Gendered Dimensions of Social Wellbeing within Dried Fish Value Chains and the Implications for Fisheries Governance in Sri Lanka

by
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EXAMINING COMMITTEE MEMBERSHIP

The following served on the Examining Committee for this thesis. The decision of the Examining Committee is by majority vote.

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AUTHOR'S DECLARATION

This thesis consists of material all of which I authored or co-authored: see Statement of Contributions included in the thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

STATEMENT OF CONTRIBUTIONS

Madu Galappaththi was the sole author for Chapters One and Five which were written under the supervision of Derek Armitage and were not written for publication. Galappaththi was the lead author of the chapters Two, Three, and Four, which were developed as co-authored manuscripts for publication. Chapter Two was co-authored with Andrea Collins, Derek Armitage, and Prateep Nayak and was published in Maritime Studies. Chapter Three was co-authored with Derek Armitage and Andrea Collins and was published in Fish and Fisheries. Chapter Four is currently in preparation for journal submission. As lead author of these three chapters, Galappaththi was responsible for conceptualizing study design, carrying out data collection and analysis, and drafting and submitting manuscripts. Co-authors provided guidance during each step of the research, and provided feedback on draft manuscripts.

Bibliographic citations for the co-authored chapters are as follows.

Chapter Two:

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Chapter Three:

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Chapter Four:

Galappaththi, M., Armitage, D., et al. (In preparation). Gendered dimensions of social wellbeing within dried fish value chains in Sri Lanka. Reviews in Fish Biology and Fisheries.

ABSTRACT

Dried fish is a sub-sector within small-scale fisheries that makes significant contributions to livelihoods, wellbeing, and survival of fishing communities. The term ‘dried fish’ refers to the fish processed using simple, low-cost, low-technology methods such as sun-drying, salting, fermenting, and smoking. The dried fish sub-sector is organized into value chains, which encompass a series of sequential activities from fish harvesting to processing, trading, distribution, and consumption.

Dried fish value chains are deeply gendered through the division of labour that exists within them. Women make up about half of the fish drying workforce and they are also employed across the value chains. However, women’s presence in dried fish value chains and their contributions are rarely documented and remain ‘invisible’. Furthermore, women face significant challenges in equitably benefitting from their value chain participation. Nonetheless, women are rarely involved in any decision-making concerning the challenges they face or the resources they interact with. A particular research gap exists in relation to the nuances of how women and men participate in these value chains and pursue wellbeing. Addressing this gap is crucial to identify opportunities to better support the wellbeing of those who critically depend on dried fish value chains.

The purpose of this research is to advance a gender-sensitive understanding of how dried fish value chains support social wellbeing, with a focus on women’s experiences, and to explore the implications for fisheries governance. Three objectives frame this research: (1) to develop a conceptual framework based on existing literature to integrate gender within the study of dried fish value chains; (2) to critically assess women’s experiences in governing small-scale fisheries more broadly; and (3) to empirically examine how dried fish value chains support gendered dimensions of social wellbeing and identify implications for fisheries governance in Sri Lanka.

An integrated framework was first developed to broaden the conceptual and analytical scope of the study of gender within dried fish value chains. The framework established the direction of this research and also offered guidance to ongoing scholarship at the intersection of gender and small-scale fisheries more broadly. The framework was developed by linking three complementary areas of literature: value chains, social wellbeing, and intersectionality. Three case examples from Bangladesh, Tanzania, and Sri Lanka were also drawn from literature to demonstrate the application of the framework in systematically unpacking the complexity of gendered value chain experiences. Notably, the conceptual and analytical linkages encouraged by this framework resulted in a deeper analysis of gender relations within dried fish value chains with a focus on how certain groups are uniquely disadvantaged.

Next, a systematic scoping review was used to survey the global empirical literature to examine women’s experiences in influencing and shaping small-scale fisheries governance. The review identified, characterized, and synthesized 54 empirical cases at the intersection of gender and SSF governance. Findings of the review revealed the crucial need to expand the current evidence base on this topic and enabled the synthesis of a typology of governance tasks performed by women. These tasks include leadership roles, relational networking and collective action, resource monitoring, and knowledge sharing. The review addressed an important gap in the literature, and helped highlight the opportunities to improve women's participation in governance and advance gender equality.

Finally, a comparative analysis of two distinct dried fish value chain cases from Sri Lanka — an urban coastal value chain and a rural inland freshwater value chain — was used to empirically examine the social wellbeing experiences of women and men participating in these value chains. The cases allowed for the examination of diversity of dried fish value chains and the place-based nature of livelihood opportunities supported by them. The cases were developed using in-depth field interviews (n=70) with dried fish producers and key informant interviews (n=19) with stakeholders who has influence over value chain activities (e.g., community leaders, fisheries managers, and development officers). The comparative analysis highlighted that the people participating in both coastal and inland dried fish value chains derive material, relational, and subjective wellbeing in nuanced ways, with substantial differences between the experiences of women and men. For example, all full-time fish drying sites in the coastal community are owned and operated by men whereas women only participate as wage workers in these sites. Findings revealed that dried fish value chains are of disproportionate importance to the wellbeing of socio-economically marginalized people in fishing communities. The findings also revealed that increased commercialization has a negative impact on women's participation in value chains and the relational underpinnings in safeguarding interests of marginalized groups in general. Moreover, increased commercialization appeared to put intergenerational capacity to support wellbeing at risk.

Outcomes of this study have the potential to inform policy and practice interventions that seek to foster gender equitable wellbeing outcomes in fishing communities. For instance, findings highlight that recognizing the value chain roles performed by women requires counting different types of fish drying operations whereas supporting their wellbeing requires a range of solutions that can safeguard the diverse community-embedded value chain activities. While findings specifically address dried fish value chains, they hold relevance and applicability to fisheries and natural resource governance more broadly.

SINHALA LANGUAGE TRANSLATION OF ABSTRACT

පර්යේෂණ සොයාගැනීම් වල සාරාංශය

ශ්‍රී ලංකාවේ වියළි මාළු සැපයුම් දාමයන්හි කටයුතු කරන කාන්තාවන්ගේ සහ පිරිමින්ගේ සමාජ යහපැවැත්ම වැඩිදියුණු කිරීම සහ ඒ සඳහා පරිපාලන ක්‍රියාවලීන් වල අවශ්‍යතාවය

වියළි මාළු නිෂ්පාදනය යනු කුඩා පරිමාණ ධීවර කර්මාන්තයේ උප අංශයක් වන අතර එය ධීවර ප්‍රජාවගේ ජීවනෝපාය හා යහපැවැත්ම සඳහා ඉතා වැදගත් දායකත්වයක් සපයනු ලබයි. 'වියළි මාළු' යන්නෙන් අදහස් කරන්නේ සරල, අඩු වියදම්, අඩු තාක්ෂණික, හා සාම්ප්‍රධායික ක්‍රම භාවිතා කර කල්තබා ගැනීම සඳහා සකස් කරන ලද මාළුය (උදා: හිරු එළිය භාවිතයෙන් කරවල වියළීම, ලුණු දැමීම, ජාඩි දැමීම, උම්බලකඩ නිෂ්පාදනය, දුම් භාවිතයෙන් වියළීම). වියළි මාළු නිපැයුම් ක්‍රියාවළිය මත්ස්‍ය අස්වැන්න ලබා ගැනීමේ සිට මාළු පිරිසිදු කිරීම, වියළීම, ඇසුරුම් කිරීම, වෙළඳාම, බෙදාහැරීම හා ඒ ආශ්‍රිත ක්‍රියාකාරකම් සැපයුම් දාමයක් ලෙස සංවිධානය වී පවතී.

මෙම සැපයුම් දාමයන් තුළ කාන්තාවන් හා පිරිමින් අතර සැලකිය යුතු ශ්‍රම විභජනයක් පවතින අතර, මාළු වියළන හා වෙළඳාම් කරන ශ්‍රම බලකායෙන් අඩක් පමණ කාන්තාවන් වේ. කෙසේ වෙතත්, වියළි මාළු සැපයුම් දාමයන් තුළින් ප්‍රතිලාභ ලබා ගැනීමේදී ඔවුන් සැලකිය යුතු අභියෝගවලට මුහුණ දෙයි. නමුත් කාන්තාවන් තමන් මුහුණ දෙන අභියෝග පිළිබඳව හෝ ඔවුන් භාවිතා කරන සම්පත් සම්බන්ධයෙන් තීරණ ගැනීමේ ක්‍රියාවලීන්ට දායක වන්නේ කලාතුරකිනි. තවද, මේ දක්වා මෙම උප අංශයට පර්යේෂණ, ධීවර ප්‍රතිපත්ති සහ කළමනාකරණ ක්ෂේත්‍රයන්හි නිසි අවධානයක් ලැබී නොමැත (විශේෂයෙන් සංවධර්නය වෙමින් පවතින රටවල). මේ අනුව, වියළි මාළු නිෂ්පාදන උප අංශයේ පරිමාණය හා වැදගත්කම පිළිබඳ අපගේ වර්තමාන අවබෝධය සීමිතය. විශේෂයෙන්, වියළි මාළු සැපයුම් දාම කාන්තාවන්ගේ සහ පිරිමින්ගේ ජීවනෝපාය හා යහපැවැත්ම අඛණ්ඩව පවත්වාගෙන යාමට සහාය වන ආකාරය පිළිබඳව අධ්‍යයනය කිරීමේ තීරණාත්මක අවශ්‍යතාවයක් පවතී.

මේ අනුව, මෙම පර්යේෂණ ව්‍යාපෘතියේ අරමුණ වූයේ ශ්‍රී ලංකාවේ වියළි මාළු සැපයුම් දාමයන්හි නිරත කාන්තාවන්ගේ සහ පිරිමින්ගේ අත්දැකීම් පිළිබඳ පුළුල් අවබෝධයක් ලබා ගැනීම සහ ඔවුන්ගේ යහපැවැත්ම වැඩිදියුණු කිරීම සඳහා ගතහැකි පරිපාලන හා ආයතනික ක්‍රියාවලීන් පිළිබඳව වැඩිදුර අධ්‍යයනය කිරීමත්ය.

අධ්‍යයන දත්ත එක්රැස් කිරීම 2020 දෙසැම්බර් සිට 2021 සැප්තැම්බර් දක්වා සිදු කල අතර සැපයුම් දාමයේ කටයුතු හා සම්බන්ධ පාර්ශවකරුවන් සමඟ සම්මුඛ සාකච්ඡා පවත්වන ලදී (උදා: මාළු වියළීමේ යෙදෙන කම්කරුවන්, ධීවරයින්, වියළි මාළු එකතු කර වෙළඳාම් කරන්නන් සහ ඔවුන්ගේ සේවා යෝජකයින්, ධීවර කළමණාකරුවන්, සමුපකාර නායකයින්, අමාත්‍යාංශ නිලධාරීන්).

පර්යේෂණ අරමුණ සාක්ෂාත් කර ගැනීමේදී, ශ්‍රී ලංකාවේ වියළි මාළු සැපයුම් දාමයන්හි නිරත කාන්තාවන්ගේ සහ පිරිමින්ගේ අත්දැකීම් පිළිබඳ වැඩිදුර අධ්‍යයනය සඳහා විශේෂ අධ්‍යයන රාමුවක් ප්‍රථමයෙන් සකස් කරන ලදී. මෙම රාමුව පදනම් කරගනිමින් කුඩා පරිමාණ ධීවර කර්මාන්තයේ යෙදෙන පාර්ශවකරුවන්ගේ අත්දැකීම් පිළිබඳ සමීක්ෂණය සඳහාද පුළුල් මාර්ගෝපදේශකත්වයක් සපයනු ලබයි.

දෙවනුව, විවිධ රටවල් වල කුඩා පරිමාණ ධීවර පරිපාලන කටයුතු වලට දැනටමත් සහභාගී වන කාන්තාවන්ගේ අත්දැකීම් පිළිබඳ පුළුල් අවබෝධයක් ලබා ගැනීම සඳහා මීට පෙර කරන ලද ක්ෂේත්‍ර අධ්‍යනයන් සමීක්ෂණය කරන ලදී. මේ අනුව, ගෝලීය වශයෙන් කාන්තාවන් දරණ පරිපාලන වගකීම් හඳුනා ගැනීමට හැකි විය (උදා: ධීවර සමිති වල තීරණ ගැනීමේ ක්‍රියාවලීන්ට සක්‍රීයව දායක වීම, නායකත්ව වගකීම්). මෙම සොයාගැනීම් මුල් කරගනිමින් කුඩා පරිමාණ ධීවර පරිපාලනය සඳහා කාන්තාවන්ගේ දායකත්වය අර්ථවත් ලෙස වැඩි දියුණු කිරීමට දරන උත්සාහයන් පිළිබඳව පුළුල් අවබෝධයක් ගොඩනැගීමටද හැකි විය. මෙම අධ්‍යයන සොයාගැනීම් තුළින් මෙම මාතෘකාව පිළිබඳ වතර්මාන සාක්ෂි පදනම පුළුල් කිරීමේ තීරණාත්මක අවශ්‍යතාවයක් ඇති බවද අනාවරණය විය.

අවසාන වශයෙන්, ලංකාවේ දැනට පවතින වියළි මාළු සැපයුම් දාමයන් දෙකක් (නාගරික වෙරළබඩ ආශ්‍රිත සහ ග්‍රාමීය මිරිදිය වැව් ආශ්‍රිත) මුල් කරගනිමින් ඒවාට දායක වන කාන්තාවන්ගේ සහ පිරිමින්ගේ අත්දැකීම් සංසන්දනාත්මක ලෙස විශ්ලේෂණය කරන ලදී. සැපයුම් දාමවල සංවිධානාත්මක වශයෙන් විවිධ ව්‍යුහයන්ගේ ස්වභාවය සහ ඒවා මත යැපෙන විවිධ ප්‍රදේශවලට ආවේණික මාළු වියළීම ආශ්‍රිත කොටගත් ජීවනෝපායන්ගේ ස්වභාවය පිළිබඳ මනා අවබෝධයක් මෙම විශ්ලේෂණයෙන් තහවුරු විය. මෙහිදී ද්‍රව්‍යමය මූලික අවශ්‍යතා (උදා: මුදල්, ආහාර), සමාජ සම්බන්ධතා (උදා: වෙළඳාම් කටයුතු වලට සහාය වන දැන ඇඳුනුම්කම්, ගම් මට්ටමේ ආයතන/සමිති සමඟ ඇති සම්බන්ධතා), හා පවුලේ සහ දරුවන්ගේ අනාගත අපේක්ෂාවන් ඉටුකරගැනීමට ඇති හැකියාව පිළිබඳව විශේෂ අවධානයක් යොමු කරන ලදී. මෙම සැපයුම් දාමයන් ඒවා ආශ්‍රිතව ජීවනෝපායේ යෙදෙන්නන්ගේ යහපැවැත්ම සඳහා සූක්ෂම ආකාරයෙන් දායකත්වයක් සපයන බවත්, දේශීය වශයෙන් කාන්තාවන්ගේ සහ පිරිමින්ගේ අත්දැකීම් අතර සැලකිය යුතු වෙනස්කම් ඇති බවත් තහවුරු විය. මෙම සොයාගැනීම්වලින් හෙළි වූයේ මහත් කම්කටොළු මැද්දේ ජීවත්වන මිනිසුන්ගේ යහපැවැත්ම සඳහා වියළි මාළු සැපයුම් දාමයන් සුවිශේෂී දායකත්වයක් ලබා දෙන බවත්, එම දාමයන් වාණිජකරණය කිරීම තුලින් (උදා: මහා පරිමාණ සුපිරි වෙළඳ සැල් ඉලක්ක කරගත් නිෂ්පාදනයන්) කාන්තාවන්ගේ සහභාගීත්වය තවදුරටත් අඩපණ විය හැකි බවත්ය. තවද, දැනට පවතින සැපයුම් දාමයන් ආරක්ෂා කර ගැනීම සඳහා උත්සාහ දැරීමේදී, ඒවා ආශ්‍රිතව ඇති සමාජ සම්බන්ධතා සහ අනාගත පරම්පරාවල අඛණ්ඩ සහභාගීත්වය සඳහා ඇති හැකියාව තීරණාත්මක වශයෙන් අවධානයක් යොමු කල යුතු කාරණා ලෙස අනාවරණය විය.

අධ්‍යයනය තුළින් මතු වූ වැදගත් කරුණු පාදක කරගනිමින්, වියළි මාළු උප අංශය වැඩිදියුණු කිරීම සඳහා අවශ්‍ය යථාර්ත ප්‍රතිපත්ති සහ ප්‍රායෝගික වශයෙන් ක්‍රියාත්මක කල හැකි වැඩසටහන් හා ව්‍යාපෘති සඳහා සැලසුම් නිමාණය කල හැක. තවද, එවැනි ව්‍යාපෘති ඔස්සේ කාන්තාවන් සහ පිරිමින් අතර සමානාත්මතාවය වර්ධනය කිරීමටද අවස්ථාවක් ඇත. මෙම පර්යේෂණය තුලින් අනාවරණය වූ සොයාගැනීම් වියළි මාළු සැපයුම් දාමයන් වලට විශේෂයෙන් අදාළ වුවද, ඒවා විවිධ පරිමාණ යථාර්ත හා ස්වභාවික සම්පත් පරිපාලනය සම්බන්ධ කටයුතු වලට හා ඒවායේ තිරසාරත්වය දීඝර් කාලීනව තහවුරු කිරීම සඳහා පුළුල් වශයෙන් අදාළ වේ.

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DEDICATION

To the fishing communities I collaborate with

and

my parents, Wimala Illankoon and Amaranayaka Tennakoon

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LIST OF ABBREVIATIONS

DFM	Dried Fish Matters – a Canadian-based research partnership focused on dried fish social economies of South and Southeast Asia
DFVC	Dried fish value chain
FAO	Food and Agriculture Organization of the United Nations
IG	Interactive Governance perspective
IYAFA	International Year of Artisanal Fisheries and Aquaculture 2022
MFARD	Ministry of Fisheries and Aquatic Resources Development of Sri Lanka
PRISMA Guidelines	Standard guidelines on Preferred Reporting Items for Systematic Reviews and Meta-Analyses
RA	Research Assistant
SCOPUS	A bibliographic database containing meta data and abstracts of academic journal articles
SDG	Sustainable Development Goals of the United Nations
SSF	Small-scale fisheries
SSF Guidelines	Voluntary Guidelines in Securing Sustainable Small-scale Fisheries in the context of food security and poverty eradication
SWB	Social Wellbeing

Chapter 1
Introduction

1.1 Research context and problem rationale

Dried fish is a sub-sector within small-scale fisheries (SSF) that makes significant contributions to livelihoods, wellbeing, and survival of fishing communities. Dried fish is predominantly produced in Asia and Africa. However, the sector remains largely 'hidden' and undervalued within SSF (Belton et al., 2022b; Johnson et al., Forthcoming). The term 'dried fish' refers to processed fish using simple, low-cost, and traditional methods such as sun-drying, salting-sun-drying, fermenting, and smoking resulting in a product that can be stored at room temperature (FAO, 2020). Dried fish production and consumption systems are organized as value chains. A value chain comprises a series of activities or 'nodes', from fish harvesting to processing (drying), trading, distribution, and consumption (Bush et al., 2019).

Globally, about 11% of fish harvests are processed as dried fish (FAO, 2020) with much higher volume conversions reported in developing countries. For example, in Myanmar and Bangladesh, 34% and 25% of total fish harvests, respectively, are processed as dried fish (Hossain et al., 2015). In comparison to global food value chains, dried fish value chains largely remain localized and firmly rooted in community contexts through cultural connections and social ties (Belton et al., 2018). Value chain activities are often dispersed across remote fishing areas with products (dried fish) moving through informal markets and distribution channels (Hossain et al., 2015). The communities who host these value chains largely comprise marginalized and disadvantaged societal groups such as the poor, caste groups, refugees, and other minority groups (Belton et al., 2018). Through their participation in dried fish value chains, dried fish dependent people generate diverse and significant benefits such as income, employment, food, social connections, and cultural values that critically support their wellbeing (Belton et al., 2022b).

Dried fish value chains are also deeply gendered through the division of labour that exist between men and women[1]. Women make up about half of the fish drying workforce and are predominately employed in the drying node whereas men dominate fish harvesting activities. Despite their presence and labour, women's roles and contributions are rarely documented and poorly acknowledged (Belton et al., 2018). Nonetheless, women face significant challenges in benefitting from their value chain participation compared to men (Matsue et al., 2014). For example, women often do not have access to good quality fish or profitable markets and gendered wage gaps are also common for similar value chain tasks.

Despite the challenges, women have limited or no access to the institutional structures that determine access to and control over resources, and they are rarely involved in any decision-making concerning the management of fisheries resources (Frangoudes & Gerrard, 2019; Kooiman et al., 2005). This exclusion, in part, stems from the traditional androcentric viewpoint of fisheries as a domain of men, which elevates men's roles while simultaneously downplaying women's vital contributions. Gender-restrictive norms and expectations, such as mobility

[1] While this dissertation refers to the gender groups of women and men, I acknowledge the need to move beyond the gender binary. In fact, the attention to marginalized societal groups in the discussion may have relevance to understanding the experiences of gender minorities.

restrictions and tasks that women are 'supposed to do', further limit women's scope for participation in decision-making (Burnley & Ziegenhagen, 2014; Frangoudes & Gerrard, 2019; Lawless et al., 2019; Rohe et al., 2018). As a result, their challenges and specific needs go unrecognized, and their work remains overlooked in fisheries management, policy, and practice (Kleiber et al., 2015, 2017). These issues perpetuate substantial gender inequities in relation to women's and men's ability to benefit from their participation in dried fish value chains, often to the detriment of women's wellbeing. Gender equity is understood as "fairness and impartiality in the treatment of women and men in terms of rights, benefits, obligations, and opportunities" (Biswas, 2017, p. 4).

Despite the significance of the dried fish sub-sector and the issues that require attention, our scholarly and applied understanding about the significance of dried fish value chains is limited (Belton et al., 2022b; Koralagama et al., 2021). Existing studies related to dried seafood value chains (i.e., invertebrates and other high-valued products such as sea cucumber, abalone, and shark fins) are largely concerned with the economic returns associated with the trading of specialized products destined for global markets such as China and Europe (e.g., Eggertsen et al., 2020; Purcell et al., 2017). Such studies are therefore less helpful in understanding the significance of dried fish value chains toward supporting local livelihoods with attention locally produced, traded, and consumed dried fish products. Further, the existing mainstream body of dried fish literature is mostly focused on technical aspects such as fish processing technologies, food safety, and health and sanitation (Belton et al., 2018). In comparison, a limited number of studies focus on social and livelihood aspects of dried fish such as social and cultural relations, value chains and economy, labour relations, and policy and practice interventions (e.g., Belton et al., 2018, 2022b; Berenji, 2020; Hossain et al., 2015; Salagrama & Dasu, 2021; Weerahewa & Kodithuwakku, 2013). A substantial body of grey literature however exists on dried fish, which provides a patchwork of information on the organization and operation of dried fish activities, labour, and working conditions (e.g., newspaper articles, life stories, and recipes).

Four significant knowledge gaps identified in relation to social and livelihood aspects of dried fish and to be addressed through this research (see also Belton et al., 2022b; Koralagama et al., 2021). First, little is known about the workings of dried fish value chains within the contexts in which they are embedded, with respect to their organization, functioning, and scales of operation. Second, the nuanced and complex ways dried fish value chains support people's wellbeing are not fully understood. Third, gendered analysis of dried fish value chains has not been conducted to understand the unique positions of women and men in relation to the benefits they obtain through their participation in dried fish value chain activities. Lastly, dried fish value chains remain a blindspot within existing approaches to fisheries management and governance (Belton et al., 2022b; Salagrama & Dasu, 2021). The need to advance these knowledge gaps is aligned with the recent calls within gender research in fisheries and aquaculture, particularly with regard to the complexity of women's experiences (Frangoudes et al., 2019; Frangoudes & Gerrard, 2018; Gopal et al., 2020; Kleiber et al., 2017) and the relational aspects of gendered roles (Gustavsson, 2020; Kruijssen et al., 2018). These calls are also grounded in the long-standing argument in the field of gender research about the need to identify and intervene in the root causes of gender equity to achieve gender transformative outcomes (Cornwall, 2016, 2003; Dunaway, 2013; Neis, 2005; Nightingale, 2011).

Moreover, the need to advance applied understanding around these topics is linked with ongoing policy frameworks and practice interventions aimed at improving small-scale and artisanal

fisheries across from local to global scales. For example, explicit commitments have been made to improve human wellbeing and address gender inequities through the ongoing implementation of Food and Agriculture Organization's Voluntary Guidelines for Securing Sustainable Small-scale Fisheries (SSF Guidelines), United Nation's Sustainable Development Goals (SDGs) particularly the linkages between SDG 14: Life Below Water and SDG 5: Gender Equality, and the declaration of 2022 as the International Year of Artisanal Fisheries and Aquaculture.

The goals of this introductory chapter then are to outline the broader context of the research presented in this dissertation with respect to problem rationale, objectives, theoretical groundings, and methods and to situate within that context the three manuscripts that comprise the body of this dissertation (Chapters Two to Four).

1.2 Research purpose, objectives, and key contributions

Broadening our limited understanding on dried fish value chain organization, gendered participation, and wellbeing creation is crucial to identify governance opportunities to improve outcomes in the dried fish sub-sector. This requires attention to the land-based fish processing/drying node of the value chain and its linkages to adjacent nodes, all of which set apart dried fish value chains from other similar value chains such as fresh fish chains and cold chains (Belton et al., 2022b). The focus on the processing node and its linkages will also facilitate the study of experiences of both women and men, as women predominantly occupy the processing node while men are employed across the chain.

The purpose of this dissertation, therefore, is to advance a comprehensive understanding of how gendered dimensions of social wellbeing is supported by dried fish value chains, with a focus on women's experiences, and to identify the implications for fisheries governance. In achieving this purpose, this dissertation pursues three specific objectives:

1. To develop a conceptual framework based on existing literature to integrate gender within the study of dried fish value chains;
2. To critically assess women's experiences in governing small-scale fisheries more broadly; and
3. To empirically examine gendered participation and wellbeing creation within dried fish value chains, and explore implications for fisheries governance.

The three objectives are interdependent and build on each other. The first objective integrates the bodies of literature relevant to the study of dried fish value chains and develops a framework to establish the conceptual and analytical direction of the study. The second objective draws from broader SSF literature to guide the empirical research and the exploration of governance implications under the third objective. The three objectives also have been strategically developed to support the development of an applied understanding of the issues being studied and also to ensure successful adaptation to field research limitations arose from the COVID-19 pandemic during which this dissertation research was completed.

The research presented in this dissertation makes an original and significant contribution to the advancement of knowledge in three main ways. First, the thesis presents a novel conceptual and analytical framework that link three complementary areas of scholarship on social wellbeing, intersectionality, and value chains. The key point of departure from existing literature in

developing the novel framework is the notion of relationality (i.e., the creation of experiences in relation to one another within a given context). The resulting framework helps systematically unpack diverse and complex experiences of women and men within the context of dried fish value chains as well as SSF more broadly.

Second, the thesis presents the first global-level systematic scoping review of peer-reviewed empirical literature at the intersection of gender and SSF governance. In doing so, the manuscript advances the conceptual and analytical linkages between SSF, governance, and women's participation; identify pertinent gaps, patterns, and emerging directions within the applied scholarship; and reveal insights that can guide fisheries policy and practice interventions.

Lastly, the thesis addresses the gap in our scholarly understanding on gendered dimensions of dried fish value chain participation and social wellbeing creation by critically examining two empirical dried fish value chain cases in Sri Lanka. The emerging insights reveal the nuances of how women and men derive material, relational, and subjective wellbeing; and explore the implications for fisheries governance.

The findings of the research presented in this dissertation are structured around the above three objectives and presented as three standalone, but interdependent manuscripts written for academic publication (Chapters Two to Four). Each manuscript addresses a distinct research question and outlines the theoretical foundations, methods, results, and analysis findings.

The next sections of this introductory chapter present a review of literature, conceptual framework, empirical context, research design, and methods. The last section of this chapter maps out the structure of this dissertation.

1.3 Literature review

This dissertation draws on theoretical and conceptual foundations, emerging themes, and gaps pertinent to three complementary core areas of literature — value chains, social wellbeing, and intersectionality. A fourth area of literature, interactive governance perspective, is used in this study as a theoretical basis to understand governance implications and assess opportunities for change. Each manuscript included in this dissertation (Chapters Two to Four) draws from various combinations of literatures as warranted by the aim of each manuscript. All three manuscripts bring attention to gender as the overarching theme. Table 1.1 outlines the combinations of literatures each manuscript draws from.

Table 1.1: Core areas of literature

Manuscript	Focus	Core areas of literature
1 (Chapter 2)	Conceptual framework to integrate gender in the study of dried fish value chains	• Value chains • Social wellbeing • Gender and intersectionality • Dried fish and SSF
2 (Chapter 3)	Systematic review on women's engagement in governing SSF	• Gender • Interactive governance perspective • SSF

3 (Chapter 4)	Gendered dimensions of social wellbeing within dried fish value chains in Sri Lanka	• Social wellbeing (has less emphasis within this manuscript) • Gender • Dried fish value chains • Social wellbeing

1.3.1 Value chains

The concept of the value chain is used in this dissertation in two main ways. First, value chain literature offers an analytical construct and associated terminology to systematically explore the structural organization and functioning of value chain activities, actor roles, and their interactions. A value chain is described as the full range of activities that transform a product from its raw state to final state and in doing so move the product from point of production to consumption (Porter, 1985). Structurally, value chain activities are sequenced as a series of nodes and linkages (Bush et al., 2019; Reardon et al., 2012). A node is a key stage that a product passes through in the sequence of the activities that comprise the value chain (e.g., production, trading, distribution, and consumption). Value chain nodes are interconnected through two-way linkages, where the product moves forward and the earnings/benefits flow backward. Moreover, diverse value actors are employed in the nodes across the chain. Various institutions and governance mechanisms, such as cooperatives, local governments, and cultural norms also take effect along fish value chains (Steenbergen et al., 2019).

In the context of dried fish value chains, key value chain nodes comprise pre-harvesting (e.g., net cleaning, net mending, gathering supplies), fish harvesting, processing (drying), trading, distribution, and consumption with fishers, fish processors, collectors, wholesale traders, and retail traders as the key actors performing various value chain tasks (Hossain et al., 2015; Weerahewa & Kodithuwakku, 2013). Furthermore, gendered divisions of labour are common in value chain employment. For example, fishing node is predominantly occupied by men whereas the processing node is occupied by women. Nonetheless, these actors often perform multiple roles across the value chain while typically resulting in heavy overlaps among the nodes (Manyungwa-Pasani et al., 2017). For example, women participating in inland dry fish value chains in Sri Lanka sun dry their own catches and sell their products in village markets (i.e., participation in harvesting and processing as well as trading nodes).

Second, a focus on the term ‘value’ opens up an opportunity to rethink the idea of value creation. As a concept originated in management literature, the term ‘value’ emphasizes value creation or incremental value addition in financial terms as a product moves through nodes of the chain (Porter, 1985). However, there is room to broaden the value chain concept by going beyond mere financial value to account for various other non-financial ways that the value chains support those who depend on them (Barrientos et al., 2011). In fact, fisheries social scientists continue to argue that fish value chain analyses should encompass socio-cultural dimensions of value, such as reciprocity, sharing, and autonomy toward achieving more equitable and sustainable value chain outcomes (See Fabinyi et al., 2018). Such socio-cultural dimensions may hold more or equal value and meaning to those who depend on value chains within particular contexts (e.g., satisfaction and gratitude associated with being able to provide others with a means of livelihood within close-knit kin groups) (Appadurai, 1988; Fabinyi et al., 2018).

In the critical examination of dried fish value chains, broadening the concept of value helps bring attention to the non-material and non-financial benefits supported through value chains (e.g., kinship ties, cultural identities, and intergenerational values). Further, the broad conception of value complements the concept of social wellbeing, which emphasizes the multiple ways people perceive and pursue wellbeing, and thereby help unpack the complexity of value creation. This approach is particularly relevant to the gendered analysis of fish value chains as women's contributions in terms of their labour and time often remain undervalued or ignored (Pedroza-Gutiérrez & Hapke, 2021).

1.3.2 Social wellbeing

The social wellbeing concept is used in this research to examine the diverse and complex ways value chains support those who participate in them while consciously moving beyond the simplified understandings of value chain benefits as a matter of material/financial benefits. In doing so, attention is paid to two aspects. First, social wellbeing is defined as "a state of being with others, where human needs are met, where one can act meaningfully to pursue one's goals, and where one enjoys a satisfactory quality of life" (McGregor, 2008, p. 1). This definition emphasizes the 'social conception' of wellbeing and argues that the wellbeing outcomes are socially and culturally constructed in a relational manner. The social conception of wellbeing is important in the study of dried fish value chains as they remain embedded within social, cultural, economic, political, and historical contexts that shape local realities and circumstances.

Second, social wellbeing offers an analytical framework that systematically captures the multiple ways wellbeing is created (McGregor, 2008; Weeratunge et al., 2014). This analytical framework encompasses three interconnected dimensions — material, relational, and subjective wellbeing (See Figure 1.1).

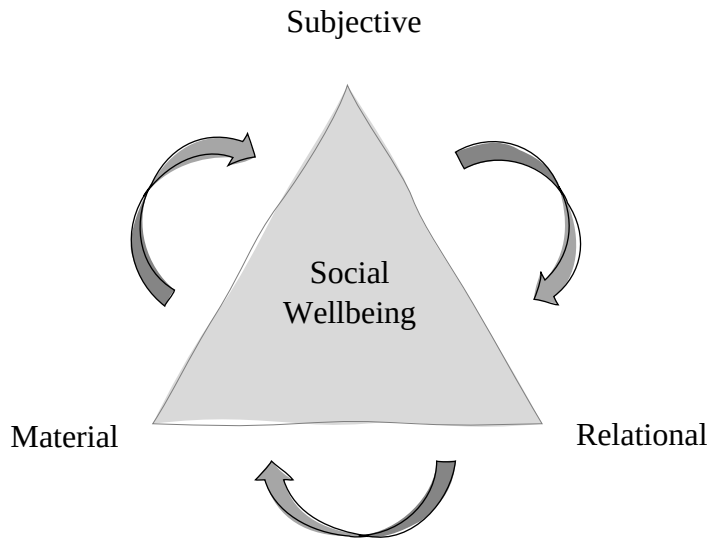

Figure 1.1: Three-dimensional framework of social wellbeing (White, 2010)

The material dimension encompasses objective or physical resources that determine practical welfare and standards of living (e.g., income, wealth, and physical health) (McGregor, 2008; Weeratunge et al., 2014; White, 2010). The relational dimension refers to social relations that

determine the scope for personal action/influence within a community such as the social ties, cultural identities, and gender relations (Coulthard, 2012; McGregor, 2008). People's own perceptions about what they have and can do are represented by the subjective dimension (e.g., values, perceptions, trust) (McGregor, 2008; White, 2010). Furthermore, social wellbeing provides a flexible approach to examine the realities of people's livelihoods while maintaining a dual focus on wellbeing and 'illbeing'. Poverty and poor working conditions, for example, may create detrimental material conditions that lead to illbeing of individuals and communities (Coulthard, 2012; McGregor, 2008; White, 2010). Furthermore, manifestations of illbeing in relational and subjective terms may include gendered power relations that curb women's participation in value chains and dissatisfaction associated with working conditions. Table 1.2 presents the key attributes of three-dimensional social wellbeing to be studied within dried fish value chains.

Table 1.2: Key attributes of three-dimensional social wellbeing

Wellbeing dimension	Key attributes [1, 2, 3, 4]
Material	• Income, wealth, and assets • Employment and other livelihood activities • Education and skills • Physical health and (dis)ability • Access to services (e.g., credits, transportation, technology) • Resource base, species diversity • Access to natural resources and quality (e.g., tenure rights, species diversity)
Relational	• Networks of support and obligation (e.g., kinship, social ties) • Gender relations, power relations, and inequalities • Cultural and social identities (e.g., castes, ethnicity, religion) • Norms, customs, and traditions • Institutional affiliations and collective action (social institutions, religious affiliations) • Relations with the state/formal structures (e.g., policies, laws, rights)
Subjective	• Values, principles, and meanings (e.g., way of living, pride, autonomy) • Perceptions • Hopes, fears, and aspirations • Experiences and levels of job (dis)satisfaction • Trust and confidence in each other • Social cohesion and collective action • Sense of alienation or connectedness within wider society

[1] Coulthard, 2012; [2] McGregor, 2007; [3] Weeratunge et al., 2014; [4] White, 2010

1.3.3 Intersectionality and gender

Intersectionality helps bring attention to the differential experiences of people participating in dried fish value chains in relation to how they can generate social wellbeing, with explicit attention to the most marginalized groups (e.g., lower castes, ethnic minorities). Intersectionality is an analytical framework that has been widely used in the study of gender across academic

disciplines to analyze the complex experiences of discrimination and oppression faced by different societal groups (e.g., racism, sexism, classism). Intersectionality acknowledges that gendered roles are inherently intertwined with structures of power and oppression operating within societies such as race, caste, ethnicity, age, and education (Crenshaw, 1989, 1991). Therefore, by definition, intersectionality brings attention to the experiences of most marginalized societal groups. Furthermore, intersectionality highlights how these structures intersect and shape an individual's position in the society or the relationality that result in differential lived experiences (Figure 1.2).

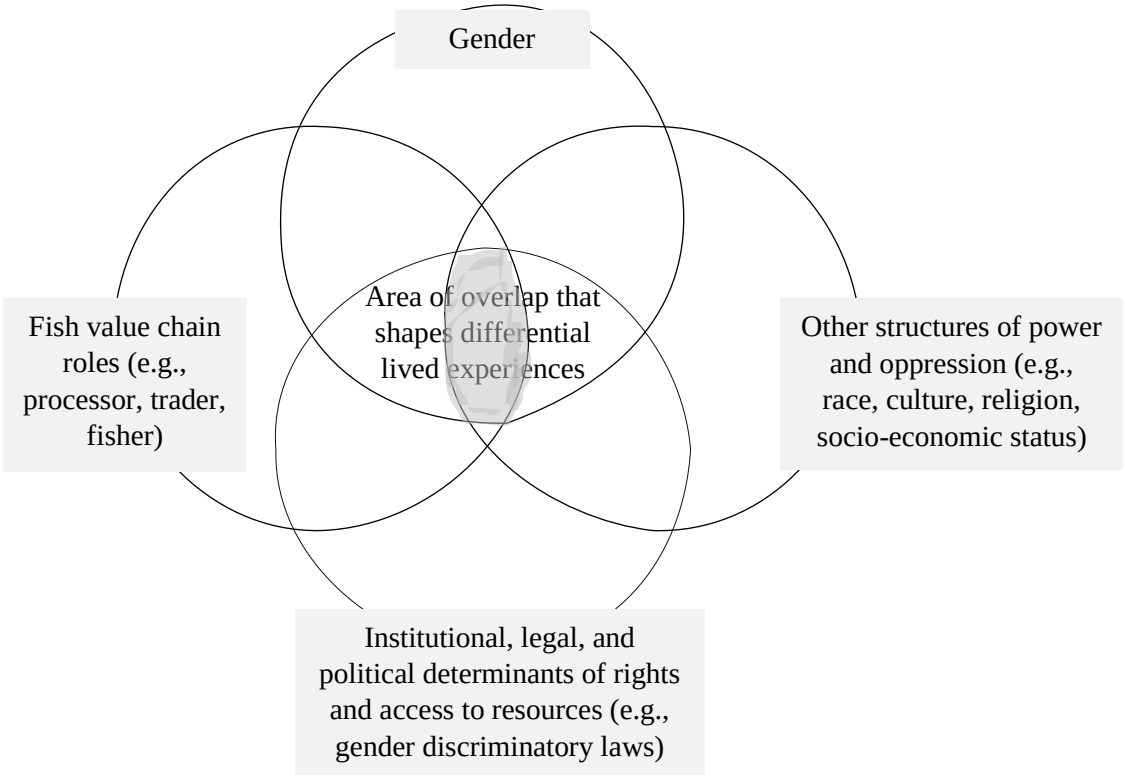

Figure 1.2: Intersecting structures of power that shape people's lived experiences

Dried fish value chains are embedded in contexts that are socially stratified based on various structures that embody power, social positions, and oppression such as castes, cultures, ethnic origins, and religions (Belton et al., 2018; Manyungwa-Pasani et al., 2017; Medard et al., 2019). These pre-existing social hierarchies are critical because they work together with gender roles and expectations to maintain or reinforce power relations and shape individual's experiences. As a result, women face substantive challenges and discrimination in trying to benefit from their value chain participation. For example, in Nazirartek, Bangladesh, Rohingya women who belong to a refugee group from Myanmar are discriminated against local Bengali women during hiring of workers in fish drying yards (Belton et al., 2018). These hiring processes are run by male supervisors, who belong to local inhabitant groups (Belton et al., 2018). Furthermore, in dried Nile perch value chains on the Tanzanian shores of Lake Victoria, East Africa, local Tanzanian women traders have limited access to dried fish and markets compared to Congolese women

traders participating in these value chains (Medard et al., 2019). This is because the Congolese women traders have managed to establish close contacts with a male-dominant powerful dried fish trading network in the area (Medard et al., 2019). Such challenges critically undermine the ability of some women to receive equitable benefits and wellbeing through their value chain participation compared to other women as well as men.

Emerging directions within gender-focused research in fisheries also encourages the adoption of intersectional approach to understand women's diverse experiences, power relations, and root causes of gender inequalities (Frangoudes et al., 2019, 2020; Kleiber et al., 2017). Overall, an intersectional lens adds further analytical value to this research by providing richer analyses that simultaneously consider gender and other overlapping structures of power. In doing so, this research seeks to understand the aspects related to women's participation in decision-making to explore direct implications for fisheries governance.

1.3.4 Interactive governance perspective

Governance offers a way to respond to the issues that undermine gender dimensions of social wellbeing, with a focus on the experiences of marginalized societal groups. Most importantly, such an approach help advance gender equality by positioning gender issues as a central topic of discussion (Kleiber et al., 2017). Improving meaningful participation of both women and men in decision-making can be a starting point to enable such processes. The analysis and reflections on governance aspects examined within this dissertation therefore are guided by the interactive governance perspective (Kooiman et al., 2005).

Interactive governance perspective emphasizes an approach where diverse governing actors (e.g., markets, state, civil society) come together in a process of deliberation and problem solving while using societal values and principles as yard sticks against which the decisions and actions can be assessed (Kooiman et al., 2005; Kooiman & Jentoft, 2009). Interactive governance is defined as "solving societal problems and creating societal opportunities through interactions among governing actors" (Kooiman et al., 2008, p. 2). The novelty in this perspective is the emphasis on the interactions that enable deliberations on what matters the most to those who have a vested interest on the issues being discussed. Furthermore, interactive approaches to governance such as partnerships, networks, and nested institutions are widely recognized for their capacity to promote participatory decision-making, value-based deliberations, and joint problem solving (Chuenpagdee & Jentoft, 2018). Most importantly, within dried fish value chain context, such approaches can bring attention to the wellbeing issues and gender inequities while opening up opportunities to improve women's meaningful engagement in decision-making. Interactive governance also aligns well with the concept of three-dimensional social wellbeing and the broad conception of values associated with value chains.

The model offered through interactive governance includes three main components — system-to-be-governed, governing system, and governing interactions (Figure 1.3; Kooiman et al., 2008; Kooiman and Bavinck, 2013). The system-to-be-governed refers to social and ecological sub-systems that are subjected to management, control, and regulation. In the dried fish context, the value chain as a whole or a selected node can therefore represent the system-to-be-governed. Diverse rules, rights, norms, and institutions that take effect along the value chain make up the governing system. Governing interactions involve the interplay, relationships, and mechanisms

between the system-to-be-governed and the governing system, which may take the form of deliberations, joint problem-solving, and communications.

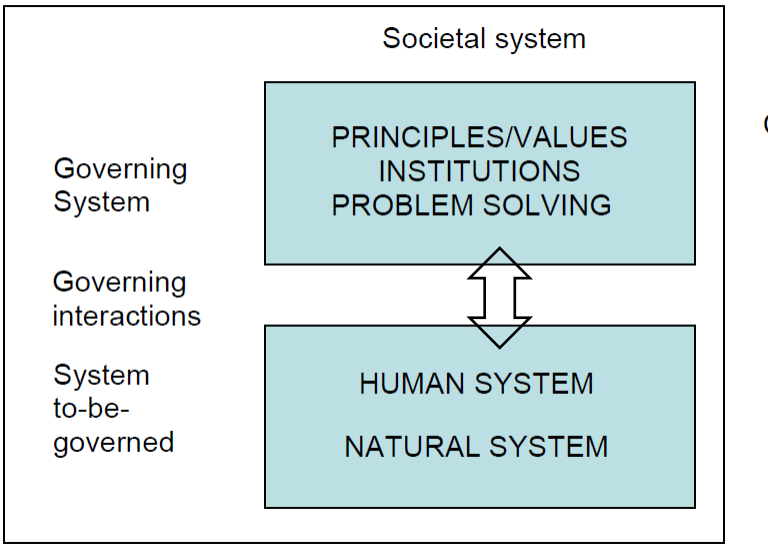

Figure 1.3: Interactive governance perspective (adapted from Kooiman et al., 2008)

Interactive governance offers the concept of 'orders of governance' — third, second, and first order of governance. Orders of governance provide a theoretically grounded basis for understanding the process of how societal problem solving can be guided by the fundamental societal values and principles (Kooiman & Bavinck, 2013). Third order governance (or meta-governance) occurs through value-based deliberations where societal values and meanings provide the yardsticks against the decisions and actions can be assessed to understand what matters to people within given contexts (Kooiman & Jentoft, 2009). Second order of governance involves institutional adjustments such as establishing new institutions or strengthening existing institutions (Kooiman et al., 2008). First order of governance encompasses day-to-day management activities such as enforcing rules and monitoring resource conditions. Through their interactive participation, diverse societal actors (e.g., community, local governments, market actors) feed their interests, values, and meanings into this problem-solving process. As a result, different activities taking place within the three orders link closely and work together to reflect the values and meanings that matter to such actors (Johnson et al., 2018; Kooiman and Jentoft, 2009).

Third order governance is particularly relevant to pursuing gender equitable outcomes because gender equality is recognized as an aspirational goal within policy and practice interventions that aim to improve coastal and fisheries-dependent livelihoods (e.g., SSF Guidelines, SDGs). Governance and decision-making agendas that seek to advance gender equality should therefore integrate gender issues as a central topic of discussion across all three orders of governance. The focus on societal values and principles during such deliberations open up an opportunity to bring more locally grounded understandings about how fisheries governance could be improved. While such deliberations can be centred on local needs and circumstances, the process also offers the flexibility to challenge and adjust gender restrictive norms and practices. For example, the study by Gallardo-Fernández & Saunders (2018) on the artisanal seaweed fishery in the Bio-Bio

Region of Chile shows that fisherwomen's collective organization into unions have helped them enter into negotiations with male-dominant local fisheries management to formally claim territorial user rights for the women to access nearshore resources. Through this process women were able to voice their interests and reinforce their traditional user rights, which provided empowering experiences for the women. As a result, not only their livelihood incomes improved but the women also challenged the gendered norms within their households as they previously needed permission from their husbands to go fishing. Men also decided the amount of time the women can spend in fishing. The recognition women gained through their new resource management roles and improved contributions to livelihood incomes also led to shifts in gender relations within the wider community and toward more gender equitable outcomes. In contrast, the study by Harper and colleagues (2018) on the experiences of Indigenous Heiltsuk fisherwomen on the central Pacific coast of British Columbia, Canada shows that the women have used their traditional leadership roles and influence within the wider community to catalyze collective action. Through this action, women brought strength to a conflict in the management of Pacific herring fishery, and actively negotiated with the colonial management system to successfully restore Indigenous community's access to the fishery.

1.3.5 Conceptual Framework

Figure 1.4 illustrates the conceptualization of key theoretical linkages among core areas of literature upon which this dissertation is grounded. Gender and intersectional experiences provide the overarching focus for the framework. The system-to-be-governed, one of the three components of interactive governance perspective, is the dried fish value chain, studied with special attention to the processing node. The three-dimensional social wellbeing has two-way linkages with the dried fish value chain as well as the governing system and governing interactions. The three orders of governance provide guidance to advance applied understanding by exploring the opportunities to improve women's meaningful participation in decision-making.

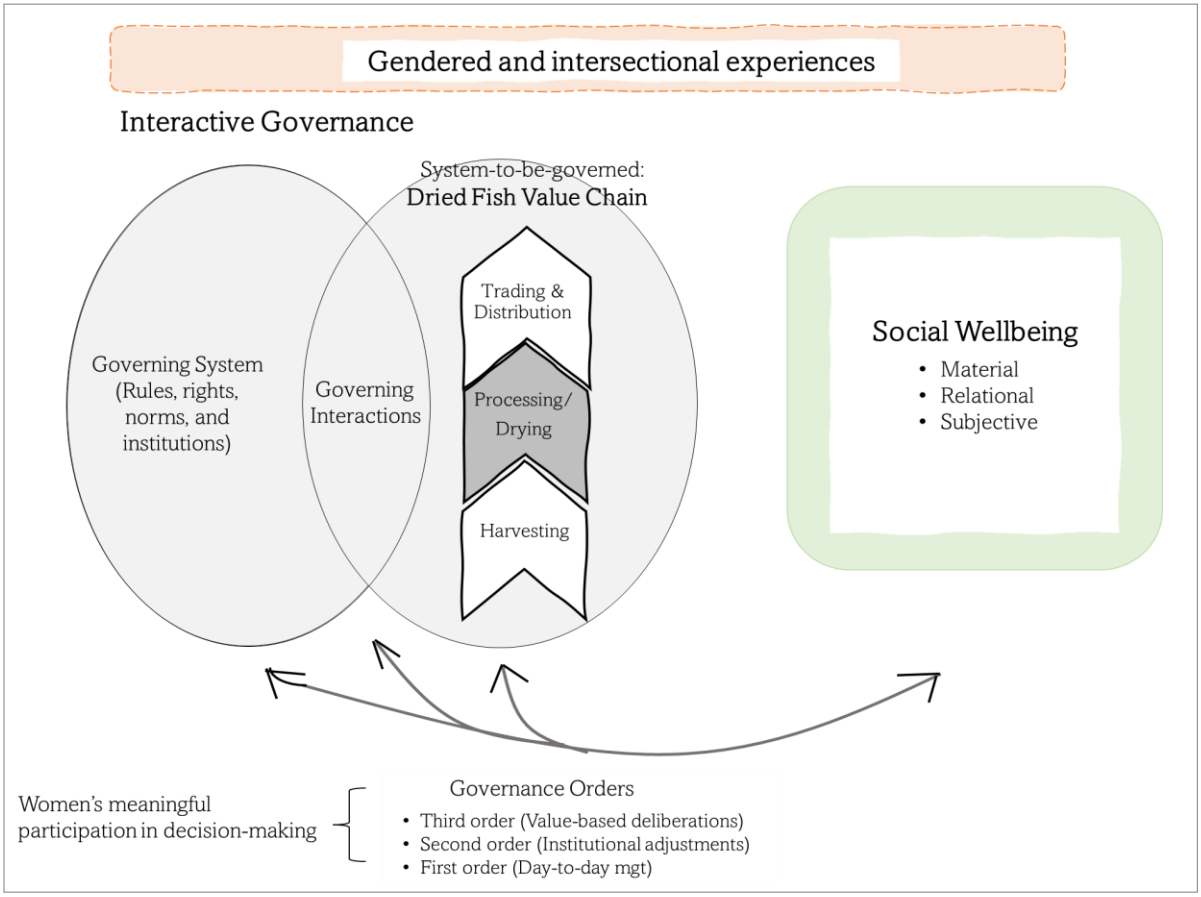

Figure 1.4: Conceptual framework of the study

1.4 Empirical context

Sri Lanka provides the empirical focus of this dissertation. The selection of Sri Lanka as a study location is strategic for three main reasons. First, Sri Lanka has a centuries long history of dried fish production in the South Asian region and a reputation for dried fish as a main food item in local diets. For this reason, Sri Lanka is among the focus countries of an ongoing six-country Research Partnership, 'Dried Fish Matters' (DFM)[2], with which this dissertation research was strategically aligned. This alignment presented a unique opportunity to undertake the field activities of this dissertation in parallel to ongoing DFM activities in Sri Lanka and with access to a well-established network of local researchers. Second, the COVID-19 pandemic spread in Sri Lanka, at the time of field research, was contained to several urban locations. The study communities were therefore accessible locally with appropriate health and safety measures in place (See Section 1.5.4 for Safety Plan). Finally, I have the expertise in Sinhala, a local language in Sri Lanka and the cultural background acquired while growing-up in Sri Lanka. I also have previous experiences in undertaking field research in coastal communities in Sri

[2] 'Dried Fish Matters' (https://driedfishmatters.org/) is a Research Partnership focused on dried fish social economies in South and Southeast Asia for enhanced wellbeing and nutrition, and funded by the Social Sciences and Humanities Research Council of Canada (SSHRC). The partnership was initiated in 2018 with key focus countries including Sri Lanka, India, Bangladesh, Myanmar, Thailand, and Cambodia.

Lanka. The language expertise, cultural background, and previous field experiences were assets to successfully meet the objectives of the empirical research component of this dissertation.

Sri Lanka is a tropical island in the Indian ocean located approximately 100 km off of the Southeastern coast of India. The island has 1770kms of coastline and an Exclusive Economic Zone (EEZ) that spans 517,000km^2. The fisheries sector of the country is considered small in scale, comprising both marine and inland fisheries. Marine fishing activities take place in coastal waters, within EEZ, and beyond in international waters. Sri Lanka also has 2600 km^2 of freshwater bodies (natural and human-made) that host inland fisheries.

Dried fish production in Sri Lanka has steadily increased over the past couple of decades from 24,000 Mt in 2000 to 64,000 Mt in 2017 (MFARD, 2020). Marine dried fish is produced along the entire coastline of Sri Lanka. A substantial inland dried fish production also occurs surrounding the perennial reservoirs, although these volumes are not systematically enumerated (Murray et al., 2000; Sugathapala et al., 2012). Despite the increased local production, about 30% of local demand is being met through dried fish imports (Weerahewa & Kodithuwakku, 2013).

The specific case study locations were selected based on the most recent district-level dried fish production statistics from Sri Lanka (See Appendix A) and were finalized in consultation with the local researchers. The criteria for selection included dried fish production volumes; evidence of women's engagement in dried fish activities; type of fishery (marine or freshwater); location (urban coastal vs. rural inland); diversity of activities (scale of operation, type of markets); proximity to the coast or reservoir; and the diversity of institutional and governance arrangements (e.g., laws and regulations, cultural norms, local institutions). The finalized locations for case studies included the coastal district of Kalutara and inland district of Kantale. The exact study communities (villages) within the selected districts were determined in discussions with the local Research Assistants. The criteria for selection were safety and accessibility based on COVID-19 risk category levels at the time of field research (low to medium risk levels for exposure as outlined in the Safety Plan).

1.4.1 Kalutara (coastal) dried fish value chain

Kalutara[3] is an urban coastal district in the Southwestern province of Sri Lanka. There are nine fisheries divisions along the coastal strip of Kalutara district. Most recent fisheries statistics report about 80 households engaging in dried fish processing. In 2020, 1,047,300 kgs of dried fish production was recorded in the entire district. This volume suggests that about 40% of the total fish harvest was processed as dried fish during that year (total fish harvest volume was 2,740,200 kgs) (MFARD, 2020).

Study data collection took place in the communities of Payagala, Maggona, and Beruwala (Figure 1.5). Dried fish value chain activities within these communities are organized as private-

[3] Kalutara borders to Western province on the north, where the commercial capital of the country Colombo is located; and to Galle district on the south, the administrative capital of South Sri Lanka. Kalutara is therefore situated within a well-developed highway, road network, and a railway system. Administratively, Kalutara has a District Secretariat while Kalutara city area and Beruwala are separately governed by two Urban Councils. Kalutara district is home to multi ethno-religious groups including Sinhala (Buddhist, Christian), Muslim, Tamil (Hindu, Christian), and other minority groups.

owned independently managed small to medium scale businesses. Salting-sun-drying is the main fish processing method in this area[4].

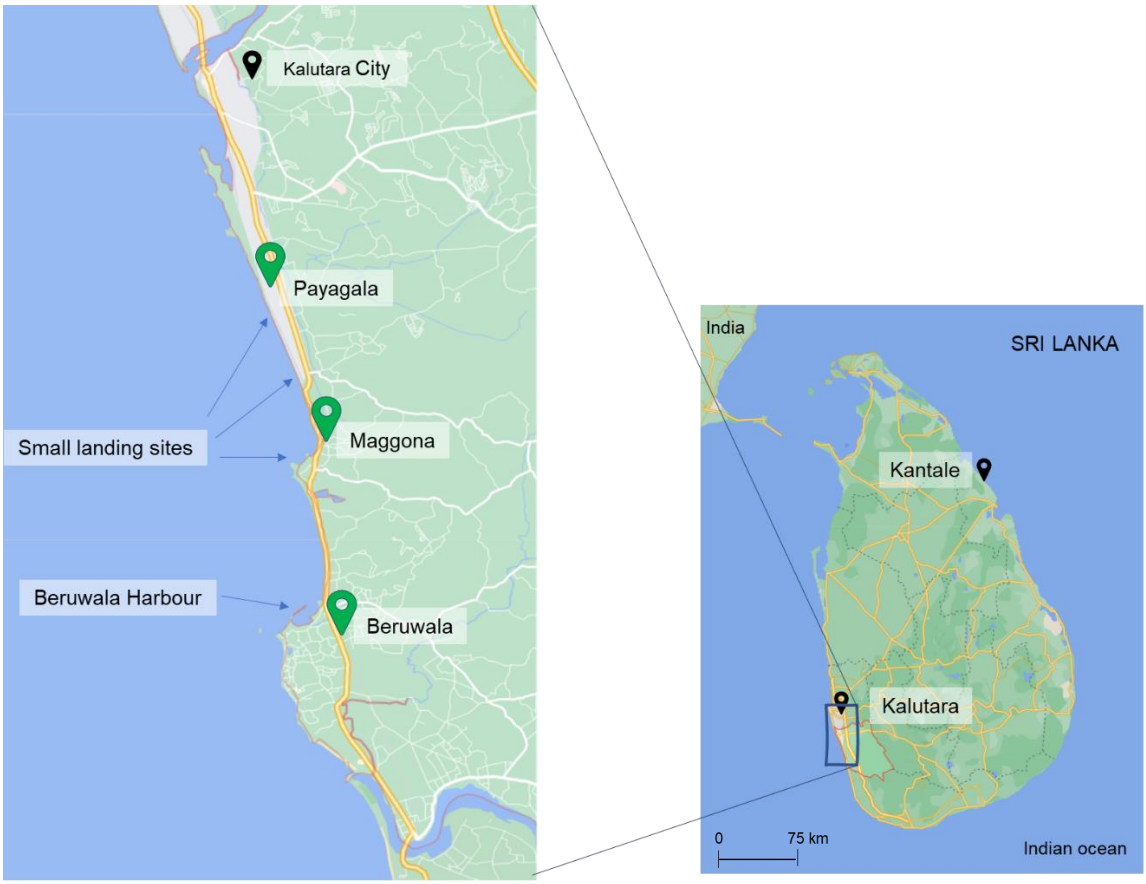

Figure 1.5: Kalutara study communities

Figure 1.6 illustrates land-based activity organization within the coastal value chain encompassing the different channels through which raw fish is procured, processed, and sold. The main source of fish is the auction at the Beruwala fishing harbour. Relatively lower-quality fish is typically sold for drying (good quality fish is sold freshly). In addition to raw fish, offshore fishing vessels also land smaller amounts of fully and partially dried fish (salted and dried at sea). Additional sources of fish used for drying include the excess harvests from traditional small boat landings, seasonal beach seines, and occasional fish stocks from other fishing harbours. It is also common practice among the local fish sellers to dry any unsold fresh fish stocks at the end of each day, although these quantities are relatively small. Commonly dried larger marine fish varieties include skipjack tuna, queen fish, yellowfin tuna, dolphin fish,

[4] Pickling of small pelagic fish (locally known as 'jaadi') is also a traditional method of fish preservation in Sri Lanka, although this method is rarely practiced today. A small quantity of fish is also processed as Maldive fish, which involves the additional steps of boiling and smoking of fish prior to sun-drying.

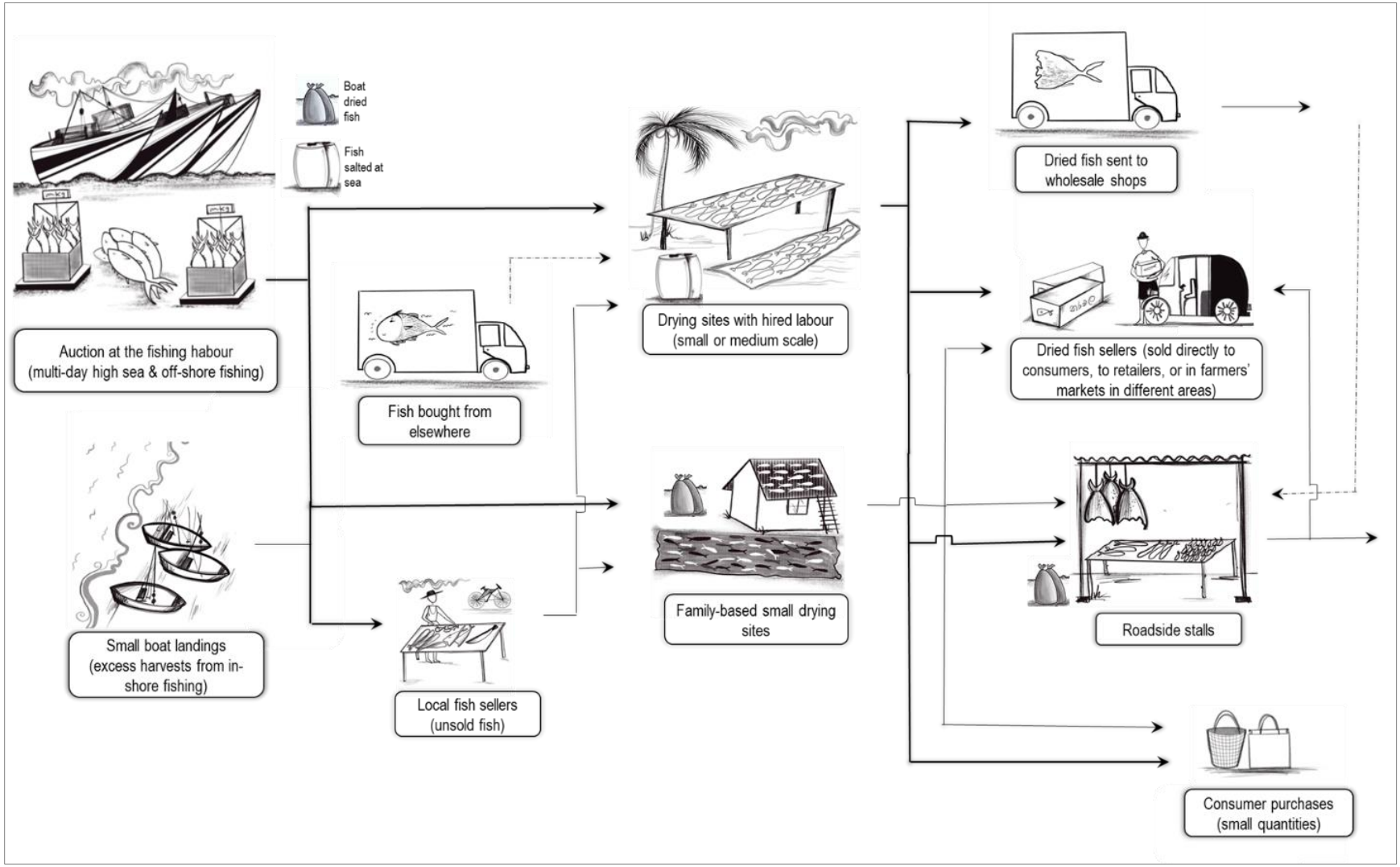

Figure 1.6: Land-based activities of the coastal value chain (Credit: Sarangi Rathnayaka)

sharks, rays, and Indian scad. Small pelagic species such as anchovies and smoothbelly sardinella are also processed widely (See Appendix B for a list of all fish varieties).

Fish drying sites are medium or small in scale and use dedicated drying spaces and hired labour. Home-based small drying operations also exist, which often take place in the backyards of family homes. Fish is dried on coir mats on the ground, on drying racks (temporary, and occasionally on house roofs or large rocks at the beach. Dried fish is sold through several channels — wholesale shops (larger stocks), small traders who buy and sell, nearby roadside dried fish stalls (retail), or directly to the consumers.

1.4.2 Kantale (inland) dried fish value chain

Kantale[5] is a rural inland area in the Trincomalee district of Northeastern Sri Lanka. The study communities included Agbopura, Wewsirigama, Jayanthigama, Suriyapura, Mollipathana, Galmitiyawa, and Seeni Kamhala (Figure 1.7).

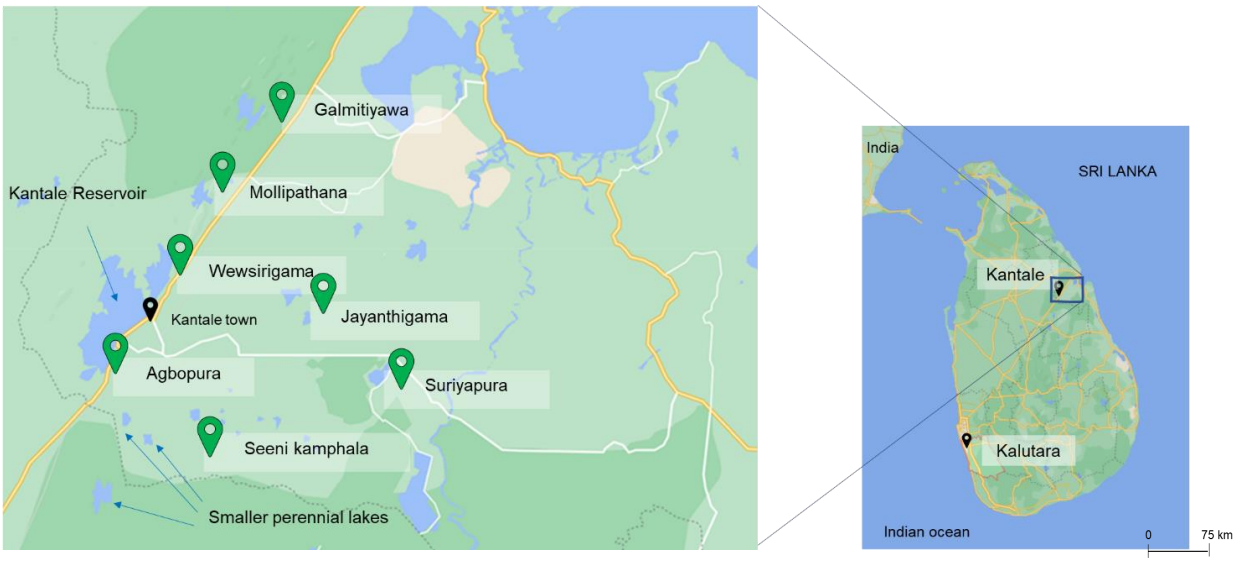

Figure 1.7: Kantale study communities

Kantale is locally well-known for artisanal salted-sundried and smoked fish products. Kantale reservoir[6], an ancient lake built for irrigating rice lands, is the main source of fish. In addition,

[5] Kantale area is administratively governed by a Divisional Secretariat located in Kantale town. The town and Agobopura (bordering the reservoir) are situated on a main road that connects Trincomalee town, a main coastal fishing area to the country's regional produce markets. Kantale is home to a majority population of Sinhala Buddhists, Muslims, Tamils, and other minority groups. While human settlements have lasted for centuries in Kantale area, there had been a government-sponsored resettlement scheme in the 1970s which has led to a significant population expansion in the area.

[6] Kantale reservoir is an ancient human-made lake built by King Aggabodhi II during 604-614 AD. The purpose of the lake was to irrigate rice lands with Mahaweli River as the main source of water and through a system of interconnected smaller lakes and steams. The lake has been renovated and is currently maintained by the Irrigation Department of Sri Lanka. Although artisanal fishery has lasted based on the Kantale reservoir for centuries, the

several smaller perennial and seasonal lakes in the area also provide many families with access to fishing. Drying activities are therefore dispersed across the villages surrounding these water bodies. The reservoir fishery is culture-based (e.g., tilapia and carp) whereas the smaller lakes harbour both cultured and wild fish varieties (e.g., stinging catfish, pearl spot cichlid) (See Appendix B).

The dried fish value chain in Kantale is organized as a backyard community-based fish drying operations. Figure 1.8 illustrates the activity organization, which is largely based on the culture-based reservoir fishery. Usually, the smaller-sized fish and juveniles are processed as dried fish while larger-sized fish is sold to fresh fish sellers. Most processors use their own fish catches for drying. The processors who handle larger quantities buy fish at the landing. Another way of accessing fish for drying is to bulk purchase the entire fish stock in a lake(s) with payments made to the Village Farmers' Association, which 'own' the lake as its primary purpose is to irrigate rice lands. A lake is typically purchased by one processor and the drying operation is seasonal lasting about two to three weeks until the entire fish stock is harvested, except the fingerlings. All local fresh fish sellers also dry if they have any unsold fish at the end of each day.

Sun drying is done on home-made temporary wooden drying structures with wire meshes, or on metal sheets that are used as roofing materials. Although salting-sun-drying is the most popular processing method, some processors smoke larger-sized fish using wire meshes and firewood. Most processors sell their dried fish to door-to-door collectors (most collectors belong to neighbouring communities) while some prefer to sell to roadside dried fish stalls within the village or to retail shops in distant places. Some processors and collectors load boxes of dried fish to lorries passing through this area that transport marine fish/dried fish from northeastern coastal areas to regional produce markets in the country.

1.5 Research design, methodology, and methods

1.5.1. Study design and approach to data collection

This section outlines the overall methodological approach in achieving the objectives of this dissertation (Section 1.2) and the justifications for methodological choices. Chapters two, three, and four each include a methods section specific to each manuscript. This study employs a participatory and qualitative design. A participatory approach is applicable as the research attempts to examine gendered dimensions of social wellbeing issues in the dried fish context by drawing upon diverse perspectives, ideas, and experiences of the people participating in dried fish value chains (Creswell, 2014; Walliman, 2011a). A qualitative design suits the study as much of the inquiry involves the exploration and understanding of different study phenomena such as value dimensions, social and relational interactions, and contextual underpinnings that shape realities. Qualitative data can help grasp rich insights into such aspects, which can only be understood with reference to the meanings and purposes ascribed by humans to what they do (Guba & Lincoln, 1994).

reservoir has been identified as an economic opportunity for aquaculture during the resettlement period. Since then, the lake fishery has been developed under the purview of National Aquaculture Resources Development Agency of Sri Lanka.

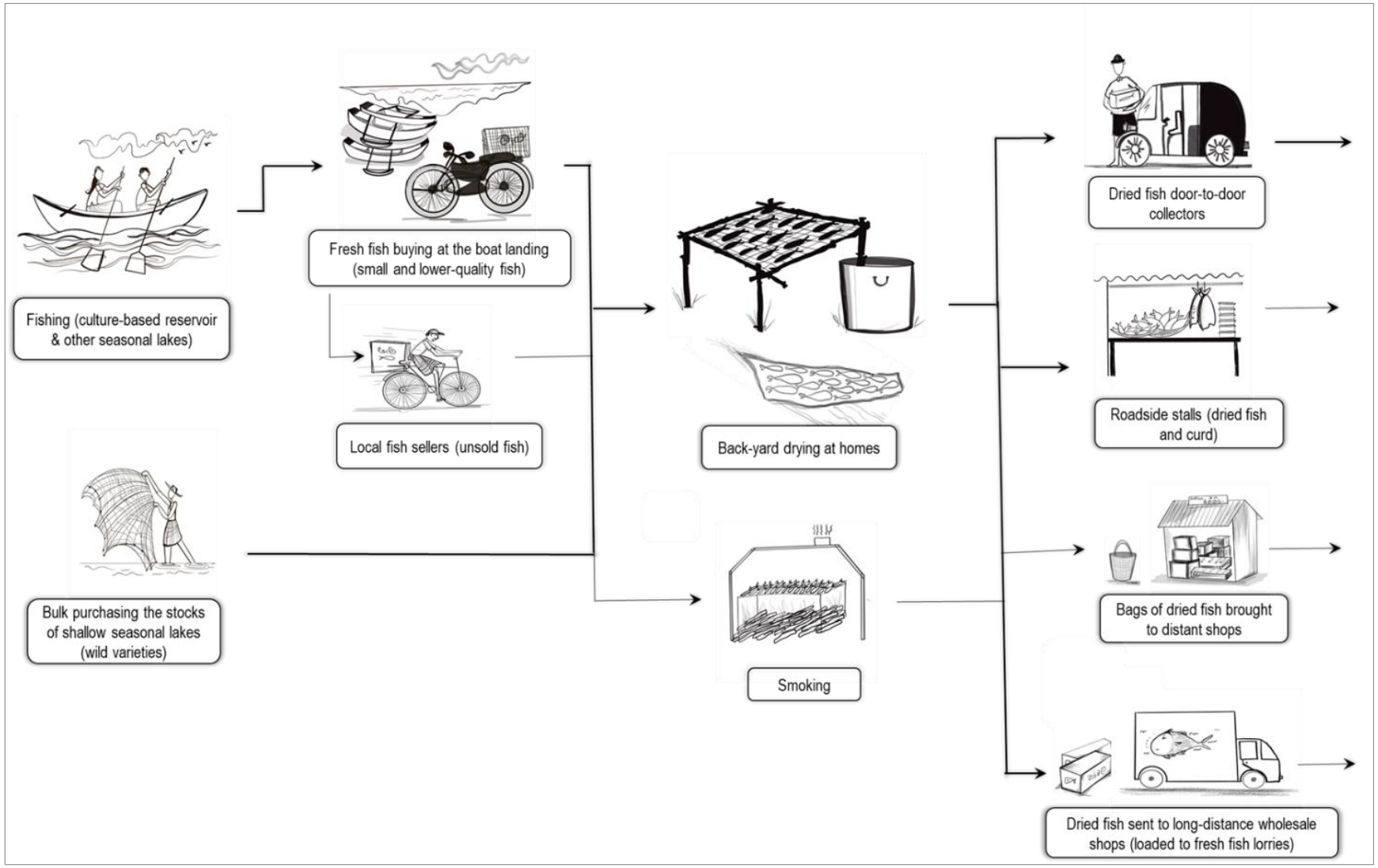

Figure 1.8: Land-based activities of the inland value chain (Credit: Sarangi Rathnayaka)

From a philosophical standpoint, knowledge claims are shaped by fundamental assumptions (or paradigms) about the nature of reality that underpin the inquiry (i.e., ontology), ways of knowing (i.e., epistemology), and the subsequent choice of methods (Guba & Lincoln, 1994). The knowledge claims made through this dissertation primarily align with a paradigm referred to as constructivism. Constructivism assumes the existence of multiple realities through which one can make sense of the world (Guba & Lincoln, 1994). Constructivists seek to understand the real world through subjective meanings of their experiences, recognizing that such meanings are varied, multiple, and often are socially negotiated (Creswell, 2014; Guba & Lincoln, 1994). The goal of inquiry, therefore, is meaning making of the phenomenon under study by relying on participants' views while also recognizing how contexts can shape such views (Creswell, 2014; Crotty, 1998). The alignment with constructivist paradigm is apparent in the qualitative approach I have taken, empirical groundings across the manuscripts, and the largely inductive reasoning to examine gendered dimensions of wellbeing experiences.

In addition, the study also include some knowledge claims that can be closely associated with postpositivism, another knowledge paradigm that is somewhat synonymous with the scientific method (Creswell, 2014). Postpositivism seeks to identify and assess cause-effect relationships through observation and measurement (Guba & Lincoln, 1994). Therefore, the research problems studied by postpositivists "reflect the need to identify and assess the causes that influence outcomes, such as found in experiments" (Creswell, 2014, p. 36). In this study, postpositivism is reflected through my use of quantitative methods, in particular the systematic scoping review of women's experiences in SSF governance where I employ standard guidelines on Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA guidelines). In doing so, I apply a deductive approach through a search protocol to identify, scope, and assess the body of literature at the intersection of gender and SSF governance. In this review, a combination of both deductive (i.e., application of a set of pre-determined codes) and inductive approaches (i.e., open coding that allows for patterns to emerge) were used in coding (Creswell, 2014). Results in relation to state of the literature were gathered through deductive coding (Research Question 1), whereas the variables on other core aspects being studied were extracted through inductive coding (Research Questions 2 and 3).

From an epistemological perspective, the study has a strong interpretive element, where the knowledge generation occurs through a process of interpretation and sense making of the phenomenon under study (Brown, 2008; Denzin, 1994), with the aim to develop 'thick descriptions' to convey findings (compared to commonplace descriptions) (Creswell, 2014). A limitation of this approach is the subjectivity as such interpretations are shaped by the researchers' own background, perceptions, and experiences (Creswell, 2014; Yin, 2014). To account for this, a critical reflexive stance has been maintained throughout the study through an ongoing process of self-reflection on researcher's positionality and its impact on the process of research (Hopkins, 2007; Yin, 2014).

In achieving the purpose of the study, first, a conceptual framework was developed to integrate gender within the study of dried fish value chains to address the limitations associated with the existing frameworks to gender-based value chain analysis. In doing so, key theoretical linkages were conceptualized among core literature areas — value chains, social wellbeing, and intersectionality. The resulting framework was grounded using dried fish case examples drawn from literature. The novel integrated framework broadened the conceptual and analytical scope of gendered analysis of dried fish value chains and framed the empirical research that followed.

Next, to understand how gender is treated in SSF governance literature and to advance applied understanding of women's contributions to governing SSF, a systematic scoping review was conducted to appraise and synthesize global empirical literature at the intersection of gender and SSF governance. A systematic scoping review aims to critically appraise the state of an emergent body of literature, as opposed to conventional systematic reviews which are typically used to appraise well-established bodies of literature (Berrang-Ford et al., 2015; Levac et al., 2010). The review was conducted in compliance with standard guidelines on Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA guidelines) and employed a rigorous and replicable search strategy to survey the relevant body of literature (Arksey & O'Malley, 2005; Moher et al., 2009). Section 3.4 outlines the detailed methodological approach. The review revealed the gap in the empirical examination of women's engagement in SSF governance, yielded a typology of tasks performed by women, and generated broader insights that informed the exploration of opportunities to improve women's participation in decision-making. The review responded to recent calls for new knowledge to inform policies and targeted action aimed at improving gender equality, including their involvement in decision-making (See Frangoudes et al., 2020; Kleiber et al., 2017; Lawless et al., 2021).

To address the critical scholarly gaps on gendered dimensions of social wellbeing within the study of dried fish value chains, additional empirical research was designed using the case study methodology as the main research strategy (Yin, 2014). Case study methodology is widely recognized as an effective form of inquiry to understand complex issues in real world settings (Yin, 2014). Case study research is defined as "a qualitative approach in which the investigator explores a bounded system (a case) or multiple bounded systems (cases) over time through detailed, in-depth data collection involving multiple sources of information…" (Creswell et al., 2007, p. 245). The study design aimed to develop multiple case studies, each reflecting study context (community) specific social, ecological, cultural, institutional, and economic underpinnings (Creswell et al., 2007; Stake, 1995). Each case study served as a separate unit of analysis (Harrison et al., 2017). Comparative assessment across cases was an explicit goal of the study design to allow for broader generalizations of study findings (Yin, 2014).

1.5.2 Adaptations to COVID-19 pandemic

In adapting to the fieldwork limitations and travel restrictions due to COVID-19 pandemic, a remote field data collection plan was developed in consultation with local research partners. The remote data collection plan included two main components: in-person field interviews conducted by locally hired research assistants and virtual/phone interviews conducted by myself. In-person field interviews were critical to successfully achieve the objectives of this research due to lack of documented records on main target study participants (i.e., dried fish processors) or their livelihood activities. Therefore, the target study participants can only be accessed through in-person visits to the field. Furthermore, gathering of contextual information through field visits (e.g., work settings, daily routines, interactions, local norms/traditions, and customary practices) was crucial to develop rich profiles and properly contextualize the cases.

All field activities were led, coordinated, and monitored remotely by myself using online and phone-based platforms. As mentioned before, field activities were undertaken in parallel to the activities of an ongoing six-country research partnership on dried fish social economies, where Sri Lanka is a country of focus. Three Master's students, two upper-year undergraduate students,

and four Diploma students, who resided in or closer to the study communities were recruited as local research assistants. Following recruitment, research assistants were trained, through a series of comprehensive training workshops, to be able to properly administer data collection instruments and maintain accuracy and reliability during the process. While the students undertook studies in various Social Science disciplines and were affiliated with local universities, Master's students led field activities while other students took on supportive roles. All field activities were conducted in compliance with the Ethics Protocol of the field research approved by the University of Waterloo's Office of Research and the Safety Plan for Minimizing Exposure to COVID-19 during Human Participant Research (See Section 1.5.4).

Field data collection took place from January to October of 2021. An initial scoping phase was undertaken through field visits and brief interviews with selected key informants to determine specific study communities, develop a preliminary understanding of fish processing activities, and pilot test the interview protocols developed for the study. Data collection methods are explained in detail below.

1.5.3 Data collection methods

Data collection activities were implemented with the aim to develop two properly contextualized case studies. In achieving this aim, several converging lines of inquiry were initiated while building on multiple sources of evidence to gather qualitative data (Harrison et al., 2017). Remote field data collection methods included a documents review, in-person field interviews, and virtual key informant interviews.

1.5.3.1 Document review

A comprehensive document review was undertaken to explore and develop an in-depth understanding of the current state of Sri Lanka's dried fish sub-sector and its position within fisheries more broadly. The review included both published articles and grey literature, with special attention to aspects related to production, consumption, and trade patterns; value chain organization; evidence for gendered participation; historical accounts on dried fish; institutional and governance arrangements; and key challenges and issues. Documents were sourced in two steps — through an online search and through materials sourced from local researchers and field-based organizations. The grey literature for example included national fisheries and nutrition policies, laws, fisheries guidelines, gender-oriented development frameworks, ministerial reports, non-profit-issued reports, and newspaper articles. Official fisheries statistics were sourced from local researchers (granular data) as well as through various publicly available sources (national statistics), such as Sri Lankan government-issued reports and the United Nation's Comtrade database[7].

While the document review revealed that the existing body of knowledge is patchy at best, the review facilitated a general understanding of the current state of Sri Lanka's dried fish sector and

[7] UN Comtrade (https://comtrade.un.org/) is a repository of global cross-border import and export statistics. The repository provided an alternative source for dried fish trade data for Sri Lanka, although the database included selected dried fish items traded such as seer and queenfish to countries like Australia, Canada, Singapore, and Kuwait.

the wider socio-economic, political, and historical context that the value chains are embedded within (e.g., policy shifts, rural/urban development interventions, trade interventions, population shifts/migrations). Most importantly, the review pointed to the pertinent issues and knowledge gaps that require attention to improve the wellbeing of those who participate in dried fish related activities. In addition, the review findings were helpful in determining the key informants for interviews.

1.5.3.2 Systematic scoping review

A systematic scoping review was undertaken to assess peer-reviewed literature on how women experience, shape, and influence SSF governance. As mentioned earlier, this review employed PRISMA Guidelines to apply a rigorous and replicable search strategy to cover all relevant literature at the intersection of gender and SSF governance while mitigating potential sources of bias (Arksey & O'Malley, 2005; Moher et al., 2009). Two comprehensive databases — SCOPUS and Web of Science — were searched to gather literature using a search protocol developed through an iterative approach to capture all literature relevant to the research questions formulated for the review. Section 3.4 outlines the systematic review methodology in detail.

1.5.3.3 In-person field interviews

In-person field interviews (n=70) were conducted with dried fish processors to gain in-depth insights into gendered dimensions of wellbeing aspects that are important to them. These interviews were conducted by the local research assistants and were guided by a semi-structured interview protocol (Latour, 1999; Walliman, 2011a), which was simplified and translated to local language for successful administration by the research assistants (See Appendix C). The interview protocol had a combination of closed and open-ended, non-leading guiding questions aimed to facilitate a free-flowing conversation as the interviews progressed (Latour, 1999). The guiding questions were designed to elicit certain types of responses such as the livelihood activities, resource use, gender relations, wellbeing dimensions, interactions with governing actors, institutional affiliations and networks, and viewpoints on governance outcomes (both real and potential).

Due to lack of documentation on dried fish processors, a combination of snowball and purposive sampling techniques were used during study recruitment (Robinson, 2014; Walliman, 2011a). The snowball sampling method was used to identify the initial study participants followed by purposive sampling. During snowball sampling, initial participants were selected by speaking to community members and observing fish drying sites in the field. Each initial participant was requested to suggest additional participants whom they perceived as relevant and knowledgeable. A shortcoming in the use of this sampling approach is its potential for bias which may result in a relatively homogeneous sample of respondents who share similar roles and perspectives. The potential bias was mitigated by consulting multiple sources to identify initial respondents and also by initiating multiple snowballs. The approach to participant recruitment shifted to purposive sampling method as the study progressed. The purposive sampling method helped improve sample diversity in terms of gender representation as well as dried fish activity organization (e.g., people involved in different scales of dried fish production, people with different livelihood profiles). The concept of saturation was used as the guiding principle in

deciding the exact sample size (Mason, 2010). The field dataset based on inland DFVC saturated more quickly because the inland DFVC is relatively less complex than the coastal one.

Table 1.3 presents the sample overview and the nature of study participants' engagement in dried fish value chain activities. Comparatively lower representation of women in the sample from the coastal study community reflects the lesser number of women participating in the coastal DFVC compared to men. In the inland community, however, both women and men occupy activities across the DFVC. This is reflected in the relatively similar number of women and men in the sample.

Table 1.3: Sample overview

Coastal community (n = 40)	No. of participants	Inland community (n = 30)	No. of participants
Gender representation in the sample (as self-identified by study participants)			
Men	28	Men	17
Women	12	Women	13
Type of work (at the time of interview) and gendered nature			
Owners of fish drying operations	16 (All men)	Owners of fish drying operations	28 (Three were run by women alone while others were family-based operations)
Workers at fish drying sites	18 (Eight women)	-	-
Dried fish sellers (roadside dried fish stalls or home-based sales)	6 (Three women)	Dried fish sellers (roadside dried fish stalls)	2 (Both were women)

Interviews were conducted in participants' work settings (outdoor fish drying sites) and the duration of each interview varied between 40 – 90 minutes. Although initially hesitant, the processors were proud to share their perspectives and experiences and appreciated the efforts to document and study dried fish related activities. All interviews were conducted in *Sinhala* local language (myself and the community researchers are fluent in this language). Upon receipt of consent from the participants, the interviews were digitally recorded (audio) and transcribed in English for analysis. The contact details of participants were separately recorded if they consented to be contacted later for study-related data verification and follow-ups. Detailed field notes were also taken by the research assistants while I maintained a field diary/activity log. In addition, photographs, voice memos, and video clips were taken portraying work settings, with participants' consent, and in public spaces (e.g., fish markets, landing sites). These materials were carefully curated throughout the field research period.

1.5.3.4 Key informant interviews

Key informant interviews (n=19) were conducted by the researcher using online and phone-based platforms (e.g., WhatsApp, Skype, Zoom) or over the phone depending on the participant preferences. An informant is "just someone who knows a lot about and is willing to chat" (Stake, 1995, p. 67). Therefore, a range of key actors, especially the stakeholders who have influence over the institutional and governance context of dried fish were targeted for these interviews (e.g., community leaders, fisheries managers, harbour officials, and development officials). The key informants were particularly helpful in probing for additional governance issues, some of which did not adequately surface during field interviews with dried fish producers. Timeline-wise, the key informant interviews (virtual) were scheduled after the completion of a substantial amount of field interviews, with the aim to verify the emerging narrative based on field interviews. The key informant interviews, therefore, both supplemented and validated the emerging study data set.

Key informants were identified using a purposive sampling method by sourcing their contact information through the research assistants and local research partners. An open-ended interview protocol (See Appendix D) was used during these interviews to gather information by systematically asking a set of pre-determined questions to prompt conversation (Walliman, 2011a). The aim was to gather contextualized information on real and potential key informant roles and interactions in creating governance opportunities that support the social wellbeing of women and men. Specific interview questions included institutional mandates, priorities, and directions; existing policies, programs, and investments; attitudes and perceptions in relation to gender equality; opportunities to enable joint problem-solving; and challenges and issues as perceived by them. The interviews were digitally recorded upon receiving consent from the key informants. Permission was also sought during these interviews to access relevant reports, statistics, and other documentation to supplement the dataset.

1.5.4 Ethical and COVID-19 related safety considerations

The Ethics Protocol for the field research reported in this dissertation complied with the standard guidelines of the latest edition of Tri-Council Policy Statement on Ethical Conduct for Research Involving Humans (TCPS2)[8] that guide Canadian researchers. The formal ethics clearance process was through the University of Waterloo's Office of Research Ethics (ORE) in accordance with TCPS2. The approved Ethics Protocol for the field research (ORE # 41888) addressed all relevant considerations and risk mitigation including, informed consent during participants recruitments; protecting privacy, anonymity, and confidentiality; data storage and password protection; reciprocity, trust, and relationships; and associated responsibilities of the researcher and research assistants (See Appendix E for the approval and consent forms). The initial Ethics Protocol was amended twice during the study period to ensure compliance with COVID-19 related safety measures, and to adjust the field interview procedures to be more context-appropriate and respectful of the study participants.

[8] Tri-Council Policy Statement on Ethical Conduct for Research Involving Humans (https://ethics.gc.ca/eng/policy-politique_tcps2-eptc2_2018.html) is the current policy that guide Canadian researchers, in Canada and aboard, in the conduct of research involving human participants. The policy is jointly implemented by Canada's three federal research agencies – the Social Sciences and Humanities Research Council of Canada (SSHRC), the Natural Sciences and Engineering Research Council of Canada (NSERC), and the Canadian Institute of Health Research (CIHR).

Field research was conducted in compliance with a COVID-19 Safety Plan to minimize potential exposure to COVID-19 during in-person field activities and was approved by the University of Waterloo's Office of Research (See Appendix F). In addition, public health guidelines and advisories issued by the health authorities in Sri Lanka were closely monitored during the fieldwork period and additional precautionary measures were implemented in collaboration with local research assistants.

1.5.5 Positionality considerations

Researcher positionality is understood as how a researcher positions themselves within the research process and findings. Positionality has a profound ability to shape knowledge production process (e.g., research design, methodological choices, data interpretation, ethical practices) through manifestations of power and subjectivity (Catungal & Dowling, 2021; Hopkins, 2007). Maintaining critical reflexivity is therefore of crucial importance during the research process (Creswell, 2014; Hopkins, 2007; Yin, 2014). Reflecting on positionality involves a process of self-conscious scrutiny of oneself as a researcher, including their identities, political aspects of life, and previous (non)research experiences (Datta, 2018; Hopkins, 2007; Moser, 2008; Smith, 2021). Researcher positionality is also fluid across time and place (Smith, 2021).

I am a woman of color, born and raised in Sri Lanka, and presently based in Canada. My approach to research and learning is shaped by my lived experiences, academic training, and work experiences acquired in both developed and developing settings. Throughout the research process, I became critically aware of various elements of my identities and positionality as a researcher and how they shape and influence the research process and practices. For example, building relationships with the study communities meant having to carefully navigate the insider-outsider perspectives brought about by the power and social position associated with my affiliation with a Canadian-based university despite my Sri Lankan upbringings. These encounters and reflections enabled a self-aware and transformative process where I endeavoured to tackle my taken-for-granted assumptions and bias about how I relate to the researched (i.e., the communities I collaborate with) and understand their perspectives. I am committed to bring an action-oriented, feminist, and a decolonized approach to my research with the aim to foster respectful and reciprocal relationships with study communities.

1.5.6 Validity, reliability, and generalizability of findings

Validity or the accuracy of data collected and the reliability (or consistency) of procedures employed are considered key criteria for assessing the quality and credibility of qualitative research findings (Creswell, 2014; Whittemore et al., 2001). This research adopted the methodological strategies outlined in Table 1.4 to address the main validity and reliability related concerns. In addition, the systematic literature review employed a step-wise process in compliance with PRISMA Guidelines, the existing standard guidelines for systematic reviews. Methodologically, the review was done using a rigorous and replicable search strategy to cover all literature relevant to the study purpose while also mitigating potential sources of bias (Arksey & O'Malley, 2005; Berrang-Ford et al., 2015; Moher et al., 2009).

Table 1.4: Key strategies adopted to address validity and reliability concerns*

Common concerns related to validity and reliability	Key methodological strategies
Positionality and personal biases of the researcher and research assistants	• Critically reflected on my own identities and positionality, experiences, potential bias, and assumptions and how those can manifest in research processed and practices. Took measures (e.g., representative and inclusive sampling, topic guides) to minimize such manifestations with the aim to maintain an objective view on the phenomena being studied. • Engaged in open conversations with the research assistants on their potential biases and assumptions that may influence study data and took measures to minimize such influences. • Acknowledged sampling biases and ongoing reflections on methods to ensure sufficient depth and relevance during remote data collection and analysis.
Ability to capture participant perspectives clearly and accurately	• Recruited several students in Social Sciences disciplines as research assistants to ensure that they have the skills to properly administer the interview guides and make sampling choices. Master's students led field activities whereas upper-year undergraduate students and Diploma students took on supportive roles. • Conducted a series of well-planned training workshops prior to commencing data collection to ensure that the research assistants are clear on the purpose of research, data collection requirements, and the need to seek clarifications from the researcher on an ongoing basis. • Reinforced the need to ensure that interview participants should be well informed on the purpose of research and how the data will be used. • Closely monitored all remote field activities through frequent one-on-one and group briefings to provide feedback and seek verification to improve data quality, accuracy, and adherence with study protocols • Data was triangulated using multiple data sources (emerging field data, key informant interview data, discussions with local researchers) and using a qualitative data analysis software.
Possibility of multiple interpretations of data	• Demonstrated clarity in terms of the thought process during data analysis and subsequent interpretations. • Repeatedly revisited interview transcripts and voice recordings during coding and analysis. • Engaged in discussions with other local researchers with expertise in similar methodologies to uncover taken-for-granted biases and assumptions. • Solicited feedback from local researchers to validate interpretations, emerging findings, and themes.

Ability to maintain consistency and trustworthiness of the methodology	• Documented all decisions taken by the researcher during the entire research process to ensure clarity and transparency in methodological choices. • Took measures to ensure thorough record keeping of all decisions taken by the research assistants during field visits.
Generalizability of findings to other contexts	• Developed two case studies to ensure broader generalizability of results. • Developed detailed accounts on study communities by gathering information from various sources to facilitate a thorough assessment of relevance and applicability of findings to other contexts.

* Developed based on Noble and Smith, 2015 and Whittemore et al., 2001

1.5.7 Data validation, coding, and analysis

I employed several strategies to validate data and support rigorous analysis. For example, clarifications were sought, and the data was first validated through follow-up calls with study participants. Key informant interviews were also used to validate the field dataset. Preliminary data analysis commenced concurrently with the field interviews (Walliman, 2011b). Emerging findings and themes were discussed with local researchers for further validation and to ensure accurate interpretation. The remote interactions with study participants, digital recordings from the field (e.g., photographs, video clips, voice memos), and the review of documents sourced during interviews and through online search further enriched the qualitative dataset. The document review particularly helped understand the community settings beyond fisheries (e.g., population statistics, socio-economic profiles, livelihood portfolios, economic sectors, and resource conditions) and the legal and regulatory background (e.g., laws, policies, guidelines applicable to coastal lands use) helped frame the governance issues that did not adequately surface during field interviews.

Interview transcripts from both semi-structured field interviews and open-ended key informant interviews were analyzed using NVIVO-12 Plus, a qualitative data analysis software. Qualitative content analysis was used to extract key findings. Content analysis is a widely used method in research involving textual data (Hsieh & Shannon, 2005). An inductive approach was used to perform qualitative content analysis to achieve the objectives of the research. The inductive approach allows for the codes to emerge from unstructured original dataset (open coding) during analysis compared to the deductive approach, where a predetermined set of codes are applied to the original dataset (Creswell, 2014). Content analysis produced a set of codes, themes, and patterns that reflected both the latent (i.e. discovering underlying meanings of words or the content) and manifest (i.e. frequency of appearance of a particular word or content) meanings of textual data (Hsieh & Shannon, 2005). The resulting code set for textual (interview) data for example included demographics, livelihood activities, resource use, three-dimensions of social wellbeing, institutional affiliations, types of governance interactions, and real/potential governance outcomes. The emerging codes were systematically organized to facilitate a development of a gradual understanding, further analysis, and extraction of key findings. This process was sequential as it started with the framework, the systematic review, and then the coding process associated with the empirical work presented in the third manuscript.

The systematic literature review identified, categorized, and assessed 54 papers that comprised the body of literature at the intersection of gender and SSF governance. These papers were also analyzed using a qualitative coding approach to extract variables and data relevant to the purpose of the review using NVivo 12 Plus. A combination of both deductive (i.e., applying a set of pre-determined codes) and inductive approaches (i.e. open coding that allows for patterns to emerge) were used in coding (Creswell, 2014). Section 3.4 outlines the coding approach in detail.

1.6 Organization of dissertation

The forthcoming chapters of this dissertation include three standalone manuscripts and a concluding chapter. These manuscripts address distinct questions and are designed to build on each other to achieve the overarching objectives of this dissertation. Some inevitable overlaps thus exist among the manuscripts in relation to theoretical foundations, methodological approaches, and empirical groundings.

Chapter Two addresses the first research objective and presents a manuscript that develops a novel framework to guide the conceptual and analytical direction of this study. More broadly, this framework also offers guidance to ongoing scholarship in the field. In doing so, the manuscript critically evaluates the limitations in current approaches to study gender within value chain literature, establishes the need to broaden the scope of value chain research towards developing a 'thick description' gender, and conceptualizes the theoretical linkages to integrate gender within the study of dried fish value chains. This manuscript is titled "Linking social wellbeing and intersectionality to understand gender relations in dried fish value chains" and was published in *Maritime Studies* (https://doi.org/10.1007/s40152-021-00232-3).

Chapter Three responds to the second research objective through an original and empirical systematic scoping review. The review responded to a pertinent gap in applied SSF scholarship and synthesized current empirical evidence on how women experience, shape, and influence SSF governance globally. Taking guidance from interactive governance perspective, the review identified, characterized, and assessed the scope of the relevant body of literature; developed a typology of governance tasks performed by women; and drew broader insights based on the patterns emerged across the literature to highlight the implications for improving women's meaningful participation in SSF governance. The manuscript is titled "Women's experiences in influencing and shaping small-scale fisheries governance" and was published in *Fish and Fisheries* (https://doi.org/10.1111/faf.12672).

Chapter four addresses the third research objective and presents the findings of the empirical research building on two comparative dried fish value chain cases in Sri Lanka. In doing so, the manuscript advances scholarly understanding on how people participate in and benefit from dried fish value chains and explores the implications for fisheries governance. The manuscript is titled "Gendered dimensions of social wellbeing within dried fish value chains in Sri Lanka" and is being finalized for submission to a Special Issue on Artisanal & small-scale fisheries on the occasion of the Year of Artisanal Fisheries and Aquaculture 2022 in *Reviews in Fish Biology and Fisheries*.

The concluding chapter revisits the purpose and objectives of this dissertation and summarizes the key findings from the three manuscripts. Next, the chapter highlights the significant and original contributions made to the advancement of knowledge with emphasis on conceptual,

empirical, and applied insights. The chapter concludes with a discussion on study limitations and areas for future research. All work cited in this dissertation are presented as a list of references at the end, itemized in alphabetical order. The appendices referred to within this introductory chapter are included at the end of the dissertation as a series of appendices.

Chapter 2

Linking social wellbeing and intersectionality to understand gender relations in dried fish value chains [9]

2.1 Chapter summary

The purpose of this chapter is to advance a comprehensive framework to integrate gender within the study of dried fish value chains. We do so by linking three complementary areas of scholarship: social wellbeing, intersectionality, and value chains. Social wellbeing literature emphasizes the range of benefits generated through dried fish value chains (e.g., social ties, cultural values, and material goods). An intersectional perspective, however, brings attention to the relational structures (e.g., caste, ethnicity) that intersect with gender to uniquely position women and men within value chains in relation to the benefits they can generate. In developing this framework, a key point of departure from existing literature is the notion of relationality (i.e., the creation of experiences in relation to one another within a given context). The value chain analysis further reveals how such unique positions determine the wellbeing outcomes women can generate through their participation in value chains. We demonstrate the contribution of this novel framework by applying it within dried fish case examples from Bangladesh, Tanzania, and Sri Lanka. In doing so, we systematically unpack how gender intersects with other structures of oppression and perpetuate gender inequity. Our framework thus results in a 'thick description' of gender relations operating in dried fish value chains. The insights that emerge can inform relevant policies, decision-making processes, and programs to ensure the creation of equitable wellbeing outcomes by those participating in dried fish value chains.

> *"There is no such thing as a single-issue struggle, because we do not live single-issue lives."* — (Audre Lorde, 1984, p. 138)

2.2 Introduction

The purpose of this perspective chapter is to advance a framework to better understand gender relations within dried fish value chains. We do so by integrating three complementary concepts — social wellbeing, intersectionality, and value chains analysis – and use this framework to reflect on three geographically distinct dried fish value chain cases drawn from literature. We further broaden the conceptual and analytical scope of dried fish value chain analysis by bringing explicit attention to the importance of relationality (i.e. creation of experiences in relation to one another within a given context). Our aim fits well with the recent call for novel approaches and methodologies in the Manifesto for Marine Social Sciences[10] which encourages explicit attention on the gendered patterns and inequities along fisheries value chains. Commentary Six to the

[9] This chapter has been published: Galappaththi, M., Collins, A.M., Armitage, D., & Nayak, P.K. (2021). Linking social wellbeing and intersectionality to understand gender relations in dried fish value chains. Maritime Studies, 20, 355–370. https://doi.org/10.1007/s40152-021-00232-3

[10] Bavinck, M., Verrips, J., 2020. Manifesto for the marine social sciences. Maritime Studies. https://doi.org/10.1007/s40152-020-00179-x

Manifesto[11] further elaborates on this need by emphasizing gender and the role of women as a topic that requires urgent attention. Our aim is also aligned with other calls related to critical gaps within gender research in fisheries and aquaculture, particularly with regard to the complexity of women's experiences (Frangoudes et al., 2019; Frangoudes & Gerrard, 2018; Gopal et al., 2020; Kleiber et al., 2017) and the relational aspects of gendered roles (Gustavsson, 2020; Kruijssen et al., 2018). These calls are also grounded in the long-standing argument in the field of gender research about the need to identify and intervene in the root causes of gender equity to achieve gender transformative outcomes (Cornwall, 2016, 2003; Dunaway, 2013; Neis, 2005; Nightingale, 2011).

Gender equity is further recognized as a fundamental guiding principle in current global policy frameworks and programs, such as the Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines; FAO, 2017, 2015) and Sustainable Development Goal 5 on Gender Equality. Achieving these commitments will require the acknowledgement of women's diverse experiences and meaningful engagement with the structural oppressions that perpetuate gender inequity (Kleiber et al., 2017; Lawless et al., 2021). The framework we advance here thus has the potential to generate critical insights to inform policy and program development across scales.

This paper is structured as follows. First, we introduce dried fish value chains and what the study of gender relations in these value chains entails. Next, we explore gendered aspects of dried fish value chains in relation to the roles of different actors in value chains, the generation of diverse wellbeing outcomes, and the key constraints women face in benefiting from their value chain participation. In the following section, we examine the advances within value chain research that bring attention to gender perspectives. Here, we highlight the relevant research gaps and emerging directions broadly within fisheries social sciences. Next, we advance an integrated framework by conceptualizing the linkages and synthesizing the elements from three bodies of scholarship — value chain analysis, social wellbeing, and intersectionality — to better understand gender relations. We then use three case examples drawn from literature to demonstrate the application of the framework in systematically unpacking the complexity of gendered value chain experiences. Finally, we highlight the potential of the framework in making a novel contribution to dried fish scholarship, policy, and practice.

2.2.1 Dried fish value chains

Dried fish is a sub-sector within small-scale fisheries, where women make up a significant portion of the workforce, particularly in Asia and Africa (Belton et al., 2018; Hossain et al., 2015; Manyungwa-Pasani et al., 2017; Medard et al., 2019). Through their engagement in value chains, women derive significant benefits that support their livelihoods, cultures, and local economies (e.g., income, employment, food, social ties, and cultural values). These benefits underpin the wellbeing of women themselves, their families, and communities (Belton et al., 2018). However, they face significant obstacles in fully participating in and benefiting from value chains, and particularly women from marginalized societal groups such as the lower castes, widows, immigrants, and the poor (Belton et al., 2018; Deb et al., 2015).

[11] Frangoudes, K., Gerrard, S., Said, A., 2020. Commentary Six to the Manifesto for the marine social sciences: gender and the role of women. Maritime Studies 19, 137–138. https://doi.org/10.1007/s40152-020-00186-y

Globally, about 10% of fish harvests are processed as dried fish using traditional, low-tech, and low-cost methods such as sun drying, salting, fermenting, and smoking (FAO, 2020). Dried fish production and consumption systems are organized as value chains (Ahmed et al., 2007; Shamsuddoha, 2007). A value chain is described as a series of nodes (i.e. activities) and actors (i.e. individuals who perform those activities) that enable procurement of inputs, transformation into outputs, and distribution to consumers (Porter, 1985). Key nodes associated with dried fish value chains include, pre-harvesting (e.g., net mending, bait preparation), harvesting, processing (e.g., sun drying, smoking), and trading and distribution (Ahmed et al., 2007; Hossain et al., 2015). These value chains are often characterized by the informal nature of their organization and operation, for example, through kinship and social networks that support more casual labour arrangements and trade linkages.

Dried fish value chains, however, have received disproportionately little attention in research compared to capture fisheries and/or fresh fish value chains. Furthermore, dried fish value chains rarely receive policy attention and are generally not captured in official fisheries statistics at national to global levels. As a result, we have a limited understanding about the scale and significance of these value chains in supporting the livelihoods, food security, and wellbeing of local communities[12]. In particular, gendered analysis of dried fish value chains is a significant research gap (Johnson et al., forthcoming). The limited research on gender dimensions of dried fish value chains is mostly concerned with the gendered division of labour. The case examples from Bangladesh, Tanzania, and Sri Lanka discussed later in this paper (Panels 1-3) represent the few exceptions in published literature where the analyses go beyond gendered division of labour to explore different experiences among women and men belonging to diverse groups (see Table 2.1).

Table 2.1: Overview of case examples drawn from literature

Case example	Focus
Nazirartek, Bangladesh	Experiences of seasonal fish drying workforce that comprise local inhabitants, migratory workers from elsewhere in Bangladesh, and Rohingya refugees from Myanmar
Mwanza, Tanzania	Trading of dried Nile perch by local Tanzanian women and the women from the Democratic Republic of the Congo
Mannar Island, Sri Lanka	Fish drying and selling experiences of Tamil fishing communities whose traditional livelihoods impacted by a civil war

In addition, there is a lack of published dried fish studies that take a whole chain approach (i.e., from pre-harvesting to distribution to consumers) to shed light on the complexity of gender relations across the chain. This oversight is particularly problematic when gender inequities

[12] Existing studies related to dried seafood value chains (i.e., invertebrates and other high-valued products such as sea cucumber, abalone, and shark fins) are largely concerned with the economic returns associated with the trading of specialized products destined for global markets (e.g., China, Europe). Such studies are therefore less helpful in understanding the significance of dried fish value chains towards supporting local livelihoods (beyond mere economic terms) with attention locally produced, traded, and consumed dried fish products.

perpetuated within these value chains go unrecognized. For example, within dried fish value chains men often control women's access to quality products and more profitable markets, and thereby assert 'subordinate' positions for women (Matsue et al., 2014; Medard et al., 2019). To this end, the framework advanced here brings special attention to how the unique positions of women and men shape the benefits they generate from participating in the dried fish value chain.

2.2.2 What are gender relations?

Gender relations broadly refer to the interactions among gender groups and how individuals navigate systems of power that shape norms of behaviour and expectations associated with gender identities (Biswas, 2017). Gender relations are highly dynamic as they are constantly being contested, negotiated, and constructed within particular contexts (Bennett, 2005; Resurreccion & Elmhirst, 2008). Use of the term 'gender relations' is intentional in this paper to bring attention to the relational construction of gendered roles, responsibilities and restrictions, and how they often uniquely disadvantage women. In dried fish value chains, for example, cultural norms and power hierarchies shape how women can participate in and benefit from value chains (Manyungwa et al., 2019; Medard et al., 2019; Quist, 2015). While gender expresses itself differently in different contexts, certain patterns also emerge in the expression of gender across social and cultural contexts, where systems of social structures, attitudes, and practices embody power and permit oppression for women compared to men. Gender systems often perpetuates substantial inequities between women and men[13] in their daily lives. Based on this understanding of how gender operates, gender equity means "fairness and impartiality in the treatment of women and men in terms of rights, benefits, obligations, and opportunities" (Biswas, 2017, p. 4).

Developing a fuller understanding of gender relations requires greater focus on who suffers from gender inequity within dried fish value chains. This means focusing on the position of women with attention to particular contexts within which dried fish value chains are embedded. The term 'context' is used in this paper to the refer to the unique array of dominant social structures (e.g., ethnicity, caste, culture, religion) that operate in intersection with gender inequity within value chains. By focusing on women, we do not suggest that the wellbeing of men in dried fish value chains is without issue. Rather, our focus is on the systematic structures (e.g., caste, ethnicity, patriarchal social practices) that uniquely position women compared to men and yet remain poorly understood. Focusing on women also does not mean leaving men behind. Gender analysis entails consideration of the relationships between gendered subjects and the power relations therein. Therefore, understanding the position of women in value chains involves a consideration of their relations with men. Moreover, women's participation in value chains supports the livelihood strategies that contribute to the overall wellbeing of households through, for example, improved family income, access to nutritious food, and education for children (Bennett, 2005). Addressing the issues faced by women in dried fish value chains by responding to the systemic issues that perpetuate unequal gender relations is thus critical in creating lasting wellbeing for families and communities who host these value chains, as well as for women themselves. We explore these aspects in detail in the next section.

[13] Although our discussion in this paper refers only to the gender categories of women and men, we acknowledge that gender is a spectrum and the need to move beyond the gender binary. Our attention to marginalized groups in fact may have relevance for gender minorities.

2.2.3 Gendered aspects within dried fish value chains

2.2.3.1 Gendered roles and contributions

Dried fish value chains are often deeply gendered because of the strong gendered division of labour that exists within them (Belton et al., 2018; Roy et al., 2017). Women predominantly occupy the fish drying node of the value chain, because the activities associated with this node are considered female tasks (Hossain et al., 2015). For example, sorting, gutting, cleaning, salting, and drying (on mats or drying racks) are tasks typically performed by women (Hossain et al., 2015; Samanta et al., 2016). Women also participate in dried fish trade in local and domestic markets and in nearby villages (selling on-foot). For example, women in Tanzania, Congo, and Malawi, play prominent roles as dried fish traders, including cross border trade (Manyungwa-Pasani et al., 2017; Medard et al., 2019). In contrast, fish harvesting, hanging fish to dry on tall scaffoldings, weighing and bagging, and trading in distant markets are generally perceived as masculine tasks and thus are performed by men (Belton et al., 2018). Sometimes, the roles women perform overlap. For example, they process and also trade dried fish or they harvest some of the fish they process. In most households, women also perform pre-harvesting activities such as net cleaning, mending, and bait preparation (Samanta et al., 2016).

2.2.3.2 Generation of wellbeing outcomes

Supporting wellbeing involves the generation of diverse outcomes that include material as well as non-material benefits (e.g., income, food, social ties, cultural values). Women, through their participation in dried fish value chains, derive significant benefits in diverse and complex ways. Moreover, fish drying may be among the limited options available for women to earn an income within the communities who host dried fish value chains and they often use this income towards supporting household coping strategies (Quist, 2015). For example, the women working in dried fish value chains in Nazirartek, Bangladesh depend on their earnings for day-to-day survival in face of poverty (Belton et al., 2018). Dried fish is also an essential ingredient of local diets and a source of vital nutrients such as proteins, omega-3 fatty acids, and Vitamins A and B_{12} (Byrd et al., 2021). Dried fish therefore plays a vital role in the food and nutrition security, particularly of low-income families.

In addition, dried fish value chains strongly support caste-based ways of life and cultural identities of those who are involved — sense of place, kin relations, and sense of belonging (Belton et al., 2018). Cultural traditions such as the inter-generational practices of sharing and reciprocity also hold significant value and meaning to the women in dried fish value chains (Berenji, 2020). Cultural continuity, however, may reinforce and maintain deeply gendered roles and discriminatory practices that embody gender inequities in context-specific ways (e.g., cultural norms that restrict women's participation as traders) (Manyungwa-Pasani et al., 2017). Understanding the complexity of how women benefit through their participation in dried fish value chains thus require attention to both material and non-material benefits and how they support or undermine their wellbeing.

The material and non-material benefits supported through dried fish value chains are dependent on the contexts because these benefits are often created in socially and culturally distinct ways in a relational manner. For example, Belton and colleagues (2018) report the apparent

vulnerabilities between women working in Daspara and Nazirartek, two main fish drying sites in Bangladesh. In Daspara, women participate in fish drying activities mostly out of sense of community identity (i.e., working for extended families and neighbours) and earn an income to support their own needs such as buying jewelry and cosmetics. In contrast, women employed in fish drying activities in Nazirartek mostly belong to marginalized groups (e.g., Rohingya refugees, migrant workers), who are extremely poor and the day-to-day survival of their families is dependent on their incomes from value chain participation. Therefore, the nuances of socially and culturally distinct ways of value creation requires attention in understanding how women's wellbeing is supported through dried fish value chains.

2.2.3.3 Selected constraints that perpetuate gender inequity

Despite the diverse benefits mediated through social and cultural relations, women face significant constraints within dried fish value chains that perpetuate gender inequities and undermine their wellbeing. Existing dried fish scholarship, however, does not provide a complete account of these constraints. We supplement existing (limited) dried fish research with insights drawn from small-scale fisheries research to explore the key constraints faced by women (Figure 2.1). We do not suggest that the constraints we discuss are the only ones impacting dried fish value chains, nor do we attempt to compare dried fish value chains to other value chains. Rather, our focus is to examine how these constraints often undermine women's ability to equitably benefit from value chain participation for the purpose of assessing the robustness of existing gender-based value chain approaches.

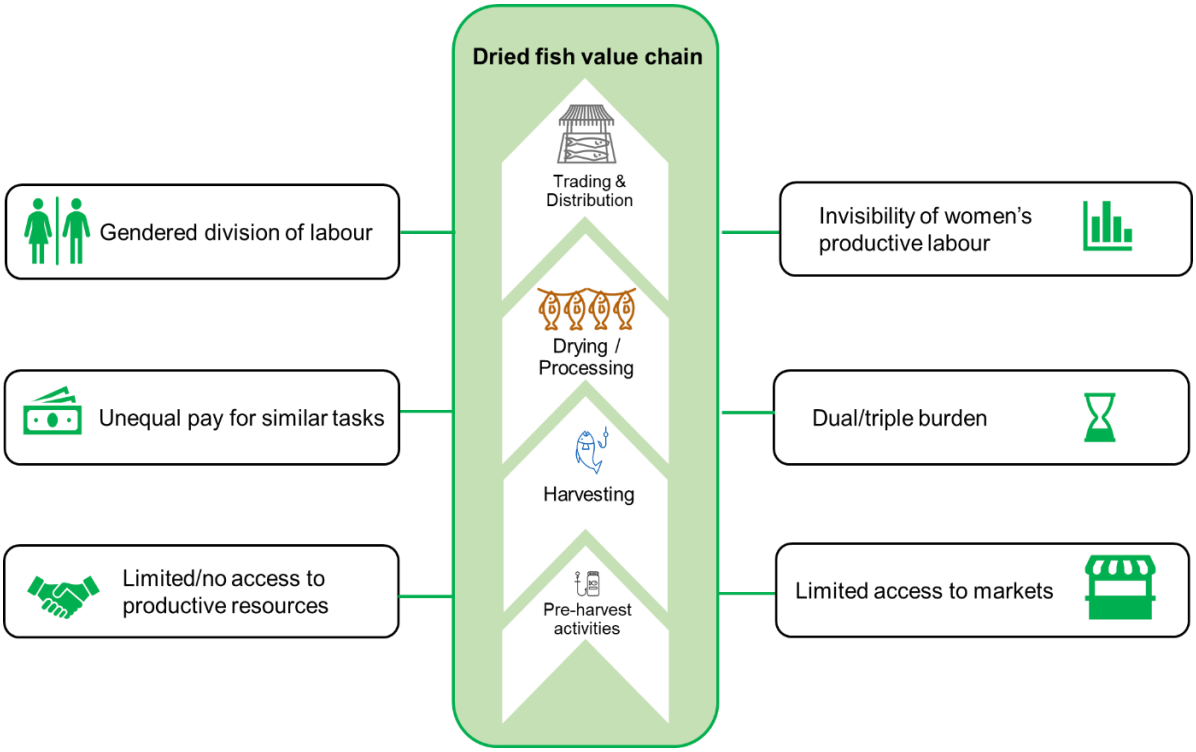

Figure 2.1: Selected constraints faced by women in dried fish value chains

Gendered division of labour within value chains is particularly problematic when it allocates certain tasks and statuses to women and men in ways that it perpetuate disparities (e.g., women being restricted to lower-paid tasks, limited access to and control over resources) (Dunaway, 2013). Moreover, stemming from the traditional androcentric viewpoint where fisheries is perceived as a masculine domain, the tasks performed by women are not systematically captured in official fisheries statistics (Bennett, 2005). While there have been growing efforts to promote the collection of gender-disaggregated fisheries data, women's productive contributions along fisheries value chains in terms of labour and time still remain largely invisible (Gopal et al., 2020; see Harper et al., 2020 for a notable exception where the authors assess the global contribution by women to small-scale marine fish harvesting). This oversight is exacerbated by existing fisheries policies. Most national policies, as well as some global policies such as the 1995 FAO Code of Conduct for Responsible Fisheries, are often criticized for gender-blindness as they do not pay attention to women's roles or their unique challenges (Williams, 2010). Consequently, women lack the recognition they deserve as legitimate value chain actors given the important roles they fulfil.

Additionally, women in diverse value chain roles often face the dual burden in having to carve out time to perform their tasks in the productive domain while also performing traditional caretaker roles within extended families as wives, mothers, and caregivers in the reproductive domain (Gustavsson, 2020; Lentisco & Lee, 2015). The burden can even triple when women are involved in community-level activities, such as attending committee meetings, social events, and ceremonies. Unequal pay is also common in these contexts, where female workers are paid lower rates than their male counterparts for similar tasks, or not paid at all when the tasks they perform are considered part of their household duties (Yingst & Skaptadóttir, 2018). Women may also have limited or no access to and control over productive resources, such as financial credits, technology, and transport (Torre et al., 2019). They may also face discrimination in accessing dock-side auctions and markets, for example, when markets are reserved exclusively for male traders or when women are only allowed to purchase inferior quality raw fish (Fröcklin et al., 2013; Matsue et al., 2014; Medard et al., 2019). Such constraints severely restrict their ability to fully participate in and benefit from these value chains.

Overall, better understanding gender inequities within dried fish value chains requires explicit attention to the underlying structural barriers, such as power hierarchies and gendered practices embodied in value chains. The need to engage with the root causes of gender inequities is a point stressed by feminist scholars for decades, especially in the context of globalized value chains (Cornwall, 2003, 2016; Dunaway, 2013; Neis, 2005; Nightingale, 2011). Such an approach to addressing inequities could also lead to significant value chain-level gains (Kruijssen et al., 2018). For example, removing barriers in accessing credit services for women may help them purchase better quality raw fish, acquire efficient drying stands, and access new markets. These changes could improve product quality and boost production volumes while improving the performance of the entire value chain and subsequently generate better outcomes for everyone involved. What insights can we draw from the existing value chain literature to understand gender inequity issues? We address this question in the following section.

2.2.4 Advancing gender perspectives in value chain research and policy

Value chains were first conceived in the 1980s as a form of industrial organization in transforming inputs into outputs (Porter, 1985). Since then, value chains have gained traction as an analytical framework and a tool for empirical study among researchers and practitioners from diverse disciplines (Bush et al., 2019). This wide adoption has resulted in the development of a diverse array of methodological and disciplinary approaches under the banner of value chain analysis, such as global commodity flows, economic performance, and technology and innovation (Belton et al., 2015; Reardon et al., 2012).

The adoption of a gender perspective in value chain analysis is not entirely new. Looking beyond fisheries value chains, international donor-led organizations have integrated gender into various policies and programs aimed at different sectors such as agriculture and horticulture under various themes (e.g., gender mainstreaming, women's empowerment, and inclusive development). These efforts are grounded in a variety of applied frameworks informed by diverse topics such as gender equity, human rights, sustainable development (see Bolwig et al., 2010; Coles and Mitchell, 2011; Laven and Verhart, 2011; Riisgaard et al., 2010; Stoian et al., 2018). Although these frameworks and analyses have brought substantial attention towards gender inequities in global value chains, they are largely concerned with women's economic empowerment through technical interventions (e.g., new markets, technology upgrades, training) with less attention towards diverse benefits generated beyond economic terms. Of particular importance to this discussion is the FAO's report on Developing Gender-sensitive Value Chains: A Guiding Framework (FAO, 2016). While this framework integrates the considerations of access to productive resources, and power and agency into value chain analysis, the framework does not fully capture the complexity of gendered experiences, and particularly the diversity among women and the breadth of value chain benefits beyond economic gains.

'Social upgrading' has also become an emerging theme associated with global value chains, where the focus is on workers' rights, entitlements, and working conditions (e.g., wage levels, working hours, hiring arrangements, discrimination) (see Barrientos et al., 2011; Gereffi and Lee, 2016). Most importantly, the workers are viewed here as 'social actors' whose quality of work is dependent on conditions such as equity, freedom, and human dignity — aspects that span beyond economic or material terms.

The work of Dunaway and colleagues (2013) on gendered global commodity (or value) chains is helpful in unpacking the complex ways in which women embed value in value chains. Among the critical insights these scholars offer on how women's work can be woven into global value chains, two considerations are of particular relevance to this discussion. First, the close linkage between the productive and reproductive spheres associated with value chains requires attention if we are to fully understand the value of women's overlooked contributions (e.g., unpaid family labour, underpaid casual labour) (Dunaway, 2013). Second, households — as the sites where most women's value chain tasks take place (and not in factories) — sustain most value chain activities by feeding different forms of women's labour (e.g., family labour, part-time casual labour) and other inputs (e.g., equipment, capital) (Dunaway, 2013). This type of home-based work, however, also allows for gendered norms, practices, and power hierarchies at the household level (and collectively at the community level) to have a bigger influence on how women can participate in and benefit from value chains (Lawless et al., 2019). For example, gender-restrictive cultural norms related to access to and control over household resources, lack

of autonomy, and lack of mobility for women within patriarchal societies directly influence their ability to produce quality products and sell them in distant markets, thus their ability to benefit from value chain participation (Manyungwa-Pasani et al., 2017; Matsue et al., 2014). Although the focus here is largely on economic value addition across the chain, paying attention to different ways and places where women participate in value chains is helpful to understand the nuances of value addition and the challenges women face in doing so.

Within fisheries and aquaculture literature, various terms such as, 'gender-based', 'gender-sensitive', and 'gender-inclusive', are interchangeably used to indicate that the value chain analyses engage with gender. These forms of analyses use sex-disaggregated data (i.e., accounting for women and men separately) and other gender-related indicators (e.g., labour statistics, household socio-economic status). Emerging fisheries social science scholarship draws attention to the critical need to examine gender equity issues in context-specific ways, which includes a growing effort to streamline data collection methodologies that illuminate women's roles and contributions in fish value chains (e.g., Hidden Harvests Project, Advancing Gender in the Environment Initiative (AGENT) initiative, SSF Guidelines implementation). For example, Stacey and Govan (2021) emphasize the gender discriminatory practices (e.g., exclusion based 'acceptable' behaviour around the amount of time women can spend away from home) and gender-based constraints (e.g., different workloads for women and men) among several other critical factors that determine the ability of men and women to benefit equitably from livelihood opportunities (also see Barclay et al., 2021) . Through the development of the framework advanced in this paper, we aim to contribute to this dialogue by broadening the scope of value chain analysis to bring critical attention to how women and men are uniquely positioned within the structures of oppression operating within value chains.

In developing a novel framework, our point of departure from existing literature is the notion of 'relationality'. Relationality refers to the creation of experiences in relation to one another within a given context. Attention to relationality not only reveals the socially and culturally distinct ways people benefit from value chain participation but also illuminates how such benefits are shaped by the intersecting social structures (e.g., caste, ethnicity, culture). Therefore, we focus on the concepts of social wellbeing and intersectionality — both of which underpin the notion of relationality — in ways that have not previously been linked with value chain research. Our new framework thus challenges the conventional approaches to studying gender in value chain research.

2.3 Toward a 'thick description' of gender relations

Geertz's (1973) notion of thick description of the contextual details and social meaning that individuals ascribe to their own experience is a useful reminder when thinking through gender relations in dried fish value chains. As discussed above, addressing the gap in relation to gendered analysis of dried fish value chains requires further development of existing frameworks with attention to relationality. Below we introduce the three bodies of scholarship and synthesize the key conceptual elements that help examine gender relations in dried fish value chains. In doing so, we draw attention to the opportunities and limitations in applying these concepts in a more integrated manner.

2.3.1 Value chain analysis: Overlapping nodes and the notion of 'value'

Although women predominantly occupy the processing (drying) node of dried fish value chains, they also perform multiple roles as traders, fishers, and provide support with pre-harvesting activities such as net cleaning and mending (Belton et al., 2018; Manyungwa-Pasani et al., 2017; Medard et al., 2019). In doing so, the nodes they operate in overlap, for example, the women who dry and trade fish in Malawi operate in both the processing and trading nodes (Manyungwa et al., 2019). Therefore, taking a whole chain approach from pre-harvesting to post-harvesting and trading will help gendered analysis account for the gendered roles across the value chain. The whole chain approach is particularly important because of the power dynamics along the chain that shape the differences in benefits they are able to create. For example, the traders and retailers close to the consumer end tend to capture more returns than the processors (Purcell et al., 2017). Understanding these aspects are crucial to assess the opportunities to foster gender equity and empower women (e.g., women's entrance into more profitable markets where they previously faced barriers to participate in).

Given the industry-centric roots of value chain analysis, value creation across the chain brings attention to incremental value addition in financial terms (Porter, 1985). However, emphasis on the term 'value' here opens up an opportunity to rethink the idea of value creation by going beyond financial (economic) terms. In fact, the need to broaden the concept of value has gained attention in recent fisheries literature. For example, Fabinyi and colleagues (2018) argue that the analysis of seafood chains should explicitly consider the social dimensions of value, such as reciprocity, sharing, and autonomy towards achieving more equitable and sustainable value chain outcomes. Applied within dried fish value chains, the analysis should bring explicit attention towards the non-financial/non-material aspects that may hold more or equal value to those who depend on these value chains, often in context-specific ways (e.g., kinship ties, cultural identities, intergenerational values). A broader and a more contextualized understanding of the notion of value creation is therefore critical in the gendered analysis of dried fish value chains. The concept of social wellbeing presents a complementary framework for developing such an understanding of the complexity of value creation along dried fish value chains.

2.3.2 Social wellbeing: Meanings and social connections that lie beyond material benefits

The social wellbeing concept emphasizes the multiple ways that people perceive and pursue wellbeing by going beyond material terms (McGregor, 2008; Weeratunge et al., 2014). This concept has been widely applied to examine the diversity and complexity of wellbeing generation in fishing communities (Coulthard, 2012; Johnson, 2018; Koralagama et al., 2017; Weeratunge et al., 2014). Social wellbeing is defined as "a state of being with others, where human needs are met, where one can act meaningfully to pursue one's goals, and where one enjoys a satisfactory quality of life" (McGregor, 2008, p. 1). The concept of social wellbeing is well-suited to understand how women generate benefits through dried fish value chains. This is because, by definition, social wellbeing emphasizes relational construction of wellbeing within particular contexts (Coulthard et al., 2011). In other words, people's roles, responsibilities, rights, expectations, and outcomes are defined in relation to one another (White, 2008).

The concept of social wellbeing provides a three-dimensional view that encompasses the linked dimensions of material, relational, and subjective wellbeing (McGregor, 2008; Weeratunge et al.,

2014; White, 2010). The material dimension is related to people's practical welfare and standards of living (e.g., money, wealth) whereas the relational dimension includes social relations that determine people's scope for action or influence within a given setting (e.g., social ties, power dynamics). People's own perceptions about what they have and can do include the subjective dimension (e.g., values, perceptions, trust). Both relational and subjective dimensions are less quantifiable, however, as they arise from meanings and social connections that may bear significant value within the contexts they are created. Likewise, the benefits generated through dried fish value chain participation may also span across the material (e.g., income, employment, food); relational (e.g., kinships, cultural identities, collective action); and subjective (e.g., values, perceptions, and visions about future) dimensions (Belton et al., 2018; Berenji, 2020; Medard et al., 2019; Quist, 2015). The interconnectedness of these dimensions also highlights the complexity of wellbeing creation in the face of various constraints (e.g., dual burden on women despite increased earnings).

A broader conception of wellbeing creation helps bring attention to how women themselves benefit from value chains. For example, improved mobility to travel to distant markets and freedom to make decisions within households about how to allocate the income they earn (e.g., further improve to dried fish activities and support children's education) may bring empowering experiences for women as a result of their participation in dried fish value chains. These aspects are critical as they may signal shifting gendered norms and expectations that patriarchal societies tend to impose on women (i.e., obligation to prioritize the wellbeing of family and the community over women themselves) and provide insights on how value chains can support gender transformative experiences.

Despite the creation of multiple benefits, value chains embody pre-existing structural oppressions that lead to power hierarchies such as the ethnic structure and the associated gender norms and practices and similarly the caste structure. For example, in Daspara village in Northern Bangladesh, women are obligated to participate in an inland fish drying operation out of sense of duty associated with their cultural identity even though they are paid about half of the daily wage rate of men (Belton et al., 2018). Women are prohibited to visit Dublar Char (an island off the Sundarbans reserve forest in Bangladesh), due to religious beliefs that discriminate against women's entrance to the island (Belton et al., 2018). Understanding such intersecting oppressions require an approach that goes beyond the simple notion of gender. Intersectionality is an appropriate analytical framework in this regard (Crenshaw, 1989, 1991). Intersectionality augments the social wellbeing framework well because the notion of relationality underpins both these frameworks.

2.3.3 Intersectionality: Intersecting structures of oppression

Intersectionality highlights how systems of power and oppression, like sexism, racism, and classism, intersect and shape people's lived experiences within a particular society (Crenshaw, 1989, 1991). Furthermore, intersectionality acknowledges that gendered roles are inherently intertwined with structural oppressions (e.g., caste, ethnicity, age, and education) (Cooper, 2016). Such conditions, in turn, reinforce and maintain gendered power hierarchies and norms of behavior resulting in differentiated experiences (Cooper, 2016). By definition, intersectionality brings explicit attention to marginalized and disadvantaged groups (e.g., women, ethnic minorities, indigenous peoples). Intersectional approaches have been widely used by feminist scholars across disciplines to grapple with the complexities involving experiences of discrimination and oppression faced by different societal groups (CRIAW, 2006). Within

fisheries gender research also intersectional approach is increasingly been applied to bring attention to the diversity of women's roles and contributions in coastal communities (Ferguson, 2021; Hapke & Ayyankeril, 2018; Khan et al., 2018; Lokuge & Hilhorst, 2017; Yingst & Skaptadóttir, 2018). The application of an intersectional approach thus adds further analytical rigour to value chain research by providing thicker analyses that simultaneously consider gender and other intersecting structural oppressions.

Figure 2.2 illustrates a novel and integrated framework which links gender, wellbeing creation, and intersecting structural oppressions within dried fish value chains, with an overarching focus on relationality. This framework improves the conceptual and analytical focus of existing approaches to analyze gender in value chains in several ways. Specifically, the dried fish value chain operates at the intersection of the structures of gender and other oppressions (e.g., caste, culture, ethnicity, religion). The analytical focus here is simultaneously on gender and other structures of oppression that exists within a given value chain context. Social structures that comprise the framework may vary by context because the array of structures operating within a given value chain defines the relevant relationalities. For instance, if caste-based identities are not prominent within a given society, then caste structure can be excluded from the framework. Similarly, the framework can be modified to include any additional structures (e.g., political affiliations, marital status, and sexual orientation) that may create oppression. Social wellbeing is constructed within the same intersecting relational structures. Dried fish value chains support social wellbeing materially as well as relationally and subjectively. A two-way linkage exists between the value chain and social wellbeing as improved wellbeing leads to better value chain outcomes. For example, mutual trust and information sharing mediated by established social ties (relational wellbeing) may provide with access to good quality fish and profitable markets.

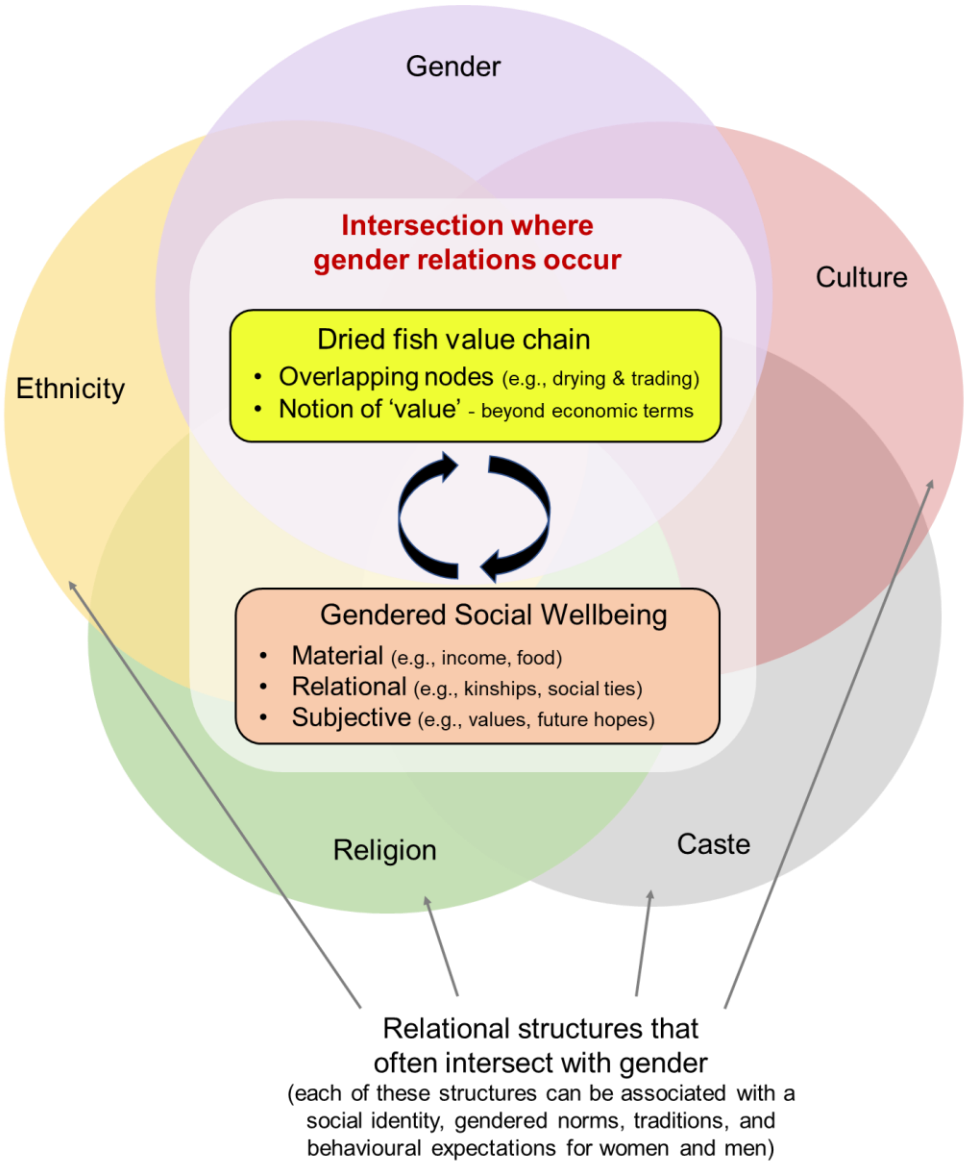

Figure 2.2: An integrated framework to understand gender relations in dried fish value chains

(The array of social structures operating within a given value chain may vary by the context where it is embedded in.)

2.4 Examining experiences within dried fish value chains from a gender relations perspective

Our aim is to advance a framework to better understand gender relations within dried fish value chains. We use this framework to reflect on three geographically distinct dried fish value chain cases from Bangladesh, Tanzania, and Sri Lanka (Panels 2.1 to 2.3). These case examples have been drawn from literature and are particularly helpful in demonstrating the key insights that emerge from the application of the framework. Insights from these cases are somewhat limited yet they provide a foundation as well to further build comparative insights from a wider range of

empirical cases across Asia and Africa using a common approach to understand gender relations in dried fish value chains.

Panel 2.1: Dried fish in Bangladesh
(developed based on Belton et al., 2018 and Hossain et al., 2015)

The seasonal and casual fish drying workforce in Nazirartek, Bangladesh's second largest fish drying yard, is made up of three diverse groups. These groups include: 1) the local inhabitants of the area, 2) seasonal migratory workers from elsewhere in Bangladesh, and 3) Rohingya refugees, a Muslim minority group from Myanmar. Both the groups 1 and 2 have Bengali (Bangladeshi) origins. Rohingya families are the most socially disadvantaged among these groups due to their undocumented refugee status in Bangladesh. For example, Rohingya families are disqualified to receive humanitarian relief and children are prohibited to attend school. Dried fish value chains often present the only employment opportunity for Rohingya women who account for about half of the total female workforce in Nazirartek.

Women employed in Nazirartek fish drying yard
(Credit: https://driedfishmatters.org)

Nonetheless, the increased availability of labour due to Rohingya migration has squeezed the wage rates for all dried fish workers, reportedly causing resentment between Rohingya and Bengali workers. The supervisory roles are often held by men who belong to the local inhabitant group. About one third of Rohingya women dried fish workers are widowed, abandoned, or divorced. Rohingya women experience a disproportionate denial of work by supervisors compared to Bengali women. Rohingya women are also at risk for sexual violence and exploitation at work due to lack of protection from husbands or male family members. Although all these workers are extremely poor, the levels of deprivation seemingly vary among the women from the three different groups — Rohingya women are the most deprived and Bengali women from local groups are the least deprived.

In all three case examples, the value chains support the social wellbeing of workers by providing income, employment, and subsistence (material wellbeing). In addition, working alongside a large number of women from the same group (e.g., caste groups, ethnic groups) brings a strong sense of belonging and nurtures social connectedness (relational wellbeing) as well as the hopes

and aspirations around women's ability to support themselves and the survival of their families (subjective wellbeing). However, in generating these benefits women face wide-spread ill-treatment, discrimination, and exclusion that arise when gender intersects with other structures of oppression.

Understanding how structures of power and oppression intersect helps systematically unpack women's complex experiences in dried fish value chain in Nazirartek, Bangladesh (Panel 2.1; Belton et al., 2018; Hossain et al., 2015). Such structures operating within Nazirartek's value chain include: racism (Rohingya vs. Bengali ethnic origins), localism (local inhabitant groups vs. migratory workers with Bengali and Rohingya origins), and marital status (precarious position of widowed, abandoned, or divorced women). Moreover, the designation of supervisory roles to men (who often belong to the local inhabitant group) suggest that women not only perform lower paid tasks but also occupy subordinate positions in the workforce. The systematic exclusion of Rohingya families in the wider society based on their undocumented immigration status have intensified poverty and lower literacy levels that undermine their wellbeing. Factoring in the precarious position of Rohingya women (e.g., denial of work, sexual exploitation), it is evident that Rohingya women are the most marginalized and disadvantaged group compared to women with Bengali origins (i.e. local inhabitants and seasonal migratory workers from elsewhere in Bangladesh).

Panel 2.2: Dried Fish in Tanzania (developed based on Medard et al., 2019)

Since the 1990s, cross-border trade of dried Nile perch, locally known as kayabo, is an important livelihood for people on the shores of Lake Victoria, East Africa. Kayabo traders in Mwanza located on the Tanzanian shores of the lake are predominantly women, who operate as retail traders. These traders include local Tanzanian women and groups of women from the Democratic Republic of the Congo. The Congolese women are highly mobile opportunity-seeking traders, whose trading livelihoods are not restricted by marital status (i.e. the married women have the freedom to trade without any interference from their male partners, similar to the freedom exercised by single or divorced women in trading groups). In contrast, Tanzanian women traders have less mobility as their children and families are dependent on their daily earnings for food and other expenses. Their ability to participate in the trade is also restricted by daily household tasks such as food preparation, care taking, and social obligations.

Fish landing site in Ukerewe Island in Lake Victoria, Tanzania (Photo: Joseph Luomba)

Both groups of women rely on kayabo made from small or low-quality fish, mostly which are rejected by the buyers from

export processing factories, which they access through brokers at the landing sites. 'Fish for sex' is also considered a common practice in this context, where women engage in sexual relations with influential men in anticipation of access to fish/kayabo and the ability to manipulate trade. These women's trading livelihoods are also impacted by various other risks and insecurities such as theft and ill-treatment. In addition to trading, some Tanzanian women also process Nile perch (salting and sun drying).

Women's access to kayabo trade is controlled by a small cross-border trade network of powerful and wealthy businessmen such as brokers and distributors. This network has emerged in face of the increased competition for the lake's (decreasing) fish harvests due to changing regional and global trading arrangements (e.g., new markets, trade destinations, new actors). The trade network, mediated by long-standing friendships, mutual trust, kinship, and nationality heavily influence kayabo prices and trade relations, including women's access.

While both Tanzanian and Congolese women traders struggle to access kayabo, these struggles vary between the two groups of women. This is mainly because Congolese women traders have managed to establish close ties with powerful men within the trade network. Through these ties, Congolese women have secured strategic positions that enable them to manipulate trading relations and afford substantial amounts of capital which they invest to buy large quantities of kayabo. In doing so, Congolese women traders operate as groups and use various strategies mediated through personal contacts and sexual relations (e.g., placing large orders with a collector associated with a cooperative, bribing at the landing sites, hiring local aids associated with cooperatives to buy fish without valid trade permits). The foreign status of Congolese women while engaging in trade in Tanzania and the protection from powerful men in the trade network enables them to secure substantial profits from kayabo destined for various regional and domestic markets. As a result, the trading opportunities available for local Tanzanian women remain heavily squeezed. In order to survive, they resort to selling small quantities of kayabo (often produced using illegally harvested fish) in local markets for a smaller profit and supplement this income by selling dried dagaa (a smaller indigenous fish). Tanzanian women rely on their families, kinship ties, and personal contacts to buy fish, however, lack of capital to support the business remains their key challenge.

Regardless of the competition and the different experiences between the two groups of women, the trading livelihoods of all women involve substantial risks and uncertainties (e.g., theft, health risks). Most women in both groups are also faced with issues within their households (e.g., increased alcohol consumption among men, husbands abandoning them and the children). Despite the hardships, these women continue to act as traders to improve their living conditions, educate children, and gain economic independence.

In the case of dried fish processing and trade in Mwanza, Tanzania (Panel 2.2; Medard et al., 2019), women's experiences seem to differ largely based on their affiliations with a trade network dominated by a group of powerful businessmen. Thus, the trade network not only asserts a subordinate position for all women (i.e. sexism) but also restricts their access to good quality fish. The ability of women to associate with this trade network is shaped by their social ties with the men in the network. Congolese women have managed to establish and maintain a

larger network of social ties that enable them to maneuver into strategic positions from which they can secure access to kayabo, markets, and capital. These social ties appear to be mediated by their nationality (Congolese vs. Tanzanian) as well as their mobility (ability to stay away from homes for a longer period) and marital status (freedom to engage in trading without the interference from their male partners). As a result, the trading opportunities and the benefits derived by women belonging to the two groups vary significantly. The most marginalized are the local Tanzanian women whose access to kayabo and profitable markets are being squeezed by powerful men as well as the Congolese women affiliated with the trade network. Tanzanian women also depend on a more localized social network involving kinship and family for support with their trade, however, the household expectations and obligations associated with their roles as wives, mothers, and caregivers also impact their availability to participate in trading. Despite the differences in trading incomes they earn, both groups of women are socially and economically disadvantaged as kayabo trading involves various risks and uncertainties (e.g., sexual exploitation, theft, ill-treatment, issues within their households). The mutual support, protection, and solidarity within the groups they socialize with (relational wellbeing) is central to the way they survive and support themselves and their families (material and subjective wellbeing). In doing so, some women perform overlapping roles as traders in different local, domestic, and regional markets and also as fish processors while participating in multiple nodes of the value chain.

In comparison, women's experiences in dried fish value chains in Mannar Island, Sri Lanka (Panel 2.3; Quist, 2015) are shaped by the dynamics of how structures of oppression intersect largely in response to the impacts of a decades-long civil war. For example, the access to fish by the women from traditional fishing communities is impacted by their marital status (widowed or abandoned), which exerts a bigger influence in post-war context in intersection with the gendered norms that restrict women from fishing. In addition, their social positions are being shaped by (lost) access to land and racism (i.e. ethnic tensions among Tamil, Muslim, and Sinhala ethnic groups). Understanding these experiences, however, requires special attention to the fluidity involving the reorganization of these structures following the war (e.g., ongoing changes in demographic profiles and social positions associated with traditional land ownership).

Panel 2.3: Dried Fish in Sri Lanka (developed based on Quist, 2015; UNHSP, 2015)

Fish drying and selling is the primary livelihood of many women in Mannar Island, a small island off the Northern coast of Sri Lanka, which is historically known for its dried fish production. Most of these women are widowed or abandoned during a civil war that lasted nearly thirty years and ended in 2009. Many fishing households in Mannar island are currently led by these women as they have lost male breadwinners to the war. These women earn a living by removing fish from nets, cleaning, and mending nets in exchange for raw fish. It is customary in these communities that fishing is done by men. The women dry the bulk of the fish they get and keep some for consumption at home. Selling dried fish in the local market is the main source of income that supports these women, their children, and extended families. The fishing season, however, lasts about six months and the women engage in other activities during off-season (e.g., rearing goats or chicken, selling home-made food).

Home-based fish drying in Northwestern Sri Lanka (Photo: Indika S.K. Tennakoon)

Most traditional fishing communities in Mannar island are Sri Lankan Tamil by ethnic origin (mostly Catholic). The war (between the Liberation Tigers of Tamil Eelam and the Sri Lankan military) created devastating impacts including loss of lives, widowed and abandoned women, internally displaced people, disrupted livelihoods, and disconnected communities across the Northern province. The entire Muslim community of Mannar island fled during this time and the island received a huge influx of internally displaced people, mostly of Tamil origin. As a result, Mannar island's demographic profile and social structures underwent major changes with a greater majority of Sri Lankan Tamils and a fewer Muslims who have returned since the ending of war. The island is also home to other smaller groups, such as Indian Tamils (mostly Hindu) and Sinhalese migratory fishers.

In navigating these social dynamics and the tensions resulted by the war, the widows engaged in dried fish production face significant challenges. Most of them reportedly encounter conflicts in accessing the coast for fish drying activities, for example, due to low social status associated with widows and land ownership issues. In many cases, these women have lost their traditional coastal lands while they temporary abandoned their houses during the war. Even though they have received alternative lands in during post-war resettlement, they continue to seek legal assistance to claim titles to their traditional coastal lands and join their communities where they feel safe and supported.

As demonstrated by the case analyses above, the application of our new framework reveals deeper insights on women's and men's differential positions and wellbeing outcomes, gender-based constraints, and underlying forms of discrimination within each value chain. In doing so, the framework brings greater attention to contextually nuanced data that describe people's real experiences. This means that the data needs to be disaggregated by gender as well as the other identity markers associated with the structures of oppression operating within a given value chain context (e.g., ethnic groups, caste groups, cultural affiliations).

The nuanced insights that emerge from the new framework can help identify entry points for policy and program interventions towards achieving gender equitable outcomes in dried fish value chains. The differential value chain experiences revealed by the framework (e.g., who has access to resources to begin with) can guide the development of targeted regulatory measures that enable the achievement of gender equality commitments within current policy and legal frameworks such as the SSF Guidelines. In relation to livelihood development programs, a range of supports might be required to address the issues unique to different groups involved in dried fish value chains because the same support will not impact all members equally. For example, addressing the wellbeing issues in Nazirartek value chain may require interventions such as informal savings groups to assist the women with lower literacy levels save their earnings and invest those savings to improve their fish drying activities. Such savings groups not only improve financial management skills but also help women gain confidence in decision-making that will enrich other aspects of their lives. A crucial consideration in such efforts is the inclusion of most marginalized Rohingya women in ways that their social status or the ability produce documentation does not undermine their capacity to participate and benefit from these interventions. Likewise, the framework advanced in this paper has the potential to inform the development of well-rounded interventions to address gender inequities embodied in dried fish value chains.

2.5 Conclusion

Understanding gender relations is about examining systems of power and oppression. Within dried fish value chains, gender intersects with other structures of oppression and uniquely positions women and men in relation to the wellbeing outcomes they can generate. To understand this complexity, we emphasize the idea of relationality to advance novel framework in this paper. By linking value chains, social wellbeing, gender, and social structures, we broaden the conceptual and analytical scope of value chain analysis and challenge the conventional approaches to studying gender in value chains. In doing so, we contribute to dried fish scholarship in several ways. First, the focus on relationality elevates gender as a crucial element of social connections and brings explicit attention to the most marginalized social groups whose survival depends on dried fish value chains. Second, the framework brings visibility to women's productive labour and recognizes them as legitimate actors in dried fish value chains. Third, the framework reveals diverse forms of value and different ways that dried fish value chains support social wellbeing of gender groups. Finally, the framework helps systematically unpack the complexities of women's lived experiences with focus on how certain groups are uniquely disadvantaged. Overall, the new conceptual and analytical linkages encouraged by the framework result in a deeper analysis of how gender inequity manifests within dried fish value chains. The nuanced and applied insights that emerge from our framework may inform the efforts within current policy frameworks and program interventions towards achieving gender equitable outcomes in meaningful and lasting ways.

Chapter 3

Women's experiences in influencing and shaping small-scale fisheries governance [14]

3.1 Chapter summary

This chapter synthesizes current empirical evidence on how women experience, shape, and influence small-scale fisheries (SSF) governance. Our synthesis addresses an important gap in the literature, and helps highlight the opportunities to improve women's participation in governance and advance gender equality. We identified, characterized, and synthesized 54 empirical cases at the intersection of gender and SSF governance, which comprise the relevant body of literature. Our review confirms the need to embed gender in the empirical examination of SSF governance towards expanding the current evidence base on this topic. We found that the institutional contexts within which women participate reflect a broad spectrum of arrangements, including the interactions with rules and regulations; participatory arrangements such as co-management; and informal norms, customary practices, and relational spaces. We also synthesized a typology of governance tasks performed by women in SSF. The typology includes leadership roles and active participation in decision-making; relational networking and collective action; exercising agency and legitimacy; resource monitoring; knowledge sharing; meeting attendance (with no/less participation in decision-making); and activism and mass mobilization. Furthermore, we drew broader insights based on the patterns that emerged across the literature and highlighted implications for improving women's meaningful participation in SSF governance. For example, exploring the breadth of governance arrangements to include all governance spaces where women are active, adjusting governance arrangements to respond to current and emerging barriers, and recognizing how women's efforts link with societal values may help legitimize their representation in SSF governance. Findings of this review should be of interest to the scholarly community, practitioners, and policymakers alike and inform future research agendas, policy dialogues and practice intervention.

3.2 Introduction

The aim of this paper is to synthesize current empirical evidence on how women experience, shape and influence small-scale fisheries (SSF) governance globally. Gender equality, which evokes inclusiveness and openness for diverse participation, has emerged as guiding principle in global fisheries policy frameworks. Gender equality is broadly understood as the 'equal rights, responsibilities, and opportunities of women and men, and girls and boys' (UN Women, 2017, p. 1). Inclusion of women's representative voices in governance and decision-making is crucial to achieving gender equality. For example, recent high-level initiatives within fisheries such as the 2015 FAO Voluntary Guidelines for Small-scale Fisheries in the Context of Food Security and Poverty Alleviation (SSF Guidelines) and, multiple other regional and national fisheries policies have made explicit commitments to improve women's participation in governance (Barclay et al.,

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2021; Kleiber et al., 2017; Kusakabe, 2005; Mangubhai & Lawless, 2021; Murunga, 2021). Furthermore, global efforts to advance United Nations' Sustainable Development Goals (SDG) within the context of SSF have raised growing concerns about the need to recognize the crucial link between SDG 5: Gender Equality and SDG 14: Life Below Water, the goal directly related to fisheries (Frangoudes et al., 2020; Nash et al., 2020). More recently, various forms of gender discriminations such as recognitional, procedural, and distributional injustices; and the marginalized status of women in ocean governance, have gained scholarly attention and especially in the context of blue justice and blue economy narratives (Gustavsson et al., 2021).

Globally, women make up about 40% of the SSF workforce (an estimated 45 million women) and critically depend on coastal and marine resources for their livelihoods (FAO, Duke University, WorldFish, Forthcoming). Despite the differential access to and use of these resources by women (e.g., gleaning, seaweed gathering), they have been rarely involved in decision-making concerning such resources (Kleiber et al., 2015; Weeratunge et al., 2010). This oversight largely stems from the traditional viewpoint of fisheries as a masculine domain and the resulting androcentric management that excludes women from participating in institutions and decision-making processes (Gustavsson et al., 2021; Kleiber et al., 2015; Williams, 2010). Gendered power relations and social norms operating within SSF contexts, such as the mobility restrictions that constrain women from travelling away from home and household caretaking responsibilities, further limit the scope for women's participation in governance (Lawless et al., 2019). As a result, women's representative voices concerning their experiences, knowledge, interests and priorities tend to be left out of deliberations and decision-making (Bennett, 2005; Burnley & Ziegenhagen, 2014; Gissi et al., 2018; Kleiber et al., 2017). The resulting solutions not only undermine the governance outcomes but also further marginalize women and perpetuate gender inequity (Bennett et al., 2021; Crona et al., 2020; Kleiber et al., 2017).

Adopting a gender-inclusive approach is widely recognized within environmental governance literature as mutually-reinforcing and necessary to achieve positive development outcomes for women themselves, their families, and communities (Agarwal, 2001; Elmhirst & Resurreccion, 2008; Rocheleau et al., 1996). Such an approach, for example, helps to secure access and user rights for both women and men, improve resource conservation and stewardship, and strengthen economic returns from fishing livelihoods (Freitas et al., 2020; Kleiber et al., 2018). For the women themselves, such experiences may build confidence, improve their agency and provide empowering experiences in ways that other aspects of their lives are enriched (Kabeer, 1999).

Despite the decades of studies focused on gendered dimensions of SSF, we have a limited scholarly understanding about the issues of gendered power relations and how to meaningfully engage women in SSF governance (Frangoudes et al., 2020; Kleiber et al., 2017). To this end, a comprehensive synthesis on the state of current empirical evidence on women's engagement in SSF governance remains a critical gap in applied scholarship and practice. Such a synthesis is crucial to understand the entry points to meaningfully engage women in fisheries management, conservation and stewardship, and the associated livelihood interventions. To address this gap, we conducted a systematic scoping review of peer-reviewed empirical literature. Our review was guided by three research questions:

1. What is the scope of empirical literature on how women participate, influence and shape SSF governance?

2. What specific roles do women perform in SSF governance processes?

3. How do women shape and influence governance outcomes, and what barriers do they face in doing so?

The novelty of our review arises in three main ways. First, we present the first global-level systematic scoping review of peer-reviewed empirical literature at the intersection of gender and SSF governance. Second, we advance the conceptual and analytical linkages between SSF governance and women's participation by situating our analysis in relation to the principles of interactive governance perspective (Kooiman et al., 2008). Lastly, our review aligns with on-going high-level discussions across science-policy-practice interfaces, such as the global implementation of SSF Guidelines, SDGs, and blue economy narratives.

The paper is structured as follows. First, we discuss the conceptual foundations that guide our review and then outline our methodological approach. Next, we present the results, where we characterize the sample, explore the institutional context, synthesize a typology of women's governance tasks, illustrate the specific outcomes to which they contribute, and assess the barriers they encounter. Lastly, we examine the patterns that emerged across the reviewed literature to draw broader insights and highlight implications to improve women's participation in SSF governance.

3.3 Conceptual background

Small-scale fisheries represent a significant yet marginalized sub-sector within global capture fisheries (Chuenpagdee & Jentoft, 2018). SSF include the wide-ranging livelihood activities along the fish value chain from pre-harvesting to harvesting and post-harvesting in marine, coastal, and inland fisheries, performed by both men and women (Smith & Basurto, 2019). SSF are strongly anchored in local communities, whose survival and well-being are critically dependent on how SSF systems are governed (Berkes & Nayak, 2018). Governance structures and processes determine access to, control over, and the management of resources in fishing communities around the world (Chuenpagdee & Jentoft, 2018). Governance happens through formal rules (e.g. policies, regulations), informal rules (e.g. norms, customs) and other arrangements (e.g. local associations) that prescribe the procedures and conditions under which fishing livelihoods operate (Kooiman et al., 2005).

In this paper, we view governance in broad terms and inclusive of all types of governance ‘interactions’ (Kooiman et al., 2008). Kooiman and colleagues [2005, p. 17] define governance interactions as ‘the specific forms of action, undertaken in order to remove obstacles and to follow new paths…’. The interactive governance perspective is helpful in this review in two specific ways. First, by definition, interactive governance brings attention to the process of societal problem-solving and opportunity creation while extending beyond the formal and informal rules and institutions to include all interactions among state and non-state actors such as markets and the civil society (Kooiman et al., 2008). This broad understanding about how governance can happen helps us capture all types of governance roles performed by women and all spaces where such contributions occur. For example, the relational networks and community events may provide practical spaces for women to collectively discuss the issues that matter to them, and voice concerns given the constraints they face in carving out time to do so.

Second, the concept of 'governance orders' (Kooiman et al., 2008) provides a theoretically grounded basis for analysing our review data. The three governance orders — first, second and third order — refer to what the governance deals with or the distinct tasks involved in each order. For example, first order governance involves day-to-day management activities, such as enforcing agreed-upon rules and monitoring resource use (Kooiman et al., 2008). Second order governance focuses on the institutional context within which first-order governing occurs (Kooiman et al., 2008). The institutional context includes informal rules (e.g., norms, customary rights, traditions), formal rules (e.g., policies, laws, regulations) and different other arrangements through which governance interactions are structured (e.g., procedures involving local institutions, markets, relational networks). The third order or meta-governance is about undertaking deliberations guided by fundamental societal values, principles and meanings (e.g., fairness, reciprocity, and respect) to ensure effectiveness and legitimacy of the resulting outcomes (Kooiman & Jentoft, 2009). Value-based deliberations are crucial to ensure that the institutional adjustments (e.g., development of new rules, strengthening existing rules), as well as the routine management practices (e.g., enforcing rules, implementing incentive schemes) needed in governing SSF are appropriately aligned with societal values and principles.

The third order governance is particularly relevant to pursuing gender-equitable outcomes because gender equality is an aspirational goal within the existing policy and practice interventions towards improving fishing livelihoods (e.g., SSF Guidelines, SDGs), and thus should be centred in decision-making agendas. Furthermore, value-deliberations open up an opportunity to bring more locally grounded understandings about how gendered governance could be improved to fit with local circumstances. Overall, the notion of governance orders provides a normative basis for assessing how gendered outcomes can be improved in SSF governance.

3.4 Methods

We conducted a systematic scoping review to assess peer-reviewed literature on how women experience, shape, and influence SSF governance. Our review is characterized as a systematic scoping review because it is focused on the critical appraisal of the state of an emergent body of literature (as opposed to conventional systematic reviews which are typically used to appraise well-established bodies of literature) (Berrang-Ford et al., 2015; Levac et al., 2010). The area of gender and SSF governance can benefit from a systematic scoping review as there have been increased calls for new knowledge to inform policies and targeted action aimed at improving women's involvement in decision-making (Frangoudes et al., 2020; Kleiber et al., 2017; Lawless et al., 2021).

We employed a rigorous and replicable search strategy to cover all relevant literature in a comprehensive way while mitigating potential sources of bias (Arksey & O'Malley, 2005; Moher et al., 2009). In compliance with the guidelines on Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA guidelines), our review followed a five-stage process: (a) formulation of research questions and scope; (b) development of search protocol; (c) database search and identification of other relevant articles through hand search; (d) screening of search results and (e) coding and analysis to discern key insights and patterns.

We selected SCOPUS and Web of Science databases to gather literature as these databases provide a comprehensive coverage of interdisciplinary environmental and social sciences

literature relevant to our research questions. We followed an iterative process to determine the search terms and develop the search string in consultation with a university librarian. We included search terms that reflected governance and management more broadly and all possible alternative terms that reflect gendered analysis within to study of SSF. The search terms were revised based on the following two criteria: sensitivity (i.e., count of all studies resulted in a search) and selectivity (i.e., proportion of studies that were relevant to research questions). Search strings were tested in the databases for finalizing. Table 3.1 shows the final search string that was consistently applied to both the selected databases.

Table 3.1: Finalized search string

Question component	Search terms included
Women	Gender* OR Women OR Female OR Fisher* OR Femini* OR Intersect
SSF	Small-scale fish* OR Small scale fish* OR Artisanal fish* OR Traditional fish*
Governance	Govern* OR Manag*

Notes: Asterisks (*) were used to broaden the search terms by capturing all variations.
'AND' operator was used to combine the three question components.

The search was restricted to title-abstract-author search because any item of indexed literature with a substantial focus on women in SSF governance would contain the finalized search terms within this search. The search included only the peer-reviewed publications, book chapters and conference proceedings. The search was limited to English as the language of publication based on the language expertise of co-authors and the availability of resources. A grey literature search was not included in the review due to the limitations in available resources. No restrictions were placed on the date of publication or the geographical location as the key aim of the review was to assess the state of literature. A full listing of inclusion and exclusion criteria is provided in Appendix G. A supplementary search was also conducted by tracing the citation lists and hand searching other known sources such as related reports and websites to gather all relevant articles. The initial searches were conducted in the Winter of 2021 and were supplemented by another search in January 2022 to ensure the inclusion of all relevant articles published during 2021.

The database searches yielded 1101 items in total. After removing the duplicates (35), the search results (1066) were screened in two steps. First, the titles and abstracts were screened to remove the items that were not related to gendered aspects in the context of SSF. Second, the remaining items were screened through a more comprehensive process where full-text articles were assessed to identify empirical cases with attention to women's involvement in SSF governance more broadly. We purposely excluded the articles which drew heavily on secondary literature without an empirical case. Here, an item was identified as empirical piece of literature if it relied purely on the analysis of one or more case studies building on primary data and original evidence from field settings (Plummer et al., 2012). The additional items (13) retrieved through the supplementary search also underwent full-text screening. Altogether, 192 articles were screened for an empirical case at the second stage and 54 items (i.e., the sample) were selected for the final qualitative review. Figure 3.1 shows the flowchart of screening. See Appendix H for a listing of papers included in the review along with a brief overview on each paper.

We employed a qualitative coding approach to extract variables and data relevant to our research questions (e.g., ways women participate in governance, outcomes they contribute towards, barriers they encounter). A combination of both deductive (i.e., applying a set of pre-determined codes) and inductive approaches (i.e. open coding that allows for patterns to emerge) were used in coding (Creswell, 2014). Results in relation to state of the literature were gathered through deductive coding (Research Question 1), whereas the variables on other core aspects being studied were extracted through inductive coding (Research Questions 2 and 3). Coding was undertaken using the qualitative analysis software NVivo 12 Plus.

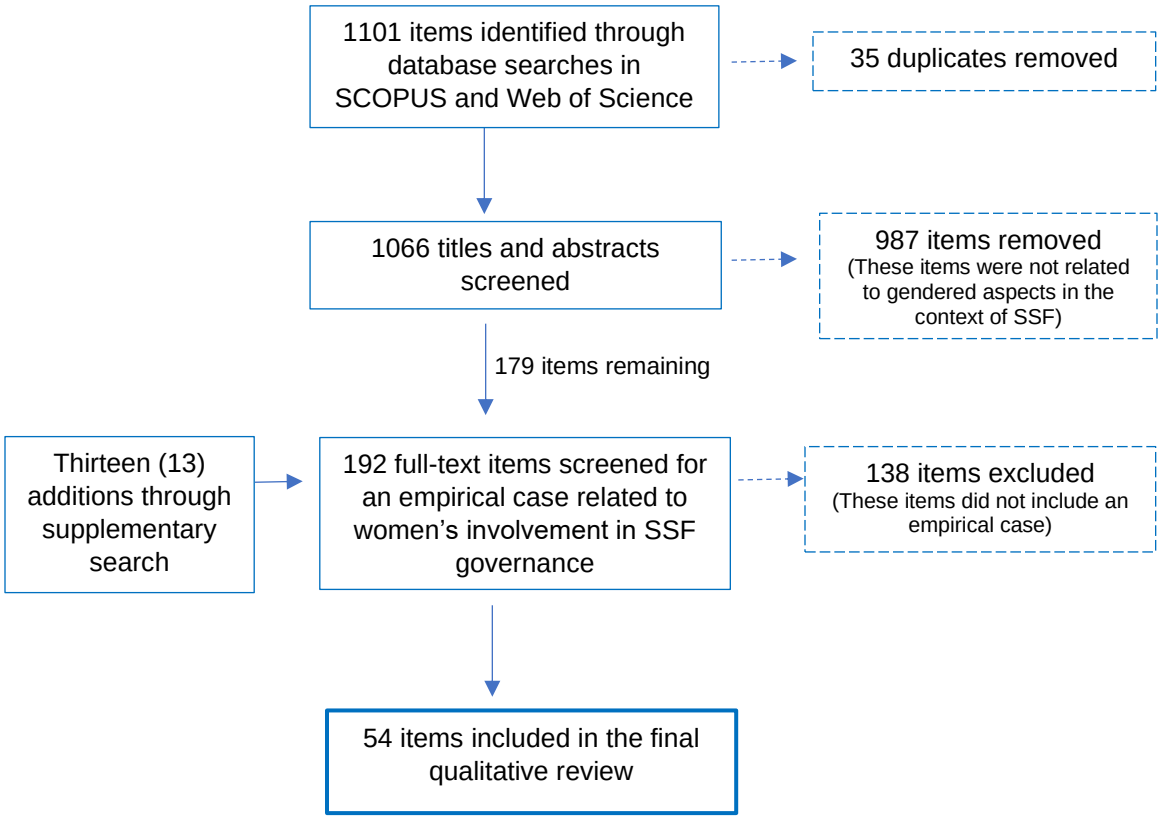

Figure 3.1: Flow chart of screening process

Following the first round of inductive coding, the code list was finalized by consolidating similar codes. This process resulted in the following coding structure that the assessment of each article/case included in the final review was based on: bibliographic information (authors, year of publication, journal); characteristics of literature (geographic location, spatial scale of study, type of fishery, value chain nodes of concern); governance order; type of institutions women interact with; governance tasks performed; outcomes achieved; barriers encountered and general comments about the articles. The codes emerged through this process were categorized into groups of variables or themes for further analysis and reporting.

Of the 54 articles included in the final review, 52 contained one empirical case each. One of the two remaining articles included two comparative cases and the other one included four cases. The search therefore yielded 58 empirical cases in total, however, with several duplications in the study locations of focus (two cases on Jeju island, South Korea; two cases on Tone Sap Lake in Cambodia, two cases on shellfish fishery Galicia and two cases on the Bio-Bio Region of Chile). The articles focusing on the same study location were reviewed together and were counted as a single case representing each empirical location. There were also some overlaps at the country level; however, with different scales of study. For example, we found separate articles focusing on SSF communities in Wales, SSF communities in Northern England, and SSF in the United Kingdom at the country level. Such articles were treated as separate cases because of the diversity in laws and regulations that govern SSF at these different scales.

Overall, the screening process resulted in a total of 54 empirical cases for the final synthesis. Our review has two limitations. First, there are categories of potentially relevant papers not captured in this review. These include the studies that obscure specific contributions made by women, for example by discussing them broadly as community contributions, without explicitly stating who is participating and in what. Further, the studies that report important details in passing such as the influential community positions held by women, are not included in our review. Second, the review does not capture any relevant items published in languages other than English or non-peer-reviewed sources (grey literature) due to the limitations in our language expertise and available resources.

3.5 Results

3.5.1 Sample overview

Our first research question was to assess the scope of empirical literature on women's engagement in SSF governance. Fifty-four articles included in the final review collectively represented the work of 160 authors. The studies presented in these articles were grounded in a variety of theoretical and applied frameworks such as feminist political ecology, agency and empowerment, community-based natural resource management, co-management, Marine Protected Area governance and participatory action research. See Appendix H for a brief description on each of the articles included in the review.

Figure 3.2 depicts the number of reviewed articles by publication year. The oldest article in our analysis was from 1995. Since then, about two articles were published each year until 2014. Several gap years (without any publication) were also present during this period. However, the annual number of publications seemed to have grown since 2017 showing the emergent nature of this body of literature.

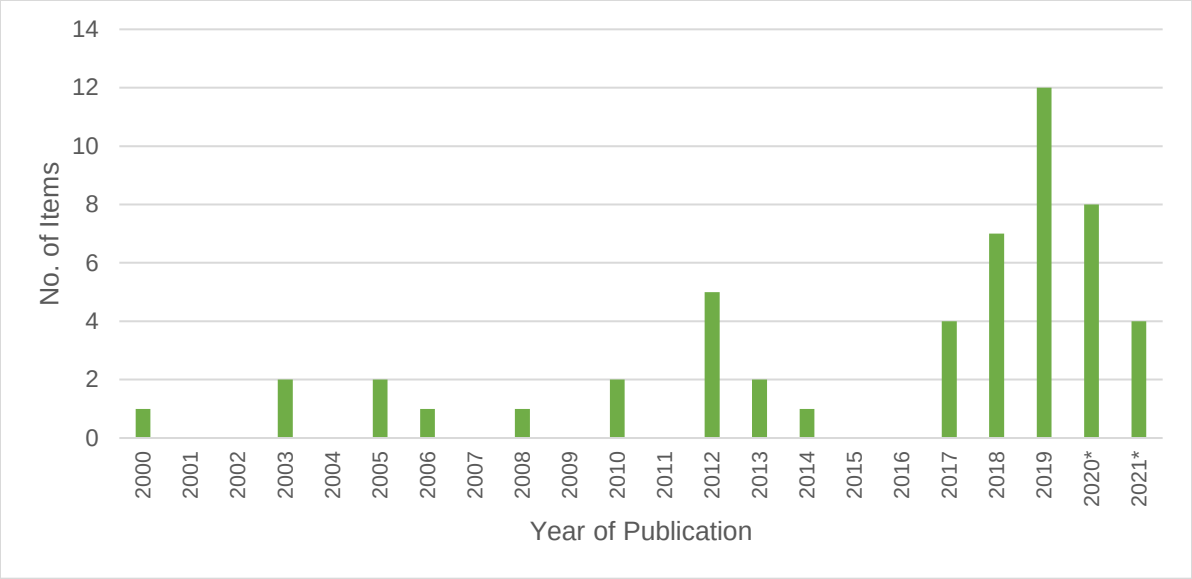

Figure 3.2: Number of items by publication year

Note: (*) The counts for 2020 and 2021 may have been impacted by COVID-19 pandemic-related fieldwork limitations and the delays in academic publishing.

3.5.1.1 Geographic location and spatial scale of study

The review protocol resulted in a total of 54 empirical cases globally (Figure 3.3). These cases reflected SSF systems in 33 countries across six of the seven continents (Antarctica not included). The majority of these cases (41) were from the Global South. The articles were predominantly focused on coastal fishery systems (47 cases). In addition, there were seven inland fishery systems –Tanzanian shores of Lake (Medard et al., 2019), Malawian lakes of Chilwa and Malawi (Manyungwa et al., 2019), Okavango Delta in Botswana (Ngwenya et al., 2012), lake fisheries in Uganda (Nunan, 2006), Brazilian Amazon (Freitas et al., 2020), and Tonle Sap Great Lake in Cambodia (Resurreccion, 2008).

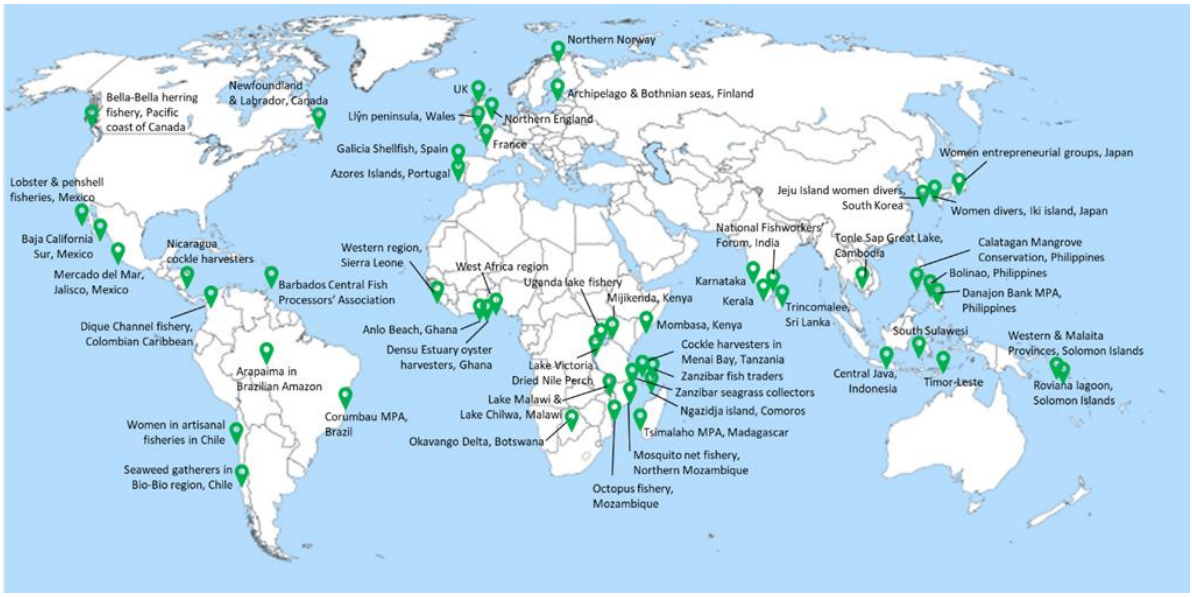

Figure 3.3: Geographical locations of case studies

Table 3.2 further characterizes the geographic context of the reviewed literature. The spatial scale or the socio-cultural setting of study identified by authors was mostly local (34 cases) with focus on one or more study communities. Eight articles each explored governance concerns at the country level and at sub-country level jurisdictions (i.e., a province or an ecosystem). Three articles focused on regional levels (i.e., representing more than one country in a region). One article was focused on decision-making and negotiations at the household level. There were no articles focusing on governance concerns at the global level.

Table 3.2: Characterization of reviewed literature

Characteristic		Description	Number of cases
Geographic location	Africa	The empirical case is from Africa	19
	Asia	The empirical case is from Asia	13
	North America	The empirical case is from North America	6
	South America	The empirical case is from South America	6
	Europe	The empirical case is from Europe	8
	Oceania	The empirical case is from Oceania	2
Spatial scale of concern and socio-cultural setting	Local	The governance aspects being studied concerns one or several communities	34
	Country level	The governance concerns reflect the entire country level	8
	Sub-country level	The governance concerns are beyond community level (e.g., province, ecosystem) but does not reflect the entire country	8

	Regional level	The governance concerns reflect two or more countries within a region (e.g., Africa, Melanesia)	3
	Household	The governance aspects being studied concerns the individual household level	1
Type of fishery being studied	Multi species	The fishery being studied is identified as SSF in general or include multiple targeted fish/seafood species	32
	Single species SSF	The fishery concerns a single species (e.g., octopus, oysters, cockles, Pacific herring, Arapaima sp.)	22
VC activities of concern	Harvesting	The case focused only on harvesting activities, including gleaning for subsistence	29
	Processing and/or trading	The case focused only on fish processing and/or trading activities, including a wholesale fish market	13
	Multiple activities	The case focused on multiple key value chain activities (not the entire value chain from pre-harvesting to consumption)	12

3.5.1.2 Type of fishery and value chains stages

A significant portion of the reviewed literature (22 cases) was focused on single target species fisheries such as octopus, cockles, oysters, flying fish, Pacific herring, Cod, Nile perch or seagrass (e.g., Crawford et al., 2010; Harper et al., 2018; Wosu, 2019). Many of these fisheries predominantly involve women compared to men. The remaining 32 cases were on fisheries targeting multiple fish/seafood species (e.g., Baker-Médard, 2017; Gallardo-Fernández & Saunders, 2018; Rohe et al., 2018) or focus on SSF activities more generally.

The value chain stages of concern varied across the cases. Twenty nine cases focused specifically on the fish harvesting stage, including gleaning, seagrass gathering and subsistence (e.g., Di Ciommo & Schiavetti, 2012; Lawless et al., 2012; Lokuge & Hilhorst, 2017). Fish processing and/or trading stages were the focus of 13 cases (e.g., Medard et al., 2019; Mutimukuru-Maravanyika et al., 2017; Pena et al., 2020) while the remaining cases (12) focused on fish harvesting, processing and trading activities. There were no studies that took a whole value chain approach to study governance implications from pre-harvesting to consumption in an all-encompassing way.

3.6 Women's engagement and orders of governance

Our second research question was to examine the specific roles women play in SSF governance processes. This included the wide-ranging arrangements that comprise the institutional and governance context where women participate, as well as the specific roles they perform. As mentioned above, we used the concept of governance orders offered through interactive governance to categorize the cases into governance orders (Table 3.3).

Eighteen empirical cases clearly mentioned women being involved in performing first order tasks such as attending meetings and performing resource monitoring roles. These also included

the cases which mentioned that women's participation in decision-making was particularly low. For example, despite women's and men's differential interactions with the SSF associated with seagrass meadows in Zanzibar, Tanzania, the management has historically been androcentric and the participation of women in decision-making was low (de la Torre-Castro, 2019). Thirteen cases discussed second order tasks such as active participation in decision-making and management roles. For example, in local fisherfolk organization in Bolinao, Philippines, several women continued to hold active leadership roles for over 10 years and exercise agency in decision-making (Dasig, 2020).

Table 3.3: Categorization of cases by the orders of governance

Order of governance	Description	Number of cases
First order	Only first order tasks specifically mentioned (e.g., resource monitoring, attending meetings).	18
Second order	Second order tasks clearly mentioned (e.g., active participation in decision making at various levels). Some of these cases also discussed additional first order tasks.	13
Third order	Third order tasks are clearly mentioned (e.g., value-based deliberations with concrete action to address gender issues). Some of these cases also discussed additional second and/or first order tasks.	10
Unclear	The cases that were not coded because they lacked sufficient information to identify the full range of tasks potentially performed by women.	13

A total of 10 cases emphasized third order tasks performed by women, such as the value-based deliberations that led to improved outcomes for women. For example, the Indigenous Heiltsuk women on the central coast of British Columbia, Canada catalysed a transformation in the management of local Pacific herring fishery through women's unique traditional leadership roles and strategic action (Harper et al., 2018).

The remaining 13 cases were not categorized because they lacked sufficient details to identify the full range of governance tasks performed by women, or the details capturing both formal as well as informal rules and norms that potentially shape women's participation. These cases were still insightful. Some of these cases highlighted how women found ways to informally address the issues concerning the resources they interact with, but that were not framed as women's participation in governance. For example, on the Tanzanian shores of Lake Victoria, some women dried fish traders used their close ties to a cross-border men's trading network to gain access to ‘helpers’, who were the men affiliated with local fishing cooperatives and acted as intermediaries in filling purchase orders (Medard et al., 2019). Although these women did not belong to the cooperatives, they found indirect ways to gain support of the cooperatives to continue trading. In some other cases, the roles women performed were beyond the regular tasks that typically characterize governance orders such as decision-making, resource monitoring and attending meetings. For example, in Trincomalee, Sri Lanka, small groups of women informally

negotiated their access to male-dominant lagoon space through their male kin even though it was not clear how the lagoon fishery was governed (Lokuge & Hilhorst, 2017).

In the following section, we explore the nuanced experiences of women in SSF governance. In doing so, we examine the institutional and governance context within which women participate, the specific governance tasks they perform, the outcomes to which they contribute and the barriers that may undermine their efforts.

3.6.1 The institutional and governance arrangements

Table 3.4 highlights the institutional and governance arrangements acknowledged across all reviewed empirical cases. The overall governance context within women participate comprised an array of arrangements: (a) legal and regulatory frameworks (formal); (b) different forms of participatory arrangements and (c) customary institutions, norms, relational networks and other social venues that structure decision-making (informal).

a) Laws, acts and policies that shape the regulatory background

The literature acknowledged formal laws shaping access and use of fisheries resources such as the rules involving Marine Protected Areas and various other fisheries-related acts, policies and guidelines (44 cases). Furthermore, legal rights, quotas and permits (11 cases), such as the exclusive user rights and commercial permits to sell cockles in Nicaragua and Tanzania directly shaped women's access to and use of resources (Crawford et al., 2010; Gallardo-Fernández & Saunders, 2018). Depending on the context, these formal rules supported or restricted women's capacity to involve in governance. For example, MPA rules in Mozambique restricted women from participating in the octopus fishery, whereas the formal recognition of customary user rights in Chile has fostered women's active participation in governing artisanal fisheries (Baker-Médard, 2017; Gustavsson et al., 2021).

Table 3.4: Institutional and governance arrangements acknowledged*

	Empirical case	Formal rules		Participatory arrangements		Informal spaces			Literature reviewed
		Laws, Acts, and policies	Legal rights, permits, quotas	Community-based mgt / cooperatives	Co-mgt	Customary practices, cultural traditions, gendered norms	Networks, social circles & groups	Social gatherings (outside of fisheries)	
	Third order of governance with evidence for gender issues as a central topic of deliberation leading to concrete action								
1	Seaweed gatherers in Bio-Bio region, Chile	●	●	●×		●			Franco-Meléndez et al., 2021; Gallardo-Fernández & Saunders, 2018

2	Jeju island women divers, South Korea	●	●	●×		●	●		Kim, 2003; Ko et al., 2010
3	Anlo beach fishing communities, Ghana	●			●	●			Mutimukuru-Maravanyika et al., 2017
4	Shellfish co-mgt in Galicia, Spain	●	●		●×		●	●	Frangoudes et al., 2008; Meltzoff, 1995
5	Herring fishery in Bella Bella, British Columbia, Canada	●	●			●	●	●	Harper et al., 2018
6	Flying fish fishery in Barbados	●			●×		●		Pena et al., 2020
7	Cockle harvesters in Aserradores Estuary, Nicaragua	●	●		●	●			Crawford et al., 2010
8	Arapaima co-mgt, Brazilian Amazon	●			●	●			Freitas et al., 2020
9	Baja California Sur, Mexico	●	●	●					Torre et al., 2019
10	Northern Norway	●	●	●×			●	●	Gerrard, 1995
	Second order of Governance with evidence for women actively participating in institutional decision-making at various levels								
11	Azores islands, Portugal	●		●×			●		Neilson et al., 2019
12	Densu Estuary oyster harvesters, Ghana	●			●	●	●		Torell et al., 2019
13	Bolinao, Philippines			●		●	●		Dasig, 2020
14	Women's entrepreneurial groups in Japan	●		●×		●		●	Soejima & Frangoudes, 2019
15	Mercado del Mer whole fish market, Mexico	●		●		●			Pedroza-Gutiérrez, 2019)
16	Cockle harvesters in Menai Bay of Zanzibar Island, Tanzania	●	●		●	●		●	Crawford et al., 2010
17	Dique channel fishery, Colombia	●		●		●	●		Barrios et al., 2020
18	Ngazidja island, Comoros	●		●×		●	●		Hauzer et al., 2013
19	Calatagan Mangrove Conserve, Philippines	●		●		●			Ladia et al., 2019
20	Artisanal fisher movement in India (1970s-1980s)	●		●		●	●		Nayak, 2005
21	Voluntary groups in Newfoundland & Labrador, Canada (1990s)	●				●	●		Neis, 2000
22	Ugandan lake fishery	●				●	●		Nunan, 2006
23	Artisanal fisheries, Chile	●		●		●	●		Gustavsson et al., 2021
	First order governance with women participating in operational activities								
24	Western & Malaita provinces, Solomon Islands	●		●		●		●	Lawless et al., 2012

25	Octopus fishery in Quirimbas National Park, Mozambique	●			●	●		Wosu, 2019
26	Roviana lagoon, Solomon Islands	●		●	●		●	Rohe et al., 2018
27	Danajon Bank MPA, Philippines	●		●	●		●	Kleiber et al., 2018
28	Tonle Sap Great Lake, Cambodia	●	●	●	●		●	Kwok et al., 2020; Resurreccion, 2012
29	Tsimalaho MPA, Madagascar	●		●	●		●	Baker-Médard, 2017
30	Zanzibar seagrass collectors & fish traders, Tanzania	●		●	●		●	Fröcklin et al., 2013; Gustavsson et al., 2021
31	Archipelago & Bothnian seas, Finland	●	●	●×			●	Salmi & Sonck-Rautio, 2018
32	Women Fish traders in Mombasa, Kenyan coast	●		●	●		●	Matsue et al., 2014
33	Corumbau Marine Reserve/MPA, Brazil	●		●	●		●	Di Ciommo & Schiavetti, 2012
34	Llyn peninsular, Wales, UK	●			●		●	Gustavsson & Riley, 2018
35	Malawi lake fisheries	●		●	●		●	Manyungwa et al., 2019)
36	Iki Island diving women, Japan	●		●×	●		●	Lim et al., 2012
37	Northern England	●	●			●		Zhao et al., 2013
38	Western coast, Sierra Leone	●		●	●			Okeke-Ogbuafor & Gray, 2021
39	Lobster & penshell fisheries, Mexico	●		●				Solano et al., 2021
40	Small-scale fisheries, France	●		●×	●			Gustavsson et al., 2021
41	Small-scale fisheries, UK	●			●			Gustavsson et al., 2021

● Acknowledged in reviewed case

●× All-women associations or all-women groups participating in co-management

* The empty cells in Table 4 do not suggest that a particular arrangement is not present in a particular setting, rather the arrangement was not acknowledged in the reviewed case (e.g., gender norms).

b) Involvement in community-based or co-management committees

The literature emphasized community fisher associations (customary institutions or cooperatives) as a key arrangement through which women are involved in and influence SSF governance (32 cases). They participated in these associations in various capacities and played different roles within them — from attending meetings to performing active leadership roles. Notably, literature mentioned nine cases of all-women community groups — Jamsuhoe women divers' groups in Jeju, South Korea (Kim, 2003; Ko et al., 2010); fisherwomen's associations in Portugal (Neilson

et al., 2019), Finland (Salmi & Sonck-Rautio, 2018), northern Norway (Gerrard, 1995), and France (Gustavsson et al., 2021); Amasan women diving groups (Lim et al., 2012) and entrepreneurial groups in Japan (Soejima & Frangoudes, 2019); fisherwomen in Ngazidja, Comoros (Hauzer et al., 2013); and the seaweed gatherers union in Coliumo, Chile (Gallardo-Fernández & Saunders, 2018). These associations operated at local and sub-national levels (e.g., Chile, Cambodia, South Korea) and also at a national level within nested institutional structures (e.g., Japan, Barbados, France).

In seven cases, women were involved in various forms of co-management arrangements that share resource management responsibilities among the state and resources users, some of which also involve civil society actors. Several of these arrangements were state-supported initiatives that particularly seek to improve women in local resource management and stewardship. Examples included the co-management interventions in the cockle fishery in Menai Bay, Zanzibar (Crawford et al., 2010), and the shellfish fishery in Galicia (Frangoudes et al., 2008), which was designed to involve women by providing them with exclusive user rights and permits to sell their harvests. Certain other co-management initiatives discussed in the literature were initiated at the community level with the support of non-profit organizations and universities. For example, the Arapaima co-management system in the Brazilian Amazon was a non-profit initiated arrangement that was adapted by the local communities and was later formally recognized by the federal government (Freitas et al., 2020). There were also two all-women associations participating in co-management arrangements — shellfish co-management in Galicia (Frangoudes et al., 2008; Meltzoff, 1995) and fish processing cooperatives in Barbados (Pena et al., 2020).

c) Customs, norms, relational networks and other informal venues

Most cases highlighted customary practices and cultural norms as informal rules through which governance occurred (36 cases). Most importantly, these norms and practices shaped the specific ways that women engage in governance (i.e., what they can and cannot do, when and where they can participate). For example, the local norms in Zanzibar about how a ‘respectable woman’ should behave around men directly influenced the women fish traders ability to interact with men and negotiate market spaces (Fröcklin et al., 2013).

Furthermore, traditional leadership roles and authority that women may (or may not) hold at the community level was also acknowledged as an aspect that directly shape women's involvement. For example, the traditional leadership roles and social positions held by Indigenous Heiltsuk women in local Pacific herring fishery on the Central coast of British Columbia, Canada had positively reinforced women's capacity to mobilize community collective action (Harper et al., 2018). Similarly, in the traditional villages of Madagascar, both women and men held positions of authority to call meetings, make decisions and actively involve both gender groups in the process (Baker-Médard, 2017). In comparison, the strong patriarchal societies where the traditional non-elected leadership roles were passed down only to male members, such as the fishing communities in Central Java (Indonesia), Solomon Islands and lake fisheries in Uganda, had restricted women's capacity to involve in governance (Fitrianggraeni, 2019; Nunan, 2006; Rohe et al., 2018).

Local relational networks were also widely recognized in the literature as spaces where women often interact and socialize in ways that facilitate information sharing, trust building and problem

solving (21 cases). These networks were underpinned by kinship ties, familial connections, friendships, neighbourhood connections, ethnic and cultural ties, and personal networks. For example, Muslim women in Trincomalee, Sri Lanka negotiated their access to lagoon space through self-organized women's groups or through their male kin (Lokuge & Hilhorst, 2017). Similarly, dried fish trade on the Tanzanian shores of Lake Victoria was structured through strong informal networks of contact that determine access to dried fish as well as the trading partners (Medard et al., 2019).

In addition to the above, various communal groups that exist beyond fisheries (e.g. church groups, self-help groups, savings groups), social gatherings, religious ceremonies and other community events were recognized in literature as platforms that enable discussions on topics of importance to governance (19 cases). Most importantly, activities taking place in such venues were associated with significant value and meaning to the communities and thus were influential in fostering social connections and community cohesion. For example, Amasan women divers in Japan mostly engage in fishing-related activities outside of male-dominant fishing co-operatives (Lim et al., 2012). These activities included meetings with other local Amasan women, stocking of harvested seafood varieties, beach cleaning and religious ceremonies to offer food to the gods for prosperity and mark the opening of diving season (Lim et al., 2012).

3.6.2 Governance tasks performed by women — a typology

Which tasks do women perform within the particular SSF governance contexts? In addressing this question, we assessed all 54 reviewed cases to capture all the tasks performed by women. Most cases discussed multiple ways that women were involved in governance, for example by holding leadership roles and helping monitor resource conditions while simultaneously contributing their social-ecological knowledge to decision-making. When all the tasks acknowledged across literature were listed, a clear typology emerged within the review results. The typology included the tasks that typically characterize the orders of interactive governance (e.g., active involvement in decision-making in second order or resource monitoring duties in first order governance), as well as the additional tasks (e.g., activism/mass mobilization, relational networking and community collective action).

The most frequently discussed tasks were the leadership roles and active participation in decision-making (24 cases), and relational networking and collective action at group or community level (31 cases). Less frequently discussed tasks were, exercising agency and fostering legitimacy (16 cases); resource monitoring (10 cases); and attending meetings (9 cases). Knowledge contributions to decision-making (6 cases) and mass mobilization/activism (4 cases) were also among the tasks. Table 3.5 provides the case examples and further details about these governance tasks.

Table 3.5: A typology of governance tasks performed by women

Ways women participate in governing SSF	Definition	Examples
Hold leadership roles and actively participate in decision-making (24 cases)	Hold leadership/managerial roles within community organizations and actively participate in decision-making through deliberations, negotiations, and strategic action with key attention to gender issues	Women leaders in fisher organizations in Bolinao, Philippines; traditional leadership roles and collective decision making among Indigenous women in Bella Bella's herring fishery in Pacific coast of Canada (Barrios et al., 2020; Dasig, 2020; Harper et al., 2018)
Relational networking and informal collective action at group or community level (31 cases)	Women self-organize, build social capital, and collectively act at group or community levels (beyond fisher cooperatives)	Collective price negotiation with fishermen and catch sharing system among women fish traders in Kenya, women divers' informal groups that facilitate mutual support in face of physical risk at work, build social capital, resolve conflicts, and encourage resource conservation (Kim, 2003; Lokuge & Hilhorst, 2017; Matsue et al., 2014)
Exercise agency and foster legitimacy in response to specific needs (16 cases)	Women exercise agency and foster legitimacy at group level but in response to specific needs	Negotiating through male kin (Sri Lanka), trading heritage (Mexico), kinship networks and personal contacts (Kenya), entrepreneurial linkages (Japan, Finland) (Harper et al., 2018; Kawarazuka et al., 2019; Medard et al., 2019)
Perform resource monitoring roles (10 cases)	Women actively perform resource monitoring roles based on agreed-upon rules and sanctions	Patrolling illegal gear use in Tonle Sap; resource maintenance and mandatory removal of other seaweeds by South Korean women divers (Crawford et al., 2010; Freitas et al., 2020; Ko et al., 2010)
Less/no participation in meetings (9 cases)	Women attend meetings (mostly irregularly) with no/minimum engagement in decision-making	Low levels of women's attendance in Corumbau MPA meetings, attending meeting out of obligation in Philippines' Danajon Bank MPA (Di Ciommo & Schiavetti, 2012; Kleiber et al., 2018; Ngwenya et al., 2012)
Knowledge contributions to decision-making (6 cases)	Women share traditional knowledge more broadly through their governance roles (e.g., species and habitats they interact with, gear fabrication, weather conditions) while informing decision-making and enabling intergenerational transfer of community values and collective identities	Sharing and replication of traditional knowledge in both Indigenous herring fishery in Pacific coast of Canada and in Arapaima fishery in Brazil; transfer of local ecological knowledge and fishing techniques as young girls accompany elders and learn-by-doing in Comoros (Freitas et al., 2020; Harper et al., 2018; Hauzer et al., 2013)

Mass mobilization and activism (4 cases)	Movements/socio-political activism among women toward catalyzing policy/structural change with varying degrees of influence	Fisherwomen's movements in India, Norway, Galicia, and Newfoundland in Canada (Gerrard, 1995; Meltzoff, 1995; Nayak, 2005; Neis, 2000)

Further, the typology was inevitably linked to the governance and institutional arrangements in which women participate. We found that leadership and resource monitoring roles were discussed within the context of participatory arrangements or within customary leadership arrangements. In addition, agency and bargaining, knowledge transfer, and developing personal contacts were explored in relation to both community associations and informal groups/relational networks. Meeting attendance was discussed mostly in the context of co-management arrangements. Figure 3.4 illustrates how these types of tasks fit within the governance orders.

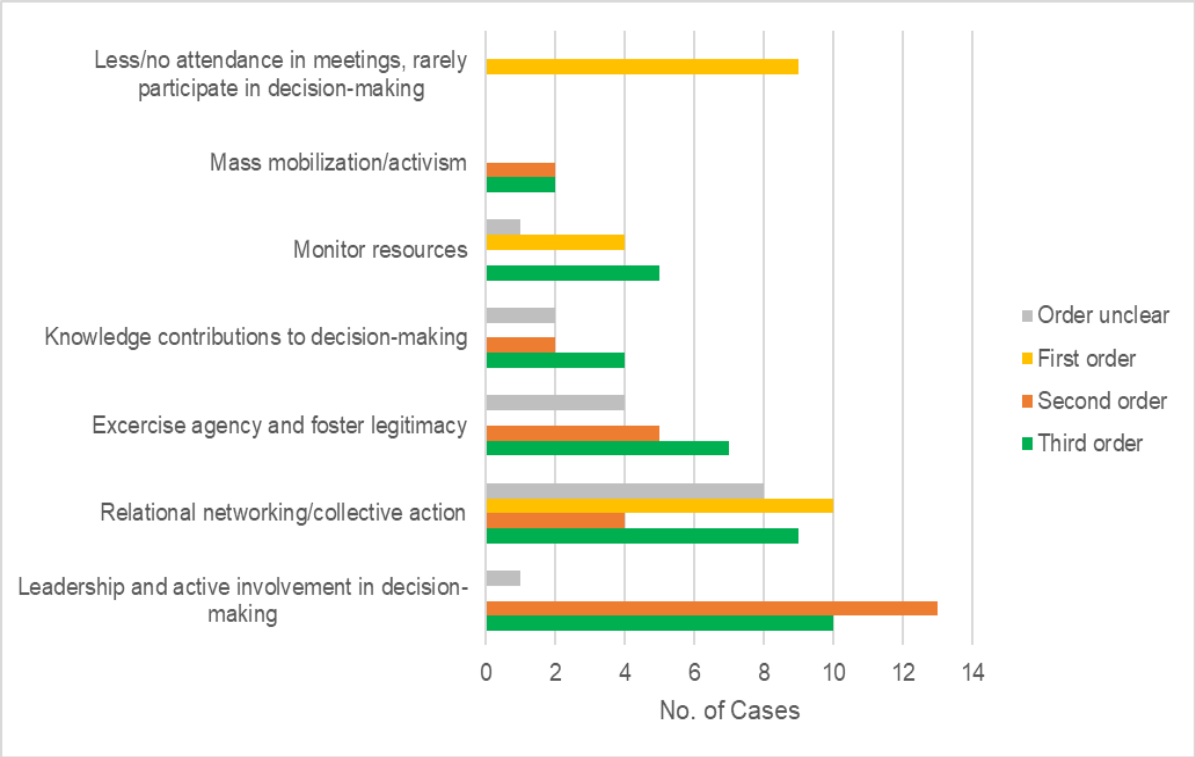

Figure 3.4: Tasks performed by women and the orders of governance

Note: All 54 study cases are represented in this figure. The tasks have been categorised into governance orders using the theoretically-grounded basis described in section 3.3.

3.6.3 Governance outcomes and barriers

Our third objective was to examine the specific outcomes to which women contribute through the roles they perform. In achieving this objective, we first explored the specific outcomes achieved in each governance order and then contextualized those outcomes in relation to the barriers that hinder such efforts.

a) Key outcomes achieved

Nine different key outcomes were emphasized in the reviewed literature. Figure 3.5 illustrates the linkages among governance orders and these outcomes. All three governance orders generated a mix of outcomes. The three main outcomes included improving socio-economic contributions (27 cases); gaining recognition for women's 'invisible' roles and contributions (20 cases); and claiming rights/access to resources while contributing to better resource management (16 cases). For example, among the many cases discussing improved socio-economic conditions, the case of Arapaima fisheries in Brazilian Amazon revealed that inclusion of women in co-managing the fishery resulted in a 77% chance of women earning US$ 215/year compared to virtually zero income earned by women in communities without such an arrangement (Freitas et al., 2020). Women's entrance into artisanal fishing in Coliumo, Chile and through the formation of unions, women had managed to successfully claim territorial user rights and reinforce village customary practices over the nearshore marine resources (Gallardo-Fernández & Saunders, 2018). In addition, women gained recognition for their roles and contributions that previously remained overlooked within the governance contexts they operate in (16 instances). For example, women's new and influential positions as respectable leaders and entrepreneurs in Mexico's Mercado del Mar wholesale fish market garnered recognition while improving their legitimacy (Pedroza-Gutiérrez, 2019). In Arezos Islands, Portugal, fisherwomen's self-organization into associations enabled them gain place within the community while also garnering the attention of state, non-profit initiatives and the researchers interested in studying or supporting the local efforts (Neilson et al., 2019).

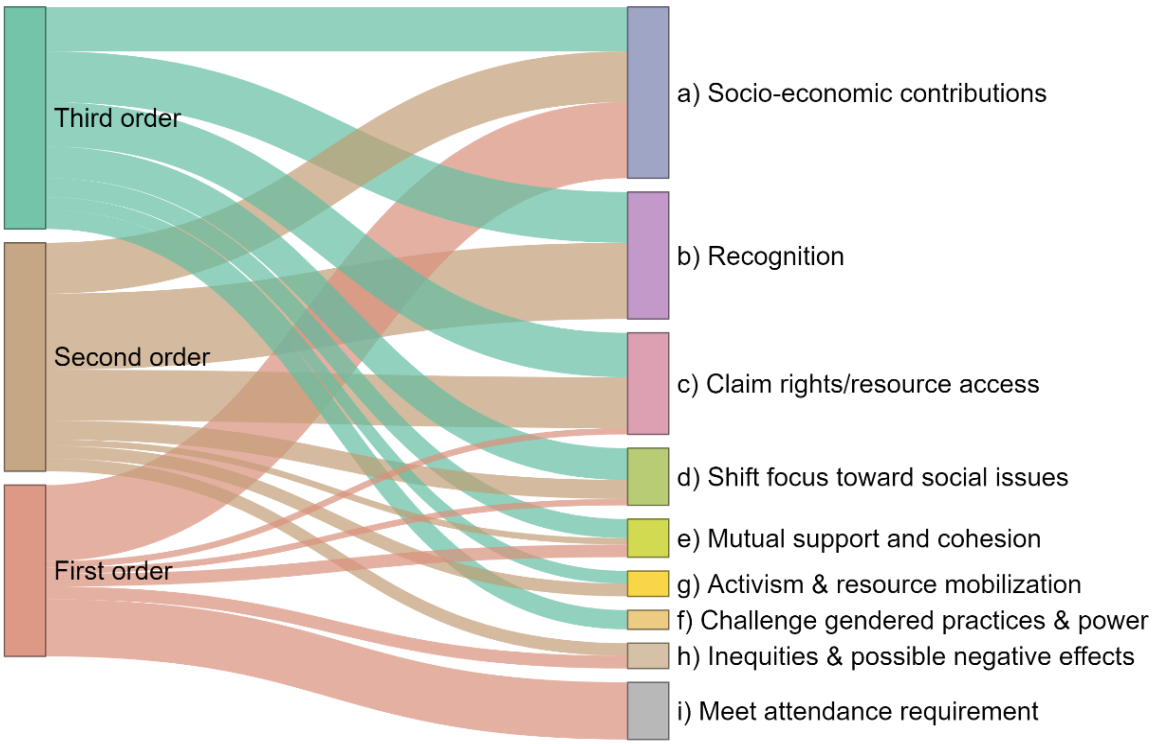

Figure 3.5: Different governance roles performed by women and the key outcomes

a) Improve socio-economic contributions to women themselves, families, and communities; b) Gain recognition for women's 'invisible' roles and contributions; c) Claim rights/access to resources and contribute to better resource management; d) Help shift governance focus toward wider social issues; e) Foster mutual support and community cohesion through activities beyond fisheries organizations; f) Challenge gendered practices and power relations; g) Engage in activism and resource mobilization towards integrating feminist perspectives into decision-making; h) Widened inequities and conflicts among women arising from privileged access to decision-making and possible negative effects on resource management; and i) Attend meetings to fullfil attendance requirement/expectations however rarely participate in decision-making.

Other types of outcomes highlighted in literature included women's contributions in shifting the focus of governance from fishery towards wider societal issues (nine cases) and in fostering mutual support and community cohesion within spaces outside of the fisheries (six cases). These contributions helped improve the overall well-being of fishing communities while also strengthening the capacity for collective problem solving. For example, in a fishing community in Northern England, fishers' wives organized into a group called 'Fishermen's Families and Friends' with the aim to uplift the profile of the fishing industry and support the continuity of fishing-based livelihoods (Zhao et al., 2013). The efforts to foster mutual support and social cohesion were mainly highlighted in relation to women's participation in community activities (civic engagement) and their involvements in close-knit relational networks. For example, Indigenous Heiltsuk women's experiences in responding to fishery conflicts on the Central coast of British Columbia highlighted how they took on leadership roles to build solidarity and mobilize the community to protest against the management practices that overlooked their interests (Harper et al., 2018).

In addition, women also engaged in activism and in building momentum to actively develop feminist perspectives to inform decision-making (four cases). For example, in northern Norway and Newfoundland (Canada), women's mass movement and activism led to strategic action and resource mobilization (Gerrard, 1995; Neis, 2000). In doing so, women found ways to improve their representation in decision-making circles, establish organizational linkages and share their viewpoints and expertise.

Challenging gendered practices and power relations was also highlighted as an outcome achieved by women (three cases). For example, fisherwomen in Coliumo, Chile not only successfully claimed customary user rights to access the artisanal fishery but also gained confidence to start negotiating within their male-dominant households to have freedom to spend more time each day in fishing (Gallardo-Fernández & Saunders, 2018). Women's sentiments are captured in the statement, 'before we asked for permission [from husbands], now we only give notice' (Gallardo-Fernández & Saunders, 2018, p. 1; clarification added). This was a significant shift as women were traditionally required to seek permission from their husbands or male family members before going fishing.

While many of the above outcomes were predominantly positive, widened inequalities and possible negative impacts on resource governance were also reported in the sample (four cases). For example, in Tonle Sap Lake, the women who had close ties to influential men in the community manoeuvred into leadership positions while further marginalizing other women (Resurreccion, 2008). Further, the local marine management rules in Roviana lagoon, Solomon Islands had enforced a marine closure in the location where women mostly used to fish and were

implemented by local male leaders on whom women had lost trust due to perceived financial mismanagement. As a result, the new rules seemed to widen the existing inequalities within the broader community while also undermining the intended conservation outcomes (Rohe et al., 2018).

Another more frequently highlighted outcome was the evidence of women attending meetings to fulfil the membership requirement (nine cases). Although women in these instances were rarely involved in any decision-making, fulfilling the attendance requirement was important for them to secure continued access to the fishery. For example, Baker-Médard (2017) estimated that women are 17 times less likely to participate in MPA governance in Madagascar than men. Sometimes women also attended meetings out of obligation as a community resident, or to just represent their husbands, for example in the case of Danajon Bank MPA in the Philippines (Kleiber et al., 2018).

b) Key barriers acknowledged

The barriers encountered by women in performing their governance roles was a key topic of discussion across the reviewed literature. These included both the barriers that had been addressed through governance efforts, fully or partially, as well as the ones that continued to hinder women's efforts. Gendered power relations were the barrier discussed most frequently in literature (27 cases). Gendered power included the conditions where men were socio-politically empowered through hierarchies/patriarchy and women were considered subordinate actors (e.g. Brazil, Solomon Islands, India, Ghana, Japan, Cambodia, Madagascar, Kenya, Malawi, Colombia, Mexico) (Baker-Médard, 2017; Kwok et al., 2020; Lawless et al., 2019; Resurreccion, 2008). Power relations were also materialized through wage gaps where men earned more than women for the same task (e.g., seagrass in Zanzibar, Sri Lankan women working in beach seines). In other cases, for example in Brazil's Corumbau MPA, women's positions were referred to as ‘assistants’, which were unpaid positions. In France, fisherwomen were viewed as the representatives of their husbands/partners and the women were not recognized on their own right (Gustavsson et al., 2021).

Another barrier emphasized in the literature was constraining gender norms, traditions, attitudes and the domestic obligations embodied in everyday practices (19 cases). These norms were deeply entrenched in local contexts with diverse manifestations of how they constrained the scope for action for women as well as their access to resources. Examples included the blurred lines in practice between ‘not allowed to’ and ‘not supposed to’ in relation to women’s participation; expectations associated with household workloads and care responsibilities; permissions required from male household heads for the women to participate in the fishery (Mozambique); restrictive attitudes among men about women not needing equal access to resources (Kenya, Tonle Sap Lake) (Kawarazuka et al., 2019; Kwok et al., 2020; Lawless et al., 2019; Matsue et al., 2014; Wosu, 2019).

Lack of supportive fisheries legislation was also discussed in the literature as a barrier that restricts women's participation. Some legislation was gender discriminatory while other legislation did not include concrete measures to effectively address gender issues (12 cases). For example, exclusion of women was evident through institutionalized rules, practices and membership rights such as the MPA rules that banned fisherwomen from gleaning in Mozambique, Danajon Bank (Philippines) and Brazil (Baker-Médard, 2017; de la Torre-Castro,

2019; Kleiber et al., 2018). Lack of formal recognition for fisherwomen (e.g., fisheries laws in Japan and Sri Lanka) or lack of concrete measures to effectively address gender issues (e.g., Mexican fisheries policies) was also discussed as key issues of concern in relation to current legislation (Lokuge & Hilhorst, 2017; Soejima & Frangoudes, 2019; Torre et al., 2019).

Lack of authority/legitimacy to influence decision-making was also discussed as a barrier undermining women's governance roles (15 cases). The challenges they face in influencing decision-making at local levels were due to various reasons. For example, both in Madagascar and Malawi, traditional leadership roles that were passed down only to male members as well as perceived lack of authority among women to voice their concerns eventually led to low/irregular meeting attendance among women (Manyungwa et al., 2019; Mutimukuru-Maravanyika et al., 2017).

Other types of barriers discussed across the reviewed literature included perceived lack of skills and capacities among women in relation to governance (10 cases). For example, Indonesian fisherwomen seemed to not have the capacity to self-organize and manage resources whereas the lower levels of literacy among fisherwomen on the Kenyan coast impacted their capacity to participate in decision-making (Fitrianggraeni, 2019; Matsue et al., 2014). In contrast, Finnish fisherwomen's modest and downplayed roles led to the perception that they lacked expertise (Salmi & Sonck-Rautio, 2018). As a result, women were excluded in decision-making concerning the resources they interact with.

The impact of broader drivers of change on women's efforts was also highlighted in the literature (10 cases). These include both the drivers that existed within and beyond fisheries: aging fisher populations (e.g., South Korea and Japan); general shifts in fishing practices from communal to more private businesses (e.g., Llyn peninsular, UK); market pressures (Galicia); and the geopolitical changes such as the Brexit (Aswathy & Kalpana, 2018; Gustavsson et al., 2021; Soejima & Frangoudes, 2019). The governance impact of these drivers varied from reduced membership in fishing associations to reduced scope for community collective action and the need to reform existing fisheries policies.

The literature also brought attention to different forms of exclusion among women in terms of access to decision-making (6 cases). Such discrimination, for example, happened when the familial ties or ethnic backgrounds of some women help them maneuver into influential social positions through which they can influence decision-making. For example, most women involved in community fisheries management groups in Cambodia's Tonle Sap Lake were the wives or female relatives of the men who occupy village leadership positions, and these kin relations helped legitimize women's participation (Resurreccion, 2008).

To further explore the linkages among outcomes and barriers and how value-based deliberations work in practice, we closely examined the cases demonstrating women's involvement third order of governance (Table 3.6). The barriers identified in these cases included those that have been dealt with through governance as well as the barriers that continue to hinder women's governance efforts. For example, some barriers included the struggles or pre-conditions that led to women's active involvement in the first place, such as the lack of rights to access resources. In contrast, gendered power relations and gender-discriminative legislation were among the barriers that continued to undermine women's efforts.

Table 3.6: Roles, barriers, and outcomes acknowledged in cases demonstrating women's active involvement in third-order decision-making

Empirical case	Governance roles performed						Barriers (both addressed and ongoing)							Outcomes contributed to						
	Lead & participate in decision-making	Relational networking and collective action	Agency & legitimacy/ empowering experiences	Knowledge contributions to decision-making	Resource monitoring	Mass mobilization and activism	Gendered practices and power relations	Constraining gender norms	Lack of access to & control over resources	Lack of authority/ legitimacy	Lack of supportive legislations	Lack of skills/capacity to lead/manage	Broader drivers of change	Socio-economic contributions	Claim rights/access & contribute to better resource mgt.	Shift focus towards wider social issues	Gain recognition for 'invisible' roles	Challenge gendered practices/power	Foster mutual support & cohesion	Activism, resource mobilization, & feminist perspectives
Seaweed gatherers in Bio-Bio region, Chile (all-women associations)	●	●	●						**x** √	**x** √	**x**			●	●		●	●	●	
Jeju island women divers, South Korea (all-women associations)	●	●		●	●				**x** √				**x**	●	●	●			●	
Anlo beach fishing communities, Ghana	●	●					**x**	**x**	**x** √	**x** √					●		●			
Shellfish co-mgt in Galicia, Spain (all-women associations)	●	●	●	●	●	●				**x** √	**x** √	**x** √		●	●	●				●
Herring fishery in Bella Bella, British Columbia, Canada	●	●	●				**x**		**x** √	**x** √					●		●		●	
Flying fish fishery in Barbados	●	●	●	●			**x** √		**x** √	**x** √		**x** √		●	●		●	●		

Cockle harvesters in Aserradores Estuary, Nicaragua	●	●	●		●							**x** √		●	●		●			
Arapaima co-mgt, Brazilian Amazon	●			●	●		**x**		**x** √			**x** √		●		●	●	●		
Baja California Sur community-based mgt., Mexico (all-women associations)		●	●		●		**x** √				**x**			●			●	●		
Northern Norway fisheries co-mgt. (all-women associations)	●	●	●			●				**x**						●	●			●

● Roles or outcomes acknowledged in literature

x Ongoing barriers acknowledged in literature

x√ Significant progress has been made through the governance interventions in addressing the specific barrier

3.6 Discussion

3.6.1 Assessing the body of empirical literature

In this review, we systematically assessed the body of literature that comprise evidence on how women engage in governing SSF globally. Fifty-four published studies met our review criteria while yielding a dataset encompassing a variety of empirical cases. Not surprisingly, most reviewed cases were focused on the spaces where women typically outnumber men such as the coastal/inshore fisheries (e.g., shellfish gathering, gleaning, seaweed gathering) and land-based value chain activities such as fish processing.

To put the size of the reviewed empirical body of literature into context, we use a recent study by Harper et al. (Harper et al., 2020) on the global contributions of women to SSF, where the authors reported the participation of over two million women in small-scale marine harvesting activities while landing an estimated 11% of global fish harvests. These estimates demonstrate the need for widespread empirical investigation of gender in the context of SSF governance. This is because the potential involvement of women in influencing the governance of the fishery systems they depend on should seemingly be much higher than the number of cases reported in literature. However, we do not suggest that there have been no other accounts of women's governance contributions beyond the 54 empirical cases reviewed in this paper. For example, Women in Fisheries Bulletin issued by the Secretariat for the Pacific Community, Yemaya newsletter issued by International Collective in Support of Fishworkers, and Women in Seafood Industry (WSI) newsletter issued by the International Organization for WSI are among the leading accounts that elevate women's roles and contributions to fisheries, including their governance contributions. Furthermore, the FAO technical paper by (Alonso-Población & Siar, 2018) is also a notable contribution where the authors assessed the enablers and barriers to

women's participation and leadership in fisherfolk organizations, and collective action. While these sources provide rich information on women in fisheries, they did not meet the inclusion criteria developed for this review.

We also encountered some limitations in the review dataset in relation to the depth of governance-related details because empirical cases were grounded in a variety of theoretical/applied frameworks and perspectives. For example, as outlined in the methodology section, the full range of governance tasks performed by women, or detailed accounts capturing both formal as well as informal rules and norms that shape women's participation, were not evident in several cases. Despite these limitations, the review yielded an evidence base to develop novel analytical insights through the application of the concept of governance orders, and to better understand women's engagement in governing SSFs. The remainder of this section identifies the patterns across literature and draw broader insights in this regard.

3.6.2 Gender as a topic of discussion within governance orders

Our categorization of the review data (Table 3.3) showed that in cases where women were involved in performing only the day-to-day operational tasks (first-order governance), their attendance in meetings was low. Further, there was no or less participation of women in any institutional decision-making (e.g., Danajon Bank MPA in the Philippines; Kleiber et al., 2018). As a result, gender appeared to be largely excluded as a topic of discussion within such decision-making processes. In contrast, when women actively participated as association leaders and collaborative decision-makers (second-order governance), they helped integrate gender as a key topic in decision-making (e.g., Azores islands in Portugal and Bolinao in the Philippines; Dasig, 2020; Neilson et al., 2019). In these cases, however, the actual progress made in achieving gender equitable outcomes appeared to be undermined by various barriers (e.g., gendered power relations), the implications of which we discuss later in this section. Moreover, women's efforts through their participation in value-based deliberations (third-order governance) widely demonstrated their agency and legitimacy in influencing decision-making, where gender was evidently a central topic of discussion. Such discussions actively sought to address the barriers women encounter, for example, by claiming legal recognition for their fishing activities as demonstrated in both Galicia shellfish fishery and Barbados flying fish fishery.

Women's engagement in third order of governance, however, did not mean that these cases were without any issues (see Table 3.6). Rather the third order cases provided evidence that substantial progress had been made through concrete action to transform governance processes towards achieving gender equitable outcomes. For example, through participatory action planning in fishing communities, Anlo beach, Ghana, women have been able to take on leadership roles and actively involve in decision-making and contribute to significant livelihood improvements (Mutimukuru-Maravanyika et al., 2017). However, challenging deep-seated gendered power hierarchies and gender restrictive norms within these communities require continued efforts and over time (Mutimukuru-Maravanyika et al., 2017).

3.6.3 Governance arrangements and implications for women's participation

Our analysis (Table 4) revealed that women perform governance roles within a broad spectrum of arrangements. Such arrangements included formal institutions (e.g., legal and regulatory frameworks), as well as participatory arrangements (e.g., co-management) and informal spaces (e.g., social gathering, relational networks, norms and traditions). As outlined below, the breadth of these arrangements influences the opportunities to advance women's participation in SSF governance.

All reviewed cases acknowledged formal arrangements that included a range of laws, acts and policies that incorporate gender considerations to varying extents. Such considerations ranged from various forms of legal recognition on women's activities through legislation (e.g., full recognition of shellfish gatherers in Galicia, Spain; collaborative spouse status offered to French fisherwomen), to broader policy commitments that advance gender equality (e.g., fisheries policies in Mexico and Ghana). In contrast, some cases highlighted legislation that was gender-discriminatory altogether (e.g., MPA laws in Mozambique and Danajon Bank, Philippines). Nonetheless, women's active governance contributions were evident when formal consideration was given by deliberately linking their efforts to formal instruments such as legal rights, permits and quotas. For example, the institutionalization of territorial user rights of artisanal fisherwomen in Coliumo, Chile enabled them to claim customary user rights over the nearshore marine resources (Gallardo-Fernández & Saunders, 2018).

Participatory approaches to resource management, such as co-management, was emphasized in the literature as an opportunity to catalyse women's participation. However, the ability to do so seemed to vary because the active participation of women in co-management was evident only in some cases (e.g., flying fish fishery in Barbados, Arapaima co-management in Brazil). This resonates with current understanding as feminist scholars have argued that inclusion of women in institutional structures with no regard for social and power relations is counter-productive (Arora-Jonsson, 2012; Resurreccion, 2006). More specifically, drawing women into male-dominant structures and processes over which they have little/no control may inadvertently reinforce existing gender biases and hierarchies (Resurreccion & Elmhirst, 2008).

All-women groups emerged as an important institutional arrangement through which women participate in governance. In the literature surveyed for this review, there were nine all-women community associations and two women's groups participating in co-management, with five of these arrangements enabling women's active participation in decision-making (Table 4). This might suggest that all-women groups may help strengthen women's engagement, yet further research is needed to better understand the nuanced implications of this phenomenon. For example, more clarity is required on how and where all-women groups might work and where gender groups need to collaborate, and under which governance pre-conditions.

Furthermore, informal spaces that exist beyond fisheries influence women's participation in governance (e.g., religious ceremonies, self-help groups). Such influences mainly occurred by way of creating opportunities for women, as well as men in some cases, to socialize, share information and build trust. In doing so, women played key roles — both traditional and contemporary — as collaborative decision-makers, knowledge holders and socio-political networkers, and thereby bringing together their expertise, insights and skills to bear on shared problems. Traditional norms and local practices such as the customary practices that dictate resource access and traditional community leadership roles were also important informal

arrangements. Literature however cautioned about these norms and practices as they can both restrict or facilitate women's participation (Fröcklin et al., 2013; Harper et al., 2018; Rohe et al., 2018).

The informal spaces were crucial for improving women's participation in SSF governance for at least three reasons. First, these spaces revealed the embedded nature of the governance arrangements that shape women's participation. For example, most interactions of women divers' long-standing self-ruled organizations in Jeju island, South Korea took place informally (Kim, 2003; Ko et al., 2010). Second, these spaces helped women in navigating workloads, household responsibilities and constraining gender norms to carve out time and alternative spaces to socialize and take on influential community positions. Finally, these experiences eventually led to empowering experiences, improved agency and legitimacy for women to take on initiatives at both community and household levels. In fact, the need to explore opportunities across formal and informal spaces where women are active to meaningfully engage them in governance is a long-standing argument in feminist scholarship in the context of natural resources (Agarwal, 2009; Arora-Jonsson, 2008). Within community forestry groups, for example informal spaces had opened up opportunities for networking and organization among previously disaggregated groups leading to improved engagement of women in resource management and stewardship (Arora-Jonsson, 2008).

3.6.4 Achievement of gender-equitable outcomes

While our synthesis did not intend to evaluate the level of success of the governance interventions reported in our sample, we sought to understand linkages among key outcomes and governance orders (Figure 4). Although each governance order generated a range of outcomes, women's active engagement in decision-making and value-based deliberations (second and third orders of governance) inevitably contributed towards achieving the most outcomes. In contrast, women's participation in first-order governance led to significant socio-economic contributions and helped them fulfil attendance expectations. Overall, these outcomes were predominantly positive in the sense that they helped strengthen the governance capacity (e.g., improved community cohesion and social capital) and improved the well-being of fishing communities (e.g., bringing attention to wider societal issues such as livelihood vulnerabilities and market pressures).

The cases where deeply gendered practices and power relations were challenged were of particular importance to the critical examination of gendered governance outcomes. This was because such actions may signal the achievement of gender transformative outcomes; that is, the outcomes achieved through an approach that seek to engage with the root causes of gender inequities and not just work around those causes (Cole et al., 2020). Among the few such examples captured in review results, Chile's artisanal fisheries revealed how women's collective action have led to new and empowering experiences as the women no longer required permission from male household leads to engage in fishing (Gallardo-Fernández & Saunders, 2018). The term empowerment is understood here as the 'process of acquiring the ability to make strategic life choices by those who had been denied this ability' (Kabeer, 1999, p. 435).

Outcomes achieved through women's governance efforts, however, were not always positive as they included widened inequalities and possible negative impacts on resource management as well. For example, when the women who were privileged over others through their close ties

with influential men manoeuvred into leadership positions, the resulting actions further marginalized other women (e.g., Tonle Sap Lake). Such actions also undermined resource governance by, for example encouraging unsustainable fish harvesting practices (e.g., juvenile catches in Tanzanian shores of Lake Victoria). Moreover, having women attend meetings without providing them the room to voice concerns appeared to be counter-productive given the difficulties they face in managing workloads. Overall, the range of outcomes from positive, including specific gender transformative outcomes, to possibly negative outcomes re-emphasize the fact that mere inclusion of women in existing arrangements will not improve their meaningful participation.

The barriers to women's participation in governance as acknowledged in reviewed literature (Table 6) were largely consistent with our current understanding about the root causes of gender inequity within SSF contexts. For example, gendered power relations, constraining gender norms, household obligations and lack of access to and control over resources, resonate with the topics widely discussed in SSF gender research. An additional insight emerged from our review was related to the impacts of external drivers of change. For example, women's governance efforts were hindered in cases of ageing fisher populations in Japan and South Korea (reduced cooperative membership). Further, the re-organization of fishing activities from communal to household enterprises in Finland and disappearing fishing communities in Northern England reduced the scope for community collective action (Aswathy & Kalpana, 2018; Salmi & Sonck-Rautio, 2018; Soejima & Frangoudes, 2019; Zhao et al., 2013). As such, these drivers not only influenced the scope for women's participation but also challenged the existing governance arrangements to continuously adjust and respond. Our analysis of barriers thus showed that even in cases where gender issues were already a central topic in decision-making, the governance arrangements need to continuously deal with existing as well as emerging barriers that may undermine women's efforts. This highlighted a further complication in relation to the efforts to ensure women's full participation in SSF governance, where ‘one-time-solutions’ will not work in practice.

3.6.5 How can an overarching focus on values help advance gender equitable outcomes?

Our review results showed that significant progress can be made in achieving gender equitable outcomes when women's interests, concerns and issues are brought to the centre of decision-making with special attention to the local circumstances that shape their realities (e.g., importance of informal spaces, different types of outcomes). According to interactive governance, a process that enables value-based deliberations (third-order governance) requires upholding community values, principles and interests across governance processes (Kooiman et al., 2008). While it is apparent that meaningful inclusion of women is crucial to bring their representative voices to such deliberations, how can an overarching focus on values help in this process? In responding to this question, we built on the concepts that link gender and institutions within natural resources scholarship, particularly the participatory exclusions framework (which provides a typology of different forms of women's participation; see Agarwal, 2001). However, as discussed in the conceptual background section, our point of departure in this review was the notion of value-based deliberations where the overarching focus is on societal values and principles.

The results across the cases demonstrating women's involvement in third-order governance showed that women were not only recognized for their knowledge contributions based on their differential interactions with SSF resources, but also for their roles as holders of community values and meanings associated with their fishing-based way of living. For example, in the Jeju island women divers' groups (with a history of over 400 years) and Indigenous herring fishery in Pacific coast of Canada, women played crucial roles in the inter-generational transfer of values, through which they fostered cultural continuity, held knowledge, and acted as a source of social capital. Their viewpoints about what matters to them were largely shaped within informal spaces such as close-knit networks, neighbourhood connections and civic engagement. Moreover, the activities taking place in such venues were associated with significant value and meaning to the communities (e.g., religious ceremonies that mark the opening of women's diving season). As such, women's governance efforts were tightly linked with the wider societal values and principles.

Furthermore, women's active contributions to decision-making earned them respect and high regard within communities, which helped them legitimize their representation. This point highlighted the importance of paying attention to the role of men in recognizing and facilitating women's efforts, starting with the openness to involve women in discussions where they were previously excluded, recognizing women as legitimate actors in SSF on their own right and valuing their perspectives with equal footing. For example, the Arapaima co-management initiative in Brazilian Amazon achieved better social outcomes through collaborative work of both women and men at the community level (Freitas et al., 2020). Such an approach will facilitate appropriate adjustments to existing rules (e.g., formal recognition of women's activities) and targeted action that seek to directly engage with the root causes of gender inequity.

3.7 Conclusion

Creating opportunities to meaningfully engage women in governance and decision-making is necessary to achieve gender equality in the context of SSF. Crucially, such efforts should be informed by comprehensive understandings of gendered power and oppression grounded on empirical realities. In this review, we synthesized a typology of governance tasks performed by women within SSF contexts, which includes leadership roles and active participation in decision-making; relational networking and collective action; exercising agency and legitimacy; resource monitoring; knowledge sharing; meeting attendance (with no/less participation in decision-making); and activism and mass mobilization. We also examined the outcomes women contribute to and assessed the barriers that undermine their efforts. Our review confirmed the limitations in our current understanding on the real-world experiences of women in SSF governance. We also drew critical insights by grounding our analysis on the concept of value-based deliberations offered through interactive governance perspective, and highlighted the broader implications towards improving women's meaningful participation in SSF governance. The insights we offer may help identify entry points to foster gender-inclusive approaches to SSF governance, and pathways to create gender equitable outcomes across policy and practice.

Chapter 4

Gendered dimensions of social wellbeing within dried fish value chains in Sri Lanka

4.1 Chapter summary

How small-scale fishers participate in and benefit from dried fish value chains (DFVC) is rarely acknowledged and poorly understood. This chapter aims to address this gap by examining two distinct dried fish value chains in Sri Lanka: a coastal urban DFVC and an inland rural DFVC. Our approach draws on value chain and social wellbeing literatures which provide theoretical foundations to examine structural aspects of value chain organization and multiple dimensions of wellbeing creation. A qualitative case study approach was employed to develop comparative value chain cases based on in-depth interviews with dried fish processors and key informants. Our approach brings special attention to the processing 'node' of the DFVC and its linkages to adjacent nodes, all of which uniquely set apart dried fish from fresh or frozen fish chains. Our results emphasize the nuanced ways how people derive material, relational, and subjective wellbeing through their value chain participation and the differences between the experiences of women and men. We argue that the DFVCs are of disproportionate importance to the wellbeing of socio-economically marginalized people in fishing communities. Our findings reveal that increased commercialization has a negative impact on women's participation in value chains and the relational underpinnings in safeguarding interests of marginalized groups in general. Moreover, increased commercialization also appears to put intergenerational capacity to support wellbeing at risk. We also highlight how these insights can inform fisheries governance to ensure the wellbeing of those who critically depend on DFVCs.

4.2 Introduction

The aim of this chapter is to critically examine how women and men[15] in fishing communities generate social wellbeing through their participation in dried fish value chains (DFVC). DFVCs comprise a unique sub-sector within small-scale fisheries that make significant contributions towards livelihoods, cultural continuity, and local economies, particularly in Asia and Africa (Belton et al., 2022b). The term 'dried fish' refers to the fish processed using simple, low-cost, low-technology methods such as sun-drying, salting, fermenting, and smoking. A fish value chain encompasses the series of activities or 'nodes', from fish harvesting to processing, distribution, trading, and consumption (Bush et al., 2019). The specific focus of this paper is on the land-based processing node, which primarily sets apart DFVCs from fresh fish value chains through preservation that enables the product to be stored in room temperature.

Globally, about 11% of fish harvests are processed as dried fish (FAO, 2020), with much higher volume conversions reported in developing countries. For example, in Myanmar and Bangladesh, 34% and 25% of total fish harvests respectively are processed as dried fish (Hossain et al., 2015). In comparison to global food value chains, DFVCs predominantly remain localized

[15] While I acknowledge that gender categories fall within a spectrum and that it is crucial to move beyond the gender binary, people in the study communities in Sri Lanka identified themselves as women and men.

and firmly rooted in local contexts through cultural connections and kinship ties (Belton et al., 2018). Fish drying activities remain dispersed across remote fishing areas, products (dried fish) are often considered artisanal, and distribution channels and markets are informal (Hossain et al., 2015; Koralagama et al., 2021). The communities who host these value chains often are the marginalized and disadvantaged societal groups such as the poor, refugees, lower castes, and other minority groups (Belton et al., 2018). Therefore, their survival and wellbeing is critically dependent on the benefits they generate through value chain participation including income, employment, food, and a culturally important way of living among others (Belton et al., 2022b).

Dried fish value chains, however, are deeply gendered. Women predominantly make up the fish drying workforce and perform various other tasks vital to the functioning of the value chains (Belton et al., 2018; Koralagama et al., 2021; Salagrama & Dasu, 2021). Nonetheless, their ability to generate benefits through their value chain participation vary significantly from that of men (Matsue et al., 2014). For example, women often do not have access to good quality fish or profitable markets. Gendered wage gaps are also common for similar value chain tasks. Furthermore, women's presence in DFVCs and their contributions are rarely documented and remain 'invisible' (Belton et al., 2018).

Despite the gender issues, our scholarly understanding about nuances of gendered value chain participation and how gender relations operate within DFVCs is limited (Belton et al., 2018, 2022b). The available body of literature on dried fish is scattered and mostly focused on the technical aspects such as food safety and preservation techniques (Belton et al., 2022b). DFVCs also remain a blindspot within mainstream fisheries management, policy, and practice interventions across geographies (Belton et al., 2022b). A particular knowledge gap exists in relation to the nuances of how women and men benefit from their value chain participation and the implications for fisheries governance. We define governance as a means to address societal issues, and involving formal and informal institutions through which societies structure collective decision-making and take action (e.g., rules, policies, norms, and customary practices) (Kooiman et al., 2005).

Understanding the implications for improving the capacity of DFVCs to support gendered dimensions of social wellbeing from a governance perspective is crucial. For example, developing a nuanced understanding of how livelihoods are organized around dried fish activities, which benefits supported through DFVCs matter the most for women compared to men, and which issues should be prioritized for interventions to support their wellbeing are among the insights that could inform governance interventions. The need to advance these knowledge gaps is also linked with ongoing global and national policy frameworks and initiatives aimed at addressing the issues of small-scale and artisanal fisheries. For example, the Food and Agriculture Organization's Voluntary Guidelines for Small-scale Fisheries (SSF Guidelines) and declaration of the 2022 International Year for Artisanal Fisheries and Aquaculture have made explicit commitments to improve human wellbeing and address gender inequities.

The next sections of this paper are structured as follows. We first introduce the theoretical foundations that guide our study design and the analytical approach. Next, we outline the study methods and provide a detailed account of the study setting, including organization of DFVC activities and the governance context. Then, we present the results, organized along the material, relational, and subjective wellbeing dimensions, emphasizing the importance of DFVC to the wellbeing of marginalized groups as a key insight of the study. Our discussion emphasizes the

key policy- and practice-relevant insights that emerge in our study and explore implications on fisheries governance. We conclude by highlighting the scholarly and applied contributions of this paper.

4.3 Theoretical framing

Our empirical research draws on the core areas of literature on value chains and social wellbeing and is guided by the conceptual framework depicted in Figure 4.1.

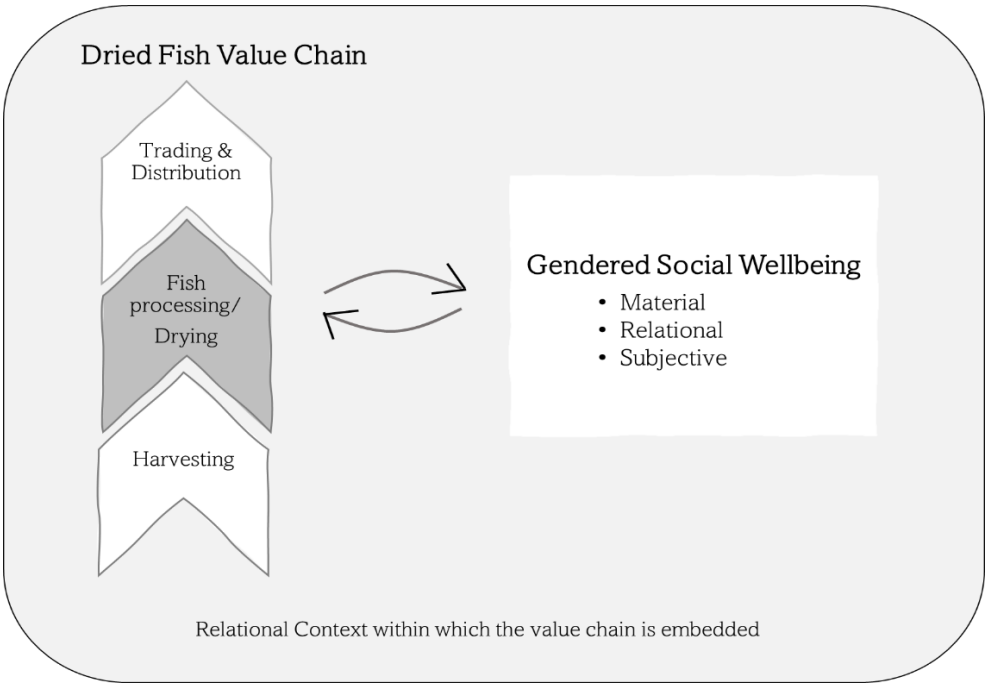

Figure 4.1: Conceptual framework

4.3.1 Value chains: Structural organization and value generation

We use the value chains concept to examine the structural organization of DFVCs and how value is generated. More specifically, we apply the value chain concept in two main ways. First, we explore the organization of activities, people involved, and their interactions by drawing from value chain terminology to understand the structural aspects. A value chain encompasses the full range of activities required to bring a product from the point of production to consumption (Kaplinsky & Morris, 2000; Porter, 1985). Structurally, value chain activities are sequenced as a series of nodes (e.g., harvesting, processing, trading) and linkages among them (Bush et al., 2019; Reardon et al., 2012). A wide array of people or value chain actors (e.g., processors, fishers, collectors, and local traders) participate in the nodes across the chain (Hossain et al., 2015). Various governance institutions, such as local governments, customary institutions, and traditional norms also take effect along a value chain (Steenbergen et al., 2019).

Second, we focus on the term ‘value’ to rethink the complexity of value creation across the value chain (Fabinyi et al., 2018; Pradhan et al., 2022). As a concept rooted in business literature, value

chains often focus on incremental value addition or value creation in financial terms as a product moves through the nodes of the chain (Porter, 1985). This opens up an opportunity for us to expand the scope of value creation by going beyond financial terms. In doing so, we bring specific attention to the range of values potentially generated through dried fish value chains, including both material and non-material benefits (e.g., cultural values, social ties) (Belton et al., 2018; Berenji et al., 2021; Salagrama & Dasu, 2021). This holistic conceptualization of value is also consistent with approaches to values in social theory (Graeber, 2001). Graeber (2001, p. 1) points out that value can be understood in a sociological sense, as what is good and desirable in human life; in an economic sense, as to the extent to which objects are desired and what is foregone to achieve these desired objects; and in a linguistic sense, as the meanings attributed to objects.

4.3.2 Social wellbeing: Pursuit of material and non-material benefits

'Social wellbeing' is an elaborated approach to wellbeing rooted in international development literature, which helps us unpack the diversity of material and non-material benefits (McGregor, 2008; Weeratunge et al., 2014). Social wellbeing is defined as "a state of being with others, where human needs are met, where one can act meaningfully to pursue one's goals, and where one enjoys a satisfactory quality of life" (McGregor, 2008, p. 1). This definition alludes to the 'social conception' of wellbeing, and argues that the wellbeing outcomes are socially and culturally constructed in a relational manner (Coulthard et al., 2011). Within DFVCs, for example, this helps understand the community embedded practices that determine access to fish or the transfer of knowledge about processing methods, which shape the outcomes (or the benefits) derived by the people participating in the value chains.

The analytical framework offered through social wellbeing concept systematically incorporates three interdependent dimensions — material, relational, and subjective wellbeing. The material dimension includes objective or physical resources that determine practical welfare and desired standards of living (e.g., income, wealth, physical health) (McGregor, 2008; Weeratunge et al., 2014; White, 2010). Relational dimension includes social relations that determine the scope for personal action/influence within a community (e.g., social ties, sense of belongingness, gender relations) (McGregor, 2008). People's own perceptions about what they have and can do are represented by the subjective dimension (e.g., values, perceptions, trust) (McGregor, 2008). Furthermore, social wellbeing is a flexible approach to examine social wellbeing at both individual and group/community levels (e.g., lines of solidarity within gender groups, collective action at the community level) (Coulthard, 2012). In doing so, a dual focus on wellbeing and illbeing can also be maintained, for example, by exploring health and safety or poverty issues that the workers experience (McGregor, 2008; White, 2010). Social wellbeing also complements broad conception of value generation through value chains.

4.4 Methods

4.4.1 Study location and context

Sri Lanka is a tropical island located in the Indian ocean approximately 100 km off of the Southeastern coast of India. The island has 1770 kms of coastline and an Exclusive Economic

Zone (EEZ) that spans 517,000 km^2. The fisheries sector in Sri Lanka is considered small in scale, and comprises of both marine and inland fisheries. Marine fisheries include activities taking place in coastal waters, within EEZ, and beyond into international waters. The country also has 2600 km^2 of freshwater bodies that host the inland fisheries.

Dried fish production in Sri Lanka has steadily increased over the past two decades from 24,000Mt in 2000 to 64,000Mt in 2017 although about 30% of local demand is still being met through imports (MFARD, 2018, 2020). Main marine dried fish production occurs along the entire coastline of the island. A substantial inland dried fish production also occurs surrounding inland perennial and seasonal reservoirs and natural water bodies.

As shown in Figure 4.2, the study communities were in Kalutara and Kantale districts — herein after referred to as coastal and inland communities or value chains. These two study communities represent urban coastal dried fish production and inland freshwater artisanal dried fish production. They have been carefully selected based on several criteria and in consultation with the local researchers. The selection criteria included type of fishery (marine and coastal vs. freshwater), location (urban coastal vs. inland rural), and evidence of both men's and women's involvement in fish drying activities.

Kalutara is a district in the Southwestern province of the country. Specific study villages included Payagala, Maggona, and Beruwala. Dried fish production in these villages relies on both deep sea and coastal fisheries and harvests landed at the Beruwala harbour as well as several traditional landing sites along the coast.

Kantale is a rural inland district in the Northeastern province locally well-known for artisanal dried and smoked fish products. Kantale lake, an ancient reservoir built for irrigating rice lands is the main source of fish. In addition, several smaller perennial and seasonal lakes in the area also provide many families with access to fishing. Drying activities are therefore dispersed across the villages surrounding these water bodies. The reservoir fishery is culture-based whereas the smaller lakes harbour both cultured and wild fish stocks. The specific study villages included Agbopura, Wewsirigama, Jayanthigama, Suriyapura, Mollipathana, Galmitiyawa, and Seeni Kamhala.

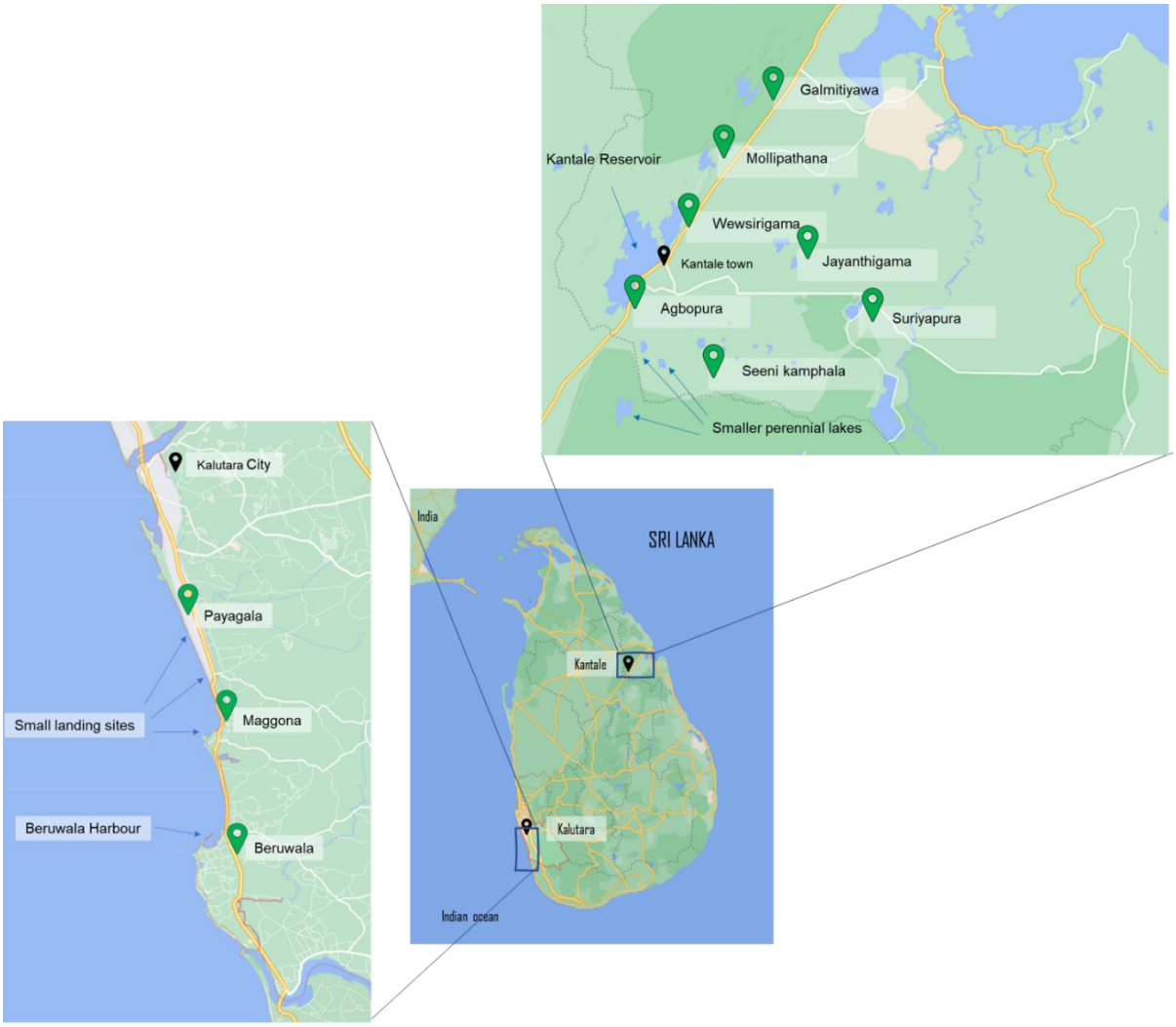

Figure 4.2: Study locations and communities (Source: Google Maps)

The Fisheries Ministry in Sri Lanka gathers monthly dried fish production volume data in the coastal community (dried fish production is not enumerated in the inland community). However, data collection appears to be inconsistent as only the production volumes of larger drying sites are recorded. The development interventions related to dried fish include the training programs on processing technologies (e.g., smoking ovens), which have limited uptake as they do not suit the practical needs or the production scale of dried fish operations.

There are two legal instruments directly applicable to fish drying activities although they are less relevant to small-scale fish processing. First, at the coastal community, solid and liquid waste disposal (e.g., fish heads, guts, wastewater) is governed by the Sri Lanka Marine Pollution Prevention Act (2008) enforced by the Marine Pollution Prevention Authority. However, the enforcement in practice appears to be limited to warnings because the sanction under the Act is applicable to 'industrial' scale fish processing (which is virtually non-existent). Second, in both study communities, food health and safety regulations (e.g., mold growth, product expiry dates) enforced by the Public Health Officials are applicable to storage during both drying and selling

activities at both study sites. However, the enforcement varies due to the informal and scattered nature of production and distribution channels. Furthermore, volume and quality of fish available for drying in both coastal and inland fishery is indirectly shaped by the national fishing regulations that generally govern fisheries such as the laws involving banned gear types and sizes and prohibited fishing areas such as coastal breeding grounds.

At a more informal level, community fisheries associations exist in both study communities although dried fish activities are not generally considered within the scope of core activities within associations. Many traditional fisheries associations in the coastal community have become inactive as the fishing activities are privately managed with less room for community-based participation. Only a handful of active associations currently exist, although their scope is limited to fishing. Historically, when the traditional associations were active, women participated in them as they owned beach seines and led fish drying at the community level. With the commercialized fish drying sites taking over community-embedded practices and the associated changes in gendered participation, women do not attend any meetings.

In comparison, a successful co-management arrangement exists in the inland study community around the main reservoir, where two active Fisheries Associations play a key role in managing the fishery in partnership with Fisheries Officers (Ministry/National Aquaculture Development Agency - NAQDA). Rules related to resource access and use are collectively developed and imposed by the community. Fishers must obtain association membership, which is open to both men and women. Although fisherwomen comprise <10% of the membership, women members can voice their concerns at the meetings without any restrictions. Other fishers who depend on the smaller perennial lakes in the area also have adopted the same model, however, women generally do not fish in these lakes.

Most importantly, gendered norms and customary practices work to structure routine value chain activities. For example, in the coastal community, local attitudes, norms, and practices related to mobility restrict women's access to large public spaces such as harbour and beach landings at distances away from homes because these are perceived as spaces that women are 'not supposed to' enter. In fact, it is customary that only men in these coastal communities go fishing. In contrast, the social positions of power associated with fishing family backgrounds facilitate access to fish at smaller traditional beach landing sites within fishing communities. For example, in some landing sites, fishers alert the drying site owners who has family backgrounds in fishing when harvest is landed, so they can be present at the beach to purchase the fish first. Since only men can access these sites according to local norms and practices, the owner (male) or a male relative does the purchasing.

Below we map the coastal and inland DFVCs[16] with primary attention to the processing nodes of each value chain and their linkages to adjacent nodes. These value chains are localized and short with actors who work across the nodes (e.g., fishers who process and sell their own harvests) compared to more globalized and long-distance value chains. While we have a general understanding of each DFVC as a whole (i.e., from pre-harvesting to consumption), our main focus is on land-based activities/nodes taking place within the study communities excluding the other nodes that may operate elsewhere such as the wholesale and retail markets across the

[16] A Photo Essay on these two study value chains co-authored with the Research Assistants has also been published as part of an eBook on Dried Fish Social Economies. The essay is available in the link: http://toobigtoignore.net/dried-fish-matters-exploring-the-social-economy-of-dried-fish/.

country. Some of the content presented under sub-sections a) and b) below overlaps with the study setting described under methods section of the introductory chapter above.

a) Coastal dried fish value chain

Coastal value chain activities are organized as independently managed private businesses. Figure 4.3 illustrates the organization of land-based activities in the study community, i.e., main channels through which raw fish is procured, processed, and sold. The main source of fish is the auction at the Beruwala fishing harbour. Relatively lower-quality fish is typically sold for drying (good quality fish is sold fresh). Offshore fishing vessels also land smaller amounts of fully and partially dried fish (salted and dried at sea). Additional sources of fish used for drying include the excess harvests from traditional small boat landings, seasonal beach seines, and occasional fish stocks from other fishing harbours. It is also common practice among the local fish sellers to dry any unsold fresh fish stocks at the end of each day, although these quantities are relatively much smaller. Fish drying sites can be medium or small in scale. They use dedicated drying spaces and hired labour. Home-based small drying operations also exist, which often take place in backyards. Fish is dried on coir mats on the ground, on drying racks (temporary, and occasionally on house roofs or large rocks by the sea. Dried fish is sold through several channels — wholesale shops (larger stocks), small traders who buy and sell, nearby roadside dried fish stalls (retail), or directly to the consumers.

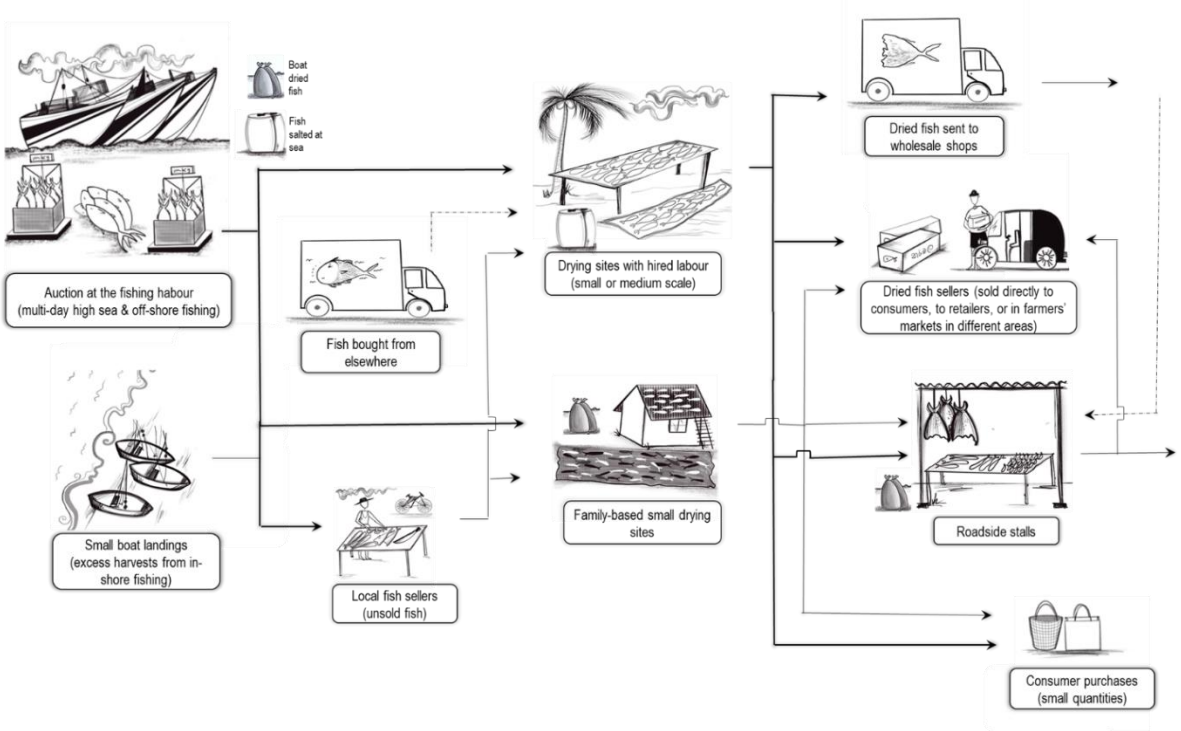

Figure 4.3: Land-based activities of the coastal DFVC (Credit: Sarangi Rathnayaka)

b) Inland dried fish value chain

The inland value chain consists of backyard community-embedded drying activities. Figure 4.4 illustrates the organization of activities, oriented around the culture-based reservoir fishery (e.g., Tilapias and Carps). Most processors use their own fish catches for drying. The processors who handle larger quantities buy fish at the landing. Another way of accessing fish for drying is to bulk purchase the entire fish stock in a lake(s) with payments made to the Village Farmers' Association, which 'own' the lake as its primary purpose is to irrigate rice lands. These operations are seasonal and last about two to three weeks until the entire fish stock is harvested, except the fingerlings. Local fish sellers also dry if they have any unsold fish at the end of each day. Drying is done on home-made temporary wooden drying structures with wire meshes, or metal sheets that are used as roofing materials. Although salting and sun drying is the most popular processing method, some processors smoke larger-sized fish using wire meshes and firewood. Most processors sell their dried fish to door-to-door collectors (many collectors visit processors from neighbouring communities or elsewhere) while some prefer to sell to roadside stalls or bring to retail shops in distant places. Some processors also act as village level collectors and supply larger stocks to long-distance markets.

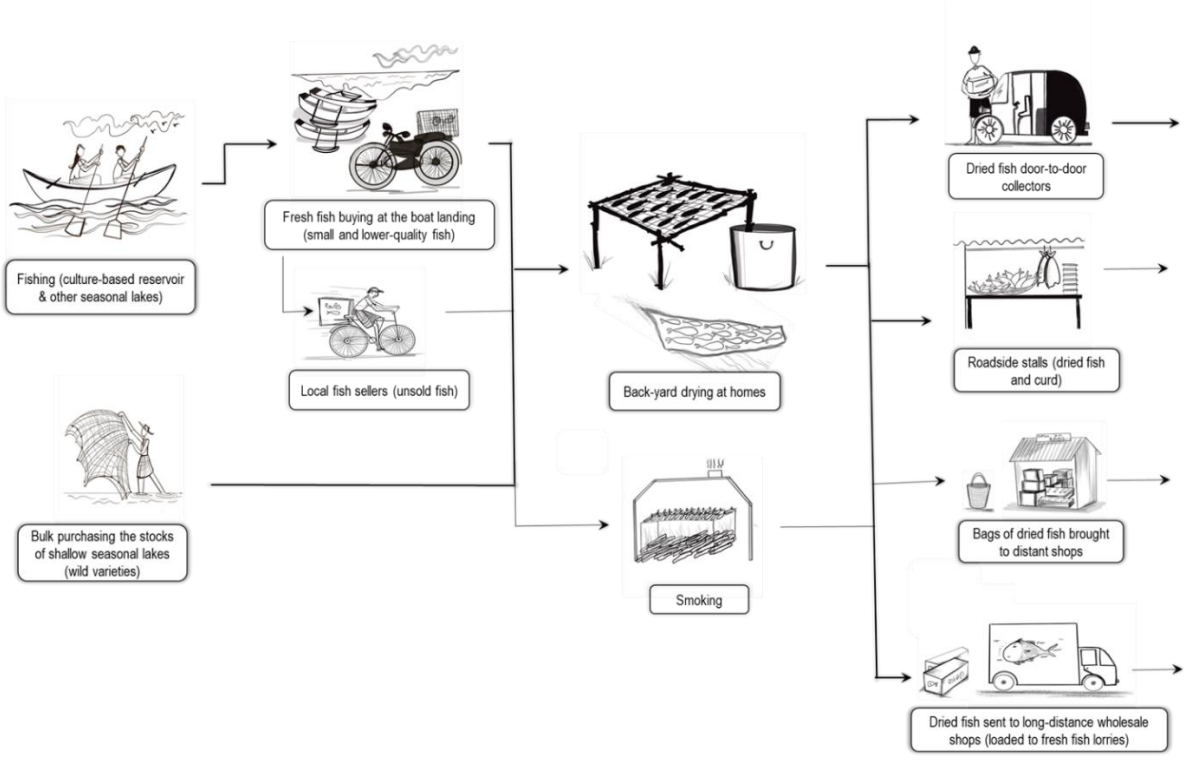

Figure 4.4: Land-based activities of the inland DFVC (Credit: Sarangi Rathnayaka)

4.4.2 Data collection methods and analysis

Data collection took place from January to October of 2021. I remotely led and coordinated the data collection due to COVID-19-related health and safety restrictions for international travel

and in-person fieldwork. Main study areas were selected in consultation with local researchers and taking the most recent district-level dried fish production statistics into consideration. Field data collection was undertaken in parallel to the activities of a six-country research partnership on dried fish social economies, where Sri Lanka was a country of focus. The Ethical Protocol for this study and the COVID-19 Health and Safety Plan for all in-person field activities were approved by the University of Waterloo Office of Research. In-country Research Assistants participated in a comprehensive training workshop to ensure compliance with safety and ethical protocols of the study, and maintain accuracy and reliability during the field data collection process.

An initial scoping phase was conducted through field visits and brief interviews with selected key informants to determine the study communities and to develop a preliminary understanding of the organization of fish processing activities. Data was collected using in-depth interviews with dried fish processors (n=70) and key informant interviews (n=19) with the key stakeholders who have influence and control over DFVCs (e.g., community leaders, fisheries managers, harbour officials, and development officials). In-person field interviews were conducted by in-country Research Assistants. The snowball sampling method was used to initially identify the study participants followed by purposive sampling to improve gender representation in the sample. Identification of key informants was done using the purposive sampling method. Key informant interviews were conducted by myself using virtual platforms (WhatsApp, Zoom) or over the phone.

Table 4.1 shows the sample overview and the nature of study participants' engagement in dried fish value chain activities (this table is also presented under the methods section of the introductory chapter above).

Table 4.1: Sample overview

Coastal community (n = 40)	No. of participants	Inland community (n = 30)	No. of participants
Gender representation in the sample (as self-identified by the study participants)			
Men	28	Men	17
Women	12	Women	13
Type of work (at the time of interview) and gendered nature			
Owners of fish drying operations	16 (All were men)	Owners of fish drying operations	28 (Three were run by women alone, others were family-based)
Workers at fish drying sites	18 (Eight women)	-	-
Dried fish sellers (roadside dried fish stalls or home-based sales)	6 (Three women)	Dried fish sellers (roadside dried fish stalls)	2 (Both were women)

All interviews were conducted in Sinhala, the local language of the study communities (I am also fluent in Sinhala). Interviews were conducted in work settings (outdoor fish drying sites) of the processors and the duration of each interview varied between 40 – 90 minutes. Although initially

hesitant, the processors were proud to share their perspectives and experiences and appreciated the efforts to document and study dried fish related activities. All interviews were digitally recorded and transcribed in English for analysis.

A semi-structured topic guide was used for the interviews with dried fish processors, translated to the local language. An open-ended topic guide was used during the interviews with key informants. Data was first validated using follow-up calls with processors and the key informant interviews as applicable. Emerging findings and themes were discussed with local researchers for further validation and to ensure accurate interpretation. Key findings were extracted through qualitative content analysis using NVIVO-12, a qualitative analysis software. The approach to coding was inductive (i.e. open coding) to allow for codes and patterns to emerge from the dataset (Creswell, 2014). In the analysis of social wellbeing dimensions, data were first grouped under material, relational, and subjective wellbeing categories and the emergent themes were extracted under each category. For example, three key themes emerged under material wellbeing (e.g., daily wages, pay gaps, and monthly earnings; flexible work schedules; and working conditions) and are presented below in detail under Section 4.5.3.1.

4.5 Results

This paper aims to critically examine how women and men in fishing communities generate social wellbeing through their participation in DFVCs. Our results are structured into two sections. First, we present the details about the marginalized status of dried fish producers, scales of dried fish activities, and livelihood diversity. We then outline the specific ways that they pursue social wellbeing. These results are presented separately under material, subjective, and relational dimensions of wellbeing and are organized along the key themes, which emerged in the study dataset.

4.5.1 Marginalized status of people participating in DFVCs

Many people participating in DFVCs belong to socio-economically marginalized and disadvantaged groups, such as the poor, people with lower levels of education, and people living in rural areas with lesser variety of livelihood options (Koralagama et al., 2021; Weeratunge et al., 2021). Particularly, the women participating in fish drying workforce are confronted with many issues within their households (e.g., poor living conditions, increased alcohol consumption among men). As fish processing and handling does not require any specialized training, skills, or experience, the workers fall within the general wage labour category similar to, for example, construction labour and are generally associated with low social status.

The marginalization of people participating in DFVCs is also due to how dried fish activities remain a blindspot within fisheries, and overlooked in food industry and the national economy in general. Despite the centuries of history in dried fish making as a fish preservation method in Sri Lanka, DFVCs remain a critically overlooked and undervalued area across these sectors (Koralagama et al., 2021). Within the fisheries sector in particular, dried fish processing activities fall within fisheries post-harvest domain, which is rarely documented and poorly understood. Regardless of significant livelihood contributions, a historically misconceived narrative exists in relation to dried fish activities (considered more of a supplementary income activity despite full-time business activities, labour relations, and commercialization); the

production process (perceived as backyard operations despite the diverse operations including high-volume production sites); and the product itself (dried fish as a 'poor people's food' despite it being a major food item across income categories).

4.5.2 Types of operations and participants' livelihood diversity

Table 4.2 presents the different types (scales) of dried fish operations undertaken by the study participants and the organization of livelihoods around fishing activities. Details on these different types of drying operations and the other livelihoods activities undertaken by the participants (both fishing related and non-related) are important to understand the complexity and embeddedness of their livelihoods. Here, the coastal DFVC presents the details only on the participants who own and operate fish drying sites (n=16). The remaining participants in the sample include wage workers at drying sites and dried fish sellers. All the study participants in the inland DFVC undertake backyard fish drying at some level (n=30).

Table 4.2: Livelihood activity organization of study participants

Type of fish drying operation run by the study participant	Gender	Dried fish related activities	Fishing, fresh fish selling, and other activities
Urban coastal DFVC			
a) Home-based drying using family labour (6)	All are men	Drying + selling at a roadside dried fish stall (5) (P2-22: sells dried anchovies only, P2-36: a collector of boat dried fish)	P2-18: main job is fresh fish selling, also has boats and a traditional beach seine, P2-36: Has a beach seine, P2-38: Sells vegetables at the market
		Drying only, on the house roof (1)	-
b) Small-scale drying sites with 3-10 hired workers (5)	All are men	Small drying site (3) (P2-29: employs women only)	-
		Small drying site + Roadside dried fish stall (1) (P2-30: employs women only, downsized from 40+ workers after a tsunami)	-
		Small drying site (contract labour) + roadside dried fish stall + collector of boat dried fish, wife and mother run the stall (1)	P2-33: owns multi-day boats
c) Medium-scale drying site with 25-30 hired workers (1)	A man	Medium-scale drying site (1)	P2-7: owns three multi-day boats
d) Seasonal or occasional drying using family labour (4)	All are men	Drying unsold fresh fish + seasonal anchovy drying at home or on beach rocks (2) (P2-28 & 37: anchovies are from own beach seines)	P2-28 & 37: Both are fresh fish sellers, and they own beach seines (anchovy)

		Selling boat dried fish at home in smaller quantities (1) (P2-1: Husband is a fisher who brings boat dried fish following each long-duration trip)	-
Rural inland DFVC			
a) Small drying operations on full-time basis (14)	One woman, 13 operations led by wives with support from husbands	Fish drying is the full-time main livelihood using their own fish catches only (10) (P1-16: Uses part-time hired help) Fish drying is the full-time main livelihood using their own catches as well as the fish purchased from others at the landing (3) (P1-4: woman goes fishing by herself; R 7: husband and wife both go fishing) Drying only the fish purchased at the landing, no fishing (1)	Everyone sells large fish as fresh fish and use only the small fish for drying. P1-18: Rears goats. - -
b) Small drying operations on part-time basis (8)	Seven men and one woman	Drying own catch as a part-time activity (1) Fresh fish sellers who dry leftovers only, no fishing (5) Fresh fish seller who dries leftovers as well as small fish purchased at the landing, no fishing (1) (P1-19 - hires part-time help, wife manages drying) Fresh fish seller who dries leftovers and also collect dried fish and sell to long-distance shops (1)	P1-13: Sand mining is the main income activity. P1-11, 12, 14, 21, and 29: All are fresh fish sellers P1-19: A fresh fish seller -
c) Full-time roadside selling and small drying (2)	Both are women	Drying own catch and selling dried fish at a roadside stall (2) (P1-1 & 22: Their husbands go fishing, wives dry and sell)	-
d) Medium-scale operations with drying, dried fish collecting, and trading (3)	One husband-wife joint business; one man, and one woman	Drying of purchased fish, collecting dried fish, and selling wholesale, a husband-wife joint business on full-time basis (1) Drying purchased small fish with family help (no fishing) and sell to shops in distant places (1) Drying own catch, collecting dried fish, and selling wholesale on part-time basis (1) (P1-25: Both her husband and son go fishing)	P1-28: Employs five full-time workers. Wife manages drying at home and the husband distributes to shops in distant places. P1-10: Has rice lands. P1-25: Fresh fish collecting and selling to wholesale is the main income activity.
e) Seasonal drying using wild stocks in smaller lakes (3)	All are men	Bulk purchase the entire fish stock (3) (P1-2: Hires four workers during drying season)	-

P1: Study participant from the inland community; P2: Study participant from the coastal community

The organization of fish drying activities is highly diverse. In the coastal site, there are four types of fish drying operations: a) home-based drying using family labour; b) small-scale drying sites with about 3-10 hired workers; c) medium scale drying with 25-30 hired workers; and d) seasonal/occasional fish drying using family labour. Historically, there have been much bigger fish drying operations in this area, which employed about 50 workers. However, the owner has downsized this operation due to the damages caused by the 2004 Indian ocean tsunami. While the fish/dried fish volumes handled vary by the type of operation, most year-around drying sites typically handle about 1,000kg of fish each day.

In contrast, there are five types of home-based backyard operations contributing to the inland value chain: a & b) small drying operations on full-time or part-time basis; c) roadside stalls with small drying operations; d) medium-size operations with drying, dried fish collecting, and selling to wholesale (intermediary role); and e) seasonal drying operations (these use wild fish stocks compared to other operations that predominantly use culture-based fish). A full-time processor/dried fish collector typically handles about 1,000kg of dried fish every two weeks.

In addition to fish drying, the majority of study participants in both study sites engaged in a range of other livelihood activities. These included the activities organized around fish drying such as roadside dried fish sales and collecting dried fish); and/or fresh fish related activities such as fishing, selling fresh fish, owning deep-sea vessels that employ crews, operating beach seines. In addition, participants engaged in various other supplementary income activities outside of fisheries (e.g., selling vegetables, sand mining, wage labour in the construction sector).

Furthermore, the labour arrangements vary between the two study VCs. In the coastal DFVC, most year-around drying sites use casual hired wage labour. About 20% of the fish drying workforce is women. Home-based small operations are sustained through family labour, often under-paid or unpaid. Some of these sites also use family labour; however, they are only men (e.g., fathers, in-laws, cousins) who work full-time, help supervise drying activities, and earn a regular wage. For example, P2-7 (man, aged 42) runs the biggest drying site in the area at present in partnership with his brother. They belong to an intergenerational fishing family and the drying site is on inherited land. Their nephew works full time and brings the dried fish to two main inland produce markets. Their father (aged 70, retired fisher) also works full-time at the site and earns a regular payment. He supervises workers and helps with drying activities during labour shortages.

In contrast, family labour sustains all the inland value chain activities. A few processors who handle larger quantities hire part-time paid workers specially during peak seasons to help with cutting and salting fish whereas drying is always done by the processor. These workers can be women or men, and they are also neighbours or extended family members. For example, P1-28 (man, aged 36) runs the biggest fish drying and dried fish collecting operation in the area at present, with the support of his wife. They employ five full-time workers and regularly collects dried fish produced by 12 other families in the area.

4.5.3 How do DFVCs support the social wellbeing of women and men?

Following the three-dimensional framework of social wellbeing described above under the theoretical foundations, we present below the core findings social wellbeing as described by the study participants and key informants during interviews, organized under material, relational,

and subjective dimensions of wellbeing. As noted earlier, diversification within and beyond dried fish is central to how livelihood portfolios are organized. However, the primary focus below in exploring three-dimensional wellbeing is only on the dried fish related activities. We also draw attention to the similarities and differences between the two DFVCs.

4.5.3.1 Material wellbeing

Material wellbeing refers to objective (physical) resources that determine practical welfare and desired standards of living (McGregor, 2008; Weeratunge et al., 2014). This section presents comparative findings on material wellbeing, organized under several key themes emerged in the dataset. These themes include: a) daily wages, pay gaps, and monthly earnings; b) flexible payments and work schedules; and c) hardship at work and working conditions.

a) Daily wages, pay gaps, and monthly earnings

Daily wage rates in coastal drying sites are generally higher than other causal labour jobs such as construction. Still, the general practice is to pay women a lower rate than men (about 60-80% of rate paid for men). However, some drying site owners pay the same rate for both women and men. Women's minimum daily wage rages between CAD[17] 9.61 – 19.23, with lower end rates usually supplemented with meals provided by the owner (two meals and tea). Men's minimum daily wage ranges between CAD 12.82 - 22.44 with lower end rates usually supplemented with meals provided by the owner. Despite the discrepancy in wage rates, woman often work longer hours than men. The workers are paid the same daily rate throughout the year regardless of the fluctuations in business earnings.

Total monthly earnings for a worker at coastal drying sites range between CAD 192.30 – 256.41. Total earnings by both women and men include any extra payments for after-hours work depending on the fish quantity to be handled each day (CAD 2.00 – 4.00 extra). Owners rarely seem to record their cash flows, however, they agreed that fish drying is profitable. While the flow of income from drying fluctuates based on seasonal fish supply levels and weather patterns, net profits reported by the owners of drying sites handling about 1,000kg of fish/day averages between CAD 641.02 – 1,923.08 per month. In home-based seasonal operations, women manage this work on part-time basis and the income they earn contribute towards family income.

In contrast, only few processors in the inland DFVC hire part-time helpers during peak seasons. These workers are often women who are also extended family members or neighbours. They are paid with cash (~CAD 1.28/10kg) or with some fish for consumption at home. Family labour is generally unpaid. The reported net incomes in the inland DFVC range from CAD 45.00 per month (part-time and during off season) to CAD 160.26 – 256.41 per month (full time and during peak season). However, participants had a hard time recalling the amounts as record keeping is very rare. Although fish drying is profitable, daily earnings are uncertain and depend on various factors such as fluctuating catch sizes due to seasonal variations and overfishing, weather conditions, credit relations, and individual circumstances that shape the quantity of dried fish to be produced. For example, women who raise young kids manage to find time only to process smaller quantities. The nature of earnings and the associated uncertainty in fishing-based livelihoods is well illustrated by the following quotation from the interview with P1-14, who does both fish drying and door-to-door fresh fish selling:

[17] Exchange rate as of April 2021: 1 CAD = ~156 SLR (Sri Lankan Rupees)

> "For us, money always come and go. We borrow, earn, repay - it's a roll. Really, fish selling or dried fish selling is not a big business. There seem to be money in hand all the time but we have to pay back here and there, then we only have a small margin. That also becomes nothing, when one or two people don't pay back. We continue to make a living in the middle of such difficulties." - P1-14

b) *Flexible payments and work schedules*

Flexible daily wage arrangements help workers meet day-to-day survival expenses. Some workers have arrangements with the owners to save a portion of daily wage to collect as a lump-sum at the end of the month. Small interest-free borrowings from the owners are also common among workers, both women and men. Women workers specially benefit from flexible work hours as they manage household caretaking responsibilities. For example, asking for a day off, late arrival, and early departure when there is no fish is not an issue. Some women have been able to access small group credit schemes by listing their fish drying 'job' as proof for their ability to payback. They use the small loans to improve their basic living conditions, such as the housing conditions (e.g., building one or two rooms with permanent roofs and cemented floors), and buying cookware and small household appliances. Participation in such small group credit schemes was mentioned only by women and the key informants explained that this might be because those credit schemes specially target women as they are perceived to be more reliable with their payments than men. Women are also perceived to be better in working as a credit group because members within each credit group are responsible to follow-up and ensure timely repayments are made by all members (if one member defaults a repayment, the whole group is disqualified from accessing any subsequent loans).

For the processors participating in the inland value chain, the earnings provide a source of family income or supplementary income. Women often store dried fish at home and sell in small quantities to ensure a regular flow of income over time. Participants, both women and men, mentioned that the earnings from fish drying and related activities contribute towards their day-to-day living expenses and children's education related expenses.

c) Hardship and working conditions

Handling large volumes of fish/dried fish involves hardship due to extended exposure to sunlight and salt and changing outdoor weather conditions. Cuts and wounds caused by fish scales and bones, and itchy legs from salt exposure, backaches due to bending was also often mentioned. P2-30 runs a home-based small fish drying site which employs five women workers. A quotation from his interview illustrates the hardship and working conditions:

> "This is a good income, but the work is hard. Lots of sadness. Cuts in hands, poked by fish bones, itchy legs in salt, get wet in rain, get dry in sun, get tanned, get colds and flu… have to pile up the fish being dried when rain comes even if I am in the middle of a meal." - P2-30

4.5.3.2 Relational wellbeing

Relational wellbeing refers to the social relations that determine the scope for personal action and influence within a community (McGregor, 2008). This section provides comparative insights on how DFVCs support relational wellbeing, organized under several key themes: a) gendered roles and business ownership; b) relations of production and gendered division of labour; c) gendered norms of access to spaces; d) trading and credit relations; e) familial ties and networks; and f) community collective action.

a) Gendered roles and business ownership

Substantial differences exist between the two study value chains in terms of gendered roles and business ownership, largely owing to the volumes handled within each chain and the level of commercialization. In the coastal DFVC, all activities along the chain are currently led by men because all full-time drying sites are owned and run by men whereas women only participate as wage workers. Even in home-based small drying sites, women play a more supportive role. In contrast, within both small and medium drying sites in the coastal community, women only participate in the drying node (as wage labour) and in trading within the community (roadside stalls). About 20% of the coastal drying workforce is women. Men handle larger quantities across the chain as well as the sales outside the community. Comparatively, lower number of women's participation than men and the more subordinate position women hold in the coastal DFVC is exemplified by the following quote by a key informant:

> "Women aren't involved much in making dried fish here because this is hard work. But they always provide 'side support' in this." – P2-KI3

In contrast, women in inland community lead the drying node and participate in activities across the value chain, including fishing, road-side sales, and dried fish distribution outside the community. Fish drying operations are generally perceived as wife-husband joint businesses. Compared to the coastal community (profit-oriented private-run businesses handling larger production volumes), the higher levels of women's engagement in the inland community is because these drying operations are organized as family-run full- or part-time small businesses with earnings that support day-to-day survival of families.

b) Relations of production and gendered division of labour

In the coastal value chain, women workers are generally assigned cleaning, salting, washing, and drying activities whereas cutting fish, carrying loads, and packing are men's tasks. In practice, both women and men collaborate in completing daily workloads. In fact, the entire drying operation in few drying sites is handled only by women. Both women and men engage in selling dried fish in nearby roadside stalls and act as community-level dried fish collectors. However, all sales activities outside the community are handled by men.

Women participate in all tasks across the inland DFVC, including fishing in the main reservoir, fish cutting, salting, drying, and trading. It is however not common for women to participate in fishing in other perennial and seasonal lakes. Roadside dried fish selling is considered a women's task. Few women also act as collectors who supply to wholesale shops outside the community. They collect and take bags of dried fish themselves. Mostly men act as door-to-door

dried fish collectors, who supply to wholesale shops elsewhere and the amounts they handle are relatively larger than the women.

c) Gendered norms of access to spaces

Gendered norms are also part of relational wellbeing as they structure the practices of inclusion and exclusion in relation to one another in terms of access to spaces (Weeratunge et al., 2014). Gendered access to spaces important because it is also an area where key differences exist between the two study DFVCs and shapes wellbeing outcomes for women and men. In the coastal site, it is customary that men attend the auction at the harbour as well as do fish buying at traditional boat landings. Women are not supposed to participate in fishing or fish buying, which poses a key limitation to their participation in the value chain. Some women send their husbands or male relatives to buy the fish/dried fish for them. Women who engage in roadside trading and home-based drying have also established regular contacts with men, who act as brokers in buying fish or boat dried fish at the harbour.

In the inland DFVC, however, women have fewer restrictions in terms of access to resources. Women engage in fishing at the main reservoir although the social norms shape whom they fish with. For example, wives fish only with their husbands whereas single women fish only with other women.

d) Trade and credit relations

In both DFVCs, trading activities are mediated by social relations that determine the material flows (buying and selling of fish or dried fish, volumes handled), trading partners (with whom to engage in business with), type of transactions (on credit or cash), and hiring arrangements (workers belonging to networks of contacts), among others. In the coastal DFVC, dried fish trading is decentralized with many buyers and sellers with privately arranged transactions based on personal contacts and trust relations. Despite the quantity, fish buying and dried fish selling related transactions happen on credit and rarely on cash. Payments are made on an agreed upon timeline, often after each batch of fish is processed and sold. These credit relations make fish drying affordable for many and ensure its continuity although the credit-bound nature of these transactions may provide less room for price negotiations. Here is a quotation from the interview with P2-4 that well illustrates the relational organization of a coastal drying operation (clarifications added). P2-4 owns a home-based small drying site with three full-time wage workers. He has been in dried fish business for 17 years:

> "Sales at the auction at the harbour are on credit and we repay in one or two weeks. I also have connections with two [dried fish wholesale] shops in Colombo. I also send to Dambulla, Polonnaruwa, Nuwaraeliya, and Badulla [major regional produce markets]. I have contacts [distributors of various products] who take to each of these areas. They take the stocks on credit, sell, and repay. This dying site is on my uncle's land. He just takes some dried fish. I don't have to pay a rent. Quality of fish is the key to maintain these connections. I also know lots of people at this harbour. Also, in Galle and Mirissa [long distance] harbours… When it rains continuously, I load the fish to my lorry and take to Hambantota [located in dry zone of the country]. I have boys there to help with drying. I dry and sell there when it rains here." - P2-4

Hiring in drying sites is also largely based on personal contacts and recommendations within the networks of contacts. Particularly the women mentioned that this type of hiring provides them with a sense of protection and security as they often get to work alongside friends and neighbours.

In comparison, although dried fish trading in the inland site is also decentralized the trading is more competitive because many dried fish collectors visit processors creating a higher demand. Some processors also supply directly to shops outside of the community based on pre-arranged orders. Credit-bound trading and verbal/informal contracts are common (about 60% of study participants have received loans). Fish/dried fish buyers settle payments on a bi-weekly or monthly basis. In case of loan repayments, buyers discuss with the processors/fishers each time to decide on a payback amount (partial/full repayment) as there is no set payback amount per month.

e) Familial ties, close-knit networks, and intergenerational fishing backgrounds

Within the community, dried fish activities are largely organized around familial ties and close-knit networks of contacts. In the coastal DFVC, family labour undoubtedly sustains the home-based operations. Several year-around drying site owners also depend on male family members in supervising hired workers and managing transactions in a trustworthy manner, especially when the owners are not around. Although the activities at traditional fish landings have become less relational and more financial based over the past decades, some processors continue to benefit from the social positions of power associated with their intergenerational fishing heritage. For example, priority access to fish at the traditional fish landings enable them with guaranteed good quality fish supplies, as encapsulated in the quotation below from the interview with P2-28, a fresh fish seller who uses part of his fish stock to produce dried fish and sells in his father's roadside stall.

> "My grandfather was a fish seller. He got the whole fish lot in this beach landing [Payagala] and then he sold to others at 200 rupees for a box of fish. They sell beach seine harvests by boxes. The fish is sold very quickly. We know how to guess the weight of the box. Those days, no one sold fish without his [grandfather] presence on the beach. Fishers won't sell. He was well respected. I send my uncle to buy now. He knows people…In this beach landing fishers have to give us fish boxes first before bidding starts or giving to anyone else. They have to give us whether we bid or not. When harvest arrives closer to the beach and if we are not there, people call me to come… A new person cannot easily find their place in this business. We get fish boxes on credit. We can't do that in other landings. We have to bid just like others and pay cash." - P2-28

There are mixed opinions about the bidding process at the harbour, where some participants mentioned that it is price-based, regardless of whether the bidder is from the community or an outsider, whereas some believe that the community members have priority access through their connections. For example, the fishers contact their regular buyers as they get closer to the harbour to arrange the transactions in advance of the landing.

In contrast, family ties and close-knit networks not only sustain the drying operations in the inland DFVC but also attach a sense of obligation towards the wellbeing of other

processors. For example, all processors and buyers conform to standard price levels during each season and the processors help each other sell their dried fish stocks through information sharing (word of mouth). Helping each other's workload is also considered an obligation within family and close-knit networks and women particularly benefit from this kind of support in managing their daily workloads (which include both value chain work and household responsibilities). The quotation below from the interview with P1-29 is representative of the experiences of many processors. P1-29 is a woman who sells home-made dried fish, smoked fish, and fresh fish on a motorbike to support her family of three children and a husband living with a disability (due to an elephant attack while going for night-time fishing). The quote illustrates how family support and close-knit networks and contacts (relational) within the community context shape and influence the creation of wellbeing across dimensions —access to fish/dried fish and sales activities (material), credit relations and mutual support (relational) as well as the sense of obligation (subjective) people have for supporting the livelihoods of the disadvantaged.

> "I sell fresh fish and home-made dried fish in many villages, sometimes on credit but I don't have to write down [the amounts] because people always pay back. My husband helps at home and my sons go and buy fish at the lake. Fishers are my neighbours. They always give fresh fish to me before giving to anyone else. They know how hard I work to raise the family… We know everyone in the village. Everyone knows everyone. We can even identify each person by their voice. They know the noise that my motorbike makes. People listen to it. Some people stop the bike and gather around saying 'come and buy from her'. They sometimes help me get my stock sold quickly." - P1-29

Despite the benefits, women struggle in managing daily workloads as it includes fish drying, net cleaning, also fishing and trading in some cases in addition to household responsibilities (e.g., meal preparation, household chores, raising children, caretaking of elderly family members). Making dried fish using own catches is particularly hectic because fishing activities generally involves hardship (e.g., fishing at dawn). Although these women are extremely hardworking and courageous, and some have family support, completing daily workload for many women requires them to 'work' from about 2am to 11pm.

f) Community cohesion and room for collective action

In the coastal community, traditional practices associated with the fishery (e.g., traditional canoe building and hauling large beach seines, labour intensive activities) and cultural attachment to fishing as a way of life have continued to fade over the past few decades mainly in face of technological advancements and modernization. With the changes described under the context section above (section 4.4.1) in relation to inactive traditional fishing associations in the coastal community and the organization of dried fish activities as individually owned and privately managed businesses led to decreasing levels of dependence and confidence on each other, and the level of cohesion within the community. Women in the coastal community do not participate in any association work/collective action involving dried fish activities or the fishery.

In comparison to the coastal study community, the inland community demonstrates a higher level of connectedness among community members, where women processors play a vital role. For

example, the fishers who process their own harvests depend more on each other for safety and security due to increased risks during night-time fishing (e.g., need to guard each other's nets, canoe accidents, wildlife attacks). As described under the section 4.4.1, community fisher associations have been instrumental in mediating community organization and collective action. In fact, fisherwomen are active members of the main reservoir's fisher association (women generally do not fish in other lakes).

4.5.3.3 Subjective wellbeing

Subjective wellbeing is about people's own perceptions about what they have and can do (McGregor, 2008; Weeratunge et al., 2014). This section presents comparative findings based on the themes that emerged in relation to subjective wellbeing — societal viewpoints and perceptions towards fish drying, day-to-day management practices such as hiring and assigning tasks, and perceptions about involving children in fish drying. Notably, labour relations emerge more within the coastal DFVC than the inland one, as paid hired labour is less common within the latter.

a) Societal viewpoints and perceptions towards fish drying as a livelihood

Varying societal perceptions and attitudes exist about fish drying as livelihood with the context of both study value chains. The general view among the participants from both study sites was that there is no marginalization of dried fish producers within the community, who are well aware of the earning potential of this occupation (the participants mentioned that the monthly earnings can be more than a government salaried job) and other contributions. However, marginalization may also occur, for example, due to working conditions involving outdoor work, hardship, and the smell of dried fish. Informal jobs and wage labour is also associated with lower levels of education and therefore generally less recognized in society compared to salaried jobs. The majority of processors, especially women, are not concerned about the social attitudes because fish drying helps them overcome the difficulties they face at home (e.g., food and clothing, debts, poor living conditions, expenses for children's education). Here is a indicative quote from the interview with P2-27. She is a fisher wife who works as a wage worker at a small-scale fish drying site:

> "Some people value us, for some this is like a lower job, but we don't steal or cheat. We do careful work to support the boss because fish can break. For some, we smell like fish. Our hands and legs are sun tanned – they say we also look like a piece of dried fish and have become dark. We tell them this is how this job is because we don't work inside, when we stay in sun the skin gets tanned. We do this happily, so we say they shouldn't make this an issue. Go to another place, do some kind of other job, there are many people who say things like that... but we think of our children, our priority is the family. If we can support the family, sun or rain - it doesn't matter to us." - P2-27

Both women and men engaged in the inland DFVC expressed concerns about societal perceptions and attitudes towards fishing-based livelihoods. Such perceptions were emphasized particularly in relation to how fishing fits with Buddhist principles, where killing a living being (fish) is considered a sinful activity. In fact, several processors mentioned that they buy only

dead fish (fish harvests often include partially alive fish as the harvests are sold immediately after harvesting). Some others took comfort in the fact that many people in the area continue to participate in fishing-based livelihoods.

Regardless of varying attitudes, processors in both communities respect their livelihood because "making a living without cheating or stealing or being a burden to anyone" is what matters to them (P1-26; a woman). They expressed gratitude for the opportunities to earn a living through their employment in DFVCs. Specially the processors who have managed to build a good livelihood are satisfied about various aspects related to their engagement in the DFVC. For example, some participants are happy about the freedom they have in managing their own business, their ability to make good quality dried fish and the contacts they have with other businesses (e.g., grocery stores, wholesale stores in distant locations). It is also important for them to be able to provide jobs and a means of living for others and contribute to improving the socio-economic status of the community. Processors who also are dried fish collectors, take pride in their ability to bring back profits to the community.

b) Hiring preferences, gendered task assignment, and general welfare of workers

In the coastal site, varying preferences and practices exist in relation to hiring and the assignment of tasks between women and men. Some drying site owners hire only men, only women, or both. Some drying site owners purposely hire women because of perceived better work ethic and sense of responsibility. For example, they mentioned that "women come to work with a sense of responsibility because they have to feed the kids whereas men spend half of what they earn on the way home for drinking and smoking" (P2-30; a man). Gendered division of tasks is also shaped by the local attitudes around the need to assign 'heavy work' to men (masculine tasks). For example, cutting, carrying loads of fish, and packing of dried fish often assigned to men while women wash excess salt, lay out the fish to dry, and collect dried fish at the end of each day. However, in practice, both women and men collaborate in completing daily workloads and help each other (e.g., women carry the loads, lay out to dry when there are shortages of male labour). On the contrary to general perceptions and attitudes around masculine tasks, the entire drying operation in a few drying sites is handled only by women. Because the exact daily wage rates are decided by the drying site owner, only in some drying sites the women handling the entire operation are paid the same rate as men in other drying sites in the community. Overall, therefore, women in general are at a disadvantaged position because they perform same tasks although they tend to be paid lower rates than men.

In both value chains, it was also apparent that the labour relations and collaboration among workers in completing daily tasks embody the local cultural and societal values of caring and sharing. The general welfare of the workers was highly regarded. For example, some owners hire workers out of obligation to support them earn an income, regardless of gender, and attend to workers' needs. Several workers also mentioned being paid the daily wage even on days when there is no fish to process. Despite the earning fluctuations, the workers are paid the same daily rate throughout the year although the general practice is to pay women lower than men (see section 4.5.3.1a above for more details). Workers are also allowed to take fish and dried fish for consumption at home. For these reasons, the workers expressed gratitude and commitment to keep working for the same employers, as illustrated by the quotation below from the interview with P2-30, who runs a home-based drying site with five women workers. He has been in the

dried fish business for about 40 years now, but has had to downsize his operation following the damages caused by the Indian ocean tsunami in 2004.

> "I help my workers when they are in need. No cuts from the payments. I do it from the bottom of my heart. My people are very attached to me. Both parties earn that way. I used to give double salary for the Sinhala New Year [traditional celebration] and Christmas as a bonus but its hard to do because my business now is much smaller. I gave only extra 10,000 rupees this year." - P2-30

c) Perceptions about involving children in fish drying

Fish processing is generally considered common knowledge held within fishing communities. The transfer of knowledge involves verbal transfer, observation, and hands on experience (e.g., how to sense good quality fish, how to cut the fish, how much salt to be rubbed). The drying process also needs an understanding of how different stages of the dried fish feels (texture) and how different outdoor temperatures and wind conditions impact the speed of drying and the quality of dried fish. Handling dried fish also gives a strong lingering smell. However, as illustrated by the quotation below from the interview with P2-39 (a wage worker and a single mother), the workers are well accustomed to this smell and are grateful for the opportunity to make a living through their participation in DFVCs.

> "This is the job that most people around here do. But sometimes people ask whether it is not smelly. I tell them that money doesn't smell." - P2-39

Most processors who run their own fish drying operations in the coastal DFVC are former workers of other drying sites or have a fishing-based family background (fishing, fresh fish selling, owning beach seine nets and boats). Some of them have learned the drying techniques by observing others, some have gathered experience by working for other drying yards, and a few have also hired the workers who possess experience in fish drying.

Both DFVCs show similar patterns in relation to future hopes and perceptions about involving children in fish drying. We found most processors being less keen to involve their children in fish drying due to various reasons such as income fluctuations, hard working conditions, and the societal attitudes towards fish drying as a livelihood, although mixed opinions exist. P1-14 is one of the women who fish in Kantale main reservoir. She is a single mother who uses her own harvest to make dried fish although she does not wish to pass it on to her daughter:

> "Uncertainty in income is what this job is about. A fisher has today, has nothing tomorrow. I will do this [fishing and drying her own catch] until I am physically fit to do this… I have been doing this job since I was child. I work harder than most men around here. But I will not bring my daughter to this. I want her to get educated and find a good job. She doesn't like to do this work anyway." - P1-14

As illustrated through the quote below, the key informants also confirmed the processors' hesitancy to involve children and how their entrance into dried fish may occur in practice:

> "Lots of people say that they don't want their children to enter this hardship. Some people chase their children from coming to the beach, but some do let them help. The thing is, when children start to make money, they don't want to go to school anymore and end up continuing this." – P2-KI4

Instead of involving children in fish drying, the processors prefer their children to engage in salaried jobs after completing education. Notably, there were few processors who expressed willingness to involve children. Those processors were all men and had managed to scale up their fish drying operations as profitable businesses. In the inland value chain in particular, several processors who dry their own catches preferred to give up fishing if there is another way of making a good living.

4.6 Discussion

Insights about gendered dimensions of social wellbeing can guide the entry points to policy initiatives and practice interventions that seek to improve the capacity of DFVCs to support the livelihoods of people who depend on them. However, as highlighted in the introduction, we have limited scholarly understanding and lack of an evidence base on the nuances of gendered DFVC participation (Belton et al., 2022a). More specifically, this study is a novel empirical examination of how DFVCs support the wellbeing of women and men beyond mere economic benefits (e.g., wages, incomes, profits). Furthermore, we ground our study on DFVCs in Sri Lanka, a sub-sector of SSF that has rarely received any attention in research, policy, and practice (Koralagama et al., 2021). In addressing these gaps, our discussion pays special attention to the patterns, which emerged through our study of two distinct DFVCs while linking those patterns to our current understanding of SSF-based livelihoods in general. We also build policy- and practice-relevant insights grounded in local realities and circumstances that shape how the DFVCs operate and discuss their implications for fisheries governance in Sri Lanka.

4.6.1 Contextualizing the study findings

We start with a brief comparative overview of the two study DFVCs to help contextualize emergent insights. The two study value chains demonstrate similar characteristics related to: diversity in channels that comprise the full DFVC, heavily overlapping nodes, decentralized operations, and relational organization. Each DFVC comprises a series of individual channels through which the products flow with different chain lengths. For example, some channels involve wholesale shops located elsewhere while others involve roadside direct sales to consumers (the latter is a comparatively shorter channel). Both the value chains also have heavily overlapping nodes, revealing substantial integration of value chain functions. For example, some fishers process and sell their own catch (i.e., overlaps among fishing, processing, and trading nodes) while most processors sell directly to consumers (i.e., overlaps between processing and trading nodes). Both the value chains also have decentralized operations, where there is no single actor such as a wholesale market or an intermediary through which dried fish is centrally distributed. Furthermore, activities in both the chains are organized around relational ties and close-knit networks that underpin long-standing trade partnerships, material flows, and credit relations among value chain actors.

In contrast, the two study DFVCs differ significantly in terms of level of commercialization, volumes handled, gendered participation, and labour arrangements. The coastal DFVC constitutes predominantly private-run, profit-oriented businesses handling large production volumes using wage labour. Fish drying in the inland community, however, is family-run community-embedded small backyard operations with much lower production volumes. While family labour helps sustain both these value chains, value chain participation is deeply gendered

and varies between the two. Men handle large volumes and lead activities across the coastal DFVC whereas women engage only in the drying node of year-around operations (as wage labour) or in selling within the village (trading node). In comparison, women play a central role across the inland DFVC, while leading the drying node.

4.6.2 Diversity in scale and complementarities between dried and fresh fish activities

DFVCs are inextricably connected to the places, people, and the relational contexts within which they are embedded. As depicted in Table 2, various scales (types) of dried fish operations and associated assets exist within both DFVCs. More specifically, there are four different types of coastal drying operations from seasonal family-run small volume operations to medium scale year-around drying sites with about 25 hired workers. In contrast, inland DFVC is comprised of backyard operations of five different types including, for example, small roadside drying and selling, and seasonal drying operations using wild fish stocks. These typologies demonstrate the enormous diversity of different operations that provide opportunities for people to participate in within the circumstances they face (e.g., differential access to resources, time constraints, and preferences about which activity to participate in).

The range of activities undertaken by each study participant provides further insights on the complementarities that exist in how participant livelihoods are organized. Here, fresh fish-related activities are particularly important as the level of access to fresh fish directly shape the DFVC roles they choose to perform and the production scale they involve in. Differential ownership of assets is a critical factor. For example, owning a multi-day offshore fishing boat enables the processors to produce large volumes of marine dried fish using their own catches. They also have more access to partially and fully dried fish at sea. Beach seine owners on the other hand run seasonal drying operations. These aspects highlight the need to pay attention to the interdependency between dried and fresh fish related activities and their asset base — in terms of both the material flow and actor roles — in understanding the embeddedness of DFVCs within fishing communities. This also alludes to the more fundamental question of how we need to view SSF and dried fish as a sub-sector within it, in ways that a more holistic understanding is supported with attention to the complementarities that exist (Belton et al., 2022a; Pradhan et al., 2022).

4.6.3 Fostering social wellbeing of women and men in DFVCs

Our results confirm the linkages among the three dimensions of social wellbeing (McGregor, 2008; Weeratunge et al., 2014). For example, labour, credit, and trust relations (relational wellbeing) mediate the flows of dried and fresh fish (material wellbeing) within value chains. Further, attitudes and preferences about gendered labour (subjective wellbeing) is influenced by the social norms and practices within the gender division of labour and contacts within close-knit networks and neighbourhood connections (relational wellbeing). The emergent outlook about the linkages among these wellbeing dimensions in relation to DFVCs is also consistent with our understanding about SSF-based livelihoods in general. This is exemplified by the work of Miñarro et al. (2022) on the link between fish catches and fishers' subjective wellbeing; Barclay et al. (2019) on links to issues that are generally not considered within the purview of fisheries management such as intergenerational decision-making and income distribution; and Coulthard

(2008) on fishers' attachment to a traditional tenure system over adapting to critical environmental changes.

Below we explore the patterns, which emerged across the two study value chains and highlight how the concept of social wellbeing holds particular relevance to understanding the nuances of how DFVCs support gendered experiences.

i) Disproportionate importance to the survival of marginalized people

Study findings reveal that DFVCs are of disproportionately greater importance to the survival of socio-economically marginalized communities. Especially for the women in fishing communities, this is because fish drying might be the only survival option for marginalized women whose ability to participate in the fishery is otherwise curbed by deep-rooted gendered norms, behavioural expectations, and ideologies (e.g., women not being allowed to fish, restrictions in accessing fish landings, lack of access to capital) (Aswathy & Kalpana, 2018; Belton et al., 2018; Salagrama & Dasu, 2021).

Section 4.2.1 presents findings on the specific ways through which DFVC participation support material and relational wellbeing. For example, daily payments and flexible schedules that help meet day-to-day survival needs, small saving arrangements and interest-free loans that help workers manage their financials, are among the many ways that the coastal value chain support wage labour. Daily payments arrangements are also affordable by the owners as they depend on credit relations. The women who run home-based operations in both value chains benefit from flexible work hours as they manage household responsibilities (sustaining their relational wellbeing) and the small sales that generate regular cash flows (supporting their material wellbeing). The participants in both communities indicated that fish drying is profitable, yet, raised concerns about the uncertainty of not having a regular cash flow. These sentiments, particularly of the small-scale operators, demonstrate the realities in making a living based on dried fish and also resonate with the vulnerabilities associated with the livelihoods of small-scale fishers (Allison & Ellis, 2001; Coulthard et al., 2011; Jentoft & Chuenpagdee, 2018). Furthermore, although the working conditions are hard, processors seemed cognizant of the realities involving fish drying and the nature of work in outdoor settings (e.g., debt-tied nature of business, use of temporary drying stands and makeshift buildings, constant exposure to sunlight and salt).

ii) Commercialization may further marginalize women

The results reveal that women may occupy more spaces when the value chain is community-embedded, compared to a more commercialized value chain comprised of private-run businesses. Gender relations permeate across the nodes of both the value chains and largely do so in a restrictive manner (Section 4.2.1). Within both value chains, men handle higher product volumes and own commercial operations while women are associated with home-based family-supported drying. For example, women only participate as wage labour in coastal fish drying comprising about 20% of the workforce and in selling within the community. Women are generally paid about 60-80% of men’s wage. Despite the pay gaps, both gender groups collaborate in completing the daily tasks in practice while undervaluing women’s labour and efforts, an aspect that has been widely documented in SSF literature (Hapke & Ayyankeril, 2018; Pedroza-Gutiérrez & Hapke, 2021; Weeratunge et al., 2010). In contrast, although women participate across the inland DFVC and lead the drying node, subtle differences exist in relation to their

participation in other nodes. For example, women fish only in the main reservoir and the two women who act as dried fish collectors, handle smaller volumes compared to men. Comparatively, women's labour and efforts are generally unrecognized in both value chains although the undervaluation is more apparent in the coastal DFVC through pay gaps.

iii) Relational underpinnings can safeguard processors' interests

Comparative insights on relational wellbeing between the two DFVCs (Section 4.2.2), reveals that lack of community cohesion undermine the potential for collective action and may work to further limit women's participation. Although the social connections and familial ties shape DFVC organization and functioning, commercialization in the coastal value chain seems to undermine the relational underpinnings compared to the inland one. For example, private-owned independently-managed businesses that comprise the coastal DFVC undermine the likelihood of any self-organization and joint problem solving at the community level (e.g., potential for price negotiations through producer cooperatives). Furthermore, study participants described how fish trading at traditional coastal landings has increasingly become money-oriented, despite whether the bidder is from outside the community, as opposed traditional trading practices which provided priority access to fish to those who hold social positions of power within fishing communities. Moreover, the gender division of labour, which shapes relational wellbeing, tends to be more rigid in commercial, rather than family-run fish drying operations.

In contrast, inland value chain's relational mediation brings more capacity and flexibility in safeguarding individual as well as community interests (e.g., sense of obligation to fill orders of buyers from the community, flexibility in loan repayments adjusted to individual circumstances). Importantly, women benefit from the sense of protection and security, and the support they receive within the close-knit networks in managing their workloads. Women also have figured out ways to work around the customary practices that limit their access to fish and dried fish by leveraging contacts within the relational spaces and networks. These findings in relation to DFVCs augment our understanding of how relational contexts support the fishing families and communities within which they are embedded (Weeratunge et al., 2014).

iv) Intergenerational continuity of value chain activities and hesitancy to involve children

From a subjective perspective, the potential of DFVCs to continue to support the wellbeing of fishing communities appear to be at risk. This is because the hopes and perceptions of current value chain actors towards involving their children is not favourable although their involvement is crucial for the continuity of DFVCs. More specifically, the majority of participants in both value chains are not keen on involving children as they have the perception that they themselves go through too many hardships to provide a better future for the children. The hesitancy to involve children also confirm their struggle to derive wellbeing outcomes through the value chains in face of various challenges and uncertainties (e.g., income fluctuations, gender-restrictive norms and practices). However, the actual patterns of knowledge transfer suggest that the process of socialization during childhood years may advertently or inadvertently influence children's future engagement. For example, children often help their parents with workloads, observe how fish is processed in community settings, and the youth may find casual work in fish processing during after school hours. Furthermore, diverse societal viewpoints and attitudes associated with various aspects of DFVC participation, work to restrict women's participation and support the prospects for children's involvement at the same. For example, societal

perceptions around working conditions and gendered hiring preferences may curb women's participation whereas the feelings of gratitude and day-to-day practices adopted by drying site owners toward safeguarding the welfare of workers may influence people to continue working in dried fish value chains.

The hesitancy to involve children also makes us question the 'quality' of wellbeing supported by DFVCs and whether people's continued participation might be more about necessity than pursuit of wellbeing. However, the nuances of material, relational, and subjective wellbeing reveal that people participating in DFVCs may sometimes prioritize material wellbeing over certain aspects of subjective and relational wellbeing, such as prioritizing the need to make a living over societal perceptions about dried fish related work. Despite such trade-offs, their ability to continue to participate in dried fish activities is crucial as DFVCs might be the only option for livelihood for many, particularly for the socio-economically marginalized women in both study communities.

Furthermore, while the wellbeing outcomes are diverse across the three dimensions, many of the outcomes discussed above appear to link back to the ability to earn income such as the trade relations that enable better sales. While the value chain focus of the study may have emphasized some of the economic aspects (e.g., sales, earnings, wages), the general outlook of the study participants regarding a happy and fulfilled life was more about relational and subjective wellbeing than just material benefits, for example, having the ability to raise one's family without being a burden to anyone.

4.7 Conclusion

Our findings provided in-depth evidence that help us better understand how women and men in fishing communities generate material (e.g., employment, income), relational (e.g., familial ties, close-knit networks), and subjective benefits (e.g., perceptions about their continued ability to support families) through their participation in DFVCs. However, certain aspects such as the unfavorable societal perceptions about dried fish related work, gendered restrictions, and the hesitancy to involve children suggest that DFVCs sometimes may even undermine wellbeing. Nonetheless, the benefits across material, relational, and subjective dimensions reveal the nuances of how these value chains support the needs and priorities of women and men who participate in them (e.g., wages that support day-to-day survival needs, interest-free borrowings and flexible work hours, community ties that secure access to fish/dried fish). We, therefore. argue that DFVCs are of disproportionate importance to all three dimensions of wellbeing of marginalized groups in fishing communities. Furthermore, increased commercialization can have negative impacts on material and relational wellbeing of women, as well as pose risks to intergenerational continuity of dried fish production, especially in terms of their subjective wellbeing.

Several key implications emerge from our discussion for fisheries governance in Sri Lanka. First, policy and management interventions should aim to re-position fish processing as a critical sub-sector within fisheries more broadly. Doing so will require taking a holistic approach centered on people, not the product (dried fish/fresh fish), and how their livelihoods are organized. Second, deliberate efforts should be made to recognize the gendered DFVC participation and wellbeing contributions. This will require counting different types of fish drying operations with attention to the spaces where women are present and derive benefits from these activities. The aim here is actively seek a range of solutions that can safeguard the diverse community embedded activities

and their wellbeing contributions. Trade-offs involving commercialization or integration of DFVCs into existing markets should be carefully explored to avoid further marginalization of people participating in them. Third, harnessing relational underpinnings appears to be key to uplift DFVCs. This could happen through carefully crafted interventions to catalyze community collective action that will help incorporate value chain participant perspectives into decision-making, including increasing benefits to women participating in value chains. Such interventions also call for openness to reconfigure existing governance structures and mechanisms to fit with the nature of activity (fish processing) and with SSF more broadly. Finally, reframing the existing narrative should be part of the strategies that seek to ensure intergenerational continuity in pursuit of wellbeing by those participating in DFVCs.

Chapter 5

Conclusion

5.0 Chapter outline

The goal of this concluding chapter is to synthesize the significant and original knowledge contributions and outcomes from this research. In doing so, the chapter revisits the study purpose and objectives, summarizes the key findings presented across the three manuscripts (Chapters Two to Four), and synthesizes theoretical, empirical, and applied contributions to the advancement of knowledge. The chapter also reviews the study limitations, explores future research directions, and presents personal reflections on the overall experience in undertaking this dissertation research.

5.1 Research purpose and objectives

The purpose of this dissertation was to advance a comprehensive understanding on how gendered dimensions of social wellbeing is supported by dried fish value chains, with a focus on women's experiences, and to identify the implications for fisheries governance. In achieving this purpose, this dissertation pursued three specific objectives:

1. To develop a conceptual framework based on existing literature to integrate gender within the study of dried fish value chains
2. To critically assess women's experiences in governing small-scale fisheries more broadly
3. To empirically examine gendered participation and wellbeing creation within dried fish value chains, and explore implications for fisheries governance

The dissertation achieved these objectives through the development of an integrated conceptual framework (Objective 1), a systematic scoping review (Objective 2), and an empirical investigation grounded on two cases (Objective 3), all of which collectively advanced the knowledge gaps highlighted in the introductory chapter. Furthermore, the first and second objectives collectively guided the direction of the empirical research component designed to accomplish the third objective. In particular, the second objective focused on a broader SSF context to explore women's engagement in governance to draw insights and lessons relevant to understanding the opportunities to involve women in decision-making concerning dried fish value chains. The need to focus on the broader SSF context to develop such an understanding was also warranted by the limited nature of dried fish scholarship, with only a few studies focusing specifically on governance aspects of dried fish value chains (Belton et al., 2022a). The three objectives also strategically supported the development of an applied understanding of the issues being studied and allowed for successful adaptation to field research limitations that arose from the COVID-19 pandemic during which this dissertation research was completed.

5.2 Major findings

Findings from this research were presented across Chapters Two, Three, and Four in this dissertation. These chapters were developed as three standalone yet interdependent manuscripts.

Chapter Two advanced a novel integrated framework to better understand gender relations within dried fish value chains. In establishing the research gap that the framework advanced, gendered perspectives that merit attention in the context of dried fish were synthesized by drawing from dried fish and small-scale fisheries scholarship (e.g., gendered value chain roles, gender dimensions of wellbeing creation, and key constraints that perpetuate gender inequalities). Next, existing value chain scholarship was interrogated to assess the existing frameworks and approaches to study gender dimensions within value chains. In doing so, key insights were drawn from the main concepts, approaches, and debates that help surface gender inequities operating in value chains, such as the work of Dunaway and colleagues (2013) on gendered global commodity chains.

In developing the new framework, three complementary areas of scholarship were linked — social wellbeing, intersectionality, and value chains. More specifically, theoretical connections were drawn among three-dimensional social wellbeing, broader conceptions of the notion of value within value chains, gender, and intersecting structural oppressions, as these concepts relate to DFVCs (Crenshaw, 1991; Fabinyi et al., 2018; McGregor, 2008; Pradhan et al., 2022). The key point of departure from existing literature in developing the novel framework was the notion of relationality (Coulthard, 2012; McGregor, 2008). The resulting framework was then used to reflect on three geographically distinct dried fish value chain cases in Bangladesh, Tanzania, and Sri Lanka that were drawn from literature.

The framework helped systematically unpack diverse and complex experiences of women and men within the context of dried fish value chains, and further augmented the scholarship in this area (Barclay et al., 2021; Belton et al., 2018; Fabinyi & Barclay, 2022; Frangoudes et al., 2019; Gopal et al., 2020; Hapke & Ayyankeril, 2018; Kleiber et al., 2017; Manyungwa-Pasani et al., 2017; Medard et al., 2019; Salagrama & Dasu, 2021; Weeratunge et al., 2010). In relation to dried fish value chain organization, two aspects were emphasized — the structural organization of how nodes overlap (e.g., fishers drying and selling their own catches), and broadly conceived notion of value that include both financial/economic and non-financial value generation (e.g., social ties, cultural values, sense of place). Further, the framework explored how social wellbeing is constructed within the same intersecting relational structures and brought attention to all encompassing wellbeing dimensions — material, relational, and subjective (see also Coulthard, 2008; Weeratunge et al., 2014). In doing so, a two-way linkage was established between the value chain and social wellbeing as improved wellbeing leads to better value chain outcomes (see also Barclay et al., 2021; Kruijssen et al., 2016; Manyungwa-Pasani et al., 2017; Medard et al., 2019). For example, mutual trust and information sharing mediated by established social ties (relational wellbeing) may provide with access to good quality fish and profitable markets.

The analytical focus of the framework was simultaneously on gender and other structures of oppression operating in dried fish value chains such as caste, culture, ethnicity, and religion; and are associated with social identities, gendered norms, traditions, and behavioural expectations for women and men (Belton et al., 2018; Berenji et al., 2021; Medard et al., 2019; Quist, 2015; Salagrama & Dasu, 2021). The framework also allowed for flexibility to include other relationalities relevant to a given value chain context based on the array of structures operating within it. Overall, the framework encouraged a deeper analysis of how gender inequity manifests within dried fish value chains.

Chapter Three was a systematic scoping review of current empirical evidence on how women experience, shape, and influence SSF governance. The main findings of the review included an assessment of current evidence base on women's engagement in governing SSFs at a global level. This assessment confirmed the crucial need to embed gender in the empirical examination of SSF governance to deliberately expand the current evidence base on this topic (Barclay et al., 2021; Frangoudes et al., 2020; Frangoudes & Gerrard, 2018; Gopal et al., 2020; Gustavsson et al., 2021; Harper et al., 2018; Kleiber et al., 2017; Williams, 2019). The review findings also revealed that the institutional contexts within which women participate encompass a broad spectrum of arrangements (e.g., rules and regulations; participatory arrangements such as co-management, social norms, customary practices, and relational spaces).

Another main finding reported in the Chapter Three was a typology of governance tasks performed by women in SSF. This typology included leadership roles and active participation in decision-making; relational networking and collective action; exercising agency and legitimacy; resource monitoring; knowledge sharing; meeting attendance (with no/less participation in decision-making); and activism and mass mobilization. The review also synthesized the governance outcomes achieved by women (e.g., improved socio-economic contributions, gaining recognition for 'invisible' roles, and claiming user rights) (e.g., Freitas et al., 2020; Gallardo-Fernández & Saunders, 2018; Gustavsson et al., 2021). Findings on the barriers women encounter in governance included both the barriers that had been addressed through governance efforts (fully or partially) as well as the ones that continued to hinder women's efforts (Baker-Médard, 2017; Frangoudes et al., 2008; Freitas et al., 2020; Harper et al., 2018). Findings related to these barriers, however, were largely consistent with our current understanding about the root causes of gender inequity within SSF contexts (Fabinyi & Barclay, 2022; Kleiber et al., 2017; Koralagama et al., 2017; Lawless et al., 2019). For example, gendered power relations, constraining gender norms, household obligations, and lack of access to and control over resources, resonated with the topics widely discussed in SSF gender research.

Furthermore, the review drew broader insights based on the patterns that emerged across the literature. The review found that the order of governance women engaged in was closely linked with how gender was treated as a key topic of discussion within decision-making processes. Gender was largely excluded as a topic of discussion within the first order of governance (e.g., de la Torre-Castro, 2019; Kleiber et al., 2018) where women only participate in day-to-day operational tasks. In contrast, findings revealed that women's efforts through their participation in value-based deliberations (third order governance) widely demonstrated their agency and legitimacy in influencing decision-making, where gender was evidently a central topic of discussion (e.g., Gallardo-Fernández & Saunders, 2018; Harper et al., 2018).

Chapter Three also highlighted the implications of improving women's meaningful participation in SSF governance as they relate to policy and practice. For example, one of the key implications was the need to explore the breadth of governance arrangements to include informal spaces where women are active (e.g., social events, religious ceremonies, self-help groups) by extending beyond the formal and semi-formal arrangements (e.g., quotas, rights, co-management) that often receive attention in efforts to improve gendered participation. Another aspect emerged through the review was the need to build flexibility into governance arrangements to be able to continuously adjust in response to current and emerging barriers such as the external drivers of change (e.g., aging fisher populations, re-organization of fishing activities from communal to household enterprises). While the synthesis did not intend to evaluate the level of success of the

governance interventions reported in the reviewed sample of literature, insights were drawn on the kinds of outcomes needed to meaningfully advance gender equality. For example, the cases where deeply gendered practices and power relations were challenged were of particular importance to the critical examination of gendered governance outcomes (e.g., Gallardo-Fernández & Saunders, 2018). Another highlighted implication was related to how women's efforts link with societal values in ways that may help legitimize their representation in SSF governance (see Harper et al., 2018; Ko et al., 2010). The findings here revealed the importance of paying attention to the role of men in recognizing and facilitating women's efforts, starting with the openness to involve women in discussions where they were previously excluded (see Freitas et al., 2020).

The key findings presented in Chapter Four drew from two distinct dried fish value chain cases based on experiences in Sri Lanka: an urban coastal value chain and a rural inland freshwater value chain. The comparative findings between the two value chain cases revealed that the coastal dried fish value chain is predominantly private-run, profit-oriented businesses handling large production volumes using wage labour. Fish drying in the inland community, however, was family-run community-embedded small backyard operations with much lower production volumes. The organization of fish drying activities within each chain was also highly diverse. In the coastal site, for example, there were four types of fish drying operations that represented various scales of activity organization from home-based drying sites using family labour to medium scale drying sites with hired workers. Furthermore, the study found that the study participants' livelihood organization was also diverse in both study sites. At the value chain level, the two dried fish value chains demonstrated similar characteristics such as heavily overlapping nodes, decentralized operations, and the relational organization. In contrast, they differed significantly in terms of the level of commercialization, volumes handled, gendered participation, and labour arrangements.

The core findings presented in Chapter Four also emphasized how people derive material, relational, and subjective wellbeing through their value chain participation and the differentials between women and men (see also Hapke & Ayyankeril, 2018; Kruijssen et al., 2018). These findings were organized under various themes that emerged from the dataset and illustrated nuanced perspectives of how dried fish value chains support the social wellbeing of women and men. Material wellbeing included themes such as gendered division of tasks, wage rates, payment arrangements, and working conditions whereas relational wellbeing included social connections, familial ties, gendered access to spaces, and community collective action. Subjective wellbeing was illustrated through, for example, the themes of societal perceptions, sense of gratitude, and future hopes regarding involving children in dried fish.

Four key insights emerged through the comparative assessment of the two dried fish value chains in relation to gendered dimensions of wellbeing: the disproportionate importance of dried fish value chains in supporting the survival of socio-economically marginalized people, commercialization's impact on women's participation, importance of relational underpinnings in safeguarding people's interests, and how intergenerational capacity to support wellbeing appears to be at risk due to processors' hesitancy to involve children in dried fish. The discussion also explored the implications for fisheries governance to ensure the wellbeing of those who critically depend on dried fish value chains in Sri Lanka.

The findings across the three results chapters (Chapters Two to Four) contributed to a growing understanding and an emergent narrative about the dried fish value chains from the perspectives

of gender and intersectionality, social wellbeing, and governance. In particular, Chapter Two set the conceptual direction as the study progressed while Chapter Three provided a sound theoretical and empirical basis for exploring governance opportunities for improving value chains with a focus on women, the most marginalized group. Chapters Two and Three, therefore, collectively guided the design and implementation of the field study component in Sri Lanka and the subsequent data analysis. The decision to focus on social wellbeing in Chapter Four was strategic as wellbeing emerged as the area with a strong field dataset compared to intersectional and governance areas that had some data gaps due to the COVID-19 pandemic-related study limitations outlined in Section 5.4 below.

The forthcoming section highlights how the major findings across Chapters Two to Four contribute to the advancement of knowledge.

5.3 Novel and significant contributions

Overall, the study responded to a significant gap in dried fish scholarship in relation to gendered dimensions of social wellbeing of those who participate in value chains. The study was grounded on both dried fish (limited) and small-scale fisheries literatures that guided its conceptual, methodological, empirical, and applied direction in the pursuit of the three specific research objectives.

5.3.1 Theoretical contributions

The framework advanced in Chapter Two broadened the conceptual and analytical scope of gendered value chain analysis and challenged the conventional approaches to studying gender in value chains (Barclay et al., 2021; Dunaway, 2013; Kruijssen et al., 2018; Pedroza-Gutiérrez & Hapke, 2021). More specifically, the framework development contributed to dried fish scholarship in four main ways. First, the focus on relationality elevated gender as a crucial element of social connections and brought explicit attention to the most marginalized social groups whose survival depends on dried fish value chains (Aswathy & Kalpana, 2018; Fabinyi & Barclay, 2022; Manyungwa-Pasani et al., 2017; Medard et al., 2019; Salagrama & Dasu, 2021). Second, the framework brought visibility to women's productive labour and recognizes them as legitimate actors in dried fish value chains (see also Hapke & Ayyankeril, 2018; Weeratunge et al., 2010). Third, the framework revealed diverse forms of value and different ways that dried fish value chains support the social wellbeing of gender groups (Belton et al., 2018; Coulthard, 2012; Weeratunge et al., 2014). Finally, the framework guided a novel approach to systematically unpack the complexities of women's lived experiences with focus on how certain groups are uniquely disadvantaged (see also Barclay et al., 2021). The new conceptual and analytical linkages encouraged by this framework therefore resulted in a deeper analysis of how gender inequity manifests within dried fish value chains.

Novelty of theoretical contributions in Chapter Three arose in three main ways. First, the chapter presented the first global-level systematic scoping of peer-reviewed empirical literature at the intersection of gender and SSF governance. Second and as discussed in the introductory chapter, we have a limited scholarly understanding about the issues of gendered power relations and how to meaningfully engage women in SSF governance, despite the decades of studies focused on gendered dimensions of SSF (Frangoudes et al., 2020; Gopal et al., 2020; Kleiber et al., 2017). To this end, the review addressed a critical scholarly gap. Third, the review advanced the

conceptual and analytical linkages among SSF governance and women's participation by grounding them on the principles of interactive governance perspective (Kooiman et al., 2008).

Chapter Four helped illustrate the relevance of the concept of social wellbeing to unpack the complexity of benefit generation through dried fish value chains and highlighted a series of nuanced insights on how women and men participate in and benefit from value chains. The comparative value chain case analysis showed that the people participating in both coastal and inland dried fish value chains derive material, relational, and subjective wellbeing in nuanced ways, with substantial differences between the experiences of women and men. For example, all full-time fish drying sites in the coastal community are owned and operated by men whereas women only participate as wage workers in these sites. These insights demonstrated the critical need to broadly conceptualize how people pursue wellbeing beyond economic terms and emphasized the need to develop a deeper understanding of gendered dimensions. In doing so, the chapter addressed a gap in our current scholarly understanding of dried fish with attention to value chain organization and functioning, social wellbeing, and gender dimensions (Belton et al., 2022a).

5.3.2 Empirical and applied contributions

Empirical contributions of this dissertation were primarily presented in Chapter Four through the development of two distinct place-based dried fish value chain cases in Sri Lanka. These cases represented urban coastal dried fish production and inland freshwater artisanal dried fish production with special attention to the processing node of each value chain. The cases supported the advancement of empirically grounded understandings related to value chains, gendered participation, gendered dimensions of social wellbeing, and the governance opportunities to catalyze meaningful change within dried fish and SSF. These empirical cases also have the potential to inform cross-country comparisons in future, particularly across the study countries in South and Southeast Asia under the Dried Fish Matters research partnership.

From an applied perspective, the nuanced insights that emerged from the conceptual framework (Chapter Two) can help identify entry points to policy and practice interventions aimed at achieving gender equitable outcomes within dried fish value chains and in SSF more broadly. For example, SSF Guidelines have made a commitment to advancing gendered outcomes by adopting gender equality as a guiding principle across the Guidelines (FAO, 2015). The 'thick description' of gender relations and intersectional insights encouraged by the new conceptual framework (e.g., who has access to resources to begin with, who benefits and in which ways, how certain groups are uniquely disadvantaged) can guide legal and regulatory measures such as the permits and quotas designed to secure equitable benefits for the marginalized groups. Such targeted measures are crucial to advance gender equality commitments within SSF Guidelines (Nakamura et al., 2021). The intersectional insights encouraged by the framework can also guide the entry points to practice interventions that seek to advance global commitments to sustainable development in the context of fisheries, such as the SDG 5 and SDG 14. For example, the acknowledgement of diverse experiences and meaningful engagement with the structural oppressions that perpetuate gender inequity is crucial to design initiatives that take a gender transformative approach (Kleiber et al., 2017). For instance, a range of solutions might be required to address the issues unique to different marginalized groups because the same support will not impact all members equitably.

The scoping review (Chapter Three) was aligned with a gap in applied scholarship and practice, particularly in relation to ongoing high-level discussions across science-policy-practice interfaces, such as the global implementation of SSF Guidelines, SDGs, and blue economy narratives (Frangoudes et al., 2020; Kleiber et al., 2017; Nakamura et al., 2021). The review therefore sought to synthesize current evidence and explore implications toward improving women's meaningful participation in SSF governance. The key insights emerged through the review can therefore guide evidence-based policymaking and fisheries management. For example, global implementation of SSF Guidelines emphasize the need to meaningfully engage women and other marginalize groups in decision-making concerning the management of SSF resources and value chains (FAO, 2015). The review findings highlighted that some existing fisheries policies are gender discriminatory (e.g., MPA guidelines that restrict access to nearshore areas where women have traditionally harvested seafood) while certain other policies lack concrete measures to advance gender equality despite broad commitments to mainstream gender (e.g., Mexican fisheries policy). Furthermore, the review illustrated that women have achieved substantial positive outcomes when their activities are linked with formal instruments such as the user rights to access resources and sales permits. Such insights thus have direct relevance in the development of new and improved fisheries policies and management practices needed to ensure successful implementation of SSF Guidelines.

The empirical chapter (Chapter Four) brought attention to dried fish value chains in Sri Lanka, a sub-sector of SSF that has rarely received any attention in research, policy, and practice (Koralagama et al., 2021). The chapter included an exploration of how the nuanced insights emerged through the field research can inform fisheries governance. This resulted in a set of specific recommendations towards improving the wellbeing of those who critically depend on dried fish value chains. For example, the empirical cases revealed that bringing attention to the existing policy blindspot related to dried fish will require counting all types of dried fish operations (e.g., home-based, part-time, seasonal) to gauge the scale of dried fish activities while also aiming to reposition the sub-sector with special attention to spaces where women are present. Such an initiative calls for modifications to existing approaches to enumeration and fisheries data collection. Furthermore, the findings emphasized how relational underpinnings (e.g., close-knit networks, familial ties) structure value chain organization and functioning. These relational underpinnings can potentially be harnessed to improve participatory decision making and collective action toward addressing the issues that undermine value chains.

Although the primary focus of the study is on dried fish value chains in Sri Lanka, the issues, themes, and key insights emerged through the study hold relevance and applicability to SSF more broadly, including fisheries governance in Canada. The study, for example, highlighted the crucial need to pay attention to the marginalized groups and their ability to access and benefit from fisheries resources. In Canada and particularly in the context of blue economy, such marginalized groups include Indigenous peoples, local small-scale fishers, and women performing land-based value chain activities such as fish processing (DFO, 2022). Despite growing policy interest and expanding mandates as diverse interest groups such as governments and industry begin to operationalize their priorities (e.g., aquatic/blue foods, energy, and shipping), pressing issues of marginalization emerge in relation to who stands to benefit the most, which benefits to prioritize, and which values to be foregrounded. Insights revealed through this study such as the need to reposition the value chains through recognizing diverse contributions to people's wellbeing and what matters to local communities are relevant to addressing some of those issues. Furthermore, the study revealed that relational underpinnings or

local community connections can be harnessed to achieve inclusive decision-making and problem solving that take diverse viewpoints and input into consideration. Such findings can help guide potential approaches to fisheries management where decisions and actions can be centered on how local communities and marginalized groups envision the future of their own fisheries.

5.4 Study limitations and future research directions

This section explores the limitations of the study reported in this dissertation and highlights the opportunities for future research. The key limitation in this research arose from the field research restrictions and travel limitations due to the COVID-19 pandemic. Although the adjusted plans to undertake remote field activities through an in-country team of research assistants provided an unprecedented opportunity for collaboration, I missed the opportunity to immerse in the study context and get to know the study participants closely in their work settings.

Furthermore, the priority consideration in implementing remote activities was to minimize the risk for COVID-19 exposure for both the study participants and the research team during field interactions. This required continuous adaptation and customization of field arrangements to align with the evolving pandemic risk levels and changing local health regulations throughout the field study period. All interactions in groups settings with the study participants were therefore avoided. There were several practical challenges as well, such as the delays in finalizing the exact study communities (villages) as the risk levels changed in communities under consideration. Two of the initially recruited research assistants could not participate in in-person interviews as their travel distance increased to the finalized study communities. Delays and challenges in being able to safely access study communities also meant having to miss certain seasonal fishing activities, particularly the beach seine fishery in the urban study location.

Such constraints and practical challenges led to several study limitations. First, there were limited opportunities to improve the diversity of study sample to capture various other intersecting identities of the study participants in addition to gender groups, for example, ethno-religious identities of dried fish processors. Second, there was a missed opportunity to explore the spaces where collective action takes place within dried fish context (e.g., local fisheries association meetings and community gatherings). Finally, there were limited opportunities to explore the value chain nodes and activities taking place outside of the study communities due to long-distance travel restrictions. For example, further opportunities to examine the study participants' interactions with dried fish wholesale shops and regional produce markets located elsewhere in the country may have further enriched the study dataset.

Although the study employs a transdisciplinary approach by drawing from theoretical groundings in multiple disciplinary areas and worldviews while also linking with policy and practice, the study was largely anthropocentric through its attention to human wellbeing (McGregor, 2008). From a framing viewpoint, the theory of change that underpinned this research was societal decision-making and governance to address the 'wicked' and complex problems that characterize small-scale fisheries (and dried fish) (Bavinck & Kooiman, 2013; Chuenpagdee & Jentoft, 2018; Jentoft & Chuenpagdee, 2009; Kooiman et al., 2005). Various other relevant theoretical and applied framings, discourses, and perspectives exist to examine complex societal issues (e.g., behavioural framings, development framings, scenarios and future visions, power theories) (Bennett et al., 2016; Brisbois & de Loë, 2016; Fischer et al., 2012;

Jentoft, 2007; Raik et al., 2008). From a scoping perspective, while the study responds to a specific gap in the study of dried fish, the limited and scattered nature of this body of dried fish scholarship warrants scholarly attention to link with and advance the many gaps and research questions that remain to be addressed, particularly at the intersections of food systems, social economies, and social-ecological systems (Belton et al., 2022a; Pradhan et al., 2022).

From a social-ecological systems perspective, the study aimed to better understand the social sub-system that comprise dried fish value chains, although these value chains are complex social-ecological systems with interlinked social as well as ecological sub-systems (Berkes et al., 2003). In achieving this aim, the study drew on social wellbeing, a fundamentally anthropocentric concept that emphasizes the social conception of wellbeing (McGregor, 2008). The study, however, still brings attention to some critical ecological linkages that sustain dried fish value chains, particularly through the discussion on material wellbeing. For example, the size of fish stocks, variety of fish (biodiversity), and healthy habitats (coastal, marine, and freshwater) determine the volumes of input (fish) processed through the value chains and the subsequent levels of output (dried fish). These input and output volumes directly shape the ability of dried fish value chains to support material wellbeing (e.g., income levels, work to do) and the associated relational and subjective dimensions. Nonetheless, there is still the need to develop a comprehensive understanding of the ecological foundations as well as the critical social-ecological linkages that sustain dried fish value chains.

In sum, three specific areas emerge through this dissertation for future research and consideration. First, future research should focus on intersectional analysis (Crenshaw, 1989, 1991) of dried fish value chains to simultaneously take gender and other overlapping identities into consideration (e.g., ethno-religious identities, age, marital status, socio-economic status). Such deeper insights will be crucial to advancing gender equality in dried fish and small-scale fisheries contexts more broadly. Second, study of dried fish value chain governance should focus on the plurality of institutions and governability (e.g., laws, policies, customary practices, norms, nested local institutions, networks) to develop comprehensive and locally grounded understandings about how society structure decision-making around dried fish (Barclay et al., 2019; Bavinck, 2018; Jentoft & Chuenpagdee, 2015). In doing so, special attention should be paid to conceptualize how feminist perspectives can augment and broaden interactive governance. The enormous diversity and complexity that characterize dried fish contexts may also permit the extension of such inquiry to understand what it means to govern a value chain compared to governing a resource system (i.e., fishery or the harvesting node). Finally, future research should expand the study scope to advance a fuller understanding of the entire value chain beyond the processing node. While taking a whole chain approach that encompass all nodes from pre-harvesting to dried fish consumption (Bush et al., 2019), consideration should also be given to the study of critical social-ecological linkages that sustain those nodes (Pradhan et al., 2022).

5.5 Personal reflections

At a more personal level, the focus on dried fish and field research in Sri Lanka, in many ways, felt like rediscovering seemingly familiar places, people, and mundane practices. The opportunity to undertake the field research amidst a global pandemic was a rewarding and humbling experience. Throughout the study period, I drew significant inspiration from the

perseverance and resilience of (marginalized) people in their daily lives against all odds and endeavored to build applied understandings that may help catalyze meaningful change.

Although initially hesitant and skeptical, we found the study participants proud and eager to share their perspectives and experiences as the study progressed. This was in part because of the efforts made through this dissertation research to document and probe into dried fish, a sub-sector that has not received any attention locally and remain marginalized in every sense of the word – within fisheries management, food industry, public policy, legal frameworks, political agendas, and development interventions. We also realized that the participants' willingness to participate in the study and eagerness to interact with the research assistants was because of what education meant for them as they looked forward to their own children pursuing higher education in future.

Both the academic inquiry and my overall doctoral experience was significantly enriched by the opportunity to collaborate with 'Dried Fish Matters' (DFM) research partnership, particularly the Sri Lanka Country Team. DFM collaboration enabled numerous opportunities for data validation, discussing emerging findings, cross-pollination of ideas, networking, and mentorship that led to significant improvements in the methodological approach, academic rigour, and applied relevance of this research.

Diverse interactions with various partners of this research including local communities, institutional partners, colleagues, and mentors have also helped me better reflect on my own positionality as a researcher. During the field research period, I paid deliberate attention to minimize the manifestations of power and privilege within the research process and practices; critically reflected on my own taken-for-granted assumptions and biases; and strived to build respectful and reciprocal relationships. As part of this endeavour, I continue to explore opportunities to contribute back to the study communities.

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Appendices

Appendix A

District-level dried fish production statistics in Sri Lanka (2020)

Fisheries district	Number of fisheries divisions	Total annual fish production (kg)	Total annual dried fish production (kg)	Maldive fish production (kg)
Kilinochchi	04	6,676,550	582,760	
Kalmunai	11	5,112,500	59,100	14,400
Trincomalee	11	42,980,771	2,207,474	10,000
Mannar	06	23,048,762	819,280	-
Jaffna	14	48,835,012	2,996,009	-
Galle	09	49,976,205	77,685	3,659
Puttalam	08	64,820,206	2,381,919	2,400
Hambantota	12	74,799,760	385,000	356,000
Chilaw	11	21,900,993	2,201,000	-
Matara	9	25,465,027	1,572,914	139,850
Kalutara	9	2,740,200	1,023,200	25100
Colombo (Negombo)	13	33,909,527	976,520	-
Mullaitivu	4	12,500,000	3,350,000	-
Batticaloa	3	3,502,970	150,000	2700

Source: Dried Fish Matters Sri Lanka Country Team (2020)

Note: The table presents most recent data submitted by District Fisheries Officers. There are inconsistencies in the approach to enumeration with some districts focusing only on full-time relatively larger dried fish production sites.

Appendix B

Main dried fish varieties

Marine:

English name	Sinhala name*	Scientific name	Habitat
Small sized			
Anchovies (sprats)	Lanka hal messa	*Stolephorus sp.*	Pelagic
Smoothbelly sardinella	Keerameen	*Amblygaster cluepeoides*	Pelagic
Trenched sardinella (herring)	Hurulla	*Amblygaster sirm*	Pelagic
Savalai hairtail (ribbon fish?)	Sawalaya	*Lepturacanthus savala*	Benthopelagic
Wolf herring	Katuwalla	*Chirocentrus dorab*	Reef-associated
Pony fish	Maskaarella	*Leiognathus brevirostris*	Demersal
Black-sail flying fish	Piya messa	*Cheilopogon nigricans*	Pelagic-oceanic
Shrimp/prawn	Isso	*Penaeus sp.*	
Krill	Kooni isso		
Medium sized			
Shortfin scad	Linna	*Decapterus macrosoma*	Pelagic
Frigate tuna	Alagoduva	Auxis thazard	Pelagic-neritic
Trigger fish	Pothuboru/Muhudu kukula		Demersal
Large sized			
Skipjack tuna	Balaya	*Katsuwonus pelamis*	Pelagic
Yellowfin tuna	Kelawalla	*Thunnus albacares*	Pelagic – tropics/sub-tropics
Big eye tuna	As gedi kelawalla	*Thunnus obesus*	
Double-spotted queen fish	Katta	*Scomberoides lysan*	Reef-associated
Shark	Mora/Keelan	*Carcharhinus sp.*	
Narrow-barred Spanish mackerel	Thora	*Scomberomorus commersoni*	Pelagic
Sting ray	Maduwa	*Dasyatis sp.*	
Dolphin fish	Vanna Parav	*Coryphaena hippurus*	Pelagic-neritic
	Dappara	*Istiompax indica*	Pelagic-oceanic
Black/Blue marlin	Koppara		
Sail fish/sward fish/bill fish	Thalapath	*Istiophorus platypterus*	
Engraved catfish	Aguluwa	*Nemapteryx caelata*	Demersal
Giant trevally	Parav	*Caranx ignobilis*	

Source: Ministry of Fisheries and Aquatic Resources Development, Sri Lanka
Scientific names and local names were verified against https://www.fishbase.org/search.php.

Freshwater dried fish varieties

Common name	Local name	Wild or cultured sp. and size	Scientific name
Stinging catfish	Hunga	Wild sp., big	*Heteropneustes fossilis*
Pearl-spot cichlid	Koraliya	Wild sp., medium	*Etroplus suratensis*
Walking catfish	Magura	Wild sp., big	*Arius sp.*
Bar-eyed goby	Weligowwa	Wild sp., small	*Glossogobius giuris*
Filamented barb	Pethiya	Wild sp., small	*Puntius filamentosus*
Murrel like fish	Luula	Wild sp., big	*Channa striata*
Indian carp	Cataluwa	Cultured sp., big	*Catla catla*
Nile / Mozambique Tilapia	Tilapiya (juveniles are called Batta)	Cultured sp., big	*Oreochromis niloticus / Oreochromis mossambicus*

Source: Ministry of Fisheries and Aquatic Resources Development, Sri Lanka

Appendix C

Semi-structured Interview Protocol (Sinhala version)

වියළි මාළු නිෂ්පාදකයින් සඳහා සම්මුඛ පරීක්ෂණ මාර්ගෝපදේශකය

(දේශීය පයෙර්ෂණ සහායකයින් විසින් පවත්වන සම්මුඛ පරීක්ෂණ සඳහා)

[NOTE: වියළි මාළු නිෂ්පාදනය සම්බන්ධව කටයුතු අදාල ආයතන / සමිති වල ලැයිස්තුවක් රැගෙන යන්න.]

සම්මුඛ පරීක්ෂණ ස්ථානය:
පයෙර්ෂණ සහායකගේ නම:
ලබාදෙන අංකය:

- **ජන විකාශන තොරතුරු** (මෙම තොරතුරු වෙනම රැස් කර, ගබඩා කර තබන්න)
  - නම
  - ස්ත්‍රී පුරුෂ භාවය
  - වයස
  - ආගම
  - ජනවාර්ගිකත්වය
  - කුලය/ සංස්කෘතිය (අවශ්‍ය නම් පමණක් විමසන්න)
  - ඉහළම මට්ටමේ අධ්‍යාපනය
  - පවුලේ විස්තර
    - විවාහක / අවිවාහක
    - දරුවන් සංඛ්‍යාව
    - යැපෙන දෙමාපියන්
  - නිෂ්පාදකයාගේ තොරතුරු: ස්වයං රැකියාවක් ලෙස කරගෙන යනු ලබයි, කුලියට ගත් සේවකයෙකි, වැටුප් රහිත පවුල් ශ්‍රමය, වෙනත් (සඳහන් කරන්න.)

මගපෙන්වන ප්‍රශ්න

වියළි මාළු නිෂ්පාදනය, විකිණීම් සහ බෙදා බෙදාහැරීමේ කටයුතු වල සහභාගිත්වය (වටිනාකම් දාමය)

01.ඔබ මෙහි කරන්නේ කුමන ආකාරයේ වැඩද (වියළි මාළු හා සම්බන්ධ)? ඔබේ ප්‍රධාන වගකීම් මොනවාද? ඔබට ‘ විශේෂ නිපුණතාවක් තිබේද?

02. ඔබ පූණර් කාලීන හෝ අධර් කාලීන පදනමෙන් වැඩ කරනවාද? ඔබ මේ ආකාරයෙන් වැඩ කිරීම් ආරම්භ කරන කලේ කවදාද? ඒ ඇයි?

03. ඔබ නැඟිටින වේලාවේ සිට නින්දට යන වෙලාව දක්වා සාමාන්‍ය වැඩකරන දිනයක් විස්තර කළ හැකිද? (එකම ස්ථානයකින්/කණ්ඩායමකින් සම්මුඛ පරීක්ෂණය සඳහා සහ සහභාගීවන සියලු දෙනා සඳහා සාමාන්‍යයෙන් වැඩ කරන දිනයක තොරතුරු සමාන වේ නම්, කාලය ඉතිරි කර ගැනීම සඳහා මෙම ප්‍රශ්නය එක් පුද්ගලයකු/දෙදෙනකුගෙන් පමණක් අසන්න.)

04. ඔබේ සේවායෝජකයා සම්බන්ධ වන කාර්යන් මොනවාද (උදා: වියළි මාළු නිෂ්පාදනය පමණක්, නිෂ්පාදනය හා විකිණීම, එකතු කිරීම හා විකිණීම)? ඔබේ සේවායෝජකයා පිරිමියකු හෝ කාන්තාවක් ද? ඔවුන් පදිංචිව ඇත්තේ කොහෙද?

05. මෙම වියළි මාළු නිෂ්පාදනය සංවිධානය වී ඇත්තේ කෙසේද?

- කුඩා පරිමාණ ව්‍යවසාය, පවුලට අයත් ව්‍යාපාරයක්, නිවසේ දී පරිභෝජනය සඳහා, හෝ වෙනත්?
- ඔබ තෙත් මාළු ලබා ලබාගන්නේ කොහෙන්ද? මෙම ප්‍රභවය ඇයි? ඔබ මිලදී ගන්නේ කුමන ප්‍රමාණයන්ගෙන් ද?
- ඔබ භාවිතා කරන්නේ කුමන මාළු වර්ගද? ඔබ මෙම විශේෂිත මාලු වර්ග තෝරා ගන්නේ ඇයි?
- ඔබේ වියළි මාළු ව්‍යාපාරයට අදාල පියවර මොනවාද (උදා: මිලදී ගැනීම, බඩවැල්/වරල්/කොරපොතු ඉවත් කර පිරිසිදු කිරීම, සේදීම, ලුණු දැමීම, වියළීම, අනිත් පිට පෙරලීම)?
- ඔබ භාවිතා කරන්නේ කුමන වියළීමේ ක්‍රමද?
- ඔබ වියළි මාළු විකුණන්නේ කාටද? විකුණන්නේ කුමන ප්‍රමාණයන්ගෙන් ද?
- ඔබ නිෂ්පාදනය කරන වියළි මාළුවල ගම්නාන්ත වෙළෙඳපොළ ඔබ දන්නවාද?
- මෑතදි Covid-19 වසංගතය ආශ්‍රිත දුෂ්කරතා වලදී මෙම ක්‍රියාවලියෙන් කිසිවක් වෙනස් වී තිබෙද?

06. මෙම කාර්ය සඳහා යොදවා ඇති වත්කම් මොනවාද (උදා: මානව සම්පත්, ප්‍රාග්ධනය, ඉඩම්, උපකරණ, වියළීමේ යටිතල පහසුකම්, ලුණු , පිරිසිදු ජලය)?

- එම වත්කම් අයිති කාටද? ඔබ මෙම කාර්යට ප්‍රවේශ වූයේ කෙසේද? මෙම කායර්ය කිරීමට ඔබ කිසියම් අත්තිකාරම් මුදලක් හෝ ණයක් ගෙන තිබෙද?
- මෙහි සේවය කරන්නේ වෙන කවුරුන්ද? ඔවුන් කාන්තාවන්ද? පිරිමින් ද? ඔවුන් කරන්නේ කුමන ආකාරයේ වැඩද? ඔවුනගේ වැඩ අධීක්ෂණය හා කළමනාකරණය කරන්නේ කවුද?

07. වියළි මාළු නිෂ්පාදනය (වටිනාකම් දාමය ඔස්සේ ළෙඳපොළ සහ ශ්‍රම සම්බන්ධතා) කිරීමේ දී ඔබ මැදිහත් වන්නේ කා සමඟද? මෙම සම්බන්ධතා ඔබට සහාය වන්නේ කුමන ආකාර වලින්ද (උදා: වෙළඳපොලක් සොයා ගැනීම, හොඳ මිලක් සොයා සොයාගැනීම)?

08. මෙම කාර්ය සිදු කිරීමේදී ඔබට යම් අභියෝග හෝ දුෂ්කරතා අත්විඳ තිබෙද? කරුණාකර ඒවා විස්තරාත්මකව පවසන්න.

- එම අභියෝගතා ඔබ පිරිමියකු හෝ කාන්තාවක් වීම හා සම්බන්ධද? ජනවාගරීකත්වය, ආගම හෝ සංස්කෘතිය හා සම්බන්ධද?
- මාළු සහ අනෙකුත් වෙරළ ආශ්‍රිත සම්පත් වලට අදාල ප්‍රශ්න තිබෙද? ඔබගේ ව්‍යාපාරය කරගෙන යාමට අවශ්‍ය තරම් මාළු ලැබෙද? නැතිනම් ඒ ඇයි? සම්පත් භාවිතය සහ සංරක්ෂණය සඳහා අදාළ ප්‍රශ්න තිබෙද?

09. වියළි මාළු සඳහා අදාළ කටයුතු වලට සහභාගී වීම සම්බන්ධව ඔබ තීරණ ගන්නේ කෙසේද? එවැනි තීරණ ඔබ විසින් ගන්නවාද, නැතිනම් වෙනත් අයෙකුගේ බලපෑමක් තිබෙද (උදා: ස්වාමියා හෝ පවුලේ පිරිමි සාමාජිකයන්)?

➢ <u>සමාජ යහපැවැත්ම</u>

10. හොඳ ජීවිතයක් ගත කිරීම යනුවෙන් ඔබ අදහස් කරන්නේ කුමක්ද?

11. මාළු වියළීමේ කටයුතු ඔබට යහපත් ජීවිතයක් ගත කිරීමට උපකාරී වන්නේ කෙසේද? Covid-19 වසංගත කාලයේ දී මෙයට බලපෑමක් ඇති වූයේ කෙසේද?

12. කාන්තාවක් / පිරිමියකු වීම මත මෙම ක්‍රියාවලියෙන් ඔබට ප්‍රයෝජන ලබා ගැනීමට ඇති හැකියාව වෙනස් වේද?

13. ඔබට ගෙවීම් කරනු ලබන්නෙ කෙසේද (මුදල් පමණක් හෝ මුදල් සහ වෙනත්)? ණය පියවීම සඳහා ඔබේ වැටුපෙන් හෝ ආදායමෙන් කොටසක් හිලව් වේද?

- ඔබ වැඩ කළ පසුගිය මාසය තුල කොපමණ මුදලක් උපයා ගත්තා ද?
- ඔබේ වැඩකටයුතු වලට අවාර කාලයේ බලපෑම කෙසේද? එවන් වූ මාස වලදී ඔබේ ආදායම කොපමණද?

14. ඔබ වියලන මාළු නිවසේ දී පරිභෝජනය සඳහා ගන්නවාද? ඔව් නම්, කුමන ප්‍රමාණයන්ගෙන්ද? එසේ නොකරන්නේ නම්, ඒ ඇයි?

15. ඔබේ පවුලේ අය, වැඩපොලේ අය, නෑදෑයින්, අසල්වැසියන්, මිතුරන් අතරින් ඔබට අවශ්‍ය වූ විට දී සහයට සිටින්නේ කවුරුන්ද?

16. ඔබේ වැඩ (වියළි මාළු ආශ්‍රිත) එවැනි සමාජ සම්බන්ධතා ගොඩනඟා ගැනීමට සහ පවත්වා ගැනීමට ඔබට සහාය වේ ද? කුමන ආකාරයෙන් ද?

17. ජීවනෝපායක් ලෙස මාළු වියළීමෙහි යෙදීම් ඔබට කොතරම් වැදගත් වන්නේද (උදා: පාරම්පරික හෝ සාම්ප්‍රදායික වශයෙන්)?

18. මාළු වියලීම ආශ්‍රිත වැඩ කරන පුද්ගලයින් අනෙක් අය විසින් (සමාජ මට්ටමෙන්) දකින්නේ කෙසේද?

19. අනාගතය පිළිබඳව ඔබේ බලාපොරොත්තු සහ අපේක්ෂාවන් මොනවාද? ඔබේ පවුලේ අයගේ අපේක්ෂාවන් මොනවාද? මාළු වියලීමේ කටයුතු වලට සම්බන්ධ වීම තුළින් ඔබට එම බලාපොරොත්තු ඉටු කර ගැනීමට හැකියාවක් තියනවාද?

20. ඔබේ ජීවනෝපාය (මාළු වියළීම) පිළිබඳව ඔබ සෑහීමකට පත්වේද? ඒ ඇයි?

21. මාළු වියළීමේ රැකියාවට ඔබේ දරුවන් සහභාගි වනවාට ඔබ කැමතිද? ඒ ඇයි?

22. ඔබ මෙම කාර්ය හැර වෙනත් ජීවනෝපාය කටයුතු වල නිරත වෙනවාද? එසේ නම් එම කටයුතු මොනවාද?

23. අවාර කාලය තුළ සාමාන්‍යයෙන් ඔබේ පවුල් නඩත්තු කරන්නේ කෙසේද? ඔබේ නිවසේ අනෙක් සාමාජිකයින් කිසිවකු වැඩ කරනවද? එසේ නම් ඔවුන් කරන්නේ කුමන ආකාරයේ වැඩද?

➢ <u>නීති රීති, ආයතනික සම්බද්ධතා, සහ සංස්කෘතික / සමාජ සම්මතයන්</u>

24. මාළු වියළීමේ කටයුතු සඳහා අදාළ වන නීති රීති, රෙගුලාසි, හෝ සැලසුම් පිළිබඳව ඔබ දැනුවත්ද? ඒවා මොනවාද?

25. ඔබ එවැනි නීති රීති අනුගමනය කරනවා ද? යමෙක් මෙම පිළිපදින්නේ නැති නම් දැනට පවතින නීති ක්‍රියාත්මක කිරීමේ පිළිවෙත් මොනවාද (උදා: අනතුරු ඇඟවීම හෝ දඩුවම් ක්‍රියාත්මක කිරීමේ)?

26. ඔබ අනුගමනය කරන දේශීය සංස්කෘතික/සමාජ සම්මතයන්, විශ්වාසයන්, හෝ සම්ප්‍රදායන් තිබේද (මාළු වියළීම ආශ්‍රිත)? කරුණාකර ඒවා විස්තර කරන්න. යමෙක් මෙම සම්මතයන් හා සම්ප්‍රදායන් පිළිපදින්නේ නැති නම් කුමක් සිදුවේද?

27. පිරිමින්ට සාපේක්ෂව කාන්තාවන්ට එම සම්මතයන් හා සම්ප්‍රදායන් අදාළ වන්නේ කෙසේද? විවිධ ජනවර්ගයන්ට, ආගම්, හෝ සංස්කෘතීන්ට ඒවා අදාළ වන්නේ කෙසේද?

28. පිරිමින්ට සාපේක්ෂව කාන්තාවන් මේ ආකාරයේ වැඩ කිරීමේදී හැසිරෙන ආකාරය පිළිබඳ අමතර සමාජමය අපේක්ෂාවන් තිබේද (උදා: වියළි මාළු විකිණීම එක් පාශර්වයකට පමණක් කළ හැකි කටයුත්තක් වීම)?

29. ඔබ, වැඩ සම්බන්ධ තීරණ වෙනත් අය සමඟ එකතුව ගන්නවාද? එසේ නම්, ඔබ කා සමඟද තීරණ සාකච්ඡා කරන්නේ (උදා: වැඩපොලේ අය, පවුලේ අය, නෑදෑයින්, අසල්වැසියන්, මිතුරන්)? ඔබ මේ ආකාරයෙන් ගන්නා තීරණ මොනවාද?

30. මෙම කාර්යන්ට සහාය දෙන ගම් මට්ටමේ ආයතන / සමිති සමඟ ඔබ සම්බන්ධව කටයුතු කරනවාද?

- ඔව් නම්, කොපමණ කාලයක් සිටද? මෙම ආයතනය හරහා ඔබට ලබාගත හැකි සහයෝගයන් කුමන ආකාරයේ ද?
- ඔබට ලැබෙන සහයෝගය ගැන ඔබ සෑහීමකට පත් වේද? නැතිනම් ඒ ඇයි?
- පිරිමින්ට සාපේක්ෂව කාන්තාවන් මෙය දකින්නේ කෙසේද?

31. ඔබ ගම් මට්ටමේ ආයතන හැර වෙනත් දිස්ත්‍රික්ක හෝ පළාත් මට්ටමේ ආයතන හා සම්බන්ධව කටයුතු කරනවද? (අදාල ආයතන වල ලැයිස්තුවක් සපයන්න / මෙම ප්‍රශ්නය අසන්න: ඔබ හා අනෙකුත් වියළි මාළු නිපදවන්නන් ගැටලුවකට මුහුණ දුන් විට සහාය ලබා ගන්නේ කාගෙන්ද?)

➢ <u>ගැටළු විසඳීමට, තීරණ ගැනීමට දක්වන දායකත්වය සහ ස්ත්‍රී පුරුෂ සමානාත්මතා ප්‍රතිපෝෂණය කිරීමට ඇති අවස්ථා</u>

32. ඔබ කලින් සඳහන් කළ _____ [පළමු ආයතනය/සමීතිය] මෙම ප්‍රදේශයේ වියළි මාළු නිෂ්පාදනය සඳහා සහය වන්නේ කෙසේද, ඔබ කලින් (ප්‍රශ්න අංක 30දී) සඳහන් කළ ආකාරයේ සහයෝගයන්ට අමතරව?

33. වියළි මාළු නිෂ්පාදනය සඳහා සහය වන්නේ කෙසේද යන්න පිළිබඳව මෙම ආයතනය/සමීතිය තීරණ ගන්නා ආකාරය ඔබ දන්නවාද?

- තීරණ ගැනීමේ /ගැටළු විසඳීමේ ක්‍රියාවලියට සම්බන්ධ වන්නේ කවුරුන් දැයි ඔබ දන්නවාද? (උදා: ධීවර කළමණාකරන නිලධාරීන්, වෙළෙඳපොළ ක්‍රියාකාරීන්, NGO ක්‍රියාකාරීන්, දේශපාලන නිලධාරීන්)?
- කාන්තාවන් සහ පිරිමින් යන දෙපාශර්වයම කිසිදු සීමාවකින් තොරව තීරණ ගැනීමේ ක්‍රියාවලියට සහභාගී වෙනවාද ? එසේ නොවේ නම් ඒ ඇයි?

34. ඉහත සඳහන් කළ _____ [පළමු ආයතනය/සමීතිය] තුල ඔබ සම්බන්ධ වන විශේෂිත කාර්යන් විස්තර කළ හැකිද? (NOTE: අදාල නම්, පහත දැක්වෙන අනුපිළිවෙල අනුගමනය කර පැහැදිලි විස්තර ලබා ගැනීමට අමතර ප්‍රශ්න අසන්න)

1. එදිනෙදා කළමනාකරණ කටයුතු වලට සහභාගිවීම
2. පොදුවේ තීරණ ගැනීමේදී සහ අදාල නීතිරීති සකස් කිරීමේ කටයුතු වලට සහභාගිවීම
3. තුළින් ගැටලු විසඳීමේ කටයුතු වලට සක්‍රීය සහභාගිත්වය (නිෂ්පාදකයින්ට වැදගත් වන සාධක පදනම් කරගනිමින්)

35. එම කාර්යන් ඉටු කිරීමේදී ඔබට යම් අභියෝග හෝ බාධක ඇති වී තිබේද? කරුණාකර විස්තර කරන්න.

[NOTE: කලින් හඳුනාගත් ආයතන හෝ සමිති සියල්ල සඳහා අංක 32 සිට 35 දක්වා ප්‍රශ්න නැවත අසන්න.]

36. සමස්තයක් වශයෙන් ඔබට සහ අනෙකුත් වියළි මාළු නිෂ්පාදකයන්ට අවශ්‍ය සහාය ලබා ගැනීම සඳහා පවත්නා ආයතන / සමිති වැඩි දියුණු කළ හැක්කේ කෙසේද?

37. ආයතන / සමිති වල කාන්තාවන්ගේ සහභාගීත්වය ඇතිව පොදුවේ තීරණ ගැනීමේ ක්‍රියාවලින් වැඩි දියුණු කිරීම ගැන ඔබ සිතන්නේ කුමක්ද?

- කාන්තාවන් සක්‍රියව දායක වනවාට ඔබ කැමතිද? ඒ ඇයි?
- කැමති නම් එවැනි ක්‍රියාවලින්ට සක්‍රියව සහභාගි වීමට කාන්තාවන්ට අවශ්‍ය වන්නේ කුමන ආකාරයේ සහයෝගයක්ද?

38. අප මෙම සාකච්ඡාවේදී කතා කළ කරුණුවලට අමතරව ඔබට වෙනත් අදහස් හෝ යෝජනා තිබෙද?

-- THE END --

Semi-structured interview protocol for dried fish producers

(English version translated to Sinhala)

To be used for the field interviews conducted by in-country Research Assistants:

Demographic information (to be recorded and stored separately)

Name (code/pseudonym):
Interview location:
Gender:
Age:
Religion:
Ethnicity:
Caste/culture (ask only if necessary as you may already know this by family name, group they work with or by their community location):
Highest level of education completed:
Family details: Married/unmarried (Y/N)
No. of Children:
Dependent parents (Y/N)
Type of producer: Self-employed, hired worker, non-paid family labour, other (specify)

Guiding questions (can be slightly modified based on how an interview progresses):

<u>Value chain participation</u>

1. What type of work do you do here (related to dried fish)? What are your main responsibilities? Do you have a particular specialization or specialized skill?
2. Do you work on full-time or part-time basis? When did you start doing this kind of work and why?
3. Can you please describe a typical working day, starting from the time you get up, to the time you go to bed? [If a typical day might look similar for everyone within the group/location, please ask this question from only one/two respondents in each location as way of saving time]
4. What tasks does your employer perform (e.g., processing only, processing and selling)? Is your employer a man or woman? Where are they from?

5. How is this dried fish operation organized?
    - Subsistence level, small-scale enterprise, family-owned operation, or other?
    - From where do you get wet fish? Why this source? In which quantities do you buy?
    - Which fish varieties do you use? Why do you select these specific varieties?
    - What are the steps involved in your dried fish operation (buying, degutting, washing, salting, drying)? Which drying methods do you use?
    - Who do you sell dried fish to? Why this buyer? In which quantities?
    - Do you know the destination market of what you produce?

- Has any of those practices changed during the recent pandemic-related lockdowns?

6. What assets have been deployed in this work (e.g., human, capital, land, equipment, drying infrastructure, salt, clean water)?
    - Who own those assets and/or how did you access them? Have you taken any advance/loan or got into debt to do this work?
    - Who else is employed in this operation? Are they women or men? What type of work do they do? Who oversee and manage their work?
7. Who do you interact with in running the dried fish operation (market and labour relations along the value chain)? In which ways do these interactions support you (e.g., finding markets, getting a better price)?

8. Have you experienced any challenges or difficulties in doing this work? Please describe them in detail.
    - Do any of the challenges relate to your gender? Ethnicity, religion, or any other reasons?
    - Do you have problems in accessing fish and other coastal resources? Is there an enough fish supply for you to continue drying? Why or why not?
9. How do you make choices about what to do, for example, how to participate in the dried fish operation? Do you make your own choices? Does anyone else have any influence over such decisions (e.g., spouse, male family members)?

Social wellbeing

10. What does a 'life well lived' mean to you?
11. How does the dried fish operation support you live a good life? How was this impacted during the pandemic-related lockdowns?
12. Does being a woman/man matter in how you benefit from this work?
13. How are you been paid (cash only or cash and in-kind)? Any credit-bound arrangements?
    - How much did you earn during the last complete month that you worked?
    - If your work is seasonal, how much did you earn during the last complete season or how much do you expect to earn over the course of this season?
14. Do you consume the fish you dry at home? If yes, in which quantities? If not, why?

15. Whom among your family, co-workers, neighbours, and friends, can you count on to support you in times of need?
16. Does your work (dried fish-related) support you build and maintain social relations?
17. How important to you is the continued engagement in fish drying as a livelihood (e.g., inter-generational or cultural values)?
18. How do other people (community level) perceive dried fish workers in general?

19. What are your hopes and aspirations for the future for yourself? For your family? How do you see the dried fish operation support you (or not) you achieve them?
20. Are you satisfied with your livelihood? Why or why not?
21. Would you pass fish drying occupation on to your children? Why or why not?

22. Do you engage in any other livelihood activities other than this work? If so, what are those activities?
23. How do you support yourself or the family normally during the off season? Do any of the other members of your household work? If so, what kind of work do they do?

Rules, organizational affiliations, and social norms

24. Are you aware of any kind of regulations, guidelines or management plans applicable to dried fish operations? What are they?
25. Do you follow any such rules? If anyone violate these rules, what are the prevailing practices of deterrent/punishment?

26. Are there any cultural norms, beliefs, or traditions that you follow? Please describe them in detail. What happens if anyone violate these norms and traditions?
27. How do those norms and traditions apply to women compared to men? How do they apply to different ethnicities, religions, or cultures?
28. Any there any additional expectations around what women or men do or how they behave in doing this kind of work (e.g., selling dried fish is restricted to one gender group)?
29. Do you make any work-related decisions together with any others other than your family? If so, who do you talk to? What kind of decisions do you make this way?

30. Are you affiliated with any village-level organizations who support this work?
    - If yes, for how long? What kind of support is available to you through this organization?
    - Are you satisfied with the support you get? Why or why not (are there any gender implications related to this)?
31. Do you interact with any organizations beyond community level? [provide a comprehensive list of organizations including district and national levels as they may not recall whom they are in contact with OR ASK: 'if you and other processors in the village have a problem related to fish drying, whom do you go to for assistance?']

Participation in problem solving/decision making and opportunities to improve gender-equitable outcomes

32. Going back to *[organization 1]* you are affiliated with, how do they support dried fish operations in this area – in addition to the kinds of support that your mentioned before?
33. Do you know how they make decisions (the process) about how to support dried fish operations?
    - Do you know who is involved in the decision-making process (market, fisheries officers, NGOs, politicians)?
    - Do both women and men participate without any restrictions? If not, why?

34. Can you describe the specific tasks that you are involved in within *[organization 1]*?

- *[If applicable, follow the order below and ask questions to clarify the details on the level of engagement]*
    i. Participation in day-to-day management
    ii. Participation decision-making and in developing rules to be enforced

iii. Active participation in problem solving guided by what matters to the producers and their communities

35. Have you encountered any challenges or barriers in performing those tasks? Please describe in detail.

[Repeat questions 32 – 35 above for any other organizational affiliations identified above, including village-level organizations.]

36. Overall, what can be done to improve the existing organizations in getting the support you and your community need (dried fish related)?
37. What do you think about women's participation in organizations and decision-making processes in general?
    - In which capacity would you like to see women contribute? Why?
    - If supportive, what kind of support do you think women need to be able to actively participate in such processes?
38. Do you have any additional comments or suggestions in relation to what we talked about today?

-- THE END --

Appendix D

Key Informant Interview Guide

(For phone-based or virtual interviews with governing actors, e.g., cooperative leaders, local fisheries managers, market actors, non-profit program managers, civil society representatives, and law enforcement officers)

Demographic information (to be recorded and stored separately)

Name (code/pseudonym):
Institutional affiliation:
Role/position held and for how long:
Gender:
Age:
Ethnicity/religion/caste as applicable:

Guiding Questions (please modify/add/drop questions based on the type of key informant):

1. Can you please describe how you are [or your society/institution is] involved in the dried fish sector? [If this is an institution, what is your institution's mandate? What are the priority areas of focus in relation to dried fish sector?]
2. Are there any rules, guidelines, or monitoring mechanisms that regulate the dried fish operations in your area?
    - Institutional rules like prohibited net sizes?
    - Any community level rules like taking turns in getting access to fishing?
    - Who enforce them?
    - How do these regulations apply to women compared to men? To caste groups, ethnic or religious groups?
3. Are there any programs and initiatives available to develop the dried fish sector in your area (government, NGO-supported)? If yes, do you know the eligibility criteria for accessing those services?
4. How were dried fish operations in your area impacted by the recent COVID-19 pandemic-related lockdowns? What challenges or issues does the sector face now?
5. Can you describe the specific tasks that you are involved in (within formal or informal institutions)? *[Follow the order below and ask questions to clarify the details on the level of engagement]*
    iv. Participation in day-to-day management (e.g., production data gathering, reporting rule breaking incidents)
    v. Participation in decision-making and in developing rules to be enforced
    vi. Active participation in deliberations guided by societal values and meanings about how to support the membership/safeguard the resource base
6. Have you encountered any challenges or barriers in performing those tasks? Please describe.
7. How are [or do you know how] decisions being made about how to support the dried fish operations?
    - What does the decision-making process look like?

- Do you seek input from anyone else (producers, market actors, levels of govt)?
- What factors do you think influence these decisions the most?
- How does the societal values and expectations fit in? Any considerations related to the state of the resource base?
- Do both women and men participate in these discussions without any restrictions?

8. What can be done to improve the wellbeing of producers, both women and men? What kind of institutions (strengthened or new) or processes are needed to do so?
9. What do you think about women's participation in institutions and decision-making processes? In which capacity would you like to see women contribute? Why?
10. What keeps women away from involving in institutions and decision-making processes? What kind of support do women need for them to be able to actively participate in decision-making?
11. Do you have any additional comments or suggestions in relation to what we just talked about?

Appendix E

Ethics Protocol and Supporting Documents

PROTOCOLS

UNIVERSITY OF WATERLOO

#41888 - Dried Fish Matters; Mapping the social economy of dried fish in South and Southeast Asia for enhanced wellbeing and nutrition

Review Type	Status	Approval Date	Renewal Date	Expirat
Expedited	Approved	Jan 14, 2021	Dec 23, 2021	Jan 1

Feedback

Approval Comment

The study has ethics clearance. Please direct any questions/concerns to Vanessa Buote at vbutoe@uwaterloo.ca

Protocol Amendment Form

Amendment

Justification

RESEARCH RESTART: PhD research of Iroshani Madu Galappaththi This amendment pertains to the PhD research of Iroshani, one of the two PhD thesis research studies included in the original ethics application. A Request to Resume Off-Campus Research Involving Human Participants and the Safety Plan have been submitted to researchqueries@uwaterloo.ca. This request is currently under review. In response to the risks arising from COVID-19, Iroshani's field research has been modified by: 1) developing a plan for remote field data collection to minimize in-person field activities; and 2) changing geographic focus of the study from India to Sri Lanka, where distant field sites can be safely accessed locally. The remote plan eliminates the

need for international travel. The remote field data collection plan includes, a) virtual/phone-based interviews, where possible and, b) field interviews with study participants who cannot be reached directly through technology. These field interviews will be conducted by locally-hired Research Assistants (RAs). Recruitment of local RAs is critical to successfully achieve the objectives of this research because the main target respondents of interviews (i.e. dried fish workers) operate in an 'informal economy' with no prior records on their profiles or the livelihood activities they perform. Therefore, these respondents can only be accessed through in-person visits to the field while meeting the sampling requirements of the study. The change in geographic focus is due to three main reasons. First, a change in fieldwork location from West Bengal to Sri Lanka will not impact the purpose of Iroshani's PhD research and the specific objectives. Second, it appears that the COVID-19 spread in Sri Lanka is relatively contained and remote field sites can be safely accessed through locally hired research assistants with appropriate health and safety measures in place. Finally, Iroshani has the cultural/local language expertise and an established network of contacts that will enable her to remotely lead, coordinate, and monitor field activities. Iroshani's field research proposed in the original ethics application (focused on West Bengal, India) was designed in alignment with the broader research mandate of a SSHRC-funded Partnership Grant ('Dried Fish Matters' - DFM, hosted by University of Manitoba) that University of Waterloo's dried fish research contributes to. DFM focuses on dried fish social economy of six countries in South and Southeast Asia, including both Sri Lanka and India. Therefore, her research in Sri Lanka will contribute towards the same broad research outcomes and will expand University of Waterloo's research contributions to DFM Partnership to include dried fish value chains in Sri Lanka. To ensure a full understanding of local health risks and other ethical considerations, a new local collaborator/institution from Sri Lanka has been added to the ethics application. During in-person field interviews, local RAs, study participants, and the general public are at risk for exposure to COVID-19. A series of precautionary measures will be taken to minimize this exposure, including physical distancing measures, PPE use, hand hygiene practices, self-assessment screening, and illness reporting. The ethics application has been fully reviewed and updated to incorporate all of the above changes. All changes have been identified under the header 'RESEARCH RESTART - IROSHANI'S PHD' in application sections and modified attachments. Please also note that the original ethics application was amended in May 2020 to request only a change in geographic location for Iroshani's research (from

West Bengal to Sri Lanka); however, that amendment was withdrawn on June

5, 2020 by the ORE with a request to resubmit an updated amendment following Stage 3 opening.

General Information

Only the Principal Investigator/Faculty Supervisor can submit the application. This acts as a signature indicating approval of the application.

Principal Investigator / Faculty Supervisor

Prateep Nayak

Department

School of Environment, Enterprise and Development

Study title

Dried Fish Matters; Mapping the social economy of dried fish in South and Southeast Asia for enhanced wellbeing and nutrition

General Questionnaire

Indicate the type of application you would like to complete

Standard Application *

* The Standard application is for faculty level research and thesis level research.

** The course project application is for (non-thesis) course based research and can be completed by students or the course instructor

Please confirm:

I understand that the type of applications listed above determine the form I

Recruitment and Verbal Consent Letter: Field Interviews

Title of Project: ***Dried Fish Matters:*** Mapping the social economy of dried fish in South and Southeast Asia for enhanced wellbeing and nutrition

Name of the Interviewer*: [Name of the Research Assistant conducting the interview to be inserted]*

Dear Participant,

To help you make an informed decision regarding your participation in the study, this letter will explain what the study is about, the possible risks and benefits, and your rights as a research participant. Please note that this letter is separate from the COVID-19 related written consent that you just provided. If you do not understand something in the letter, please ask one of the investigators prior to consenting to the study. You will be provided with a copy of the information and consent form if you choose to participate in the study.

I. About the Study

The study is about developing an understanding of dried fish systems in Sri Lanka. The research will examine the value chain complexities by applying a social-ecological systems, governance and gender perspective to value creation across the value chain. This will offer nuanced understanding of human socio-economic activity in the dried fish value chain in the context of social, ecological, cultural, historical, political and other forces. This study is part of a larger international and collaborative research "Dried Fish Matters; Mapping the social economy of dried fish in South and Southeast Asia for enhanced wellbeing and nutrition". The research engagement of University of waterloo is limited to various study sites in Sri Lanka. The study will be conducted through Environment, Enterprise and Development (SEED), University of Waterloo, Canada and School of Environment, Resources and Sustainability under the supervision of Professors Prateep Kumar Nayak and Derek Armitage. As you may already know, dried fish has a strong social-ecological and economic function to the life and livelihoods of people engaged at various stages of dried fish operation. Because you are an active member of dried fish value stream, your opinion may be important to this study. Thus, I would appreciate the opportunity to speak with you about this.

II. Your responsibilities as a participant

What does participation involve?

Participation in this study is voluntary and would involve a 45 – 60 minutes interview in your home or alternate location at a convenient location and time. You will first complete a short demographic information (age, gender, religion, no of children, roles in dried fish value chain etc.), and then I will seek opinion on various questions with regard to different social, ecological and economic dimensions of dried fish value chain. You may decline answering any questions

you do not wish to answer, and you may end the interview at any time by advising me of this decision.

Who may participate in the study?

In order to participate in the study, you must be at least 18 years of age and an active member of fishing communities. You must also not belong to any groups considered vulnerable with respect to COVID-19 (e.g., an older adult; underlying medical conditions such as heart disease, hypertension, diabetes, chronic respiratory diseases, cancer, etc.; or a compromised immune system).

II. Your rights as a participant

Is participation in the study voluntary?

Your participation in this study is voluntary. You may decline answering any questions you do not wish to answer, and you may end the interview at any time by advising me of this decision. All information that could identify you will be removed from the data we have collected within 24 months and stored separately. We will keep identifying information for a minimum of seven years and our study records for a minimum of seven years. You can withdraw consent to participate and have your data destroyed by contacting us within this time period. Only those associated with this study will have access to these records which are password protected. It is not possible to withdraw your consent once papers and publications have been submitted to publishers. All records will be destroyed according to the data storage and management policy of the University of Waterloo, Canada.

What are the possible benefits of the study?

Participation in this study may not provide any personal benefit to you. I hope the information collected through this interview will aid in strengthening dried fish sector and protect the interest of dried fish value chain actors with nuanced knowledge and analysis.

Are there any other risks associated with the study in addition to the risk of exposure to COVID-19 as we discussed before?

There may be some minor risks to participating in our study, in addition to the risk of COVID-19 exposure. Our questions are about your work where you may have competition or conflict with others. We will be protecting your information and will only use it for research to help your industry and community. Also, other people may know that you participated in the interview, but we will not share any of your answers or anything else that you tell us. Real names will be confidential and stored separate from the study data. I will explain in more detail our privacy measures further down/in a moment. If a question, or the discussion, makes you uncomfortable, you can choose not to answer. Your participation is voluntary as we discussed before.

Will my identity be known to others?

Your participation in this study will be considered confidential. Your name will not be used in any paper or publication resulting from this study, however with your permission anonymized quotations may be used. Identifying information will be removed from the data that is collected and stored separately. If you have any questions about participation, please feel free to discuss these with the interviewer, or later, by contacting the Principal Investigator of this study Prof. Prateep Kumar Nayak [redacted].

Will my information be kept confidential?

The data collected will be kept in PI's office/lab at the University of Waterloo to help maintain baseline data for future. All the interview forms will be coded to replace any real names and they will then exist on record separately. Identifying information will be removed from the data that is collected and stored separately. Only those associated with this project will have access to study records.

III. Questions, comments, or concerns

Who is sponsoring/funding this study?
This study is supported by the Social Sciences and Humanities Research Council of Canada and being implemented in five countries of South and South-East Asia.

Has the study received ethics clearance?

This study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Committee **[ORE Ethics approval number 41888].** If you have questions for the Committee contact the Office of Research Ethics, at 1-519-888-4567 ext. 36005 or ore-ceo@uwaterloo.ca.

Who should I contact if I have questions regarding my participation in the study? If you are interested in receiving a copy of the executive summary of the session outcomes, please contact Prof. Prateep Kumar Nayak at [redacted]. For all other questions contact **Madu Galappaththi at** [redacted]

Thank you for your assistance with this research.

Yours sincerely,

Madu Galappaththi

(Researcher)

VERBAL CONSENT FORM FOR RSEARCH PARTICIPATION

(This is separate from the COVID-19 related written consent)

By agreeing to this consent form, you are not waiving your legal rights or releasing the investigator(s) or involved institution(s) from their legal and professional responsibilities.

I understand the information presented to me about a study being conducted by Madu Galappaththi at the Faculty of Environment, University of Waterloo, Canada. I have had the opportunity to ask any questions related to this study, to receive satisfactory answers to my questions, and any additional details I wanted.

Do you understand the information?

Are you aware that you have the option of allowing my interview to be audio recorded to ensure an accurate recording of your responses?

Are you aware that excerpts from the interview may be included in the thesis and/or publications to come from this research, with the understanding that the quotations will be anonymous?

Are you aware that you may withdraw your consent up until results are submitted for publication or included in any other documents without penalty by advising the researcher?

This study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Committee [ORE Ethics approval number 41888]. If you have questions for the Committee contact the Office of Research Ethics, at 1-519-888-4567 ext. 36005 or ore-ceo@uwaterloo.ca.

For all other questions, please contact **Madu Galappaththi at** [redacted].

With full knowledge of all foregoing, I agree, of my own free will, to participate in this study.

☐YES ☐NO

I agree to have my interview audio recorded.

☐YES ☐NO

I agree to the use of anonymous quotations in any thesis or publication that comes of this research.

☐YES ☐NO

Verbal Consent: COVID-19 Risks for In-Person Research Study Visits

Researcher name and contact details: Madu Galappaththi at [redacted]

Study Title:

This study is conducted as part of a Canadian-based Partnership Project titled *"Dried Fish Matters (DFM):* Mapping the social economy of dried fish in South and Southeast Asia for enhanced wellbeing and nutrition

Principal Investigator (DFM - UWaterloo): Prof. Prateep Kumar Nayak, [redacted]

Name of the Interviewer*: [Name of the Research Assistant conducting the interview to be inserted]*

Dear Participant,

As you know, the location of this field site, **[insert location]**, falls under the jurisdiction of **[insert public health name]**. We are putting in place safety precautions to reduce exposure to COVID-19 during these interviews, but the risk of exposure can still exist. We ask that you follow public health directives, as well, for the safety both of participants and researchers.

COVID-19 can result in severe illness, medical expenses, loss of income and death. **If you are feeling unwell or experiencing any of the following potential COVID-19 symptoms, then please discuss your participation with the research team before consenting**: new or worsening cough, shortness of breath or difficulty breathing, temperature equal to or over 38C (100.4F), feeling feverish, chills, fatigue or weakness, muscle or body aches, new loss of smell or taste, headache, gastrointestinal symptoms (abdominal pain, diarrhea, vomiting), or feeling very unwell.

Because the researcher may need to be closer to you than the recommend 2m distance, the following safety protocols must be followed:

- Answer questions for a **required COVID-19 screening assessment, which you did just before this letter.** Please **sanitize your hands** or wash them before we begin the interview. Hand sanitizer will be provided.
- Please **wear a mask or face covering throughout the interview duration**. Masks will be provided if required.
- Avoid touching the face or the mask.

- Advise a researcher if you believe a safety measure is not being taken, or that safety is at risk.
- Provide your **personal contact information** for contact-tracing purposes.

We will be collecting personal contact information that we must retain and will use only to **follow up with you or support contact tracing** if you may have been exposed to COVID-19 at the research site. Contact information will be **stored securely and separately** from research data, then **destroyed** as soon as permitted by public health authorities.

To reduce the possibility of COVID-19 exposure, especially if study procedures cannot maintain 2-metre distancing, we have implemented the **following safety procedures** recommended by our Safety Office and public health:

- Regular **hand sanitizing or washing** by all research team members,
- Availability and use of **hand sanitizer** for study participants and researchers,
- The voice recorders, cell phones, and pens used by the research term have been properly sanitized and each member has their own supply of these equipment to avoid sharing,
- Wearing of **face masks/face coverings** (A **face mask will be provided** for you if required).
- Where necessary, use of face shields and gloves, and
- All research members have taken COVID-19 self assessments this morning and have followed all safety guidelines during their commute to the field site.

If you feel that you are unable to wear a mask or you are from a vulnerable group with respect to COVID-19 (e.g., an older adult; underlying medical conditions such as heart disease, hypertension, diabetes, chronic respiratory diseases, cancer, etc.; or a compromised immune system), please discuss your participation with the research team before consenting.

You are invited to participate in an in-person interview on a voluntary basis. You are **under no obligation to participate** and nothing will happen if you change your mind about participating in the research. At any time, you can stop participating or withdraw from the study by notifying the researcher.

As noted above, your information will be held for the time required by public health authorities for contact tracing purposes.

Thank you for your interest and participation.

Yours sincerely,

Madu Galappaththi

Researcher

VERBAL CONSENT FORM

FOR ACKNOWLEDGING AND ACCEPTING THE INFORMATION PRESENTED TO YOU ABOVE ABOUT RISKS OF COVID-19 EXPOSURE AND THE RELATED SAFETY MEASURES IN PLACE AND ARE WILLING TO PARTICIPATE IN THE IN-PERSON INTERVIEW

By agreeing to this consent form, you confirm that **you have been verbally presented the information above** and had an **opportunity to ask questions**; you are **not waiving your rights** or releasing the investigator(s) or involved institution(s) from their legal and professional responsibilities.

With full knowledge of all foregoing, I agree, of my own free will, that:

- I am not experiencing any potential COVID-19 symptoms, including new or worsening cough, shortness of breath or difficulty breathing, temperature equal to or over 38C (100.4F), feeling feverish, chills, fatigue or weakness, muscle or body aches, new loss of smell or taste, headache, gastrointestinal symptoms (abdominal pain, diarrhea, vomiting), or feeling very unwell.

  ☐YES ☐NO

- In the last 14 days, I have not travelled outside Canada, tested positive for COVID-19, had close contact with anyone who has any of the symptoms listed above (or is a confirmed or presumed case of COVID-19), or been advised by public health to remain in self-isolation.

  ☐YES ☐NO

- I have completed the COVID-19 assessment questions prior to this letter.

  ☐YES ☐NO

This study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Committee [ORE Ethics approval number 41888]. If you have questions for the Committee contact the Office of Research Ethics, at 1-519-888-4567 ext. 36005 or ore-ceo@uwaterloo.ca.

For all other questions, please contact **Madu Galappaththi at** [redacted]

Study Title: Governance opportunities to foster gendered social wellbeing in dried fish value chains in Sri Lanka

Date: _____

Time: _____

Information for Contact Tracing

Participant:

Name (Please print): _____ (required)

Phone: _____ (required)

Email: _____ (optional)

This information:

- will not be stored with the study data,
- will always be securely stored,
- will be used only if requested by public health to provide this information for COVID-19 contact tracing purposes, and
- will be held only for the time required by public health authorities.

Institutional Letter

UNIVERSITY OF WATERLOO

FACULTY OF ENVIRONMENT | School of Environment, Resources and Sustainability
519-888-4567 | fax 519-746-0292
uwaterloo.ca/sers

March 8, 2021

To whom it may concern:

We, Madu Galappaththi (PhD Candidate) and Derek Armitage (PhD Supervisor), are writing to provide information relevant to the remote data collection activities being conducted in Sri Lanka.

Research title: Governance opportunities to foster gendered social wellbeing in dried fish value chains in Sri Lanka

Research overview: Dried fish sub-sector is a unique segment within small-scale fisheries that makes significant contributions towards the wellbeing, food security, cultures, and local economies of coastal communities, particularly in developing country settings. However, this sub-sector remains largely hidden in mainstream research, policy dialogues, and fisheries management practices. Thus, our current understanding about the scale and significance of dried fish sub-sector is limited. Particularly, a critical research gap exists in relation to how dried fish 'value chains' support the wellbeing of women and men who depend on these value chains for livelihoods and survival.

The aim of this research is to critically examine the governance and institutional context of dried fish value chains to identify opportunities to foster gendered social wellbeing. The research employs a remote data collection plan that includes field interviews conducted by in-country Research Assistants. This study is conducted as part of a Canadian-based Research Partnership titled '*Dried Fish Matters*' that focuses on dried fish social economies across six countries in South and Southeast Asia.

Expected outcomes of the study: The outcomes of this study will include novel insights/evidence on governance opportunities to improve the social wellbeing of women and men involved in dried fish value chains, and transferable lessons for similar systems across scales. These outcomes will generate both scholarly and applied contributions that will actively inform cross-scale policies and practices related to fisheries, gender equity, food security, and sustainable development.

Please feel free to contact us if you have any questions or require more information.

Sincerely,

Madu Galappaththi, PhD Candidate

Prof. Derek Armitage

200 UNIVERSITY AVENUE WEST, WATERLOO, ON, CANADA N2L 3G1

Sinhala language project proposal summary

<u>පර්යේෂණ ව්‍යාපෘතියේ සාරාංශය</u>

මදුමාලි ගලප්පත්ති
ආචාර්ය උපාධි අපේක්ෂිකා, වෝටර්ලූ විශ්ව විද්‍යාලය, කැනඩාව
Email: Madu.Galappaththi@uwaterloo.ca; Tel: (+1) 431-373-4738

ශ්‍රී ලංකාවේ වියළි මත්ස්‍ය සැපයුම් දාමයන්හි සේවය කරන කාන්තාවන්ගේ සහ පිරිමින්ගේ සමාජ යහපැවැත්ම වැඩිදියුණු කිරීම සඳහා පරිපාලන හා ආයතනික උපායමාර්ග

වියළි මත්ස්‍ය උප අංශය යනු ශ්‍රී ලංකාවේ කුඩා පරිමාණ ධීවර කර්මාන්තයේ සුවිශේෂී උප අංශයක් වන අතර එමඟින් වෙරළබඩ ප්‍රජාවන්ගේ යහපැවැත්ම, ආහාර සුරක්ෂිතතාව, සංස්කෘතිය සහ දේශීය ආර්ථිකය සඳහා සැලකිය යුතු දායකත්වයක් සපයයි. ‘වියළි මාළු’ යන්නෙන් අදහස් කරන්නේ සරල, අඩු වියදම්, අඩු තාක්ෂණික හා සාම්ප්‍රදායික ක්‍රම (හිරු එළිය භාවිතයෙන් වියළීම, ලුණු දැමීම, ජාඩි දැමීම, උම්බලකඩ නිෂ්පාදනය සහ දුම් භාවිතයෙන් වියළීම). කෙසේ වෙතත්, මේ දක්වා මෙම උප අංශයට පර්යේෂණ, ප්‍රතිපත්ති සහ ධීවර කළමනාකරණය යන ක්ෂේත්‍රයන්හි නිසි අවධානයක් ලැබී නොමැත (විශේෂයෙන් සංවර්ධනය වෙමින් පවතින රටවල). මේ අනුව, වියළි මත්ස්‍ය උප අංශයේ පරිමාණය හා වැදගත්කම පිළිබඳ අපගේ වර්තමාන අවබෝධය සීමිතය. විශේෂයෙන්, වියළි මත්ස්‍ය ‘සැපයුම් දාම’ මත පදනම් වූ (මාළු පිරිසිදු කිරීම, වියළීම, ඇසුරුම් කිරීම හා ඒ ආශ්‍රිත ක්‍රියාකාරකම්) කාන්තාවන්ගේ සහ පිරිමින්ගේ ජීවනෝපාය හා යහපැවැත්ම අඛණ්ඩව පවත්වාගෙන යාමට සහාය වන ආකාරය පිළිබඳව පර්යේෂණ සිදු කළ යුතුය.

මෙම පර්යේෂණයේ අරමුණ නම්, වියළි මත්ස්‍ය සැපයුම් දාමයන්ට අදාල පරිපාලන ක්‍රියාවලීන් සහ ආයතනික විධිවිධාන පිළිබඳ විමසා බැලීමයි. මෙහිදී කාන්තාවන් සහ පිරිමින් මුහුණ දෙන ගැටලු විසඳීමේ ක්‍රම කෙරෙහි විශේෂ අවධානයක් යොමු කිරීමය.

අධ්‍යයන දත්ත එක්රැස් කිරීම 2020 දෙසැම්බර් සිට 2021 සැප්තැම්බර් දක්වා දුරස්ථව සිදු කෙරේ. සැපයුම් දාමයේ මාළු වියළීමේ කටයුතු හා සම්බන්ධ පාර්ශ්වකරුවන් සමඟ සවිස්තරාත්මක සම්මුඛ සාකච්ඡා පවත්වනු ලැබේ. උදාහරණයක් ලෙස, මාළු වියළීමේ කම්කරුවන්, ධීවරයින්, මාළු එකතු කරන්නන් සහ ඔවුන්ගේ සේවා යෝජකයින් (කාන්තාවන් සහ පිරිමින්) සමඟ ක්ෂේත්‍ර සම්මුඛ සාකච්ඡා දේශීයව බඳවා ගන්නා ලද පර්යේෂණ සහායකයින් විසින් පවත්වනු ලැබේ. ධීවර කළමණාකරුවන්, සමුපකාර නායකයින්, අමාත්‍ය නිලධාරීන්, වෙළඳපොළ ක්‍රියාකාරීන් සහ රාජ්‍ය නොවන සංවිධානවල වැඩසටහන් නියෝජිතයින් සමඟ දුරකථන හෝ අන්තර්ජාල සම්මුඛ සාකච්ඡා පවත්වනු ලැබේ. මෙම පර්යේෂණය රුහුණ හා පේරාදෙණිය විශ්ව විද්‍යාලයන් සමඟ එක්ව සිදු කෙරේ.

මෙම පර්යේෂණයේ අපේක්ෂිත ප්‍රතිපල මගින් තිරසාර සංවර්ධනය (සමාජ යහපැවැත්ම, ආහාර හා පෝෂණ සුරක්ෂිතතාව, සහ ස්ත්‍රී පුරුෂ සමානාත්මතාවය ඇතුළුව) සඳහා දායක වීමට ශ්‍රී ලංකාවේ වියළි මත්ස්‍ය උප අංශයට ඇති හැකියාව කෙරෙහි අවධානය ගෙන එනු ඇත. මෙම පර්යේෂණය සැලසුම් කර ඇත්තේ දකුණු හා ගිනිකොණදිග ආසියාවේ රටවල් හයක වියළි මත්ස්‍ය ආර්ථිකය ඉලක්ක කරගත් සහයෝගීතා ව්‍යාපෘතියක කොටසක් වශයෙනි.

Appendix F

COVID-19 Safety Plan

COVID-19 FIELD/OFF-CAMPUS WORK SAFETY PLAN TEMPLATE FOR RESEARCH WITH HUMAN PARTICIPANTS

INTRODUCTION

This is a safety plan template and is based upon the hierarchy of controls model of risk management. The premise is to prioritize and implement controls that are known to be most effective (removing/eliminating exposure vs using PPE). The image in Figure 1 depicts this model using COVID-19 specific controls.

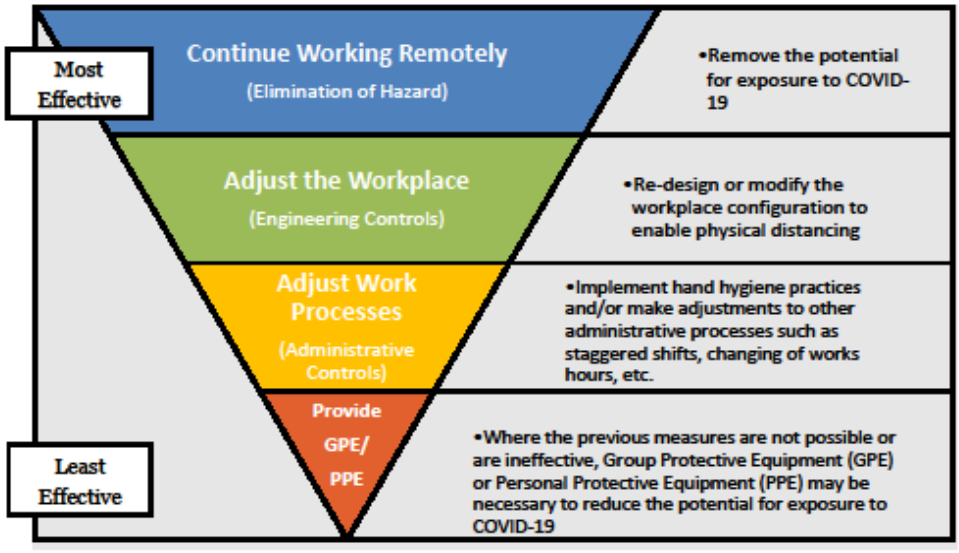

Figure 1: Hierarchy of controls as it applies to COVID-19

PURPOSE

This document has been designed to assist principal investigators and researchers in establishing appropriate protocols to minimize risk for field/off-campus work occurring in-person with human participants during COVID-19. Off campus human participant research applies to studies conducted in locations other than UWaterloo campuses and includes but is not limited to the following:

- Public spaces (parks, streets, town squares)
- Private indoor and outdoor settings (homes, properties, offices, businesses)

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- Spaces under the jurisdiction or authority of an organization or entity (e.g., schools, community centers, other post-secondary institutions, government offices, etc.)
- Health facilities and clinics under the authority of a health authority, hospital, health region
- Lands and facilities under the authority of an Indigenous nation(s) or controlled access community (e.g., Mennonite community)

INSTRUCTIONS FOR USE

Sections in Part A do not require any data to be submitted, they may be left blank. All sections in Part B must be completed.

To use this template, **insert your instructions in the relevant sections.** Once complete, review with all fieldwork employees, supervisors, students, and relevant persons at the host site/location(s).

Review involves going through the processes you have established and getting acknowledgement from all members of the work/research group and relevant persons at the host site/location(s) that they understand and will comply with the plan.

Notes

- Develop one plan per fieldwork project
- A Fieldwork Risk Management Form must also be approved
- You will need to obtain acknowledgement from all fieldwork employees, supervisors, and students
- You will need to sign the plan at the end signifying that you will enact the plan as outlined as well as be accountable for enforcing this plan
- At minimum, all fieldwork/off-campus research safety plans should contain the following elements:
    - Activities that do not require in-person interactions with study participants are to be done remotely
    - Meetings or contacts with study participants to arrange visits, complete questionnaires, and consent should be held virtually or by phone
    - Suitable pandemic safety precautions must be in place at all times, including physical distancing and hand hygiene
    - You will need to understand and demonstrate in this plan how you intend on meeting the COVID-19 protocols for any region/province community, and or organization that you will be visiting. Please reference these where applicable. If requirements differ between the those used here at UW, and another location, you are expected to the more prescriptive requirements.
    - All research must be conducted in accordance with applicable safety requirements and best practices
    - No operation or fieldwork should be carried out without adequate training and supervision
    - The Working Alone Guideline must be followed when deploying employees or students in any operation or fieldwork
    - Fieldwork requiring use of a boat is not permitted unless physical distancing of at least two meters can be maintained
    - Travel to, or in proximity to, Indigenous communities or on Indigenous land to undertake field research is normally not permitted
    - International travel is not permitted, including to the USA,and domestic travel will be assessed on a case-by-case basis

- Permissions must be obtained and be current for use of off-campus locations or facilities (e.g., businesses, organizations, field stations, greenhouses, farms, municipal land) by the authority responsible for these locations or facilities
    - These updated permissions will need to be in place before your field work research request is given final approval
    - Respect the wishes to limit visitors to and from these areas
    - Permission to access national and provincial parks must be obtained from the relevant authorities
- Appropriate precautions must be in place and documented to protect employees, students, and the larger community
- Limit interaction with the general public
- Avoid sharing equipment
- The designation and frequency for cleaning of equipment, vehicles, field stations and other high-touch surfaces
- An outline of when non-medical masks are required

PART A

1.0 EMPLOYEE TRAINING

Before performing fieldwork or coming back to campus, employees, students, and researchers must complete the following training:

- Mandatory "Return to Campus Safety during COVID-19" (SO 2036) online training
- Training from the PI on the new practices outlined in this procedure

2.0 RESPONSIBILITIES

2.1 Supervisor

- Develop this plan to meet Health & Safety Guidance during COVID-19 and any requirements for any host site(s) or location(s) being visited.
- Prior to deployment, meet with your employees, students, and research team prior to starting fieldwork. Orientation shall cover all items within this plan.
- Prior to deployment, discuss the requirements of this plan with relevant contact person(s) at the host site(s) or location(s).
- Enforce all criteria within this plan.
- Ensure appropriate hand hygiene and surface disinfection supplies are provided to all fieldwork employees, students, and research team.
- Actively review site/location pandemic and travel advisories in case adjustments to research protocols must be made.
- Review this plan at least monthly to:
    - Identify hazards as per the Occupational Health and Safety Act
    - Ensure the adequacy and adherence to this safety plan.

2.2 Employees and Students

- Follow all guidance within this plan.
- Notify their supervisor if supplies are not sufficient to maintain hand hygiene and surface decontamination requirements.
- Notify their supervisor of any hazards that are discovered while working.

- Do not conduct field/off-campus work if ill and report all illnesses to their supervisor using the process outlined in section 3.2 Illness and Absence Reporting.

3.0 HEALTH PROTOCOLS

3.1 Self-Assessment Screening

To minimize risk, it is imperative that employees and students do not come to campus or conduct field/off-campus work when ill. For this reason, the University requires that employees and students monitor themselves daily for symptoms of COVID-19. The COVID-19 self-assessment tool, found in the WatSAFE app and on the University's Health Protocols site, provides clear directions on how to self-assess.

3.2 Illness and Absence Reporting

Do not participate in fieldwork or allow a member of your team to participate if exhibiting COVID-19 symptoms. Review and follow the University's Health Protocols at all times.

4.0 HAND HYGIENE

Hand hygiene should be performed regularly throughout the day. At minimum, fieldwork employees, supervisors, students, and study participants shall wash hands or perform hand sanitization:

- After using the washroom, before eating, and when finished work for the day
- When they remove gloves
- After using shared equipment

Hand washing is the preferred method of hand hygiene. If hands are soiled (dirt, debris, oils, grease, and other contaminants), hand sanitizers will not be effective. Use soap and warm water in these cases. If work consistently causes hands to be soiled, hand washing facilities need to be provided and accessible (portable water jug/sink and soap).

Communicate these requirements to your employees and students before they embark on field/off-campus work.

5.0 GROUP PROTECTIVE EQUIPMENT (GPE)

Group protective equipment (GPE) requirements should be based upon local requirements of the area of research. If physical distancing is not be possible for specific tasks or specific situations, GPE such as cloth face coverings must be used. More information regarding other protective equipment:

- Where there is no human contact, gloves are not required to protect against COVID-19. Hand hygiene is more effective.
- Respirators and surgical face masks are not recommended for general use to protect the public against one another. However, when interacting with Human Participants, UW expects our researchers to do what is needed to ensure the risk to participants and themselves is low. The following guidance can be used to determine masking requirements:
    - In cases where physical distancing of 2 m is not possible, disposable masks should be provided to participants, and used by researchers.
    - When the study involves exertion – ASTM level 2 medical grade masks should be provided to participants and used researchers. Exertion refers to an elevation in heart rate and breathing rate for a prolonged period of time, or during heavy lifting or strenuous activity.

    - Note – despite this guidance, evaluation of masking requirements will be made on a case by case basis.
- Rubber gloves for cleaning can be shared if proper hand hygiene is performed before and after use.
- When face shields and safety goggles are used, they should be individually provided and wiped with a disinfectant before and after each use.
- When safety barriers (plexiglass) are used, they should be wiped with a disinfectant before and after each use.

PART B

Principal Investigator: Iroshani Madu Galappaththi (PhD Candidate)_____

Field/Off-campus Location: Sri Lanka (Remote data collection)___

Field sites:

The fieldwork of this research involves remote data collection in distant field locations in Kalutara, Trincomalee, and Puttalam districts of Sri Lanka. The exact field sites (coastal communities) will be decided based on most up-to-date local health advisories and in consultation with local research partners in Sri Lanka. This research does not involve any international travel.

Research set-up and activities:

The remote data collection plan includes, a) virtual/phone-based interviews and, b) field interviews conducted by local Research Assistants (RAs). Where possible, I will employ virtual/phone-based tools and data collection methods to interview research participants who can be accessed through technology. To conduct field interviews with the study participants who cannot be reached directly through technology, I will recruit local RAs who are currently based on each of the study districts.

The target participants of this study are dried fish workers and their employers who are involved in converting wet fish into dried fish using methods like sun drying and salting. Within the three districts of fieldwork focus, fish drying activities are undertaken as small-scale informal-type operations owned and managed by community members. Prior to accessing any field sites, the RAs will seek explicit permission from the owners and/or employers of fish drying yards to enter the site under current conditions for conducting interviews.

All field interviews will be conducted in outdoor places where the study participants work (i.e., fish drying yards) following the safety measures outlined in this plan. For any potential study participant whose work involves indoor activities at the time of the RA visit (e.g. packaging and storing of dried fish), an attempt will be made by the RA to schedule an alternative time for the interview where the participant can be present in an outdoor setting. No interviews will be conducted indoors.

1.0 ADJUST THE WORKPLACE - PHYSICAL DISTANCING

- Outline the plan to ensure that 2m physical distancing can be maintained in the field or when off-campus.
    - Include distancing between fieldwork employees, supervisors and students, between study participants and local contacts, and the public.
- Outline safety measures to ensure fieldwork employees, supervisors and students travel safely to and from the field site(s)/study location(s).
- Outline safety measures if accommodations are required, including how fieldwork employees, supervisors and students will be separated with respect to:
    - Sleeping quarters
    - Washroom facilities
    - Meal plans, including food preparation and eating (e.g., how will these plans protect fieldwork employees, students, research team, and the community?)

Describe your plan here. Note any specific measures regarding GPE that need to be addressed for the work/study conditions.

Scope of field interviews:

Field interviews will be conducted as one-on-one physically distanced interviews with study participants following all safety measures outlined in this plan. The estimated duration of each interview is 45-60 minutes. The number of interviews to be conducted is 30-40 interviews per each field location (district). A maximum of three local persons will be recruited as RAs, including at least one person with the ability to fulfil the role of translator (i.e. with expertise in both Sinhala and Tamil languages spoken locally).

Key safety consideration	Measures to minimize potential COVID-19 exposure
Recruitment of RAs and review of the safety plan	• Upon recruitment, the safety measures outlined in this plan will be reviewed and discussed with the RAs to ensure clarity, responsibility, and accountability. • The safety plan will be revisited on a monthly basis and the ongoing field implementation of safety measures will reviewed to ensure compliance with the most up-to-date guidelines issued by local health authorities.
Study site selection	• When selecting local study sites/communities, any local areas designated as high- or medium-risk for COVID-19 exposure will be avoided as per the local advisories issued by the health authorities in Sri Lanka. • Local public heath guidelines and advisories will be closely monitored throughout the entire duration of field data collection to ensure adherence to any additional precautionary measures recommended.
Health insurance coverage for RAs, accommodation, and meals	• Short-term health insurance plans will be purchased for each of my RAs/translator to cover the financial risks of COVID-19 related testing, hospitalizations, and medications. • Arrangements will be made for safe accommodation for RAs/translator during their field stays following applicable local COVID-19 guidelines. This includes individual hotel rooms for each RA/translator with a private bathroom and with all meals arranged through the hotel room services. • The frequency of hotel stays will depend on the number of RAs/translator to be recruited; however, the RAs will be required to use safe accommodation in close proximity to the field site in a way that it minimizes in and out travel during the entire duration of fieldwork. • Hotel common spaces, continental breakfasts, buffets, and housekeeping services will be avoided during hotel stays.
Masks and other personal protective equipment (PPE)	• Cloth/non-medical face masks will be worn by RA's when inside indoor public spaces and while traveling by public transit, they will also be worn by both RA's and interviewees if interviews take place indoors or in situations where >2m distancing cannot be maintained. • Study participants will be encouraged to wear masks during the entire interview and any participant how do not consent do so will not be interviewed. • Handwashing with soap, water, and paper towels is preferred, and will be used instead of/in addition to hand sanitizer, when available.

	• Hand sanitizer will be available at all times to study participants during interviews. • RA's/translators will keep sanitizer on them at all times including when using public transit. Hand hygiene will take place when entering/exiting indoor public spaces, hotel rooms, washrooms, field sites, public transit, before eating, after donning/removing/touching face mask, and before/after each interview, etc. • Use of additional PPE (e.g., face shields, gloves), avoiding contact with anyone who is sick, etc. should be done as required by the most up-to-date local public health guidelines. • The PI will purchase voice recorders and stationery for individual use by the RAs during field interviews. • RAs/translator should perform COVID-19 self assessment (https://covid19checkup.ca/) at the beginning of each field visit day. • RAs will follow all transit safety guidelines when using public transit for commuting from home to the field sites where interviews take place. • Hotel stays in close proximity to the field sites should be used to minimize travel between homes and interview locations throughout the entire duration of fieldwork. • Use of cell phones, personal laptops, and voice recorders should be limited only to private use with no sharing among the RAs. These devices should also be wiped down properly with an appropriate disinfectant before and after each field visit.
Physical distancing requirements	• A physical distance of a minimum of 2m should always be maintained by the RAs during field visits. • All field interviews should be conducted in outdoor places where target study participants work (i.e. fish drying sites where they perform tasks such as salting and sun drying of fish). In case if the work of a potential study participant involves indoor activities (e.g., places where died fish is packaged and stored), a request should be made by the RA to attempt to schedule a convenient time for an interview where the participant can be present in an outdoor setting while maintaining the physical distancing requirements. • The duration of field stays should be minimized by the RAs to what is absolutely required for interviewing.

COVID-19 related written consent, contacts log, and screening questions	• A separate COVID-19 consent form has been developed to obtain written consent from study participants prior to the interview. This form includes screening questions on COVID-19 symptoms and potential exposure to any confirmed/presumes cases within the last 14 days to assess if the safety is at risk. • The consent form also indicates the need to record participants' personal contact information in a separate log only for contact-tracing purposes. The form further emphasizes that, in case of a possible exposure to COVID-19 at the field site, the contact log will be shared with local public health authorities. • The form also stresses that the participants are under no obligation to participate in the interview and nothing will happen if they change their mind at any time, during or after the interviews. • Consent forms will be translated to local language(s), orally presented in their language of choice prior to start of the interview, and written consent will be obtained to acknowledge that the participants are well-informed of the potential safety risks. • An interview will not proceed without the COVID-19-related informed written consent from the study participant.

2.0 Surface Decontamination

Surface decontamination of work areas and equipment is the responsibility of the supervisor or PI. At minimum, most surfaces should be disinfected twice per day. Fill out the sections below to outline decontamination plans.

2.1 SHARED equipment Decontamination

Complete the table below regarding the disinfection details for the shared equipment (including vehicles) when in the field/off-campus activities.

Table 1: Shared equipment disinfection details

Equipment Identifier	Disinfectant	Concentration	Contact time	Frequency of disinfection
Cell phones, personal laptops, and voice recorders (personal devices; no contact with interviewees and no sharing among RAs)	Isopropyl rubbing alcohol	70%	A gentle wipe down of hard and nonporous surfaces using a lint-free cloth (see manufacturer guidelines for further details)	At least twice daily before and after each visit to the field

Notes on surface disinfection:

- Ensure the disinfectant chosen is appropriate for the surface being disinfected.

- Ensure there is enough disinfectant to last for the course of the fieldwork.
- All work surfaces should be decontaminated twice daily. In most situations, this means before work begins and once work has concluded.

2.2 High-touch area Decontamination (indoor areas)

All high-touch surfaces should be disinfected twice daily. Designate responsible persons and a schedule for this to be done. Complete the table below.

Table 2: High touch surface disinfection summary table.

Item Identifier	Disinfectant	Responsible Person	Schedule	Frequency of disinfection
High touch surfaces related to RA/translators' hotel stays:				
Doorknobs, cupboard handles, room appliances, faucets and washroom fixtures, light switches, TV remote, etc.	A commercially available disinfectant with an approved DIN on the label (e.g., Lysol wipes)	RA/translator staying in accommodation	N/A	Twice daily at minimum
Vehicle steering wheel, door handles	N/A			

Click here for more information on the disinfection of surfaces:

3.0 CONTINGENCY PLAN

All field/off-campus work is required to have a contingency plan. This must describe actions that will be taken if a fieldwork employee, supervisor, or student has symptoms of COVID-19, tests positive for COVID-19, or is required to self-isolate. It must include actions to be taken if a study participant has symptoms of COVID-19 or tests positive for COVID-19. It also includes the need to immediately respond to University, regional or provincial directions to cease field/off-campus work operations. Responsibility must be assigned to individuals within your group to ensure that field/off-campus work can be safely and appropriately scaled back or stopped on short notice, including travel and accommodation needs. Ensure you reference any requirement of the Region, Province, or area you are in if they are different than the ones used at Waterloo.

Describe your contingency plan here:

Each local RA will be responsible for the following measures that will be written into their contracts (along with the other the safety measures outlined above):

- Fieldwork will be stopped immediately upon noticing any symptoms of COVID-19, tested positive, or required to self-isolate.
- Appropriate health and safety measures will be taken in accordance with the guidelines and advisories issued by the health authorities in Sri Lanka (http://www.epid.gov.lk/web/index.php?lang=en). These measures include but not limited to:

    - Accessing appropriate COVID-19 screening and testing services and adhering to the applicable instructions;
    - Undergoing a mandatory 14-day self-isolation at home or at a Quarantine Centre as determined by the local Health Officials;
    - Providing the local Public Health Inspectors with a listing of all immediate contacts made up to 14 days prior to the diagnosis for contact tracing purposes; and
    - Implementing any additional infection control measures specified in the most up-to-date local guidelines.
- Notify me (the PI) immediately about illness to ensure the implementation of all health and safety measures outlined in this Safety Plan.

4.0 ACKNOWLEDGEMENTS

Field/off-campus employee, supervisor and student acknowledgements

By printing and signing my name in the table below, I acknowledge that I have been trained on the procedures outlined in this document, that I have been consulted and have no reservations with the safety precautions and processes that will be in place to conduct research described in the request to conduct fieldwork.

Employee Name	Signature	Date
Upon recruitment, each local RA will be required to sign onto this document.		

Principal Investigator acknowledgement

I acknowledge that I am responsible for the implementation of all procedures outlined in this document to reduce infection risk of COVID-19. Those found not following these directives will be subjected to corrective action up to and including disciplinary measures.

Principal Investigator name: Iroshani Madu Galappaththi _____

Principal Investigator signature: [redacted] **Date:** 24/11/2020__

Supervisor Name: Prof. Derek Armitage

Supervisor signature: _ [redacted] **Date:** _24/11/2020__

Appendix G

Inclusion and exclusion criteria of items included in systematic review

Inclusion Criteria	Exclusion Criteria
• English, all years, and all geographies	• Languages other than English
• Peer-reviewed publications, book chapters, and conference proceedings	• Reviews, editorials, synthesis articles, dissertations, grey literature
• Items from academic disciplines that are relevant to the research question (e.g., fisheries sciences, social sciences, humanities, development studies, women's studies, interdisciplinary studies)	• Items focused on women's engagement in commercial, industrial or recreational fisheries
• Each item contains an empirical case(s)	• Items focused on other gender-related themes (e.g., gendered livelihoods, women's economic and nutritional contributions, and gendered identities, division of labour)
• Items explicitly focused on women's engagement in SSF governance in broad terms (e.g., formal and informal arrangements of decision making, participation in local organizations, day-to-day management)	• Items that discuss gender perspectives more broadly (without drawing from empirical data) to emphasize, for example, the critical need to improve gendered participation in governing bodies and incorporate women's unique social-ecological knowledge in decision-making

Appendix H

Listing of reviewed literature for systematic review

	Reviewed items	Governance aspects of focus, issues/struggles, and women's contributions
1	Aswathy, P., Kalpana, K., 2018. Women's work, survival strategies and capitalist modernization in South Indian small-scale fisheries: the case of Kerala. Gender, Technology and Development 22, 205–221.	Women's working conditions, rights, and collective action in face of growing competition in small-scale fisheries
2	Baker-Médard, M., 2017. Gendering Marine Conservation: The Politics of Marine Protected Areas and Fisheries Access. Society & Natural Resources 30, 723–737.	Institutionalization of gender inequities in access to marine resources (led by multiple marine conservation projects)
3	Barrios, L.M., Prowse, A., Vargas, V.R., 2020. Sustainable development and women's leadership: A participatory exploration of capabilities in Colombian Caribbean fisher communities. Journal of Cleaner Production 264, 121277.	Experiences of women leaders in relation to sustainable development, leadership, and empowerment
4	Bennett, E., 2005. Gender, fisheries and development. Marine Policy 29, 451–459.	Ways to strengthen institutional capacity of West African fishing communities (based on a multi-stakeholder workshop in Benin)
5	Bhatta, R., Rao, K.A., 2003. Women's Livelihood in Fisheries in Coastal Karnataka, India. Indian Journal of Gender Studies 10, 261–278.	Women's involvement in decision making in fishing cooperatives and govt supports to encourage all-women processing co-op
6	Crawford, B., Herrera, M.D., Hernandez, N., Leclair, C.R., Jiddawi, N., Masumbuko, S., Haws, M., 2010. Small Scale Fisheries Management: Lessons from Cockle Harvesters in Nicaragua and Tanzania. Coastal Management 38, 195–215.	Co-managing women dominated cockle fishery using no-take zones (with govt and university support). Exclusive user rights were granted to the community along with commercial permits to sell cockles.
7	Dasig, S.M.M., 2020. Difficult but fulfilling: women's lived experiences as leaders in fisherfolk organizations in Bolinao, Philippines. Gender, Technology and Development 24, 10–27.	Experiences of women leaders in local fisherfolk organizations, who held leadership positions for at least 10 years. The experience sharing event was organized with the academic and NGO support.
8	de la Torre-Castro, M., 2019. Inclusive Management Through Gender Consideration in Small-Scale Fisheries: The Why and the How. Front. Mar. Sci. 6, 156.	Critical need for mgt approaches that "consciously and explicitly consider gender and diversity of actors"
9	Di Ciommo, R.C., Schiavetti, A., 2012. Women participation in the management of a Marine Protected Area in Brazil. Ocean & Coastal Management 62, 15–23.	Fisherwomen's participation in MPA co-mgt – participation mgt and decision-making
10	Fitrianggraeni, S., 2019. Building business, enriching lives: an Indonesian initiative to empower women in	Viability of organizing women into a cooperative to achieve greater gender equality and participation

	the fishing communities. WMU J Marit Affairs 18, 595–616.	
11	Franco-Meléndez, M., Tam, J., van Putten, I., Cubillos, L.A., 2021. Integrating human and ecological dimensions: The importance of stakeholders' perceptions and participation on the performance of fisheries co-management in Chile. PLoS ONE 16, e0254727.	Perceptions of artisanal fishers and decision-makers about co-managing resources in Bio-Bio region, Chile.
12	Frangoudes, K., Marugán-Pintos, B., Pascual-Fernández, J.J., 2008. From open access to co-governance and conservation: The case of women shellfish collectors in Galicia (Spain). Marine Policy 32, 223–232.	Form open access to co-governance involving shellfisher organizations with the support from the government.
13	Freitas, C.T., Espírito-Santo, H.M.V., Campos-Silva, J.V., Peres, C.A., Lopes, P.F.M., 2020. Resource co-management as a step towards gender equity in fisheries. Ecological Economics 176, 106709.	Fisherwomen's inclusion in Arapaima co-management, increased recognition for women's roles, and increased chances of women earning an income (77% higher chance than the communities without co-management).
14	Fröcklin, S., de la Torre-Castro, M., Lindström, L., Jiddawi, N.S., 2013. Fish Traders as Key Actors in Fisheries: Gender and Adaptive Management. AMBIO 42, 951–962.	Women fish traders' participation in trading associations and gender sensitivity in fisheries mgt (or lack thereof)
15	Gallardo-Fernández, G.L., Saunders, F., 2018. "Before we asked for permission, now we only give notice": Women's entrance into artisanal fisheries in Chile. Maritime Studies 17, 177–188.	All-women seaweed gatherers union in Coliumo (Bio-Bio Region, Chile)
16	Gerrard, S., 1995. When women take the lead: Changing conditions for women's activities, roles and knowledge in north Norwegian fishing communities. Social Science Information 593–631.	Fisherwomen's active struggle to defend their interest following restricted financial support for processing industry and the cod moratorium, and a quota system for coastal fleet. Highlights women's leadership in formal & informal venues and political power, and the mismatch between knowledge among women and the administrators.
17	Grantham, R., Lau, J., Kleiber, D., 2020. Gleaning: beyond the subsistence narrative. Maritime Studies. 19, 509-524.	Relational networks in considering plurality of values associated with gleaning and the importance of incorporating such understanding to create a representative voice for women gleaners.
18	Gustavsson, M., Frangoudes, K., Lindström, L., Ávarez, M.C., de la Torre Castro, M., 2021. Gender and Blue Justice in small-scale fisheries governance. Marine Policy 133, 104743.	Examines procedural and distributive injustices in SSF governance drawing from country case studies in Zanzibar, Chile, UK, and France.
19	Gustavsson, M., Riley, M., 2018. Women, capitals and fishing lives: exploring gendered dynamics in the	Women's positions, capitals, and changing fishing livelihoods

	Llŷn Peninsula small-scale fishery (Wales, UK). Maritime Studies 17, 223–231.	
20	Harper, S., Salomon, A.K., Newell, D., Waterfall, P.H., Brown, K., Harris, L.M., Sumaila, U.R., 2018. Indigenous women respond to fisheries conflict and catalyze change in governance on Canada's Pacific Coast. Maritime Studies 17, 189–198.	Indigenous Heiltsuk women as agents of change in governance transformations of the Pacific herring fishery on BC's central coast.
21	Hauzer, M., Dearden, P., Murray, G., 2013. The fisherwomen of Ngazidja island, Comoros: Fisheries livelihoods, impacts, and implications for management. Fisheries Research 140, 28–35.	Need for including women's perspectives in the design of management interventions, grounded on the case of artisanal fisherwomen's experiences following a ban (due to their unsustainable fishing practices).
22	Kawarazuka, N., Locke, C., Seeley, J., 2019. Women bargaining with patriarchy in coastal Kenya: contradictions, creative agency and food provisioning. Gender, Place & Culture 26, 384–404.	Women's creative agency in negotiating with household/local patriarchal structures
23	Kim, S., 2003. Jeju Island Women Divers' Association in South Korea: A Source of Social Capital. Asian Journal of Women's Studies 9, 37–59.	Professional women divers' voluntary associations at village level (about 100) who work together to provide mutual support in face of danger at work, solve issues, and encourage conservation.
24	Kleiber, D., Harris, L., Vincent, A.C.J., 2018. Gender and marine protected areas: a case study of Danajon Bank, Philippines. Maritime Studies 17, 163–175.	Gendered participation in local MPA mgt and implications on access although women attended meetings out of community obligation.
25	Ko, J.-Y., A. Jones, G., Heo, M.-S., Kang, Y.-S., Kang, S.-H., 2010. A fifty-year production and economic assessment of common property-based management of marine living common resources: A case study for the women divers' communities in Jeju, South Korea. Marine Policy 34, 624–634.	Women divers' groups/communities in Jeju, Korea – strong work ethic and social networks
26	Kwok, Y.K.E., Kc, K.B., Silver, J.J., Fraser, E., 2020. Perceptions of gender dynamics in small-scale fisheries and conservation areas in the Pursat province of Tonle Sap Lake, Cambodia. Asia Pac. Viewp. 61, 54–70.	Gendered power relations, access and control over resources, and participation in fisheries mgt
27	Ladia, J.R., Malenab, M.C.T., Visco, E.S., 2019. Bridging the Gap between Gender and Marine Conservation: The Case of Calatagan Mangrove Forest Conservation Park in Batangas, Philippines. Pertanika Journal of Social Sciences & Humanities 27, 193–213	Community-based conservation of a marine park, where women undertake resource management and hold executive roles.
28	Lawless, S., Cohen, P., McDougall, C., Orirana, G., Soita, F., Doyle, K., 2019. Gender norms and relations: Implications for agency in coastal livelihoods. Maritime Studies. 18:347–358	Agency (capacity to exercise choice) in community decision making and household level in coastal communities in Solomon Islands
29	Lim, C.P., Ito, Y., Matsuda, Y., 2012. Braving the Sea: The Amasan (Women Divers) of the Yahataura Fishing Community, Iki Island, Nagasaki Prefecture,	Women divers (for multi-species) engagement as registered members in male-dominant community cooperate

	Japan. Asian Fisheries Science Special Issue, Gender in Aquaculture and Fisheries: Moving the Agenda Forward 25S, 29–45.	(with the legal power to manage fishery) and women's struggle to secure rights and engagement in community work outside of the co-op.
30	Lokuge, G., Arambepola, C., 2018. Outside the net: The lack of recognition by the state continues to cast women in fishing outside the net in Sri Lanka. Yemaya 57.	Structural inequality, sources of power among women who catch and market fish and their invisibility in fisheries mgt
31	Manyungwa-Pasani, C.L., Hara, M., Chimatiro, S.K., 2017. Women's participation in fish value chains and value chain governance in Malawi: A case of Msaka (Lake Malawi) and Kachulu (Lake Chilwa) (Working Paper 45). Institution for Poverty, Land and Agrarian Studies (PLAAS), UWC, Cape Town.	Women's participation in decision-making along the fish value chain nodes
32	Matsue, N., Daw, T., Garrett, L., 2014. Women Fish Traders on the Kenyan Coast: Livelihoods, Bargaining Power, and Participation in Management. Coastal Management 42, 531–554.	Mama Karangas' (women who buy and process fish for local markets) bargaining power, access to fish, and participation fisheries mgt
33	Medard, M., van Dijk, H., Hebinck, P., 2019. Competing for kayabo: gendered struggles for fish and livelihood on the shore of Lake Victoria. Maritime Studies 18, 321–333.	Gendered power relations within a male-dominant centralized cross-border trade network in Lake Victoria. Powerful identity-making by the women with ties to the network, a process which marginalizes local women.
34	Meltzoff, S.K., 1995. Marisquadoras of the Shellfish Revolution: The Rise of Women in Co-management on Illa de Arousa, Galicia. Journal of Political Ecology 2.	Women shellfishers' role in co-managing Illa de Arousa's and significant rise in women's status and political power in galvanizing change.
35	Mutimukuru-Maravanyika, T., Mills, D.J., Asare, C., Asiedu, G.A., 2017. Enhancing women's participation in decision-making in artisanal fisheries in the Anlo Beach fishing community, Ghana. Water Resources and Rural Development 10, 58–75.	Participatory action research to promote women's participation in decision-making in Anlo Beach fishing community
36	Nayak, N., 2005. Fishing for Need and Not for Greed. Women, Men and the Fishworker's Movement in India, in: Neis, B. (Ed.), Changing Tides: Gender, Fisheries and Globalization. Fernwood Pub, Halifax, NS, pp. 32–44.	Feminist perspective in India's Fish Workers' Movement in face of change over the last 40 years including modernization, globalization, and aquaculture expansion.
37	Neilson, A.L., São Marcos, R., Sempere, K., Sousa, L., Canha, C., 2019. A vision at sea: women in fisheries in the Azores Islands, Portugal. Maritime Studies 18, 385–397.	Creation of women's associations with govt support and the role of participatory research collaborations in Azores Islands
38	Neis, B., 2000. In the eye of the storm: Research, activism and teaching within the Newfoundland fishery crisis. Women's Studies International Forum 23, 287–298.	Experiences of the author as a feminist researcher and an activist, elaborating on the process that led to the formation of a women's network at the provincial level and its contributions during 1990 ground fishery crisis.

39	Nessa, N., Gatta, R., Ambo-Rappe, R., Jompa, J., Yahya, A.F., 2020. The role of women in the utilization of *Enhalus acoroides*: Livelihoods, food security, impacts and implications for coastal area management. IOP Conference Series: Earth and Environmental Science, 564.	Need for including women's perspectives in the design of management interventions to avoid a blanket ban in face of unstainable harvesting. Grounded on the case of women's harvesting of a fruit in sea grass bed to survive during monsoon.
40	Ngwenya, B.N., Mosepele, K.K., Magole, L., 2012. A case for gender equity in governance of the Okavango Delta fisheries in Botswana: A case for gender equity in governance of the Okavango Delta fisheries in Botswana. Natural Resources Forum 36, 109–122.	Embeddedness of gendered inequities in governing a delta fishery and how the policies/regulations, management structures, and programs have exacerbated these inequities.
41	Nunan, F., 2006. Empowerment and institutions: Managing fisheries in Uganda. World Development 34, 1316–1332.	Community-based integrated lake management in Uganda and the experiences in including local people towards improving representation, accountability, and empowerment.
42	Okeke-Ogbuafor, N., Gray, T., 2021. Is community-based management of small-scale fisheries in Sierra Leone the answer to their problems? World Development Perspectives 21, 100292.	Issues and viability of community-based mgt approach
43	Pedroza-Gutiérrez, C., 2019. Managing Mercado del Mar: a case of women's entrepreneurship in the fishing industry. Maritime Studies 18, 335–346.	Women's influential roles and positions in a wholesale fish market
44	Pena, M., McConney, P., Simmons, B., Selliah, N., 2020. How has organization benefited women in the Barbados flyingfish fishery? A look from within. Gender, Technology and Development 24, 28–47.	All-women organization (Central Fish Processors Association) in Barbados flyingfish fishery
45	Resurreccion, B.P., 2012. Gender, legitimacy and patronage-driven participation: Fisheries management in the tonle sap great lake, Cambodia, in: Gender and Natural Resource Management: Livelihoods, Mobility and Interventions. pp. 151–173.	Community fisheries mgt groups (newly state-created) against "historically conflict-ridden and patronage-driven systems with intense competition for fishery resources". Community institutions enabled the participation of women, whoever, only the women with ties to powerful men.
46	Rohe, J., Schlüter, A., Ferse, S.C.A., 2018. A gender lens on women's harvesting activities and interactions with local marine governance in a South Pacific fishing community. Maritime Studies 17, 155–162.	Women's interactions with local marine management in Solomon Islands
47	Salmi, P., Sonck-Rautio, K., 2018. Invisible work, ignored knowledge? Changing gender roles, division of labor, and household strategies in Finnish small-scale fisheries. Maritime Studies 17, 213–221.	Changing gendered roles, livelihood strategies, and participation in decision making
48	Short, R.E., Mussa, J., Hill, N.A.O., Rowcliffe, M., Milner-Gulland, E.J., 2020. Challenging assumptions: the gendered nature of mosquito net	Need for questioning assumptions and consider gendered use of fishing gear in effective and equitable mgt in relation to a widely banned fishery in

	fishing and the implications for management. Gender, Technology and Development 24, 66–88.	ways that it does not undermine the food security and livelihood impacts.
49	Soejima, K., Frangoudes, K., 2019. Fisheries women groups in Japan: a shift from well-being to entrepreneurship. Maritime Studies 18, 297–304.	Gendered dimensions of participation and roles in long-standing community fishing cooperatives in Japan
50	Solano, N., Lopez-Ercilla, I., Fernandez-Rivera Melo, F.J., Torre, J., 2021. Unveiling Women's Roles and Inclusion in Mexican Small-Scale Fisheries (SSF). Front. Mar. Sci. 7, 617965.	Inclusion of women in leadership/decision-making and their roles across the value chains of three single species fisheries
51	Torell, E., Bilecki, D., Owusu, A., Crawford, B., Beran, K., Kent, K., 2019. Assessing the Impacts of Gender Integration in Ghana's Fisheries Sector. Coastal Management 47, 507–526.	Engaging women oyster harvesters in co-management and user rights (Witten based on a USAID gender integration project)
52	Torre, J., Hernandez-Velasco, A., Rivera-Melo, F.F., Lopez, J., Espinosa-Romero, M.J., 2019. Women's empowerment, collective actions, and sustainable fisheries: lessons from Mexico. Maritime Studies 18, 373–384.	Women's cooperative leadership and decision-making that lead to sustainable fisheries mgt and empowerment
53	Wosu, A., 2019. Access and Institutions in a Small-scale Octopus Fishery: A Gendered Perspective. Marine Policy 108, 103649.	Normative and regulatory institutions that determine access to women's Octopus fishery
54	Zhao, M., Tyzack, M., Anderson, R., Onoakpovike, E., 2013. Women as visible and invisible workers in fisheries: A case study of Northern England. Marine Policy 37, 69–76.	Women's roles in fishing, value chain activities, with family/community, and in contributing to policymaking with focus on participation and equality.