

Tuna is women's business too: Applying a gender lens to four cases in the Western and Central Pacific

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Abstract

The USD6 billion Western and Central Pacific Ocean (WCPO) tuna fisheries produce over half the world's tuna and are important for coastal countries. Tuna fisheries policy, management and research currently focus on fisheries resources and industrial fishing on offshore vessels with all male crews, although women, as much as men, are employed in tuna processing and trading in domestic, informal and export value chains. We apply a gender lens to four WCPO case-study tuna industries: Suva and Levuka in Fiji, Bitung in Indonesia, General Santos City in the Philippines and Western Province including Noro in Solomon Islands. The gender divisions of labour, livelihood opportunities and social impacts vary greatly across the value chain nodes, depending on the size, quantity and quality of fish handled, and the scale of operations. The gender lens also reveals the social impacts of fishing when husbands/fathers/sons are killed or injured, absent for long periods and engage in sex, drugs and alcohol behaviours in port. Despite the centrality of women in tuna industries, and the gendered social impacts, regional and national policies largely omit gender. The tuna discourse should be broadened from that of male-dominated industrial fishing to whole of value chains including domestic and informal enterprises in which women are equally involved. Progress on gender equity needs collaboration by multiple stakeholders including industrial firms employing people in factories, offices and on fishing vessels, regional bodies and national governments responsible for policy, monitoring and regulation, and research agencies to build knowledge.

KEYWORDS

equality and equity, gender division of labour, gendered value chains, inclusive fisheries policy, just work in fisheries, tuna industries

Meryl J. Williams—Retired.

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1 | INTRODUCTION

Tuna fisheries, from small to large scale, are carried out in most coastal countries. Their multi-species catches are processed and traded in marketplaces from local through to global. The industry is perceived as highly masculine, but this perception fails to take into account the women engaged in value chains. In this paper, we apply a gender lens to tuna industries in four countries of the Western and Central Pacific Ocean (WCPO) to understand the gender division of labour in fishing, processing and trading nodes of value chains, gendered impacts and the (in)visibility of gender in tuna policy. We use results from recent gender and livelihood studies to construct case studies in four locations hosting tuna fleets, one or more processing factories and trading operations: Fiji (Suva and Levuka); Solomon Islands (Western Province including Noro); Philippines (General Santos City); and Indonesia (Bitung).

We use a gender lens to bring into focus people's roles, activities, responsibilities and power in tuna value chains. Gender is a social construct for characterizing people. Gender is not limited to two categories, but we have no data by which to understand gender as non-binary in tuna industries, so for the purposes of this paper we will take a binary approach. Gender is distinguished from sex, which refers to the biological and physiological characteristics of women and men. Sex is often mistakenly assumed to be deterministic of all gender roles, leading to gender norms, which are the unwritten beliefs, opinions and expectations about how people should act as women, men, girls and boys. Moreover, 'women' and 'men' are not homogeneous classifications. In addition to gender, each person carries multiple identity markers such as age, life stage, race, religion, economic and cultural class and migrant status. These categories intersect to confer privilege or marginalization. Gender norms and the other categories used to discriminate among people intersect in WCPO tuna value chains.

The WCPO tuna fisheries are now the world's largest, in 2019 producing 55% of world tuna (2,961,059 million MT of—skipjack [*Katsuwonus pelamis*, Scombridae], yellowfin [*Thunnus albacares*, Scombridae] and bigeye [*Thunnus obesus*, Scombridae]), worth USD 5.8 billion (Williams & Ruaia, 2020). The other tuna species relevant to this study are albacore (*Thunnus alalunga*, Scombridae) and the coastal neritic tunas longtail (*Thunnus tonggol*, Scombridae), frigate tuna (*Auxis thazard*, Scombridae) and bullet tuna (*Auxis rochei*, Scombridae). Overall, 55% of the catch is skipjack caught by purse seine, most of which is canned and thus almost fully controlled through the industrial value chains. The rest is sold as whole raw fish, sashimi, fresh tuna steaks or smoked, operating through a more heterogeneous set of value chains.

The modern tuna fishing era started in the early 20th century with the pole and line and longline fleets of Japan moving out into the Pacific and Southeast Asia, establishing industries that changed over time but remain today (Appendix S1). Presently fleets from 26 countries fish in the WCPO, including from Pacific Island and Southeast Asian countries, China, Japan, South Korea and Taiwan, Europe, Latin America and the United States of America (USA).

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The region-wide development of tuna fisheries in the 1970s and 1980s took place within a geopolitical landscape which included the United Nations Convention on the Law of the Sea (UNCLOS) negotiations creating the legal regime for coastal states, many newly decolonized, to assert their control over tuna in their exclusive economic zones (EEZs). In this period, tuna brands also prospered and changed their rent-seeking strategies, ownerships and loci of operations. 'Rent-seeking' is seeking to increase one's own wealth without increasing wealth overall, often through the use of government funding. In the global tuna case, it includes organizing production around trade agreements to avoid import tariffs, and organizing supply chain activities to avoid paying tax. Labour costs, access to resources and technologies for processing, transport and trade preferences drove the (re)location of processing operations globally (Havice & Campling, 2010).

Benefits derived from the tuna resources vary by country according to the biological endowments of EEZs, how resources are used and access to resources of other countries. For Pacific Island countries, the main benefits include resource access fees—USD 554 million in 2018 to the Pacific Island Forum Fisheries Agency (FFA) member countries (FFA, 2020). Other benefits are at-sea and onshore jobs, including labour in processing plants, on fishing and transshipment vessels and in ports, purchase of domestic goods and services, ownership of local companies and in joint ventures, and taxes on capital (World Bank, 2017).

In some Pacific Island countries, at-sea and onshore jobs are nationally important—a tuna company has long been the largest private sector employer in Solomon Islands—but at a regional scale tuna employment is less significant. Tuna-related jobs equate to 22,350 making up less than 0.5% of the total Pacific Island countries' workforce (these job numbers are not standardized into a unit such as Full Time Equivalent [FTE] so should be treated with caution) (FFA, 2020). The numbers of people employed in tuna processing and fishing are much higher in Southeast Asian countries—80,000 local and migrant workers work in tuna processing in Thailand (Asia Foundation & International Labour Organization [ILO], 2015). Tuna resources also support substantial small-scale fisheries and local value chains, many of which are informal, and thus largely not included in statistics. In both Southeast Asia and Pacific Island countries, employment onshore is higher than at-sea, with more opportunities for women. About one third of tuna employment in FFA member countries is at-sea on fishing vessels and as fisheries observers, and two-thirds is onshore in processing and ancillary services, and fisheries management (FFA, 2020).

Attempts to develop national fishing and processing have been less successful in the Pacific (Barclay & Cartwright, 2007) than in

Indonesia and Philippines, which have had domestic industrial tuna operations since the 1980s (Morgan & Staples, 2006). Due to geography and higher input costs, Pacific Island countries have been less competitive (Terawasi & Reid, 2017; Appendix S1) and foreign capital has remained necessary for investment and international trade connections (Campling, 2016; Appendix S1).

Fishing, processing and trading ownership and industry structures are heterogeneous and often complex (Figure 1, Appendix S2). Structures range from multinational companies with fully vertically integrated ownership from fishing vessels to cannery to export and wholesale trade through to fishers working from tiny vessels selling their own catch in local urban markets and food outlets. In between are a multitude of small, medium and large firms fishing, processing or trading in intermingled domestic and export supply chains. A portion of the catch from industrial vessels always makes its way into local markets (Crona et al., 2016). Whereas most tuna fishers are men, women are heavily involved in handling, processing and marketing, and in business administration (Prieto-Carolino et al., 2021).

Regional organizations shape the governance of WCPO tuna fisheries. Fisheries management is coordinated by the Western

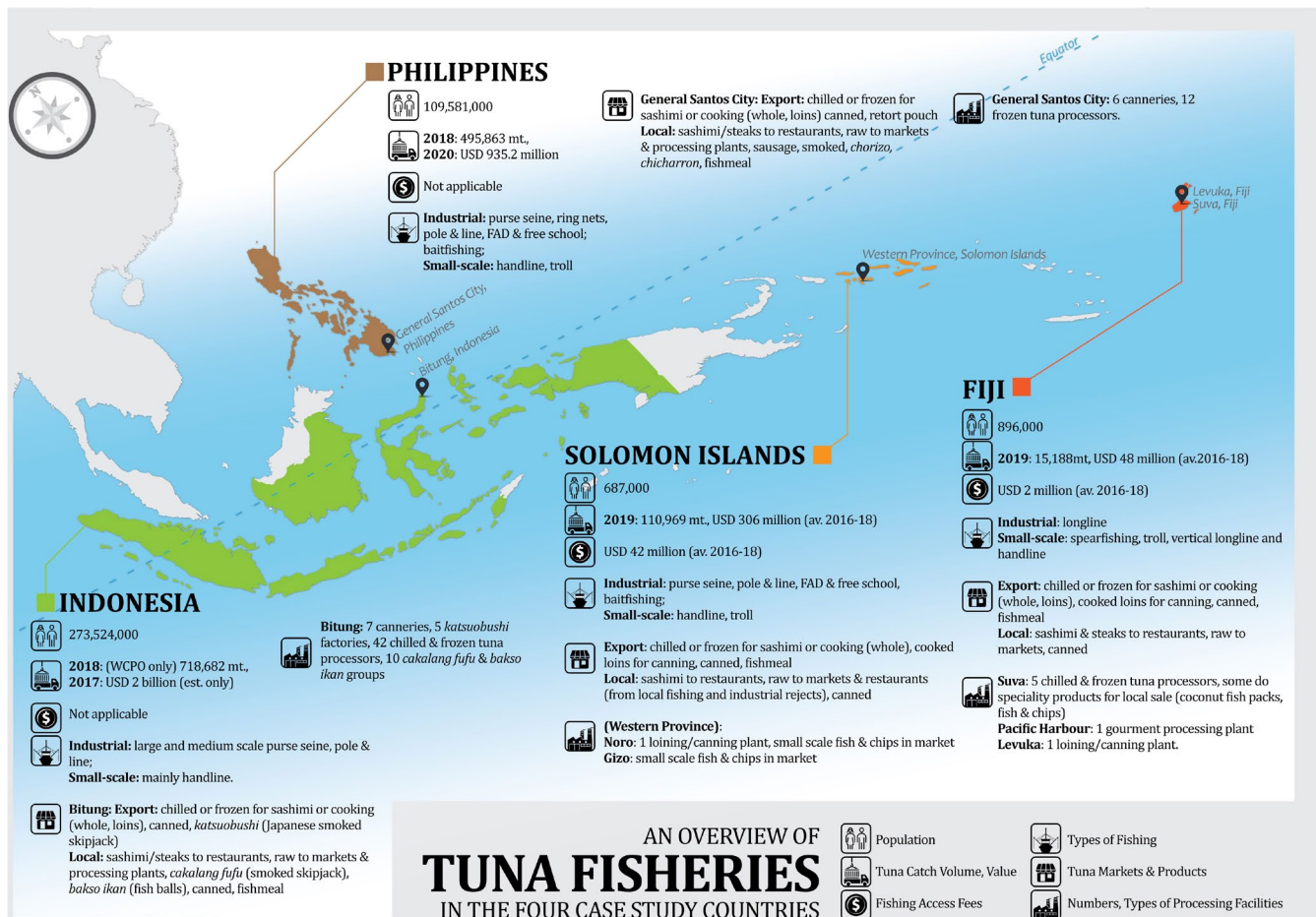


FIGURE 1 Locations of the four case studies in the Western and Central Pacific Ocean

Graphic artist: Songphon Chindakhan. Sources: Appendix S2; population figures from the World Bank (<https://data.worldbank.org/indicator/SP.POP.TOTL>)

and Central Pacific Fisheries Commission (WCPFC), with albacore and Pacific bluefin tuna stocks being jointly managed with the Inter American Tropical Tuna Commission. For the Pacific Island countries, technical and scientific fisheries support is provided by the Pacific Community (formerly called the Secretariat to the Pacific Community) and several experienced consultants. Most of the independent Pacific Island countries collaborate on tuna management and development via the FFA. Other multi-country agreements pertain, the most important of which is that by countries with strong purse seine fisheries—the Parties to the Nauru Agreement.

2 | MATERIALS AND METHODS

The objective of the paper is to apply a gender lens to WCPO tuna industries from local and small-scale to export and industrial scales, by identifying gender divisions of labour and impacts on women along value chains. To that end, we have used research from three bodies of work conducted since 2017 by the authors and colleagues on tuna industries in case-study countries (Table 1). This research is predominantly qualitative, using individual and group interviews, document review and workshops. One body of work was under the aegis of the USAID Oceans and Fisheries Partnership in Indonesia and the Philippines. This paper draws on gender analyses and labour assessments of the tuna industries in key tuna centres of Bitung, Indonesia (USAID Oceans, 2018a, 2018c), and General Santos City, Philippines (USAID Oceans, 2018b, 2018d). A second body of work was research investigating how the governance of fisheries affects the wellbeing of coastal communities in Indonesia and Solomon Islands, with case studies in Bitung and Ambon in Indonesia, and Noro and Gizo in Solomon Islands. This work examined the economic and livelihood aspects of tuna fisheries value chains, food supply and environmental sustainability, disaggregated by socio-economic status, migration status and gender (McClean et al., 2019). The third body of work examined the impacts of governance and tuna fisheries development in Fiji and Solomon Islands, using gender and climate change as lenses for conceptually modelling social–ecological system networks (Syddall et al., 2021). National-level statistics for human development and gender inequality ratings have been used to contextualize findings from these projects, and policy documents reviewed to see how women and gender are addressed in fisheries policies.

The data presented in the Section 4 are drawn from the authors' three studies and other literature. Where points were drawn from interviews and focus groups, they have been fact checked, or are presented as perceptions. Referencing is used to show the sources of the many pieces of data used.

3 | LIMITATIONS

Much of the quantitative data needed to thoroughly explore this topic at a regional scale is non-existent, or is nationally specific or

otherwise aggregated in ways that make a regional analysis difficult. In lieu, we have combined our own studies with other available data. The present study concentrates on roles and benefits through employment and business enterprises, with some consideration of gender in fisheries management and policy. We only minimally address how tuna value chains impact the reproductive labour of women (care work, domestic housework and other unpaid labour). We have virtually no information on gender power relations.

4 | RESULTS

4.1 | Tuna industries in case-study countries

The nature of the tuna industry, which affects women's and men's roles in the value chains, differs in each of the four countries. Fiji has the smallest industry made up of locally based industrial longlining, handling and various small-scale fishing methods mainly targeting albacore. Industries in the other three countries are dominated by skipjack. Solomon Islands is the second smallest and Philippines and Indonesia have larger industries (Figure 1). Tuna landed in Bitung, Indonesia, is caught by medium-scale purse seine and pole and line vessels, and by small-scale handlines. General Santos City and environs support industrial scale purse seiners and ring net vessels, using fish aggregating devices, originally a Philippine local technology that has become pervasive in surface tuna fishing worldwide. In addition, a wide range of small-scale fishing vessels and gears are used, especially handline, longline, gillnet and beach seine. The Solomon Islands industrial tuna fleet is made up of medium-scale purse seine and pole and line vessels using FADs and fishing on free schools, and a small-scale fleet using handlines. Skipjack is mainly canned for export and local markets, or smoked. Large parts of the yellowfin and albacore catches are also canned, as is juvenile bigeye. Neritic tunas may be smoked. High grade yellowfin, albacore and bigeye are sold fresh or frozen to sashimi and tuna steak markets internationally, or to local restaurants catering for affluent customers and tourists. For further details on the fisheries in each country, see Appendix S2.

4.2 | Employment in WCPO tuna value chains

Gender-disaggregated employment data are patchy. Major gaps are: (a) small-scale tuna fisheries and informal value chain workers; (b) crew numbers on distant water fishing fleets; (c) fishing company, port, processing and ancillary services employment in countries outside the FFA countries; and (d) all forms of trading. Although we have no numbers of people working in (a) and (d), based on observation, at the minimum tens of thousands of people work in these areas in Indonesia and Philippines. On existing information more than 300,000 people are employed in WCPO tuna value chains (Table 2; Appendix S2).

TABLE 1 Case-study research materials and methods

Methods/data types	Places and numbers (and type of analysis-gender/labour)	Dates
Suva & Levuka, Fiji		
<i>Project: Development and governance of tuna fisheries using social-ecological systems framework</i>		
<i>Researcher: Victoria Syddall</i>		
Semi-structured interviews	19 (10F, 9M) Suva and village of Waiqanake	May 2019
Semi-structured focus discussion groups	1 Kalekana village (6F)	
Bitung, Indonesia		
<i>Project: Gender and labour analyses of the tuna industries</i>		
<i>Researchers: Arlene Nietes-Satapornvanit with Sam Ratulangi University and Verité, respectively</i>		
Semi-structured interviews	85 (29F, 56M) Bitung, Manado, Sangihe (labour)	October 2016
Structured interviews	244 (123F, 121M) (gender)	March–May 2017
Focus group discussions	5 (2F, 1M, 2 mixed) (gender)	
Inception workshop	22 (14F, 8M) (gender)	
Gender-responsive value chain mapping workshop	50 (35F, 15M) (gender)	
Key informant interviews	25 (4F, 21M) (gender)	
	8 (2F, 6M) (labour)	October 2016
Stakeholder validation workshop	25 (20F, 5M) (gender)	May 2017
Integrated stakeholder validation workshop	100 (53F, 47M) (gender and labour)	June 2017
<i>Project: Assessing community wellbeing benefits from tuna industries</i>		
<i>Researchers: Kate Barclay with Nicholas McClean and Dedi Adhuri</i>		
Semi-structured interviews	86 Jakarta, Bitung, Ambon	March 2018
Inception workshops (for research design)	Jakarta 19 (6F, 13M)	December 2017
Stakeholder feedback workshops (for validation)	Jakarta 14 (5F, 9M), Ambon 14 (3F, 11M), 1 Bitung 7 (1F, 6M)	March 2019
General Santos City, Philippines		
<i>Project: Gender and labour analyses of the tuna industries</i>		
<i>Researcher: Arlene Nietes-Satapornvanit with National Network on Women in Fisheries in the Philippines and Verité, respectively</i>		
Semi-structured interviews	100 (35F, 65M) (labour)	August 2016
Structured interviews	225 (114F, 111M) (gender)	December 2016–August 2017
Inception workshop	31 (21F, 10M) (gender)	
Gender-responsive value chain mapping workshop	31 (21F, 10M) (gender)	
Key informant interviews	16 (12F, 4M) (gender), 10 (labour)	
Integrated stakeholder workshop	165 (71F, 94M) (gender and labour)	February 2017
Validation workshop	33 (14M, 19F) (gender)	July 2017
Western Province, Solomon Islands		
<i>Project: Assessing community wellbeing benefits from tuna industries</i>		
<i>Researcher: Kate Barclay with Nicholas McClean and Reuben Sulu</i>		
Semi-structured interviews	48 Honiara, Noro, Mbabanga, Titiana	June 2018
Inception workshop (for research design)	Honiara 15 (9F, 6M)	December 2017
Feedback workshops (for validation)	Honiara 8 (3F, 5M), Noro 5 (M), Mbabanga 6 (M), Titiana 9 (M)	March 2019
<i>Project: Development and governance of tuna fisheries using social ecological systems framework</i>		
<i>Researcher: Victoria Syddall</i>		
Semi-structured individual interviews	13 Honiara	December 2019
Focus group discussions	Mbabanga (6M, 1F), Titiana (6F, 11M)	

Notes: Research participants were government fisheries managers, staff of tuna-related intergovernmental organizations (such as FFA, or the Pacific Community), staff of civil society organizations (CSOs), staff of tuna fishing and processing companies (owners, managers and workers), tuna traders, small-scale processors, small-scale fishers and families of tuna sector workers.

Sources: McClean et al. (2019), Syddall et al. (2021); USAID Oceans (2018a, 2018b, 2018c, 2018d).

[Correction added on 15 February 2022, after first Online publication: In Table 1, the gender indicators for Mbabanga relating to Focus group discussions have been corrected in this version]

TABLE 2 Workforce employment data in WCPO tuna fisheries with % women

Numbers employed	FFA member countries	Fiji	Bitung, Indonesia	General Santos City, Philippines	Solomon Islands
All employment					
Total employed	24,321 ¹	4,193 ¹	>15% of Bitung workforce ²	>200,000 ³	3,323 ¹
Women employed	44%	34%	NA	NA	47%
Harvest sector (fishing)					
Total employed	7,236 ¹	1,676 ¹	12,366 ⁴	NA	534 ¹
Total employed in small-scale fishing	Unknown	Unknown	12,366 ⁴	>4,000 ³	~305
Women employed	0.9%	<1%	<1%	<1%	<1%
Processing and ancillary services					
Total employed	14,719 ¹	2,243 ¹	NA	NA	2,477 ¹
Women employed	70%	61%		80% ³	56%
Public sector					
Total employed	1,629 ¹	234 ¹	NA	NA	139 ¹
Women employed	30%	27%			35%
Observers					
Total employed	867 ¹	40 ¹	NA	NA	117 ¹
Women employed	0.6%	0%			1.7%

Note: 'NA' means data were not available.

Sources: 1. FFA (2019) data, L. Rodwell pers. comm. 2. USAID Oceans (2018a). 3. Bureau of Fisheries and Aquatic Resources (BFAR) (2018b), Prieto-Carolino et al. (2021), USAID Oceans (2018b). 4. Sukarsih et al. (2019). 5. McClean et al. (2019).

TABLE 3 Gender and human development indicators

	Fiji	Indonesia	Philippines	Solomon Islands
Human Development Index ¹				
Gender Inequality Index rank ¹	78	103	98	N/A
Labour force participation rate (%)				
Women	38.1	52.2	45.7	62.4
Men	76.1	82.0	74.1	80.3
Population with at least some secondary education (%)				
Women	78.3	44.5	75.6	N/A
Men	70.2	53.2	72.4	
World Bank/UNESCO ²				
Educational attainment: at least completed short-cycle tertiary, population 25+ (%)				
Women	5.0	9.9	28.4	N/A
Men	5.4	10.1	24.7	

Note: 1. UNDP (2019, 2020). 2. World Bank (2020a, 2020b).

Fiji and Solomon Islands are members of the FFA, which reports data on industrial tuna fisheries of member countries, including gender-disaggregated employment data (Terawasi & Reid, 2017). In 2019 in FFA countries, women were 44% of all those employed in tuna fishing, processing and fisheries management, down from 52% in 2016. The gender division of labour differs markedly with each node of the value chains: women are 70% of employees in processing and ancillary services; 30% in the public sector; and less than 1% in the harvest sector and among fishery observers (Table 2).

Fiji, Indonesia and the Philippines are ranked relatively low on the United Nations Gender Inequality Index (Table 3, no ranking is available for Solomon Islands). In all four countries, women participate in the paid labour force less than men (gender gap 17.9% in Solomon Islands, 38.0% in Fiji). National secondary education levels are higher for women than men in Fiji and the Philippines, but lower for women than men in Indonesia. In tertiary education, women and men in Fiji and Indonesia have similar attainment, while in the Philippines women have a higher rate of tertiary qualification than men.

4.3 | Gender division of labour and impacts on women

4.3.1 | Fishing node

At-sea and shore-based work in the fishing node is mostly done by men, at all scales of fishing (industrial, medium and small scale). Some women work in administration in onshore bases for fishing and very few go to sea (Table 4). In a few small-scale family enterprises in Bitung, Fiji and Solomon Islands women fish, often with their husbands, but sometimes independently (Satapornvanit & Parengkuan, 2020; Syddall et al., 2021). Some donor and non-government organizations are funding training for women to fish on industrial tuna vessels in Fiji (World Wildlife Fund, 2019) and Solomon Islands (International Finance Corporation [IFC], 2019).

Tuna fishing at sea is circumscribed for women by cultural and business practices. In all case-study countries norms against women going to sea are expressed as being protective of women, not wishing to expose them to the harsh work of fishing (USAID Oceans, 2018b) and the expectation that women will take care of the home and children (Barclay et al., 2021; McClean et al., 2019; USAID Oceans, 2018a, 2018b).

In Fiji, a few women work in the workshops and offices supporting fishing operations. Fijian fishing companies commonly employ

educated women in office work, including financial management, but few are in senior management (Table 4).

In addition to low participation, the masculinist nature of fishing has other direct and indirect social, economic and health impacts on women. When men work on fishing vessels they have jobs that bring income to their households, but may incur costs borne by other household members. Going to sea leaves women responsible for household and community obligations over extended periods. This has been worsened during the COVID-19 crisis as seafarers have been unable to return home due to travel restrictions (Marschke et al., 2021). Even in pre-COVID-19 times, during long absences women faced a daily challenge of making ends meet, multiple burdens from both productive and reproductive roles, and sometimes debt burdens with labour recruiters who secure the men's at-sea jobs. Moreover, seafarers are at heightened physical and psychological workplace risk. When fishermen are injured or die, women and other family members also suffer severe emotional and financial impacts (Human Rights at Sea, 2019). Safety at sea varies across fleets. In Solomon Islands, the National Fisheries Development (NFD) vessels have a good record for low levels of injury and death. Throughout the WCPO, small-scale fishing vessels are risky, lacking navigation and safety equipment. Some distant water fishing companies have abysmal work conditions, including violence and slavery (Blaha & Sloan, 2019).

TABLE 4 Gender division of labour in tuna fishing and related onshore work in fishing company offices and workshops, and in port

	Women	Men
Suva and Levuka, Fiji ¹		
Skippers, engineers	0%	100%
Longline vessel crew (and deck hands in training, cooks)	2%	98%
Boat owners, boat managers	0%	100%
Company managers	19%	81%
Workshops	7%	93%
Office workers	42%	58%
Bitung, Indonesia ²		
Small-scale fishing	A few, close to shore (small tuna-like spp, reef fish)	~100%
Industrial fishing	0%	100%
Bookkeeping, administration, preparation for fishing	Yes, proportion unknown	Yes, proportion unknown
General Santos City, Philippines ³		
Small-scale nearshore (Municipal) fishing, offshore handline fishing, industrial purse seine fishing	0%	100%
Bookkeeping, administration, preparation for fishing	Yes, proportion unknown	Yes, proportion unknown
Western Province, Solomon Islands ⁴		
Small-scale fishing (handline)	Some women fish	~100%
Industrial fishing (purse seine, pole and line)	NFD is training a few women cadets	~100%
Bookkeeping, administration, preparation for fishing	Yes, proportion unknown	Yes, proportion unknown

Sources: 1. Sullivan et al. (2008), Syddall et al. (2021), Vunisea (2007, 2016). Fiji onshore work spans processing as well as fishing as the companies studied do both. 2. Satapornvanit and Parengkuan (2020), USAID Oceans (2018a). 3. USAID Oceans (2018b). 4. McClean et al. (2019), Tuara and Passfield (2011).

Industrial tuna fishing has been associated with sex work and human trafficking in Fiji (Schoeffel, 2015; SPC, 2004; Sullivan et al., 2008; Syddall et al., 2021), General Santos City (Clariza, 2007) and Solomon Islands, including Noro (Barclay, 2008; Barclay et al., 2015). We are not aware of a study of transactional sex around Bitung. Seafarer behaviour in port, often involving alcohol and drugs as well as transactional sex, has led to high rates of sexually transmitted infections among crews, and gender-based violence (McMillan et al., 2016; SPC, 2004).

4.3.2 | Processing node

The processing node of tuna value chains includes jobs from entry-level minimum wage (fish processing line workers, cleaners), technical (electricians, plumbers, food safety and quality control), administration, finance and management. Significant numbers work in export-oriented industrial processing plants canning tuna, loining for canning elsewhere, or loining for fresh or frozen sashimi or tuna steaks. In addition, Indonesia and the Philippines have significant industrial, semi-industrial, small-scale informal processing of varied products for domestic market products, for example, *cakalang fufu* (smoked skipjack) and *bakso* (fish balls) in Indonesia, and tuna *chicharon* (fried tuna skin) in the Philippines (Prieto-Carolino et al., 2021; USAID Oceans, 2018a, 2018b). All four countries have small-scale informal processing by cooking or smoking fish for local markets.

The gender division of labour in processing differs markedly from that in fishing. Fish processing in canneries and loining plants is majority female (Table 2). This is in part due to the gender wage gap (women's labour is lower cost) and labour supply (Table 3), and also due to industry-wide stereotyping of women as well suited to the task of preparing fish for canning (Barclay, 2008; USAID Oceans, 2018a, 2018b, 2018c). Some of the technical roles (mechanics, plumbers, machine operators) are male-dominated. Soltuna, the industrial plant in Noro, has undertaken programmes to encourage women into non-traditional roles such as forklift driver and electrician (Pacific Women, 2019). Other roles in processing firms comprise both women and men, although men tend to coalesce around the more senior, higher pay jobs in larger scale companies, and women coalesce around lower status, lower pay jobs in smaller scale enterprises (Table 5).

In contrast to industrial processing factory work, small-scale processing operations supplying local markets are much more diverse, product- and location-specific (Appendix S2). Smoked tuna (*cakalang fufu*) businesses in Bitung are often owned and managed by women, with men doing most of the labour in the smoking process (USAID Oceans, 2018a). In General Santos City, women process parts of the tuna into value-added and by-products such as *chicharon* and *dayok* (sauce of preserved tuna parts), as well as drying and smoking fish, whereas men handle all the large fish caught in the hand-line fishery (Prieto-Carolino et al., 2021; USAID Oceans, 2018b). In Gizo and Noro in Solomon Islands, women vendors obtain fish from local fishers or reject fish from the industrial fleet and cook it to sell

in markets or dining houses, often in a paper bag as fish and chips (Table 6).

In processing, the economic, social and health impacts on women vary widely depending on the scale of the operations and people's positions and power within the operations. In industrial processing in all four cases, women were more likely to be in low paid work designated 'low skill' on processing lines. Nevertheless, wages for this work are equal to or greater than those for other waged work available to women in those locations. Moreover, fish processing line work in factories is safer than working on fishing vessels, and due to its formal nature has more social protections, assuming companies comply with regulations. These benefits vary according to local context but include health insurance, minimum wage levels, transport services, housing services, financial services and training programmes (Barclay et al., 2015; Pacific Women, 2019; USAID Oceans, 2018b). Women occupying lower level jobs in processing, however, may not have access to all these benefits. Notwithstanding that working in a factory is generally safer than working on a fishing vessel, workers in tuna processing plants have reported health problems, including musculoskeletal pain or circulation problems from standing for many hours, working in very hot or very cold environments and poor ventilation (Barclay et al., 2015; Sullivan et al., 2008; USAID Oceans, 2018a, 2018b, 2018c, 2018d).

A woman's educational attainment affects her work opportunities in industrial processing. The factories now require more educated workers to meet food safety, quality and private certification standards, even in the lowest paid roles. In Bitung and General Santos City factories, women workers have higher levels of education than those in small-scale fisheries value chains (USAID Oceans, 2018a, 2018b). In Noro, managers interviewed said that compared to previous decades many more of their current workers have finished high school. In factory offices women have achieved near parity in junior positions and appear to be rising in managerial positions in the Fiji and Noro cases.

Small-scale informal processing has none of the social protections or security of formal employment, and may also have negative health impacts. For example, fish smoking as it is conducted in Bitung likely has negative effects on the health of processing workers exposed to the smoke, which contains toxic chemicals (Berhimpon et al., 2018). Nevertheless, being self-employed in small-scale processing remains an important and flexible livelihood option. It is appreciated by many women as fitting around caring responsibilities. In some cases, informal businesses are more lucrative than formal processing work, and some women have built solid businesses around informal processing (McClellan et al., 2019; USAID Oceans, 2018a, 2018b). We interviewed women selling fish and chips in the market at Noro, who said had been working on the processing lines at Soltuna, but childcare was difficult when working at the cannery. They shifted to selling cooked food at the market because they could keep their children around them doing this work, and said the weekly income was higher selling cooked food. Nevertheless, the small size and informality of women's processing businesses renders them vulnerable. For example, home-based *cakalang fufu* women processors in Bitung struggled to buy quality raw material when their Filipino suppliers were banned in the 2014

TABLE 5 Gender division of labour in industrial tuna processing (for canning and for sashimi and tuna steaks)

Women	Men
Suva and Levuka, Fiji ¹	
PAFCO, Levuka	
Executives 0%	Executives 100%
All employees 65%	All employees 35%
Processing lines 62%	Processing lines 38%
Suva fishing and processing companies (Fiji Fish, Golden Ocean, Solander)	
All employees 14%	All employees 86%
Administrators 42%	Administrators 58%
Office managers 19%	Office managers 81%
Bitung, Indonesia ²	
Plant management 2%	Plant management 98%
All employees 70%	All employees 30%
General Santos City, Philippines ³	
All employees 80%	All employees 20%
Western Province, Solomon Islands ⁴	
SolTuna (as at 2014)	
All employees 64%	All employees 36%
Salaried staff (access to housing, benefits) 19%	Salaried staff 81%
Waged workers (unknown #)	Waged workers (unknown #)
Senior management 2	Senior management 11
Deputy manager 0	Deputy manager 9

Sources: 1. Parliament of the Republic of Fiji (2019), Sullivan et al. (2008), Syddall et al. (2021). 2. USAID Oceans (2018a). 3. BFAR (2018a, 2018b), Prieto-Carolino et al. (2021), USAID Oceans (2018b). 4. Barclay et al. (2015), McClean et al. (2019).

Moratorium against foreign operators, because suppliers prioritized larger processing companies.

4.3.3 | Trading node

Tuna trading businesses range in scale from small and local, such as selling fish that are locally caught or rejected from industrial vessels, to mass volumes of international products such as canned tuna and fresh/frozen tuna for sashimi and tuna steaks. Trading seems to be the main driver and source of profit for large-scale integrated fishing and processing companies (Barclay, 2008). In Indonesia and the Philippines, many thousands of small businesses engage in trading as a standalone activity or as part of businesses in fishing and processing. In Fiji and Solomon Islands, fish trading is usually an extension of small-scale fishing, with family members selling the catch, but since the 2000s in Solomon Islands buying and selling fish has emerged as a small business independent of fishing (Brewer, 2011).

TABLE 6 Gender division of labour in small scale and informal tuna processing (cooking, smoking, etc.) indicated by women's share of labour

	% Women
Suva and Levuka, Fiji ¹	
No data	No data
Bitung, Indonesia ²	
Business owners/managers	60%
Labourers producing <i>cakalang fufu</i>	0%
General Santos City, Philippines ³	
Municipal fishery and lower grade handline fish	>50% (est.)
Handline export grade	0%
Western Province, Solomon Islands ⁴	
Cooking fish for Gizo and Noro markets	100%

Sources: 1. Sullivan et al. (2008). 2. USAID Oceans (2018a, 2018c). 3. BFAR (2018a, 2018b), USAID Oceans (2018b, 2018d). 4. Barclay et al. (2015), McClean et al. (2019).

The types of products, their sizes and volumes all determine who has access to trade products and what type of people or businesses benefit (see Appendix S2). Both women and men engage in tuna trading, but they cluster around different parts of trading businesses. In all four case-study sites in the larger integrated companies both women and men work in the offices, but men tend to have the senior roles. Women's roles tend to be in more local trading at a smaller scale and less formal relative to men's roles, selling fish of smaller sizes and lower value such as skipjack, small yellowfin and neritic tunas. For example, in Bitung women tuna traders called *tibo-tibo* dominate local small-scale retail and intermediate trading. Women's trading businesses serve an important function in local communities feeding lower income families and supporting households (McClean et al., 2019; USAID Oceans, 2018a, 2018b).

In Bitung, one business owned and managed by women engaged in large-scale tuna trading, supplying tuna to Bitung processing companies for export (Donnelly, 2019; USAID Oceans, 2018c). In small-scale fishery households in General Santos City, women's vulnerability increases as they face low fish catch, low prices of fish products, multiple burdens from household tasks and doing marginal fisheries work (USAID Oceans, 2018b). In Solomon Islands, both women and men work as small-scale fish traders, and face a range of challenges including lack of clean water or toilets in market areas, and difficulties accessing banking services. Women traders face additional problems from threatening or demeaning social interactions including sexual harassment and discriminatory practices by market management (Tuara Demmke, 2006).

4.4 | Effects of COVID-19

In fisheries worldwide, millions of people involved in both primary and secondary production activities have been affected

by the health and economic fallout of COVID-19. Women who make up the majority of the workforce in seafood processing and marketing are directly impacted due to mitigation health measures that have closed or reduced markets or restricted processing activities (Food and Agriculture Organisation of the United Nations [FAO], 2020). Demand for canned tuna rose during COVID-19 lockdowns (FAO, 2021). The pandemic has affected the tuna value chains of the WCPO differently in the Pacific and Southeast Asia. Indonesia and the Philippines have both been hard hit by the virus in terms of sickness and mitigation measures damaging the economy (Robins et al., 2020). During 2020, Fiji and Solomon Islands had few cases of COVID-19 and comparatively limited disruption by lockdowns (Butler et al., 2021), although Fiji was much harder hit in 2021. The purse seine fishery and cannery processing sector has not been much reduced, but crews on DWF vessels—and therefore their households—have been badly affected by travel restrictions. The longline sector has suffered greatly from restrictions in air freight for high value sashimi exports (Infofish, 2020).

4.5 | Gender in WCPO fisheries organization policies

WCPO regional fisheries organizations and country governments have policies and strategies with varying levels of consideration to social aspects (including gender) of fisheries in general and tuna in particular (Table 7). Gender strategies, however, are focused mainly on coastal fisheries rather than tuna activities.

In regional fisheries, organizations gender initiatives have been slow to penetrate policies and more so practices (Appendix S2). International human rights laws such as the 1979 Convention on the Elimination of all Forms of Discrimination Against Women (CEDAW) and strategies such as gender mainstreaming have not been taken up by any of the regional bodies. Gender mainstreaming involves integrating a gender perspective and analysis into all policies and programmes, rather than having a separate gender policy or programme.

In the Pacific, meetings and workshops still begin gender sessions with conversations about the cultural, traditional and organizational barriers to discussing gender in fisheries (PEUMP, 2018). The regional agencies FFA, Pacific Community and Southeast Asian Fisheries Development Center (SEAFDEC), have taken steps to include gender considerations into high-level policies and reports to their oversight bodies, but they have been slow turning general statements of commitment on gender equality into implementable actions. Moreover, most efforts to address gender are not endogenous, being driven by donor agencies. WCPFC is the least advanced in addressing gender, despite a potential entry point in its Conservation and Management Measure CMM 2014-06 that established a Harvest Strategy approach. The Harvest Strategy provisions include “to achieve agreed biological, ecological, economic and/or social management objectives.” The expert groups advising WCPFC, especially its Scientific Committee, are firmly focused on the fish

stocks, fishing effort and by-catch. Whereas civil society groups attend WCPFC meetings to advocate for ecological and biological sustainability issues, no gender equality advocacy groups attend WCPFC meetings. Recently, efforts by civil society groups to address ship-based labour issues and observer safety at sea met strong resistance but did achieve an intersessional working group led by Indonesia and FFA, to gather information (WCPFC, 2021).

In tuna research agencies, women are still in the minority, although their numbers slowly increased in the years to 2011 (Tuara & Passfield, 2011) and continued to grow, according to interviewees for the projects covered in this paper. The near equality of educational attainment in case-study countries has created cohorts of women qualified for mid-level and senior roles in government agencies. Among government fisheries officers, women make up about one third of staff in the Pacific (Table 2). In the Division of Fisheries, Aquaculture and Marine Ecosystems (FAME) of the Pacific Community, among the 94 staff in December 2020, the overall staff numbers were almost in balance by gender (50 men, 44 women) but among international (senior professional) staff, 69% were male, and 88% of locally appointed (junior, support and administrative) staff were female (FAME MEL Team, 2021:2). Women with scientific education are being encouraged to become onboard fisheries observers and constituted three per cent of Pacific observers in 2016 (Terawasi & Reid, 2017).

At the national level, the case-study countries have moved towards addressing gender inequality, often stimulated by national gender commitments to the international Convention for the Elimination of All Forms of Discrimination Against Women (CEDAW). In the tuna sector this has been supported by donor-funded projects, such as USAID Oceans and the IFC work with SolTuna. No national organizations actively advocate for gender equality in tuna industries. Furthermore, representatives of processing and trading activities (where women are more involved) are not engaged in fisheries policy formulation.

In Fiji, the 2021 draft Offshore Fisheries Management and Development Plan 2021–2026 included provisions not in previous plans to promote women's benefits from the tuna industry (Ministry of Fisheries Fiji, 2021). Gaps remain between policy and practice, however, due to cultural barriers and safety concerns for women onboard tuna vessels (Syddall et al., 2021; Vunisea, 2016).

In Indonesia, women are not mentioned explicitly in fisheries and conservation technical policies even though technical policies such as the fight against IUU fishing greatly reduced activities in the fish processing sector, negatively affecting women workers (Suadi & Kusano, 2019). Women fishers lack access to the National Fishers' Registration System due to a national identification recording system that prevents them registering as fishers and defaults women's occupation as housewives (Satapornvanit & Parengkuan, 2020).

At the national level, the Philippines has more advanced gender-responsive policies that stipulate the representation of women in fisheries management councils and in governance to support the fishery sector. However, these policies are not fully mirrored in local codes, including those for the localized management and governance of the tuna industry. Fisheries sector employers do not completely

TABLE 7 National and regional organizational policies relevant to tuna fisheries and women/gender

Country/organization and policy	Women or gender mentioned
Western and Central Pacific Fisheries Commission	
Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Central and Western Pacific Ocean (2000)	No
Conservation and Management Measure on Establishing a Harvest Strategy for Key Fisheries and Stocks in the WCPO (CMM 2014-06)	No
Pacific Islands Forum Fisheries Agency (FFA)	
Regional Roadmap for Sustainable Pacific Fisheries (with SPC) (2015)	No
Strategic Plan 2020–2025	Yes
Gender Equity Framework (2016)	Yes
Socio-economic Development Indicator Framework for the Pacific Tuna Industry [in preparation 2021]	Yes
Southeast Asian Fisheries Development Center (SEAFDEC)	
Vision, Mission and Strategies of SEAFDEC Towards 2030 (2017)	Yes
SEAFDEC Gender Strategy: Mainstreaming Gender in SEAFDEC and its Programs (2019)	Yes
Coral Triangle Initiative for Coral Reefs, Fisheries and Food Security (CTI-CFF)	
Regional Plan of Action 1.0 (2016)	Yes
Regional Plan of Action 2.0 (Draft)	Yes
Gender Equality and Social Inclusion Policy (Draft)	Yes
Fiji	
National Fisheries Policy (draft) June 2020	Yes
National Development Plan (2017)	Yes
Tuna Management Development Plan (2014–2018)	No
Fiji Offshore Fisheries Management and Development Plan: A plan for tuna and other pelagic fisheries 2020–2026 (Draft rev.10)	Yes
Indonesia	
Sustainable Fisheries Management Plan (SFMP) for Fisheries Management Area (FMA) 716 (2019)	Yes
Ministerial Regulation No. 35/2015 on Human Rights System and Certification in the Fishing Industry	No
Protection and Empowerment of Fishermen, Fish Farmers and Salt Farmers (Law of the Republic of Indonesia No. 7/2016)	No
Presidential Instruction No.9/2000 on Gender Mainstreaming in National Development (updated in 2010 as No.3/2010)	Yes
Ministerial Decree on Gender Mainstreaming in Marine and Fisheries Sector (No. 67/KEPMEN-KP/2016)	Yes
Philippines	
Agriculture and Fisheries Modernization Act (1997)	Yes
Philippine Fisheries Code (RA 8550 as amended by RA10654) (1998, 2014)	Yes
Comprehensive National Fisheries Industry Development Plan (CNFIDP) 2016–2020	Yes
D956The Comprehensive Post-Harvest, Marketing and Ancillary Industry Plan (2018–2022)	No
The Philippine Tuna Management Plan	No
Resolution Supporting the Promotion of Gender Equality and Women Empowerment in the Tuna Fisheries Sector in General Santos City and Sarangani Bay Area, Philippines (2019), SOCCSKSARGEN Federation of Fishing and Allied Industries, Inc. (SFFAIL)	Yes
Solomon Islands	
Fisheries Management Act (2015)	No
Ministry of Fisheries and Marine Resources (MFMR) Gender Strategy 2011–2014	Yes
MFMR Corporate Plan for 2015–2018	No

implement national laws governing employment benefits and privileges affecting women, particularly in the fish processing sector (USAID Oceans, 2018b).

In Solomon Islands, national government policies and documents are more concerned with gender now than previously, responding to an international wave flowing from CEDAW (Braun, 2012). For

example, the Ministry of Fisheries and Marine Resources had a Gender Strategy for the period 2011–2014. At the time, the Gender Strategy, however, was not built into the Corporate Plan, which drives the work of the Ministry, its action plans and performance indicators. Gender will be mainstreamed in the next Corporate Plan (Pacific Community, 2018). Thus far gender considerations in documents have not manifested in improved outcomes for women in tuna supply chains, and these outcomes are not monitored.

5 | DISCUSSION

Tuna fisheries and value chains are an important source of development throughout the WCPO. Women are central to this industry, but do not have equality in it—indeed, their roles and positions are concentrated in value chain nodes and scales of operation with little influence (Figure 2). Women's needs and contributions are rarely considered when fisheries management and trade preference decisions are made. The tuna sector is predominantly seen as male, and most people working in the sector are blind to the gender discrimination entrenched in practices throughout the sector.

Women typically work in roles and own assets that differ from those of men. The gender division of labour varies across the nodes of value chains according to the size, quantity and quality of fish handled and the scale of the operations. In our four case studies, women make up the bulk of the workforce in industrial processing and

certain types of trading, and in smaller firms dealing with mainly local markets for small to medium sized fish (Appendix S2). Industrially caught tuna not of export quality enters local value chains, often via women-run micro enterprises. Men more commonly work in and/or own small- and medium-scale fishing operations and make up virtually all of the labour force in industrial fishing. Very small numbers of women engage in small-scale fishing for tuna, usually with their spouses or family members. A handful are being trained on industrial fishing vessels in Fiji and Solomon Islands. Men also handle the high-quality fish from small-scale fishing going to high value including international markets. Men cluster around the more senior higher paid roles in processing and trading enterprises, and in fisheries management. These gendered patterns are widespread across the WCP tuna industries and have endured in similar shape for decades (Havice & Reed, 2012; Nguyen et al., 2020; Sullivan et al., 2008; Tuara Demmke, 2006).

Despite women's numbers as workers and their dominance in some nodes, women are little recognized in fisheries management or policies affecting the value chains. Some limited progress has been made to improve women's opportunities in their present workplaces or to remove stereotyping and discrimination. Policy documents signal some change, as do the human resources practices of government fisheries institutions and some tuna companies. How deep are these changes, and are they likely to be long lasting? Among Pacific Island countries, we note that efforts promoting women in fisheries started in the 1980s. These, however, turned out to be waves

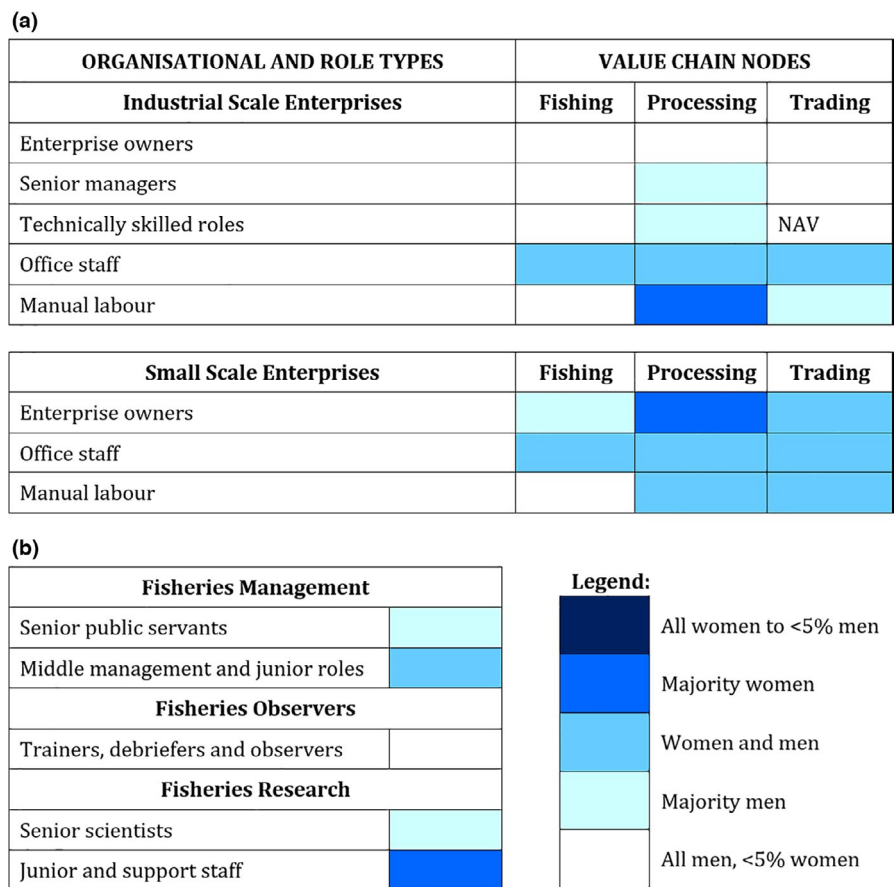


FIGURE 2 Schematic of the engagement of women and men in WCPO value chain nodes
Graphic artist: Songphon Chindakhan

of interest, with initiatives building then largely falling away again (Williams, 2014). Will the current interest in gender equality generate more permanent change? In 2020 and 2021, several papers provided criteria for assessing attempts at improving gender equality in fisheries (Lawless et al., 2020, 2021; Mangubhai & Lawless, 2021), which shed light on the potential of changes noted in the Section 4 of this paper.

Lawless et al. (2020) provide a diagnostic schema for assessing the extent to which standard setting or meta-norms such as gender equality are adopted in sectors such as fisheries. They identify eight drivers affecting uptake: (a) compliance mechanisms; (b) economic benefits; (c) functional interaction; (d) institutional normative environment; (e) norm source; (f) norm issue framing; (g) cultural resonance; and (h) societal temper. The paper also discusses a spectrum of actor responses to norms such as gender equality, from outright resistance to internalizing/adopting norms.

A thorough exploration of gender equality in WCPO tuna fisheries using this schema requires data beyond that contained in this paper, but we can make some observations inspired by the schema. Of the eight drivers of uptake, few strongly encourage gender equality in WCPO tuna fisheries. The drivers that are present include some compliance mechanisms in policy documents (see Section 4 and Appendix S2), often not enforced, to prevent labour abuses and promote fair work conditions. There are some discernible economic benefits for improving gender equality, such as reduced absenteeism achieved by SolTuna through financial literacy training for women cannery workers (Pacific Women, 2019). Generally, however, tuna industries do not see gender equality as improving their profits and may even view it as a threat to competitiveness that is helped by keeping wages low.

How far the norm of gender equality has been internalized by WCPO tuna actors varies across actors. The FFA has taken a first step through generating a gender strategy, while the WCPFC has yet to address gender. Policy changes noted in the Section 4 mostly were not initiated by tuna actors but largely driven via donor projects, or from outside the fisheries sector from organizations concerned with gender. As sources of norms, these actors do not have the same credibility as fisheries actors. Indonesia and Philippines are at an important transition stage where the USAID Oceans and Fisheries Partnership provided knowledge and capacity building in gender, but fisheries management agencies and companies must now take the project outcomes further. In Solomon Islands gender equality improvements in SolTuna and NFD have included financial literacy training, helping women struggling to feed their family on their wages better manage household finances, improve their standards of living and plan for the future (Pacific Women, 2019). The initiatives were initially driven externally from the IFC, part of the World Bank Group, and time will tell whether the companies independently continue working towards gender equality.

The Philippine national government mandates regarding gender are driving some change in practices, but are yet to be followed through in fisheries legislation and implemented. Thus the norm uptake falters in the functional interaction between the national

government and fisheries agencies. Similarly, in the Solomon Islands, the Ministry of Fisheries and Marine Resources has had a gender strategy, and a gender focal point, but these have been the result of gender mainstreaming moves across the government, rather than arising from within the Ministry. Training small numbers of women as crew for industrial vessels in Fiji and Solomon Islands, and encouraging women to take up conventionally male roles on shore such as forklift driving show a willingness to consider women in non-traditional roles. However, when very small numbers of people enter strongly segregated workplaces they usually encounter difficulties, as women observers on tuna vessels experienced (Pacific Community, 2020). In sum, thus far the norm of gender equality is not internalized by most tuna actors in the WCPO. Many have been exposed to the idea of gender equality in recent externally driven initiatives, and the next few years will reveal whether these gender norms will be resisted or adopted.

Mangubhai and Lawless (2021) assessed the effectiveness of gender initiatives in fisheries management agencies in terms of whether they 'reach' women, 'benefit' women, 'empower' women, or 'transform' gender relations. In this spectrum, reaching women is least effective in improving gender equality, and transforming gender relations is most effective. They find that gender work carried out by the fisheries agencies of Fiji, Vanuatu and Solomon Islands has mainly been 'reaching' women, rather than generating more effective change. That study was on coastal fisheries initiatives, but tuna fisheries are managed from within the same agencies, and our research finds similar tendencies towards 'reaching' and 'benefiting' women rather than gender transformation. This is most clearly evident in recruitment, whereby women are now making up a much larger proportion of tuna fisheries management staff, especially in junior and middle level (untransformed) office roles and even in the male-dominated area of monitoring control and surveillance.

Employing more women is one step towards gender equality in formal organizations, but it does not lead to empowerment or transformation if a gender blind culture remains entrenched. Mangubhai and Lawless (2021) found that, for coastal fisheries, "gender inclusive approaches were limited by the knowledge and capacities of fisheries managers and practitioners, and inhibitive institutional cultures." Lawless et al. (2021) take these issues further, finding the treatment of gender in fisheries documents narrow and outdated, failing to draw on sophisticated knowledge available in the women's affairs agencies in the same governments. For example, in fisheries documents gender is often equated with women as a homogeneous group, rather than the norms shaping relations between people.

Tuna fisheries suffer from the same broad lack of understanding of women's roles, and lack of institutional support. The authors of this paper, in their work with fisheries policy makers and industry representatives are continually asked why gender is relevant for fisheries management or development. We often see the gender component of projects downplayed—for example by being converted from chapters in main reports to just annexes. A tuna industry leader in the Philippines stated in a large multi-stakeholder meeting that women

in tuna-dependent communities stay home and 'do nothing', eliding their reproductive and caring work, as well as the business administration, informal trading/processing work most women in tuna fishing families undertake (USAID Oceans, 2017). Prevailing mindsets render the small numbers of women who fish for tuna invisible. In Indonesia women cannot be registered as tuna fishers. Despite the fact that some women from the communities supplying tuna to Gizo in Solomon Islands do fish, Syddall et al. (2021) found many interviewees asserted that no women fish for tuna. For example, "Maybe the women are mainly involved in the cleaning of the fish and processing it for markets but the fishing part of things, especially when it comes to tuna, it is all males" (Interviewee, Solomon Islands, 2019).

Superficial understanding is revealed in public statements about gender equality in tuna fisheries. The increasing number of women in high profile political and professional positions has been used to infer overall progress on women's equality. The WCPFC Scientific Committee claimed "[g]reat progress on gender issues" (Scientific Committee-WCPFC, 2016, p. 2), naming five prominent women leaders in the tuna sector. The existence of a handful of women attaining senior roles, however, is not evidence of great progress towards gender equality in fisheries. It is probably related to improved equality in education making more women qualified for senior roles. Similarly, the increased number of women in mid- and junior-level roles in fisheries management is in line with improved opportunities for women in public sector recruitment due to education and some changes in social acceptance. It does not qualify as deeper, broader change towards gender equality across the tuna industry.

"Great progress on gender issues" would need action in three key areas: in industrial scale operations including in factories, offices, value chain companies and on fishing vessels; in national fisheries policy and support for small- and medium-scale tuna value chains; and in monitoring, evaluation and research to better understand gender equality in tuna industries. Responsibility for progress is thus spread across multiple stakeholders, and may best be achieved through collaboration.

In industrial operations, decent working conditions and opportunities for women and men is the responsibility of the private sector, regulated and supported by national government labour and industry laws to eliminate job discrimination and stereotyping, the gender pay gap and create supportive work conditions for women workers, including pregnant and nursing mothers. In many operations, structural workplace change will be required to achieve decent work such as ensuring human rights at sea and on shore by changing maritime norms that, on some tuna vessels, condone the ill-treatment—largely of men—at sea and devastates households, and the sexual exploitation of women in ports. Not only fishing and processing companies, but also trading and end-market companies have a responsibility to ensure their tuna has been sourced and processed under decent work conditions. National governments requiring onshore processing could also secure decent work conditions. Regional fisheries management organizations must also engage to make decent work issues a higher priority with national governments responsible for port and flag-state governance of the

industrial fleets and factories. Workers and their representatives must be given legitimate voices in governance to balance the power over the industrial operations that currently rests solely with industry actors (companies and industry associations), many of whom formally attend regional fisheries meetings as delegates of member states (Petersson et al., 2019).

National government agencies are pivotal for creating and implementing gender-aware and even gender transformative tuna industry policies, and for representing national interests in WCPFC and in sub-regional bodies such as the Parties to the Nauru Agreement. Their gender equality responsibilities in tuna should respect national gender commitments with respect to labour, care, education and social security, such as to CEDAW and Sustainable Development Goal 5 (Gender Equality). These responsibilities cover industrial fishing and processing and small- and medium-scale enterprises. Small- and medium-scale tuna value chains are important for women in many countries, but their operations and beneficiaries are given little attention in the whole discussion over the beneficial use the tuna resources. In Pacific island countries, national governments also control how the fisheries access fees are used, and hence which sectors of the economy, such as health, education, infrastructure and benefit from their budgetary allocation. These allocations are not transparent.

Finally, a quantum leap in knowledge and championing action are essential for achieving "great progress on gender issues." Finding information for the present article has been difficult. Much of what we sought was not available, such as the numbers and demographics of people working in different value chain nodes, their incomes and how the gendered patterns of control over productive assets affect development outcomes. Beyond the basics, no gendered analysis has been conducted on the impacts on women of management strategies, prospective harvest control rules, trade and access agreements and ecolabel certification. This illustrates how far we still are from properly understanding the social, economic and cultural elements of tuna industries. To track progress, research organizations can illuminate the gendered impacts of tuna industries, and national governments and regional organizations can monitor the gender-disaggregated demographic, social and economic dimensions of tuna industries.

Development assistance donors in the WCPO such as USAID (US Agency for International Development), the European Union and Australian Aid have tried valiantly to build capacity for including gender equality in coastal and also, in some countries, tuna fisheries. To date, these interventions have not been mainstreamed in the national and regional fisheries bodies. WCPFC should have a standing agenda item on social issues, including gender equality. Grassroots, labour and community-based organizations should be encouraged to represent women's views at regional and national meetings in the same way as the environment and industry advocates.

All three areas for action constitute a giant leap from the current situation where people working in tuna value chains are invisible unless they have risen to top influential private sector or government positions, or suffer misfortune at sea.

6 | CONCLUSION

Since the social benefits from tuna are throughout whole value chains, tuna policies should address whole value chains, and all the women and men in them. However, regional and national tuna fishery management focuses on the at sea operations of the industrial fishing node, with the goal of promoting its growth while maintaining tuna stocks. Some governments and sub-regional groups pay attention to onshore industrial processing and market standards to leverage exports and extract greater value from their tuna stocks, but not explicitly because of the benefits to women. Existing gender policies relating to WCPO tuna fisheries are vague and immature. Women's productive work in tuna value chains and their reproductive work supporting men who fish at sea are largely overlooked. The lack of gender-responsive policies and social protection results in inequity, missed opportunities for inclusive growth, and makes women more vulnerable or easily subjected to sexual harassment, exploitation and abuse in the workplace and in the domestic space. People in positions of influence in fisheries management and tuna companies must build on the momentum started in recent years by women's affairs agencies and donor-funded projects to ensure tuna industries better fulfil their potential as an engine for equitable and sustainable development.

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CONFLICT OF INTEREST

The authors have no conflicts of interests.

AUTHOR CONTRIBUTIONS

K.M.B and M.J.W. designed/conceptualized the paper, and all authors provided ideas, data, wrote and edited the paper.

DATA AVAILABILITY STATEMENT

Data used in this paper are not available for use by other researchers for two reasons. Some of the data is protected by the ethical approval conditions of the research, as is usual for qualitative data

where the identity of the speaker may be visible even once their name has been removed. Other data are not public due to the intellectual property requirements of the research contracts.

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