory approaches. Of particular concern was that Tassal would exceed their stocking limit. This email was leaked to the Greens party, which tabled it in the State Parliament. In the upper house of the Federal Parliament, the Greens proposed a Senate Inquiry into the matter and a reduction in stocking limits to represent pre-expansion numbers. The Tasmanian Premier declared the Inquiry a “witch hunt” (ABC News, 2015b). On 24 March 2015, the Senate referred the matter of the “regulation of the fin-fish aquaculture industry in Tasmania” for Inquiry which consisted of a period open to public written submissions, a two-

day hearing process (15 and 16 July 2015) and a final report due by 21 August 2015. The Inquiry investigated:

- (a) “the adequacy and availability of data on waterway health;
- (a) the impact on waterway health, including to threatened and endangered species;
- (a) the adequacy of current environmental planning and regulatory mechanisms;
- (a) the interaction of state and federal laws and regulation;
- (a) the economic impacts and employment profile of the industry; and
- (a) any other relevant matters.” (Commonwealth of Australia, 2015)

The Committee advertised the Inquiry on its website, in the *Australian* (a nationally distributed newspaper), and wrote directly to what it considered relevant organisations and individuals inviting submissions by 1 June 2015. The Committee received 103 submissions of which 15 were confidential. Anyone could make a submission to the Senate Inquiry, which presented information in a way that transparently identified sources and was structured to allow for public decision-makers to respond. The majority of submissions were made by local residents and businesses. Both national and regional NGOs and government agencies also made submissions.

One of the main outcomes of the Senate Inquiry was the debate that was instigated concerning the adequacy of environmental regulations and the tension presented by the government acting as both proponent and regulator.

3.3 *Four Corners* episode ‘Big Fish’

Following years of expansion, regulatory changes and environmental campaigning, an historically Tasmanian-contained conflict was broadcast to audiences Australia-wide in 2016 by the *Four Corners* episode ‘Big Fish’. This was aired nationally on television by the Australian Broadcasting Corporation (ABC), dedicating an hour-long segment to the salmon aquaculture industry in Tasmania on 31 October 2016. The program prompted a social media frenzy and almost tripled news media attention (Outlined in detail in **Chapter 5**).

The program focused on salmon farming in Macquarie Harbour on the West Coast (which was the focus of the Senate Inquiry) and the then proposed lease at Okehampton Bay on the East Coast, both close to world heritage and marine protected areas. The program interviewed the following: representatives of two of the three main salmon companies; a representative of a salmon feed company; an American lawyer; a Melbourne-based scientist; a Tasmanian mussel farmer; representatives of two Tasmanian NGOs (Environment Tasmania, a prominent environmental campaign organisation in Tasmania, and Marine Protection Tasmania a relatively newer organisation); a representative of one transnational NGO (WWF); and local business owners, mayors and various community members.

The *Four Corners* program discussed issues of expansion, lack of transparency and regulatory rigour and environmental and aesthetic impacts that were also present in the Senate Inquiry submissions. The program depicted the salmon industry as “powerful” and expansion as something that needs to be “reined-in” (Meldrum-Hanna, 2016). The program played a substantial role in portraying Tassal as a “corporate juggernaut” by revealing a perceived lack of transparency, apparent disregard for the environment and community mobilisation against

the company's East Coast proposal. Meanwhile, the program portrayed Huon Aquaculture as the humble, environmentally conscious company and "one of Tasmania's greatest home-grown success stories" (ABC, 2016).

The *Four Corners* program highlighted community anxieties concerning the expansion of the industry, particularly regarding Tassal's East Coast farming operations. This appeared to stem from the perceived lack of transparency, of Tassal in particular, amplified in the program by appearing to uncover internal Tassal documents and communications. For the first known time in the public debate concerning the adequacy of environmental governance of the Tasmanian salmon industry, the credibility of the WWF and the ASC Certification, which WWF co-founded as noted earlier, was brought into question. The risk to the ENGO's reputation was amplified due to claims made that its independence was compromised by the accreditation services work it was paid to do for Tassal. This professional exchange of services between Tassal and WWF was already publicly disclosed by both parties prior to the *Four Corners* episode.

In 'Big Fish', the EPA was depicted as lacking regulatory rigour and ignoring advice from Huon Aquaculture, Petuna and former Tasmanian salmon farmers regarding the risks to the marine environment posed by current practices and/or regulations. Additionally, the program addressed how scientific knowledge and data is used by different actors by highlighting the inconsistency in the interpretation of both environmental data available and the impact of salmon farming on the surrounding marine environment. However, the only scientific data that was discussed on the program concerned a select incident of low dissolved oxygen in Macquarie Harbour, giving little context of environmental process. This was presented by a

scientist from Melbourne University. Local scientists who worked directly with the Tasmanian salmon aquaculture industry and regulators were notably absent from the program.

Conflict over science information was entrenched in the public debate over salmon farming in Tasmania. This was exemplified in discussions regarding Tassal's latest proposal for a salmon farm off the coast of King Island, in the North West of Tasmania, where a community meeting was organised by opposition groups. These groups used crowd funding to engage what they determined to be 'independent' scientists to conduct an environmental assessment of the proposed farm, hoping it would indicate the area was environmentally unsuitable to farm salmon. However, a concern was raised by the organiser and leader of the meeting that this assessment could find that the location was in fact environmentally suitable. In response, another opposition group leader suggested that regardless of what the outcome of the assessment was they would oppose it because "that doesn't mean the community has given a licence to do it and that it is acceptable" (Marine Protection Tasmania, 2017).

Science was portrayed in the Tasmanian public discourse of salmon aquaculture as something that mattered alongside community and place, articulated in the script of an all-media campaign featuring the CEO of Tassal:

I grew up in Tassie. My journey's led me away and back again to this place and home I love.

All the things we hold near and dear: people, environment, science. What I love most about our company is what Tassal brings our local communities. We love the fish. But it is really about the people. (Tassal, n.d.)

The media campaign, rather than having the aim of directly selling Tassal products, sought to attract the attention of the local audience in attempt to win back Tassal's social licence to operate.

3.4 Beyond borders: Australia-Asia region as the transnational case of trade

International trade can emphasise the disconnect between impact on local environments and demands from distant markets (Steneck et al., 2011). What is considered important changes across local and global environments, debates and markets. For example, seafood traders in China view green labelling and concerns of environmental sustainability as less important compared to other factors such as food safety (Fabinyi et al., 2017). The risk of continued environmental impact can be considerable if this disconnect is not addressed through effective governing mechanisms. Therefore, understanding how the interpretation of environmental sustainability is modified transnationally is increasingly important to local and global governance of internationally traded seafood.

The environmental sustainability of seafood is prevalent in transnational market-based governance discourses involving governments, seafood harvesters and producers, NGOs, media actors and consumers (Barclay and Miller, 2018, Miller, 2014). Nevertheless, there are limited theoretical literature and empirical case study examples to understand how environmental concerns are conveyed transnationally in relation to media roles and environmental campaigning.

3.4.1 Trade context in the Australia-Asia region

A focus on the Australia-Asia region is pertinent as Australia recognises the opportunity for export of luxury export items (Fabinyi, 2007, Commonwealth of Australia, 2012). The Australian Government's enthusiasm and commitment to these Asian export markets is highlighted in reports such as the government's white paper, *Australia in the Asian Century* (2012) and the subsequent 2013 white paper 'Tasmania's place in the Asian Century'. The reports stipulate the opportunity for luxury export items, as the Asian middle class is predicted to grow to three billion Australian dollars by 2030 and have the largest population of high-income earners in the world within the next 20-30 years (Commonwealth of Australia, 2012). From 2013 to 2017, Australian export increased by 40% from \$1 billion to \$1.4 billion, with exports to China forming most of this growth (Fabinyi, 2007). The Tasmanian white paper specifies "enabling the expansion of salmon aquaculture in Macquarie Harbour [a large inlet on the west coast of Tasmania and the first area to farm salmon in Australia]" as one of the key activities to build export strengths and sustainable development (Tasmanian Government, 2013: 43). However, this growth agenda was challenged when the University of Tasmania's Institute for Marine and Antarctic Studies (IMAS) was reported to have found salmon farming to be responsible for "environmental collapse" in Macquarie Harbour (Woodruff, 2017). This was accompanied by increased media attention, local opposition and environmental campaigning. Parallel to the local public debates (as described in earlier sections), export revenue for salmon increased, with high-margin sales making China the most desirable international market for Tasmanian producers. Tassal's annual export sales revenue climbed

by 238% to \$44.1 million, while domestic revenue dropped by 2.8% to \$400.6 million (Tassal, 2017). As noted earlier, at this time Tassal opened an office in Shanghai.

The tension between the economic growth and environmental impact of the salmon industry in Tasmania is not expected to diminish. Seafood has been the fourth largest export for Tasmania and international trade is reported to have increased by 27% in 2015, including a doubling of sales to China (Tasmanian Government, 2017a). In 2015, Australia also signed free trade agreements with Japan and China. As we enter the ‘Asian Century’, demand for resources, market opportunities and changes to media and communications practices and strategies is expected to intensify in the Australia-Asia region. Adjacent to this, rapid growth in both seafood consumption and production, environmental effects and arising environmental conflicts is expected in the Australia-Asia region (Cao et al., 2017). To complement the existing scholarship on local sustainable seafood discourses within Asian export countries (see Fabinyi, 2016), further examination of how local and global environmental concerns of seafood production interact and flow in the Australia-Asia region is required.

The Chinese seafood market (both production and consumption) is the largest in the world. Chinese consumption patterns are likely to have the most influence in global fish markets into the future with the region expected to account for 38% of the global consumption of food fish by 2030 (World Bank, 2014). These consumption patterns are highly relevant to global environmental outcomes. The scale of this consumption and trend in luxury species has been directly linked to overfishing and stock declines in some fisheries (Cao et al., 2017, Fabinyi et al., 2012). Rising demand for luxury seafood in China has initiated a “global blue gold rush”

(Caplog Group, 2014). For example, in 2014, accessing the growing Chinese middle-class consumer became easier and cheaper with the launch of ‘Gfresh’, an online marketplace facilitating the import of seafood to China, directly linking business and consumer. In the company’s first two years of operation, it is reported to have “processed more than \$200 million worth of wholesale live seafood orders” (Kolodny, 2017). The platform notes origin, species and quality of their catch.

China made up 65% of Australia’s total sales in 2017, an unusually high export year with 32% increase from 2008 to 2018 (FRDC, 2018). Comparatively, Australia only made up 0.3% of China’s Atlantic salmon imports in 2017, with 0.53% from 2008 to 2018. Additionally, there is a growing discourse regarding Asian investment in Tasmanian salmon companies, the strengthening vertical monopolies that are forming and possible implications for future food security (O’Conner, 2018, MacDonald, 2018, Thompson, 2011b). In emphasising the significance of the Chinese market for the Australian economy and the relative insignificance of Australian product for China, these figures make clear the vulnerabilities of trade for Australia. These trade vulnerabilities have been accentuated during the COVID-19 pandemic as China blocked imports, imposed new customs inspections and imposed considerable tariff increases on Australian primary industry products. This was said to be China punishing Australia for calling for an investigation by the World Health Organisation into the origins of the COVID-19 virus in China (Niewenhuis, 2020). Tasmanian Atlantic Salmon were among the Australian seafood products that were at risk of shipment delays into China leading to commercial losses (Australian Government, 2020).

Australia's trade relations with its Asian neighbours is a prominent agenda for governments and industries. At the 2016 G20 meeting the then Australian Prime Minister, Malcom Turnbull, is reported as stating: "It would be a mistake of historic proportions for the G20 to stand by while scare campaigns not based on facts or evidence foster protectionism, or indeed isolationism," (ABC news, 2016a). Turnbull reportedly stressed that "protectionism, trying to turn back the clock on economic reform, that is the road to poverty" (ABC news, 2016a). In other words, G20 leaders should ignore economic scaremongering and be aware of the risks of opposition campaigning against efforts to strengthen trade relations, particularly with Asia.

The transnational reality of Tasmanian farmed salmon is that it is not simply a locally produced product which is sold domestically (i.e. with a simple, linear production and value chain). Rather, the operating environment in which it is produced and sold is characterised by international investment, local campaign messages reflecting international frames (Wood, 2017), exchange of expertise, technologies and products from overseas, and global environmental sustainability certification (Rockcliff, 2017). The transnational flow of personnel, investment, resources and information is expected to increase and congregate in the Asian region. As Australia's natural resources are put under pressure to supply the growing middle class of Asia (Cao et al., 2017), Lester (2014) highlights the increasing relevance and importance of the notions of 'locally affected', 'distant aware' and 'global risk' in her examination of transnational publics and environmental conflict in the Asian century. Lester (2014) brings to attention the challenges and potential for regional conflict as competition for natural resources increases in the Australia-Asia region:

If media and communications, community organisations and individuals (among others) have crucial roles to play in developing Australia's 'two-way' links with Asia, these may only rarely present a 'public diplomacy' stance that promoted the Australian government or business community's immediate interests. Instead, they will increasingly produce multi-directional and multi-layered flows of political communication and action in which distant social networks join with those affected to resist development, end resource procurement and undermine growth strategies. How Australian government and industry choose to respond to and manage the economic and political impact of these protests and the still poorly understood transnational communities of environmental concern that result will be a crucial test of Australian claims to democratic and market leaderships among its regional neighbours in the Asian Century. (Lester, 2014: 168)

Over the past decade, Tasmanian-based environment campaigners have cultivated strong national and international networks from previous successful transnational campaigns regarding the clearing of Tasmanian old growth forest for export into Asian Markets. These campaigns targeted managers in Japanese corporations (using letters and reports) and were successful in causing the corporations to discontinue contracts with Ta Ann Tasmania – associated with the Malaysian company Ta Ann holdings (Lester, 2016b, 2019).

For transnational networks of NGOs and grass roots lobby groups to influence the operations of large transnational corporations, they mobilise support at various locations and distances from the actual site of contention. This puts local issues on the political agenda of other countries, thus turning local conflicts into transnational ones. Their influence on policy formation should not be underestimated (Holzer, 2001). Given the export of Tasmanian salmon into Asian markets is increasing, combined with Tasmania's notable history in

transnational environmental campaigning, the industry is positioned for local environmental concerns to extend into Asian supply chains.

The link between China's consumption patterns and impact on global fish stocks, combined with Asia's contribution to Australian trade, further highlights the importance of investigating transnational flows of environmental concern (Fabinyi et al., 2017). With increased exports to China and Chinese investment in the state, Tasmania provides a unique and critical opportunity to explore what Lester (2014) describes as "multi-directional and multi layered" links with Asia and "poorly understood transnational communities of environmental concern" and the responses they elicit.

3.5 International: Norway as the transnational case of information flows

In response to this public scrutiny and politicisation of salmon aquaculture, a number of studies have examined how such conflicts occur in the news media in a range of farming regions (Amberg and Hall, 2010, Olsen and Osmundsen, 2017, ABC news, 2015a). Scholars have also compared political and ecological growth challenges in farming countries (Young et al., 2019). However, very little attention has been given to the transnational and international flows of information regarding salmon aquaculture (see Bocking, 2012). This thesis examines for the first time how environmental risk discourses compare and flow between Australia (a relatively new salmon aquaculture industry experiencing expansion and conflict) and Norway (a world founder and leader in salmon aquaculture for which the Tasmanian industry emerged). This contributes to the knowledge of how the same industry can experience similar or different trajectories, how environmental conflicts change depending on the age of industry operations, different public spheres and levels of expansion. Olsen and Osmundsen's

(2017) media analysis highlight that perceptions of aquaculture and the associated environmental risks might be influenced to a greater extent when these risks are associated with global environmental discourses compared with actual or experienced reality at the site of production. This aligns with Urkidi (2010) work which makes the connection between the scaling-up strategy and glocalisation as strategic schemes to access political opportunities and forces the opposition to engage in global oriented discourse. For example, the importance placed on the localised environmental impacts of fin-fish aquaculture in international discourses of global consumption of sustainable seafood (e.g. World Wide Fund for Nature, 2018) is promoted by ‘supralocal’ actors (those which transcend location or are associated with more than one location).

Norway is the oldest and largest producer of farmed salmon globally and a world leader in the globalisation of the international seafood market (Liu et al., 2016). Originating in the 1960s, the foundations of the industry occurred in Norway and were supported by government in an attempt to enhance the economies of regional fishing communities (FAO, 2012). After biological and technical breakthroughs such as smolt rearing and feed, the industry experienced considerable growth in the 1980s. Norway now produces 60% of the world’s farmed Atlantic Salmon. Continued developments in production and management efficiencies and global markets allowed the sector to become the large-scale commercial industry it is today (Liu et al., 2016). The industry went from local small-scale farms producing 500 tonnes in the early 1970s to large multi-national companies producing 1.2 million tonnes in 2018, worth \$64.5 billion (Norway Statistics, 2019) and constituting 70% of Norway’s seafood

exports. Aquaculture has grown at the highest rate of any sector of the Norwegian economy with an average growth of 10% per annum over the past 50 years (Hersoug et al., 2019).

Of the 20 largest salmon aquaculture companies, 11 are headquartered in Norway (Berge, 2017). Mowi (formally Marine Harvest) has been the largest salmon farming company since 2000 with a global harvest volume of 354,700 tonnes in 2017, with 210,200 tonnes of this was produced in Norway (Marine Harvest, 2018). Mowi also diverged from the rest of the companies in 2014 when it challenged the adequacy of management approaches for mitigating lice problems (Bailey and Eggereide, 2020).

The industry was initially characterised by a narrative of rural development and local ownership. As production grew, issues with disease of farmed fish became prominent, leading to the environmental degradation narrative in the late 1980s (Fløysand and Jakobsen, 2017). The increase in production and disease outbreak also caused product prices to fall. In response, the government removed regulations that facilitated the locally owned and small-scale structure of the industry. While bigger companies began to dominate with large-scale production and focused on forming a global industry, the industry and government continued to promote the rural development narrative. As sustainability principles gained traction, the narrative of global demand was promoted to allow the industry sector to maintain a growth agenda while remaining legitimate within the sustainability discourse. This shifted the narrative of local environmental impact to the nutritional needs of a global community. Here, industry has a responsibility to supply food to a growing population.

The Norwegian government champions the aquaculture sector's goal to grow to an industry worth \$100 billion by 2030 and five times that by 2050 (Hersoug, 2015, Norsk Industri, 2012).

Along with industry growth there has been increasing awareness and extensive media coverage of both the positive impacts such as production of healthy food for a growing population and negative impacts including the environmental externalities of such economic pursuits (Liu et al., 2016). Over the past decade, the environmental risk narrative has prevailed and negative framing of the industry has been prominent in public discourse (Young et al., 2019).

Growth of the sector has flattened in recent years due to management decisions that restricted expansion in response to concerns over struggles with sea lice infestations. In 2009, the Norwegian government released the ‘Strategy for an environmentally sustainable Norwegian aquaculture industry’ noting areas that identified where aquaculture practices were likely to have a negative effect (Norwegian Ministry of Fisheries and Coastal Affairs, 2009). In 2014, the government also released 45 ‘green’ licences for the sector which required licence holders to enhance technologies that reduced the environmental impact of salmon aquaculture (Fløysand and Jakobsen, 2017). Of these, 35 were ‘light green’, requiring those applying for the licences to develop improvements to the current open-net-pen technology. The remaining 10 were ‘dark green’, which required a discernible reduction in fish escapees and less than 0.1 adult female sea louse per fish. ‘Greening technologies’ that were trialled and developed using these licences included land-based production systems, closed containment systems, and offshore aquaculture operation systems (Fløysand and Jakobsen, 2017). The announcement of these licences led to an increase in innovative technology projects reinforcing the ‘greening’ of the industry (Christiansen, 2017).

The third-party certification programs also received criticisms from environmental campaigns. A petition with 3,369 supporters run by Global Alliance Against Industrial Aquaculture (GAAIA) in 2011 was sent to WWF and the ASC, arguing that their collaboration with Mowi, the largest and multinational salmon company, was contributing to corporate green-washing (Staniford, 2011). GAAIA's website states "WWF Norway even accepted blood money from the world's largest salmon farming company (Mowi) in return for the panda stamp of approval" (GAAIA, n.d.). In its mission statement, GAAIA opposes WWF and ASC, along with aquaculture companies, exhibiting concerns that the "Standards for Responsible Aquaculture" they imposed are not stringent enough and "fail to address welfare and food safety issues and allow for the use of toxic chemicals, antibiotics, unsustainable feed, escapes, non-native species, GM feed and the killing of marine mammals." There are also campaigns claiming that the soy used in the fish feed is from unsustainable sources. For example, one of the prominent concerns of environmental campaign organisations in Norway at the time of this research was the use of soy in the feed to produce salmon was sourced from farms that had cleared rainforest in Brazil (see Garberg et al., 2014). The fish feed industry transitioned to using soy in response to concerns regarding the poor conversion ratio of fish input (to feed the salmon) to the fish produced. Following further concerns about the providence of the soy, the fish feed industry claimed to use certified products, proving that the soy did not come from the regions of concern.

4

RESEARCH APPROACH AND METHODOLOGY

4.1 Introduction

This chapter outlines the approach taken to answer the research questions and the overall aim of the thesis as posed in **Chapter 1**. To understand how environmental risks are negotiated via complex media and communications process, both locally and transnationally, a case study approach is applied which draws on qualitative methods. This chapter explains the selection of the case study, empirical material and discusses the approach and theoretical underpinnings for data collection and analysis. The research combines content analysis with critical discourse analysis of semi-structured in-depth expert interviews, news media text and scholarly accounts of media analysis. This chapter also reflects on limitations, challenges and quality of the research approach.

4.2 Research aim and question

The aim of this thesis is to inquire into how mediation of environmental conflict occurs and is examined via the overarching research question: *How are environmental risks of common pool natural resource use articulated and negotiated locally and transnationally through processes of media and communications?* The research problem this study addresses is explained in **Chapter 1**, and the theory, concepts and case context discussed in **Chapters 2 and 3**.

In the context of increasing pressure and conflict over natural resources, the overarching aim of the thesis is to investigate and critically analyse how environmental risks are publicly constructed and debated

4.3 Research approach and assumptions

Common throughout this study is the acceptance that making decisions regarding environmental risk is political and therefore a subjective process. The relationship between

mediated environmental conflict and the physical or tangible environmental outcomes remains theoretical in this research. From this theoretical foundation the thesis explores the implications of the communications strategies and mechanisms that different stakeholders undertake and the presence and absence of competing claims for the governance of environmental risk.

In qualitative research, the researcher is recognised as an active constructor of the research, from framing research questions, data generation and analysis, to synthesis and interpretation of findings. Interpretations of qualitative data are seen to be subjective and partial with objectivity considered impossible. Therefore, researcher reflexivity is imperative at every stage of the research process. Here, I reflect on the research process as a whole and my ontological and epistemological underpinnings and assumptions. The intention here is not to find a single truth, but rather open up the understandings and discussion on how we negotiate environmental risk. This research engaged in three main undertakings:

- 1) *Problematisation*: where the researcher does not discover a problem, but rather the problem is constructed. The researcher identifies something that is perplexing and worth investigating further. In this thesis, I was intrigued by how different knowledges and information were perceived and considered in environmental governance at different scales and how this process was negotiated between and among different stakeholders. This raised questions of legitimacy and power particularly in the interaction between environmental campaigns, formal decision-making processes and policy change, market mechanisms and scientific ‘evidence’. What I found increasingly

perplexing is how the local and transnational interact in this context and to understand what roles media play.

- 2) *Empirical inquiry underpinned by theory:* Grounded in existing ideas, concepts and theories this thesis employs an empirical research approach in order to contribute to and build on current knowledge. This empirical and theoretical work provides the basis for developing context applicable implications and considerations for claims-makers and decision-makers in environmental conflicts. From the empirical data, codes, categories and themes are generated as a basis for a critical analysis of discourse.
- 3) *Critical explanation of the problem:* During the research, I presented my identified problem, findings and insights to my supervisors, at multiple international conferences spanning environmental communications and seafood governance and three papers have been produced for publication in peer review journals. In doing so I have received critical review of my research approach, empirical data gathering and analysis, and the synthesis, interpretation and the meanings I make regarding the implications of the research and its application. This critique has been consistent and enhanced my constant evaluation and revaluation of my research at every step.

The local and transnational elements of environmental conflict is a complex system with multiple feedback loops (rather than one-directional causal relationships), which requires research that addresses these complexities. With the ambition of embracing complexity and uncovering detailed descriptive and empirical accounts of public risk negotiations, power

relations and interactions between knowledge information and institutions in the context of environmental governance, the research utilises a case study approach. This generates empirical data for analysis guided primarily by qualitative research methodologies. Such investigations of complex social interactions are arguably more fruitful compared to other more simplistic research approaches (Wolfe et al, 2013: 10).

Risk involves perception and individuals can interpret risk differently (Howes, 2005). Even if individuals can come to the same definition of risk, they may rate the severity differently – for instance by scientists, politics, publics, corporations, NGOs and economists (Landy et al., 1994). Realists take the view that risks are ‘real’ and can be identified and defined by science. In this approach, divergence in risk perceptions can be attributed to lay person ignorance, misinterpretation of expert information, or lack of data or uncertainties in the science. However, the realist approach fails to adequately acknowledge the social context and the norms and boundaries this creates for which risk is perceived and negotiated.

Because the research aims to examine how environmental risks are constructed publicly at the discursive level, the focus of analysis is discourse. Here I draw on Dryzek (2013) to define discourse as a “shared way of apprehending the world … constructing meanings and relationship and helping define common sense and legitimate knowledge”. In this way, I do not assume that impact to the physical environment is a given when producing seafood for human consumption. If my ontological position (i.e. view about how the world works) is one where environmental risk is not fixed but rather socially constructed, I require an epistemological (i.e. idea about how we generate knowledge about the world) approach that helps me investigate knowledge and information as a product of the social and political

context in which it was shaped. Departing from the positivist position of environmental impact, I shift the focus of my analysis to how the risk of environmental impact is viewed and produced as a topic of concern. I want to know how environmental risk emerges as an object in the discourse and the tensions and resolutions in social interactions when negotiating this object. This interest in discourse is based in post-structural discourse theory, a branch of critical theory (Guba and Lincoln, 1994), whereby individuals assume different positions on a given subject at different moments in space and time dependent on the discourses that they are presented with and have access to (Davies, 2004). Here multiple discourses often conflict while each try to dominate the others (Kress, 1985).

While post-structural theory deems knowledge as socially constructed, it does not reject the existence of the physical world or the individuals in it, in contrast to what some critics suggest (e.g. Quigley, 1999, Litfin, 1994, Irwin, 2001). Accused of neglecting a solution (Irwin, 2001), it unapologetically pays attention to the construction of the problem and challenges the status quo by considering a range of alternatives and therefore identifying multiple opportunities for action, rather than one true and correct outcome. In fact, defining the problem and revealing underlying interests is considered the first and most important step in conflict resolution (Marcus et al., 2012), with wicked problems rarely being completely ‘solved’. Moreover, socio-ecological issues are not binary, and post-structuralism allows the research to capture complex and fluid ideas. For example, the term ‘sustainability’, ‘environment’, ‘development’ and ‘community’ are all interpreted and experienced differently by different individuals and even likely to shift across space and time for individuals.

To uncover the complexity of environmental conflicts and governance, a qualitative approach was taken in both data generation and analysis. Primary and secondary data were collected including news media (**Chapters 5 and 6**) and peer reviewed scholarly accounts of local mediated debates (**Chapter 7**) (secondary data) and interviews with stakeholders that had expertise in the environmental governance and communications of salmon aquaculture and seafood in Australia, Norway and Asia and on a global scale (**Chapters 5, 6 and 7**) (primary data) (see below sections for more detail). Because the research aims to examine how environmental risks are constructed publicly at the discursive level these data are analysed using critical discourse analysis, underpinned by content analysis of news media and literature.

4.4 Research Design

4.4.1 Case study

Applying this empirical qualitative research to a case allows for in-depth inquiry of a real-life phenomenon within a specific context and provides valuable insight which can be applied to other cases (Yin, 2014). The importance of the background context provided by a case study is foregrounded by Wodak (2001) stating that analysis should take note of; “1) the immediate, language, or text-internal context; 2) the intertextual and interdiscursive relationship between utterances, texts, genres, and discourses; 3) the extralinguistic social variables and institutional frames of a specific “context of situation”; and 4) the broader socio-political and historical context, which discursive practices are embedded in and related to”. It is suggested that constantly moving between these perspectives for evaluation in a case study is one way to minimise the risk of bias in the interpretation of results and lack of ability to generalise

broad implication, common criticisms of the case study approach (Flyvbjerg, 2006). Eliciting generalisation for the broader society can be achieved by appropriate case selection (as is the case in the natural sciences). Case studies also offer the opportunity to help explain or uncover phenomena that are not readily understood by existing theory (Bradshaw and Wallace, 1991). The approach provides the opportunity to produce practical knowledge supported by practical experience, which is no less valuable than general theoretical knowledge that is independent of context (Flyvbjerg, 2006). Comparison of cases allow researchers to better understand special and temporal differences and expose contributing factors (Ragin and Zaret, 1983).

4.4.1.1 Case selection

When applying a transnational research agenda, many researchers advocate the importance for foregrounding the local reality within global communications studies (Lester, 2016a, Kraidy and Murphy, 2008). The research began at the local level by obtaining a detailed account of the publicised environmental conflicts following key events in the expansion of salmon aquaculture in Tasmania: the Senate Inquiry and the *Four Corners* episode. Tasmanian salmon aquaculture provided a local context for which the research could expand from. These locally contained debates (**Chapter 5**) were then placed within global environmental risk discourses in the seafood industry (**Chapter 6**) and the international salmon aquaculture sector (**Chapter 7**). This approach contributes to critical understanding of how environmental risks are defined within local and international communities and sustainability discourses flow and interact transnationally.

The expansion of salmon aquaculture in Tasmania and Australia's free trade agreements with China and other Asian countries at the time of the research provided a timely and opportune

case to contextualise the theories and concepts of media roles and transnational environmental campaigning in seafood governance in the Australia-Asia region (**Chapter 7**).

This Asia-based research provided insight into the largest export market for Tasmanian salmon products. Additionally, the mediatised environmental conflicts observed in Tasmania and Norway were drawn upon to investigate the extent to which environmental risks and associated discourses are shared between nations that farm Atlantic salmon and what these could tell up about the trajectory of the Tasmanian industry. Norway was chosen because it is the oldest and largest producer of farmed salmon globally and a world leader in the globalisation of the international seafood market (Liu et al., 2016) with early connection to the foundations of the Tasmanian industry.

The case study provided current, visible and contentious environmental politics to investigate three spheres of conflict and how they interact; 1) expansion at the site of salmon farming causing regionally contained tensions and contested claims (**Chapter 5**); 2) how this is transferred through export markets and supply chains (Chapter 6); and 3) how this tension is manifested transnationally, forming a global community of concern (Chapters 6 and 7). The case has high levels of general public interest, significance across local, national and global spheres and is unique, all of which are key attributes essential for research (Yin, 2014).

4.5 Data collection and analysis

This research uses multiple methods of data collection, generation and analysis for which each are rigorous, valid and complete in their own right. The results from these individual methods are then triangulated to form the overall research (Morse, 2003), described by Neuendorf (2004:33) as a ‘highly desirable situation’. In doing so the strengths and weaknesses of each

method is compensated for by the other. Triangulation in research is considered to improve validity of the results by assuring legitimacy and accuracy (Jick, 1979) and is defined by Denzin (1970:297) as “the combination of methodologies in the study of the same phenomenon”.

This thesis applies multiple approaches to collect and generate qualitative data: The following methods were applied in this research:

1. Qualitative content, framing and critical discourse analysis of news texts that reference the Tasmanian salmon aquaculture debates,
2. Critical discourse analysis of semi-structured interviews with key export stakeholders in the case of Tasmanian salmon aquaculture, Norwegian salmon aquaculture, Asia export markets and international seafood discourses,
3. Direct observation of key events in the global seafood, Asian seafood trade, Australian seafood and Norwegian salmon aquaculture were attended, and
4. Systematic literature review of scholarly accounts of news media representation of the Norwegian salmon aquaculture industry debates.

The research includes a two-step analysis of interview and news media texts, using NVivo 11 software (QSR International), a software that allows for descriptive hierarchical coding of prevalent concepts within qualitative data. The first step was a content analysis, which served to highlight areas for further discourse analysis to “uncover the way reality is produced” (Hardy et al., 2004: 19). Content analysis identifies the frequency of content making discourse themes that are present in the text clear and quantifiable (Riffe et al., 2014). For this thesis, both content analysis and critical discourse analysis are applied as a means of providing the

most breadth and depth for the research. The most notable limitations of, and threat to reliable, qualitative research methods is the risk of “excessive interpretation on the part of the researcher” and the risk of losing the richness of the original data by way of excessive reduction (Elo and Kyngäs, 2008: 114). It is not possible for any researcher to maintain complete objectivity during their research and approach. Therefore, qualitative researchers must acknowledge and interrogate their bias through reflection, triangulation of data and combination of analytical methods. While both content analysis and discourse analysis rely on the researcher’s interpretation, each method provides something the other cannot. The nature of content analysis assures that all units of data receive equal treatment (Sharp and Richardson, 2001). The content analysis drives the discourse analysis in that it identifies areas for further investigation.

In order to make a full assessment of the influence of media, Sima (2011) recommends media-based assessment of stakeholder activity be supplemented with interviews and/or observation. Thus, while the media and textual analysis allows for examination into the claims-making and decision-making discourse in the public sphere and the outcomes of environmental campaigning, the interviews and direct observation afford insight into how these responses, outcomes and agendas are devised.

Wodak (2001) also suggests triangulation by way of using empirical data alongside background information. Similarly, Kitzinger (2007) identifies the importance of context of an issue by stating that researchers should start with “immersing themselves in the media coverage” supplemented by material such as that produced by campaign groups or discussing the issue with key stakeholders. Additionally, triangulation in research is considered to improve validity

of the results by assuring legitimacy and accurate representation of the problem (Jick, 1979). For example, Andersen (1993) argues that an analysis of an issue “based purely on the content of media coverage paints a rather one-sided picture” and suggests that this analysis should be accompanied by interviews with the sources themselves as well as with media journalists.

Table 3 outlines the data sources that were required to answer different research questions.

Table 3: Overview of data sources used to answer each research question

Data source	RQ1 What are the dominant claims and counter-claims being mediated in relation to environmental risk?	RQ2 How and by whom are environmental risks being negotiated publicly?	RQ3 How do local mediatised environmental conflicts and transnational discourses of environmental sustainability interact?	RQ4 What are the roles of media and processes of mediatisation in communicative governance in cases of environmental risk?
News media text	✓	✓	✓	✓
Semi-structured in-depth interviews			✓	✓
Systematic literature review			✓	✓
Direct observation			✓	

4.5.1 Discourse analysis

Studying discourse is a common approach in media and communications fields (Peeples, 2015). There are various approaches to analyse these discourses and they all encompass important assumptions regarding the relationship between social and political change. Schiffrin et al. (2003: 1) explains there are three main categories that define discourse “(1) anything beyond the sentence, (2) language use, and (3) a broader range of social practice that includes non-linguistic and nonspecific instances of language”. There are varying degrees

of importance given to communication and institutional structures as factors for bringing on social change (Sharp and Richardson, 2001).

Discourse approaches are generally referred to as either ‘descriptive’ or ‘critical’ (Gee, 2014: 8). A common approach to descriptive discourse analysis is content analysis which focuses on the themes and issues raised in discourse. Critical discourse analysis applies and considers concepts of social power (Van Dijk, 2001). This facilitates exploration of sociological avenues where discourses are “multiple and competing sets of ideas” where relationships between practices and institutions are acknowledged (Sharp and Richardson, 2001 :196). Discourses function in a way that promote, make accessible or normalise certain ways of perceiving the world. Analysis is critical because “no discourse can ever be neutral; it is always involved in circulating and promoting one form of knowledge, of values, of ways of being and living over another; it is involved therefore in promoting the interests of a particular social group” (Morgan, 1996b: 71). Critical discourse analysis was developed by Norman Fairclough, among others, and focuses on how power flows and operates within society using language (see Fairclough, 2013). This approach was applied to this research to understand the underlying social dynamics and political realities of mediatised environmental risk negotiations. By doing so, it places the data and results within societal context, with particular attention payed to power to help understand how texts are produced and what they ‘say about the society in which it was produced for’ and the impacts ‘text may have on social relations’ (Richardson, 2007: 42). Critical discourse analysis is considered as “the single most authoritative line of research regarding the study of media discourse” (Carvalho, 2008: 162).

This thesis applied discourse analysis to examine how environmental risks are constructed publicly at the discursive level to answer the questions of salience of issues, trends and patterns in media. The analysis techniques of discourse and content analysis are employed by researchers to uncover the frames that are used to portray a particular issue. Content and discourse analysis serve as the process underpinning the frame analysis (Kitzinger, 2007). How risks are socially constructed is determined by how they are communicated in the public sphere (Cottle, 1998). Framing is closely tied to agenda setting, however framing goes a step further. The literature distinguishes between first and second levels of agenda setting where 1) first level agenda setting refers to what media tells the audience to think about – *what* topics are present or absent in the news, campaign, media release etc, and 2) second level agenda setting (and framing theory) is how media frames the information in order to control *how* the audience thinks about an issue.

Because the process of critical discourse analysis is detailed and time-consuming, such research is often limited to a smaller sample (Machin and Mayr, 2012). Rather than collecting texts over a long period of time, it is often the case that a detailed review is conducted of a sample that is taken to represent a ‘snapshot’ in time (Carvalho, 2008: 173). These temporally concentrated snapshots which see the exchange of power occur between actors or groups are referred to by Carvalho (2005) as ‘critical discourse moments’. Generally following key events in the conflict timeline, they change the course of the conflict or reaffirm the existing trajectory of the discourse. The concept of ‘critical discourse moments’ identifies that there are often specific events where the prevailing discourse is contested, multiple alternative positions are generated and power challenged (Carvalho, 2005). By identifying critical

moments, rich analysis of the different value positions engaged in issues of debate and conflict can be conducted.

In line with Patton (1987), this research undertook three key stages in data analysis; 1) organise data; 2) reduce data into concepts/codes/categories; and 3) identify themes and correlations in data. Descriptive coding was used to identify and categorise statements made by interview participants and in media and textual documents. Hierarchical coding was employed to assist with the interpretation and organisation of results. Open coding, the first step in the coding process, identifying the major themes, was first applied to identify major headings and subheadings. Axial coding, a process that relates codes to each other, looked further into the nuances of these initial categories, exploring what causes or influences categories and the relationships between them. As the coding process progressed coding and analysis occurred simultaneously.

4.5.2 Application of discourse analysis

Both primary and secondary data were generated and collected in this research. Primary data consisted of key informant interviews which complemented the collection of news media and peer reviewed scholarly accounts of local mediatised debates. Table 4 outlines the different data sets for which discourse analysis was applied that are presented in each results chapter.

Table 4: Overview of the data sets and what results chapters they are presented in.

	News media following the senate Inquiry (58 news articles)	News media following the <i>Four Corners</i> Episode 'Big Fish' (219 news articles)	Interviews Tasmania (16)	Interviews Asia (5)	Interviews Transnational (6)	Interviews Norway (7)	Scholarly accounts of news media representation of the Norwegian salmon industry debates (6 papers)
Chapter 5	✓	✓	✓				
Chapter 6		✓	✓	✓	✓		
Chapter 7	✓	✓	✓		✓	✓	✓

4.5.2.1 News text selection

To begin, I had to determine how to select the text for analysis. Challenges were already met at this first task, considering that news texts are published and shared across multiple platforms and often boundless in the global flow of information (Beck, 2011). Because of this, research practice in the field of media and communications no longer accepts the categorisation of ‘traditional’ (print) vs ‘new’ (digital) because it fails to adequately represent how audiences consume media (Beck, 2011, Couldry, 2012, Hepp and Couldry, 2009). I sought advice from media and communication scholars, whom often used news text, as opposed to spoken word and/or visual images on television, to reflect public discourse on environmental issues (see Amberg and Hall, 2008, Olsen and Osmundsen, 2017, Feucht and Zander, 2017, Bocking, 2012). Certainly, a key factor influencing this research was that historical records of newspaper articles are much easier to access and analyse. The online news archives also provide a reliable data source where it is clear what is, or is not, being archived. Continuing this tradition, it was assumed in this research that the audience was the Australian public who used news outlets with both print and digital platforms.

During the period of research design there was considerable spill-over of public debate into social media (i.e. Facebook and Twitter). Largely unmediated by journalistic norms and practices, social media provided insight into the values, beliefs and interests of multiple Australian publics. To capture these insights, I monitored content present on social media between mid-2016 and early-2018. This included Twitter posts and Facebook pages of opposition groups, salmon companies, science institutions and political representatives. This shaped my understanding of the case and how it was portrayed across media by giving

background context to those with interests, information flows, power relations and provided colour around the mechanisms and strategies for claims-making and their responses. However, due to the limitations of collecting and downloading social media data, particularly historical data (Stieglitz et al., 2018), formal analysis was not able to be conducted and therefore data from social media as a data source is not included in this thesis. Furthermore, Wodak and Meyer (2009) recommend using only one form of media in the analysis.

News articles were collected using the Factiva news database, claiming nearly 33,000 sources of news globally (Dow Jones, 2018). Search words for both data sets were: “salmon farm” OR “fish farm” OR “salmon aquaculture” OR Tassal OR “Huon Aquaculture” OR Petuna. Search criteria also stipulated Australian sources. The timeframe for which articles were collected was chosen with the aim of capturing media representations of critical moments in the discourse. Hence, the six-month period following the Senate Inquiry (between 15 July 2015 and 15 January 2016) and the *Four Corners* episode ‘Big Fish’ (between 1 November 2016 and 1 May 2017) was chosen. More detail about these events is given in **Chapter 3** and **Chapter 5**. These time frames also ensured there was no overlap between the two events. Submissions to the Senate Inquiry were invited on 24 March and due by June 1 and the Committee’s report was submitted 21 August. While the proceedings of the Senate Inquiry spanned several months, the public hearings were held on 15 and 16 of July and was used as the event date for collecting news articles. The *Four Corners* dataset started the day after the show aired.

The top five news sites that published the most articles for both the Senate Inquiry and *Four Corners* were: *ABC News* (14 and 49), *Launceston Examiner* (10 and 28), *Burnie Advocate* (21 and 37), *Hobart Mercury* (13 and 98) and *The Australian* (0 and 7) (Table 5). Other news outlets

which emerged from the key word searches primarily published financial information (e.g. regular share price updates) and were excluded from the analysis. Also excluded were stories concerning other fish farming operations around Australia. Subsequently, these five news outlets were considered the most representative data sources for investigating the Tasmanian salmon farming debate and articles published by these news outlets were included in the analysis (Table 5). A total of 277 news articles were included in the analysis, split into two corpus: the Senate Inquiry comprising of 58 news articles and *Four Corners* comprising of 219 news articles. This sample included opinion pieces as well as articles written by journalists.

Table 5: Details of news media used in analysis (Roy Morgan, 2019b, ABC, 2017a, Roy Morgan, 2019a).

News providers	Reach	Readership	Ownership	Following the Senate Inquiry	Following 'Big Fish'	Total
Hobart Mercury	Local (Hobart)	Reach of 540,000 readers monthly (cross platform)	News Corporation	13	98	111
ABC News	National	Reach of 7.7 million readers monthly (digital)	Australian Government with editorial independence via the Australian broadcasting Corporation Act 1983	14	49	63
Burnie Advocate	Local (regional north of Tasmania)	171,000 monthly readership (cross platform)	Fairfax Regional Media	21	37	58
Launceston Examiner	Local (regional)	315,000 monthly readership	Fairfax Regional Media	10	28	38

	north of Tasmania)	(cross platform)				
The Australian	National-Australia's only general newspaper	Reach of 4.4 million readers monthly (cross platform)	Murdoch	0	7	7
Total				58	219	277

The dataset provided by Factiva includes both articles written by journalists/news outlets and opinion pieces submitted by any interested parties or the general public. Opinion pieces were included in this data set because they are the outcome of news media practices and decisions – that is, they meet publishing criteria and are presented to readers as worthy of publication. They are part of the package of information on salmon aquaculture that is presented to readers. The information contained in the opinion pieces contributes to mediated reality and public knowledge (Johnson-Cartee, 2005, Page et al., 1987). See also Olsen and Osmundsen (2017) and Osmundsen and Olsen (2017).

For comparison, a study analysing the Norwegian salmon aquaculture debates included news articles from 9 Norwegian newspapers with local, regional, and national audiences over 3 years from 2012-2014 comprised of 827 articles. If this sample were to include 'small notes' and debate contributions, making it more similar to the sample used in this thesis, the sample would have been 1,304 articles. Considering the salmon aquaculture sector in Norway is the largest and oldest in the world and covers a much larger spatial scale, population, industry players, NGOs, local and regional governments and research institutions, it would be expected that the number of news articles published would be considerably greater than that

of the Tasmania salmon aquaculture industry. However, newspapers in this sample covering the Tasmanian salmon debates produced 20% of this amount in a third of the time. Considering the considerably smaller spatial scale and operating environment and number of newspapers reporting on the Tasmanian salmon industry this sample is considered comparable.

The *Hobart Mercury* and *The Australian* are both owned by News Corp Australia. The *Hobart Mercury* covers Tasmania's south and claims to reach 540,000 readers monthly across its print and digital platforms and an average readership of 68,000 to 75,000 monthly readers (weekends and weekdays respectively) (News Corp Australia, 2018b) with 73,000 followers on Facebook and 16,000 followers on Twitter at the time of writing. *The Australian* is the Murdoch flagship paper and Australia's only general newspaper with a national news coverage. The paper is said to have a monthly reach of 4.4 million readers across its print and digital platforms with an average monthly readership of between 430,000 and 470,000 (weekdays and weekends respectively) (News Corp Australia, 2018a) with 907,000 followers on Facebook and 735,000 on Twitter. The Burnie *Advocate* and the Launceston *Examiner* are both owned by Fairfax Regional Media. The *Advocate* focuses on news from the North-West and West of Tasmania, claiming a combined print and digital monthly readership of 171,000 (Fairfax Media, 2018a) with 180,000 followers on Facebook and 6,000 on Twitter. The *Examiner* covers northern Tasmania, claiming a combined print and digital monthly readership of 315,000 (Fairfax Media, 2018b) with 61,000 following on Facebook and 14,000 followers on Twitter. Historically, the three Tasmanian newspapers have had one of the highest penetration rates into local homes and remain important within these readership figures,

undoubtedly inflated compared with the populations in their respective readership areas. The ABC uses a variety of platforms including television, online and radio. For the purposes of analysis, news published online was collected. The ABC claims that in the 2016-2017 financial year, average monthly reach of ABC Online was 7.7 million, (ABC, 2017b). The national ABC Facebook page has just over 4.2 million followers with the ABC Hobart page having 160,000 followers. The national ABC Twitter page has 14 million followers with the ABC Hobart page having 14,800 followers.

4.5.2.2 News text analysis

Following data collection, individual files were uploaded into NVivo 11. A thematic analytical approach, seen as a foundation method for qualitative data analysis (Braun and Clarke, 2006), was applied to this research. I conducted an initial content analysis on both data sets in which codes and categories were identified. This initial high-level quantitative count of themes was undertaken to help lay the foundation for critical discourse analysis (Fairclough, 2013). The approach to identifying and defining codes and categories was conducted in a way that ensured the research question was answered. This process consisted of familiarisation with the data, from initial codes relationships between codes identified to form themes which were then reviewed, compared and when necessary redefined.

The first step involved the coding of the presence of stakeholder groups and discourse themes within articles. All mentions were noted, not only those in which stakeholders were directly quoted. This aimed to capture how visible stakeholder groups were, compared to how active some were. This aimed to uncover any stakeholder groups that might have been visible but not actively engaged in public debate. The number of articles that mentioned a theme or

stakeholder were counted, rather than the frequency that the theme or stakeholder was mentioned throughout the dataset.

Once this initial content analysis was conducted, the second step involved a deeper discourse analysis, for which I refer to Hager and Versteeg (2005: 175) whereby discourse is “an ensemble of ideas, concepts and categories through which meaning is given to social and physical phenomena, and which is produced and reproduced through an identifiable set of practices”. Environmental politics and concepts such as sustainable development “are continuously contested in a struggle about their meaning, interpretation and implementation” (Hager and Versteeg (2005: 176). By unpacking the “key language, rules, norms and values and assumptions” the analysis can focus on the sources of the problem rather than the symptoms (Fleming et al., 2018: 24). Here discourse analysis serves to better understand the mechanisms and meanings behind environmental discussions regarding complex socio-ecological interactions.

Both data sets following the Senate Inquiry and *Four Corners* episode are compared in **Chapter 5** with a more in-depth look at the competing discourses following the *Four Corners* episode in **Chapter 6**. The analysis underpinning **Chapter 7** coded specifically for anything that related to the transnational nature of the industry.

The option of using computer aided discourse analysis was trialled with the software program Leximancer. The program conducts a content analysis and identifies a linier relationship between themes identified. However, this did not add any depth or nuance to the understanding of the research question in focus. I also felt a distance from the raw data compared to the understanding I obtained when I was immersed in the analysis. The program

allowed the level of detail in the themes to be changed. This was useful to gain an understanding of the text, and the outputs were helpful in testing and confirming the content analysis that had been conducted. The software could also be useful in other instances where: visual representation of the data is important, large amounts of textual data must be analysed within very short time frames, to identify changes over time and to test analysis conducted by the researcher. However, it was felt that the analysis in Leximancer did not add anything to the analysis contained in this thesis and therefore has not been included.

4.5.2.3 Interviewing

Interviewing is a well-established and recognised qualitative research method in the social sciences (Flick et al., 2004, Berger, 2016, Deacon et al., 2007, Yin, 2016), particularly in studies using multiple methods of data collection (Bryman, 2006). Interviews provide rich personal experience that other data sources cannot often generate, if requiring interpretation by the researcher. They have been used extensively in the field of media and communications and environmental studies (e.g. Bourk et al., 2017, Lester and Hutchins, 2009, Schweizer et al., 2013). While there is an array of approaches and techniques, the act of interviewing is described as “a conversation between a researcher (someone who wishes to gain information about a subject) and an informant (someone who presumably has information of interest on the subject)” (Berger, 2016: 191). Interviews can be undertaken either with the intent of gathering very structured precise information or to generate a rich description and an in-depth understanding of how the informant experiences a phenomenon (the qualitative interview). “The purpose of the qualitative research interview is to contribute to a body of knowledge that is conceptual and theoretical and is based on the meanings that life

experiences hold for the interviewees.” (Warren and Karner, 2005: 314). Whilst providing a richness of personal experience that other data sources cannot often generate, this approach leaves much of the interpretation to the researcher. Thus, triangulation is important to consider in the research design and researcher reflexivity is required when conducting the research. The level of interpretation depends on the type of interview conducted, ranging from structured to unstructured. The semi-structured in-depth interview is the most commonly and widely employed interviewing format and was used to provide depth and context to the textual data (DiCicco-Bloom and Crabtree, 2006, Britten, 1995). This format of interviewing was chosen due to the level of detail in the data they produce, compared with a structured survey format. This is especially important when comparing language and attitudes of different groups and actors within the issue. Nonetheless, it is important when interviewing to constantly reflect that there is no single truth and that a rounded understanding of an issue comes from the learnings from many interviews and other sources of information that lends to the construction of knowledge (Deacon et al., 2007).

In the case study approach, interviewees are selected based on their involvement in the case and are often identified using snowballing techniques guided by the principle of saturation. This helps to ensure that the most suitable and appropriate participants are identified, and several interviews are conducted. Snowballing refers to a practice where interviewees are asked if they know of anyone they think would be appropriate and willing to be interviewed (Ezzy, 2002). Saturation is achieved when no new ideas or concepts emerge from the data (e.g. Glaser and Strauss, 1967). Hence, more data generation does not equal more information or shed more light on the issue being investigated (Mason, 2010). How quickly saturation is

achieved, and therefore the sample size, can be determined by a range of factors including (but not limited to) the scope of the study and interview, the number of special interest groups, homogeneity of the sample, method of data collection (i.e. interviewing technique chosen), whether interviewing is one of multiple data collection methods, level of expertise of participants and position within the case, time and resources available (Lee et al., 2002, Ritchie et al., 2003, Jette et al., 2003). Because qualitative research is about making meaning, frequencies are less important compared to quantitative research. It only takes one occurrence of a code to be included in the research and its sole occurrence is potentially just as useful in uncovering processes within the research problem. The concept of saturation is debated (Dey, 1999, Strauss and Corbin, 1998). Strauss and Corbin argue that as researchers familiarise themselves with the data there is always potential to find something new. Therefore, I take Strauss and Corbin's (1998: 136) recommendation that saturation should be concerned with identifying the point where generating more data becomes "counter-productive" and that anything new that is discovered does not contribute to understanding the overall research problem. Ultimately, the aim of the research is the main determinant of the study design and therefore the sample size (Charmaz, 2006).

Because qualitative research is laborious and time consuming, samples are often much smaller compared to that of quantitative research. If the sample is too large the analysis becomes repetitive and unnecessary. Nevertheless, interviewing a large range of stakeholders ensures the qualitative data is representative of the topic providing reliable data (Francis et al., 2010). Identifying participants can either be done in a purposive or non-purposive manner. While purposive sampling for interview participants within the stakeholder groups raises

issues of bias, this is mitigated if the sample is representative (Tongco, 2007). This also ensures critical actors in the case are interviewed. With this in mind, enough data samples must be collected to ensure most, if not all, perspectives that are critical to understanding the research problem are uncovered.

The aim of this thesis was to gain insight from expert stakeholders. Data was collected from one-on-one interviews rather than workshops because organising key stakeholders in contentious issues to participate in a focus group or group interview is problematic. The issues relating to salmon aquaculture are potentially contentious and politically charged. Because this thesis sought to gain unobstructed in-depth insights from a range of expert stakeholders involved in a contentious issue, group interviews or focus groups were not appropriate and individual interviews were chosen for this research.

4.5.2.4 Application of semi-structured interviews

The interview questions were open-ended in order to facilitate and promote discussion regarding complex matters and probe into the underlying and potentially previously unidentified attributes to the conflict. This was particularly useful given the highly contested nature of the issue. Additionally, at the end of the interview participants were asked if they had any further comments allowing them to address any issues they perceived as relevant to the topic that were not covered during the interview.

Non-random purposeful sampling was used for selecting knowledgeable and experienced interview participants from a range of backgrounds including government, science, industry, NGOs, international trade, global seafood governance and journalism across local and global scales in order to obtain insight into local and transnational flows of mediatised environmental

conflict. These participants were identified partly by the media analysis and partly through the snowball sampling technique, guided by the principle of saturation, to ensure the full extent of the social and political conditions were captured. Interviewees from the same organisation were not interviewed unless it was thought that they could provide considerably different insights to avoid duplication and unrepresentative saturation.

A total of 34 interviews were conducted in this study with stakeholders who were considered to be key informants and experts in their respective fields and selected based on their ability to provided expert insight into the environmental conflicts regarding the Tasmanian and Norwegian salmon industry, the global seafood operating environment and sustainability discourses, Asian export markets, Chinese media and environmental campaigning, Australia-Asia trade relations, international media reporting on the seafood industry, environmental science and science communication and third-party environmental certification (Table 6).

Table 6: Area of expertise that interviewees represented.

Stakeholder group	Tasmania-based interviewees	Asia-based interviewees	Norway-based interviews	Transnationally operating interviewees	TOTAL
Industry	Communications and environmental managers of salmon companies (5)	Large Asian retailer (1) Consultants with expertise in Chinese primary industry business (2)	Communications and global sustainability managers of salmon farming and feed companies * (3)	-	11
Media	Journalists reporting on Tasmanian salmon aquaculture industry (2)	Journalist reporting on Asian seafood dynamics (1)	-	Seafood industry news organisation* (1)	4

ENGO	Environmental NGOs with campaigns opposing Tasmanian salmon aquaculture and/or expertise in Tasmanian environmental campaigns (3)	Environmental NGO with campaigns against Australian seafood product (1)	Environmental NGOs (2)	-	8
Third-Party Certification	-	-	-	International environmental certification organisations (2)	
Government	Government regulators (2) Government department for Australia-Asia trade relations (2)	-	Government regulators (2)	-	6
Environmental science	Scientists researching the environmental aspects of the salmon industry (2)	-	-	Scientists and science communicators working in global seafood business stewardship (3)	5
TOTAL	16	5	7	6	34

*Headquartered in Norway but transnational companies

The broad cross section of influential and knowledgeable positions of interviewees provided opportunity for in-depth analysis of concepts and a source of triangulation of results from the textual analysis. The interviews covered topics of local and transnational flows of information regarding seafood sustainability. Interviewees detailed how they perceived the overall

operating environment of the public debates and their understanding of environmental campaigning, media and environmental governance. Interviews aimed to obtain the informants' understanding and perceptions regarding the environmental conflicts of salmon farming and seafood more broadly where appropriate, how participants gathered information to form their perceptions, and their communication mechanisms and strategies. They also sought to map and understand interactions between key stakeholders. In particular, the interviews explored the claims-making and decision-making processes of NGOs, seafood companies, government regulators, media and journalism, environmental campaigning, and the interactions this elicits between these actor groups. This was done in local and transnational contexts. The extent to which these either draw upon or contribute to transnational messaging regarding environmental impacts of seafood production was considered. The implications of these networks and conflict discourses for environmental governance at the local and regional level was also explored.

The potential interviewees were contacted via email which included an information sheet and consent form. This procedure and all associated research was in accordance with the University of Tasmania Human Research Ethics Committee (Social Science, Ethics Ref No: H0014669) which encompassed the broader Australian Research Council project 'Transnational Environmental Campaigns in the Australia Asia Region'. The introductory email gave the participants an opportunity to decide if they were both willing and knowledgeable enough to participate in the subject area. Interviewees remain anonymous. All interviews were conducted in person apart from one which was conducted online via Skype. Interviews were conducted from mid-2017 to early 2018 and each interview went for between 45

minutes to two hours. While a predetermined set of questions provided structure to the interviews, additional lines of discussion raised by the interviewee were pursued if relevant. The interviews were digitally recorded and professionally transcribed. Transcriptions were provided to the respective interviewees for approval and the opportunity to make any changes. No participants made any significant changes. After transcription, all the interviews were read for data familiarisation. Initial codes were generated and relationships between codes identified. Codes were constantly reviewed, coding hierarchies rearranged and when necessary redefined.

4.5.2.5 Direct observation

In addition to the core data collection and analysis, key events in the global seafood, Asian seafood trade, Australian seafood and Norwegian salmon aquaculture were attended. Direct observation of key industry and trade events provided insight into the operating environment and the current state of affairs, ideas, technology, interactions, policy and governance in Norway and Asia. Important context was gained and attendance helped to ensure the research was asking relevant and timely questions. This also provided confidence that the research was placed appropriately within overall issues of seafood trade, sustainability, politics, consumption and stakeholder relations and communications (Table 7). Travelling to China and Norway and conducting the research myself provided me with first-hand experience of the places that I write about. Attending seafood industry events in Norway and Hong Kong and interacting with many people across the global and Australia-Asia supply chain provided a vivid understanding of the operational setting to the research.

Table 7: Events attended throughout the period of research

Event	Date	Location	What it provided to the research and my learning
Conference on Communication and Environment	June-July, 2017	Leicester, United Kingdom	<p>This conference was nearly a year into my PhD and I was able to present and gain feedback regarding my research approach and design. I welcomed constructive critique and embraced the opportunity to discuss my research with experts in environmental communications.</p> <p>Presentation: The mediatised Tasmanian salmon farming controversy</p>
Aqua Nor	August, 2017	Trondheim, Norway	<p>This expo revealed detail regarding the operating environment of the aquaculture industry (primarily Atlantic Salmon aquaculture) in Norway including key issues and stakeholders.</p>
The World Seafood Congress	September, 2017	Reykjavik, Iceland	<p>Attracting a range of participants from around the world with experience in seafood governance, including seafood companies, government officials, NGOs, technology experts, scientists.</p> <p>Presentation: Mediatised politics of salmon aquaculture: Transnational environmental campaigning</p>
Seafood Directions	September, 2017	Sydney Australia	<p>Insight into Australian seafood discourses including key issues and stakeholders.</p>
The Asia Seafood Expo	October, 2018	Hong Kong	<p>This expo provided invaluable insight into seafood markets and trade. Specifically, how companies in the seafood sector marketed themselves and how environmental risk and impact was portrayed.</p>
International Communication Association Conference	May 2020	Virtual	<p>This conference was themed “Opening communication” with the aim of “aims to facilitate and deepen the conversation about Open Science in the field of communication”.</p> <p>Presentation: The Tragedy of the Discursive Commons: Considering ‘Closed’ Environmental Communication and Opportunities for ‘Opening’ - Media, science and the environmental risk of Tasmania’s expanding salmon aquaculture industry</p>

4.5.2.6 Systematic peer-reviewed literature

The aim of the systematic review was to collate and synthesise literature which documented media analysis of social conflict regarding environmental risks of salmon aquaculture in Norway and compare the mediatised environmental conflicts. The literature that presented media analysis were identified by searching the Scopus database using the search “Norway AND salmon OR Aquaculture AND discourse OR narrative OR media OR communication OR conflict OR governance OR management” in Abstract, Title or Key Words (N=411) and limited to social science research (N=76). The literature search was current as of 1 August 2020. All papers published prior to this date were included in the review. At this stage titles and abstracts were read to ensure their relevance. Those that did not conduct a media analysis regarding Atlantic salmon aquaculture were removed. The remaining papers (N=6) were then read in full to understand how it related to mediated environmental conflict in Norway.

The focus was to identify and collate articles that were specific to how environmental conflicts were negotiated in the mainstream media. However, articles which produced knowledge regarding the broader operating environment for which these mediated discourses occurred were also reviewed to provide context to the study.

Table 8: Literature analysing news media presenting the Norwegian salmon aquaculture debates

Citation	Type of Media data	Analysis	Search terms
Norwegian literature			
Misund, A. U. (2019). From a natural occurring parasitic organism to a management object: historical perceptions and discourses related to salmon lice in Norway. <i>Marine policy</i> , 99, 400-406.	- 561 news articles - 14 news papers - from 2009-2014	- Statements related to management of aquaculture and salmon lice, and - Actors present	Fish farming* AND Salmon* AND Lice* AND (Knowledge* OR Research* OR Lack* OR Sustainability* OR Resistance* OR Measure* OR Conflict* OR Disagreement*)
Osmundsen, T. C., & Olsen, M. S. (2017). The imperishable controversy over aquaculture. <i>Marine policy</i> , 76, 136-142.	- 273 written contributions in the opinions section - Nine newspapers with national, regional and local outreach - from 2012-2014	- Topics in media coverage, - Sources used (and actors given access to the debate), - Possible media event, - Impression conveyed by the article concerning benefits or risks, - The importance of environmental, economic or health issues, and - What positions are presented in the articles.	Farming, Aquaculture, farmed salmon (references to other farming was removed)
Olsen, M., & Osmundsen, T.C. (2017). Media framing of aquaculture. <i>Marine policy</i> , 76, 19-27	- 827 news articles - Nine newspapers with national, regional and local outreach - from 2012-2014	- Topics and issues in the news media, - Sources used (and actors given access to the debate), - Possible media events, - The impression conveyed by the article concerning benefits or risks, - The importance of environmental, economic or health issues, -What positions (explicitly/implicitly positive/negative) appear in the articles.	Farming, Aquaculture, farmed salmon (references to other farming was removed)

Christiansen, E. A. N. (2017). Diversity in narratives to green the Norwegian salmon farming industry. <i>Marine policy</i> , 75, 156-164.	- National, regional and industry newspapers - from 2011 to 2015	- Ongoing public debates on the greening of the salmon farming industry.	N/A
Liu, P., Lien, K., & Asche, F. (2016). The impact of media coverage and demographics on the demand for Norwegian salmon. <i>Aquaculture economics and management</i> , 20(4), 342-356.	- Media reports spread across online media, newspapers, television etc but sources not specified – from 2007-2013	- Relationship between media coverage and consumer demand for Norwegian farmed Atlantic salmon.	"The media coverage variables were collected for 10 categories: stock exchange information, Chile, export, health benefit, food safety, environment, recipes, spillovers, escapes, and diseases"
Tiller, R., Brekken, T., & Bailey, J. (2012). Norwegian aquaculture expansion and integrated coastal zone management (ICZM): Simmering conflicts and competing claims. <i>Marine policy</i> , 36(5), 1086-1095	- 14 national and regional newspapers that have large circulation and geographical proximity to the coastline - from 1984 – 2010	- The presence of a conflict frame or negative connotation in the news media over time, and -If the coverage coincides with events important in the history of Norwegian aquaculture.	"oppdrett" ("fish farming") or "akvakultur" ("aquaclutre")

4.5.2.7 Application of systematic literature review: A comparative analysis

A comparative analysis of the mediatised environmental conflict of the Tasmanian and Norwegian salmon aquaculture industries is undertaken in **Chapter 7**. To do this the research activities included:

- 1) Media analysis of themes and stakeholder groups addressed in news text concerning the Tasmanian salmon industries,
- 2) Synthesis of academic peer reviewed articles that present a thematic media analysis of the Norwegian salmon industries,
- 3) Comparison of the themes identified between the two case study farming regions and presence of stakeholder groups in the news content, and
- 4) Interviews in both case study farming regions to test, verify and expand the findings of the comparisons made between the media analyses presented in this thesis and the synthesis of academic peer reviewed articles. Interviews were conducted with expert stakeholders from industry, media, government, NGOs, third-party certification and science organisations.

Results were compiled into thematic tables emphasising three main dimensions: environmental risk framing, key stakeholder groups present in mediated discourse, and communication strategies of stakeholder groups.

This research intended on obtaining an understanding of the communication and media practices, conflict attributes, and claims-making and decision-making processes, both locally in Australia and Norway and transnationally. Similarities and differences regarding these elements in the two countries were explored in order to contribute to the understanding of

mediatised environment conflicts regarding salmon aquaculture across local and global contexts. The communications and media techniques and strategies were assessed to identify areas of learning that could be applied to current and future environmental conflicts over common pool resource use.

4.5.2.8 Limitations

Comparing different sets of media analysis presented in different research papers has inherent limitations in producing conclusive findings regarding discourse nuances. Different papers will have different research questions and approaches to qualitative coding and collect data during different times. Additionally, very few studies have looked specifically at how and by whom environmental risks are represented in news media regarding the Norwegian industry, providing a small sample of literature to review. These limitations mean that the analysis and conclusions from this part of the study (**Chapter 7**) should be read as indicative rather than absolute. However, it does serve a purpose to provide a broad overview of how the same industry can experience similarities and differences across world production regions. It makes an argument for understanding industry trajectory in different growing regions and transnational flows of corporate and campaigning practice, information, and knowledge.

Asking questions regarding transnational flows requires new approaches to how we understand the world. It is easy to retreat to the local, providing neat boundaries and context. However, this is not possible if one seeks to explore transnational flows of ideas and resources. Waisbord (2016: 869) refers to “academic globalisation”, inviting the exchange of knowledge and understanding across geographical boundaries with particular reference to the field of communication becoming progressively globalised in recent decades. Waisbord

draws on Livingstone's (2007: 274) observation that, "if internationalisation means exchanging knowledge and understanding across borders, then we would probably all sign up to it, confident that national approaches or concerns could find their place within this larger forum". Global translation of academic knowledge expands the collection of findings and arguments with regard to particular empirical and theoretical queries, for example news framing.

Both Tasmania and Norway share China as a major export market and are responding to similar global trade conditions and demands. It is necessary to understand these comparisons in an increasingly transnational world. Interviews provided depth and triangulation to the literature review and together provided a useful approach to understand the differences and similarities in the two country's discourses and the transnational flow of information.

5

MEDIA REPRESENTATION OF CRITICAL MOMENTS IN TASMANIAN SALMON DEBATES

5.1 Introduction

This chapter develops an in-depth understanding of how news media might help emphasise, explain, exacerbate or help resolve deliberative processes within the context of the Tasmanian salmon aquaculture industry conflict. Leith et al. (2014b) acknowledge the usefulness of deliberative processes to link science, societal values and decision-making. One of their industry interview participants noted the importance of finding pathways that mitigate vicious cycles of conflict when they stated that “we can’t just be meeting in the media ... there has to be a process, and we are just starting that process” (Leith et al., 2014b: 289). These “processes” include narratives around engagement and research projects mapping public values of waterways. The Tasmanian salmon aquaculture industry experienced heightened environmental conflict in which media played more than a neutral role – that is, the conflicts were both mediated and experienced the impacts of mediatisation.

To assess how environmental risks of salmon aquaculture in Tasmania were framed and negotiated in the public sphere (Habermas, 1991), this chapter identifies and analyses the narratives presented in news media discourse following the formal Senate Inquiry and the more informal journalistic mode of inquiry presented in the *Four Corners* program into aquaculture governance. By focusing on how Tasmanian salmon aquaculture was presented in regional and national news media, this study sheds light on the relationship between public knowledge and policy formation. This chapter seeks to understand the role media play in public negotiations of Tasmanian salmon aquaculture by a) identifying and analysing dominant themes and stakeholders within news media coverage, particularly where disputed and ambiguous social and scientific information appears; and b) considering how associated

media practices and logics might influence outcomes of complex common pool natural resource-use conflicts.

5.2 Overview of news media attention

The number of news articles identified in this study was 268% greater following the *Four Corners* program compared to that of the Senate Inquiry (Figure 5). This increase was most obvious in *The Hobart Mercury*.

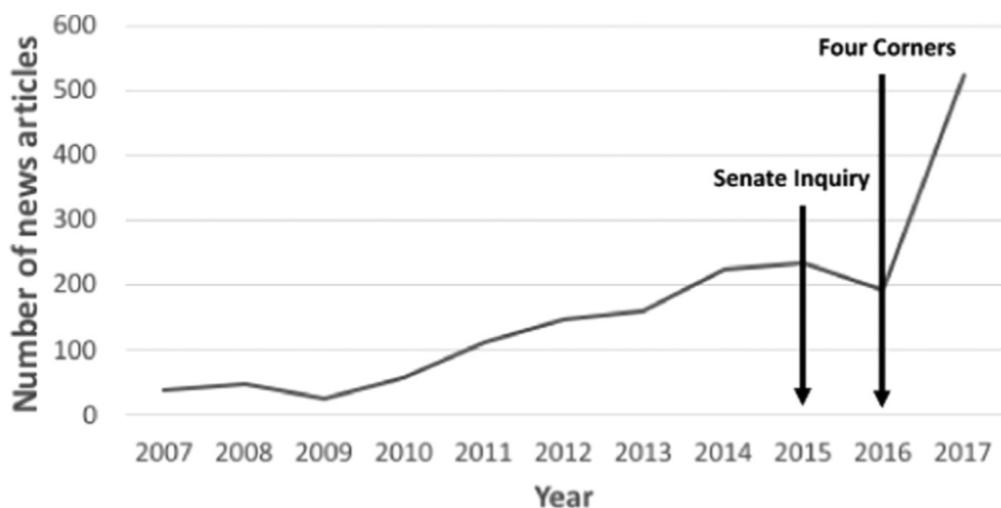


Figure 5: Total number of news articles between 2007 and 2017 for a key word search for salmon aquaculture, salmon farm, Tassal, Huon Aquaculture and/or Petuna in the Hobart Mercury, Launceston Examiner, Burnie Advocate, ABC News and The Australian newspapers. Source; Factiva.

5.3 Stakeholder visibility, conflict and framing following two critical moments in the public debate

The analysis identified key stakeholder groups present in the mediated discourse following the Senate Inquiry and *Four Corners* program (Figure 6). The most prominent stakeholders that were mentioned in the news media across both events were salmon companies, government regulators and politics and science institutions. Local NGOs and emergent local opposition groups became visible following *Four Corners*.

Stakeholders mentioned in news media following *Four Corners* and the Senate Inquiry respectively included salmon aquaculture companies (Tassal 60% and 46%, Huon Aquaculture 42% and 36%, and Petuna 17% and 27%), government and political actors (59% and 31%), scientists/science institutions (23% and 17%), Tasmanian-based ENGOs (18% and 3%), emergent local opposition groups (11% and 5%), third-party certification organisations (10% and 14%) and community members (7% and 3%).

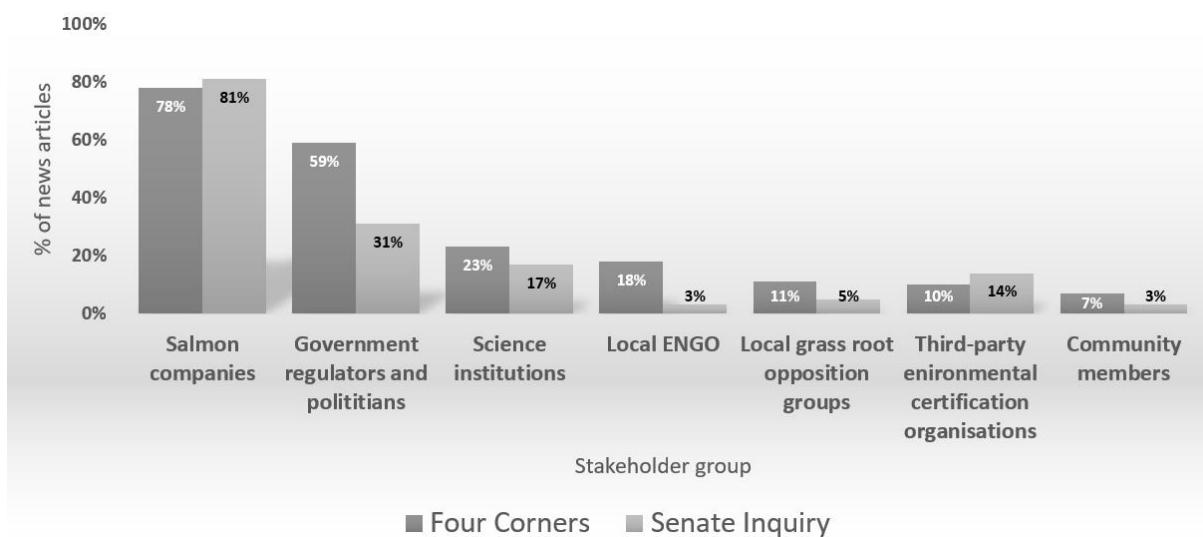


Figure 6: Frequency of key stakeholders mentioned in the news articles following the Senate Inquiry and *Four Corners* program

The Tasmanian salmon industry was commonly referred to as one entity (Figure 7). According to news reports, the industry embraced the Senate Inquiry as an opportunity to “showcase” the industry, showing confidence that the industry would come out of it stronger and “welcome[ed] the Inquiry’s focus on transparency around waterway health” (Blucher, 2015b). Both Tasmanian Liberal and Labor political parties opposed the Senate Inquiry, with the leader of the Labor party opposition, Bryan Green, explaining that the industry underwent

rigorous monitoring regimes and politicising the issue would diminish public confidence in the salmon industry (Smiley, 2015). The resistance from political parties for the Inquiry into the industry may have promoted the lack of trust in regulatory processes instigated by Huon Aquaculture and expressed through news media, broadcast television and radio, social media and legal proceedings evident following *Four Corners*.

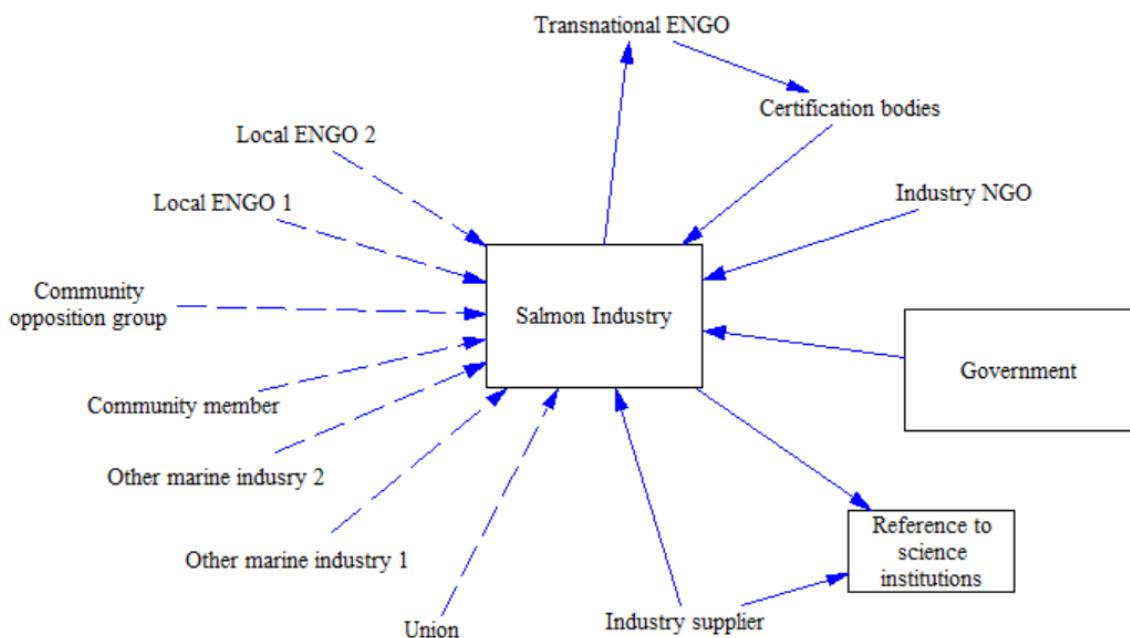


Figure 7: Actors and flows of claims and information evident in the print news media in the six months following the Senate Inquiry. Dashed arrows indicate negative relationships and solid arrows indicate positive relationships. Boxed stakeholders and the size of the box (approximately) indicate the number of news articles they are mentioned in. No box indicates a lower presence.

Compared to the relatively contained social network present in news media following the Senate Inquiry, the *Four Corners* program expanded the number of actors present in news media and revealed unexpected coalitions and alliances between stakeholders (Figure 8). This created more complexity in the conflict relative to that of the Senate Inquiry. Most notably, *Four Corners* publicly highlighted a shift in industry cohesiveness. The division among industry in Tasmania was brought to the fore in *Four Corners*, which explicitly identified claims of industry corruption and environmental degradation.

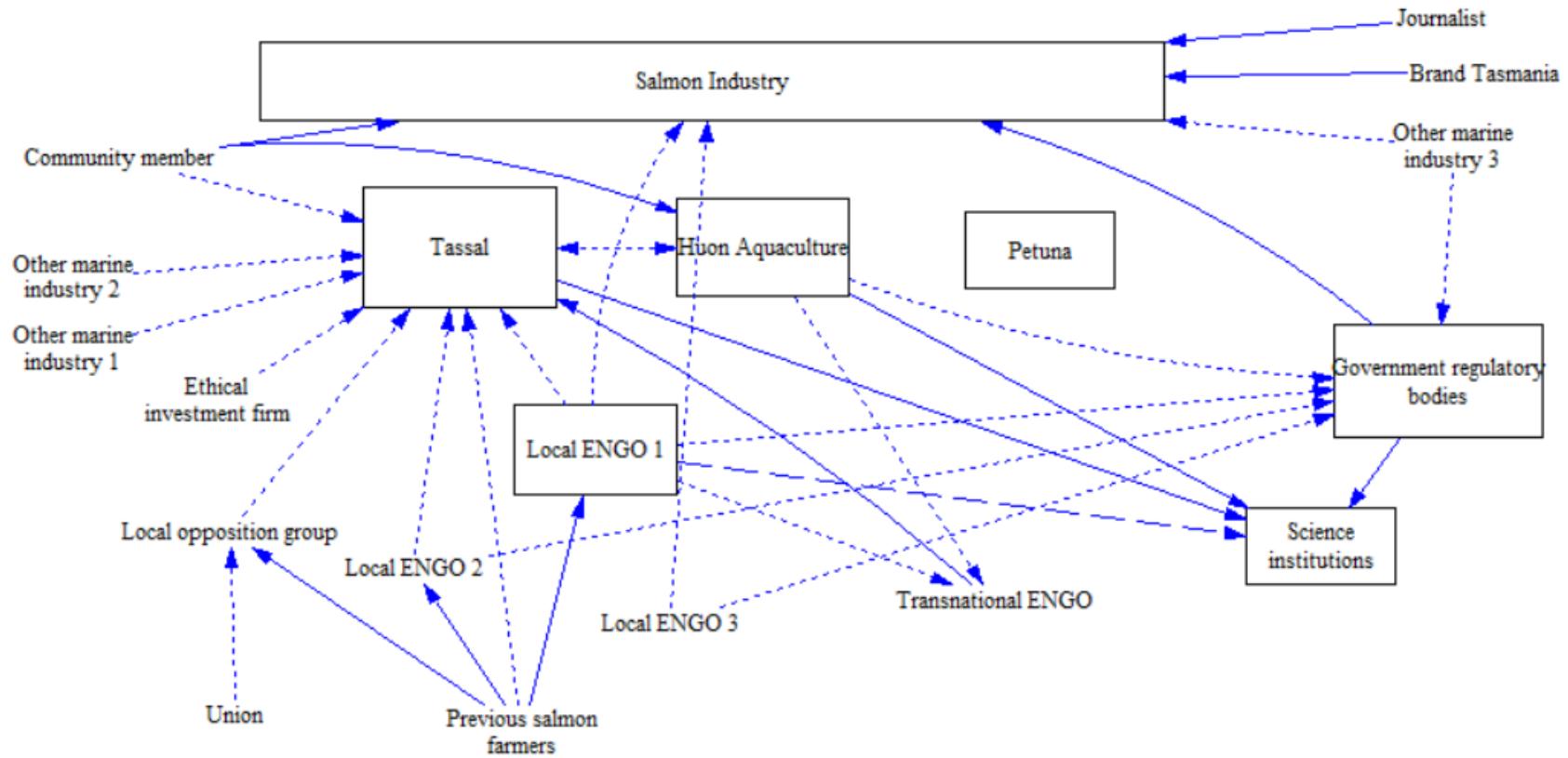


Figure 8: Actors and flows of claims and information in the news media in the six months following the *Four Corners* program. Dotted arrows indicate negative relationships and solid arrows indicate positive relationships. The larger dashed line indicates a mix of positive and negative dialogue. Boxed stakeholders and the size of the box (approximately) indicate the number of news articles they are mentioned in. No box indicates a lower presence.

From publicly acting and being perceived publicly as one unit, variances developed in individual company's communications and how they were being portrayed and perceived in the public sphere. News media following *Four Corners* displayed negative perceptions toward Tassal. Whereas Huon Aquaculture appeared to be publicly forming positive relationships with local ENGOs (although it comes at the cost of a negative relationship with the World Wide Fund for Nature). The public adversity towards Tassal also experienced input from a greater number of actors following *Four Corners*. This was instigated by the *Four Corners* program itself but also related to Tassal's expansion on the East Coast which instigated the formation of local opposition groups. The industry division was not only carried through news media, but also social media sites such as Twitter and Facebook with posts indicating a preference to purchase Huon products or an adversity to purchasing from Tassal. An ethical investment firm was also persuaded by ENGOs to halt investment in Tassal.

Along with increased complexity of actor networks and associated claims-making, news coverage following *Four Corners* was characterised, and complexity reinforced, by conflict compared with that of the Senate Inquiry. In news coverage, this was represented through the following: word choice in stories about Huon Aquaculture's legal action, portrayed hostility between and among key stakeholder groups; the use of words such as *attack*, *divisive*, *extremist*, *hot topic*, *conflict* and *squabbling*; accusations of double standards and use of misinformation; and through claims that key actors were not engaging outside of media. Reinforcing the presence of conflict, actors in media identified the need for collaborative, rational and respectful discourse.

Editorials began to address and highlight the conflict present in the discourse and suggested methods for resolution. In its editorial, 'The power of compromise', the *Hobart Mercury*

acknowledged the importance the salmon aquaculture industry plays in the Tasmanian economy and calls for greater leadership and unity of the salmon industry by learning from previous environmental failings. This begins with meaningful public engagement “beyond meaningless press releases”:

The Mercury’s position is straightforward. Aquaculture is vital for the future of the state’s economy. Absolutely vital. We want to see it do well. It creates desperately needed jobs at a time when unemployment and under-employment remain among our greatest blights. But it needs to be sustainable and we make no apologies for shining a light on when this may have failed. The debacle that Macquarie Harbour is fast becoming cannot be allowed to persist. We must learn from this, be honest in our assessment and put in place measures that ensure it is resolved and never happens again. And the industry needs to move beyond meaningless press releases and background briefings and genuinely build internal bridges. Without a unified front, it will be complicit in its own demise. The heads of all companies need to sit around a table, put whatever differences they have aside and agree on a path forward. Extreme sides — mired in cheap shots and offering information that is either incredibly biased or completely wrong — do nothing to advance either position. Aquaculture represents a genuine opportunity for Tasmania — an opportunity to build something together as a state. A line in the sand needs to be drawn. Leadership needs to be shown. (Hobart Mercury, 2017)

Similarly, also in an article in the Hobart *Mercury* following *Four Corners*, the then sustainability manager of Tassal acknowledged that “vigorous debate is healthy” while “unproductive conflict...is damaging for everyone” (Thomas-Wilson, 2017).

The conflict within the sector was further amplified by the apparent, traditionally unlikely, alliance between Huon Aquaculture and Environment Tasmania, self-described as: “the peak

group for environment organisations in the state...[a] campaigning organisation best known for leading the alliance that stopped the Super Trawler *Margiris* from fishing in Australian waters, and for our part in the Tasmanian Forest Agreement" (Environment Tasmania, 2016a). It could be construed that by publicly supporting Huon Aquaculture for its efforts to reduce the environmental impacts of salmon farming, Environment Tasmania was claiming to have created a partnership to achieve better environmental performance. However, the same NGO discredited rather than supported Tassal's efforts to mitigate environmental impacts and to improve the industry standard for transparency and accountability in environmental reporting in the company's annual sustainability reports. Furthermore, Environment Tasmania also carried the discourse prompted by *Four Corners* concerning the credibility of the global conservation NGO World Wide Fund for Nature (WWF) and its partnership with Tassal into news media. This discourse was framed as corruption by Environment Tasmania, which circulated a petition calling for WWF to halt the partnership.

The results indicate that the *Four Corners* program prompted heightened visibility of Environment Tasmania within news media. This could reinforce the symbiotic relationship between NGOs and journalists (Bownas, 2017, Konishi, 2017, Lück et al., 2016). However, supporting Powers' (2015) findings, the NGOs' presence in media was still not as prevalent as corporate and political representatives, or even science. These results indicate that these critical moments in the discourse were not solely a result of environmental campaigns, which have historically played a significant role in environmental discourse in Tasmania (see Cullen-Knox et al., 2017b, Murphy-Gregory, 2017, Lester, 2016b). Rather, in the case of salmon aquaculture, Environment Tasmania was shown to leverage these critical moments for its own strategic purposes. This is not to say that these campaigning organisations did not

provided a solid grounding for corporate players to use the environmental discourse as a legitimate source of concern. However, it exemplifies a shift in the traditional role of NGOs in holding industries and governments to account, with an industry player adopting this role.

Both the Senate Inquiry and the *Four Corners* program led to a proliferation of different framings of the salmon industry (Table 9). *Four Corners* was noticeable in shifting perceptions of salmon companies with Tassal portrayed negatively and Huon Aquaculture portrayed positively. The legitimacy of external third-party certification was also brought into question.

Table 9: The most frequent stakeholders present in news media following the Senate Inquiry and *Four Corners* program

Stakeholders	Framing following the Senate Inquiry	# of news articles following Senate Inquiry	Framing following <i>Four Corners</i>	# of news articles following <i>Four Corners</i>
Tassal (salmon company)	For the sustainable expansion of industry	27 (47%)	Portrayed negatively	131 (60%)
Government regulators and politicians	For the sustainable expansion of industry	18 (31%)	Portrayed negatively	130 (60%)
Huon Aquaculture (salmon company)	Calling for improvement of environmental regulation of industry	21 (36%)	Portrayed positively	92 (42%)
Scientists/science institutions	As knowledge providers	10 (17%)	Identified environmental impacts in Macquarie Harbour	51 (23%)
Environment Tasmania (NGO)	Against inshore salmon farming	1 (2%)	Against inshore salmon farming	40 (18%)
Petuna (salmon company)	For sustainable expansion of industry	16 (28%)	For sustainable expansion of industry	37 (17%)
Third-party environmental certification bodies	Positive for the salmon industry	8 (14%)	Questions around certification in Macquarie Harbour	22 (10%)
Let's grow Tasmania's future (NGO)	n/a	(0%)	Against inshore salmon farming. Primarily the expansion on the East Coast	15 (7%)
Community members	- Against inshore salmon farming - Support economic benefits	2 (3%)	- Against inshore salmon farming - Support economic benefits	14 (6%)
Other marine industry/sectors	Against inshore salmon farming	6 (10%)	Against inshore salmon farming	11 (5%)
Marine protection Tasmania (NGO)	n/a	(0%)	Against inshore salmon farming. Primarily expansion on the East Coast	9 (4%)
Workers union	Protecting workers	9 (16%)	For sustainable expansion of industry	9 (4%)
Previous salmon farmers	n/a	(0%)	Against inshore salmon farming	7 (3%)
Tasmanian Salmon Growers Association	For sustainable expansion of industry	3 (5%)	For sustainable expansion of industry	2 (1%)
Transnational ENGO	Positive for the salmon industry	2 (3%)	Corruption	2 (1%)
TOTAL NEWS ARTICLES		58		219

5.3.1 Absence of scientists in media discourse

The Senate Inquiry played a notable role in introducing the role of science – if not scientists themselves – in news media, primarily presenting science as a problem solver and an integral component in informing corporate and political environmental decision-making. Following the Senate Inquiry, 25% of the news articles and 40% following the *Four Corners* program mentioned environmental science in a general capacity, such as the role of science in informing the management of the Tasmanian salmon industry or excerpts from scientific reports. However, only 7% and 2% of articles respectively featured scientists themselves. Following the Senate Inquiry, four scientists were present in news media (two IMAS scientists (one quoted) and environmental scientists from Adelaide, Sydney and Melbourne universities (all quoted)). Only three Tasmanian scientists – including two marine scientists (one quoted) and one political scientist (quoted) – and one environmental scientist from Melbourne (quote was taken from *Four Corners*) were present in the news coverage following *Four Corners*. This could be considered a very low presence of scientists as actors in media coverage considering the relatively high attention given to scientific reports and the debate over scientific information and its role in environmental governance (Figure 9).

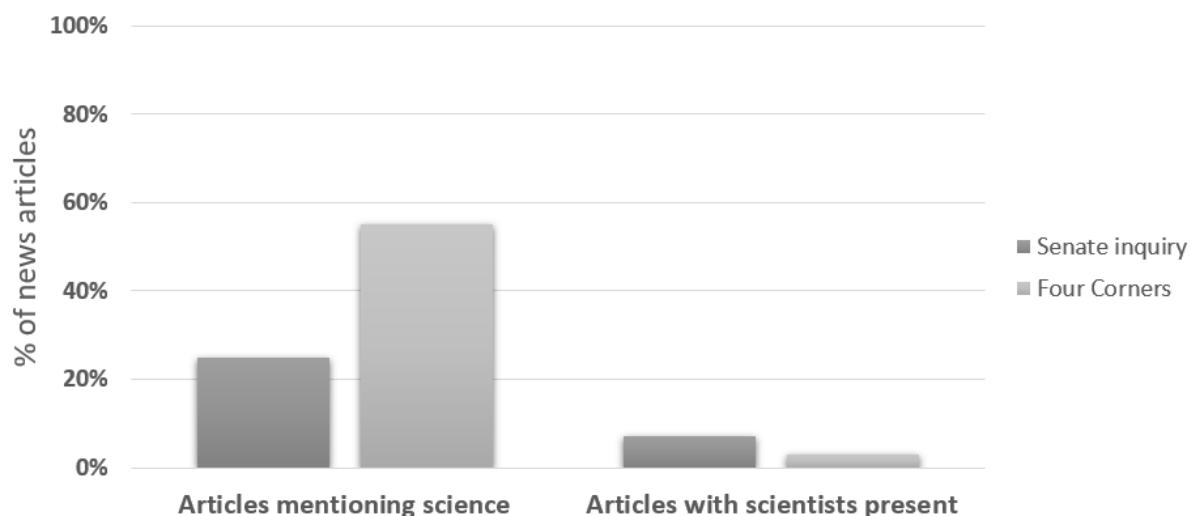


Figure 9: Low presence of scientists in news articles relative to the number of articles with scientists present

5.4 Themes present in the news media following two critical moments in the public debate

Analysis of news articles in the six months following the Senate Inquiry (Table 10 and Figure 10) and *Four Corners* ‘Big Fish’ episode (Table 11 and Figure 10) revealed the following dominant themes: environment (56% and 61%) and expansion and growth (53% and 54%), government regulation (29% and 44%), community interests (34% and 41%), environmental science (27% and 40%), economic prosperity (53% and 34%), sustainability (31% and 29%), transparency (20% and 26%), and legal action (0% and 24%).

Table 10: Key stakeholder groups and themes that were present in the news articles following the Senate Inquiry.

STAKEHOLDERS								
THEMES	Tassal	Government regulators and politics	Huon Aquaculture	Petuna	Scientists / Science Institutions	Local opposition groups	Community member	Total # of articles each theme was mentioned in
<i>Environment</i>	16	15	12	12	8	2	2	33 (56%)
<i>Economic interests</i>	18	11	9	12	5	0	2	31 (53%)
<i>Expansion and growth</i>	11	9	11	9	7	2	2	31 (53%)
<i>Community interests</i>	8	8	6	6	3	3	2	20 (34%)
<i>Sustainability</i>	14	4	5	5	1	1	0	18 (31%)
<i>Formal public policy processes and decision-making</i>	7	11	9	5	7	1	2	17 (29%)
<i>Environmental Science</i>	6	8	8	4	10	2	2	16 (27%)
<i>Transparency</i>	6	7	6	5	4	0	1	12 (20%)
Total	27 (47%)	18 (31%)	21 (36%)	16 (28%)	10 (17%)	3 (5%)	2 (3%)	Total # of news articles = 58

Table 11: Key stakeholder groups and themes that were present in the news articles following *Four Corners*.

STAKEHOLDERS									
THEMES	Tassal	Government regulators and politics	Huon Aquaculture	Scientists / Science Institutions	Environment Tasmania	Petuna	Local opposition groups	Community member	Total # of articles each theme was mentioned in
Environment	84	93	70	42	26	28	14	8	134 (61%)
<i>Expansion and growth</i>	70	76	44	18	23	15	23	12	118 (54%)
<i>Formal public policy processes and decision-making</i>	57	73	59	35	17	27	3	5	98 (44%)
<i>Community interests</i>	50	58	30	11	15	10	18	15	91 (41%)
<i>Environmental Science</i>	55	67	46	49	16	16	6	4	87 (40%)
<i>Economic interests</i>	45	49	32	12	14	17	16	6	75 (34%)
<i>Sustainability</i>	39	41	34	11	11	21	6	1	63 (29%)
<i>Transparency</i>	42	39	24	20	11	7	9	5	58 (26%)
<i>Legal action</i>	31	33	45	18	5	15	1	1	53 (24%)
TOTAL	131 (60%)	130 (59%)	92 (42%)	51 (23%)	40 (18%)	37 (17%)	25 (11%)	14 (7%)	Total # of news articles = 219

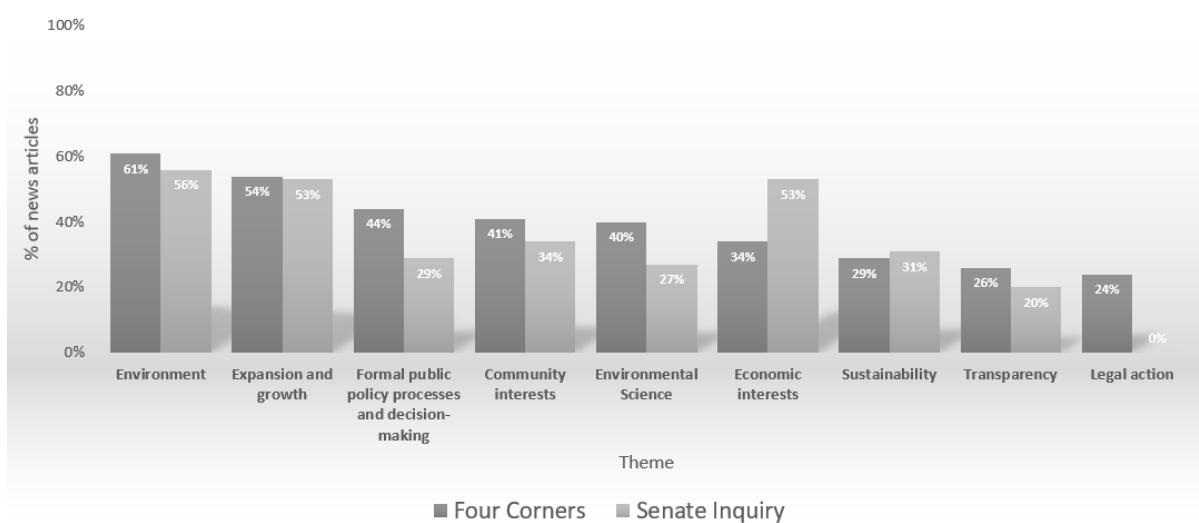


Figure 10: Frequency of themes in news articles following the Senate Inquiry and *Four Corners*

5.5 Discursive themes arising in interviews

The interviews with expert stakeholders in the Tasmanian salmon aquaculture industry, governance and environmental campaigning provided further understanding of these themes, providing insight on, for example, the communication of science, perceptions of transparency between stakeholders and outwardly to interested members of the public, and how media roles are perceived in public debate (Table 12). Excerpts and more detail from interviews are included in the following sections to provide depth and context to the media analysis.

Table 12: Coding of interviews regarding the Tasmanian salmon aquaculture operating environment

Theme	Codes
Science communication	
	Uncertainty regarding who and how environmental science information should be communicated to communities of interest
	Access to/disclosure of environmental data
	Link science communication with community values
Transparency	
	Transparency hindered due to lack of effective forum (media facilitates conflict)

	In person communication is important to facilitate transparent and trusted dialogue
	Lack of effective communication of government regulatory process
	Lack of engagement between stakeholders
Media	
	Misinformation/truth setting in media
	Fear of media misrepresenting statements
	Hinders transparent dialogue
	News media and social media used as a proxy for key issues – this can drive outcomes

5.5.1 Environmental impact

The Senate Inquiry played a notable role in raising concerns of environmental impacts in the news media with the protection, management and importance of the environment dominating news media coverage following the *Four Corners* program. Environmental concerns included impact on the benthic environment, dissolved oxygen depletion, farmed fish health and mortality rates, surrounding marine life and animal welfare and surrounding world heritage areas. For example, following the Senate Inquiry the discourse exhibited a focus on the management of Macquarie Harbour in relation to the low dissolved oxygen and impact on the benthic habitat. The discourse regarding the environmental impact on Macquarie Harbour, first present in the Senate Inquiry, was carried by the *Four Corners* program and further reinforced as a news issue by Huon Aquaculture's legal proceedings. The environmental impacts that were observed in Macquarie Harbour resulted in Tassal forfeiting Aquaculture Stewardship Certification (ASC) certification for one of its leases closest to a world heritage site, the EPA reducing stocking limits and Huon Aquaculture's legal action which claimed inadequate regulation of the harbour.

Concerns of environmental impact were closely related to the industry's expansion (particularly in Macquarie Harbour and Tassel's proposal for Okehampton Bay) and the importance of considering environmental risk in decision-making processes. Concerns

regarding environmental impact of the industry's expansion were responded to by companies by promoting awards and certification received for their efforts toward environmental sustainability. Tassal and government actors also responded to concerns of environmental impact by asserting that opposition groups and *Four Corners* journalists were misrepresenting the extent of environmental impacts of salmon production. It was reported that the State Government "took aim" at a local environmental group (O'Connor, 2017) and "debunk[ed]" claims from "green groups" that the Okehampton Bay site would not be sustainable" (Inglis, 2017b).

5.5.2 Adequacy of the regulation of industry expansion

The Senate Inquiry instigated formal public debate concerning the adequacy of the environmental regulatory process of the industry. Those opposing salmon farming in Tasmania raised concerns regarding the independence of the regulatory process. These claims were grounded in the perception that the government regulatory body at the time was both the proponent and regulator of the industry. As one of the Senate Inquiry committee members reportedly stated there was a "community perception" of potential conflict of interest in the same bureaucracy being the industry's "regulator and proponent" (Blucher, 2015a). In response to concerns identified from the Senate Inquiry regarding the State Government being both the regulator and proponent of the industry the regulatory power for the environment was transferred from the Marine Farming Branch of DPIPWE to the EPA mid-2016.

The regulation of the industry became a more prominent theme following *Four Corners*, with Huon Aquaculture's legal case and claims from opposition groups promoting debate concerning the adequacy of the regulatory process in Tasmania to mitigate environmental

impacts of aquaculture. Industry and government actors addressed these concerns by noting the high environmental standards and practices of the Tasmanian salmon industry, both in the local and global context, by asserting that regulation rests on the input of independent and quality science and promoting third-party certification of the industry. However, the perceived regulatory and environmental failings of the management of salmon farming in Macquarie Harbour gave grounds for parts of the Tasmanian community to question whether government and industry, and the environmental science that informed their decision-making, could ensure that industry expansion (particularly Tassal's proposed Okehampton Bay site) would not pose unacceptable environmental risk:

One of the state's three big salmon producers, Huon Aquaculture, told last night's *Four Corners* program it believed a potential disaster was looming in Macquarie Harbour where the industry had expanded in recent years... The program also highlighted community interests about Tassal's proposal to farm salmon at Okehampton Bay on the east coast.

(ABC News, 2016b)¹

This was framed by an interviewee as leading to a loss of trust:

I genuinely feel the planning process is one of the big ones that let us down. Not helped by the fact that Macquarie Harbor did go pear shaped and people have lost trust. So, the idea of saying to people, "We've got a planning process," is not very reassuring to anyone these days. (Interviewee 11)

Huon Aquaculture was reported to argue that regulatory measures were lagging:

¹ Note regarding referencing: The author by-line is used when provided. In the absence of the author byline the news organisation is provided for referencing purposes.

"We are saying to the government: 'We've set the bar, you catch up'," said Huon co-founder Frances Bender. "It has to be comparable (to world's best practice) because if it isn't ... they'll be too many of us, too close together, we'll get our fish sick, seals will get in ... and we just start over again." Ms Bender said Huon's proposals had met with "silence" from the Hodgman government. (Denholm, 2016)

Additionally, while Tassal was seen to promote the quality of government regulations, the CEO also promoted an additional "industry funded watchdog" when he stated: "We know we have the best regulations in the world...The best way to prove that is to be adequately policed and that information being transparently produced." (Bevin et al., 2017). This also addressed the concerns of independence of the regulatory process:

Primary Industries Minister Jeremy Rockliff has denied the \$700 million industry is not regulated strongly enough, and told ABC 936 Hobart he was disappointed in the way the industry was portrayed [in the *Four Corners* Episode]...Mr Rockliff said the Government had strengthened the industry's regulatory regime. "We've made enormous inroads to ensure there is a far better arm's length process," he said. "Now the Environment Protection Authority is in charge of the entire supply chain when it comes to regulating salmon, we've actually also strengthened the penalties for those that breach the feed cap or the nitrogen cap. (Bevin et al., 2017)

With fragments of information provided in media regarding these regulatory changes there was a notable lack of information regarding how and why these changes were decided.

5.5.2.1 The role of environmental science in formal regulatory processes

Science institutions and environmental science were most mentioned in articles that also mentioned formal regulatory processes. This portrayed a strong correlation between the two in the public sphere. However, no clear information was provided regarding this relationship:

Government stakeholders used science information to support their claims of “good regulation” and was the group that most used science to “debunk claims”, in this case claims of “green groups”. (Inglis, 2017b)

We [the government in power] have always said we will be guided by the science and I now call on those opposed to this proposal to abide by the independent umpire’s decision.
(Lohberger and Richards, 2017)

Similarly, an interviewee emphasised the link between community interests and science and the ambiguity regarding how these were considered in the regulatory process:

You can come up with science measures but I think people actually want to see how do we relate that to the things that they care about, and how do we prioritise that?...Where in the planning process is the community? That is where [scientists] started doing a lot more of trying to relate the science to what people value. (Interviewee 11)

Concern was also raised by a range of interview participants that the collection of more detailed environmental data was suggested only in order to appease community concerns rather than deliver environmental outcomes. One interviewee explained that this use of science can reduce the capacity for conversations to address the science being conducted and the subsequent results and recommendations, referred to as the “real science”:

I have talked to some of [those opposed to a new salmon farm], "We just don't want a marine farm there. Visually we don't want one there." Well, that is fine, that is a reason for

not having one, it's a valid argument. Government were doing the same on the other side of the coin, everyone just kept using the science, but really, I do not think ... we actually never got to speak about the real science. (Interviewee 3)

While science information and science institutions were frequently mentioned in news media, in interviews scientists appeared to be reluctant to contribute to the deliberations over risk definition in media – as one interviewee noted, because “these debates ... tend to be political” (Interviewee 11). While environmental scientists could explain the implications that different farming regimes were likely to have on the environment and the risk of these occurring, “acceptability is a political decision, because that is a social decision about what they are prepared to tolerate” (Interviewee 11). This means there were instances where government decision-making did not align with science recommendations due to political reasons (Interviewee 2).

5.5.2.2 Transparency of science information, formal decision processes and the role of media

How science information was being represented and by whom was called into question in interviews and news articles. The ownership and transparency of environmental science, and how this information was used in regulatory decision-making and to support claims was debated among salmon aquaculture companies, environmental groups and political parties. In news articles Huon Aquaculture and representatives from the Greens political party rendered the public release of scientific findings as a key accountability mechanism for government decision-making, while also emphasising the ownership of scientific information and power relations:

The company's [Huon Aquaculture] executive director Frances Bender said she was "pleading" with EPA director Wes Ford to release IMAS' findings to the public. "I don't see how you can interpret no oxygen at the bottom of the harbour and the fauna in the sediments being deceased, as being anything [else]," Mrs Bender said. (Inglis, 2017c)

There is information out there, there are scientists conducting scientific studies now, there have been numerous over the last five years especially since the expansion...but all that science goes into the black hole that is DPIPWE said [Mr Wish-Wilson]. (Blucher, 2015b)

Notable was the absence of a rebuttal or information detailing government processes regarding public release of scientific information. How to legitimately communicate science information was highlighted when an interviewee stated:

There has been no independent authoritative voices to talk to the science publicly since this issue began. We have not seen ... scientists ... talking publicly about their findings. [Salmon aquaculture companies] cannot talk about it because then people say, "It's your science." If government had to talk about it, and they largely do not, and do not know how to explain it, then there is a perce[ption] of government and industry colluding to either not release the science, or to influence the appearance of science, or assuming that it's not good science. It's just a really easy way to knock out reality from a campaigning perspective.

(Interviewee 14)

During interviews, opposition groups expressed concern that companies and the government were not disclosing information in a timely or useful format that allowed for other interested stakeholders to make informed judgements (Interviewee 10). One interviewee explained the difference between information provision and trust in that information, depicting the difficulty of communicating scientific information:

This is where the media fits in quite a lot...Everybody says, "We want transparency, we want to see the data," and I have tried in many of the environmental groups to see, "Do you really want to see the data? Is that what you are saying? ... or do you want to feel that you can trust the output information that you are getting?" I think it's the latter. So, a lot of stuff around transparency and easy access. I think the government has taken that on board and said, "Okay, we are going to put everything on our websites." What they have not done is really improve the mechanism in which you find it. So, it's all there now, everything, you know? In most cases information goes up very quickly and the reports still go up, but they are still 400-page reports. (Interviewee 11)

Salmon aquaculture companies and government primarily used websites to make large amounts of information public. While this information was available it also needed to be promoted in order to inform public debate. As one interviewee explained:

[Environmental monitoring programs are] just not promoted. The amount of water quality monitoring they did for years before and after [the instalment of the Okehampton Bay farm]. But I do not know whether they did not promote it properly or the public did not want to listen to it. So, there is a lot being done that I do not think the public realise.

(Interviewee 3)

While a perceived increase in transparency over the past decade was thought to have made claims-making more accurate and accountable (Interviewee 1), interviewees also suggested that very few people were accessing or trusting this information.

While transparency of scientific information was a prominent communications theme in the conflict discourse, there remains considerable uncertainty among interviewees regarding transparency of science information and whose role it was to communicate science information:

I certainly think that the science, the actual science could be represented better and more clearly... now, is that up to the companies? Is it up to government? How do you do that? [the company] want to farm there, it's not [the scientists] job to provide science that supports what they are doing." (Interviewee 3)

5.5.3 Community interests

Community interests were given similar visibility as environmental science in news media. Community interests in articles took the form of community meetings regarding industry operations, economic benefits for regional communities, and the connection between adequate and transparent scientific information and increased community confidence in decision-making. Community interests regarding Tassal's proposed expansion in Okehampton Bay were also frequent in the sample. The importance of community support was commonly noted, highlighting that community interests were an important consideration for the industry and its management. Opposition to the Okehampton Bay proposal focused on potential environmental impact and impact on the aesthetics of the region.

Community members were most mentioned in article where expansion of the industry was discussed. An opinion piece in *The Examiner* highlighted community interest in the environmental regulation of industry expansion and the lack of trust that regulation would remain stringent in its absence:

In recognition of growing community interest in the regulation of the salmon industry, we believe the Okehampton lease should be subject to the most stringent environmental regulations and oversight," Ms White [opposition party leader] told the media. Surely that's already the job of the state's Environmental Protection Agency? At least one would hope so. (Anonymous opinion, 2017)

Community confidence was linked to stringent environmental monitoring and transparency of these measures. The Government was strong in their support for the expansion of the industry promoting the industry for its “world class” environmental regulations and the significance in the state’s economic prosperity:

Premier Will Hodgman said Tasmanians could be proud of the state’s world-class salmon industry. “The Government has recently updated environmental regulations for salmon farming to make sure the community can continue to have confidence in the industry,” Mr Hodgman said. “We have also made changes to the Marine Farming Planning Act will help to ensure environmental regulations keep pace with industry expansion.” The Tasmanian salmon industry is worth \$500 million, with the State Government aiming to expand it to \$1 billion by 2030. (Howard, 2016)

5.5.4 Conflation of environmental science and community interest

Environmental science and community interests were conflated following *Four Corners* within the prominent themes of environmental risk of industry expansion and the adequacy of government regulation. Building “public confidence” was said to rely on the interaction between science and government process:

The decision [to deem Oakhampton Bay suitable for farming] has sparked predictable reactions. Primary Industries Minister Jeremy Rockliff said it “debunks false claims made by green groups around the suitability of the site”. The Greens and Environment Tasmania have derided the decision as a foregone conclusion. But at some point, the community needs to be able to trust the science at hand and there is no reason we can find at this point to doubt the findings of the review panel. However, this is very much a test case for the future of the industry. Not only for how it operates but for how it can cultivate public confidence well into the future. Given the amount of fog that has clouded the issue in recent

times, it is not a test the key players, the Government, nor the science, can afford to fail.

(Editor, 2017)

5.6 Economic prosperity

While environmental impact and risk was the prominent concern regarding the sector's expansion, the most prominent claim to support the expansion of the industry was the economic prosperity it provided to the state of Tasmania. Local government representatives discredited campaigns opposing industry expansion by stating they did not represent factions of local communities that in fact welcomed employment opportunities. Nonetheless, proponents of the 'pro jobs' narrative acknowledged the need for sustainable development, highlighting the differences in interpretations of sustainable development. This reveals the jobs versus environment narrative that was dominant in the expansion discourse:

A rally of 150 salmon industry workers and family members gathered on Parliament House lawns on Wednesday to hear those employed in aquaculture speak of its importance to regional communities. The rally was in reaction to a campaign, Let's Grow Tasmania's Future, against Tassal's proposal to farm 800,000 salmon at Okehampton Bay. (Maloney, 2017)

With 5200 jobs in the industry, fish cannot be allowed to replace forestry as the environmental battleground in this state. (Anonymous opinion, 2016)

The Tasmanian Government has given Australia's largest salmon producer, Tassal, permission to build a new farm at Okehampton Bay on Tasmania's east coast. The decision is dividing opinion in the local community, with some people welcoming the jobs that will be created; while others are worried about the impact that salmon farming will have on the environment. (Ogilvie, 2017)

The struggle between the economic prosperity and environmental preservation agendas was embodied by what appeared to be a space for negotiation at the interface between environmental science, government and salmon aquaculture companies:

Tassal's proposed salmon farm on the East Coast may have been approved, but the fiery conversation it has provoked shows no sign of dying down... While the [Marine Farm Planning Review] Panel deemed the Okehampton Bay site suitable for salmon farming, it also suggested further environmental surveys of the site be undertaken. Primary Industries Minister Jeremy Rockliff, who commissioned the report, said the panel's findings were a boon for Tasmanian jobs and industry. "[The government] values the science," he said. "We want this industry to grow, and grow sustainably." Mr Rockliff also noted that further data on the site would "give the community confidence" as the industry moves forward. (Inglis, 2017a)

A council on Tasmania's east coast has approved an application for seafood giant Tassal to expand salmon production into the area, amid calls it should have waited for an Inquiry's findings on the environmental impact... Mayor Michael Kent last night said the proposal — which includes a 200-metre-long jetty — would create much-needed jobs for locals in nearby Triabunna. "We must take the opportunities ... particularly where jobs can come into it". Cr Kent said. (ABC News, 2016c)

Support for economic growth as the overriding concern was not unequivocal. This was reflected in the statement of the Mayor of Glamorgan Spring Bay Council who, while generally supportive of Tassal's expansion into Okehampton Bay, was reported as stating: "I don't necessarily mean jobs at all costs, but we need to evaluate how many jobs are involved, we think 25" (ABC News, 2016c). Here, the economic argument tried to find its place within the 'sustainability' discourse and was seen to quantify the clash between economic and

environmental agendas identifying the level of environmental risk that was acceptable for the level of economic prosperity.

Within news media, the concept of sustainability was often used ambiguously in sweeping statements with no clear reference to the environmental, economic or social elements of sustainability. This was exemplified when it was reported in *The Mercury* that the legal action Huon Aquaculture was taking against the government regulator “was about protecting jobs by ensuring the harbour was sustainably farmed” (Humphries, 2017). Here the reader would need to assume that Huon’s Ms Bender was referring to the *environmental* sustainability of farming. When sustainability *was* explicitly defined it was often environmental sustainability that was specified. This also depicted a narrative in news media that environmental sustainability underpinned and provided the foundation for sustainable growth and provision of jobs, rather than being valuable on its own. Government and industry stakeholders were seen to promote the narrative of sustainable growth and at times acknowledged that this should align with social licence and community concerns, but references to social sustainability beyond these considerations were lacking.

5.7 Chapter summary

This chapter expands both empirical and theoretical understanding of how media influences public debate through representations of claims-makers and decision-makers, and of their claims, under differing modes of public inquiry – the Senate Inquiry and *Four Corners* program. In particular, the chapter contributes to the understanding regarding ‘visibility’ (Lester, 2011) of stakeholders and how different stakeholders do, or do not, engage as political actors. The analysis of these investigations, and the interactions and responses in news coverage that they facilitate and promote, also asks what implications these claims-

making and discourse-shaping processes have for accountability and transparency in public policy and management of environmental resources. Given the dominance of the environment-at-risk discourse and the acknowledgement and use of scientific information in claims and counter-claims by non-experts, the lack of participation by scientists themselves in the mediated debate following *Four Corners* is a discernible gap. Also, the traditional role of NGOs in holding industries and Governments to account has shifted in this case to an industry player (Huon Aquaculture).

Concerns such as lack of transparency, poor regulation and environmental impact that were evident in Leith et al.'s (2014) work were still prevalent at the time of conducting this research. This can inform processes of risk framing and potential opportunities for mediatised conflict resolution between state and non-state stakeholders. It builds on Leith et al.'s (2014) work which acknowledge the usefulness of deliberative processes to link science, societal values and decision-making. It helps inform pathways for virtuous cycles by better understanding how science, societal values and decision-making are negotiated in news media. While Leith et al.'s (2014) research focuses on how science can better inform decision-making, the findings presented in this chapter emphasise the outward communications of this process. In particular, it illustrates how acceptable environmental risk and impact is determined in government decision-making processes.

The chapter finds that what is considered acceptable environmental risk of expansion has been determined without adequate transparency of processes. The perceived lack of engagement by government and industry decision-makers and transparency of decision-making processes have reinforced the distrust in environmental management and the knowledge production institutions and processes that inform them (vicious cycle).

Considerable uncertainty still exists regarding whose role and responsibility it is to publicly communicate environmental risks identified by science and what is an acceptable level of risk. This chapter suggests that, in the case of environmental risk conflicts, it is worthwhile determining the nuances of science communication in the public sphere where the discourse over what is acceptable risk is carried out. Particularly in the transparency debate in mediatised environmental conflicts of aquaculture. If we consider that how mediatised environmental conflict unfolds is determined by the power dynamics between activists, journalists, industry and politics (Hutchins and Lester, 2015), the findings in this chapter suggest that modern media are playing a different role now in the mediation of scientific information in public sector decision-making. Select scientists are given voice and because of the contestation that this evokes, scientists become more reluctant to take up those limited opportunities for voice. How science information is communicated within environmental risk discourses of seafood industry expansion should consider the potential for, and risks of, scientists becoming political actors.

6

TRACING ENVIRONMENTAL SUSTAINABILITY DISCOURSES TRANSNATIONALLY: THE AUSTRALIA-ASIA REGION

6.1 Introduction

This chapter places localised tensions regarding the environmental impacts of salmon aquaculture within transnational environmental sustainability debates concerning seafood production and vice versa. It focuses on the Australia-Asia region with Australia providing the nuanced case study and Asia, particularly China, providing transnational context as Australia's largest export market for Atlantic salmon products.

The aim of this chapter is to gain an understanding of how the construct of environmental risk and sustainability of seafood flows transnationally in the Australia-Asia region. The analysis identifies how environmental sustainability is defined and negotiated, who is involved and what mechanisms are used. To do this I ask:

- 1) What are the perceptions of environmentally sustainable seafood production within an international community and which actors portray these perceptions?
- 2) How do these perceptions influence local debates of environmentally sustainable production of seafood?
- 3) How do local issues influence international discourse regarding the environmental sustainability seafood?

6.2 Overview of news representation and interviews

The analysis of interviews (Table 13) and news text (Table 14) revealed how different actors determined, and used information to support this determination, whether the industry was or was not meeting international environmental standards for farming salmon. Not only was there a disconnect between international standards and how they are expected to be applied locally, but also how different markets interpret environmental sustainability and what that might mean for local operations. Third-party certification was used by industry as a

benchmark for environmentally sustainable practices and as a means of managing the risk of environmental campaigning. However, discrepancies in what is considered acceptable environmental impact between local NGOs and third-party certification schemes were observed in the research.

Table 13: Themes from interviews

Themes	Sub-themes	Sub-Themes
Tasmanian salmon industry operating environment within a global context		
Use of international references to support agendas		
	Tasmanian salmon industry is or is not meeting international standards	
	Local NGOs campaign against Aquaculture Stewardship Certification	
	Tassal holds Aquaculture Stewardship Certification	
	Tasmanian industry promoting the world class practices	
	Tasmanian industry is learning from other countries	
	ENGOS using internationally sourced information in campaign material	
Asia key export market		
Chinese communications and market operating environment		
Restrictive communications		
	China media is contained	
	Many ENGOS in China operate as consultants rather than campaign organisations with the exception of a few	
Consumers consider safety, status and providence more important than environmental sustainability		
	Australia = quality	
Communications on a global scale		
Global industry communications regarding environmental sustainability is in its infancy		
ENGOS are well versed in transnational networking and knowledge sharing		
	ENGOS seen as a pressure for change	
		Chinese ENGOS campaigning for Chinese retailers to stop selling Australian product (which has friends of the sea certification)
		Third-party certification used by industry to manage risk of environmental campaigning
Media as a pressure for change		
Importance of transparency		
	Transparency between industry and ENGOS	
		Communication gap between the industry and ENGOS that campaign against industry
		Observing a shift toward collaboration and understanding between some ENGOS and industry actors
	Transparency between industry and the public is increasing	
	Media facilitates conflict and inhibits open conversation	

Varying interpretations of environmental sustainability between countries and how to best achieve it	
	Third-party certification uses a clear benchmark for industry to define environmental sustainability

Table 14: Themes from news articles

Themes	Sub-themes
Asia key export market	
Industry is, or is not, meeting international standards	
Using international sources of information to support agendas	
Tasmanian salmon industry is world class	
Third-party certification	
	Provides clear standards for industry to achieve
	Provides a way for industry to show their practices are environmentally sustainable, safe and ethical

Asia, particularly China, is a growing market for Tasmanian farmed salmon. Australian branding and environmental third-party certification indicate to the Chinese consumer that the food is safe, rather than environmentally sustainable. This indicates a gap between local debates at the site of production in Tasmania and the values of international markets. The operating environment for media and NGOs in China is also considered more restricted than that of Australia. Nonetheless, Chinese NGOs were observed to be campaigning against selling of Australian products. It was also understood that NGOs are proficient at facilitating transnational networks and discourse while industry is still gaining momentum at the global level. Industry considered some NGOs to be a source of support at the global level of discourse regarding environmental sustainability.

6.3 Transnational relationships between and among NGOs and supply chain actors

The results of the interviews indicated a shift in the relationship between NGOs and international seafood supply chain actors. Interviewees operating in a transnational capacity in industry, NGOs, media, retail and third-party certification reported that the degree of

collaboration currently observed in relationships between some ENGOs and seafood businesses is vastly different to the mostly hostile relationships between business or industry and NGOs historically. As one interviewee noted, now “we act together, we discuss problems, the NGOs start to understand what is our problem and we start to listen to their problems” (Asia-based interviewee 25). Similarly, Transnational interviewee 17 highlighted that:

Campaigns against salmon farming have shifted from making kind of global unbacked claims to being very well documented claims. (Transnational interviewee 17)

However, it was also acknowledged in the interviews that historically, environmental claims regarding unacceptable environmental impact of harvesting or producing seafood, highlighted in transnational campaigns by global ENGOs, were not always being challenged by the seafood industry with the same efficacy at the global level as ENGO campaigns:

The way [the industry] was segmented nationally, internationally or transnationally, was very peculiar in that there was not always a voice that could address the concerns that were being made on a global scale. (Transnational interviewee 17)

Further highlighting the global scale of environmental discourse, industry representatives noted that ENGOs have been putting pressure on companies to be responsible for their entire value chain, emphasising the necessity for global environmental standards and transnational networking mechanisms that facilitate such expansive yet robust process. However, Transnational interviewee 19 addressed the presence of alternative opinions between and among stakeholder groups regarding how to best improve or meet environmentally sustainable practices through the value chain – namely whether it is most effective to be an active participant in a supply chain that could have practices that are considered unsustainable to help improve it or simply to not use those products.

The interviews indicated that managing the commercial risk of environmental campaigning has been an important driver over the past two decades for the global seafood industry to accept and embrace the concept of environmental sustainability. A representative of a prominent Asian retailer identified in interview that the company determined procurement risk areas by using ENGOs, media content and customer surveys as the major sources of information. The interviewee particularly noted that the retailer did not address scientific information in this decision-making process. If during this monitoring process conflict was identified to be present regarding a product they stocked, the retailer would send someone from headquarters to local suppliers in an attempt to solve the problem (Asia-based interviewee 25). This interviewee also noted that in response to ENGOs asking retailers to initiate environmental discourses through the supply chain, seminar-type events were set up to instigate information sharing with key stakeholders, such as government, companies and ENGOs in the supplying country. When asked why these retailers work closely with ENGOs the interviewees noted three key reasons; 1) to understand the ideas and thinking of the ENGOs in order to manage the risk of environmental campaigning, 2) to utilise the ENGOs expertise and international networks and, 3) ENGOs provide technical expertise on matters that span international governance boundaries.

A comparable example provided by interviewees was that of Southern Bluefin Tuna, which was produced in Australia and sold in the Asian market with third party environmental certification. In 2017, a major e-commerce platform in Asia, JD.com, posted a photo on social media of a Southern Bluefin Tuna promoting the Australian supplier. In response, a group of Chinese ENGOs campaigned in the Chinese media for JD.com to stop selling the fish based on its International Union for Conversation of Nature (IUCN) critically endangered status. Even

though this fish holds the “Friends of the Sea” certification, JD.com ceased selling the tuna within three days of the campaign. The World Wide Fund for Nature (WWF) was criticised for its partnership with JD.com. Similar to the Tasmanian salmon debate, dialogue between the NGO and industry was reported to have been limited at best, with all communications occurring via media platforms (Asia-based interviewee 27). While “Friends of the Sea” serves as a different certification process to Aquaculture Stewardship Certification (ASC), they both advocate for environmentally sustainable seafood and portray this sentiment to consumers. This example reinforces the finding that communication between local and international actors was absent and certification did not, in this instance, provide protection against criticism regarding seafood production practices. This example encompasses a similar set of actors to the salmon case study, but directly operating across the Australia-Asia region (Asian-based and international NGOs, Australian seafood producers and exporters, global environmental third-party certification schemes, and Chinese media). These actors also appear to disagree about what is the acceptable environmental impact of seafood production activities, providing a precedent for conflict between NGOs and certification schemes to occur in the trade of seafood from Australia into Asia markets.

6.4 The extent to which global discourses are used in local claims-making

Local industry and government actors have used global references in the Tasmanian newspapers by promoting third-party certification of the industry and the implementation of what they claimed to be “world class” environmental practices and standards (Rockcliff, 2017). As a rebuttal, local NGOs promoted international scientific literature and details of international fin-fish farming practices to assess nuances of the meaning of “world class” standards. For example, it was claimed in the Hobart *Mercury*:

If you look around the world, it is clear that the future for aquaculture is either land based or properly offshore... Other salmon farming countries like Norway and Canada have arrived at the same conclusion. (Wood, 2017)

Additionally, the ramifications that local industry practices can have on distant environments and societies was acknowledged in the interviews. For example, if a local company shuts down, retailers must then source the product from elsewhere in the world that may have lower standards or regulatory rigour. Those in support of the industry explained:

If our salmon industry goes by the wayside, the gap will be filled, and the jobs will be taken, by producers in Asia or South America. (Walton, 2017)

These potentially undesirable repercussions of extremist approaches on industry and the environment has meant that “we need to be really, really careful that we do things very, very well here”. (Tasmania-based interviewee 8)

Using international materials to underpin local claims is instilling the notion of a ‘transnational community of concern’ (Lester, 2014), giving grass-roots groups a form of legitimacy. Here, local actors use global discourse to strengthen local claims. However, the results also indicate there was little connection between local and international perceptions of the Tasmanian salmon industry. For instance, it was perceived among portions of the Tasmanian public that industry and government processes lacked transparency, particularly those associated with Tassal (Whitson, 2017). However, a Tasmanian newspaper highlighted that internationally, Tassal had been applauded for its transparency:

TASMANIAN salmon producer Tassal Limited has achieved another sustainability honour, this time on the world stage. ASX-listed Tassal was named as the world’s top seafood

company for sustainability reporting and transparency in a report rating the top 100 seafood companies on various measures. (Ford, 2015)

Tasmanian-based interviewee 9 highlighted that while Tassal focused on undertaking initiatives of environmental sustainability and transparency that were recognised internationally, namely ASC certification, the company had overlooked the need to engage and promote these initiatives locally early on in its expansion.

The disconnect between local environmental campaigning and global third-party certification schemes regarding the perception of the processes and implementation of certification has created confusion for industry concerning what is deemed “good enough...what is sustainable, what does sustainability mean?” (Tasmania-based interviewee 8) and what mechanisms to determine and practice environmental sustainability are considered legitimate to both the consumer, NGOs and third-party certifiers. This highlights disagreement and conflict over interpretation of fact (e.g. whether something is transparent), which can be based on different sources of information, values and priorities driving how that information is perceived.

6.5 Third party certification as a mechanism of transnational flow of information regarding environmental sustainability of seafood production

Seafood buyers acknowledged third-party certification schemes were useful tools to help identify seafood that is more likely to align with their purchasing policies (Asia-based interviewee 25). However, a range of interviewees highlighted that global third-party certification schemes for environmental sustainability were still undergoing improvements and identified that the relationship between certification and environmental sustainability was strained. One transnational interviewee (18) depicted some of the challenges by

explaining “not everything that is certified is by definition sustainable, but definitely not everything that is sustainable is certified.” This provides considerable challenges for those either wishing to produce or purchase environmentally sustainable seafood and to show that they are doing so.

Defining environmentally sustainable practices and how best to assess them can vary between and within stakeholder groups. For example, consumers in different countries “have different concepts of what sustainability means and different levels of urgency to address those issues” (Transnational interviewee 19). At the site of salmon production in Tasmania local actors defined environmental sustainability by its impact on the immediate environment (e.g. benthic and water quality, fauna and flora and aesthetics). However, for the Chinese consumer, any indication of environmental third-party certification is used as a proxy for provenance. Provence indirectly implies food safety or freshness. Here, this is not a different interpretation of sustainability but rather indicates that these customers value the supply chain traceability associated with the certification label over sustainability. Furthermore, NGOs and those involved in certification had only just started to engage in matters of environmental sustainability with the Chinese seafood supply chain (Transnational interviewees 17 and 19). As China shifts to a net importer, rather than certifying Chinese products, certification bodies and NGO efforts were said to be focusing on raising awareness of sustainable purchasing practices in China (Transnational interviewee 16). Additionally, Chinese media and politics was said to be considerably complex to navigate (Asia-based interviewee 29). For example, in order to gain access to moderated countries such as China, the larger transnational NGOs (e.g. WWF and Greenpeace) are said to act as more of a consultant to government, rather than activist organisations (Asia-based interviewee 29). A

speaker at the 2018 Asian Seafood Expo explained that the environmental sustainability of a seafood product only becomes an area of concern or discourse theme in markets more established than those in China (field notes, Asian Seafood Expo 2018).

6.6 Chapter summary

This chapter has explored the transnational flow of information, resources, perceptions and governance of environmentally sustainable seafood. Tasmanian salmon aquaculture provided a local context from which the research could expand. By traversing local and global scales, this research contributed to understanding the mechanisms for which information regarding the environmental risk of seafood production flows transnationally. In doing so it also identified some of the risks of not addressing both local and global factors in communication and governance strategies. It reveals how different actors determined whether the industry was or was not meeting international environmental standards for farming salmon.

Contributing to the difficulty of communicating environmental sustainability is the apparent lack of shared understanding concerning what constitutes environmentally sustainable practices and how to govern this in an increasingly transnational operating environment. Local and international perceptions and expectations regarding the sustainability requirements of salmon companies did not align in the case of the Tasmanian salmon industry. The interpretation and meaning of environmentally sustainable seafood production shifts as it moves from the site of production through the supply chain to export markets. These differences in the interpretations of environmental sustainability underpin stakeholder conflicts at both local and international levels. The challenge for all actors is to ensure communications and management practices and strategies address concerns at the local level while operating within global governance, market and resource pressures. This will be

discussed in depth in **Chapter 8**, which asks how the environmental risks of private use of common pool natural resources are publicly negotiated across time and scale. It considers how local and transnationally applied discourses of environmental sustainability and how messages flow contributes to local and transnational public debate on environmental issues.

7

AN INTERNATIONAL COMPARISON: AUSTRALIA AND NORWAY

7.1 Introduction

This final results chapter presents a comparative analysis of the mediatised environment conflicts in Australia and Norway as two nations producing farmed Atlantic salmon. The chapter explores how environmental risks of salmon aquaculture are presented and enacted in media discourse, identify narratives that transcend political borders and physical geography and those that differ between Atlantic salmon growing regions.

The two former results chapters (**Chapters 5 and 6**) traverse conceptual, spatial and temporal aspects of environmental debates regarding Tasmanian salmon aquaculture which contribute to important research gaps regarding news media of Tasmanian industry and local and transnational discursive flows. This chapter serves to contextualise the learnings from the Australian case study by testing it against environmental conflict in Norway. It compares media representations of the Australian and Norwegian industries to tease out similarities and differences at local and international scales and how media, risk and governance might vary across cultures and geographies.

In this chapter, I explore how environmental risks of salmon aquaculture traverse different scales of physical geography and public spheres by asking:

- 1) How are environmental risks of Tasmanian and Norwegian salmon aquaculture portrayed in mediated environmental conflict?
- 2) By whom are these environmental risks negotiated in the mediated environmental conflict? and
- 3) How do the two countries compare in their public negotiations of environmental risks?

7.2 Themes in Australian and Norwegian news media

News media coverage of salmon aquaculture in Australia and Norway presented common topics of: environmental risk, regulations and politics, economic prosperity and industry expansion. Additionally, in Australian news media, common themes included: community interests, environmental science, transparency, world class practices and third-party certification, while in Norway industry innovation, new technology and feeding a global population were prominent themes in the news discourse (Table 15).

Table 15: Topics that were prominent in the Australian and Norwegian news media discussing salmon aquaculture.

Topic	Australia	Norway
Similarities		
Environmental risk	✓	✓
Regulation and politics	✓	✓
Economic prosperity	✓	✓
Industry expansion/growth	✓	✓
Differences		
Community interests	✓	
Environmental science	✓	
Transparency	✓	
World class practices	✓	
Third-party certification	✓	
Industry innovation and technology		✓
Feeding a global population		✓

Apart from financial information on the sector (i.e. salmon prices and financial reports), environmental risk was the most common theme in news media of both Australia and Norway. When discussing the topic of environment, both Norwegian and Australian news media focused on environmental challenges and the management of these challenges (Olsen and Osmundsen, 2017). While there were a range of environmental challenges associated with salmon aquaculture in Norway, news media focused on issues associated with disease and pathogen (lice) management of farmed fish, the risk of disease and pathogen transfer to wild stocks along with the genetic harm to wild stocks due to escapes dominated the

environmental risk discourse. In Australia, concerns of environmental impact included degradation of benthic habitat below the open net pens, depletion of dissolved oxygen, health and mortality rates of farmed fish, impact on surrounding marine life (the endangered Maugan skate, whales and seals) and impact on surrounding world heritage areas.

Table 16: Dominant environmental themes in the Australian and Norwegian news media.

Themes	Australia	Norway
Similarities		
Sustainability	✓	✓
Impact on surrounding marine life	✓	✓
Impact on benthic habitat	✓	
Depletion of dissolved oxygen levels in the water	✓	
Impact on world heritage areas	✓	
Differences		
Pathogens (Sea lice)		✓
Escapes		✓
Disease		✓
Impact on wild salmon		✓
Use of soy in fish food		✓

Environmental issues were linked broadly to the concept of sustainability in both countries (. Table 16). Osmundsen and Olsen (2017) and Olsen and Osmundsen (2017) summarise the narratives:

While the negative environmental impact was acknowledged by those that supported the food production narrative, it was often portrayed in terms such as "sustainability" and "an acceptable footprint" suggesting that this is both manageable and tolerable." (Osmundsen and Olsen, 2017: 139).

[T]he focus on sustainability was present, but both governmental representatives and stakeholders (including newspaper journalists) mainly focused on the environmental dimension of sustainability and as a result the economic and social dimensions were rarely

part of the debate about sustainable aquaculture production (Olsen and Osmundsen, 2017: 23).

Misund's (2019) findings suggest that in Norway achieving sustainability relied on stricter management as it had so far failed to solve problems of lice and escapees. Researchers, NGOs and wild salmon organisations were said to speak to the insufficient regulatory mechanisms available to manage the dispersion of lice. Governments acknowledged the requirement of stronger sanctions and new measures, while Industry promoted the discourse that the industry complied with regulatory requirements (Misund, 2019). Failure of environmental regulations were also present in the Australian news media, but with a focus on the assimilation of salmon waste in the surrounding environment. In both Australia and Norway there is a lack of trust of regulatory mechanisms portrayed in media.

In Australia, achieving environmental sustainability was also linked to third-party certification schemes which have been an emerging mechanism in news media. These schemes were promoted by industry as a tool to achieve sustainability, while local opposition groups and ENGOs discredit their legitimacy. Certification went from being positively framed in news articles to being questioned by environmental campaigning groups following the airing of 'Big Fish' which portrayed corporate relations between salmon companies and certification organisations as corrupt. In contrast to the presence of third-party certification in Australian mediated debates, Norwegian news articles were found to omit reference to the topic of certification (Olsen and Osmundsen, 2017). However, with the announcement of the 'green' licences, Norway media had a solutions narrative regarding innovation and technologies to solve their environmental challenges. While Australian companies were portrayed to continue expanding without adequate precautions.

In response to the environmental risk discourse, government and industry in both Australian and Norwegian news media applied a local and global benefits narrative. The narrative that focused on local benefits was the same in the two countries promoting the economic prosperity that the industry provides (Olsen and Osmundsen, 2017). However, the global narrative was different in the two regions. Norwegian discourse represented an ‘aquaculture saves the global population’ narrative (Osmundsen and Olsen, 2017) while Australia had a ‘world-class practices’ narrative. The Australian narrative speaks to the benefits to the local community compared with the Norwegian narrative which presents a global perspective on food production and the sacrifices local community must make. While the narrative of ‘world class practices’ was employed by Australian government and industry, there appeared to be less discussion over specific innovation compared to that of Norway.

The perceived government support for the exploitation of the environment to allow for economic growth received criticism in both Norway (Tiller et al., 2012) and Australia. Both Norway (Krøvel et al., 2019) and Australia share the same narrative of economic prosperity versus environmental risk narrative. As (Osmundsen and Olsen, 2017: 136) summarised the mediatised debate in Norway to be “... between those in favour of a flourishing industry producing food to a growing global population, and those who fear that such industrial production may have irreversible consequences for marine ecosystems.” Osmundsen et al. (2017) illuminates the fast pace at which technologies, environmental challenges and growth of salmon aquaculture have evolved. The regulatory framework is required to adapt to this constant evolution however science information struggle to keep up with developments in the sector. This can create tension in the science-policy interface whereby science cannot provide clear guidelines for, or likely consequences of, government decisions. This same

tension was experienced in Australia whereby uncertainty regarding the role of science in government environmental regulation and planning processes was raised in news media. The role of environmental science information in the management of salmon aquaculture was prominent in Australian news discourse. Of particular focus was the transparency of this information and how it informs decision-making processes that regulate the expansion of the industry. Both the Australian and Norwegian news media highlighted the tension between science and politics. A key difference between the two countries, however, was that scientists in Norway appeared to be more willing to engage in debate regarding management compared to those in Australia.

7.3 Stakeholder groups present in Australian and Norwegian news media

Government regulators and politicians, salmon companies, NGOs, community members and private individuals were present in both Norwegian and Australian news media that discussed salmon aquaculture (Table 17). When looking at emerging stakeholder groups lawyers were found to be an important contributor to the mediatised debate in Norway (Osmundsen and Olsen, 2017) while in Australia it was community members and their interests. In comparison to Norway media, scientists were relevantly absent from the Australian news articles, even though science institutions were frequently referred to in the Australian news sample. The reluctance of scientists in Australia to engage in politically charged highlights the tension between science and politics. Comparatively, scientific experts contributed to 16.5% of the opinion pieces in the Norwegian news media sample analysed by Osmundsen and Olsen (2017), along with political parties (16.8%), private individuals (15%), NGOs (11.7%), industry (8.8%), ministers (7.3%), public administration (5.10%), sports anglers (5.5%), and lawyers

(1.1%). Researchers were also said to be a key stakeholder contributing to discourse regarding the management of lice in Norwegian news media (Misund, 2019).

Table 17: Stakeholder groups that were present/absent in the Australian and Norwegian news media discussing salmon aquaculture.

Stakeholder group	Australia	Norway
Similarities		
Government regulators and politicians	✓	✓
Salmon companies	✓	✓
NGOs	✓	✓
Community members and private individuals	✓	✓
Differences		
Scientists and researchers		✓
Lawyers		✓

There was one company in Norway (Mowi) and one in Australia (Huon Aquaculture) that left industry peak bodies and separated themselves from other salmon aquaculture companies based on their claim that regulations and current practices within the industry were not meeting high enough environmental standards. The sector became divided in its communications approach. This caused conflict and distrust (vicious cycles) rather than promoting communication within the industry to present a unified voice.

7.4 Discursive themes identified in interviews

Interviewees across stakeholder groups and regions highlighted that publicised conflicts were underpinned by discrepancies in what was considered acceptable levels of environmental impact. To enter into negotiations of acceptability and environmental sustainability, the credibility and legitimacy of stakeholders, information and communication mechanisms were raised in interviews with key stakeholders in Australia and Norway (Table 18).

Table 18: Themes present in the Australian and Norwegian based interviews

Theme	Australia-based interviews	Norway-based interviews
Defining acceptable environmental impact and environmental sustainability is ambiguous	✓	✓
Third-party certification was used by industry as a benchmark for environmentally sustainable and acceptable practice	✓	✓
Environmental campaigns challenged the adequacy of Third-Party certification standards	✓	✓
Industry stakeholders were reactive in their public communications	✓	✓
The primary mechanism for information provision by governments, industry and Third-party certification was websites and reports	✓	✓
Mainstream media inhibits transparency	✓	✓
Transparency is important	✓	✓
Third-party certification was used by industry to mitigate the risk of environmental campaigning		✓
Industry and government communications were in the early stages of growing and remained largely business to business		✓
Scientists were cautious with their relationships with NGOs to maintain independence and credibility with industry stakeholders		✓
Environmental campaigning organisations use environmental risks experienced in other world regions to create risk discourses locally	✓	

Opposition groups in Australia identified the use of international sources to create local environmental risk discourses:

The biggest fish farming industries in the world are in British Columbia, Scotland, and Norway. The good thing we [opposition group] have found there is they are having huge problems with their aquaculture industries with disease. So, information we can gather from those countries that also are experiencing problems with their fish farming industries, can be used as examples when we come out and quote that these are the sorts of issues that we could have, or do already have. (Australia-based interviewee 4)

You have got these big huge companies in Norway, British Columbia, and Scotland getting away from in-shore fish farms but here is our government still pushing ahead big time, wanting to double the size of the industry by 2020, through having inshore coastal fish farms all around Tasmania. So, it's really frustrating to see what is happening in other parts of the world and we just blunder ahead the same old way we always have. (Australia-based interviewee 3)

Industry stakeholders relied on third-party certification schemes to provide a level of certainty that they were undertaking environmentally acceptable or sustainable practices. This was particularly evident when claims were of a transnational nature (e.g. soy products used in fish feed). However, environmental campaigning organisations in both Australia and Norway claimed that certification standards were inadequate. Ambiguity within the definition of sustainability and divergence in interpretations of sustainability between and among stakeholder groups is reflected across interviewees that operated in Australia, Norway and transnationally:

Most of the Norwegian soy is certified, we [ENGO] claim that the certification is not good enough, but the feed producers say that it's certified so it's not a problem. So, we are currently having a debate with them about if the certification is good enough or not, and we say that there are limitations for that as well. (Norway-based interviewee 25)

Now they're [ENGOs] trying to undermine the Aquaculture Stewardship Certification. So, they're actively saying, "It's not good enough." And they're developing their own charter, so Environment Tasmania has come up with its own sustainable charter. If you compare their points, seriously, it's eight points of criteria on their charter versus 150 for Aquaculture Stewardship Certification. (Australia-based interviewee 8)

The public communications of industry and government regulators regarding the management of environmental risk were said to be largely reactive rather than proactive. Industry stakeholders identified a shift from business-to-business communications to business-to-interested community. Response to this was seen by the growth in communication departments and proactive communication strategies. Norwegian salmon companies were said to be making efforts to mitigate mediated conflict by having annual seminar-type discussions with ENGOs involved in the debate regarding environmental risks of salmon aquaculture. It was stipulated that media were prohibited from being present to allow for open discussion (Norway industry interviewee 23).

Government departments in both Norway and Australia indicated changes in their media strategy to encompass social media. In Australia, salmon companies emphasised the shifting focus from relying on internationally recognised standards and communications to portray commitment to environmental sustainability and local community engagement. An interviewee explained the new communication initiatives with local communities and the importance for alignment between government and industry communication strategies:

It's hard because it's a fine line between that [communicating complex environmental information] and people think you are spinning stuff. I still think face to face is one of the best ways. So, we [salmon aquaculture company] now have quarterly community meetings and a community advisory in every region where we farm. Part of that is to support Aquaculture Stewardship Certification (ASC) certification and part of it is a new model...and we are strong supporters of that despite everything you see swirling around [in the media], we feel that has been a safe place in our opinion to go and talk about things. So, we have enough people that phone calls can be returned and face to face meetings can happen. So that's an investment. We have developed our own social media page. We did market

research into it and Facebook was the best way to reach people in Tasmania. We developed our own Facebook page and started disseminating information that way, kind of in response to Marine Protections Facebook page. We have got five people and we're about to hire a sixth person. We now have the routine engagement with the politicians which is more pervasive in all of this...There is a lot of stuff happening in that space that drives media and drives outcomes. For instance, their [governments] announcement around the [new farming region], we didn't want to go then. We didn't know they were going to go early, we had two days' notice. We had no say in how it went, and the community is going, "Well nobody has talked to us". So, it wasn't ideal, and it really undermined everything we were trying to do better this time, right? So that has a role. (Tasmania-based interviewee 7)

For the industry to have communication with publics that are transparent and proactive it was suggested that the challenges of salmon farming should be acknowledged:

You have to be honest and accept the challenges and the problems and you need to do something with that before you can say you are fully sustainable. (Norway-based interviewee 24)

The media does give us [industry] a lot of the time when it comes to our challenges. When it comes to sea lice when it comes to escapes and of course that is something that they have to write about, they have to give it attention and I think one of the major problems for the industry is that we in the industry we are not willing to talk with the media. We are not willing to respond when the media are actually writing about us as an industry even when it includes our problems like sea lice and escapes. (Norway-based interviewee 23)

However, ambiguity remains regarding the roles and responsibilities of publicly communicating environmental risks of the salmon aquaculture sector and their management.

A Norwegian-based interviewee put the responsibility on industry:

We [government regulators] are not advocates for the industry. We are regulators. We are trying to make sure that you have a developmental industry within sustainable framework. But the industry has to be able to participate in public debates, and they don't. They seemed very actively disengaged. (Norway-based interviewee 26)

When faced with potentially contentious topics, industry interviewees in both Australia and Norway expressed their inclination to consult ENGOs that have scientists or experts within their organisation. A Tasmanian-based ENGO that does not have a scientist on their team suggested that they do not use science as an information source as much as they would like to because: 1) they did not have access to a lot of the science (particularly that which is industry funded) and 2) even if they did have access to science information they question the independence and therefore credibility of such science. The interviewee explained that because of the perceived institutionalised issue of transparency regarding science information the ENGO had “no one to talk to other than overseas scientists” (Tasmania-based interviewee 9):

Science could definitely be an information source, but until there is access to the science the companies do and until there is some independent science that is not produced by the companies, we are not going to be able to utilise that as an information source...There was no independent science as far as I'm aware. If there was it was non-transparent because we didn't know about it. So, the only thing that could verify [the company's] claims that it was mitigating impact was [the company's] own report. The figures in the report don't even add up because the feed input data hasn't been put in. (Tasmania-based interviewee 9)

At the time of writing there were 33 scientific studies of salmon aquaculture in Australia made available on the website of the Institute of Marine and Antarctic Studies. While environmental science might well be available, ENGOs and other concerned citizens may lack

the knowledge of where to find reports, or how to interpret them, as well as lack trust in them.

Interviewees working in international science communication expressed that partnerships with NGOs, while important, could be perceived as damaging to their reputation as an independent scientific organisation and subsequently their efforts to work collaboratively with multi-national seafood companies:

yes, we [international science institution] do collaborate with other sort of non-academic institutions even NGOs but we do have to be careful. We have to make sure that we're not completely sort of used for their own agenda and we have to maintain our own merit and very carefully maintain our scientific integrity in everything that we do. (Transnational interviewee 20)

A transnational media interviewee identified that they engage with NGOs that were seen to actively participate in industry discourses:

Do you see them [NGO workers] at industry events engaging with people? Do they have some measure of scientific background in the topic? Are they kind of seen as fringe? Are they the same people you have seen over and over just talking about it but not really engaging? (Transnational Interviewee 21)

Similarly, Tasmanian interviewees indicated that government and corporate decision-makers and journalists were quick to dismiss claims that they determined were not based on “evidence” or lacked “merit”. Determining the “merit” of an argument was highly subjective and, as one interviewee explained, it depended on “your level of understanding of the issue” (Tasmania-based interviewee 14).

7.5 Chapter summary

This chapter contributes to the knowledge of how environmental conflicts change depending on the age of industry operations, different public spheres and levels of expansion. It makes an argument about the trajectory of the Tasmanian industry as having emerged from the Norwegian industry, flows of corporate practice, claims-making mechanisms, presence of actors, risk, ideas and information. It does this by drawing on the media analysis presented in **Chapters 5 and 6** and a systematic review of scholarly accounts of Atlantic salmon aquaculture discourses in Norwegian newspapers. To account for the limitations of comparing multiple media analysis I drew on expert in-depth interviews with stakeholders that had expertise in Tasmanian and Norwegian salmon aquaculture environmental governance and current environmental conflicts. Direct observation of events that provided insight into the Norwegian and Tasmanian Atlantic salmon aquaculture and seafood industries were observed along with global seafood events to provide context to the findings.

The findings indicate that while broad themes of environmental challenge and risks associated with the expansion and continued economic prosperity of the salmon aquaculture sector are easily transferred globally, subthemes of risk are not as easily transferable between growing regions. The scale of claims and subthemes differed between the two countries and are not easily transferable. Tasmania was on the same trajectory as Norway regarding key claims-making mechanisms. For example, the adequacy of decision-making mechanisms and third-party certification standards were claims shared by environmental campaigns and salmon aquaculture companies in both countries broke industry ranks because they disagreed with management approaches. To counter local risk discourses, government and industry stakeholders in both Australia and Norway were seen to promote global benefit

narratives. Norway promoted a narrative of local sacrifice in order to feed a global population, while Australia focused on local benefit narratives of world's best practice.

By asking questions of what messages are being carried, by whom and how, it was found that legitimacy of stakeholders, information and risk definitions and interpretations were central to negotiations in both countries. In both countries, environmental campaigning organisations were less readily engaged by other stakeholders and the level of engagement was determined by their scientific expertise, presence at industry events and capacity to contribute to solving the environmental challenges the industry was facing.

Interviewees indicate that traditionally, industry communications have remained largely business to business with a shift toward business to consumer. Communication departments of industry and government regulators were growing in both Tasmania and Norway acknowledging the substantial resources it takes to communicate complex issues as transnational information technologies evolve.

This chapter has investigated change and evolution of the salmon aquaculture industry and how environmental conflict is constructed in media. As each of the previous three results chapters have exposed the flow of environmental risks locally and transnationally, how different discourses work to create local and global communities of concern and how these discursive scales interact, this leads to discussion regarding the implications for media and communications processes of environmental risk. It finds that mediated visibility of stakeholders and constructs of environmental risk signals the emergence for necessary communicative practices within environmental governance.

8

THESIS SYNTHESIS AND DISCUSSION

8.1 Introduction

This chapter synthesises the key findings from **Chapters 5, 6 and 7** and deliberates on the contributions these findings make to understanding how the environmental risks of private use of common pool natural resources are publicly negotiated across time and scale. The research aimed to explore the relationship between environmental campaigns, media and communications and environmental governance to understand how this nexus contributes to local and transnational public debate on environmental issues. This was done by exploring locally contained media (**Chapter 5**), transnational flows of environmental risk information and their cross-scale interactions (**Chapters 6 and 7**). Drawing on the depth of this case study I highlight in this Chapter some of the implications this has on how environmental risks are portrayed and potentially resolved in socio-ecological systems. Critical discourse analysis was applied to extend the theory of mediatised environmental conflict (Hutchins and Lester, 2015) to encompass the role of science in media representation of environmental governance processes (see **Chapter 4**). The (in)visibility of scientists and science information was first uncovered in **Chapter 5** and tested further in **Chapter 7**. Below, I will continue to draw upon the Tasmanian salmon aquaculture case, and seafood more broadly, with examples where useful, giving consideration to local and global context and transnational realities.

The research started by examining how environmental risks are constructed publicly at the local level. I found that news media discourse regarding the Tasmanian salmon aquaculture industry was predominantly framed by environmental risk, economic prosperity, expansion of the industry and government regulation. Within these themes, environmental science and community interests became conflated. The themes were characterised by a perceived lack of transparency regarding environmental science information and lack of trust in the

regulation of industry expansion. Once I understood how the Tasmanian salmon aquaculture industry was being framed in news media, I could then ask by whom these themes were being carried. The most mentioned stakeholder groups in news media were government, salmon companies and science institutions respectively, suggesting the leverage they hold to facilitate virtuous cycles in conflict over the use of common pool natural resources.

At the time of this study, public conflict persisted about the Tasmanian salmon aquaculture industry, exposing entrenched vicious cycles that have prevailed since the work of Leith and colleagues in 2014. By a) identifying and analysing dominant themes and stakeholders within news media coverage, particularly where disputed and ambiguous social and scientific information appears; and b) considering how associated media practices and logics might influence outcomes of complex common pool natural resource-use conflicts, reflection on this earlier work by Leith et al. (2014b) can be undertaken and examine how this contention is presented in media and scholarship. It offers the opportunity to assess how the prevalent risk themes following national media scrutiny of the industry might have contributed to vicious cycles in the public sphere. This can also contribute to understanding how vicious and virtuous cycles were performed by various participants in the mediatised debate. This can help inform pathways for virtuous cycles by better understanding how science, societal values and decision-making (Leith et al., 2014b) are negotiated in news media.

Chapter 5 uncovered how different forms of inquiry into environmental risk is responded to. News coverage following the *Four Corners* episode was framed by a conflict discourse compared to that of the Senate Inquiry, which industry had embraced as an opportunity to be transparent. The impact this had on how different information was perceived, for example science, is highlighted in this thesis. While scientists themselves remained largely invisible in

media coverage of the conflicts, science information and community interests (the two becoming increasingly conflated) became visible following *Four Corners*. In response to increased conflict, industry and government actors responded with claims of “world class” environmental practices and standards. However, these stakeholder groups were portrayed to be outwardly opaque in their communications of, and lacking engagement in, decision-making processes, creating uncertainty and lack of trust in these processes.

Chapter 6 highlighted that claims of world’s best practice and global governance mechanisms regarding environmental sustainability applied at the local level were not as easily accepted where transnational flows of information regarding environmental practices and concerns were sought out and carried by social actors in the context of transnational environmental campaigning. Third-party certification was used and promoted by industry as a benchmark for environmentally sustainable practices and as a means of managing the risk of environmental campaigning. However, discrepancies in what was considered acceptable environmental impact between local ENGOs and certification schemes was observed in the research and was said to create confusion regarding acceptable environmental impact. Additionally, third-party certification in the context of export markets, in this case the Chinese consumer and the Australian brand, indicated that the food is safe, rather than environmentally sustainable. This indicates a gap between local debates at the site of production in Tasmania and the values of the industries international markets. Not only was there a disconnect between international standards and how they were expected to be applied locally, but also how different markets interpret environmental sustainability and what that might mean for local operations.

To test the trajectory of the Tasmanian industry, **Chapter 7** introduced knowledge gathered of the Norwegian salmon aquaculture industry into the thesis. This Chapter found that while

broad themes of environmental risk were shared between both Tasmania and Norway, subtle differences in the mediatised discourses shed light on opportunities and challenges present in governance mechanisms. Tasmania was on a similar trajectory regarding industry relations and broad themes in the mediatised conflicts. However, the two growing regions experienced different environmental risks and governance structures. This can be seen in how the local and global discourse were framed in media. This also showed that while broad themes are easily transferable, subthemes were dependent on local conditions.

The next sections in this chapter will elaborate on the implications and opportunities of these findings. It begins with discussion on transnational flows and how the local and global interact before focusing on the research questions regarding what and who is being mediatised and social acceptance of communicative environmental governance mechanisms. I finish this chapter with a discussion of media's role in transparency and accountability of salmon aquaculture governance.

8.2 Summary of findings

8.2.1 RQ1) What are the dominant claims and counter-claims being mediated in relation to environmental risk?

As seen in **Chapters 5 and 7**, news media coverage of salmon aquaculture has increased over time in both Australia and Norway. Tiller et al. (2012) suggested that Norwegian media coverage of salmon aquaculture followed either environmental impact events (i.e. lice problems and impacts on wild salmon stocks) or changes in planning, such as expansion. This was also reflected in Australian media coverage of salmon aquaculture which followed environmental impact and expansion proposals.

The dominant environmental framing of the media debate presented in **Chapter 5** appeared to be triggered by the expansion of industry practices in existing and new locations. Subsequently, the adequacy of government regulation and private governance structures to manage these environmental risks was debated. Concerns of environmental impact, the adequacy of government regulation and lack of transparency that were evident in Leith et al's 2014 work were still prevalent in the Tasmanian debates at the time of this study. Experiences of environmental impact of industry expansion in Macquarie Harbour provided grounding for continued public concerns regarding expansion proposals, primarily those from Tassal. The perceived lack of engagement by government and industry decision-makers and transparency of decision-making processes had reinforced the distrust in the environmental management of the industries expansion. This included the science knowledge production institutions and processes that informed this decision-making.

At the centre of this heightened conflict was the struggle between the economic prosperity and environmental preservation agendas. The environmental protection narrative prompted the counter claim of economic prosperity. The struggle between these two discourse frames was systemic in public debates of industry expansion. These competing discourses were placed within a broader discourse of sustainability which remained ambiguous with little clarity regarding what aspects of sustainability were being referred to. Aquaculture practices that are financially sustainable may not fit within environmentally sustainable boundaries. While environmental sustainability was often implied and seen as essential for achieving growth, there was little information communicated through media provided for how this was defined and being achieved. This was embodied by what appeared to be a space for

negotiation at the interface between environmental science, government and salmon aquaculture companies and a lack of transparency regarding this process.

Within these themes of environmental risk, sustainability and regulation, environmental science and community interests became conflated. The conflation of community interests and science information is an important finding in terms of deliberative democracy and public interest. Community concerns regarding environmental science were primarily characterised by a perceived lack of transparency regarding environmental science information and lack of trust in how it was used in the decisions regarding industry expansion. The combination of the environmental risk discourse with that of poor management was further fuelled by Huon Aquaculture's legal actions against the government claiming inadequate environmental regulation. Irrespective of whether or not the government decision-making processes were adequately managing the environment with the information they had or considering a range of information (such as environmental impact data, interests of other users of the waters and economic benefits to regional communities), the government was portrayed to be outwardly opaque in their communications of these processes.

In the case of Tasmanian salmon, scientific information was used as a political tool by actors within media coverage of the environmental conflict. Following the Senate Inquiry, while some debate concerning the validity of the science-based information was present, this was not one of the more prominent features in the news articles. Comparatively, articles where the validity of the scientific information was debated, and information was selectively wielded to support agendas, actions or statements were more frequent following *Four Corners*. As a result, uncertainty was created concerning the independence, relevance, and role of science

in informing opposition campaigns, corporate decisions, and Government regulations regarding the environmental impact of the industry.

8.2.2 RQ2) How and by whom are environmental risks being negotiated publicly?

As shown in **Chapter 5**, government, salmon aquaculture companies and science institutions were the most mentioned stakeholder groups respectively in the news media regarding Tasmanian salmon aquaculture. This suggested that these stakeholders could hold the most leverage to influence the public discourse and therefore facilitate virtuous cycles. The idea that industry and government stakeholders hold the most potential to influence media coverage and therefore play “important roles in strengthening communications and improving the transparency of information especially surrounding public issues of concern” is evident in similar work by Weitzman and Bailey (2019: 180). However, these stakeholder groups were portrayed to be outwardly ambiguous in their communications of decision-making processes or their involvement in these processes.

Environmental opposition groups had a relatively low “mediated visibility” (Thompson, 2005). The results presented in **Chapter 5** indicate that critical moments in the discourse were not solely a result of environmental campaigns, which have historically played a significant role in environmental discourse in Tasmania (see Cullen-Knox et al., 2017b, Murphy-Gregory, 2017, Lester, 2016b). Rather, concerns of inadequate regulation raised by Huon Aquaculture (also seen in Norway, see **Chapter 7**) was the catalyst for much of the public discourse regarding the environmental risk and impact of the industry. In the case of Tasmanian salmon aquaculture, Environment Tasmania was shown to leverage these critical moments for its own strategic purposes. This is not to say that these campaigning organisations did not

provide a solid grounding for corporate players to use the environmental discourse as a legitimate source of concern. However, it exemplified a shift in the traditional role of NGOs in holding industries and Governments to account, to an industry player taking this role.

In the case of Tasmanian salmon, scientific information was used as a political tool by actors within the conflict (see **Chapter 5**). Yet notably absent from the media discourse was scientists themselves, particularly given the frequent reference made to scientific information and findings and the scientific institutions in media. Given the dominance of the environmental risk discourse and the acknowledgement and use of scientific information in claims and counter-claims by non-experts, the lack of participation by scientists themselves in media discourse was a discernible gap. In comparison, as shown in **Chapter 7**, scientists and researchers had a notable presence in the opinion pieces of selected Norwegian newspapers (Osmundsen and Olsen, 2017).

8.2.3 RQ3) How do local mediated environmental conflicts and transnational discourses of environmental sustainability interact?

Broadly, this research found that the practice of farming salmon was placed within the overarching theme of sustainability across local and global discourses (**Chapters 5 and 6**). Disagreement concerning the environmental risks of salmon aquaculture and the management of these is evident in both Norwegian and Australian news media (**Chapter 7**). This confirmed that the saliency of these issues in the public discourse was not only present in both countries but also at a global level. The sustainability of salmon aquaculture and its management is a complex problem (Sandersen and Kvalvik, 2015, Osmundsen et al., 2017) that had been simplified in news media in both countries into a binary tension between environmental impact and economic prosperity. When discussing sustainability, it was often

the environmental sustainability that was implied but often not made explicit. While environmental risk was a key theme in both Australian and Norwegian media the foci of these risks varied between countries. In Norway, pathogens (i.e. lice) were the primary limiting environmental risk. While in Australia it was the assimilation of salmon waste into the surrounding environment. In both countries, the perceptions regarding the adequacy of the management of these environmental risks was prevalent within the environmental risk discourse.

Campaigns of both ENGOs and salmon companies targeted alternative third-party decision-making mechanisms and standards because they disagreed with public agency management standards and frameworks. This discourse also provided an opportunity for Huon Aquaculture to pursue competitive advantage. **Chapters 6 and 7** highlighted that the transnational flow of environmental risks contributed to the complexity of interpretations and measurements of acceptable environmental impact at the local level. Australian opposition groups saw the environmental risks experienced in other world regions as an opportunity to create risk discourses locally and create ‘awareness’ of potential environmental risks. However, many of the environmental impacts of farmed salmon faced by the aquaculture sector in Europe were not applicable to Australia (Haward, 2016). This transnational flow of, at the time inapplicable, environmental risk discourses could potentially detract from the risk experienced in a given area. This risk framing could either highlight potential risks that could benefit from proactive management or inhibit the likelihood that resources were most usefully applied to mitigate experienced environmental impact.

To counter local risk discourses, government and industry stakeholders in both Australia and Norway were seen to promote global benefit narratives. Norway promoted a narrative of

local sacrifice in order to feed a global population. While Australia focused on local benefit narratives by promoting the industry implementing world's best practice to ensure local environmental risks were minimised. Community members and emergent local community opposition groups were key emergent stakeholder groups in the Australian news media. Similarly, Tasmanian based interviewees often focused on local benefits, risks and local community engagement strategies. Whereas Norway claims-makers and decision-makers applied national and global lenses to their narratives. In Norway, Salmon farms are governed by the local municipalities, for which they pay rent fees too. This means that the local community directly experiences the benefits of having salmon aquaculture in their local area (Berge, 2018). This could be why the issue of local community benefits was not as evident in Norway's news media. The local focus in Australia could be due to the Australian salmon aquaculture industry operating in a small island state compared to the Norwegian industry which spans vast coastlines across the country. Many of the stakeholders in Norway also operated on a transnational scale with multinational salmon aquaculture companies, global media outlets and, NGOs addressing impacts of aquaculture experienced in other countries.

Additionally, the opposition (presented in **Chapter 5**) against Tassal highlighted that it was not sufficient enough to rely on third-party certification alone to demonstrate commitment to environmental sustainability. While Tassal focused on achieving international standards in environmental sustainability and reporting (Aquaculture Stewardship Council certification), the company was said to have lacked local stakeholder engagement at the site of production. Local opposition groups voiced concerns regarding the perceived lack of transparency of the Tasmanian salmon industry, particularly Tassal. Meanwhile, **Chapter 6** showed that the company received international praise for transparency regarding its sustainability reporting.

Interviewees reported that the company was potentially too complacent in its expectation that their commitment to achieving international environmental and reporting standards would filter through to, and be accepted by, local communities. This was perceived to have contributed to the opposition from a portion of concerned communities in Tasmania and a disconnect between these groups and international standard-setting stakeholders and actors.

8.2.4 RQ4) What are the roles of media and what are the processes of mediatisation in communicative governance in cases of environmental risk?

The Four Corners episode ‘Big Fish’ created considerable conflict and complexity in the interactions between and among stakeholder groups within Tasmania. The television program instigated conflict language that reinforced extremist positions and hostility among and between stakeholder groups. This was a one-way information flow lacking transparency regarding information gathering and processing practices. It was evident in this case that media events such as *Four Corners* can instigate greater news media attention, involvement and diversity of actors, emphasis on alliances and conflicts, debate over governance along with the raising of concerns regarding the legitimacy of knowledge and information. While the ‘Big Fish’ episode may not have been the sole cause for the conflict present in news media discourse, it did appear to be the platform for which opposition groups, political parties, salmon companies, community members and journalists built and shaped their case. Thus, public perception was inevitably shaped by processes of mediatisation.

The Senate Inquiry and *Four Corners* were instigated by conflict internal to industry rather than environmental campaigning. It was following ‘Big Fish’ that industry cohesion visibly deteriorated and was highly visible in news media coverage. Discourse shifted away from addressing the industry as a whole and claims-against companies themselves became

prevalent in the news discourse. Comparatively, the government-led Senate Inquiry provided a transparent and inclusive platform for collection of information (submissions) and deliberative dialogue (hearings) and a presentation of findings. This subsequently resulted in comparably less complexity and conflict in the news media. It could be construed that Huon Aquaculture's breaking of industry ranks, first present in the Senate Inquiry and publicised in *Four Corners*, acted as the prompt for the shift in public discourse.

It was portrayed in news media that without media scrutiny of environmental science and management, the environmental impact experienced in Macquarie Harbour would continue. This was represented by Huon Aquaculture, political opposition parties, journalists and community members. The narrative of uncertainty and distrust was heightened when Huon Aquaculture contested environmental regulations by taking legal action against the government and condemning the environmental impact of the industry within media. This publicly highlighted the variation in definitions of appropriate level of environmental risk among and between industry, government regulations and third-party certification providers along with a lack of healthy discussion processes within industry to agree on these.

By revisiting the research questions, the analysis presented in **Chapter 5** has established that the *Four Corners* program and Senate Inquiry were able to promote different framing and engagement with the perceived issues of the Tasmanian salmon industry. The Senate Inquiry process provided a platform for dialogue regarding the claims being made concerning the regulation of the industry's expansion. Comparatively, *Four Corners* was a one-way information stream outward which contained the controlled and subjective information it chose to source and include. Public debate, as conveyed in news media, was more contained in the Senate Inquiry compared with *Four Corners*. It could be that this was because of the

formality of the Senate Inquiry compared to the controversy presented by the *Four Corners* program, activating a discourse of conflict between and among key stakeholder groups.

It has been acknowledged that popular ‘soft journalism’ programs, such as *Four Corners*, have the capacity to create frames that are then difficult to dislodge in subsequent public debate (Lester and Hutchins, 2012). The impact this has on how different information is perceived, for example science, has been highlighted in this study. While Leith et al. (2014b) acknowledge the usefulness of deliberative processes to link science, societal values and decision-making, this thesis provides greater detail of this process in the context of conflict that plays out within media. It has raised important questions regarding the role media play (both claimed and actual) as a catalyst for change for how environmental risks are negotiated. In this space, media have a delicate role to play in democracy – is it their job to be a conduit or contributor? Do media act to hold decision-makers and claims-makers to account or are they a business with their own agenda to prosecute? Media’s role in transparency and accountability of natural resource governance processes is discussed in more detail in the following section.

8.3 Insights and implications for mediatised environmental conflict and environmental governance

8.3.1 Information flows closing and widening the gap between local and global perceptions of environmental best practice

The transnational flow of environmental risks complicates interpretations and measurements of social acceptability of such natural resource-based industrial activity. The thesis supports existing theory that information about the environmental risks of salmon aquaculture do not simply “flow freely and unmediated across oceans and continents” (Bocking, 2012: 720). Contrary to popular belief “the role of the internet in determining what information should

be communicated, and how, has been secondary to that played by social mechanisms of information movement" (Bocking, 2012:720). This contradicts a free-flowing form of transnationalism. It says that information flows are controlled by transnational actors, rather than flowing freely in a transnational context.

This thesis has shown that variation in environmental best practice and sustainability perceptions create stakeholder conflicts at both local and international levels. The disconnect between local and global definitions of environmental sustainability and the conflicts and confusion this can create between claims-makers and decisions-makers has been highlighted. Also emphasised is the influence media and NGOs can have on how decisions regarding natural resource management are communicated (e.g. pressures for local management reform can come from the international community influencing local grass-roots organisations), and how media coverage in foreign countries can affect buyers' choices in a key export market such as China.

Global narratives are employed by stakeholders to give local claims validity. Actors in this study used references to global standards to either endorse or discredit local actions. This strategy either closed the gap between the local and global or distanced the two. Both strategies were employed to serve the same purpose of measuring local environmental risk of salmon aquaculture. For example, in attempting to close the gap, the Tasmanian government and industry actors initiated claims of world's best practice, world class production methods and promoted third-party certification as assurances that local-level environmental risks were sustainably managed. In Norway, the government was seen to close the gap between local and global by endorsing the sector's role in producing a healthy source of protein for a growing global population. Concurrently, opposition groups in Tasmania

promoted scientific and news material from other countries that farm salmon to support assertions of environmental risk in Tasmania. Here NGOs are leveraging the notion of a “transnational community of concern” (Lester, 2014) to legitimise their claims. This strategy aligns with Olsen and Osmundsen’s (2017) media analysis of salmon aquaculture in Norway, which finds that connection made with global discourse can have a greater influence on the perceptions of the environmental risks of aquaculture compared to local experiences. Alternatively, NGOs in Tasmania also created a gap between local and global standards to portray a perceived mismanagement at the local level and attacked the Aquaculture Stewardship Council (ASC) for being corrupt. Here the ASC standard might well be considered adequate as a form of third-party certification but inadequate in its application. What is also not considered in this use of international references in the Tasmanian case is that different growing regions experience different social and environmental challenges (Vince and Haward, 2017).

This study has shown that environmental campaigns at the global scale, historically uncontested, are now being challenged at the same scale and same efficacy by industry organisations. It is evident that companies are considering how they engage with publics at the range of scales across which they operate. While industry recognition and adoption of two-way engagement with local publics was prominent during interviews, so too was acknowledgement of the global response to environmental campaigning, representing industry interests at the global scale. Actors operating at the transnational level identified the historic absence of an entity representing industry to respond to environmental claims at this scale. However, this is changing, evidenced by the rise of: global third-party certification schemes, global sustainability initiatives (both initiated – GSI – or joined by – seaBOS –

seafood companies) and global sustainability and communication departments within companies. This shift in players in global environmental risk discourses has been said to improve the accuracy of claims being made at this scale as they are now being contested. However, it is clear in this research that companies are leveraging the environmental discourse but driven by corporate interests.

8.3.2 Challenges of third-party certification as a tool to communicate best practice across scale

Third-party certification has been a key mechanism for companies to portray commitment to environmental sustainability and mitigate risks of environmental campaigning by going beyond regulatory requirements. Norwegian industry interviewees referred to certification schemes as mechanisms for managing environmental concerns raised in environmental campaigns, particularly transnational issues such as the ingredients sourced for fish food. While certification provides a mechanism for which companies can go beyond regulatory requirements to obtain or maintain a social license to operate, this thesis reinforces that this is not sufficient alone (see also Vince and Haward, 2019). Third-party certification of a product does not guarantee local acceptance of a practice, nor should it form the only mechanism by which a company demonstrates or defines best practice. This is because certification lacks contextual features of sustainability. Hence, in instances where the certification standards would be considered sufficient, it may not be locally trusted or applied. Local and transnational environmental campaigns in Australia, Norway and China criticised global certification programs and certified products, resulting in a widening of the gap between local impacts and international standards. In response, companies are having to adapt to local and global demands by going beyond what is stipulated in standards (voluntary or regulated) in

order to adapt to shifting conditions of the SLO. For example, in Tasmania salmon companies had focused on building trust in impacted communities by undertaking meetings with local communities before expanding into new areas.

The disconnect between local and international interpretations of best practice was initially only evident through piecing together discourse in news media. However, the gap between local and international interpretations and applications of environmental best practice was later made obvious when local ENGO Environment Tasmania campaigned against the transnational ENGO World Wide Fund for Nature (WWF) and the ASC and their partnership and certification of Tassal (Environment Tasmania, 2017). Given the national and international credibility the WWF and ASC symbol holds and the market capacity this has to promote the idea of sustainability and associated practices, it becomes a question of what is considered legitimate application of environmentally sustainable standards to different actors in different world regions. Environment Tasmania also collaborated with the transnational ENGO, Marine Stewardship Council, to develop a sustainable salmon consumer guide. Seafood guides have been a long-standing tool used by ENGOs to promote their perceptions of environmentally sustainable practices to consumers. However, these have also highlighted the lack of consensus among ENGOs and between ENGOs and industry when defining sustainable seafood (Roheim, 2009). This inconsistency is also evidenced by the various sustainability criteria and indicators used in the multitude of third-party certification schemes creating confusion with regards to sustainability objectives and targets (Osmundsen et al., 2020). This again demonstrates and reinforces the ambiguity of the term sustainability and the various ways in which it can be defined and used, a reoccurring finding in this research. Additionally, certification schemes have been criticised for favouring large-scale

fisheries in the developed world. This highlights that while balancing local and global communications is challenging, it is important to ensure one is not considered without the other, especially when supply chains of both product and information have local and global dimensions (Olson et al., 2014). This aligns with Ertör and Ortega-Cerdà's argument that local interests and concerns should never be discounted in global communications and governance (2015).

This thesis affirms that it cannot be assumed that global scale environmental risk discourse will automatically transfer to local contexts. It indicates the high level of adaptability and reflexivity required to engage and operate in complex and dynamic issues of sustainability across scales. Brought to the forefront in **Chapter 6** is the importance, and at times difficulty, of acknowledging and attempting to reconcile between local and international standards regarding acceptable environmental risk. Aligning local expectations and interpretations of environmental impact (identified by environmental campaigning) and global standards (e.g. ASC certification) is complex and the processes poorly communicated. Local ENGOs claim that global standards do not fit the local reality. If, as stated earlier, transnational flows of information make it easy for claims of world's best practice to be challenged, this highlights the role of ENGOs and media in the selection and distribution of that information, given their transnational networks. Equally, the thesis highlights the capacity for these transnational flows to transfer information to sites of local production and influence environmental risk discourse on the basis of transnational claims that do not reflect, or are irrelevant to, the risk issues at hand.

Local environmental campaigning and global market mechanisms can be demanding different standards and improvements in environmentally sustainable practices. This presents

challenges for the producer, seller and buyer to determine the trade-offs when these positions or interests are countervailing. The thesis contributes to the gap in the literature regarding how these global dimensions affect local discourses and governance and how these changes in local discourse and governance in turn affect global discourse and governance. Such a research agenda becomes increasingly important as the transnational dimensions of seafood grows, with progression in, for example, global third-party certification, international markets and global opposition groups.

8.3.3 The transnational role of environmental campaigning and media in defining acceptable practices in the Australia-Asia region

The degree of contestation over the environmental sustainability status and credentials of seafood, and international variations of what is considered acceptable environmental impact, may explain why the strategies of NGOs operating in the transnational space were said in interviews to be shifting. Rather than NGOs solely being organisations for protest and campaigning, actors throughout the supply chain (in both Asia and Norway) perceived some NGOs as sources of expertise and insight into environmental issues and transnational social networks. Often carried through media, they provided early warning mechanisms for potential public reputations issues and interpreters of publicly acceptable levels of risk. They also offered expertise in not only how to produce and purchase environmentally sustainable products but also in how to influence the international social networks involved in environmental sustainability. NGOs were seen to be utilising processes whereby they create environmental discourse through the supply chains by using the resources of large retail companies to send messages transnationally, easily targeting key decision-makers within the supply chain. Nonetheless, in a key export market for Australian seafood such as China, media

coverage can be a powerful driver when it affects buyers' choices. This suggests that rather than local conflicts from the site of production transferring to international markets, it is more likely that Chinese media and NGOs could have persuasive power over the standards on imported product. While some NGOs and journalists in China have been successful in raising awareness and in some cases stopping the import of what they consider environmentally unsustainable seafood product, these actors express the difficulty of operating in China. The interviews identified the apparent lack of NGO presence in Asian countries compared to most western countries due to greater governmental control over media and public comment.

While China is the major export market for Australian farmed salmon it is also a country that many of the interviewees who work transnationally knew little about. Only in recent years have these actors begun to engage in issues of environmental sustainability within China. This lack of engagement could explain why Asian consumers have less exposure and/or desire to address environmental concerns in their purchasing practices (Fabinyi, 2016). Therefore, if exports to Asian markets continue to grow as predicted (Inehan, 2013) yet Asian consumer preferences do not send signals through markets for environmentally sustainable product and environmental harm is determined to be occurring at the site of production, then non-market mechanisms such as protest campaigns and public agency regulation could have a greater role to play to ensure environmental sustainable standards are met. The interviewees also discussed the implications for global net environmental impact of seafood production, because of the ease of product substitution. This highlights the responsibility of NGOs running environmental campaigns based on perceived environmental risk to consider possible unintended consequences – for example, increased exploitation of less managed

fisheries close to markets to meet food security needs if imported product is halted due to successful market campaigns.

8.3.4 Public legitimacy of NGOs and environmental campaigning in environmental conflict discourses

The traditional role of NGOs in holding industries and governments to account is now shared with industry players. While industry organisations and companies have become prominent in promoting environmental sustainability objectives, the interests and values that drive these objectives is different to that of NGOs. These guiding priorities are identified by Vormedal (2017: 55) in her analysis of the drivers of Mowi's proactive sustainability strategy stating "that company-specific motives have been central. While contextual factors, such as NGO pressure, globalization and consumer-market trends, have influenced strategic options and choices, they seem to have been filtered through a company specific lens". Vormedal identifies the key motives of such a proactive strategy include:

- (i) to prevent environmental problems from escalating into a costly crisis – a major lesson from the Chile experience;
 - (ii) to maintain high salmon prices;
 - (iii) to sell salmon to buyers who impose environmental standards;
 - (iv) to protect and strengthen the company's competitive positioning;
 - (v) to maintain a good reputation and avoid negative publicity;
 - (vi) to safeguard the social license to operate by making sustainable development central to the company's business model.
- Further, the analysis has shown how MH's proactive strategy is driven by globalization, and made possible by the company's large size and vast resources. (Vormedal, 2017: 55).

Here, the intrinsic value of the environment is lost and replaced with corporate-centric values.

The findings of the thesis raise the question of what is considered a legitimate relationship between ENGOs and industry actors. Attention to these relationships in the case of Tasmanian salmon aquaculture was heightened following the *Four Corners* program with the introduction of a contentious relationship occurring between local ENGO, Environmental Tasmania, and salmon company Huon Aquaculture, and between transnational ENGO, WWF, and salmon company Tassal. If Environment Tasmania's support for Huon Aquaculture was broadly portrayed as legitimate while WWF's partnership with Tassal was framed as corrupt, this adds considerable complexity regarding what constitutes a legitimate partnership between an ENGO and corporate entity. The impact that the increased complexity of these relationships and greater number of actors has on the governance of the salmon aquaculture industry in Tasmania is an important area for further research and more broadly in other sectors and locations. Literature on European fisheries governance notes the rapid shift (compared to other areas of environmental governance) in the role of ENGOs from identifying problems and advocacy campaigning to partaking in collaborations for their solutions and management (Dunn, 2005, Espinosa-Romero et al., 2014). This is not to say that problem identification and campaigning has become obsolete but that there has been considerable recognition in the importance for progressing potential solutions for what is being campaigned for. Here, ENGOs are not confined to either role but rather their role broadens to encompass both identifying problems and their solutions.

The degree to which industry, government and industry focused journalists that participated in this study were willing to engage with opposition groups was, at times, determined by how much their claims appeared to reflect an understanding of scientific information and the general operating environment of government and industry. For example, the dismissal of

comments referring to anything other than what they consider ‘fact’ or those that have ‘merit’ highlighted the imbalance of power in environmental conflicts. An ENGO’s level of scientific understanding of environmental issues was said to determine how legitimate they were perceived to be. This was linked with frustration regarding misinformed claims-making, again highlighting the gap between claims-makers and decision-makers. This contributes to a vicious cycle of conflict by promoting the view that values (such as aesthetics and human wellbeing) outside of environmental damage are considered illegitimate risk framing (Cordner, 2015). This could result in a situation where concerned citizens or other stakeholders employ a risk frame (or misinformation) characterised by environmental impact in order to legitimately be involved in debate regarding the suitability of a site for marine farming. The presence of misinformation in public debates could be an indicator of power struggles and lack of reflexivity and adaptability of governance structures and campaigning groups. This vicious cycle encourages the politicisation of science and its placement in socio-political issues, potentially damaging both valid scientific and values-based information and claims. In Maeseele’s (2009: 69) research “local NGOs are found to perform a role as alternative science communicators who wish (1) to instigate an epistemic shift to an uncertainty-oriented approach in risk assessment, and (2) reframe the (values at stake in the) debate” ... Maeseele (2009: 70) concludes by making the argument that:

“it is only by framing scientific and technological developments as social issues, in which conflicting epistemological, normative and axiological views are exposed, that news media live up to their role as facilitators of public discussion and (science) democratisation. Here the role of NGOs as alternative science communicators could prove particularly valuable”.

(Maeseele (2009: 70)

This is one perspective as to the role of media and the shifting media landscape. Further research into not only the relationships between claims-makers and decision-makers but the apparent blurring of what constitutes and defines these roles could allow for insights into the processes of influence and framing in the governance of not only salmon aquaculture but other sectors.

8.3.5 The (in)visibility of scientists in media discourses

The critical role of independent and appropriate science in Tasmanian salmon aquaculture governance was undisputed in news media discourse. However, claims and counter-claims regarding the level of independence and transparency of science information were prevalent. In interview, scientists expressed their reluctance to contribute to the deliberations over risk definitions in media. Research by Osmundsen et al. (2017) identified that mainstream media play a key role in exacerbating the gap between expert and lay knowledge. The media discourse following the *Four Corners* episode would support this. Environmental science was used in media discourse to support stakeholders' framing of acceptable environmental risk. While there is frequent reference to science information and science institutions, the use of science to support competing claims and agendas could explain why scientists themselves were notably absent from the Tasmanian news media. The presence of scientists in Norway opinion pieces and the absence of scientists in Tasmanian news media indicates that it would be useful to investigate the institutional structures that might explain the visibility of scientists in the mediated environmental debate. This could reveal communications opportunities and barriers in evidence-based decision-making where public debate is heightened (e.g. Kuehne et al., 2014, Brossard, 2013, Roll-Hansen, 1994).

How scientists and science information (and its role in informing the management of the environmental impacts of salmon aquaculture) are portrayed in mediated environmental conflict contributes to the politicisation of science and the efficacy of public debate (Maeseele, 2017). While science information in this case is used by government, industry, opposition groups and journalists in attempt to gain a position of power in environmental conflict, scientists themselves lack such power in Tasmanian media debates.

Leith et al. (2014b) concludes that during policy conflict science communication plays a key role in supporting a virtuous cycle, by having stakeholders with perceived impartial expertise inject information about prominent topics in the public discourse of Tasmanian salmon aquaculture, taking into account the structure of the problem (see also Monteiro, 2017, Jasianoff, 2017, Gluckman, 2015, Palliser and Dodson, 2019, Yang et al., 2015). However, for those actors entering public environmental conflict, they do so with no confidence about how they will be perceived. Nonetheless, it is argued that not actively contributing to media debate is “a riskier strategy” (Lester and Foxwell-Norton, 2020: 114). Lester and Foxwell-Norton explain that:

whether scientists themselves are present or not, their data will be used by the key actors—media, industry, government, and campaigners—and will become a source of contention in itself. When the data is not accompanied into the public domain by its scientific creators and proponents, it is prone to politicisation—rendering futile any decision on the part of scientists to deliberately stay out of public debate so as not to politicise their work. (2020: 114)

Here the “tumultuous” relationship between science and media (Besley and Tanner, 2011: 241) and science and decision-making (Sarewitz, 2004) are evident. This disconnect between

scientists and the presentation of the information they produce has consequences for how scientific information is used and perceived in not only environmental conflict but environmental governance. In the Tasmanian case, uncertainty was created concerning the independence, relevance, and role of science in informing opposition campaigns, corporate decisions, and government regulations regarding the environmental impact of the industry. The findings from this thesis combined with that of other case studies presented by Lester (2019: 115) speaks to scientists not participating as political actors – that “when politicisation of science is entrenched within a conflict, scientists’ involvement, along with that of their data, is rarely presented as that of a key actor who is able to actuate switching points within mediatised environmental conflict”, whereby power is transferred between actors. Further exploration of the apparent absence of scientists in mediated environmental debate could reveal nuances regarding the communications and institutional pathways and barriers in evidence-based decision-making where public debate is heightened.

Additionally, wanting to acknowledge the shift from ‘the’ media to media, extensions of this study could examine how readers receive environmental science information. News sites are increasingly focusing on ‘shareable’ content (Heimbach and Hinz, 2018) and the presence of environmental science information in social media needs further research to complement this work. For instance, investigating what news stories get ‘shared’ on social media could contribute to understanding what information is circulated beyond news media. Do the narratives in news media and social media align? And how is environmental science perceived and used across different media platforms? This speaks to the science-public-policy interface.

8.3.6 Broadening the theory of mediatised environmental conflict to encompass science and scientists in communicative environmental risk governance

This research brings to the fore the role or lack thereof environmental science and science communication in the mediatised environmental conflicts framework. The thesis findings suggest that it is pertinent to expand the theory of mediatised environmental conflict to include environmental science and science communication in order to usefully examine environmental conflict within social ecological systems. Accordingly, how mediatised environmental conflict unfolds is determined by the interaction between “(i) activist strategies and campaigns, (ii) journalism practices and news reporting, (iii) formal politics and decision-making processes, ... (iv) industry activities and trade” (Hutchins and Lester, 2015) and (v) environmental science and science communication. However, because the theory is about who *has* power, not who *should* have power, this reworked version of mediatised environment conflict represents an ideal scenario whereby scientists have power in environmental conflict. The relationship between the four stakeholder groups (activists, journalists, politicians and government and industry) and science should be considered in the context of media and environmental conflict, however this research demonstrates that science is not yet the key player it should be or even claims to be in public environmental conflict. This thesis considers why scientists don’t have power in the case of Tasmanian environmental conflict over salmon aquaculture and how they might obtain it in public debates.

Much of the literature discussing the outward communications of science information relates to the science-policy interface with the goal of policy and decision-making processes being informed by the most relevant and current scientific knowledge (Posner and Cvitanovic, 2019,

Sternlieb et al., 2013). It is also acknowledged that decisions may not necessarily follow the recommendations of environmental science due to the consideration of other information (Gregory et al., 2016). Therefore, it is not only the accountability of the environmental science and risk assessment in question here but also the transparency of governments to ensure stakeholders understand how this science information is placed within multifaceted decision-making (Kania and Kramer, 2011). This thesis reinforces the notion that while science can measure the environmental impact of a given practice, what is considered acceptable environmental risk is socially and politically constructed. In complex socio-ecological problems the capacity to deal with scientific uncertainty and clearly understanding and communicating the boundaries and capabilities of science can be greater than the requirements for specific technical advice. Also important is having clear expectations of what science can and cannot provide in solving socio-ecological problems (Bocking, 2013).

The task of communicating complex scientific knowledge to interested publics becomes increasingly challenging and complex in politically charged and highly contentious issues involving a variety of interests, values, attitudes, and beliefs. Efforts to test and determine how best to communicate complex information in lay terms is a contemporary research agenda (Kelly, 2020, VanDyke and Lee, 2020). However, in practice, how environmental science information can and should be communicated to create virtuous cycles within mediatised environmental conflict remains largely unresolved and unaddressed. While there have been decades of literature that explores the politicisation of science and scientists (e.g. Nelkin, 1975, (Jasanoff, 1987, Sarewitz, 2004), Lewenstein (2017: 78) proposes “that we have not studied scientific and technical controversies enough to find the enduring patterns. Perhaps we are just at the beginning of study of controversy, and there is much to

do". Certainly, it has been apparent in this thesis that considerable uncertainty still exists regarding whose role and responsibility it is to publicly communicate environmental risks identified by science in the expansion of Tasmanian Salmon farming. In particular, when in the decision-making process should science information be outwardly disseminated and in what format?

If it is understood that scientific information is unlikely to override competing interests or prevail in disputes over values (Nelkin, 1975), then communication of science information should be accompanied by a clear definition of what has been determined as an acceptable level of risk in the decision-making process and how this level of risk has been determined. However, 'risk' is not a single fact nor is there one person or institution in charge of or responsible for defining 'it' and communicating 'it' to a separate public. Rather, risk is an understanding that is continually redefined discursively in different contexts. Risk definitions, and by whom they are defined, is malleable and constantly changing. There are multiple simultaneous risk definitions and ownership over a singular risk definition is illogical. Therefore, no singular institution can be in charge of communicating them. Likewise, science is not independent from politics, even the problems that science seeks to understand are only considered problems in the context of socially embedded norms, values and interests (Sarewitz, 2004). Moreover, if the acceptable level of environmental risk is socially constructed and government decision-making considers a range of information outside of environmental science, then the role of social scientists and economists could also play a role in public environmental debates. Hence, the discussion remains focused on how, in a democracy, do media, science, governance, industry and interested communities all play a role in understanding, communicating, and managing risk. This sits within current scholarship

that captures the contemporary contestation of ‘evidence’ which Parkhurst (2016) refers to as the “politics of evidence”. Here, not only is evidence used and misused within political areas but what constitutes evidence is also disputed.

Importantly, this thesis does not make a distinction between scientists who are positioned to provide advice to government and are given agency to directly inform decision-making and scientists who do not have these formal government support roles. There is also environmental monitoring commissioned by companies to meet regulatory requirements and inform industry practice. There are differences in problem framing and communicative practices that reflect the different drivers of the research. For user driven research the problem will be limited in scope and communication will be tailored for the end user. When considering science communication and mediatised environmental conflict within the broader socio-ecological system this also raises questions regarding the responsibility scientists have to the natural environment and society.

The findings of this thesis suggest that the field of science communication in mediatised environmental conflict needs to inquire into ways to address concerns of transparency and independence, keeping in mind the various roles in which scientists operate within. In the case of environmental risk conflicts, it is worthwhile determining the nuances of science communication in the public sphere where the discourse over what is acceptable risk is carried out. Particularly in the context of transparency regarding contentious issues of how industry uses publicly owned common pool natural resources, such as marine aquaculture.

The thesis reinforces that adjacent to communicating science information it is also important to outwardly communicate the process for which scientific recommendations, along with a range of other knowledge, information and interests, are considered in formal decision-

making. Even if stakeholders disagree with the outcome, legitimacy can be gained if they understand and accept why and how the decision was reached (Smith, 2003). It would be useful to further investigate the correlation between how environmental scientific information and values-based interests are applied in claims-making, how these different forms of knowledge and information are considered within formal regulatory processes and how these decision-making processes are communicated publicly.

The politicisation of environmental science in the case of Tasmanian salmon aquaculture was exacerbated by the poorly perceived participatory mechanisms in project-level decision-making in Tasmania. Irrespective of whether or not the decision-making processes of the Tasmanian government were adequately managing the environment with the information they had (i.e. environmental impact data, interests of other users of the waters and economic benefits to regional communities) the government was outwardly opaque in their communications of these processes. Along with Palliser and Dodson (2019) and Spangenberg (2011) this research emphasises that increased stakeholder participation in environmental decision-making is critical in rebuilding trust, but that this must be supported by overall changes in science and governance systems to improve transparency and accountability.

8.3.7 Broadening the practices of transparency and accountability of decision-making processes to encompass media

While Leith et al.'s (2014b) research focuses on how science can better inform decision-making, the findings presented in this thesis emphasise the need for enhancing the outward communication of this process. In particular, the communication of how acceptable environmental risk and impact is determined in government decision-making processes and how and when science informs this process, along with other interests and knowledges.

Acceptability addresses the competing narratives of growth versus environment. Here it is pertinent to note that while scientists can take accountability for their results, it is government who must take responsibility for the overall decisions. It is not only how media frame scientific information but also practices of science such as research problem framing and communicating scientific uncertainty (Bocking, 2012). Greater transparency of how science information is considered in the decision-making process along with other interests and knowledges could potentially contribute to reducing the degree to which science is politicised. This thesis suggests that it is this nexus between environmental science, social and political definitions of acceptable environmental risk and government decision-making that if given greater transparency could contribute to virtuous cycles within socioecological debates. However, it is important to reiterate that discourses will always compete and there is no single ‘correct’ outcome. Transparency is unlikely to be the only remedy for entrenched socioecological conflicts.

The importance of transparency – paired with accountability (Seligsohn et al., 2018) – regarding the process, impacts and outcomes of corporate and government practices has a long history in the environmental governance and corporate social responsibility literature (e.g. Steurer, 2010). The importance of transparency and accountability acting together is emphasised by Seligsohn et al. (2018) by explaining that “in the absence of a mechanism for the public to hold local government accountable, public transparency alone has no impact on outcomes other than information provision itself”. Adequate transparency of process and outcomes provides the foundations for accountability, key pillars of democratic values (Bovens, 2007, Grimmelikhuijsen and Welch, 2012, Hood, 2006, Kjaer, 2004). Grimmelikhuijsen and Welch (2012: 563) defines transparency as “the disclosure of

information by an organization that enables external actors to monitor and assess its internal workings and performance” which “typically incorporates multiple components, including inward observability, active disclosure, and external assess ability”. The findings of this thesis also point to the possibility that scientists clearly communicating results that are used in government decision-making and government transparency regarding the decision-making process could facilitate virtuous debates regarding the environmental risks of aquaculture. However, this should be placed within a critical assessment of media roles, politics and power which should be given active consideration in how discourses work to shape reality and different agendas.

The link between the quality of government communications and the presence of public conflict has been acknowledged for decades (for example Beierle and Konisky, 2000). The perceived ambiguity regarding governance and management processes has been a legacy of Tasmanian salmon aquaculture sector’s development, with government processes found to be seen as lacking legitimacy and transparency in Leith et al.’s (2014b) work. This ambiguity concerned inadequate distribution of information and exclusion of community concerns by government and industry in planning and management processes. This speaks to the importance of a two-way accessibility component of transparency whereby “stakeholders have access to government processes and the government has access to stakeholder values” (Drew and Nyerges, 2004: 43). Perceived issues of governance and the failure of regulatory mechanisms, along with the dominant environmental risk framing evident in this research is also prominent in media representations of salmon aquaculture around the world (Schlag, 2011, Olsen and Osmundsen, 2017). The consistency of this finding across salmon aquaculture regions indicates that there is an identified need and opportunity for stakeholders involved

in the governance and management of fin-fish aquaculture to develop proactive, transparent and engaging communication of governance processes. The requirement for greater transparency of State Government decision-making, particularly concerning clear, accessible, timely and regular information regarding environmental management, also has a long history in other aquaculture sectors in Australia (Mazur and Curtis, 2008). Transparent and proactive communication of decision-making processes could improve the likelihood of the level of civic and policy dialogue and debate and its legitimacy. According to the research in this thesis, this might include outward promotion of 1) the mechanisms for which different information (e.g., environmental data and community interests) is collected, processed and considered in decision-making processes and 2) how these mechanisms address common issues in media discourse (e.g. environmental risk, economic growth and regulation). Drew and Nyerges (2004) conceptualise this as 'decision transparency' whereby the steps taken to reach a decision and rationale behind the decision are accessible, accurate, clear and presented in relation to the broader problem context. The process stipulates stakeholder involvement and accountability. Other points for which government can adopt transparency include policy content – what measures are adopted and how they solve a problem – and policy outcomes – what effect has the policy had (Heald, 2006).

Media, in this case, play a role in publicised negotiations for defining acceptability. If what is considered acceptable environmental risk of expansion of salmon aquaculture has been determined without adequate transparency of processes, then conflict in media is publicly highlighting the decision-space (what is up for negotiation). If the decision-space is small then public participation is limited (Walker, 2015), potentially leading to vicious cycles. In this instance, media may play an important role in a deliberative democracy by attempting to

open up decision spaces and therefore participation. However, when interviewees were seeking transparent and reflexive public dialogue on both local and global scales, the presence of journalists was explicitly prohibited. There was a systemic fear of mainstream news media expressed by interviewees. This is an expression of the power struggles between media and key stakeholders. While public debate is vital for deliberative democracy it does not negate the importance of ensuring it serves the public interest. Uncertainties, knowledge gaps and diverse values, interests, perspectives and understandings are normal (Palliser and Dodson, 2019). To conceal these in public dialogue limits the ability for publics to make informed judgements. Yet, media representation of government processes portrayed a lack of reflexivity and adaptability in decision-making processes, regardless of the adequacy of the processes. The nexus of media, environmental campaigning, environmental science and decision-making and the notion of informed public debates² as evidenced in this thesis emphasised that outward communication of government processes is just as important as the processes themselves.

With the rise of deliberative democracy (Brooks et al., 2020) and collaborative approaches to natural resource management (Walker, 2015), transparency of “what knowledge gets counted as valid is as important as the knowledge itself” (Lindenfeld et al., 2012: pp. 29 citing Latour, 2004). Deliberative democracy is built on the notion that “those affected by collective decisions should have the right, capacity and opportunity to participate in the making of those decisions” (Schirmer et al., 2016:citing Cohen 1989). The main promise of deliberative democracy (compared to representative democracy) is to achieve a shared sense of

² Bozeman and Johnson (2015) identify the following as “public values criteria; creation, maintenance, and enhancement of the public sphere; progressive opportunity; mechanisms for values articulation and aggregation; avoiding monopolies; sufficient transparency for public to make informed judgements; distribution of benefits; long term time-horizons; conservation of resources; and ensure subsistence and human dignity”.

legitimacy between stakeholders, even in the most challenging and polarising of value conflicts, whilst acknowledging that it cannot “make incompatible values compatible” (Gutmann and Thompson, 2004: 11). This view inherently focuses on processes rather than outcomes, providing lessons for future conflicts over common pool natural resources. While the literature clearly acknowledges the importance of transparency of processes and such a conclusion might appear obvious and unremarkable, the efficacy of communicating this in practice is still lacking. By investigating mediatised environmental conflicts and how local and transnational discourses interact, there can be a move towards identifying and establishing the opportunities that may begin to reduce the gap between knowledge and practice in contentious issues.

This study lays the foundations for further research regarding what the potential role of media is in how democracy interacts with environmental governance. While social conflict is an important and integral part of social process and decision-making about managing natural resources, media discourse can expose areas of governance structures that create tensions (Bengston and Fan, 1999). For example, because salmon farms are governed by the local municipalities in Norway, the local community directly experiences the benefits from a fee-paying industry. This could explain why Norwegian government and industry did not need to promote a local benefits narrative, unlike Tasmania. Also, traditional owners were not visible in Tasmania or Norway news media discourse, yet they have a considerable presence in debates over salmon aquaculture in Canada (Young and Matthews, 2010). Additionally, concerns of a lack of sufficient transparency in government and corporate processes and environmental impacts are still prevalent in media claims in the case of Tasmanian salmon aquaculture. There remain contemporary questions regarding the concept, such as: what is

considered adequate transparency? How does transparency shift with context and scale? And what role can media play in the transparency of complex natural resource management? For example, when companies go beyond what is stipulated by third-party certification or regulatory requirements, analysis of media discourse could provide a proxy for the issues they need to be proactively transparent about. Media could also have a greater role to play in relaying digestible information regarding how decisions are made.

This study has revealed areas for further investigation with regard to the link between science, publics and decision-making in mediatised environmental conflict. For example, what does this imply for how ‘evidence’ is portrayed in risk communication, interpretation, and decision-making? Because different discourses work to shape reality in different ways for different agendas, the role of media and politics should be actively considered in these types of debates. Having a critical view of media, politics and power is imperative for these contributions to improve policy process and public information. For example, what mechanisms are available for stakeholders and concerned citizens to communicate risk definitions in the government decision-making process regarding industry expansion (for example see van Putten et al., 2018)? And are these mechanisms perceived to be adequate and by who? If they are in fact considered adequate then it could confirm that enhancing (clear, regular and proactive) public communication of decision-making processes could facilitate virtuous cycles. If not, then it could indicate areas of improvement for how and when environmental, social and economic information is gathered and considered in the management of the Tasmanian salmon aquaculture industry.

Further research would be useful to confirm whether it is a governance failure or a failure of communicating said governance (and the perception of this process), or a combination of

these, that sparks conflicts. This thesis addresses the need to be specific as to how communication pathways (not just media) can be used to contribute to environmental governance (government, corporate and market) outcomes that are in the public interest (Bozeman and Johnson, 2015: 67). Interviewees in Australia and Norway suggest that communication departments of government and industry are undergoing a growth period to accommodate this new communications model and is an emerging area to assess.

9

CONCLUDING REMARKS

This research places environmental risk negotiations at the nexus of science information, community interests, industry expansion and impacts and government decision-making within a critical assessment of media roles, politics and power. It gives active consideration to how discourses work to shape reality and different agendas. The thesis builds upon the overall understanding of the mediatisation of environmental conflict, the politicisation of knowledge and information and the flow of environmental governance and risk discourses at different temporal and spatial scales. The principal concern of the thesis has been to ask how the environmental risks of common pool natural resource use, particularly Tasmanian salmon aquaculture, are articulated and negotiated via processes of media and communications, both locally and transnationally. When seeking to contribute to the understanding of the public negotiations of natural resource management across time and scale it is easy to retreat to the local, providing neat boundaries and context. However, this is not possible if the aim is to explore how the local and transnational interact. Asking questions regarding local and transnational flows of sustainability, risk, ideas, trade, investment, and governance requires new approaches to investigate how we understand the world. This thesis investigated these complexities using media analysis, expert interviews, direct observation and peer reviewed literature review to provide insight into the complex and multi-directional nexus between media, public and policy across time and scale. By bringing together the literature on environmental governance and media in the context of Tasmanian salmon aquaculture, it is evident that conceptualisation of the dynamics and dimensions of environmental conflict and governance benefits from considering mediatisation and its transnational dimensions.

While this research contributes empirically to the fields of environmental communication, media studies and environmental governance literature by conducting an in-depth study of a

globally significant case study in aquaculture, the research limitations need to be considered. These include data collection constraints such as a potentially non-representative interview sample, access to interviewees limiting participation and the lack of (language) ability for analysis of Asian and Norwegian news texts. To limit the impacts on the findings the research approach triangulated the data sources and combined analysis techniques to provide depth and breadth in knowledge.

By empirically investigating the claims and counter-claims in news media regarding the environmental risks of Tasmanian salmon aquaculture, and seafood more broadly when appropriate, the thesis makes several novel contributions. Firstly, it conducts the first known in-depth study of the public debates in media of Tasmanian salmon aquaculture industry and how these local discourses interact with transnational flows of trade and production. By doing so it answers the research questions by uncovering the dominant discourse presented in the news media coverage of Tasmanian salmon aquaculture, by who were these discourse themes carried, how these local conflicts interact with transnational discourses of environmental sustainability and the role of media in these mediatised processes. This has culminated in the following key findings:

The thesis has confirmed that environmental conflicts are reinforced by divergent scientific, social and political definitions of acceptable environmental risk and sustainability and inadequate transparency of how these definitions are formed. Discourse of salmon aquaculture within the Tasmanian news media was predominantly framed regarding environmental risk of industry expansion and the adequacy of government regulation. First identified in Chapter 5 and confirmed in Chapter 7 is that complex risk discourses were being simplified in news media into a binary tension between environmental impact and economic

prosperity. Environmental science and community interests were conflated within these discourses, particularly concerning transparency of information and knowledge and how these were used in decision-making processes. Subsequently there was visible contestation over knowledge, who carries it and when is it considered legitimate. This is reflected by the ambiguous and subjective interpretation of environmental sustainability and best practice in the claims of different stakeholders.

It cannot be assumed that global scale discourse will automatically transfer to local contexts and the interaction between global and local is important to consider. Claims and counter-claims regarding environmental sustainability and best practice are themes that are most strongly placed within transnational flows. The disconnect between local and global definitions of environmental sustainability and best practice and the conflicts and confusion this creates between claims-makers and decisions-makers has been highlighted in this thesis. This suggests that different interpretations of environmental sustainability are at the heart of the stakeholder conflicts at both local and international levels. While broad themes of environmental challenge and risks associated with the expansion and continued economic prosperity of the salmon aquaculture sector can transfer globally, subthemes of risk are not as easily transferable between growing regions.

There is a high level of adaptability and reflexivity required to engage and operate in complex and dynamic issues of sustainability across scales and this is broadly lacking in governance, media and science. Brought to the forefront is the importance, and at times difficulty, of acknowledging and attempting to reconcile between local and international standards regarding acceptable environmental risk and the limitations of standards as the only metric for sustainability. This research suggests that government, salmon companies and

science institutions could hold the most leverage to influence the public discourse and therefore facilitate virtuous cycles. However, in the case of Tasmanian salmon aquaculture these stakeholders were portrayed in news media to be outwardly ambiguous in their communications of decision-making processes or their involvement in these processes. Environmental opposition groups had relatively low visibility in Australian news media. This is not to say that environmental campaigning organisations have not provided the foundations for corporate players to use the environmental discourse. However, it exemplifies a shift in the traditional role of NGOs in holding industries and governments to account to industry. Subsequently, the priorities supporting this environmental discourse favours the interests and motives held by companies.

The interactions between industry, government and journalist stakeholders and opposition groups show that power is linked with scientific understanding. This research brings to the fore the absence of environmental science and science communication in the mediatised environmental conflicts theory. Because the theory is about who *has* power, not who *should* have power, the theory is currently accurate in its disregard of science. This research demonstrates that science is not yet the key player it should be or even claims to be in public environmental conflict. However, the relationship between the four stakeholder groups in the mediatised environmental conflict theory (activists, journalists, politicians and government and industry) and science should be considered in the context of media and environmental conflict. In an ideal scenario science does have power in environmental conflict and therefore would have a rightful place in the theory of mediatised environmental conflict. Accordingly, how mediatised environmental conflict unfolds should be determined by the interaction between “(i) activist strategies and campaigns, (ii) journalism practices and

news reporting, (iii) formal politics and decision-making processes, ... (iv) industry activities and trade" (Hutchins and Lester, 2015) and (v) environmental science and science communication. However, science must earn the fifth spot by accessing more power within processes of mediatisation. By considering why scientists don't have power in the case of Tasmanian environmental conflict over salmon aquaculture this thesis has been able to contribute to how they might obtain power in public debates. Science information has a critical role in the management of common pool natural resource use. However, science cannot provide clear guidelines for, or likely consequences of, government decision, creating tension at the science-policy-public interface. The role of scientists and their information in defining environmental risk, and how this information interacts with other information and knowledges can be a source of contention and should be given attention in communications theory.

Greater transparency of how science information is considered in the decision-making process along with other interests and knowledges could potentially contribute to reducing the degree to which science is politicised. The framing of science in environmental controversies in media is determined by a range of external factors such as competing newsworthy events, economic and political conditions and the perceptions of credibility. It is not only how media frame scientific information but also practices of science such as research problem framing and communicating scientific uncertainty (Bocking, 2012). This thesis reinforces the notion that while science can measure the environmental impact of a given production practice, what is considered acceptable environmental risk is socially and politically constructed. Yet, the representation of government processes in media portrayed

a lack of reflexivity and adaptability in decision-making processes, regardless of the adequacy of the processes.

The nexus of media, environmental campaigning, environmental science and decision-making and the notion of informed public debates as evidenced in this thesis has emphasised that outward communication of government processes is just as important as the processes themselves. In the case of Tasmanian salmon aquaculture, what is considered acceptable environmental risk of expansion in the decision-making process has been determined without adequate transparency of processes. The lack of trustworthy decision-making processes in Tasmania was reinforced by the perceived ambiguity regarding the mechanisms for which different interests and knowledges were sought and considered in the formal decision-making process. This likely could contribute to virtuous cycles within socioecological debates.

Importantly, the thesis reinforces the importance of pairing transparency with accountability to ensure information provision is carried into a virtuous cycle of negotiations. Clear proactive communication of decision-making processes in media and other relevant communications channels (case dependant) could improve the likelihood of the level of civic and policy dialogue and debate and its legitimacy. According to the research in this thesis, this might include outward promotion of 1) the mechanisms for which different information (e.g. environmental data and community interests) is collected, processed and considered in decision-making processes and 2) how these mechanisms address common issues in media discourse (e.g. environmental risk, economic growth and regulation). However, it is important to reiterate that discourses will always compete and there is no single

'correct' outcome. Therefore, transparency is unlikely to be the only remedy for entrenched socioecological conflicts.

Analysing the mediatised conflict concerning the Tasmanian salmon aquaculture industry has exposed entrenched vicious cycles that have prevailed since Leith et al's work in 2014b and how they are portrayed to the public. This can inform processes of risk framing and potential opportunities for conflict resolution between state and non-state stakeholders. Attention to the outward communication of processes, rather than outcomes, can identify opportunities to reduce the gap between knowledge and practice in contentious issues. Understanding the mediatised environmental conflict of the Tasmanian salmon aquaculture and how these interact with transnational flows of transnational flows of sustainability, risk, ideas, trade, and governance has been useful in identifying factors that contribute to virtuous cycles within socioecological debates and opportunities for creating virtuous ones.

While the aim of the conclusion chapter is to clearly and succinctly summarise the key findings and recommendations regarding media, communication and governance, it remains that it is no one person's or institution's (including media) role or responsibility to define and communicate risk. Who defines risk at different spacial and temporal scales, in which context and for whom is fluid and complex. 'Risk' is not a single fact nor is there one institution in charge of 'communicating it' to a separate public, but rather risk is an understanding that is continually redefined discursively in different contexts. Media, science, government regulations, industry, environmental campaigning, third-party certification and various and diverse publics all have a role to play in understanding, negotiating and managing risk. How this occurs transnationally is purposive and actors in the negotiations need to be acutely aware of the local-global interaction and the associated implications and opportunities.

It is likely that the anthropogenic pressure on natural resources will continue and economic and environmental sustainability will remain at odds. While the findings and discussions within this research are of direct relevance to the salmon aquaculture sector, particularly in Tasmania, the lessons could be usefully applied to other cases of private/commercial use or development of common pool (publicly owned) natural resources, particularly in multi-use areas and resources (in this case the highly contested coastal zone). The transnational flow of personnel, investment, resources and information is expected to increase and congregate in the Australia-Asia region. Those involved in the enactment of environmental conflict should reflect on the circumstances for which conflict was built upon and the implications for environmental governance. The contemporary areas of contention around accountability, transparency, reflexivity, adaptability, and inclusion presented in this thesis and the nexus between publics, policy and media highlight the complexity of claims-making and decision-making in current environmental conflicts. Defining risk cannot be achieved by any one individual, group or institution at any one location. Everyone has a role to play in creating virtuous negotiations of environmental risk.

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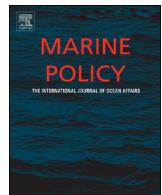
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PAPER I



Publicised scrutiny and mediatised environmental conflict: The case of Tasmanian salmon aquaculture

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ABSTRACT

This paper analyses mediatised environmental conflict over the Tasmanian salmon aquaculture industry's performance. It compares the Senate Inquiry into the "Regulation of the fin-fish aquaculture industry in Tasmania", the influential *Four Corners* investigative journalism television program 'Big Fish' and news media coverage following each of these mediatised public investigations. The concept of "mediatised environmental conflict" is applied to reveal how these different modes of investigation influence public debate. Both the Senate Inquiry and the *Four Corners* program allowed previously invisible actors and networks to be made visible, while rendering others largely silent, particularly scientists despite strong references to science within the debate. Also, the traditional role of NGOs in holding industries and Governments to account has shifted in this case to an industry player. Considerable differences in the discourses was observed, raising further questions concerning accountability and transparency in public-policy decision-making in relation to management of marine resources.

1. Introduction

In 2015/2016, the Tasmanian salmon aquaculture industry appeared to lose what it had previously referred to as its enviable 'social license' [1]. The industry had earned this (perceived) 'community acceptance' (at the local level) and 'socio-political acceptance' (at the broader level) [2] over the previous decades by bringing new and renowned industry to the otherwise economically struggling southern island state of Australia. Importantly, it had done this with few visible impacts on the much fought over Tasmanian environment, about 20 per cent of which is listed as wilderness World Heritage and 135,100 ha of Marine Protected Areas. The conflict largely became visible to the public through two mediatised events – a Senate Inquiry into the "regulation of the fin-fish aquaculture industry in Tasmania" and a piece of investigative journalism broadcast by the ABC on its flagship current affairs program *Four Corners*, the episode titled "Big Fish". Following these events, the conflict was further entrenched by, and continues as, key legal and political undertakings between key actors.

This paper investigates the role that media plays in framing the Tasmanian salmon aquaculture industry and subsequently the role these frames played in the public debate as having important consequences for policy and resource management. This study compares a formal Government (the Senate Inquiry) and informal journalistic (*Four Corners* program) mode of Inquiry into aquaculture governance, including subsequent news media coverage, with a focus on the

following:

- 1) What discourse frames are present within news media following these investigations?
- 2) Who are the prominent actors present in media discourse following these investigations (and those that are absent) and how are they were portrayed?
- 3) How does this influence the operating environment for claims-makers and decision-makers in environmental governance and how different stakeholders engage as political actors?

This paper answers these questions through the lens of 'mediatisation', particularly 'mediatised environmental conflict', that approaches environmental disputes as an interaction between various actors and how these interactions come together to change the course of the discourses and outcomes of the conflict [3]. In doing so, it expands both empirical and theoretical understanding of how media influences public debate through representations of claims-makers and decision-makers, and of their claims, under differing modes of public Inquiry - the Senate Inquiry and *Four Corners* program. It is expected that the Senate inquiry and *Four Corners* would take different approaches to examining what is traditionally evidence-based environmental governance of salmon, and that the response to these two types of investigations in the public sphere would also differ. In particular, this research is interested in analysing the role of scientists as political actors in publicised issues of

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environmental management. The analysis of these investigations, and the interactions and responses in news coverage that they facilitate and promote, also asks what implications these claims-making and discourse-shaping processes have for accountability and transparency in public policy and management of environmental resources.

Aquaculture is a growth industry and will continue to supply the rising demand for fish for human consumption while capture fisheries remain relatively stable. By 2030 the aquaculture sector is predicted to supply 62% of fish for human consumption [4]. While salmon aquaculture is only one species which is generally marketed to the upper-middle class consumer it provides a timely and opportune case to examine key environmental and social licence debates that underpin public discourse concerning food production.

To begin, this paper first outlines the context for the growth and current status of the salmon aquaculture industry in Tasmania, and the conditions leading to the emergence of conflict. It then provides background to the concept of mediatisation as it is understood in relation to environmental conflict, before outlining the methods deployed for our analysis. This paper examines the Senate Inquiry and *Four Corners* episode “Big Fish”, and the news coverage generated by each, with a focus on the presence and roles of key frames and actors. To conclude, it discusses the implications for how NGOs, salmon companies and scientists engage as political actors in different discourse contexts and the media's role in constructing these contexts.

1.1. Background

Three main companies farm salmon in Tasmania: Tassal, the largest of the three, is a publicly listed company; Huon Aquaculture, a family founded company that floated 30% on the ASX in 2014; and Petuna, the smallest of the three is family founded and has not publicly listed. The industry has been the focus of various environmental conflicts [see 5–7] particularly since recent plans to significantly expand the industry [8] with a goal of doubling production by 2030. This growth agenda is also shared and supported by the Tasmanian Government [9].

Years of expansion, regulatory changes and concerns of amenity and environmental impact preceded the *Four Corners* program. This tension was carried through a range of events leading up to and following *Four Corners* (Fig. 1).

In 2012, the industry's application to expand the farming practices in Macquarie Harbour was approved. As a precaution, the proposed expansion was staged. Following increases in the stocking limit, initial concerns regarding the environmental carrying capacity of the harbour were identified in 2014 [10]. At this point the State Government at the time changed the management scheme in the harbour from biomass limits to a percentage given to each company, resulting in a larger allocation to Tassal. The conflict between companies was observable from this moment. In September 2014 an email written by Petuna and Huon Aquaculture addressed to the Tasmanian Premier and Minister for Primary Industries and Water along with senior bureaucrats within the Tasmanian Government detailing concerns of high stocking rates,

environmental impacts and inadequate regulatory approaches to managing these issues was leaked to the Greens political party. In particular was the concern that Tassal was going to exceed their stocking limit. This in itself was a critical moment in the discourse that led to the Senate Inquiry.

In the State Parliament, the then Greens party leader, Kim Booth, tabled the leaked email sent from Huon Aquaculture and Petuna to the Tasmanian Premier, Will Hodgman, (who declared the Inquiry a “witch hunt” [11]). Following this, Greens Party Senator Peter Wish-Wilson proposed the Senate Inquiry into the matter and reduction in the salmon stocking limits to represent pre-expansion numbers. On 24 March 2015 the Senate referred the matter of the “regulation of the finfish aquaculture industry in Tasmania” for Inquiry with a report due by 21 August 2015. The hearings were conducted on July 15–16 2015 to investigate;

- (a) “the adequacy and availability of data on waterway health;
- (a) the impact on waterway health, including to threatened and endangered species;
- (a) the adequacy of current environmental planning and regulatory mechanisms;
- (a) the interaction of state and federal laws and regulation;
- (a) the economic impacts and employment profile of the industry; and
- (a) any other relevant matters.” [12]

The Committee advertised the Inquiry on their website and in the national newspaper, *The Australian*, and also wrote directly to what they considered relevant organisations and individuals inviting submissions by 1 June 2015. The Committee received 103 submissions of which 15 were confidential. Anyone could make a submission to the Senate Inquiry.

There is evidence to suggest that the apparent environmental and regulatory issues in Macquarie Harbour have increased levels of mistrust among parts of the Tasmanian community in the industry and State Government to effectively mitigate environmental impacts of salmon aquaculture. This is most notable in areas in the close vicinity of proposed salmon farms. The mistrust has provided grounding for opposition groups to express their concerns of environmental impact pertaining to expansion of the industry, as demonstrated in the following excerpt from the *Hobart Mercury*:

The proposal [for Okehampton Bay] comes at a controversial time for the industry, with community concern about allegations of environmental problems in Macquarie Harbour on the West Coast and plans by salmon rival Tassal for a fish farm at Okehampton Bay on the East coast [13].

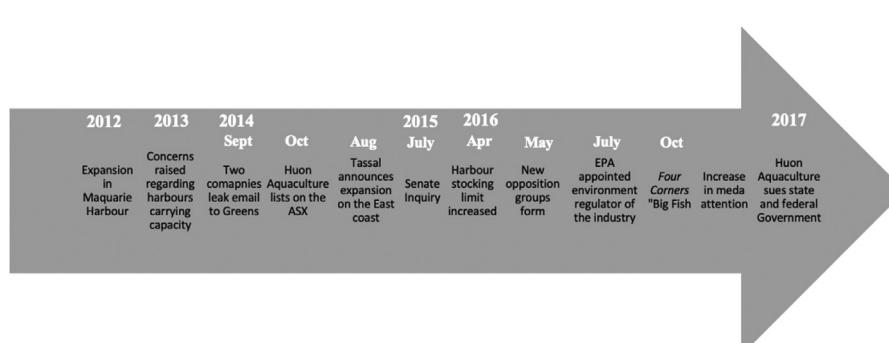


Fig. 1. Timeline of events surrounding the Senate Inquiry and *Four Corners*.

Community opposition to Tassal's expansion into Okehampton Bay on Tasmania's East coast, a previously unfarmed region, was made increasingly apparent in early 2016. A local opposition group, Marine Protection Tasmania, was formed in response to Tassal's expansion into Okehampton Bay. Another opposition group, Let's Grow Tasmania's Future, was responsible for an advertisement distributed on TV, their website and Facebook page, beginning its online presence approximately two months following the *Four Corners* program. The industry's expansion in Macquarie Harbour and Okehampton Bay has raised concerns among some locally-based companies, sections of local communities, and environmental organisations, prompting greater attention to the regulation and environmental impacts of the industry.

In mid 2016, responsibility for environmental regulation of the Tasmanian salmon industry was shifted to the Environmental Protection Authority (EPA) in response to concerns regarding the independence of the State Government (acting as both the proponent and regulator of the salmon industry) identified from the Senate Inquiry. At the same time, Macquarie Harbour's stocking cap was further increased [14].

The conflict, embedded in the rich environmentally antagonistic political history of Tasmania [see 15,16], reached new heights of contention between the salmon industry, political decision makers, ENGOs and science providers in late 2016 with a dedicated ABC *Four Corners* investigative journalism program. Ms Rosalie Woodruff, the Marine Environment Spokesperson for the Greens political party states that "the scale of revelations from the *Four Corners* exposé on salmon farming was immense." [17]. She praised the *Four Corners* program in an article in the *Hobart Mercury*, the main local newspaper, for publicly addressing the perceived failings of sections of the industry.

The program instigated a social media frenzy and almost tripled news media attention. *Four Corners* is an influential investigative journalism program aired nationally on television by the Australian Broadcasting Corporation (ABC). The TV program, dedicating an hour long segment to the salmon aquaculture industry in Tasmania, aired on 31st October 2016. The program focused on salmon farming at two of the three farming regions; Macquarie Harbour on the West Coast (which was the focus of the Senate Inquiry) and Okehampton Bay on the East Coast, both close to world heritage and marine protected areas. The program interviewed the following: representatives of two of the three main salmon companies; a representative of a salmon feed company; an American lawyer; a Melbourne-based scientist; a Tasmanian mussel farmer; representatives of two Tasmanian ENGOs (Environment Tasmania, a historically prominent environmental campaign organisation in Tasmania, and Marine Protection Tasmania a relatively newer organisation); representative of one transnational ENGO (WWF); and various community members.

In early 2017 Huon Aquaculture sued the State and Federal Governments for not adequately and fairly managing the harbour. This was an unprecedented move for a company to publicly and legally condemn its own industry and regulator for environmental impacts.

1.1.1. Senate Inquiry into the regulation of the fin-fish aquaculture industry in Tasmania

The Senate Inquiry consisted of a period open to public written submissions, a two day hearing process (15th and 16th July 2015) and a final report. The majority of submissions to the Senate Inquiry were made by local residents and businesses. This highlighted the struggle at the site of production between benefits arising from the business and jobs that the salmon farms create and the impact on amenity and access to the waterways for local residents. Both national and regional ENGOs and Government agencies also made a number of submissions and, along with local residents and other marine industries, identified the importance of communication from Government and industry, particularly regarding transparency and stakeholder engagement, and conveyed a range of levels of opinion concerning the adequacy of how these were undertaken. Anxiety concerning expansion of salmon

farming activity was also expressed and was linked to a perceived lack of transparency and the high level of support from State Government for expansion of the industry. Social and economic benefits and impacts outweighed the other categories for all key stakeholder groups, however local residents and ENGOs showed greater concern for expansion compared with other groups.

One of the main outcomes of the Senate Inquiry was the debate that was instigated concerning the adequacy of environmental regulations and the tension presented by the Government acting as both proponent and regulator. In response, the responsibilities of environmental monitoring and enforcement were transferred to the EPA. The process of the Senate Inquiry presented information in a way that transparently identified sources and was structured to allow for public decision-makers to respond.

1.1.2. *Four Corners* – "Big Fish"

The *Four Corners* program discussed issues of expansion, lack of transparency and regulatory rigour and environmental and aesthetic impacts that were also present in the Senate Inquiry submissions. The program depicted the salmon industry as "powerful" and expansion as something that needs to be "reined-in" [18]. The program played a substantial role in portraying Tassal as a "corporate juggernaut" by revealing a perceived lack of transparency, apparent disregard for the environment and community mobilisation against the company's East Coast proposal. Meanwhile, the program portrayed Huon Aquaculture as the humble, environmentally conscious company and "one of Tasmania's greatest home-grown success stories". [19].

The *Four Corners* program highlighted community anxieties concerning the expansion of the industry, particularly regarding Tassal's East Coast farming operations. This appeared to stem from the perceived lack of transparency, of Tassal in particular, amplified in the program by appearing to uncover internal Tassal documents and communications. For the first known time in the public debate concerning the adequacy of environmental governance of the Tasmanian salmon industry, the credibility of the World Wildlife Fund (WWF) and the Aquaculture Stewardship Council (ASC) certification, a third-party certification which WWF co-founded, was brought into question. The risk to the ENGOs reputation was amplified due to claims made that their independence was compromised by the accreditation services work they are paid to do for Tassal. This professional exchange of services between Tassal and WWF was already publicly disclosed by both parties prior to *Four Corners*.

The Environmental Protection Agency (EPA) was depicted as lacking regulatory rigour and ignoring advice from Huon Aquaculture, Petuna and former Tasmanian salmon farmers regarding the risks to the marine environment posed by current practices and/or regulations. Additionally, the program addressed how scientific knowledge and data is used by different actors by highlighting the inconsistency in the interpretation of both environmental data available and the impact of salmon farming on the surrounding marine environment. However, the only scientific data that was discussed on the program was concerning a select incident of low dissolved oxygen in Macquarie Harbour, giving little context of environmental process. This was presented by a scientist from Melbourne University. Local scientists who work directly with the Tasmanian salmon aquaculture industry and regulators were notably absent from the program.

1.2. Mediatisation and mediatised environmental conflict

Broadly, this paper examines the mediatisation, explained by Kübler and Kriesi [20] as "the increase of th[e] influence of the media on political processes, institutions, organisations and actors", of investigations and debates into environmental conflicts. The "preferences and interests... of (competing) actors...are likely to influence the ways in which the media process and select information they communicate, and thereby bias the content that is transmitted in media coverage of

political processes or events” [20: 236]. Hutchins and Lester (2015) acknowledge that common pool environmental resources attract conflict which is difficult to solve due to the varying multitude of actors involved. ‘Mediatized environmental conflict’ as theorised by Hutchins and Lester [3] captures how power is played out in the public sphere regarding how we use – and impact on – the environment and natural resources. This emphasizes problems such as “who is affected, who is responsible [and] who should respond, and how?” [21:1]. Simon Cottee’s ‘mediatised conflict’ identifies media forms as not only avenues for information dissemination but as resources for a variety of actors to convey their knowledge, values, and opinions through a public arena [22]. The information which flows through these networks also enters into the political and news discourse of the conflict. Therefore, the theory of ‘mediatised conflict’ acknowledges that media is entrenched in the construction of conflict and asks how the conflict is conducted. Hutchins and Lester’s theory builds on this by acknowledging the “political significance of the environment, and the pivotal role of media in contests over the definition and understanding of environmental risks and impacts” [3: 341].

While this scholarship presents evidence of the mediatisation process, some researchers are cautious of the term ‘mediatisation’ because it places too much weight on the influence that media has on political and corporate decision-making [23,24]. This view argues that by emphasising the role of media one reduces the holistic reality whereby multiple and wide-ranging elements sway how an issue unfolds. In contrast, Kriesi [25:155] explain “the media and mediated communication are of central relevance for contemporary societies due to their decisive influence on, and consequences for, political institutions, political actors and individual citizens”.

In applying the theory of ‘mediatised environmental conflicts’ [3] to two key investigations into the Tasmanian salmon farming, this paper explains how these investigations functioned as critical moments in the discourse [26]. Power exchange between actors or groups often occurs around ‘critical discourse moments’ [27], where the height of conflict often follows key events in the conflict timeline that changes the course of the conflict or reaffirms the existing trajectory of the discourse. The concept of ‘critical discourse moments’ identifies that there are often specific events where the prevailing discourse is contested and multiple alternative positions are generated. By identifying critical moments in the discourse more particularly, rich analysis of the different values positions engaged in issues of debate and conflict can be conducted.

2. Methods

Two stages of data collection and analysis were undertaken; first, the submissions to the Senate Inquiry and the *Four Corners* transcript underwent separate critical discourse analysis; second, related online news media in the 6 months following these two investigations were collected and underwent both content analysis and critical discourse analysis (see next section). This follows Carvalho’s (2007: 226) approach to examining news media, which focuses on “challenges to discourse constructions of the issue”. It allows for organisation of data that captures, to the greatest degree possible, the various actors and arguments that are present in the discourse. Applying this methodology provides insight into how media, NGOs, scientists, Government, industry and concerned citizens approach and respond to informal and formal probes into a contentious industry and how different actors are represented in media, making and responding to claims under different conditions. This can inform if and how such investigations influence the operating environment for claims-makers and decision-makers in environmental governance.

Content present on social media was monitored between mid 2016 and early 2018. This included Twitter posts immediately following the *Four Corners* program and Facebook pages of opposition groups and salmon companies. The monitoring identified methods for communication, claims being made and subsequent interactions between

actors and stakeholder groups. However, due to the limitations of collecting and downloading historical social media data [28] formal analysis was not able to be conducted and therefore data from social media has minimal presence in this paper.

2.1. Data collection

News articles were collected using the Factiva news database, claiming nearly 33,000 sources of news globally [29]. Search words for both data sets were: “salmon farm” OR “fish farm” OR “salmon aquaculture” OR Tassal OR “Huon Aquaculture” OR Petuna. Search criteria also stipulated Australian sources. The *Four Corners* dataset comprised news articles published between 1 November 2016 and 1 May 2017 and, for the Senate Inquiry, between 15 July 2015 and 15 January 2016 (six months following the events). These dates were chosen to capture the media’s representation of the event and how actors responded to these investigations without overlapping in time. This ensured that the content of news articles collected following each event was not influenced by the other.

Submissions to the Senate Inquiry were invited 24 March and due by June 1 and the Committee’s report was submitted 21 August. While the proceedings of the Senate Inquiry spanned several months, the public hearings were held on 15 and 16 of July and was used as the event date for collecting news articles. The *Four Corners* dataset started the day after the show aired.

The top five news sites that published the most articles for both the Senate Inquiry and *Four Corners* were; ABC News (14 and 49), Launceston Examiner (10 and 28), Burnie Advocate (21 and 37), Hobart Mercury (13 and 98) and *The Australian* (0 and 7). Other news outlets primarily published financial updates (e.g. share prices) or stories concerning other fish farming operations around Australia. These five news outlets were therefore considered the most representative data sources for investigating the Tasmanian salmon farming debate and articles published by these news outlets were included in the analysis.

The *Hobart Mercury* and *The Australian* are both owned by News Corp Australia. The *Hobart Mercury* covers Tasmania’s south and claims to reach an average of 94,000 readers of the print version and 350,000 unique visitors each month on digital platforms [30] with 52,683 followers on Facebook and 15,000 followers on Twitter. *The Australian* is a national newspaper, claiming an average of 489,000 with just over 123,000 daily unique visitors to the mobile site [31] with 804,527 followers on Facebook and 659,000 on Twitter. The *Burnie Advocate* and the *Launceston Examiner* are both owned by Fairfax Regional Media. The *Advocate* focuses on news from the North-West and West of Tasmania, claiming a combined print and digital monthly readership of 171,000 [32] with 175,000 followers on Facebook. The *Examiner* covers northern Tasmania, claiming a combined print and digital monthly readership of 204,000 [33] with 51,348 following on Facebook and 12,400 followers on Twitter. The ABC uses a variety of platforms including tv and radio, however for the purposes of analysis the online based news was collected. The ABC claim that in the 2016–2017 financial year “the average monthly reach of ABC Online in Australia was 7.7 million, or 39% of online Australian” [34]. The national ABC Facebook page has just over 3.6 million followers with the ABC Hobart page having 46,338 followers. The national ABC Twitter page has 14 million followers with the ABC Hobart page having 14,800 followers.

Submissions to the Senate Inquiry were downloaded from the Parliament of Australia website. The Committee received 103 submissions of which 15 were confidential, leaving 88 available for analysis. The *Four Corners* transcript for the episode “Big Fish” was taken from the ABC’s website.

2.2. Text analysis

Content and critical discourse analysis was conducted by applying

inductive qualitative coding whereby qualitative data was organised and coded into conceptual categories using Nvivo 11 software (QSR International). Nvivo is a software that facilitates descriptive coding to identify and categorise concepts in the 217 news articles (159 following *Four Corners* and 58 following the Senate Inquiry). Nvivo allows for constant comparison between codes, review and redefinition of concepts as new ones are identified or merged during analysis. The content analysis identified key areas to apply discourse analysis to gain further depth from the data. This type of analysis also allowed for frame evaluation whereby to “frame is to select some aspect of a perceived reality and make them salient” [35:52]. This included how the Tasmanian salmon industry was framed in the news media and how different actors framed the industry and related discourse following the two events.

Dryzek [36] defines discourse as a “shared way of apprehending the world ...constructing meanings and relationship and helping define common sense and legitimate knowledge”. Wodak [37] also foregrounds the importance of contextualizing the discourse by taking note of “intertextual and interdiscursive relationships”, “social variables and institutional frames of a specific context of situation”, and “the broader socio-political and historical context, which discursive practices are embedded in and related to”. In order to “uncover the way reality is produced”, the content analysis drives the discourse analysis in that it identifies areas for further investigation [38:19]. Riffe, Lacy [39] explains that “content analysis serves to elicit the frequency of certain features and makes variation in the communication content explicit as well as measurable”. The nature of content analysis assures that all units of data receive equal treatment [40].

To identify if and how the *Four Corners* and the Senate Inquiry influence how different actors are presented in the media and the apparent flow of information between key interest groups, the analysis identified;

- 1) The actors or groups present in the news articles and the number of articles they were either mentioned or quoted in; and
- 2) The relationship between these groups. This was identified by the type of claims made (positive or negative), who made these claims and who were the targets of these claims. This was determined by the language used in news coverage.

3. Results

The number of news articles identified in this study was 268% greater following the *Four Corners* program compared to that of the Senate Inquiry (Fig. 2). This increase was most obvious in *The Hobart Mercury*.

Both the Senate Inquiry and the *Four Corners* program led to a

proliferation of different framing of the salmon industry. Salmon farming's environmental performance was the most common type of content in news media concerning the industry following both investigations.

3.1. Senate Inquiry into the regulation of the fin-fish aquaculture industry in Tasmania

The Senate Inquiry played a notable role in raising concerns of environmental impacts in the news media. For example, following the Senate Inquiry the discourse exhibited a focus on the management of Macquarie Harbour in relation to the low dissolved oxygen and impact on the benthic habitat. Concerns regarding environmental impact of the expansion of the salmon industry in Tasmania were responded to by companies by promoting awards and certification received for their efforts toward environmental sustainability.

The Senate Inquiry played a notable role in introducing the role of science – if not scientists themselves – in news media, primarily presenting science as a problem solver and an integral component in informing corporate and political environmental decision-making. Following the Senate Inquiry 25% of the news articles and 55% following the *Four Corners* program mentioned science in a general capacity, such as the role of science in informing the management of the Tasmanian salmon industry or excerpts from scientific reports. However, only 7% and 3% of articles respectively featured scientists themselves. Following the Senate Inquiry, four scientists were present in news media (two IMAS scientists (one quoted) and environmental scientists from Adelaide, Sydney and Melbourne universities (all quoted)). Only three Tasmanian scientists – including two marine scientists (one quoted) and one political scientist (quoted) – and one environmental scientist from Melbourne (quote was taken from *Four Corners*) were present in the news coverage following *Four Corners*. This could be considered a very low presence of scientists as actors in media coverage considering the relatively high attention given to scientific reports and the debate over scientific information and its role in environmental governance (Table 1).

The Senate Inquiry instigated formal public debate concerning the adequacy of the environmental regulatory process of the industry. Those opposing salmon farming in Tasmania and factions of the industry raised concerns regarding the independence of the regulatory process. These claims were grounded in the perception that the government regulatory body at the time was both the proponent and regulator of the industry. As one of the Senate Inquiry committee members reportedly stated that there was a ““community perception” of potential conflict of interest in the same bureaucracy being the industry's “regulator and proponent” [41].

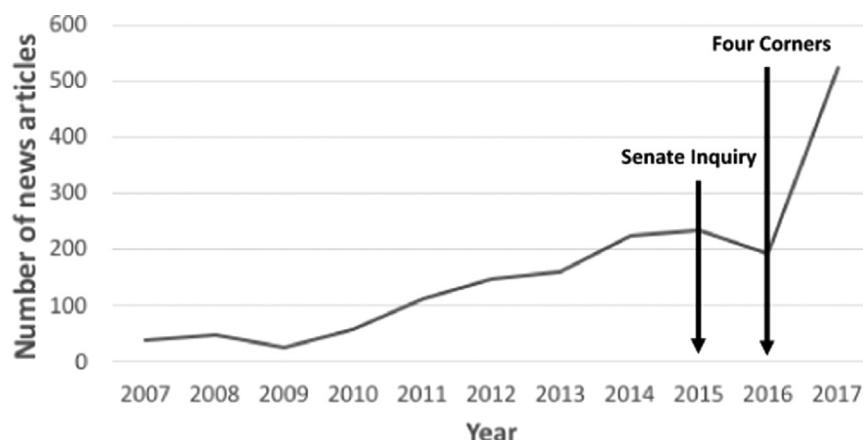


Fig. 2. Total number of news articles between 2007 and 2017 for a key word search for salmon aquaculture, salmon farm, Tassal, Huon Aquaculture and/or Petuna in the Hobart Mercury, Launceston Examiner, Burnie Advocate, ABC News and The Australian news papers. Source; Factiva.

Table 1

Low presence of scientists in news articles relative to the number of articles with scientists present.

Event	# of articles mentioning science	% of articles mentioning science	# of articles with scientist's present	% of articles with scientist's present	Total # of news articles
Senate Inquiry	15	25%	4	7%	59
Four Corners	87	55%	5	3%	158

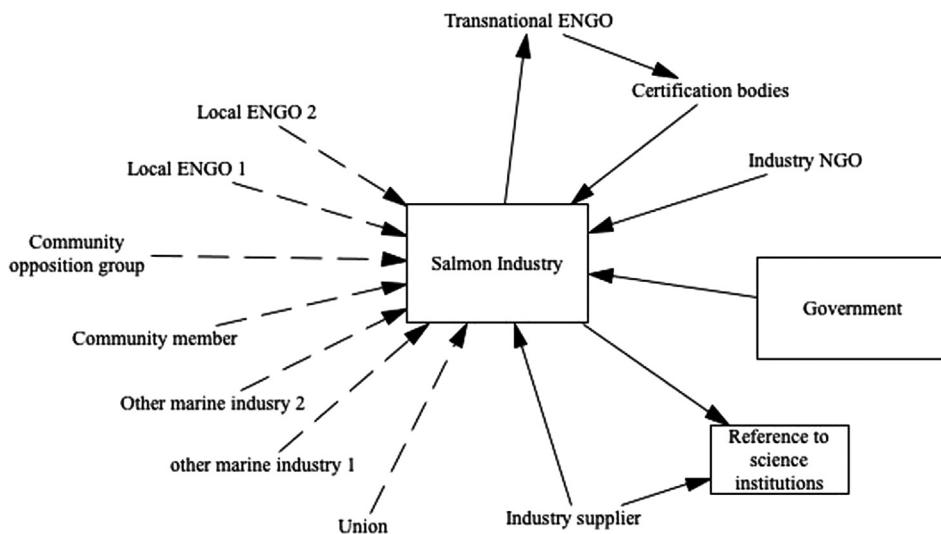


Fig. 3. Actors and flow of claims and information evident in the print news media in the six months following the Senate Inquiry. Dotted arrows indicate negative relationships and solid arrows indicate positive relationships. Boxed stakeholders and the size of the box indicate the number of news articles they are mentioned in. No box indicates a lower presence.

The social network present in the media following the Senate Inquiry was simple and did not prompt many new actors to be present in the news media. The Tasmanian Salmon Industry was commonly referred to as one entity (Fig. 3).

The industry embraced the Senate Inquiry as an opportunity to "showcase" the industry, showing confidence that the industry will come out of it stronger and "welcome[ed] the Inquiry's focus on transparency around waterway health" [42]. While both Liberal and Labor parties opposed the Senate Inquiry, with Labor leader, Bryan Green explaining that the industry underwent rigorous monitoring regimes and politicizing the issue would diminish public confidence in the salmon industry [43]. The resistance from political parties for the inquiry into the industry may have promoted the lack of trust in regulatory processes instigated by Huon Aquaculture and expressed through news media, broadcast television and radio, social media and legal proceedings.

3.2. Four Corners – "Big Fish"

Concerns of environmental impacts on the farms surrounding environment were further emphasised following *Four Corners* and the importance and critique of their mitigation was highlighted. The discourse regarding the environmental impact on Macquarie Harbour, first present in the Senate Inquiry, was carried by the *Four Corners* program and further reinforced as a news issue by Huon Aquaculture's legal proceedings.

The environmental discourse concerning Macquarie Harbour provided a strong platform for groups to shape their opposition to the expansion on the East Coast of Tasmania. Claims from opposition groups promoted debate concerning the adequacy of the regulatory process in Tasmania to mitigate environmental impacts of the aquaculture practice. Industry and Government actors addressed these concerns by noting the high environmental standards and practices of the Tasmanian salmon industry, both in the local and global context, by asserting that regulation rests on the input of independent and quality science and promoting third party certification of the industry. Tassal

and Government actors also responded by asserting that opposition groups and *Four Corners* journalists were misrepresenting the extent of environmental impacts of salmon production. It was reported that the State Government "took aim" at a local environmental group [44] and "debunk[ed]" claims from "green groups" that the Okehampton Bay site would not be sustainable" [45].

Compared to the relatively contained social network present in the news media following the Senate Inquiry, the *Four Corners* program expanded the number of actors present in news media and revealed unexpected coalitions and alliances between stakeholders (Fig. 4). This created more complexity in the conflict relative to that of the Senate Inquiry. Most notably, *Four Corners* publicly highlighted a shift in industry cohesiveness. The division among industry in Tasmania was brought to the fore in *Four Corners*, which explicitly identified claims of industry corruption and environmental degradation.

From publicly acting and being perceived publicly as one unit, variances developed in individual company's communications and how they are being portrayed and perceived in the public sphere. News media following *Four Corners* displays negative perceptions toward Tassal. Whereas Huon Aquaculture appears to be publicly forming positive relationships with local ENGOs (although it comes at the cost of a negative relationship with WWF). The public adversity towards Tassal also experiences input from a greater number of actors following *Four Corners*. This was instigated by the *Four Corners* program itself but also related to Tassal's expansion on the East Coast instigating the formation of local opposition groups. The industry division was not only carried through news media, but also social media sites such as Twitter and Facebook with posts indicating a preference to purchase Huon products or an adversity to purchasing from Tassal. An ethical investment firm was also persuaded by ENGOs to halt investment in Tassal.

Along with increased complexity of actor networks and associated claims-making, news coverage following *Four Corners* was characterised, and complexity reinforced, by conflict compared with that of the Senate Inquiry. In news coverage, this was represented through the following: word choice in stories about Huon Aquaculture's legal action, portrayed hostility between and among key stakeholder groups; the use

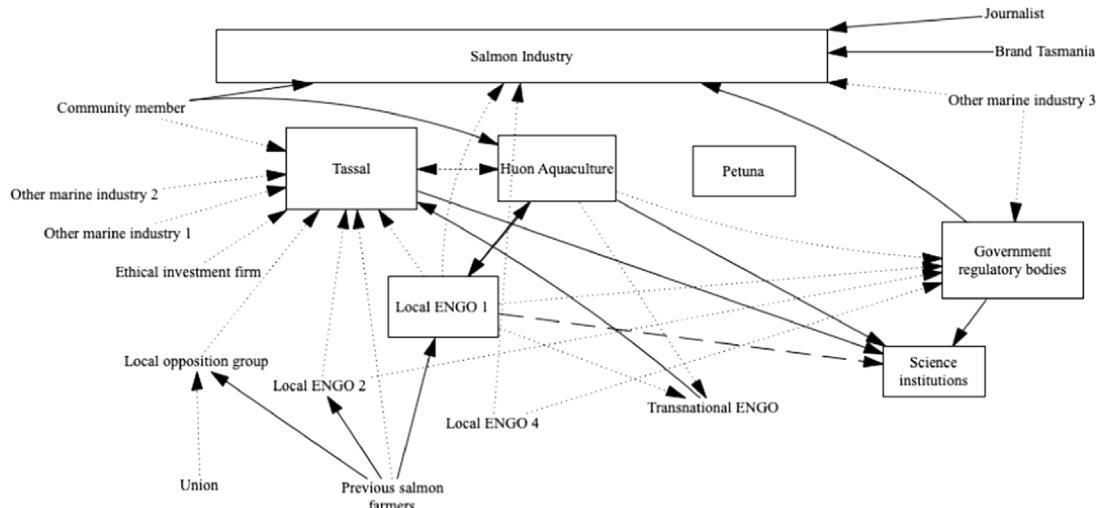


Fig. 4. Actors and flow of claims and information in the news media in the six months following the *Four Corners* program. Dotted arrows indicate negative relationships and solid arrows indicate positive relationships. Boxed stakeholders and the size of the box indicate the number of news articles they are mentioned in. No box indicates a lower presence. The larger dashed line indicates a mix of positive and negative dialogue.

of words such as *attack*, *divisive*, *extremist*, *hot topic*, *conflict* and *squabbling*; accusations of double standards and use of misinformation; and through claims that key actors were not engaging outside of media. Reinforcing the presence of conflict, actors in the media identify the need for collaborative, rational and respectful discourse.

Editorials began to address and highlight the conflict present in the discourse and suggested methods for resolution. In its editorial, ‘The power of compromise’, the *Hobart Mercury* states that;

The Mercury's position is straightforward. Aquaculture is vital for the future of the state's economy. Absolutely vital. We want to see it do well. It creates desperately needed jobs at a time when unemployment and under-employment remain among our greatest blights. But it needs to be sustainable and we make no apologies for shining a light on when this may have failed. The debacle that Macquarie Harbour is fast becoming cannot be allowed to persist. We must learn from this, be honest in our assessment and put in place measures that ensure it is resolved and never happens again. And the industry needs to move beyond meaningless press releases and background briefings and genuinely build internal bridges. Without a unified front, it will be complicit in its own demise. The heads of all companies need to sit around a table, put whatever differences they have aside and agree on a path forward. Extreme sides — mired in cheap shots and offering information that is either incredibly biased or completely wrong — do nothing to advance either position. Aquaculture represents a genuine opportunity for Tasmania — an opportunity to build something together as a state. A line in the sand needs to be drawn. Leadership needs to be shown [46].

Similarly, also in an article in the *Hobart Mercury* following *Four Corners*, the then sustainability manager of Tassal acknowledges that “vigorous debate is healthy” while “unproductive conflict...is damaging for everyone” [47].

The conflict among the industry was further amplified by the apparent, traditionally unlikely, alliance between Huon Aquaculture and Environment Tasmania self-described as; “the peak group for environment organisations in the state...[a] campaigning organisation best known for leading the alliance that stopped the Super Trawler *Margiris* from fishing in Australian waters, and for our part in the Tasmanian Forest Agreement” [48]. It could be construed that by publicly supporting Huon Aquaculture for its efforts to reduce the environmental impacts of salmon farming, Environment Tasmania was claiming to have created a partnership to achieve better environmental

performance. However, the same ENGO discredited rather than supported Tassal’s efforts to mitigate environmental impacts and to improve the industry standard for transparency and accountability in reporting environmental reporting through its annual sustainability reports. Furthermore, Environment Tasmania also carried the discourse prompted by *Four Corners* concerning the credibility of the global conservation ENGO, WWF and its partnership with Tassal into the news media. This discourse was framed as corruption by Environment Tasmania circulating a petition calling for WWF to halt the partnership.

The results indicate that the *Four Corners* program prompted the presence of Environment Tasmania in the news media. This could reinforce the symbiotic relationship between NGOs and journalists [49–51]. However, supporting [52] findings, the ENGOs’ presence in the media is still not as prevalent as corporate and political representatives (Table 2).

These results indicate that these critical moments in the discourse were not solely a result of environmental campaigns, which have historically played a significant role in environmental discourse in Tasmania [see 7,53,54]. Rather, in the case of salmon aquaculture, Environment Tasmania is shown to leverage these critical moments for its own strategic purposes. This is not to say that these campaigning organisations have not provided a solid grounding for corporate players to use the environmental discourse as a legitimate source of concern. However, it exemplifies a shift in the traditional role of ENGOs in holding industries and Governments to account, to an industry player taking this role.

4. Discussion

By revisiting the research questions, the analysis of frames has been able to establish that the *Four Corners* program and Senate Inquiry were able to promote different framing and engagement with the perceived issues of the salmon industry. The Senate Inquiry process provided a platform for dialogue regarding the claims being made concerning the regulation of the industry’s expansion. Comparatively, *Four Corners* was a one-way information stream outward which contained the controlled and subjective information it chose to seek out and include. Public debate, as conveyed in news media, was more contained in the Senate Inquiry compared with *Four Corners*. It could be construed that this was because of the formality of the Senate Inquiry compared to the controversy presented by the *Four Corners* program, activating a discourse of conflict between and among key stakeholder groups.

It is evident in this case that media events such as *Four Corners* can

Table 2Top actors present in news media following the Senate Inquiry and *Four Corners* program.

Actor	Framing following the Senate Inquiry	# of news articles following Senate Inquiry	Framing following <i>Four Corners</i>	# of news articles following <i>Four Corners</i>
Tassal (salmon company)	For the sustainable expansion of industry	27	Portrayed negatively	131
Government actors	For the sustainable expansion of industry	18	Portrayed negatively	130
Huon Aquaculture (salmon company)	Calling for improvement of environmental regulation of industry	21	Portrayed positively	92
Scientists/science institutions	As knowledge providers	10	Identified environmental impacts in Macquarie Harbour	51
Environment Tasmania (NGO)	Against inshore salmon farming	1	Against inshore salmon farming	40
Petuna (salmon company)	For sustainable expansion of industry	16	For sustainable expansion of industry	37
Certification bodies	Positive for the salmon industry	8	Questions around certification in Macquarie Harbour	22
Let's grow Tasmania's future (NGO)	n/a	0	Against inshore salmon farming. Primarily the expansion on the East Coast	15
Community members	– Against inshore salmon farming – Support economic benefits	2	– Against inshore salmon farming – Support economic benefits	14
Other marine industry/sectors	Against inshore salmon farming	6	Against inshore salmon farming	11
Marine protection Tasmania (NGO)	n/a	0	Against inshore salmon farming. Primarily expansion on the East Coast	9
Workers union	Protecting workers	9	For sustainable expansion of industry	9
Previous salmon farmers	n/a	0	Against inshore salmon farming	7
Tasmanian Salmon Growers Association	For sustainable expansion of industry	3	For sustainable expansion of industry	2
Transnational ENGO	Positive for the salmon industry	2	Corruption	2
Total news articles		59		158

instigate greater news media attention, involvement and diversity of actors, emphasis on alliances and conflicts and debate over governance. What is interesting however is that the Senate Inquiry and *Four Corners* were instigated by conflict internal to industry. In this case environmental campaigns, rather than instigating the two events identified by this analysis, are shown to leverage these critical moments for their own strategic purposes. Additionally, while *Four Corners* may not be the sole cause for the conflict present in the news media discourse, it does appear to be the platform for which opposition groups, political parties, salmon companies, community members and journalists used to build and shape their case. It could be construed that Huon Aquaculture's breaking of industry ranks, first present in the Senate Inquiry and publicised in *Four Corners*, acted as the prompt for the shift in public discourse.

It has been acknowledged that popular 'soft journalism' programs, such as *Four Corners*, have the capacity to create frames that are then difficult to dislodge in subsequent public debate [55]. The impact this has on how different information is perceived, for example science, is highlighted here. In the case of Tasmanian salmon, scientific information was used as a political tool by actors within mediatised environmental conflict, yet scientists themselves were not key actors in this case. This was evident across the two events, however most noticeable following the *Four Corners* program. Following the Senate Inquiry, while some debate concerning the validity of the science-based information was present this was not one of the more prominent features in the news articles. Comparatively, articles where the validity of the scientific information was debated and information was selectively wielded to support agendas, actions or statements were more frequent following *Four Corners*. As a result, uncertainty was created concerning the independence, relevance, and role of science in informing opposition campaigns, corporate decisions and Government regulations regarding the environmental impact of the industry.

Given the dominance of the environment-at-risk discourse and the acknowledgement and use of scientific information in claims and counter claims by non-experts, the lack of participation by scientists themselves in the media response following *Four Corners* is a discernible gap. Further exploration of the apparent absence of scientists in the mediatised environmental debate could reveal nuances regarding the communications pathways and barriers in evidence-based decision-

making where public debate is heightened.

Ambiguity and uncertainty is further emphasised in the media following the Senate Inquiry which highlighted a disconnect between 1) local concerns regarding adequacy of the environmental regulatory process at a time of industry expansion and 2) the globally recognised environmental certification that the salmon companies were being awarded and promoted. This disconnect was further heightened following the *Four Corners* program with the introduction of a contentious relationship occurring between local ENGO, Environmental Tasmania, and salmon company, Huon Aquaculture, and between transnational ENGO, WWF, and salmon company, Tassal. If Environment Tasmania's support for Huon Aquaculture is broadly portrayed as legitimate while WWF's partnership with Tassal is framed as corrupt, this then adds considerable complexity regarding what constitutes a legitimate partnership between an ENGO and corporate entity. The impact that the increased complexity of these relationships and greater number of actors has on the governance of the salmon aquaculture industry in Tasmania is an important area for further research.

5. Conclusions

This analysis has revealed how news media influenced different actors' responses to, and how news media itself responded to, various modes of investigation into the environmental impact of the salmon aquaculture industry. The *Four Corners* program "Big Fish" and Senate Inquiry into the "regulation of the fin-fish aquaculture industry in Tasmania" have influenced agendas and issues within public discourse, emphasised changing roles and responsibilities of key actors as well as revealing relationships between and among stakeholder groups. Further research into not only the relationships between claims-makers and decision-makers but the apparent blurring of what constitutes and defines these roles could allow for insights into the processes of influence and framing between media, public and policy in the governance of not only salmon farming but other sectors.

Acknowledgements

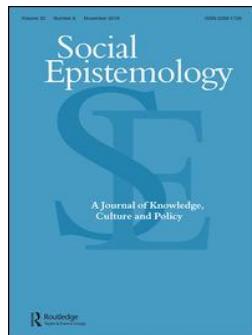
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PAPER II



Perceiving Environmental Science, Risk and Industry Regulation in the Mediatised Vicious Cycles of the Tasmanian Salmon Aquaculture Industry

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ARTICLE



Perceiving Environmental Science, Risk and Industry Regulation in the Mediatized Vicious Cycles of the Tasmanian Salmon Aquaculture Industry

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ABSTRACT

This paper examines public conflict over the rapid growth of the Tasmanian salmon aquaculture industry and associated environmental and social impacts. By conducting a media analysis, triangulated with key stakeholder interviews, we find news media discourse was predominantly framed by environmental risk, expansion of the industry and the in/effectiveness of Government regulation. Environmental science and community interests were conflated within these themes, leading to a perceived lack of transparency and loss of trust in both environmental science information and regulation of environmental impacts. Government, salmon companies and science institutions were the most frequently mentioned stakeholder groups within news media, suggesting they had power to facilitate virtuous cycles – that is, shared goals and language. However, these stakeholder groups were portrayed to be outwardly opaque in their communications of, and lacking engagement in, decision-making processes. By revealing how science, societal values and decision-making were negotiated in news media through this conflict, we hope to contribute to the understanding of how vicious and virtuous cycles can be facilitated by various stakeholders and within media.

KEYWORDS

Environment; risk; aquaculture; media; salmon; conflict; communication

1. Introduction

The salmon aquaculture industry is no stranger to public conflict, with a number of scholars exploring how the industry is represented in media in different growing regions (Amberg and Hall 2010; Olsen and Osmundsen 2017; Sha et al. 2015; Cullen-Knox et al. 2019). While it represents only a small amount of global salmon production, Tasmanian salmon aquaculture has a long history of contention, with Leith, Ogier, and Haward (2014b) identifying what they term a 'vicious cycle of distrust' – that is, 'cherry-picking, secrecy and misinterpretation' in the use of science information and claim-making (pp. 290). In this cycle, 'reputational capital is traded away by all parties in costly, unproductive, and acrimonious processes' (pp. 291) destabilising the 'social license to operate' (Cullen-Knox et al. 2017). By contrast, virtuous cycles are 'deliberate, slow and considered' and are characterised by shared 'goals and language' creating trust between and among stakeholder groups (Leith, Ogier, and Haward 2014b). Leith, Ogier, and Haward (2014b) find that environmental science can play a pivotal role in how a social license to operate functions in scenarios of aquaculture where common pool resources are utilised by large companies. While acknowledging that science is not neutral (Boykoff and Goodman 2009), Leith, Ogier, and Haward (2014b) suggest that the involvement of third-party scientists in environmental conflict can foster trust,

informed debate and distribution of responsibility, potentially turning vicious cycles into virtuous ones. Such virtuous cycles shift contention around environmental science information toward acknowledgement and understanding.

Here we take the opportunity to develop a nuanced understanding of how news media might help emphasise, explain, exacerbate or resolve these deliberative processes within the context of the Tasmanian salmon aquaculture industry conflict. Leith, Ogier, and Haward (2014b) acknowledge the usefulness of deliberative processes to link science, societal values and decision-making. One of their industry interview participants noted the importance of finding pathways that mitigate vicious cycles of conflict when they stated that 'we can't just be meeting in the media ... there has to be a process, and we are just starting that process' (Leith, Ogier, and Haward 2014b, 289). These 'processes' were interpreted to include narratives around engagement and enacted by research projects mapping public values of waterways. However, the Tasmanian salmon aquaculture industry went on to experience heightened environmental conflict (Cullen-Knox et al. 2019), in which media played more than a neutral role – that is, the conflicts were mediatised.

In order to assess how environmental risks of salmon aquaculture in Tasmania are framed and negotiated in the public sphere (Habermas 1991), this paper will identify and analyse the narratives presented in news media discourse. The public sphere encompasses the 'constellation of communicative spaces in society that permit the circulation of information, ideas, debates – ideally in an unfettered manner – and also the formation of political will (i.e., public opinion)' (Dahlgren 2005, 148). Media are core to the enactment of the contemporary public sphere. Therefore, by focusing on how Tasmanian salmon aquaculture is presented in Tasmanian and Australian news media, this study sheds light on the relationship between public knowledge and policy formation. We want to understand the role media play in public negotiations of Tasmanian salmon aquaculture by (a) identifying and analysing dominant themes and stakeholders within news media coverage, particularly where disputed and ambiguous social and scientific information appears; and (b) considering how associated media practices and logics might influence outcomes of complex common pool natural resource-use conflicts.

To begin, this paper provides background to the Tasmanian industry, contextualising growth and the current status of salmon aquaculture in Tasmania. It then outlines the theory of mediatised environmental conflict and how it can be applied to explore vicious and virtuous cycles. We then describe the methods used before examining how risks are publicly framed and negotiated by different stakeholders and whether these interactions are virtuous or vicious. We consider our findings in relation to the stakeholders in Tasmanian salmon aquaculture, how and what information they carry in the public sphere and the role media play in this flow of information between stakeholders.

1.1. Background: Tasmanian Salmon Aquaculture Industry

Cultivated over decades, Tasmania has a rich, antagonistic history of environmental politics. Generations have experienced entrenched conflict in which the discourses of economic growth and environmental impact continue to compete. At the time of the study, the Tasmanian salmon aquaculture industry was undergoing a considerable growth period. In 2009, the industry announced plans to double its value to a 1 USD billion a year (DPIPWE 2017). To achieve this growth, Tasmanian salmon aquaculture companies expanded into new farming areas. Of the three companies that farm Atlantic Salmon in Tasmania, Tassal is the largest (100% publicly listed), followed by Huon Aquaculture (a family-founded company that floated 30% on the Australian Securities Exchange in 2014), with Petuna the smallest (100% privately owned).

In early 2016, Tassal applied to expand into an existing but unused lease in Okehampton Bay on the island's East Coast, a favourite holiday destination for Tasmanians and an area new to salmon farming. This application was put to the Marine Farming Review Panel to assess its suitability to farm salmon. At the same time, Macquarie Harbour on the West Coast was being investigated for environmental degradation linked to aquaculture. Tassal¹ had forfeited Aquaculture Stewardship Council (ASC) certification for leases in Macquarie Harbour in 2016 and was ordered by the

Environmental Protection Authority (EPA) to destock its lease closest to the World Heritage area by February 2017.

In October 2016, the Australian Broadcasting Corporation's (ABC) flagship investigative journalism television program, *Four Corners*, aired an episode nationally titled 'Big Fish', 'exposing' the salmon aquaculture industry (*Four Corners 2016*). This program was followed by a peak in news media attention and public scrutiny, with the impact noted by ABC News:

Salmon giant Tassal ... concedes it had been a tough year for scrutiny since *Four Corners* aired concerns about the health of the west-coast Tasmanian harbour. (*Burgess 2017*)

The disruption and the complexity of the conflict created by the 'Big Fish' program (*Cullen-Knox et al. 2019*) and the uncertainty constructed by the conflict were exemplified by an opinion column, published in the *Hobart Mercury* newspaper:

So what is the truth about the impact of the farmed salmon industry on Tasmanian waters? This is a difficult question to answer. The claims and counter claims of business, unions, Governments, political parties and environmental groups are not helping the situation. Each has a bias, understandably so, but it means that one should be cautious in accepting their claims ... Can we, as a community, instead have a nuanced, rational discussion and respectful discourse about the impact of this multi-million dollar industry on Tasmania's marine environment? (*Barns 2017*)

In 'Big Fish', Huon Aquaculture was portrayed as environmentally conscious. By February 2017, the company had broken industry ranks by leaving the state's seafood industry organisation and beginning unprecedented legal action against the EPA and Tasmanian Department of Primary Industry, Parks, Water and Environment (DPIPWE). Reportedly, the company sued the Government departments for 'fail[ing] to manage and protect the environment in Macquarie Harbour' (*Meldrum-Hanna, 2017*). Tassal, represented in the 'Big Fish' episode as a 'corporate juggernaut', joined the proceedings in support of the Government. This deepened the conflict between salmon aquaculture companies. Both federal and state Governments have remained committed to the expansion of the industry, despite being criticised for environmental exploitation of public waterways to support economic growth and profit for particular companies (*Tiller, Brekken, and Bailey 2012; Vince and Haward 2017*).

1.2. Approach and Methods

We adopt the view posited by Hutchins and Lester (*2015*) that environmental conflict is a product of the often complex interplay between '(i) activist strategies and campaigns, (ii) journalism practices and news reporting, (iii) formal politics and decision-making processes, and (iv) industry activities and trade' (*Hutchins and Lester 2015*, 337). Mediatisation captures a large-scale transformation in everyday life, society, culture and contemporary politics, a process where media has infiltrated into all domains of society (*Krotz 2017*), and one to which decisions over salmon aquaculture are not immune. Likened to the processes of globalisation, society cannot escape mediatisation where the power and effects of media shape and frame communication as well as the society for which communication occurs. Such social transformations are referred to as 'meta-processes' (*Lundby 2009*). Media are no longer able to be neatly separated from society (*Deuze 2012*). Mediatisation has become systemic over the last two decades and mediatisation theory and 'media-centered' research 'involves a holistic understanding of the various intersecting social forces at work at the same time as we allow ourselves to have a particular perspective and emphasis on the role of media in these processes' (*Hepp, Hjarvard, and Lundby 2015*, 316). In this paper, we seek to understand how mediation of environmental conflict occurs in the context of mediatisation and how vicious and virtuous cycles are impacted by this. As such, news media texts and key informant interviews were collected for analysis, and we approached this data seeking insights into how the environmental risks of salmon aquaculture were perceived, articulated, negotiated and potentially resolved across media and communication networks and between key stakeholder groups.

News articles were sourced using the Factiva news database, claiming nearly 33,000 sources of news globally (Jones 2018), using the search words: 'salmon farm' OR 'fish farm' OR 'salmon aquaculture' OR Tassal OR 'Huon Aquaculture' OR Petuna. News articles from 1 November 2016 and 1 May 2017 were collected. This was the six-month period following the Four Corners episode 'Big Fish', which created a spike in news media discussing the Tasmanian salmon aquaculture industry (see Cullen-Knox et al. 2019). According to the Factiva database search, the news sites that published the most articles in this six-month period were; *Hobart Mercury* (98), *ABC News* (49), *Burnie Advocate* (37), *Launceston Examiner* (28), and *The Australian* (7) (Table 1). The *Hobart Mercury*, *Burnie Advocate* and *Launceston Examiner* are daily regional newspapers and represent a range of viewpoints. *ABC News* is a public news service, while *The Australian* is conservative in its reporting. Other news outlets which emerged from the key word searches were primarily related to financial information – for example, regular share price updates – and were excluded from the analysis. Also excluded were stories concerning other fish farming operations around Australia. The dataset provided by Factiva includes both articles written by journalists/news outlets and opinion pieces submitted by any interested parties or the general public. Opinion pieces were included in this data set because they are the outcome of news media practices and decisions – that is, they meet publishing criteria and are presented to readers as worthy of publication. They are part of the package of information on salmon aquaculture that is presented to the public. The information contained in the opinion pieces contributes to mediated reality and public knowledge (Johnsoncartee 2005; Page, Shapiro, and Dempsey 1987), see also Olsen and Osmundsen (2017) and Osmundsen and Olsen (2017).

To provide depth, context and triangulation to the textual data, in-depth semi-structured interviews were conducted (Britten 1995). Interviews provide rich personal experience that other data sources cannot often generate, if requiring interpretation by the researcher (Neuendorf 2004). A total of 15 interviews were conducted by the first author from mid-2017 to early 2018 with Tasmanian salmon aquaculture companies (5), NGOs (3), Government regulatory authorities (2), scientists involved in Tasmanian salmon aquaculture research (2), journalists who have reported on the industry in Tasmanian newspapers (2), and those involved in third-party certification of the industry (1). The interviews were digitally recorded and professionally transcribed as per the study's approved ethics protocol. Transcriptions were provided to the respective interviewees for approval and the opportunity to make any changes. No participants made any significant changes.

Interviews aimed to obtain information regarding the informants' understanding and perceptions regarding the operating environment of the Tasmanian salmon aquaculture industry, and how participants gathered information to form their perceptions, communication mechanisms and strategies. They also sought to map and understand interactions between key stakeholders.

We carried out a two-step analysis of interview and news media texts, using Nvivo 11 software (QSR International), a software that allows for descriptive hierachal coding of prevalent concepts within qualitative data. The first step was a content analysis, which served to highlight areas for further discourse analysis to 'uncover the way reality is produced' (Hardy, Harley, and Phillips 2004, 19). Content analysis identifies the frequency of content making discourse themes that are present in the text clear and quantifiable (Riffe, Lacy, and Fico 2014). For this research, we coded for the presence of stakeholder groups and discourse themes within articles. We noted all mentions, not only those in which stakeholders were directly quoted.

Our second step involved a deeper discourse analysis, for which we refer to Hager and Versteeg (2005, 175) whereby discourse is 'an ensemble of ideas, concepts and categories through which meaning is given to social and physical phenomena, and which is produced and reproduced through an identifiable set of practices'. Environmental politics and concepts such as sustainable development 'are continuously contested in a struggle about their meaning, interpretation and implementation' (pp. 176). By unpacking the 'key language, rules, norms and values and assumptions' we can focus on the sources of the problem rather than the symptoms (Fleming et al. 2018, 24). Here

Table 1. Metrics of news media sources used in analysis (ABC News 2017, Roy Morgan, 2019a, Roy Morgan, 2019b).

News outlet	Reach	Readership	Ownership	Number of articles included in analysis
<i>Hobart Mercury</i> Local (Hobart)	53,000 and 203,000 (cross platform) daily	News Corporation		98
ABC News	National	~9 million weekly (2017)	Australian Government with editorial independence via the Australian broadcasting Corporation Act 1983	49
Burnie <i>Advocate</i>	Local (regional north of Tasmania)	32,000 daily (2018)	Australian Community Media	37
Launceston <i>Examiner</i>	Local (regional north of Tasmania)	27,000 daily (2018)	Australian Community Media	28
<i>The Australian</i>	National -Australia's only general newspaper	831,000 and 2.864 million (cross platform) weekly	News Corp Flagship	7

discourse analysis serves to better understand the mechanisms and meanings behind environmental discussions regarding complex socio-ecological interactions.

2. Results

Analysis of the news articles in the six months following the Four Corners 'Big Fish' episode identified key stakeholder groups ([Table 2](#) and [Figure 1](#)): salmon aquaculture companies (Tassal 61%, Huon Aquaculture 42%, and Petuna 17%), Government and political actors (60%), scientists/science institutions (23%), Tasmanian-based NGOs (18%), emergent local opposition groups (11%) consisting of Let's Grow Tasmania's Future and Marine Protection Tasmania, and community members (7%). It revealed seven key themes ([Table 2](#) and [Figure 2](#)). These are; environment (61%), expansion and growth (54%), Government regulation (44%), community interests (41%), environmental science (40%), economic prosperity (35%), sustainability (29%), transparency (26%), and legal action (24%). The interviews provided further understanding of these themes, providing insight on, for example, the communication of science, perceptions of transparency between stakeholders and outwardly to interested members of the public, and how media roles are perceived in public debate ([Table 3](#)).

2.1. Environmental Impact

The protection, management and importance of the environment dominated news media in this analysis ([Table 2](#)). This included concerns of current environmental impact, particularly in Macquarie Harbour, potential environmental impact of proposed expansion or not rectifying impacts of previous expansion, and the importance of considering environmental risk in decision-making processes. Environmental risk was strongly associated with Government regulation, environmental science, expansion, and economic interests. Environmental concerns included impact on the benthic environment, dissolved oxygen depletion, farmed fish health and mortality rates, surrounding marine life and animal welfare and surrounding world heritage areas. These impacts were observed in Macquarie Harbour resulting in Tassal forfeiting ASC certification for one of its leases closest to a world heritage site, the EPA reducing stocking limits and Huon Aquaculture's legal action claiming inadequate regulation of the harbour.

2.2. Adequacy of the Regulation of Industry Expansion

The perceived regulatory and environmental failings of the management of salmon farming in Macquarie Harbour gave grounds for parts of the Tasmanian community to question whether Government and industry, and the environmental science that informed their decision-making, could ensure that industry expansion (particularly Tassal's proposed Okehampton Bay site) would not pose unacceptable environmental risk:

One of the state's three big salmon producers, Huon Aquaculture, told last night's Four Corners program it believed a potential disaster was looming in Macquarie Harbour where the industry had expanded in recent years ... The program also highlighted community interests about Tassal's proposal to farm salmon at Okehampton Bay on the east coast. (ABC News 2016a)²

This was framed by an interviewee as leading to a loss of trust:

I genuinely feel the planning process is one of the big ones that let us down. Not helped by the fact that Macquarie Harbor did go pear shaped and people have lost trust. So, the idea of saying to people, "We've got a planning process," is not very reassuring to anyone these days. (Interviewee 11)

Huon Aquaculture was reported to argue that regulatory measures were lagging:

"We are saying to the Government: 'We've set the bar, you catch up,'" said Huon co-founder Frances Bender. "It has to be comparable (to world's best practice) because if it isn't ... they'll be too many of us, too close together,

Table 2. Key stakeholder groups and themes that were present in the news articles.

THEMES	STAKEHOLDERS							Total # of articles each theme was mentioned in
	Tassal	Government regulators and politics	Huon	Scientists/Science Institutions	Environment Tasmania	Petuna	Emergent local opposition groups	
<i>Environment</i>	84	93	70	42	26	28	14	8
<i>Expansion and growth</i>	70	77	44	18	23	15	23	12
<i>Formal public policy processes and decision-making</i>	59	73	59	35	17	27	3	5
<i>Community interests</i>	50	58	30	11	15	10	18	15
<i>Environmental Science</i>	55	67	46	49	16	16	6	4
<i>Economic interests</i>	45	49	32	12	14	17	16	7
<i>Sustainability</i>	39	41	34	11	11	21	6	1
<i>Transparency</i>	42	39	24	20	11	7	9	5
<i>Legal action</i>	31	33	45	18	5	15	1	1
TOTAL	133 (84%)	131 (83%)	91 (58%)	51 (32%)	40 (25%)	37 (23%)	25 (16%)	15 (9%)
								Total # of news articles = 158

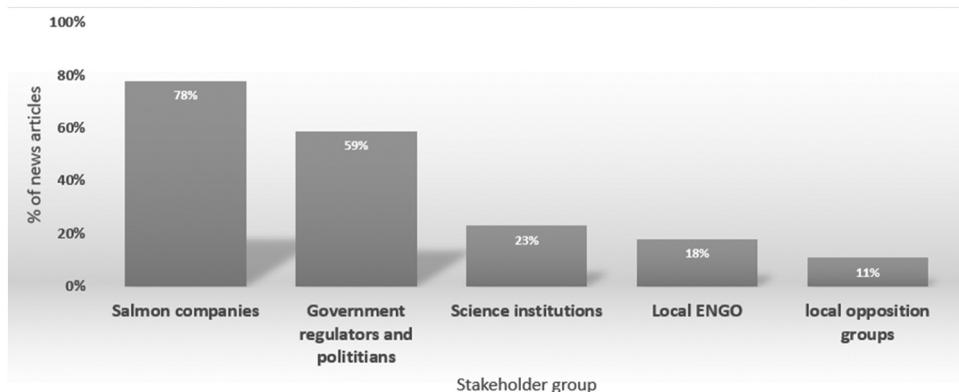


Figure 1. Number of news articles that mentioned stakeholder groups.

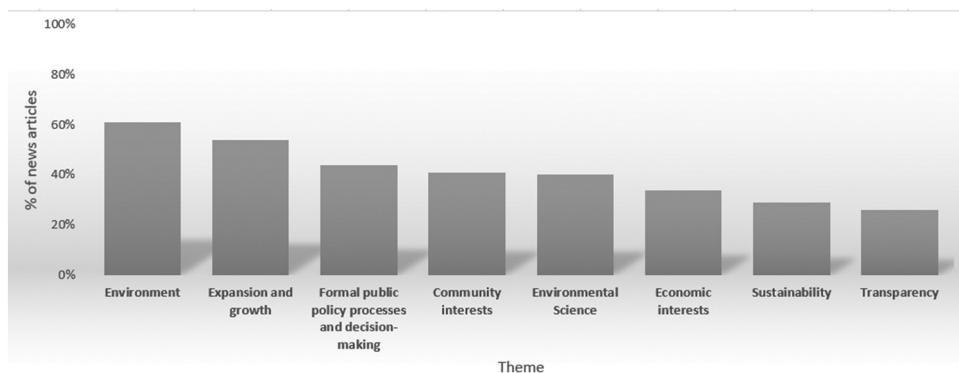


Figure 2. Number of news articles that mentioned themes.

Table 3. Interview coding.

Theme	Codes
Science communication	Uncertainty regarding who and how environmental science information should be communicated to communities of interest Access to/disclosure of environmental data Link science communication with community values
Transparency	Transparency hindered due to lack of effective forum (media facilitates conflict) In person communication is important to facilitate transparent and trusted dialogue Lack of effective communication of government regulatory process Lack of engagement between stakeholders
Media	Misinformation/truth setting in media Fear of media misrepresenting statements Hinders transparent dialogue News media and social media used as a proxy for key issues – this can drive outcomes

"we'll get our fish sick, seals will get in ... and we just start over again." Ms Bender said Huon's proposals had met with "silence" from the Hodgman Government. (Denholm 2016)

Additionally, while Tassal is seen to promote the quality of Government regulations, the CEO also promotes an additional 'industry funded watchdog' when he is reported to state: 'We know we have the best regulations in the world ... The best way to prove that is to be adequately policed and that

information being transparently produced.' (Bevin, Whitson, and Carlyon 2017). This also addresses the concerns of independence of the regulatory process:

Primary Industries Minister Jeremy Rockliff has denied the 700 USD million industry is not regulated strongly enough, and told ABC 936 Hobart he was disappointed in the way the industry was portrayed [in the Four Corners Episode] . . . Mr Rockliff said the Government had strengthened the industry's regulatory regime. "We've made enormous inroads to ensure there is a far better arm's length process," he said. "Now the Environment Protection Authority is in charge of the entire supply chain when it comes to regulating salmon, we've actually also strengthened the penalties for those that breach the feed cap or the nitrogen cap. (Bevin, Whitson, and Carlyon 2017)

With fragments of information provided in media regarding these regulatory changes, there is a notable lack of information regarding how and why these changes were decided.

2.2.1. The Role of Environmental Science in Formal Regulatory Processes

Science institutions were most mentioned (apart from environment and environmental science) in articles that also mentioned formal regulatory processes. This portrays a strong correlation between the two in the public sphere. However, no clear information was provided regarding this relationship:

Government stakeholders used science information to support their claims of "good regulation" and was the group that most used science to "debunk claims", in this case claims of "green groups." (Inglis 2017b)

We [the Government in power] have always said we will be guided by the science and I now call on those opposed to this proposal to abide by the independent umpire's decision." (Lohberger and Richards 2017)

Similarly, an interviewee emphasised the link between community interests and science and the ambiguity regarding how these are considered in the regulatory process:

You can come up with science measures but I think people actually want to see how do we relate that to the things that they care about, and how do we prioritise that? . . . Where in the planning process is the community? That is where [scientists] started doing a lot more of trying to relate the science to what people value. (Interviewee 11)

Concern was also raised by a range of interview participants that the collection of more detailed environmental data was suggested only in order to appease community concerns rather than deliver environmental outcomes. One interviewee explained that this use of science could reduce the capacity for conversations to address the science being conducted and the subsequent results and recommendations, referred to as the 'real science':

I have talked to some of [those opposed to a new salmon farm], "We just don't want a marine farm there. Visually we don't want one there." Well, that is fine, that is a reason for not having one, it's a valid argument. Government were doing the same on the other side of the coin, everyone just kept using the science, but really, I do not think . . . we actually never got to speak about the real science. (Interviewee 3)

While science information and science institutions were frequently mentioned in news media, in interview scientists appeared to be reluctant to contribute to the deliberations over risk definition in media – as one interviewee noted, because 'these debates . . . tend to be political' (Interviewee 11). While environmental scientists could explain the implications that different farming regimes were likely to have on the environment and the risk of these occurring, 'acceptability is a political decision, because that is a social decision about what they are prepared to tolerate' (Interviewee 11). This means there are instances where Government decision-making does not align with science recommendations due to political reasons (Interviewee 2).

2.2.2. Transparency of Science Information, Formal Decision Processes and The Role of Media

How science information was being represented and by whom was called into question in interviews and news articles. The ownership and transparency of environmental science, and how this

information is used in regulatory decision-making and to support claims was debated among salmon aquaculture companies, environmental groups and political parties. In a news article Huon Aquaculture renders the public release of scientific findings as a key accountability mechanism for Government decision-making, while also emphasising the ownership of scientific information and power relations:

The company's [Huon Aquaculture] executive director Frances Bender said she was "pleading" with EPA director Wes Ford to release IMAS' findings to the public. "I don't see how you can interpret no oxygen at the bottom of the harbour and the fauna in the sediments being deceased, as being anything [else]," Mrs Bender said. (Inglis 2017c)

Notable is the absence of a rebuttal or information regarding Government processes regarding public release of scientific information. How to legitimately communicate science information is highlighted when an interviewee stated:

There has been no independent authoritative voices to talk to the science publicly since this issue began. We have not seen ... scientists ... talking publicly about their findings. [Salmon aquaculture companies] cannot talk about it because then people say, "It's your science." If Government had to talk about it, and they largely do not, and do not know how to explain it, then there is a perception of Government and industry colluding to either not release the science, or to influence the appearance of science, or assuming that it's not good science. It's just a really easy way to knock out reality from a campaigning perspective. (Interviewee 14)

During interviews, opposition groups expressed concern that companies and the Government were not disclosing information in a timely or useful format that allowed for other interested stakeholders to make informed judgements (Interviewee 10). One interviewee explained the difference between information provision and trust in that information, depicting the difficulty of communicating scientific information:

This is where the media fits in quite a lot ... Everybody says, "We want transparency, we want to see the data," and I have tried in many of the environmental groups to see, "Do you really want to see the data? Is that what you are saying? ... or do you want to feel that you can trust the output information that you are getting?" I think it's the latter. So, a lot of stuff around transparency and easy access. I think the Government has taken that on board and said, "Okay, we are going to put everything on our websites." What they have not done is really improve the mechanism in which you find it. So, it's all there now, everything, you know? In most cases information goes up very quickly and the reports still go up, but they are still 400-page reports. (Interviewee 11)

Salmon aquaculture companies and Government primarily used websites to make large amounts of information public. While this information was available, it also needed to be promoted in order to inform public debate. As one interviewee explained:

[Environmental monitoring programs are] just not promoted. The amount of water quality monitoring they did for years before and after [the instalment of the Okehampton Bay farm]. But I do not know whether they did not promote it properly or the public did not want to listen to it. So there is a lot being done that I do not think the public realise. (Interviewee 3)

While a perceived increase in transparency over the past decade is thought to have made claims-making more accurate and accountable (Interviewee 1), interviewees also suggested that very few people were accessing or trusting this information. An editorial in the *Hobart Mercury* acknowledged the importance the salmon aquaculture industry played in the Tasmanian economy and called for greater leadership and unity in their communications and learnings from previous environmental failings. This begins with meaningful public engagement 'beyond meaningless press releases':

The Mercury's position is straightforward. Aquaculture is vital for the future of the state's economy. Absolutely vital. We want to see it do well. It creates desperately needed jobs at a time when unemployment and under-employment remain among our greatest blights. But it needs to be sustainable and we make no apologies for shining a light on when this may have failed. The debacle that Macquarie Harbour is fast becoming cannot be allowed to persist. We must learn from this, be honest in our assessment and put in place measures that ensure it

is resolved and never happens again. And the industry needs to move beyond meaningless press releases and background briefings and genuinely build internal bridges. Without a unified front, it will be complicit in its own demise. The heads of all companies need to sit around a table, put whatever differences they have aside and agree on a path forward. Extreme sides — mired in cheap shots and offering information that is either incredibly biased or completely wrong — do nothing to advance either position. Aquaculture represents a genuine opportunity for Tasmania — an opportunity to build something together as a state. A line in the sand needs to be drawn. Leadership needs to be shown. (Hobart Mercury 2017)

While transparency of scientific information was a prominent communications theme in the conflict discourse, there remained considerable uncertainty among interviewees regarding transparency of science information and whose role it is to communicate science information:

I certainly think that the science, the actual science could be represented better and more clearly . . . now, is that up to the companies? Is it up to Government? How do you do that? [the company] want to farm there, it's not [the scientists] job to provide science that supports what they are doing. (Interviewee 3)

2.3. Community Interests

Community interests were given similar visibility as environmental science in the news media. Community interests in articles took the form of community meetings regarding industry operations, economic benefits for regional communities and the connection between adequate and transparent scientific information and increased community confidence in decision-making. Community interests regarding Tassal's proposed expansion in Okehampton Bay were also frequent in the sample. The importance of community support was commonly noted, highlighting that community interests were an important consideration for the industry and its management. Opposition to the Okehampton Bay proposal focused on potential environmental impact and impact on the aesthetics of the region.

Community members were most mentioned in articles where expansion of the industry was discussed. An opinion piece in The Examiner highlighted community interest in the environmental regulation of industry expansion and the concern that regulation would not remain stringent in its absence:

In recognition of growing community interest in the regulation of the salmon industry, we believe the Okehampton lease should be subject to the most stringent environmental regulations and oversight," Ms White [opposition party leader] told the media. Surely that's already the job of the state's Environmental Protection Agency? At least one would hope so. (Anonymous Opinion 2017)

Community confidence was linked to stringent environmental monitoring and transparency of these measures. The Government was prevalent in their support for the expansion of the industry promoting the industry in media for its 'world class' environmental regulations and the significance to the state's economic prosperity:

Premier Will Hodgman said Tasmanians could be proud of the state's world-class salmon industry. "The Government has recently updated environmental regulations for salmon farming to make sure the community can continue to have confidence in the industry," Mr Hodgman said. "We have also made changes to the Marine Farming Planning Act will help to ensure environmental regulations keep pace with industry expansion." The Tasmanian salmon industry is worth 500 USD million, with the State Government aiming to expand it to 1 USD billion by 2030. (Howard 2016)

2.4. Conflation of Environmental Science and Community Interest

Environmental science and community interests were intrinsically conflated within the prominent themes of environmental risk of industry expansion and the adequacy of Government regulation. The nexus of community interests, science and Government was exemplified in an editorial in the Hobart Mercury when building 'public confidence' was said to rely on the interaction between science and Government process:

The decision [to deem Oakhampton Bay suitable for farming] has sparked predictable reactions. Primary Industries Minister Jeremy Rockliff said it "debunks false claims made by green groups around the suitability of the site". The Greens and Environment Tasmania have derided the decision as a foregone conclusion. But at some point the community needs to be able to trust the science at hand and there is no reason we can find at this point to doubt the findings of the review panel. However, this is very much a test case for the future of the industry. Not only for how it operates but for how it can cultivate public confidence well into the future. Given the amount of fog that has clouded the issue in recent times, it is not a test the key players, the Government, nor the science, can afford to fail. ([Hobart Mercury 2017](#))

2.5. Ambiguous Use of the Term Sustainability

The concept of sustainability in the news media was often used ambiguously in sweeping statements with no clear reference to the environmental, economic or social elements of sustainability. This was exemplified when it was reported in the Mercury that the legal action Huon Aquaculture was taking against the Government regulator 'was about protecting jobs by ensuring the harbour was sustainably farmed' ([Humphries 2017](#)). Here the reader would need to make the assumption that Ms Bender was referring to the *environmental* sustainability of farming. When sustainability *was* explicitly defined, it was often the environmental sustainability that was specified. This also depicts a narrative in the news media that environmental sustainability underpinned and provided the foundation for sustainable growth and provision of jobs. Government and industry stakeholders were seen to promote the narrative of sustainable growth and at times acknowledged that this should align with social licence and community concerns.

2.6. Economic Prosperity

While environmental impact and risk was the prominent concern regarding the industry's expansion, the most prominent claim to support the expansion of the industry was the economic prosperity it provided to the state of Tasmania. Local Government representatives discredited campaigns opposing industry expansion by stating they did not represent factions of local communities that in fact welcomed employment opportunities. This revealed the jobs verse environment narrative that was dominant in the expansion discourse:

A rally of 150 salmon industry workers and family members gathered on Parliament House lawns on Wednesday to hear those employed in aquaculture speak of its importance to regional communities. The rally was in reaction to a campaign, Let's Grow Tasmania's Future, against Tassal's proposal to farm 800,000 salmon at Okehampton Bay. ([Maloney 2017](#))

With 5200 jobs in the industry, fish cannot be allowed to replace forestry as the environmental battleground in this state. ([Anonymous Opinion 2016](#))

The Tasmanian Government has given Australia's largest salmon producer, Tassal, permission to build a new farm at Okehampton Bay on Tasmania's east coast. The decision is dividing opinion in the local community, with some people welcoming the jobs that will be created; while others are worried about the impact that salmon farming will have on the environment. ([Ogilvie 2017](#))

This struggle between the economic prosperity and environmental preservation agendas was embodied by what appears to be a space for negotiation at the interface between environmental science, Government and salmon aquaculture companies:

Tassal's proposed salmon farm on the East Coast may have been approved, but the fiery conversation it has provoked shows no sign of dying down ... While the [Marine Farm Planning Review] Panel deemed the Okehampton Bay site suitable for salmon farming, it also suggested further environmental surveys of the site be undertaken. Primary Industries Minister Jeremy Rockliff, who commissioned the report, said the panel's findings were a boon for Tasmanian jobs and industry. "[The Government] values the science," he said. "We want this industry to grow, and grow sustainably." Mr Rockliff also noted that further data on the site would "give the community confidence" as the industry moves forward. ([Inglis 2017a](#))

A council on Tasmania's east coast has approved an application for seafood giant Tassal to expand salmon production into the area, amid calls it should have waited for an inquiry's findings on the environmental impact... Mayor Michael Kent last night said the proposal — which includes a 200-metre-long jetty — would create much-needed jobs for locals in nearby Triabunna. "We must take the opportunities... particularly where jobs can come into it" Cr Kent said. (ABC News 2016c)

Support for economic growth as the overriding concern was not unequivocal. This was reflected in the statement of the Mayor of Glamorgan Spring Bay Council who, while generally supportive of Tassal's expansion into Okehampton Bay, was reported as stating; 'I don't necessarily mean jobs at all costs, but we need to evaluate how many jobs are involved, we think 25' (ABC News 2016b). Here, the economic argument tries to find its place within the 'sustainability' discourse and was seen to quantify the clash between economic and environmental agendas identifying the level of environmental risk that was acceptable for the level of economic prosperity.

3. Discussion

At the time of this study, public conflict persisted about the Tasmanian salmon aquaculture industry, exposing entrenched vicious cycles that have prevailed since Leith et al.'s work in 2014. We can reflect on this earlier work by Leith, Ogier, and Haward (2014b) and examine how this contention is presented in media and scholarship by a) identifying and analysing dominant themes and stakeholders within news media coverage, particularly where disputed and ambiguous social and scientific information appears; and b) considering how associated media practices and logics might influence outcomes of complex common pool natural resource-use conflicts. It offers the opportunity to examine how the prevalent risk themes following national media scrutiny of the industry might be contributing to vicious cycles in the public sphere. We can also contribute to understanding how vicious and virtuous cycles are performed by various participants in the debate. This can help inform pathways for virtuous cycles by better understanding how science, societal values and decision-making (Leith, Ogier, and Haward 2014b) are negotiated in news media.

3.1. What are the Prominent Themes in Media Discourse of Tasmanian Salmon Aquaculture?

Concerns of environmental impact, the adequacy of Government regulation and lack of transparency evident in Leith et al.'s (2014b) work were still prevalent at the time of this study. Experiences of environmental impact of industry expansion in Macquarie Harbour provided grounding for continued public concerns regarding expansion proposals, primarily those from Tassal. The perceived lack of engagement by Government and industry decision-makers and transparency of decision-making processes have reinforced the distrust in the environmental management of the industry's expansion. This includes the knowledge production institutions and processes that inform this decision-making. Drew and Nyerges (2004) conceptualises this as 'decision transparency' whereby the steps taken to reach a decision and rationale behind the decision are accessible, accurate, clear and presented in relation to the broader problem context. The process stipulates stakeholder involvement and accountability. Other points for which Government can adopt transparency include: policy content – what measures are adopted and how they solve a problem – and policy outcomes – what effect has the policy had (Heald 2006).

Adequate transparency of process and outcomes provides the foundations for accountability, key pillars of democratic values (Bovens 2007; Grimmelikhuijsen and Welch 2012; Hood 2006; Kjaer 2004). Grimmelikhuijsen and Welch (2012, 563) defines transparency as 'the disclosure of information by an organisation that enables external actors to monitor and assess its internal workings and performance' which 'typically incorporates multiple components, including inward observability, active disclosure, and external assessability'.

Community concerns regarding environmental science were primarily characterised by a perceived lack of transparency regarding environmental science information and lack of trust in the regulation of industry expansion. The combination of the environmental risk discourse with that of poor management was further fuelled by Huon Aquaculture's legal actions against the Government claiming inadequate environmental regulation. Irrespective of whether or not the Government decision-making processes were adequately managing the environment with the information they had or considering a range of information (such as environmental impact data, interests of other users of the waters and economic benefits to regional communities), the Government was portrayed to be outwardly opaque in their communications of these processes. Further contributing to the vagueness regarding how environmental, social and economic factors were considered in the management of salmon aquaculture, the term 'sustainable' was often ambiguously applied in the news media. While environmental sustainability was often implied and seen as essential for achieving growth, there was little context provided for how this was being achieved. The perceived ambiguity regarding governance and management processes has been a legacy of Tasmanian salmon aquaculture, with Government processes seen as lacking legitimacy and transparency in Leith et al.'s (2014b) work. Particularly regarding inadequate distribution of information and exclusion of community concerns by Government and industry in these processes. This speaks to the importance of two-way accessibility component of transparency whereby 'stakeholders have access to Government processes and the Government has access to stakeholder values' (Drew and Nyerges 2004, 43).

Perceived issues of governance and failure of regulatory mechanisms, along with the dominant environmental risk framing evident in this research is also prominent in media coverage of salmon aquaculture around the world (Schlag 2011; Olsen and Osmundsen 2017). The consistency of this finding across salmon aquaculture regions indicates that there is an identified need and opportunity for stakeholders involved in the governance and management of fin-fish aquaculture to develop proactive, transparent and engaging communication of governance processes. The requirement for greater transparency of state Government decision-making, particularly concerning clear, accessible, timely and regular information regarding environmental management, also has a long history in other aquaculture sectors in Australia (Mazur and Curtis 2008). This might include; (1) how different information (e.g., environmental data and community interests) is collected and processed in governance mechanisms and (2) how these mechanisms address frequently mentioned issues in media (e.g., environmental risk, economic growth and regulation).

3.2. Who are the Key Stakeholders in Media Discourse of Tasmanian Salmon Aquaculture?

Government, salmon aquaculture companies and science institutions were the most mentioned stakeholder groups respectively in the news media. This suggests that these stakeholders could hold the most leverage to influence the public discourse and therefore facilitate virtuous cycles. The idea that industry and Government stakeholders hold the most potential to influence media coverage and therefore play 'important roles in strengthening communications and improving the transparency of information especially surrounding public issues of concern' is evident in similar work (Weitzman and Bailey 2019, 180). However, our research suggests that, in the case of environmental risk conflicts, it is worthwhile determining the nuances of science communication in the public sphere where the discourse over what is acceptable risk is carried out. Particularly in the context of transparency regarding contentious issues of how industry uses publicly owned common pool natural resources, such as marine aquaculture.

3.2.1. Communication of Environmental Science Information in Mediatized Environmental Risk Discourse

This research supports Leith, Ogier, and Haward (2014b)'s conclusions that science communication plays a key role in supporting a virtuous cycle, by having stakeholders with perceived impartial expertise inject information about prominent topics in the public discourse, taking into account the

structure of the problem (see Leith et al. 2014a). While Leith et al.'s (2014b) research focuses on how science can better inform decision-making, the findings presented in this paper emphasise the need for enhancing the outward communication of this process. In particular, the communication of how acceptable environmental risk and impact is determined in Government decision-making processes and how and when science informs this process. Acceptability addresses the competing narratives of growth versus environment. Here it is pertinent to note that while scientists can take accountability for their results, it is Government which must take responsibility for the overall decisions. In complex socio-ecological problems clearly understanding and communicating the boundaries and capabilities of science and the capacity to deal with scientific uncertainty is just as important as the requirements for specific technical advice. This provides clear expectations of what science can and cannot provide in solving socio-ecological problems (Bocking 2013).

The task of communicating complex scientific knowledge to interested publics becomes increasingly challenging and complex in politically charged and highly contentious issues involving a variety of interests, values, attitudes and beliefs. Efforts to test and determine how best to communicate complex information in lay terms is a contemporary research agenda (Kelly, *In press*, Vandyke and Lee 2020). However, in practice, how environmental science information can and should be communicated to create virtuous cycles within mediated environmental conflict remains largely unresolved and unaddressed. While there has been decades of literature that explores the politicisation of science and scientists (e.g., Nelkin 1975; Jasanooff 1987; Sarewitz 2004), Lewenstein (2017, 78) proposes 'that we have not studied scientific and technical controversies enough to find the enduring patterns. Perhaps we are just at the beginning of study of controversy, and there is much to do'. Certainly it has been apparent in this present paper that considerable uncertainty still exists regarding whose role and responsibility it is to publicly communicate environmental risks identified by science in the expansion of Tasmanian Salmon farming. In particular, when in the decision-making process should science information be outwardly disseminated and in what format?

If it is understood that scientific information is unlikely to override competing interests or prevail in disputes over values (Nelkin 1975), then communication of science information should be accompanied by a clear definition of what has been determined as an acceptable level of risk in the decision-making process and how this has been determined. However, 'risk' is not a single fact nor is there one institution in charge of defining 'it' and communicating 'it' to a separate public. Rather, risk is an understanding that is continually redefined discursively in different contexts. Likewise, science is not independent from politics, even the problems that science seeks to understand are only considered problems in the context of socially embedded norms, values and interests (Sarewitz 2004). Moreover, if the acceptable level of environmental risk is socially constructed and Government decision-making considers a range of information outside of environmental science, then the social scientists and economists could also play a role in environmental debates in media.

Scientists can be hesitant to participate in controversial debates because of the inherent risk of getting involved in political issues (Dunwoody, 2015). Some scientists see themselves as separate from the public sphere altogether— 'a messy space of negotiation and contest that has a clearly troubled relationship with fact' (Lester 2019). In some socio-environmental problems, such as climate change (Sarewitz 2004), we can see that the authority of science can be publicly challenged, potentially making it even less appealing for scientists to engage publicly in controversial debate. For those actors entering mediated environmental conflict, they do so with no confidence about how they will be perceived. However, it is argued that not actively contributing to media debate is 'a riskier strategy' (Lester and Foxwell-Norton, 2020, 114). Lester and Foxwell-Norton explain that:

whether scientists themselves are present or not, their data will be used by the key actors—media, industry, Government, and campaigners—and will become a source of contention in itself. When the data is not accompanied into the public domain by its scientific creators and proponents, it is prone to politicisation— rendering futile any decision on the part of scientists to deliberately stay out of public debate so as not to politicise their work. (Lester and Foxwell-Norton 2020, 114)

Here the ‘tumultuous’ relationship between science and media (Besley and Tanner 2011, 241) and science and decision-making (Sarewitz 2004) is evident.

The framing of science in environmental controversies in media is determined by a range of external factors such as competing newsworthy events, economic and political conditions and the perceptions of credibility. It is not only how media frame scientific information but also practices of science such as research problem framing and communicating scientific uncertainty (Bocking 2012). Arguably greater transparency of how science information is considered in the decision-making process along with other interests and knowledges could potentially contribute to reducing the degree to which science is politicised. Our analysis suggests it is this nexus between environmental science, social and political definitions of acceptable environmental risk and Government decision-making that, if given greater transparency, could contribute to virtuous cycles within socioecological debates. However, transparency is unlikely to be the only remedy for entrenched socioecological conflicts and so this should be placed within a critical assessment of the role of media, politics and power which should be given active consideration in how discourses work to shape reality and different agendas.

3.3. What Role Do Media Play in Public Negotiations of Tasmanian Salmon Aquaculture?

Discourse in the news media portrayed that without media scrutiny of the environmental science and management, the environmental impact, experienced in Macquarie Harbour, would continue. This was portrayed by Huon Aquaculture, political opposition parties, journalists and community members. The narrative of uncertainty and distrust was heightened when Huon Aquaculture broke industry ranks by taking legal action against the Government and coming out in media as condemning the environmental impact of the industry. This publicly highlighted the variation in definitions of appropriate level of environmental risk among and between industry, Government regulations and third-party certification providers. Environmental science was used in media discourse to support stakeholders’ chosen level of acceptable environmental risk. While there is frequent reference to science information or institutions, this use of science to support competing claims and agendas could explain why scientists themselves are notably absent from the news media (Cullen-Knox et al. 2019).

The prominence of vicious cycles in the environmental conflicts of Tasmanian salmon aquaculture in media could be considered inherent with the type of public deliberation and political nature of the case study chosen. While the vicious/virtuous cycle framework is useful to examine interaction between stakeholders in public deliberations regarding environmental futures it also raises questions regarding its binary function; is there always a presence of a vicious and virtuous cycle? Or can there be cases where only vicious or virtuous examples exist? In which case the binary is only useful as a first step to the data analysis, at which point examining mediatised environmental conflict allows for further investigation into why vicious cycles are prevalent and identify opportunities to turn vicious cycles into virtuous ones.

4. Conclusions

Analysing the conflict concerning the Tasmanian salmon aquaculture industry in news media exposes entrenched vicious cycles that have prevailed since Leith et al.’s work in 2014b and how they are portrayed to the public. This can inform processes of risk framing and potential opportunities for conflict resolution between state and non-state stakeholders. This research suggests that what is considered acceptable environmental risk of expansion has been determined without adequate transparency of processes. The outward communication of Government process is just as important as the processes themselves.

If we consider that how environmental conflict unfolds is determined by the power dynamics between activists, journalists, industry and politics (Hutchins and Lester 2015), the findings in this paper suggest that modern media is playing a different role now in the mediation of scientific

information in public sector decision-making. How science information is communicated within environmental risk discourses of seafood industry expansion should consider the potential for, and risks of, scientists becoming political actors. The politicisation of science could be reduced if scientists themselves carry the information in the public sphere. The Tasmanian case study has also raised important questions regarding the role that media play (both claimed and actual) as a catalyst for change in how environmental risks are negotiated within the context of environmental regulation. Are concerned citizens engaging differently now with these issues as community interests are being conflated with science information? How can complex environmental science information be most effectively communicated in contentious mediatised debates? Can the concept of sustainability be applied more usefully in such debates?

These results point to the need for further work to better understand how stakeholders use science information in media. What does this imply for how 'evidence' is portrayed in risk communication, interpretation and decision-making? Different discourses work to shape reality in different ways for different agendas. The role of media and politics should be actively considered in these types of debates. Having a critical view of media, politics and power is imperative for these contributions to improve policy process and public information. For example, what mechanisms are available for stakeholders and concerned citizens to communicate risk definitions in Government decision-making processes regarding industry expansion (i.e., see Van Putten et al. 2018)? And, are these mechanisms perceived to be adequate and by whom? If they are in fact considered adequate then it could confirm that enhancing (clear, regular and proactive) public communication of decision-making processes could facilitate virtuous cycles. If not, then it could indicate areas of improvement for how environmental, social and economic information are considered in the management of the Tasmanian salmon aquaculture industry.

Notes

1. Tassal was the first company in the world to gain certification across all of its sites and was the only Tasmanian company to achieve ASC certification at the time of the study.
2. Note regarding referencing: The author byline is used when provided. In the absence of the author byline the news organisation is provided for referencing purposes.

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No potential conflict of interest was reported by the author(s).

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insight into the capacity for environmental campaigning and mediated public debate to influence environmental and market related decision-making in an increasingly transnational world.

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PAPER III



Tracing Environmental Sustainability Discourses: An Australia-Asia Seafood Case Study

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The seafood market is highly globalised with a growing demand for seafood and fish products worldwide. The capacity of wild fisheries is limited and therefore aquaculture is fast becoming the most stable source of seafood to meet increasing demand. Subsequently, the perceived environmental risk of fin-fish aquaculture has been the focus of substantial environmental campaigning, media and public scrutiny around the world. This paper places localised tensions regarding the environmental impacts of salmon aquaculture within transnational environmental sustainability debates concerning seafood production and vice-versa, with a focus on the Australia-Asia region. The results contribute to understanding the interpretation and communication of environmental sustainability of seafood through international supply chains and to audiences at different spatial scales. The paper draws particularly on the case of salmon aquaculture in Tasmania, Australia's southern island state. It highlights mechanisms, such as certification, for which information flows transnationally regarding the environmental sustainability of seafood production, the resultant transnational and local public sphere and the implications for local discourse, market access, governance and certification of seafood production.

Keywords: environment, sustainability, Australia, Asia, seafood, aquaculture, transnational

INTRODUCTION

Seafood products are some of the most highly traded food commodities globally (FAO, 2016). Demand for seafood, driven by a growing population, particularly the Asian middle class, requires the increased use of natural resources globally (Cao et al., 2017). Accompanying this increased pressure on natural resources to sustain the human population is the rise in awareness of sustainable development. Sustainable development encompasses the concept that human life is sustained within the limits of earth's carrying capacity so that future generations are unimpacted (IUCN, 1980). The environmental sustainability construct is both widely used and widely disputed (Seghezzo, 2009). Environmental sustainability can be approached from either the perspective of how best to protect environmental attributes or how to most optimally use an environmental resource. Also variously interpreted is how these perspectives fit in with the construct of sustainable development.

Given the transnational reality of seafood markets and communication mechanisms, who gets to define environmentally sustainable seafood production and the mechanisms by which they define it is expected to shift with scale. Global risk discourse regarding the environmental sustainability of

seafood production and harvest are increasingly encompassing the notions of the “locally affected” and “distant aware” (Lester, 2014). For local communities, environmental impact, or the risk of impact, is a lived experience. However, distant consumers, or those simply with an interest, can be alerted to potential environmental risks in another location via mechanisms such as media, campaigning or food labeling. These distant communities of interest can still participate in the issue through strategies such as social media or changing their purchasing practices. Within the context of the “transnational public sphere” (Fraser, 2007: 15), how perceptions of local and global environmental risks of seafood flow transnationally is becoming increasingly relevant.

This paper builds on scholarship by Lester (2016) who investigates the production and flow of environmental messages in a transnational context. Lester’s investigation reveals environmental campaign organizations engaging transnationally in an attempt to protect the Great Barrier Reef from anthropological impact. The sensationalist media campaigns target international corporations investing in Australia, distant consumers, and international environmental governance organizations highlighting the environmental risks and lack of “social licence” (see also Cullen-Knox et al., 2017). These campaigns also allocate responsibility to “global citizens” (Lester, 2016) to remind global organizations and the Australian government of their accountability to protect important environments.

Both public and private governance structures influence how sustainable seafood is defined at any given time and space. In his examination of the interpretation of sustainability standards in international fisheries policy, Rice (2014) observes how the malleable nature is accentuated over time. To define and standardize global benchmarks for environmentally sustainable seafood production, market-based mechanisms such as third-party certification schemes have been developed. A third-party certification label is one of the few ways for customers to determine what is considered to be sustainable seafood. However, despite efforts to standardize the definition for sustainable seafood, “sustainability” has been so overused as a marketing tool that some argue it has become meaningless and lost its value and impact (McEwan and Bek, 2009). There are also concerns that external sustainability assessments could undermine government authority (Crona et al., 2016).

International trade can also emphasize the disconnect between impact on local environments and demands from distant markets (Steneck et al., 2011). What is considered important changes across local and global environments, debates, and markets. For example, seafood traders in China view green labeling and concerns of environmental sustainability as less important compared to other factors such as food safety (Fabinyi et al., 2017). The risk of continued environmental impact can be considerable if this disconnect is not addressed through effective governing mechanisms. Therefore, understanding how the interpretation of environmental sustainability is modified transnationally is increasingly important to local and global governance of internationally traded seafood.

The recognition of regionally specific perceptions of “best practice” and the resistance against the global monopoly some international certification schemes have over assessment

of sustainable practices and subsequent product labeling is visible in the emergence of territorial certification schemes (Foley and Havice, 2016). Foley and Havice (2016) note that for these schemes to be successful they must integrate state regulation and interests of seafood producers with international markets and governance norms and must operate credibly within transnational commodity networks. Interactions between the network of actors and their governance frameworks also contributes to the perception of environmentally sustainable seafood. When discussing transnational activism, the globalization of markets is commonly regarded as the trigger, however this fails to address the “when,” “why” and “how” by different actors and their networks conduct transnational activism (Tarrow, 2005). Tarrow describes transnationalism as a set of international networks, creating society-like structures, that allow individuals to move effortlessly between scales and spheres of influence. Adding to this, Beck’s (1996) “global risk society” and “cosmopolitanism” encompass world-wide communications and global environmental risks, whereby political borders are transcended boundaries. This risk “can be dramatized or minimized, transformed or simply denied according to the norms that decide what is known and what is not.” (Beck, 2011: 1349). This is exemplified by Lester (2014) describing where an Australian Environmental Non-Government Organisation (ENGO) launched a decade-long campaign persuading Japanese corporations that Tasmanian forestry companies and products were unsustainable. Simultaneously, direct action activism was occurring at the site of forestry practices. However, the practices of Tasmanian forestry companies only gained noticeable attention when the obtaining of certification became necessary to secure international markets and contracts for forestry production. Here the risk was avoided until certification made the issue inescapable.

The environmental sustainability of seafood is prevalent in transnational market based governance discourses involving governments, seafood harvesters and producers, ENGOs, media actors, and consumers (Miller, 2014; Kate and Alice, 2018). However, there are limited theoretical literature and empirical case study examples to understand how environmental concerns are conveyed transnationally in relation to the role of media and environmental campaigning.

To explore how environmental concerns regarding seafood production are carried transnationally in the context of local production, international trade and global communications, this paper draws on one of Australia’s topical environmental conflicts concerning seafood production: Fin-fish aquaculture in Tasmania. Marine coastal waters in Tasmania, Australia’s southern island state, are used to farm Atlantic salmon for domestic consumption and export to Asian markets. However, the industry is facing considerable opposition from local community groups, local and national ENGOs and journalists. While local opposition remains, both domestic and international demand for Tasmanian Atlantic Salmon continues. Free trade agreements between Australia and Asian countries including China, Japan and Korea are making these export markets more accessible and are likely to increase demand for farmed Atlantic salmon, and thereby

potentially increase the pressure on ecosystem services at sites of production.

The aim of this paper is to gain an understanding of how the potential or perceived environmental risks of seafood production (particularly salmon aquaculture) are understood, articulated, negotiated and potentially resolved across transnational media and communication networks, particularly in the Australia-Asia region. The growing Asian middle class is a significant influencer in food production and resource use globally. As we enter what an Australian Government 2014 white paper refers to as the "Asian Century," Asia is, and is set to continue to be, an important export market for Australia, with trade agreements being signed (Tasmanian Government, 2013). To identify how the construct of environmental sustainability of seafood flows transnationally the analysis identifies how environmental sustainability is defined and negotiated, who is involved and what mechanisms are used. To do this we ask:

- (1) What are the perceptions of environmentally sustainable seafood production within an international community and which actors portray these perceptions?
- (2) How do these perceptions influence local debates of environmentally sustainable production of seafood?
- (3) How do local issues influence international discourse regarding the environmental sustainability seafood?

Trade in the Australia-Asia Region; The Importance of Seafood and Salmon

The Chinese seafood market (both production and consumption) is the largest in the world. Chinese consumption patterns are likely to have the strongest influence on global fish markets into the future with the region expected to account for 38% of the global consumption of seafood by 2030 (World Bank, 2014). These consumption patterns are highly relevant to global environmental outcomes. The scale of this consumption and the trend toward luxury species has been directly linked to overfishing and stock declines in some fisheries (Fabinyi et al., 2012; Cao et al., 2017). Rising demand for luxury seafood in China has initiated a "global blue gold rush" (Caplog Group and EDF Maxico, 2014). For example, in 2014, accessing the growing Chinese middle-class consumer became easier and cheaper with the launch of "Gfresh," an online marketplace facilitating the import of seafood to China, directly linking business and consumer. In the company's first 2 years of operation it is reported to have "processed more than \$200 million worth of wholesale live seafood orders" (Kolodny, 2017). The platform notes origin, species, and quality of their catch.

In 2015 Australia signed free trade agreements with Japan and China. Australia's trade relations with its Asian neighbors is a prominent agenda for governments and industries. At the 2016 G20 meeting the then Australian Prime Minister, Malcolm Turnbull, with reference to trade between China and Australia, is reported as stating: "It would be a mistake of historic proportions for the G20 to stand by while scare campaigns not based on facts or evidence foster protectionism, or indeed isolationism," (ABC News, 2016). While this statement was made in reference to Australia blocking agricultural and electricity sales to China, this quote represented the trade atmosphere between China and

Australia and captures the Australian Government's sentiment regarding strengthening trade relations with China. In other words, G20 leaders should ignore economic scaremongering and be aware of the risks of opposition campaigning against efforts to strengthen trade relations, particularly with Asia.

The transnational flow of investment, resources and information is expected to increase and congregate in the Asian region. Lester's (2014) research into Australia's White Paper on the trade of goods and services in the Australia-Asia region, *Australia in the Asian Century* (Commonwealth of Australia, 2012), suggests that:

if media and communications, community organizations and individuals (among others) have crucial roles to play in developing Australia's "two-way" links with Asia, these may only rarely present a "public diplomacy" stance that promoted the Australian government or business community's immediate interests. Instead, they will increasingly produce multi-directional and multi-layered flows of political communication and action in which distant supports join with those affected to resist development, end resource procurement and undermine growth strategies. How Australian government and industry choose to respond to and manage the economic and political impact of these protests and the still poorly understood transnational communities of environmental concern that result will be a crucial test of Australian claims to democratic and market leaderships among its regional neighbors in the Asian Century.

The subsequent 2013 white paper "Tasmania's place in the Asian Century" stipulated the opportunity for luxury export items as the Asian middle class is predicted to grow in value to three billion Australian dollars by 2030 and have the largest population of high-income earners in the world within the next 20–30 years. From 2013 to 2017 Australian export increased by 40% from \$1 billion to \$1.4 billion with exports to China forming most of this growth (Fabinyi, 2007). This paper identifies "enabling the expansion of salmon aquaculture in Macquarie Harbor," a large inlet on the west coast of Tasmania and the first area to farm salmon in Australia, as one of the key activities to build export strengths and sustainable development (Tasmanian Government, 2013: 43). However, this growth agenda is challenged when the Institute for Marine and Antarctic Studies (IMAS) is reported to have found salmon farming to be responsible for "environmental collapse" in Macquarie Harbor (Woodruff, 2017), highlighting the conflict between the growth and impact discourses. This tension is not expected to diminish with seafood now being the fourth largest export for Tasmania (Tasmanian Government, 2017), with international trade reported to have increased by 27% in 2015, including a doubling of sales to China.

Australia only made up 0.3% of China's Atlantic salmon imports in 2017, with 0.53% from 2008 to 2018. Meanwhile, China made up 65% of Australia's total sales in 2017, an unusually high export year with 32% increase from 2008 to 2018 (FRDC, 2018). Additionally, there is a growing discourse regarding Asian investment in Tasmanian salmon companies, the strengthening vertical monopolies that are forming and possible implications for future food security (Thompson et al., 2011, MacDonald, 2018, O'Conner, 2018). In emphasizing the significance of the Chinese market for the

Australian economy and the relative insignificance of Australian product for China, these figures make clear the vulnerabilities of trade for Australia.

The link between China's consumption patterns and impact on global fish stocks, combined with Asia's contribution to Australian trade, further highlights the importance of investigating transnational flows of environmental concern (Fabinyi et al., 2017). With increased exports to China and Chinese investment in the state, Tasmania provides a unique and critical opportunity to explore what Lester (2014) describes as "multi-directional and multi layered" links with Asia and "poorly understood transnational communities of environmental concern" and the responses they elicit.

Local Conflicts in Tasmania Concerning Salmon Aquaculture

Salmon aquaculture in Tasmania has been a controversial industry since its inception in the early 1990s and acts as a local case study in this research. Three companies farm salmon in Tasmania: Tassal, Huon Aquaculture, and Petuna. Tassal is the largest of the three and Petuna the smallest. The act of farming salmon in public marine waters has been contested between those who hold environmentally centered ethics and those who support industrial growth in otherwise struggling regional communities.

Since 2012 the industry has undergone expansion, and with the support of the Tasmanian state government, announced production would double by 2030 (Tasmanian Government, 2013). The proposed expansion into new unfarmed areas in 2016 was preceded by a decline in environmental health of already farmed areas and a spate of regulatory attempts to manage these impacts. This sparked public debate regarding the adequacy of the governance mechanisms to manage the environmental impacts of the salmon industry. Subsequently, two critical discourse moments (Carvalho, 2005) occurred. In 2015 a Government led senate inquiry was held into the "Regulation of fin-fish aquaculture in Tasmania" where 103 public submissions were received followed by a 2-day hearing. In 2016, local opposition groups were formed, environmental campaigns became prevalent and increased media attention took what was historically a locally contained conflict to audiences Australia wide with *Four Corners*, Australia's premier investigative journalism television program, airing an episode titled "Big Fish." This media attention has focused on how the environmental risk of the industries' expansion has been managed. The complex social networks that formed around these critical discourse moments are explored in previous work (Cullen-Knox et al., 2019).

One of the main ways for producers to inform purchasers and consumers that their practices are environmentally sustainable is through third-party certification (Hatanaka et al., 2005). In the case of the Tasmanian salmon industry, third-party certification, in addition to government regulation, has played a key role in the environmental governance of the industry. The Aquaculture Stewardship Council (ASC) scheme is the most visible in this case, with Tassal the first salmon company in the world to achieve ASC certification across all its operations (Tassal, 2018). Compared to local government regulations, the ASC scheme

and standards are global in outlook. It brings, or is claimed to bring, sustainability standards based on scientific advice and management practices as applied in a range of countries to the localized site of production. Other Tasmanian salmon aquaculture companies hold third-party certification by other providers. However, the partnership between Tassal and ASC has been the most visible and contentious in the Tasmanian public discourse (Cullen-Knox et al., 2019).

Regardless of being ordered by the Environmental Protection Authority (EPA) to destock leases and receiving non-compliance notices, Tassal was perceived to retain ASC certification. However, Tassal opted to exclude these non-compliant leases in the ASC audit and therefore forfeited ASC certification for these leases. The ambiguity regarding this process and the uncertainty this created is present in the auditor's report (see SCS Global Services, 2017). In response, Environment Tasmania, a local ENGO, made claims that the ASC audit process, along with WWF partnership, was faulty and corrupt. Environment Tasmania initiated a petition "demanding that all certifications for Macquarie Harbor be suspended and a full and transparent review of just how Tassal has retained ASC certification while breaching key ASC standards for more than 18 months" (Environment Tasmania, 2016). Additionally, Environment Tasmania, developed a "Tasmanian Salmon Consumer Guide" to rank Tasmanian salmon companies based on a traffic light system. Criteria included salmon mortality rates, stocking density and escapees, bird and seal interactions, antibiotic use, genetic modification, dissolved oxygen levels, site water temperature and depth, capacity to flush waste, impact on protected species and areas and wild fish use in feed (Environment Tasmania, 2019). Simultaneously, Environment Tasmania commenced a campaign against transnational ENGO WWF for partnering with Tassal (see Cullen-Knox et al., 2019).

The difficulty of including local concerns in global governance schemes was highlighted during a public engagement meeting held by accredited third party auditors (Conformity Assessment Body at SCS Global Services) evaluating the application of the ASC standard in Hobart in 2017 regarding fin fish farming in Macquarie Harbor. This public engagement formed part of the ASC biannual audits for certified salmon farming sites. At the meeting concerns were raised in relation to the environmental impacts of salmon farming, primarily by ENGOs. For example Environment Tasmania, a Tasmanian ENGO, is reported as stating "Tassal did not deserve ASC certification for Macquarie Harbor, because it was failing to meet the council's own minimum oxygen level standards" (Burgess, 2017). The auditors note in the 2017 report that there were concerns raised (predominantly by ENGOs) during the community meeting that the ASC standard was neither adequate nor applied correctly. The auditors report notes Environmental Tasmania's concerns that the auditors interpretation of non-conformities do not align with the environmental impact at the site;

Breaches of ASC standards for DO levels were classified as "minor" in the first ASC surveillance report. At this time evidence from Government data, the Dissolved Oxygen Working Group and IMAS, indicated that DO levels had dropped to worrying levels harbor wide.

The evidence on DO indicated a systemic failure in the ecology of the harbor such that it could not support farming to ASC standards.

Environment Tasmania argues that “non-compliances” for the companies breaches in DO standards should have been, and should certainly now be, considered major non-conformities.

However, the report finds that the ASC standard was correctly applied in the case of Tassal's Macquarie Harbor leases. Any non-conformities were correctly classified and closed out according the ASC methodology during surveillance audits (see SCS Global Services, 2017). However, the report acknowledges that the ASC standard is globally applicable and local conditions might require a different approach. The auditors state that the standard may require changes, based on further scientific monitoring and potentially a change of monitoring methods, to address local environmental impacts (SCS Global Services, 2017). This is seen in the auditors' response to a general concern raised at the stakeholder meeting that “Tassal has gotten too big too quickly. It has only taken 3 years for the Franklin lease to completely kill the seabed. It makes a mockery of ASC accreditation. How do we know that the same thing won't happen to the Middle harbor and Gordon leases?”(pp: 86):

The recent IMAS report has raised concerns that the compliance monitoring is not adequate to support management and further research has been proposed and additional recommendations were made. Assessments against the ASC standards rely heavily on published information and monitoring surveys rather than its own additional surveys. Therefore, it cannot be judged in isolation. The monitoring system that has been applied in Macquarie Harbor for many years is now under question and will be strengthened. These proposed research and additional monitoring requirement will be included in any further assessment.

The ASC standards have been developed to be globally applicable with international multi-stakeholder engagement over many years. Local conditions may vary greatly from one site to another and, in some cases, a different approach might be necessary to deliver more accurate assessments. Identifying these and feeding them into the standard review process is important for the development of the standard. The audit team has committed to do that and will provide all standard specific issues to the ASC for their consideration.

As it stands the audit team and past reports prepared by SCS and members of the team have been reviewed by the official ASC accreditation body, ASI. The review confirmed our proper understanding and application of the standard. (SCS Global Services, 2017: 86).

This exemplifies the complexities of addressing and communicating the interaction between local and global governance mechanisms and differences in what is considered acceptable level of environmental impact.

Theory: Understanding the Interaction Between Local and Global Discourse

Transnational communications, governance, knowledge, investment and trade (among others) are pronounced influences in natural resource management. However, as Hutchins and Lester (2015) state, investigating these complex aspects of media,

public and policy in local environmental governance in an increasingly transnational world is challenging;

To study conflict in this way and at this scale is no small task, encompassing intricate networks of environmental concern, strategic webs of media and political influence, public policy debates, and bi- and multi-lateral trade negotiations and deals. Nonetheless, it is imperative that this research challenge is met, as this is the arena in which global environmental futures are set to be determined.

The scholarship on global communication, policy and trade emphasizes the role of the local in the global and the importance of maintaining a sense of equality between the two scales when first examining a case. Terms such as “glocalisation” encompassing how economic, political and social dynamics occurring at the global scale influence processes on the local scale and vice versa (Ramutsindela, 2004) and indicate a keen sense of the local in the global. Local threats and global risks are amalgamated to play a role in the decision-making of each (Lester, 2016). Similarly, Ertör and Ortega-Cerdá (2015) state that high-level regional and national policies should never discount local community attitudes and interests because the local level is the level of implementation. If local preferences and values are disregarded, coupled with the growth of a sector (in this case the expansion of fin-fish aquaculture), it becomes a recipe for disaster according to Ertör and Ortega-Cerdá and lessons from these conflicts should underpin the future management of this food production sector. When national and international networks or coalitions are formed, local and global conflict discourses are intertwined and subsequent arguments are the product of a glocal process (Swyngedouw, 1997).

MATERIALS AND METHODS

Data Collection

In order to explore information flows concerning the Tasmanian salmon industry and its context in the global operating environment for seafood, environmental sustainability and target markets, two phases of data collection were undertaken; textual analysis of news media articles and semi-structured in-depth interviews. News articles were collected from the five most prominent news sources in Australia. Three of these were Tasmanian based newspapers the Hobart Mercury (111), Launceston Examiner (38) and the Burnie Advocate (58), and two were national news sources, the Australian (7) and ABC News (63). News articles were collected using the Factiva news database using the search terms: “salmon farm” OR “fish farm” OR “salmon aquaculture” OR Tassal OR “Huon Aquaculture” OR Petuna. News articles that did not address salmon farming in Tasmania were excluded. For example, many articles published financial updates and share prices and other aquaculture pursuits in Australia. News articles were collected for the 6 months following the Senate Inquiry (15 July 2015 to 15 January 2016) and Four Corners Program “Big Fish” (1 May 2016 to 1 November 2017). Particular attention was paid to international references being made and the context in which they were made.

To provide greater detail and the opportunity for validation of strategies, mechanisms and claims based on transnational flows, interviews were conducted with 29 individuals. Interview participants were considered to be key informants and were selected based on their ability to represent local through to global aspects of seafood sustainability and trade in the Australia-Asia region (**Table 1**). Of these interviewees, 16 had experience in the Tasmanian salmon aquaculture and/or Australia trade relations with Asia, 8 operating in a global capacity regarding salmon specifically, seafood more generally and/or global markets, and 5 were experts in Asian business and media. Interviewees were not considered to represent the entire Australia-Asia conditions for which environmental sustainability and seafood trade would operate in. However, the broad cross section of influential and knowledgeable positions of interviewees did provide opportunity for in-depth analysis of concepts and a source of triangulation or verification of results from the textual analysis.

The interviews covered topics of local transnational flows of information regarding seafood sustainability. Participants were asked how they obtained and shared information, identifying interactions and relationships between key stakeholder groups both locally and transnationally. In doing so, specific details were gathered regarding the interviewees' communications practices and strategies. An overview was obtained regarding how the interviewees portrayed their operating environment and their understanding of environmental campaigning, media, and environmental governance. In particular, the interviews explored the processes of claims-making and decision-making processes of NGOs, seafood companies, government regulators, media, environmental campaigning and the interactions this elicits

TABLE 1 | Areas of expertise that interviewees represented.

Tasmania-based interviewees (16)	Asia-based interviewees (5)	Transnationally operating interviewees (8)
Communications and environmental managers of salmon companies (5)	Large Asian retailers (1)	International environmental certification organizations (2)
Journalists reporting on Tasmanian salmon aquaculture industry (2)	Journalists reporting on Asian seafood dynamics (1)	International companies in the salmon industry (2)
Scientists researching the environmental aspects of the salmon industry (2)	Industry NGOs (1)	International journalists reporting on issues of seafood in international media (1)
Environmental NGOs (3)	Environmental NGOs (1)	Scientists and science communicators working in global seafood business stewardship (3)
Government regulators (2)	Consultants with expertise in Chinese primary industry business (1)	
Government department for Australia-Asia trade relations (2)		

between these actor groups. The extent to which these either draw upon or contribute to transnational messaging regarding environmental impacts of seafood production was considered. The implications of these networks and conflict discourses for environmental governance at the local and regional level was then explored. Interviews were conducted by the first author from mid 2017 to early 2018, with one conducted by the second author in 2016. The interviews were digitally recorded and professionally transcribed.

Data Analysis

Critical discourse analysis of qualitative data (interviews and news articles) was conducted by applying an inductive qualitative coding technique using Nvivo 11 software (QSR International). This software allows for descriptive coding to identify and organize ideas, themes, and concepts. Prevalent concepts were organized into hierarchical coding. Discourse has been defined as a "shared way of apprehending the world...constructing meanings and relationship and helping define common sense and legitimate knowledge" (Dryzek, 2013). This critical discourse analysis identified how different actors characterized the transnational elements of salmon aquaculture and seafood globally, indicators that information was flowing transnationally and the mechanisms by which this was occurring, and the outcomes these transnational dimensions had on environmental governance. The analysis focused particularly on the environmental sustainability of the industry.

Linking the two methods of qualitative coding and discourse analysis follows Fleming et al. (2018), which coded key concepts and language use at the sentence level. The analysis identified key themes present in the text (interviews and media content) and organized into codes. These codes were constantly compared, reviewed and redefined as new concepts were identified or merged during analysis.

RESULTS

The analysis of interviews (**Table 2**) and news text (**Table 3**) revealed how different actors determined, and used information to support this determination, whether the industry was or was not meeting international environmental standards for farming salmon. Not only was there a disconnect between international standards and how they are expected to be applied locally, but also how different markets interpret environmental sustainability and what that might mean for local operations. Third-party certification was used by industry as a benchmark for environmentally sustainable practices and as a means of managing the risk of environmental campaigning. However, discrepancies in what is considered acceptable environmental impact between local NGOs and certification schemes were observed in the research.

Asia, particularly China, is a growing market for Tasmanian farmed salmon. Australian branding and certification indicate to the Chinese consumer that the food is safe, rather than environmentally sustainable. This indicates a gap between local debates at the site of production in Tasmania and the values of

TABLE 2 | Themes from interviews.

Themes	Sub-themes	Sub-themes
Tasmanian salmon industry operating environment within a global context		
Use of international references to support agendas	Tasmanian salmon industry is or is not meeting international standards Local NGOs campaign against ASC Tassal holds ASC certification Tasmanian industry has world class practices Tasmanian industry is learning from other countries NGOs using internationally sourced information in campaign material	
Asia key export market		
Chinese communications and market operating environment		
Restrictive communications	China media is contained Many NGOs in China operate as consultants rather than campaign organizations with the exception of a few	
Consumers consider safety, status and providence more important than environmental sustainability	Australia = quality product	
Communications on a global scale		
Global industry communications regarding environmental sustainability is in its infancy		
ENGOs are well versed in transnational networking and knowledge sharing	ENGOs seen as a pressure for change	Chinese ENGOs campaigning for Chinese retailers to stop selling Australian product (which has friends of the sea certification) Certification used by industry to manage risk of environmental campaigning
Media as a pressure for change		
Importance of transparency	Transparency between industry and ENGOs	Communication gap between the industry and ENGOs that campaign against industry Observing a shift toward collaboration and understanding between some ENGOs and industry actors
Varying interpretations of environmental sustainability between countries and how to best achieve it	Transparency between industry and the public is increasing Media facilitates conflict and inhibits open conversation	
Certification uses a clear benchmark for industry to define environmental sustainability		

the industries international markets. The operating environment for media and ENGOs in China is also considered more restricted than that of Australia. Nonetheless, Chinese ENGOs were observed to be campaigning against selling of Australian product. It was also understood that ENGOs are proficient at facilitating transnational networks and discourse while industry is still gaining momentum at the global level. Industry considered some ENGOs to be a source of support at the global level of discourse regarding environmental sustainability.

Transnational Relationships Between and Among ENGOs and Supply Chain Actors

The results of the interviews indicated a shift in the relationship between ENGOs and international seafood supply chain actors. Interviewees operating in a transnational capacity in industry, ENGOs, media, retail and certification reported that the degree of collaboration currently observed in relationships between some ENGOs and seafood businesses is vastly different to the mostly hostile relationships between business or industry and NGOs historically. As one interviewee noted, now “we act together,

we discuss problems, the NGOs start to understand what is our problem and we start to listen to their problems” (Asia-based interviewee 25). Similarly, transnational Interviewee 17 highlighted that;

Campaigns against salmon farming have shifted from making kind of global unbacked claims to being very well documented claims.

However, it was also acknowledged in the interviews that historically, environmental claims regarding unacceptable environmental impact of harvesting or producing seafood, highlighted in transnational campaigns by global ENGOs, were not always being challenged by the seafood industry with the same efficacy at the global level as ENGO campaigns:

The way (the industry) was segmented nationally, internationally or transnationally, was very peculiar in that there was not always a voice that could address the concerns that were being made on a global scale (Transnational interviewee 17).

Further highlighting the global scale of environmental discourse, industry representatives noted that ENGOs have been putting pressure on them to be responsible for their entire value chain, emphasizing the necessity for global environmental

TABLE 3 | Themes from news articles.

Themes	Sub-themes
Asia key export market	
Industry is, or is not, meeting international standards	
Using international sources of information to support agendas	
Tasmanian salmon industry is world class	
Certification	Provides clear standards for industry to achieve Provides a way for industry to show their practices are environmentally sustainable, safe and ethical

standards and transnational networking mechanisms that facilitate such expansive yet robust process. However, transnational interviewee 19 addressed the presence of alternate opinions between and among stakeholder groups regarding how to best improve or meet environmentally sustainable practices through the value chain. Namely whether it is most effective to be an active participant in a supply chain that could have practices that are considered unsustainable to help improve it or simply to not use those products.

The interviews indicated that managing the commercial risk of environmental campaigning has been one important driver over the past two decades for the global seafood industry to accept and embrace the concept of environmental sustainability. A representative of a prominent Asian retailer identified in interview that the company determined procurement risk areas by using NGOs, media content and customer surveys as the major sources of information. The interviewee particularly noted that the retailer did not address scientific information in this decision-making process. If during this monitoring process conflict was identified to be present regarding a product they stock, the retailer would send someone from headquarters to local suppliers in an attempt to solve the problem (Asia-based interviewee 25). This interviewee also noted that in response to NGOs asking retailers to initiate environmental discourse through the supply chain, seminar-type events were set up to instigate information sharing with key stakeholders, such as government, companies and NGOs in the supplying country. When asked why these retailers work closely with NGOs the interviewees noted three key reasons; (1) to understand the ideas and thinking of the NGOs in order to manage the risk of environmental campaigning, (2) to utilize the NGOs expertise and international networks and, (3) NGOs provide technical expertise on matters that span international governance boundaries.

A comparable example provided by interviewees was that of Southern Bluefin Tuna, which was produced in Australia and sold in the Asian market with third party environmental certification. In 2017, a major e-commerce platform in Asia, JD.com, posted a photo on social media of a Southern Bluefin Tuna promoting the Australian supplier. In response, a group of Chinese NGOs campaigned in the Chinese media for JD.com to stop selling the fish based on its International Union for Conversation of Nature (IUCN) critically endangered status. Even though this fish holds the “Friends of the Sea” certification, JD.com ceased selling the

tuna within 3 days of the campaign. WWF was also criticized for their partnership with JD.com. Similar to the Tasmanian salmon debate, dialogue between the NGO and industry was reported to have been limited at best, with all communications occurring via media platforms (Asia-based interviewee 27). While Friends of the Sea serves as a different certification process to ASC, they both advocate for environmentally sustainable seafood and portray this sentiment to consumers. This example reinforces the finding that communication between local and international actors was absent and certification did not, in this instance, provide protection against criticism regarding seafood production practices. This example encompassed a similar set of actors to the salmon case study, but directly operating across the Australia-Asia region (Asian-based and international NGOs, Australian seafood producers and exporters, global environmental certification schemes, and Chinese media). These actors also appear to disagree about what the acceptable environmental impact of seafood production activities, providing a precedent for conflict between NGOs and certification schemes to occur in the trade of seafood from Australia into Asia markets.

The Extent to Which Global Discourses Are Used in Local Claims-Making

Local industry and government actors have used global references in the Tasmanian newspapers by promoting third-party certification of the industry and the implementation of what they claimed to be “world class” environmental practices and standards (Rockcliff, 2017). As a rebuttal, local NGOs promoted international scientific literature and details of international fin-fish farming practices to assess nuances of the meaning of “world class” standards. For example, it was claimed in the Hobart Mercury:

If you look around the world, it is clear that the future for aquaculture is either land based or properly offshore... Other salmon farming countries like Norway and Canada have arrived at the same conclusion (Wood, 2017).

Additionally, the ramifications that local industry practices can have on distant environments and societies was acknowledged in the interviews. For example, if a local company shuts down, retailers must then source the product from elsewhere in the world that may have lower standards or regulatory rigor. Those in support of the industry explained:

If our salmon industry goes by the wayside, the gap will be filled, and the jobs will be taken, by producers in Asia or South America (Walton, 2017).

These potentially undesirable repercussions of extremist approaches on industry and the environment has meant that “we need to be really really careful that we do things very very well here” (Tasmania-based interviewee 8).

Using international materials to underpin local claims is instilling the notion of a “transnational community of concern” (Lester, 2014), giving grass-roots groups a form of legitimacy. Here, local actors use global discourse to strengthen local

claims. However, the results also indicate there was little connection between local and international perceptions of the Tasmanian salmon industry. For instance, it was perceived among portions of the Tasmanian public that industry and government processes lacked transparency, particularly those associated with Tassal (Whitson, 2017). However, a Tasmanian newspaper highlighted that internationally Tassal had been applauded for its transparency:

TASMANIAN salmon producer Tassal Limited has achieved another sustainability honor, this time on the world stage. ASX-listed Tassal was named as the world's top seafood company for sustainability reporting and transparency in a report rating the top 100 seafood companies on various measures (Ford, 2015).

Tasmanian-based interviewee 9 also highlighted that while Tassal focused on undertaking initiatives of environmental sustainability and transparency that were recognized internationally, namely ASC certification, the company had overlooked the need to engage and promote these initiatives locally early on in their expansion.

The disconnect between local environmental campaigning and global certification schemes regarding the perception of the processes and implementation of certification has created confusion for industry concerning what is deemed “good enough...what is sustainable, what does sustainability mean?” (Tasmania-based interviewee 8) and what mechanisms to determine and practice environmental sustainability are considered legitimate to both the consumer, NGOs and third-party certifiers. This highlights disagreement and conflict over interpretation of fact (e.g., whether something is transparent), which can be based on different sources of information, values and priorities driving how that information is perceived.

Certification as a Mechanism of Transnational Flow of Information Regarding Environmental Sustainability of Seafood Production

Seafood buyers acknowledged certification schemes were useful tools to help identify seafood that is more likely to align with their purchasing policies (Asia-based interviewee 25). However, a range of interviewees highlighted that global third-party certification schemes for environmental sustainability were still undergoing improvements and identified that the relationship between environmental certification and environmental sustainability was strained. One transnational interviewee (18) depicted some of the challenges by explaining “not everything that is certified is by definition sustainable, but definitely not everything that is sustainable is certified.” This provides considerable challenges for those either wishing to produce or purchase environmentally sustainable seafood and to show that they are doing so.

Defining environmentally sustainable practices and how best to assess them can vary between and within stakeholder groups. For example, consumers in different countries “have different concepts of what sustainability means and different levels of urgency to address those issues” (Transnational interviewee 19).

At the site of salmon production in Tasmania local actors defined environmental sustainability by its impact on the immediate environment (e.g., benthic and water quality, fauna and flora and aesthetics). However, for the Chinese consumer, any indication of environmental certification is used as a proxy for provenance. Provence indirectly implies food safety or freshness. Here, this is not a different interpretation of sustainability but rather indicates that these customers value the supply chain traceability associated with the certification label over sustainability. Furthermore, NGOs and those involved in third-party certification had only just started to engage in matters of environmental sustainability with the Chinese seafood supply chain (Transnational interviewees 17 and 19). As China shifts to a net importer, rather than certifying Chinese products, certification bodies and NGO efforts were said to be focusing on raising awareness of sustainable purchasing practices in China (Transnational interviewee 16). Additionally, Chinese media and politics was said to be considerably complex to navigate (Asia-based interviewee 29). For example, in order to gain access to moderated countries such as China the larger transnational NGOs (e.g., WWF and Greenpeace) are said to act as more of a consultant to government, rather than activist organizations (Asia-based interviewee 29). A speaker at the 2018 Asian Seafood Expo explained that the environmental sustainability of a seafood product only becomes an area of concern or discourse theme in markets more established than those in China (field notes, Asian Seafood Expo 2018).

DISCUSSION

Closing and Widening the Gap Between Local and Global Perceptions of Environmental “Best Practice”

Global perceptions of “world’s best practice” were employed in local discourse to support opposing agendas. Actors used references to global standards to either endorse or discredit local actions. This strategy either closed the gap between the local and global or distanced the two. Both strategies were employed to serve the same purpose of measuring local environmental risk of salmon aquaculture. In an attempt to close the gap, the Tasmanian government and industry actors initiated claims of “world’s best practice” and promoted third-party certification as assurances that local-level environmental risks are sustainably managed. Meanwhile, opposition groups promoted scientific and news material from other countries that farm salmon to support assertions of environmental risk in Tasmania. Here NGOs are leveraging the notion of a “transnational community of concern” (Lester, 2014) to legitimize their claims. This strategy aligns with Olsen and Osmundsen’s (2017) media analysis of salmon aquaculture in Norway, which finds that connection made with global discourse can have a greater influence on the perceptions of the environmental risks of aquaculture compared to local experiences. Alternatively, local NGOs also created a gap between local and global standards to portray a perceived mismanagement at the local level and attacked

the ASC for being corrupt. Here the ASC standard might well be considered adequate as certification but inadequate in its application. What is also not considered in this use of international references in the Tasmanian case is that different growing regions experience different social and environmental challenges (Vince and Haward, 2017).

The disconnect between local and international interpretations of “best practice” was initially only evident through piecing together discourse in news media articles. However, the gap between local and international interpretations and applications of environmental “best practice” was later made obvious when local ENGO, Environment Tasmania, campaigned against the transnational ENGO WWF and the ASC and their partnership and certification of Tassal (Environment Tasmania, 2017). Given the national and international credibility the WWF and ASC symbol holds and the market capacity this has to promote the idea of sustainability and associated practices, it becomes a question of what is considered legitimate application of environmentally sustainable standards to different actors in different world regions. Environment Tasmania also collaborated with the transnational ENGO Marine Stewardship Council to develop a sustainable salmon consumer guide. Seafood guides have been a long-standing tool used by ENGOs to promote their perceptions of environmentally sustainable practices to consumers. However, these have also highlighted the lack of consensus among ENGOs and between ENGOs and industry when defining sustainable seafood (Roheim, 2009). Additionally, third-party certification schemes have been criticized for favoring large-scale fisheries in the developed world. This highlights that while balancing local and global communications is challenging, it is important to ensure one is not considered without the other, especially when supply chains of both product and information have local and global dimensions (Olson et al., 2014). This case shows that variation in environmental “best practice” perceptions underpin stakeholder conflicts at both local and international levels.

Third-Party Certification as a Tool to Communicate “Best Practice”

Third party certification of a product does not guarantee local acceptance of a practice, nor should it form the only mechanism by which a company demonstrates or defines “best practice.” This aligns with Ertör and Ortega-Cerdà (2015), who argued that local interests and concerns should never be discounted in global communications and governance. While Tassal focused on achieving international standards in environmental sustainability and reporting (ASC certification), the company is said to have lacked local stakeholder engagement at the site of production. Local opposition groups voiced concerns regarding the perceived lack of transparency of the Tasmanian salmon industry, particularly Tassal. Meanwhile, the salmon company received international praise for transparency regarding its sustainability reporting. Interviewees reported that the company was potentially too complacent in its expectation that their commitment to achieving international environmental and reporting standards would filter through and be accepted, to local communities. This is perceived to have contributed

to the opposition from a portion of concerned communities in Tasmania and a disconnect between these groups and international standard-setting stakeholders and actors.

This work brings to the forefront the importance, and at times difficulty, of acknowledging and attempting to reconcile between local and international standards regarding acceptable environmental risk. Aligning local expectations and interpretations of environmental impact (identified by environmental campaigning) and global standards (e.g., ACS certification) is complex and the processes poorly communicated. Local ENGOs claim that global standards do not fit the local reality. This work also highlights that claims of “world’s best practice” and global governance mechanisms regarding environmental sustainability are not as easily accepted where transnational flows of information regarding environmental practices and environmental concerns are relatively effortless, frequent and available. This then highlights the role of ENGOs in the selection and distribution of that information, given their transnational networks. Equally, this analysis highlights the capacity for these transnational flows to transfer information to sites of local production and influence discourse on the basis of transnational claims that do not reflect or are irrelevant to the sustainability issues at hand.

Environmental Campaigning and Media Forces in Defining Acceptable Practices in the Australia-Asia Region

The degree of contestation of the environmental sustainability status and credentials of seafood, and international variations of what is considered acceptable environmental impact, may explain why the strategies of ENGOs operating in the transnational space are shifting. Rather than ENGOs solely being institutions for protest and campaigning, actors throughout the supply chain perceived some ENGOs as sources of expertise and insight. They provide expertise in not only how to produce and purchase environmentally sustainable products but also in how to influence the international social networks involved in sustainability. ENGOs are also seen to be utilizing processes whereby they create environmental discourse through the supply chain by using the resources of large retail companies to send messages transnationally, easily targeting key decision-makers within the supply chain. Nonetheless, in a key export market for Australian seafood such as China, media coverage can be a powerful driver when it affects buyers’ choices. This study suggests that rather than local conflicts from the site of production transferring to international markets, it is more likely for Chinese media and ENGOs to create pressure on imported product. While some ENGOs and journalists can create pressure for change these actors express the difficulty of operating in China. The interviews identified the apparent lack of ENGO presence in Asian countries, particularly in the capacity for which they are known in most western countries.

While China is the major export market for Australian farmed salmon it is also a country that interviewees who work transnationally on seafood sustainability know little about.

Only in recent years have these actors begun to engage in issues of environmental sustainability within China. This aligns with Fabinyi (2016) who states Asian consumers are said to have less exposure and/or desire to address environmental concerns in their purchasing practices. Therefore if unsustainable environmental harm is (not just perceived to be) occurring at the site of production, exports to Asian markets continue to grow as predicted (Linehan et al., 2013) and Asian consumer preferences do not send signals through markets for environmentally sustainable product, then other non-market mechanisms, such as protest campaigns and regulatory rigor, could have a greater role to play at the site of production or extraction to ensure environmental sustainable standards are met. The interviewees also discussed the implications for global net environmental impact of seafood production, because of the ease of product substitution. This highlights the responsibility of NGOs running environmental campaigns to consider possible unintended consequences - for example, exploitation of less managed fisheries close to markets to meet food security needs if imported product is halted.

CONCLUSION

This paper has explored the transnational flow of information, resources, perceptions and governance of environmentally sustainable seafood. Tasmanian salmon aquaculture provided a local context from which the research could expand. By traversing local and global scales, this research contributed to understanding the mechanisms for which information regarding the environmental risk of seafood production flows transnationally. In doing so it also identified some of the risks of not addressing both local and global factors in communication and governance strategies.

Contributing to the difficulty of communicating environmental sustainability is the apparent lack of shared understanding concerning what constitutes environmentally sustainable practices and how to govern this in an increasingly transnational operating environment. Local and international perceptions and expectations regarding the sustainability requirements of salmon companies did not align in the case of the Tasmanian salmon industry. The interpretation and meaning of environmentally sustainable seafood production shifts as it moves from the site of production through the supply chain to export markets. These differences in the interpretations of environmental sustainability underpin stakeholder conflicts at both local and international levels. The challenge for all actors is to ensure communications and management practices and

strategies address concerns at the local level while operating within global governance, market and resource pressures.

DATA AVAILABILITY STATEMENT

The datasets generated for this study will not be made publicly available. Data includes interviews and remain confidential.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Tasmanian Health and Medical Human Research Ethics Committee, University of Tasmania (H14669). The participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

All authors contributed to the conception and design of the study, development of the argument, manuscript revision, and read and approved the submitted version. CC was the primary author and wrote the first draft of the manuscript, coordinated all revisions, and collected and analyzed the data. This work forms a component of her Ph.D thesis. LL, AF, and EO are her supervisors.

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Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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