

Looking Beyond the Fisherwoman: A Case Study of Women's Empowerment in Marine  
Resource Management and Policy

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**Abstract**

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The substantial role of women in fisheries is gaining increasing recognition, but awareness about women's roles in the fish value chain has not led to equal gender representation in management and policy. Moreover, the role and participation of professional women in marine resource management and policy remains under-studied and largely unacknowledged. The lack of understanding of women's role in fisheries policy-making is biasing the ways in which management decisions are made and how conservation and fisheries management programs are designed. This study documents and examines the implications of women's participation at national and regional levels of marine resource management in a large multinational marine conservation program, the United States Coral Triangle Initiative (US CTI) Support Program. The study uses a mixed-methodological approach to examine factors that affected women's degree of empowerment in the US CTI. Using a combination of quantitative surveys, social network analysis and qualitative interviews, results indicate that women's participation in US CTI regional activities contributed to their empowerment. The potential for international programs to contribute to increased gender parity in regional and national decision-making was demonstrated through increased capacity, new social connections, enhanced leadership and changing cultural attitudes.

*Keywords:* gender equality, empowerment, marine resource management, coral triangle, women

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**Introduction**

Globally, women constitute an estimated 47% of the fisheries workforce, which includes both harvest and post-harvest activities, yet efforts to systematically engage and involve them in management and decision-making bodies remains limited (FAO, 2013; Harper et al., 2013; World Bank, 2012a). Gender roles based on socially constructed norms assigned to biological sex has resulted in a gendered division of labor, which has created major inequalities across the world in a wide range of social, economic, educational, and political-related issues (Reiter, 1975; Wirls, 1986)

The lack of gender equality in the fisheries sector is partly a result of the gender-based dichotomous division of labor, where men are characterized as providers (fishers) and women as caregivers (responsible for childcare) (Harper et al., 2013). This traditional but dated perspective on 'fishing' substantially undervalues the economic and societal benefits that women in fisheries provide (Harper et al., 2013; FAO, 2013). Women's contributions and activities throughout the fish value chain, mostly in nearshore capture (gleaning), processing, marketing and sales, have been excluded from what traditionally constitutes "fishing" and consequently seldom considered in management decisions (Harper et al., 2013). Only recently have women become involved in fisheries governance, a field that has long been dominated by men (Pauly, 1989; Harper et al., 2013). However, men continue to hold the majority of high-level policy positions and key decision-making authority (Harper et al., 2013).

Governance has yet to fully address the unequal division of labor and the under-acknowledgement of women's contributions to the fishing sector (FAO, 2013; Harper et al.,

2013). However, researchers have sought to highlight and document the experience of fisherwomen to bring awareness to women's roles in this sector (see *e.g.* Ahmed et al., 1998; Aswani, 2004; Bennett, 2005; Bliege-Bird, 2007; Brummett et al., 2010; Chapman, 1987; D'Agnes, 2005; Deb et al., 2014; Dela Pena and Marte, 1998; Di Ciommo and Schiavetti, 2012; European Commission 2003; Fay-Sauni et al., 2008; Fitriana and Stacey, 2012; Frangoudes et al., 2008; Frocklin et al., 2013; Gammage, 2004; Hao, 2012; Harper et al., 2013; Hauzer et al., 2013; Kinch, 2003; Kleiber et al., 2014; Kronen and Vunisea, 2007; Lim and Apong, 2012; Lim et al., 2012; Neis et al., 2013; Nowak, 2008; Siar, 2013; Veutheya and Gerber, 2012; Walker and Robinson, 2009; Zhao et al. 2013). Although these studies provide a valuable contribution, they seldom examine the experiences of professional women in marine resource management and policy, particularly in the Global South. Capturing professional women's experiences about the obstacles they face or the benefits they receive are essential for increasing their participation in key marine resource management decisions and for improving the quality of gender mainstreaming in the environmental sector (Rodriguez, 2013).

While women in professional positions possess and wield certain social, economic, and political resources more than fisherwomen, they still face significant struggles in both private and public spheres in reaching higher job positions and continue to be subordinately positioned to men (Ismail et al., 2011; Rodriguez, 2013; Ross-Smith and Huppatz, 2010). To improve gender equity in management, researchers have advocated for examination of the changing roles of women and women's participation in management (Ismail et al., 2011; Ross-Smith and Huppatz, 2010). Gender equity refers to the means for achieving gender equality and represents the process of providing equal opportunities for women and men to access socio-economic, natural and other resources (Torell and Tobey, 2012).

This study presents data that highlight the experience of professional women involved in the Coral Triangle Initiative (CTI), the largest regional ocean governance initiative ever attempted across six independent nations in the Asia-Pacific (Mills et al., 2010). Specifically, the study examines how professional women's access to resources, through their participation in a series of multi-national technical and educational meetings, referred to as 'regional exchanges', affected their degree of empowerment and gender equity.

This study is part of a broader evaluation of the Coral Triangle Initiative (CTI) and the United States Coral Triangle Initiative (US CTI) Support Program led by the University of Washington and World Wildlife Fund (WWF) with funding from the United States Agency for International Development (USAID). The primary objective of the project, entitled the Learning Project, was to identify the challenges, successes, and the lessons learned from the ambitious approach of the CTI and its partners in multilateral ocean governance (Christie et al., 2014). The US CTI's final evaluation report, prepared by Social Impact Inc. and Partner Management Systems International, identified a need for, "a systematic process of assessing the implications for women and men of any planned action including policy making in all areas and at all levels," (Baker et al., 2013 pp. 40). Thus, the identified need provided an opportunity to systematically assess the implications of women's participation at the regional and national level of the US CTI hierarchy for women's empowerment and leadership development.

The questions explored in this study include: 1) how women's participation in the US CTI increased their capacity and enhanced their abilities in marine management, 2) how women and men access, value and utilize social resources, 3) how women's participation enhanced their leadership development, and 4) can a neutral setting provide an opportunity for changing the attitudes about women's culturally constructed roles. Examining these questions will address the

need for knowledge about professional women's experiences in this sector and provide information for what gaps remain to address gender equity in management and improve gender mainstreaming in fisheries and conservation development programs.

## **Background**

### *Gender Mainstreaming, Gender Equity and Empowerment*

In 1995, gender mainstreaming became a globally accepted strategy for achieving and sustaining gender equality (UN, 1997). Gender mainstreaming is a process for integrating the perspectives, concerns, and experiences of women and men in different activities within any sector and at all decision making levels (UN, 1997). Gender mainstreaming in practice has received considerable scrutiny (Lee-Gosselin et al., 2013). Various studies have demonstrated that the efficacy of gender mainstreaming is more symbolic for gender equity and has failed to produce concrete, measurable reductions in inequalities (Benschop et al., 2012; Bendl and Schmidt, 2013; Gervais, 2008; Howard, 2002; Langevin, 2009; Lee-Gosselin et al., 2013; Sainsbury and Bergqvist, 2009; Senac-Slawinski, 2008; Woodward, 2008). This is partially a result of many projects lacking the technical expertise and understanding to adequately implement gender mainstreaming (Bennett, 2005; IUCN, 2013; Lee-Gosselin et al., 2013; Rodriguez, 2013).

In addition to the failures associated with gender mainstreaming, policies aimed at addressing the inequalities of women in the Global South have focused solely on women's issues, such as basic reproductive rights and civil rights, and tend to overlook the relevance of exploring gender relations (Rodriguez, 2013). Exploring gender relations and the processes that lead to a shift in the cultural and political landscape should be monitored to encourage the

institutionalization of gender equity (Lee-Gosselin et al., 2011). Moreover, exploring gender relations provides necessary information to break generalizations about women in the Global South and to help improve gender mainstreaming in organizations that has overlooked diversity (Rodriguez, 2013). Given the regional breadth of this study, it is imperative to adequately evaluate cultural dimensions and women's work experiences across the diverse cultural landscape. The degree of women's empowerment across the Coral Triangle region, encompassing Southeast Asian and Melanesian countries, will vary as a result of the different socio-political contexts in which these women live (Petesch et al. 2005).

Empowerment is typically understood as a process for increasing the capacity of individuals or groups to make choices, which lead to desired actions or outcomes (World Bank, 2002). The empowerment process occurs through resources, agency, and achievements (Kabeer, 2005). The first step in the empowerment process is when individuals gain access to resources, including social, political, and educational, that enhance one's ability to make choices (Kabeer, 2005). Agency refers to the process of decision-making, defining goals and translating those goals into action, where women themselves are significant actors in the change that is occurring (Kabeer, 2005). Achievements refer to the tangible outcomes that can be measured (Kabeer, 2005). For example, access to new social resources may enhance one's abilities to make choices or set goals, which leads to the ability to transform those goals into achievements. Access alone, however, does not guarantee empowerment. Having adequate access to resources is a critical first step as resources can increase self confidence, which can lead to a self perpetuating cycle of feeling empowered and an increasing ability to carry out successful change (Diener and Biswas-Diener, 2005). Thus, to adequately measure empowerment, it necessary to capture how women were impacted through their participation.

*Study Region Context*

The Coral Triangle is a geographical region located along the equator at the convergence of the Western Pacific and Indian Oceans (Burke et al., 2012). It encompasses the exclusive economic zones of six different countries (CT6): Indonesia, Malaysia, Papua New Guinea, the Philippines, the Solomon Islands, and Timor-Leste. The region holds the richest marine biodiversity in the world, containing over half of the world's coral reefs with the most abundant diversity of coral species, the greatest extent of mangrove forests in the world, and provides spawning areas and juvenile habitat for the world's largest tuna fishery (Burke et., 2012).

*Social and Cultural Conditions in the Coral Triangle*

This ecologically impressive region is also home to more than 370 million people, and represents one of most culturally diverse regions in the world (Fidelman et al., 2012). The Coral Triangle encompasses two culturally distinct contexts: Southeast Asia and Melanesia. Within Southeast Asia (Indonesia, Malaysia, the Philippines and Timor-Leste), the two predominant religions, Islam and Catholicism, present a deep cultural divide both among and within these countries (CIA World Factbook, 2014; Fidelman et al., 2012). The Melanesian countries hold incredibly rich linguistic and ethnic diversity, with over 800 indigenous languages spoken in Papua New Guinea alone, and over 80 indigenous languages in the Solomon Islands (CIA World Factbook, 2014).

Such high diversity corresponds with a high prevalence of divisions, tensions, and violence between different social and cultural groups within the CT6 countries (Fidelman et al., 2012). Many of the culturally driven divides are reflected in the context of marine resource management, where different user groups in Southeast Asia and Melanesia experience varying

degrees of conflict (Fidelman et al., 2012). With regard to gender equality in this region, culture plays a large role, as culture typically establishes gender roles (Yeganeh and May, 2011).

Traditional gender roles, characterizing men as providers (hunters, fishers, etc.) and women as caregivers (gatherers, mothers, domestic caretaker) is reflected in certain CT6 countries more than others in the region (World Bank, 2012b). In comparison to other parts of the world, women in the Coral Triangle region are typically more heavily involved throughout the fish value chain than other parts of the world (GIZ, 2013). For example, women in the Philippines make up 60% of the small-scale fisheries workforce and women market 60-80% of all seafood in both Southeast Asia and Melanesia (GIZ, 2013). However, despite the similarities of these two regions women's contributions to the fishing sector and geographical proximity to one another, development and paths toward gender equality have been quite different, especially concerning women's voice and influence (World Bank, 2012b).

Women's parliamentary representation has been growing in the Asia region but female parliamentary representation in the Pacific has experienced very little change (World Bank, 2012). Women in Melanesia (which includes the CT6 countries of Papua New Guinea and the Solomon Islands) are one of the most under-represented groups in the world (Wallace, 2011; UNDP, 2012; CID, 2012; True et al., 2012). The Pacific Island states, excluding Australia and New Zealand, have the lowest female parliamentary representation in the world, lagging behind the Arab region (UNDP, 2012; World Bank, 2012b). Furthermore, the Pacific Island nations continue to have the highest rates of women-based incidences of violence than anywhere in the world (UNDP, 2012; World Bank, 2012b).

By contrast, certain countries such as the Philippines have a much more gender-equal relationship, where the prevalence of highly patriarchal cultural stereotypes about women's

traditional gender roles is comparably lower (World Bank, 2012b). Although not perfect, success stories are apparent in the Philippines for engaging women in fisheries-related decision-making (GIZ, 2013). However in other Coral Triangle countries, cultural stereotypes about women's roles in society have prevented them from obtaining higher-level decision-making authority (GIZ, 2013).

### *Formation of the Coral Triangle Initiative*

Roughly 120 million of the 370 million total population of the coral triangle directly rely on the region's marine and coastal resources for income and food (Burke et al., 2012). The region's ecosystems, and the services they provide, are at risk from a range of factors including rapid population growth, poverty, over-fishing, land-based sources of pollution and climate change (Burke et al., 2012). To address these imminent threats, in 2007, the six Coral Triangle countries agreed to form the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF) (CTI, 2009). Formally launched in 2009, the CT countries' governments finalized and adopted a 10-year Regional Plan of Action (RPOA) and established six different National Plans of Action (NPOA). The RPOA combines the priorities and interests of all six governments and reflects widespread efforts from many partners, while the NPOA provides a roadmap for regional CTI goal implementation and takes into account national context (CTI, 2009).

The RPOA and NPOA for each country provide clear goals, targets, and prioritized actions that are necessary to achieve local, national, and regional outcomes within 10 of 15 years of the formal launch (2009). Broadly, CTI-CFF defines five major goals (CTI, 2009):

1. Priority seascapes designated and effectively managed
2. Ecosystem approach to fisheries management (EAFM) and other marine

resources fully applied

3. Marine protected areas (MPAs) established and effectively managed
4. Climate change adaptation (CCA) measures achieved
5. Threatened species status improving

The US Government provided technical and financial assistance in a five-year program from 2009-2013, known as the United States Coral Triangle Initiative (US CTI) (or simply US CTI). The US CTI was designed to increase CTI-CFF leaders' capacity for sustainable management of the region's coastal and marine resources (USAID, 2008). Through coordinated efforts by the United States Agency for International Development (USAID), the National Atmospheric and Oceanic Administration (NOAA), Department of State (DOS), and the Coral Triangle Support Partnership (CTSP)—an NGO consortium led by World Wildlife Fund (WWF) with The Nature Conservancy (TNC), and Conservation International (CI)—the program supported the CT6 nations as they worked to achieve the CTI goals. Additionally, led by Tetra Tech/Associates in Rural Development (TT), the Program Integrator (PI) provides regional support, technical assistance and small grants while supporting the US program team and the CTI-CFF Regional Secretariat.

The consortium of transnational conservation NGOs continues to maintain a strong presence in all CT countries, providing opportunities to receive additional resources to meet regional social and ecological challenges (Christie et al., 2014).

#### *US CTI Regional Exchange Program*

Supported under the US CTI Support Program, a novel regional exchange program was created to bring together national government policy makers from the CT6 countries in order to share best conservation practices, facilitate the cross-fertilization of ideas and achieve regional

goals at an accelerated rate (US CTI representative, personal communication, February 6<sup>th</sup>, 2014). Prior to the US CTI's regional exchange program, no other program had attempted learning exchanges on such a large, multi-national scale in the Coral Triangle. Additionally, the CT6 countries had never exclusively met in international forum prior to the CTI, which provided a unique opportunity for these countries to form a new network (US CTI representative, personal communication, January 15<sup>th</sup>, 2014). National Coordinating Committees (NCC), six decision-making entities established to coordinate and promote country-level NPOA and RPOA implementation, were responsible for nominating individual people from member government agencies to attend regional exchanges. The Program Integrator (PI) supported the NCCs in the nomination process, which, according to the US CTI Final Evaluation report, had a required gender plan that established minimum female participation in regional exchanges (Baker et al., 2013).

## **Methods and Materials**

### *Study Design*

Multi-method triangulation was used to help improve internal and external credibility in arriving at conclusions (Creswell, 2009; Miles and Huberman, 1994). This triangulated approach (for this study, the use of surveys, social network analysis, and interviews) allows for results to be compared and contrasted against each other (Creswell, 2009). These methods are helpful for explaining why patterns emerge or do not emerge in the survey findings. Data were generated from multiple sources, including US CTI publications and documents, an online structured survey, and qualitative interviews. The use of narratives is commonly overlooked in research but narratives are a powerful tool for capturing opinions and important implications (Miles and Hubermann, 1994; Patton, 2001).

*Empowerment Analysis Framework*

Examination of complex relationships surrounding gender, participation, and empowerment in the environmental arena requires an innovative framework that combines elements of gender analysis and an evaluation metric for empowerment. Thus, several World Bank (Petesch et al., Diener & Biswas-Diener, Grootaert C., 2005) empowerment evaluation frameworks were adapted and applied in conjunction with USAID's Six Domain Gender Analysis Framework (USAID, 2011). The adapted World Bank frameworks served to contextualize the study, acknowledge the study's limitations, and evaluate how the US CTI program's activities encouraged empowerment. The USAID Framework was utilized to formulate questions that analyzed elements of the US CTI's program structure, which had an effect on gender outcomes.

The four dimensions employed for empowerment analysis comprise (Petesch et al., Diener and Biswas-Diener, Grootaert C., 2005):

1. Capacity Building: greater ability to implement policy and projects; degree of influence to take action;
2. Valuing Social Networks and Accruing Social Capital: the extent to which women's involvement in CTI-CFF fostered new relationships, friendships, and mentorships;
3. Leadership Development: the extent to which the CTI process contributed to and fostered leadership development among women; and
4. Shifting Cultural Attitudes: the impact of socializing a diversity of cultures where women's roles vary by country.

*Publication and Document Analysis on Gender Representation at Regional Exchanges (REXs)*

The number of women and men who attended REX were derived from the US CTI “Activity Reports”. These reports summarized REX activities and attendees at these events, including the number of women and men participants. For the REX Activity Reports, analysis focused on three of the five thematic areas: Ecosystem Approach to Fisheries Management (EAFM), Marine Protected Areas (MPA), and Climate Change Adaptation (CCA). The three thematic areas are based on the five goals of the CTI-CFF’s RPOA and were the focal point for US CTI support. The number of women attending the REX meetings was compared with male participants using the gender-reporting data presented in the activity reports. Percentages of male and female participants were calculated for easy comparison across the 9 exchanges (3 exchanges per thematic area).

*Structured Survey*

A short information-sharing survey was administered via the online SurveyMonkey™ platform to US CTI Regional Exchange (REX) participants in the three thematic areas of EAFM, MPA, and CCA. The Program Integrator (PI) of the US CTI program provided a list of REX participants for the Learning Project. The survey was used to measure respondents’ perceptions about capacity building in the REX program and explain relational patterns formed within the CTI. Survey respondents were CTI-CFF “country participants” who were elected by the NCCs from the CT6 member nations to participate in REX events and “resource persons and partners,” thematic area experts and partners typically involved in the US CTI program (e.g., experts from NOAA, Tetra Tech, USAID, and NGOs).

The survey responses were disaggregated by gender and questions from the survey relevant to the empowerment matrix were analyzed for significant differences between genders

using non-parametric cross-tabulation, Mann-Whitney U and Chi-Square tests in SPSS version 21. The results of these tests were considered significant at  $p < 0.05$ . The non-parametric tests were used to determine differences between two independent samples, with gender as the independent variable and the dependent variable measuring capacity to implement policy, influence to take action, value in social network building, communication motivations and nomination patterns between men and women. These tests are appropriate for small-sample sizes that exhibit non-normal distributions (Siegel, 1988). The medians and means were calculated for all variables.

The survey was also used to conduct social network analysis (SNA) (e.g. Borgatti et al., 2009; Wasserman and Faust, 1994), an appropriate method for examining the social power, or importance, of individuals within a social network and how individuals access and share information with others (Hoppe and Reinelt, 2010). SNA data are crucial for empowerment as they provide quantitative data for women's leadership development and social network building. This assessment was conducted by asking respondents to nominate individuals with whom they communicate and why about CTI-related topics. The SNA data were used to explain social-relational patterns and leadership formation among different actors from a gender perspective within the CTI and US CTI network. SNA uses relational concepts to describe linkages among units (Wasserman and Faust, 1994). These concepts typically represent actors as nodes (individuals within a network) and relationships (friendships, mentors, kinships, etc.) as ties (Wasserman and Faust, 1994).

In this study, SNA was used to create network models to conceptualize the social structure of the CTI network, where structure is defined as regular patterns in relationships among actors (Wasserman and Faust, 1994). These models were used to observe gendered

interactions among groups to better understand the relationship between and among these individuals, e.g., how women and men are connected throughout the social network (e.g. closeness), relative centrality of female and male actors, and relative prestige of female actors (Wasserman and Faust, 1994).

Undirected centrality, or simply referred to as centrality, is defined as having many non-directional relations and does not take into account whether the actor is the recipient or transmitter of ties (Wasserman and Faust, 1994). In social network analysis, centrality is typically an indicator for how influential or well connected the actor is within the network (Wasserman and Faust, 1994). A central actor is typically connected to many other well-connected individuals, and thus has more resources at her or his disposal and tends to rely less on one individual. In other words, central actors are able to call on more of the network's resources as a whole (Wasserman and Faust, 1994). Prestige, or in-degree centrality, indicates directional relation, which means that the actor is the recipient of many ties (Wasserman and Faust, 1994). Prestigious actors serve as highly utilized communication sources for other actors in the network, suggesting that they: 1) hold a significant amount of pertinent knowledge relative to other actors, and 2) have alternative resources to satisfy needs, and consequently are less dependent on other individuals (Wasserman and Faust, 1994).

### *Semi-structured Interviews*

Semi-structured interviews and qualitative analyses were used to complement the quantitative analysis. Interviews were conducted at national and regional levels, which included informants from national ministerial leadership, US CTI leadership, NGOs and scientific personnel (Christie et al., 2014). Informants were identified as key national and regional focal contacts from US CTI leadership. Informants were purposely sampled with the intent of

balancing different perspectives across the region and for institutional representation (e.g. nongovernmental organization vs. governmental agency). REX participants, who were identified by the Program Integrator (PI), frequently served as interview informants. To improve consistency across the region, an interviewing instrument was used to frame discussions about key questions and themes; however, interviews were adapted to address contextual factors that affected US CTI implementation in each country. These adaptations often led to conversations regarding women's opinions about capacity building, empowerment, leadership development, and social-network development.

Additionally, three in-depth follow-up interviews with key informants from the US CTI were conducted regarding matters of historical gender work in the region, gender components of the program, and the impact of the program on gender relations in the region. These informants were selected based on previous discussions and the breadth of their knowledge regarding the program itself and overall gender work in the region.

Interviews were conducted in English and national languages of CT6 countries. The interviews were translated as necessary, transcribed, and then coded using ATLAS.ti software. The analysis mixed inductive and deductive analytic techniques by identifying and labeling relevant themes within interviews (Strauss and Corbin, 1990; Miles and Huberman, 1994). Interview narratives were analyzed from determined and emergent code categories (e.g. "capacity development: leadership development", "women: empowerment and capacity building"). Once interviews were coded, search commands of relevant code categories for the topic of women's empowerment were used to scan the interviews for quotations meeting one or more criteria (e.g. "women: leadership development", "women: cultural challenges and context"). As trends emerged, theoretical memos were created and attached to each emergent

code category (Strauss and Corbin, 1990; Miles and Huberman, 1994). The analytic memos served as the means to begin the process of relating qualitative to quantitative findings. This approach allowed for transparency in the process of how conclusions were made. In total, 17 interviews were analyzed.

## **Results and Discussion**

### **1. US CTI Program Design and Gender Representation at Regional Exchanges**

#### *Gender Representation*

On average, men participated more than women in three of the five REX topical areas (EAFM, MPA, and CCA). Across the 9 exchanges examined, REX attendees were 64% male and 36% female (Table 1, see Appendix 1 for a more detailed breakdown of the 9 exchanges). Overall, gender parity at CCA REXs was highest. Across three CCA exchanges held in Timor-Leste, Indonesia, and the Solomon Islands, participants were 60% male and 40% female (Table 1). Women were seen in lowest numbers at EAFM REXs; on average, only 29% of participants were women (Table 1).

Table 1: Gender breakdown at regional exchange meetings

Thematic Area and Location	Women (%)	Men (%)
<b>EAFM</b>		
Putrajaya, Malaysia (2012)	27	73
Kota Kinabalu, Malaysia (2011)	31	69
Cebu, Philippines (2009)	30	70
Overall	<b>29</b>	<b>71</b>
<b>MPA</b>		
Honiara, Solomon Islands (2013)	41	59
Sanur, Indonesia (2012)	32	68
Batangas, Philippines (2011)	42	58
Overall	<b>38</b>	<b>62</b>
<b>CCA</b>		
Dili, Timor-Leste (2013)	34	66
Honiara, Solomon Islands (2011)	46	54
Ancol, Indonesia (2010)	39	61
Overall	<b>40</b>	<b>60</b>
<b>All Topical Areas</b>	<b>36</b>	<b>64</b>

These findings are surprising because the regional CTI EAFM plan explicitly encourages the involvement of women in the development of countrywide EAFM plans (Baker et al., 2013). Furthermore, climate change adaptation (CCA) is a relatively new field compared to fisheries management, with CCA entering the environmental management agenda sometime in the 1990s (Tol et al., 1998). The burgeoning field of CCA may explain the higher than average female participation rate in the CCA REX meetings; women may see this area as an opportunity to be involved, rather than attempting to enter the already male-dominated field of fisheries management.

## 2. Capacity Building

### *Ability to implement policy*

Women and men reported similar, positive impacts of REXs on capacity development. Respondents were asked to rate on a scale of 1 to 10, with 10 signifying the highest degree, the

extent to which REXs increased capacity to implement policy in their country. The median response for women (n = 39) and men (n = 61) was 7 on a 10-pt scale (10 signifying a significant degree of capacity increased). The perceived ability for REXs to increase capacity to implement policy did not differ across gender (n=100, U = 1091.5, p = 0.48). This result suggests that REXs were effective for increasing capacity for both genders.

Interview narratives reinforce quantitative findings and demonstrate that women and men both felt REXs were beneficial for capacity development.

The exchanges have been very beneficial in terms of knowledge and capacity building, and interacting with people from other countries helped me become more broadminded. When you're talking to people from other countries, you see the broader picture and [there are] many more options to doing your job when you get home ... CTI and the other international meetings I attended gave me the opportunity to learn from other countries new ideas or ways of doing things that I can bring down to the community level, so then I can bring the community experience back up to the national and regional level. – *Female Malaysian Government Official*

The success to me is not only from the scientific understanding of the government officials on connectivity ... but I also see this as a platform for them to challenge their government counterpart ... I think [Regional Exchanges are] valuable in the sense that [they] allow the countries to come and talk to each other and try to address the same issues collaboratively – *Male Indonesian Government Official*

Female and male informants saw the potential of REXs for connecting CT6 countries, learning from one another, and achieving goals collaboratively. Describing REXs as both a “success” and

“very beneficial” are evidence that REX’s positively impacted women’s and men’s capacity development. Capacity building and knowledge development are key for the empowerment process as access to new educational resources, such as through regional exchanges, leads to a great ability to make strategic choices and perform professional duties in marine management (Kabeer, 2005). In this sense, women are exercising agency, the process of putting into effect one’s own abilities (Kabeer, 2005).

### *Action-taking*

Women and men reported similar, positive impacts of REXs on influencing action. Respondents were asked whether one or more REXs influenced them to take action in their country. 94% of women (n = 35) and 91% of men (n = 63) responded “yes”, that REXs influenced them to take action. There was also no statistical difference between genders on the perceived ability of REXs to influence participants to take action in their country (n=98,  $\chi^2 = 0.436$ , p= 0.51). These numbers suggest that REXs were equally influential for both genders. This finding was underscored in interviews, where women and men both commented on the influential nature of REXs. For example, a female NGO employee from Malaysia describes how REXs and other regional meetings were influential.

[My involvement in CTI] changed me ... I learned a lot by attending all these regional level things, workshops, met many friends, lots of sharing and ... actually, I feel happy that I assisted a little bit of my knowledge to the Malaysian government in the implementation of our NPOA in the CTI areas of Sabah. So I learned a lot. – *Female NGO Employee, Malaysia*

Evidently, the cross-learning between countries provided women and other participants

an opportunity to take what they learned from REXs and carry out concrete actions within their country. REXs proved to be an effective way to broaden women's knowledge and thus contribute to further developing their capacity. It is important to understand that merely bringing women to meetings does not necessarily guarantee meaningful participation or guarantee inclusiveness in decision-making (Petesch et al, 2005). However, because women's participation led to tangible achievements (action taking), it can be concluded that they were empowered to take these specific actions (Kabeer, 2005). The resources that the REXs provided were thus instrumental in the empowerment process, as it enabled women to carry out actions within their organizations and facilitated their abilities to implement relevant policies.

### **3. Valuing Social Networks and Accruing Social Capital**

#### *Value in Linking People in the CTI*

Respondents were asked to rank on a scale of 1 to 10, with 10 signifying the highest degree, how valuable REXs were for linking people within the CTI. The perceived value for REXs in linking people within the CTI did not differ across gender ( $n=117$ ,  $U = 1548$ ,  $p = 0.63$ ). The median response for women ( $n = 46$ ) and men ( $n = 71$ ) was 8 on a 10-pt scale (10 signifying highly valuable), suggesting that the expansion of social networks through REX meetings was highly valuable for both genders.

This finding was echoed in interview narratives. Both women and men highlighted the importance of collaboration and how it was very useful to connect with other countries to perform the tasks at hand.

It's a good feeling to see all the partners at one table and talking and sharing experiences ... It's a very good initiative, the Coral Triangle Initiative. It has brought everybody together ... Now we can chat with somebody from Indonesia, Philippines, Solomons. – *Female National Government Official, Papua New Guinea*

*Interviewer: What would be the 3 words that capture the spirit of what you just said [about your regional exchange experience]?*

Informant: It is the friendship, it is the sharing, and number 3 is commitment. – *Female Philippine Government Official*

[Regional Exchanges are] very useful because we can work together ... [F]or example in my experience, in Indonesia, marine protected areas, just 15 or 20 years they [have] developed. But in other countries, [they] have [had them] a lot longer than Indonesia ... [W]e can learn, we can share information, and bridge our knowledge. – *Indonesian Male Government Official*

Women and men found REXs to be substantially beneficial for connecting their countries for marine resource management. A new social network emerged among the CTI actors, which is demonstrated in the new connections they made through regional activities.

#### *New Connections in the CTI*

The extent to which CTI fostered new connections for women is of particular importance for their empowerment, as it provides evidence that women have increased their social capital, which can contribute to empowerment (Kabeer, 2005). Survey respondents were asked whether

they knew the individual they chose to nominate prior to CTI. Both women's and men's involvement in CTI activities expanded social networks both within and outside of their country (Table 2). CTI fostered more new connections for women and men internationally than domestically. Domestically, 32% of women's nominees and 38% of men's nominees were new connections (Table 2).

Table 2: New Connections for women and men

	Women	Men	Women and Men
Domestic			
Female Respondent			
Existing connection (%)	67	68	67.5
New connection (%)	33	31	32
Male Respondent			
Existing connection (%)	64	60	62
New connection (%)	36	40	38
International			
Female Respondent			
Existing connection (%)	27	35	31
New connection (%)	73	65	69
Male Respondent			
Existing connection (%)	20	33	27
New connection (%)	80	67	74

On an international scale, CTI had an even greater impact on fostering new connections: 69% of women's nominees and 74% of men's nominees were made a result of CTI activities (Table 2). Although comparatively, women seem to have connected with slightly fewer new individuals (69% new) than men (74% new), it is evident that both genders nominated new international contacts, a direct result of the social networking CTI provided. This finding is also reflected in statistical analyses, where differences between women's and men's new connections were not statistically significant ( $p > 0.05$ ).

However, men made more new connections with women (80%) internationally than they

did with men (67%), suggesting women are gaining more recognition from international counterparts as a result of the CTI process. A similar pattern also emerged for women, where 73% of the women they now communicate with are new connections, compared with 65% of their male nominees. This implies women became increasingly connected to both women and men at the regional level.

One woman in particular spoke very highly about the opportunity CTI gave her to participate in a 3-week capacity building program, the University of Rhode Island (URI) exchange program.

*Interviewer: Did you expand your network of friends, network of people that you can ask information from as a result of your involvement [in CTI]?*

Informant: Yes. Previously I only work in [Malaysian Government Agency]. When I went to URI, I started to have linkages [and] networks with the people at the regional level from the 6 countries ... [After URI] that network became bigger, and when I was appointed as the coordinator it became BIGGER. ... It's getting bigger and bigger and bigger ... We meet our old friends and we meet new friends. ... [W]hen you have the same group of people around you ... who share the same vision, the same target, share the same passion, I think we can achieve it faster. I think that is a good lesson learned.

*Learn, learn, learn from others. – Female Malaysian Government Official*

The relative importance of the new connections CTI created may differ across gender. Some research has revealed that women tend to depend more on social relations, given that their ability to accumulate economic resources and access to opportunities is typically more restricted than men's (Agarwal 2000; Molyneux 2002; More 1990; Riddell et al. 2001). Moreover, it has been argued that across employment sectors, masculine skills are desired while feminine skills

are undervalued (Fagenson, 1990; Ross-Smith and Huppertz, 2010). Therefore the skills that women innately possess have placed them in disadvantageous roles for obtaining decision-making authority or in securing resources (Fagenson, 1990). Consequently, women have been subjected to lower positions with limited power and struggle to move up the employment ladder, which in turn inhibits their opportunities for developing skills to advance their career (Jogulu and Wood, 2011). The resulting unequal-gender landscape alludes to the importance of women's access to social resources that can further their participation and professional development. Social resources provide women more opportunities to leverage assistance through built relationships for developing the skills needed to carry out professional duties.

#### *Gendered Patterns in Nomination*

The creation of social resources may be relatively more important for women than for men raised a new line of inquiry. The study identified whether there were significant differences between women and men regarding how they nominated individuals based on gender identity. It was hypothesized that women tended to nominate other women, while men tended to nominate other men. To test this hypothesis, Pearson Chi-Square was conducted to measure the relationship between women and men and the gender of their respective nominees.

Women and men tended to nominate individuals along gender lines ( $n = 89, \chi^2 = 4.28, p = 0.04$ ). Within their country, 50% of women's nominees were men and 50% were women. Comparatively, only 28% of men's nominees were women, while 72% were men (Table 3).

Table 3: Nomination patterns among women and men

	Respondent	
	Female	Male
Domestic Nominees	n=32	n=57
Women (%)	50	28
Men (%)	50	72
International Nominees	n=29	n=41
Women (%)	38	12
Men (%)	62	88

Internationally, a similar pattern emerged. Women and men nominated along gender lines, a statistically significant finding ( $n = 70, \chi^2 = 6.38, p = 0.01$ ). Outside of their country, 38% of women's nominees were women. Only 12% of men's nominees, on the other hand, were women (Table 3). This finding could be a result of women's underrepresentation at regional-level meetings. Moreover, men dominate the CTI social network, where 7 of the 10 most prestigious actors are male, a finding that will be discussed in subsequent sections.

#### *Motivating Factors for Communication*

The study identified whether there were significant differences within and between gender identities for why individuals communicate. The survey asked respondents to nominate the first individual they go to for questions about the CTI and subsequently asks the respondents for the reasons why they communicate with that particular individual.

For the entire network ( $n=89$ ), the most frequently selected motivation for communication was to make useful connection to others (69.8%). Respondents and nominees were grouped into four gender-nomination patterns (Figure 1). A summary of these patterns of communication are separated by each gender group and presented (Figure 1).

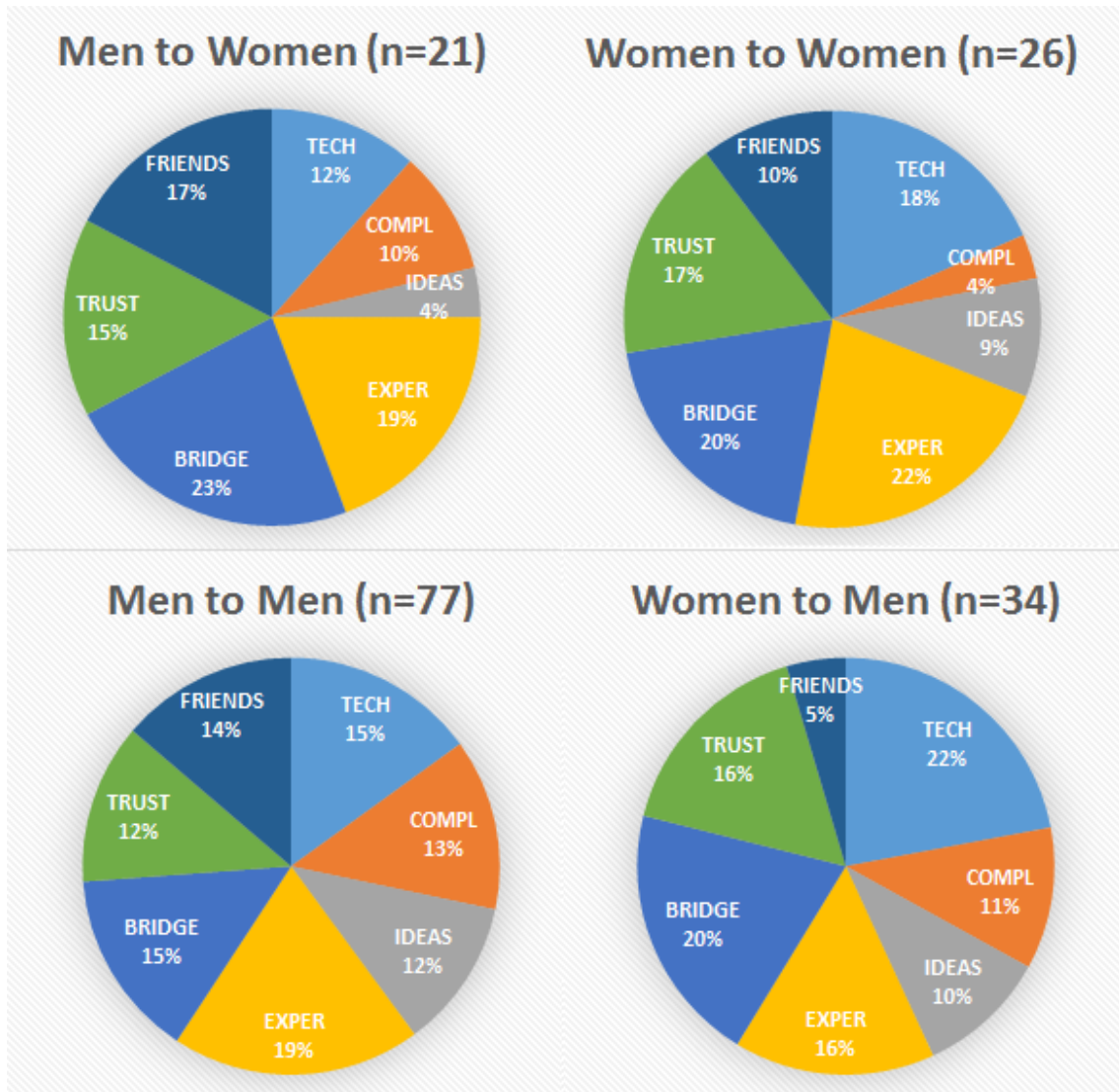


Figure 1: Summary of REX participants’ communication motivation, displaying apportioned breakdown of motivations

Three communication motivations, “this person has access to technical knowledge I wouldn’t have otherwise” (TECH), “this person works in a complementary discipline” (COMPL) and “I am friends with this person” (FRIENDS), differed across the gender groups, a statistically significant finding (Table 4). TECH (this person has access to technical knowledge) was the most frequently selected reason for why women communicate with men for CTI-related questions. Conversely, men communicate with women for their connection to others (BRIDGE)

with TECH seldom selected among men for communication with women (Figure 1). FRIENDS (“I am friends with this person”) was the third-most frequently selected reason why men communicate with women, while FRIENDS was the least-frequently selected reason for why women communicate with men. However, this was also a seldom-selected reason for why women connect with other women for CTI questions.

Table 4: Statistical significance of communication motivation factors across gender the four groups (table 8)

Motivation Type	Pearson Chi-Square	Df	p-value	n
TECH	11.55	3	0.01*	81
COMPL	8.19	3	0.04*	81
IDEAS	5.18	3	0.16	48
EXPER	4.23	3	0.24	91
BRIDGE	6.01	3	0.11	85
TRUST	4.40	3	0.22	70
FRIENDS	8.49	3	0.04*	55

The communication motivation data and nomination patterns demonstrate that women and men tend to communicate with individuals of the same gender about CTI and that they communicate with women and men for different reasons. One must be careful to assume that the reasons can be generalized across gender. It seems that women and men approach others within the CTI for reasons that span friendship, technical knowledge, connection to others, and experience in the field. However women, although observed at the community level, tend to form informal networks and rely on kinships and friendships more so than their male counterparts for addressing resource management problems (Agarwal, 2000). Perhaps if the question was framed in a different manner, e.g. “With whom do you collaborate to work on CTI issues,” may have led to different results. Thus, further examination of the relationships between gender and communication motivation is needed to infer implications for resource management

and women's empowerment.

#### 4. Leadership Development

##### *Women's and Men's Influence and Importance in the CTI Social Network*

Women and men in the CTI social network have differing levels of centrality and prestige, which may serve as indicators for leadership and influence (Hoppe and Reinelt, 2010). Male actors dominate the CTI network (Figure 2), which is predictable given that men participated more in regional exchanges. Moreover, the absolute number of female respondents was lower than male respondents. However, the rate of response between women and men corresponds with the REX participant ratio (36% female, 64% male).

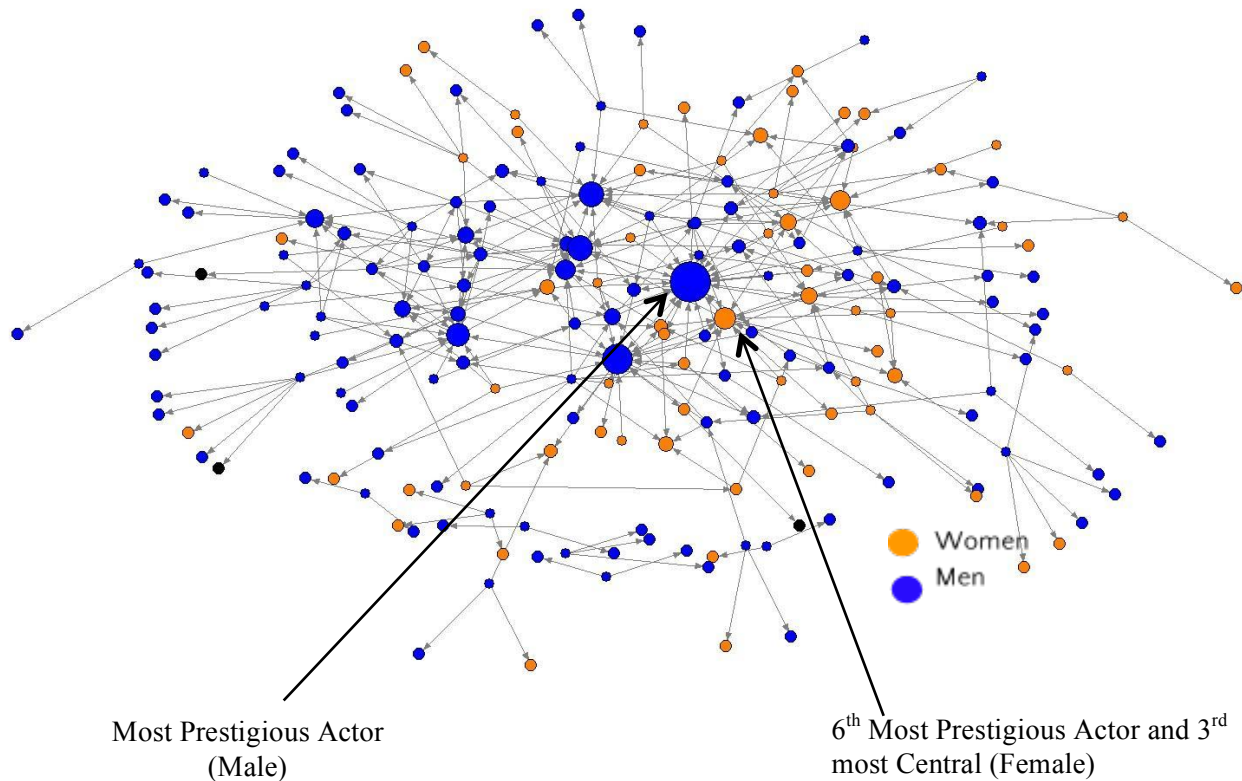


Figure 2: The entire CTI social network of REX participants color-coded by gender with spring embedding. The nodes are sized by in-degree centrality

Using prestige, or in-degree centrality, the most prestigious actor in the CTI social network is a man from the United States, with a woman from the Solomon Islands as the 6th and two women from the Philippines as the 8th, and 9th most prestigious actors. Prestige, or in-degree centrality, is calculated based on the number of directional ties an individual has, meaning that he or she is the recipient of many ties (Wasserman and Faust, 1994). Prestigious actors are individuals whose resources are highly sought after by other individuals in the network, suggesting that others may perceive them as important leaders or receptacles of information in the network (Hoppe and Reinhelt, 2010). Having a significant degree of prestige indicates a particular actor may hold a significant amount of pertinent knowledge relative to other actors and has many alternative resources to satisfy needs. These actors are therefore less dependent on other individuals (Wasserman and Faust, 1994).

### *Female Social Network*

Using undirected centrality, which calculates the total number of ties a given actor has, two women, one from the Solomon Islands and one from the Philippines are the 3rd and 9th most central actors. Centrality typically refers to how influential and well-connected an actor is within a network (Wasserman and Faust, 1994). Central actors have the ability to utilize more of the entire network's resources and can also exert a greater degree of influence on the network as a whole (Wasserman and Faust, 1994).

Central actors can be thought of as hubs, individuals with the most influence who can bridge across other relations in the network (Hoppe and Reinhelt, 2010). Thus, the short path length of the 3<sup>rd</sup> most central actor, the woman from the Solomon Islands, to other nodes, notably to the most prestigious actor in the network (Figure 2), suggests that information is frequently communicated through this individual and is a frequently utilized connection by many

individuals (Figure 2 and 3). Because central actors, such as the woman from the Solomon Islands, are highly sought-after by other network members, central actors provide insight into which individuals act as leaders in a network (Hoppe and Reinelt, 2010).

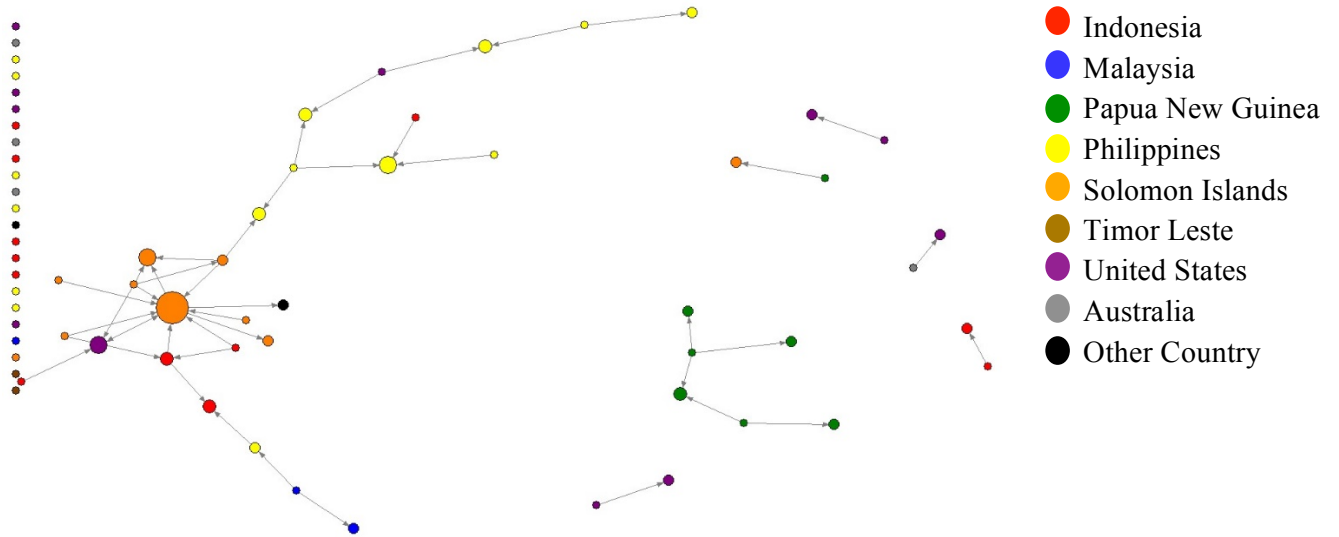


Figure 3: The overall female REX participant social network with spring embedding, color-coded by country. The nodes are sized by in-degree centrality within the female subgroup.

The third most central actor in the entire network is depicted in orange (representing the Solomon Islands); she is also the most central actor within the female network. Her direct, international connections are to the United States, Australia, and Indonesia. Through these connections, further connections are made to the Philippines and Malaysia. Interview narratives, however, reveal that there are direct connections between women from the Solomon Islands and Philippines, as well as the Solomon Islands with Papua New Guinea, and Malaysian women to Philippine women. This discrepancy is perhaps an artifact of the survey in the way the question was asked.

Isolates in the female network further demonstrate the discrepancy in women's social

connections within the CTI. Isolates on the left hand side of the model (Figure 3) depict women who hold no connection to other women in the network. The female isolates represent women who responded to the survey and only nominated men, or women who were nominated by men but not by any women. The motivations that encouraged communication in the CTI could possibly explain the fragmentation of the female network. Women rarely selected the “I am friends with this person” motivation for communicating with both women and men about CTI topics, even though in interview narratives women frequently identified and spoke about the friendships they made through the CTI. Thus, perhaps if a survey question asked women whether they made new friendships or mentorships in the CTI, and to nominate those women, then the female social network may be less fragmented and offer a richer quantitative evaluation of the social network CTI created for women.

### *Mentoring*

Evidence from interview narratives suggests that leadership development particularly among women within the CTI was partly a result of mentoring relationships, which has been cited as an important part of leadership development (Isaac et al., 2012, Lester et al., 2011). This study’s findings are consistent with Isaac et al. (2012), who found that “efficacy building experiences”, such as mentorships or role models, could significantly improve women’s leadership.

The creation of female leaders with the CTI region is a significant outcome and illustrated best through an examination of a new, female Solomon Island leader. Referred to as Woman A in this study, Woman A emerged as a central connection for women and men both in interview narratives and social network models (see figures 2 and 3). Prior to CTI, Woman A was emerging as a leader in her own government’s department (US CTI representative, personal

communication February 6<sup>th</sup>, 2014). A US CTI representative commented on her evolving role in CTI and how she was able to build her capacity to assume a leading role.

When we met [Woman A], she was a young, up-and-coming ministry staff person. She had some, but not a lot of international contact but she was moving into a very important role within her own ministry. So, I think that her roles as the representative for Solomon Islands in these regional exchanges but also the regional technical working groups for MPAs, Climate Change, Fisheries, etcetera, really broadened her vision. Gave her experience, built her confidence, so that she was able to go back and take on more of a leadership role in the Solomon Islands.

One of the women involved at the regional level from the Philippines also spoke about Woman A's demeanor at the beginning of the program. The quotation recounts her experience meeting Woman A for the first time at the first Regional Exchange.

I think we had 5 days there sitting together with 5 other countries and that was the time when I met [Woman A]. And she was so shy [then]. [...] So I was briefing [Woman A] - 'You present.' And she said, 'No.' And I told her ... 'Just read here. Just read.' 'Okay.' And then she said, 'How about the questions?' 'I'll handle it.' ... I [told] the group that due to strong decision of the group [Woman A] will present ... So she presented. She was trembling ... But she did it. - *Filipina 1 (Philippine Government Official)*

The encouragement demonstrated in Filipina 1's quotation reflects how Woman A describes her experience in gaining confidence at the regional level to overcome gendered stereotypes and assume a leading role.

Woman A: At the regional level, I learned leadership. I got a lot of mentoring at the

regional level. I think that's where I just learned by doing and ... copying off the leadership ... I've learned a lot, like women can play a great role in leadership.

*Interviewer: [About her mentors] who are these women and where are they from?*

Woman A: Philippines! [She laughs] Philippines and PNG, yes, and Malaysia but Malaysia has just come on board. But I have some really good mentors as well as friends, personal friends in the Philippines. My mentor is [Filipina 1] and [Filipina 2] ... [They are] involved in a lot of discussion, a lot of sharing of debates and just by observing, I learn a lot from them. They give out a lot at the regional level... I exchange emails on a daily basis with them... Every time they encourage women like themselves.

Woman A credits her regional leadership development to the exposure she received from CTI-related activities and female mentors from other CT6 countries.

As previously noted, Woman A is the 6<sup>th</sup> most prestigious actor in the network, indicating that she was highly nominated by individuals within her country, from other CT6 countries, and from regional partners (Figure 4).

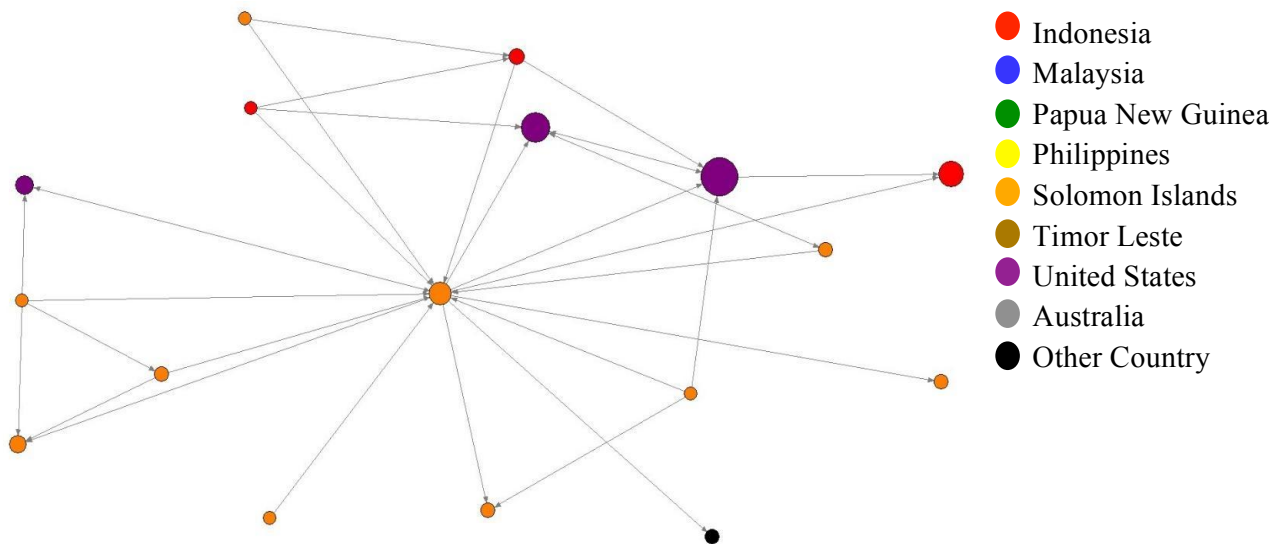


Figure 4: The ego-network for Woman A. Nodes are color-coded by country sized by in-degree centrality.

The most common reason people indicated they communicate with this actor was “connection to others” followed by “CTI experience” and “trust” (Figure 5).

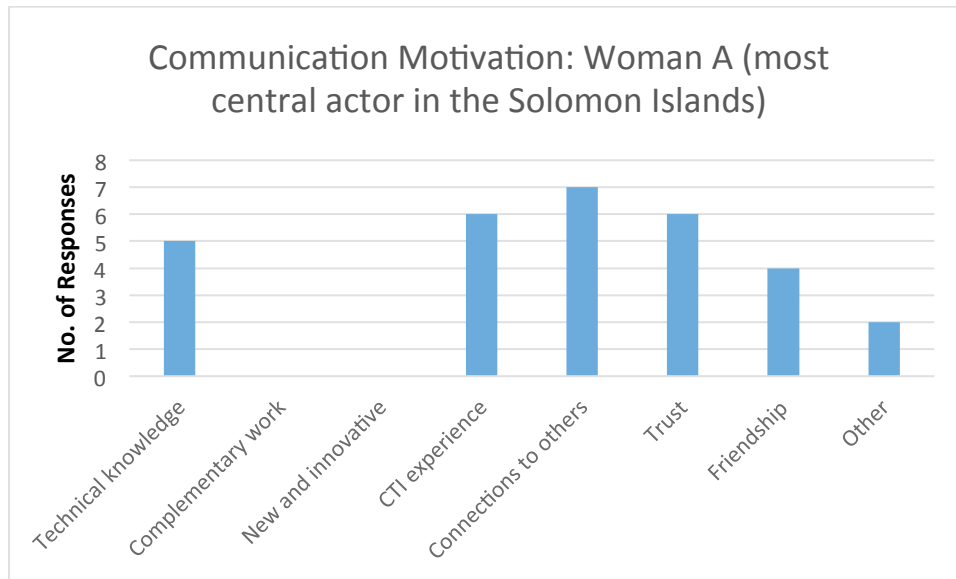


Figure 5: Graphical representation of the motivations for individuals who communicate with Woman A

People both from the Solomon Islands and outside of the Solomon Islands selected “connection to others” as a reason for communicating with Woman A. Thus, individuals may view Woman A as an important bridging actor for the Solomon Islands, linking the Solomon Islands to the larger Coral Triangle region. Woman A described this pattern in her interview, suggesting that she may in fact serve as a bridge for international partners wanting to connect with the Solomon Islands.

“I think for the first stages of the past few years, I took all the learning, and I took all the burden for understanding what the CTI is for the Solomons and ... trying to learn [the] technical themes as well. [T]hen I [became] the focal coordinator for the country and I

built that skill to be the coordinator for the Coral Triangle leadership for Solomons ... Now my role has changed, ... external partners, different sectors, different government agencies, development partners inside and outside [of my country] ... come to me when they want to know something about the CTI initiative ... in Solomons as well as at the regional levels.” - *Woman A, Solomon Islands Government Official*

Woman A’s personal account of her leadership development highlights how confidence, technical skills, mentorship, and institutional support collectively create a female leader in a context that is hostile to change. This particular woman emerged as a regional leader for the Solomon Islands, a country with cultural stereotypes that prevent many women from performing strong leadership roles. Although there are many other examples of women in the US CTI who played a leading role, at the regional, national, and community level (Appendix 2), Woman A’s emergence into a leading role is the exemplary case in the US CTI for women’s leadership development. Many individuals involved in CTI commented and took notice of her leadership skills.

“She’s just phenomenal and ... for someone who seems to be ... a young person and has to cover quite a bit of ground for her country ... in this regional program. I was just so impressed with her. ... She was the kind of person who would listen, ... go over things in her head and you could see her thinking and then come out with some clarity that helped the whole group resolve something they were stumbling over ... she did it in such an unassuming manner too ... That’s inspiring for a number of reasons.” – *US CTI Representative*

Interview narratives and SNA data demonstrate that Woman A became a hub of connections for individuals both within and outside of the Solomon Islands. Her contribution to the CTI is key for both national and regional success of the program. Woman A's development from the assistant level in her ministry, and as an up-and-coming person within her department, illustrates how the CTI fully contributed to her empowerment. As a key aspiration of the CTI, she represents how the CTI fostered the creation of leadership, new connections, regionalism, capacity development and learning.

## **5. Shifting Cultural Attitudes**

Culture and societal norms influence how gender roles affect women's professional advancement (Jogulu and Wood, 2011; Yeganeh and May, 2011). The Regional Exchanges served as a neutral landscape where women from more male dominated societies were able to interact with other women from more gender equal societies. Such an opportunity provided women the means to challenge how they viewed themselves.

I'm inspired by women in this forum ... I've learned a lot, like women can play a great role in leadership ... I come from a background where women are not so much considered ... I work in an environment with men, but [CTI] had given me confidence ... in playing [a leading] role at the regional level as well ... It's great ... [to] be involved in [these] forums because there's not a lot of examples to be seen in [my] country for women like me to be performing at the regional level ... There's some ladies but they don't take the full front and be an example to all ... [and] I think there is need for examples and role models in this sector where women can play a good role in marine management - *Woman A, Solomon Islands Government Official*

Another woman from Indonesia commented on the impact CTI will have on cultural stereotypes and gender roles.

[T]here's a lot of stereotyping in Indonesian society [about women's roles] ... And I would say ... that CTI will change the way that women think and the way women are being treated ... CTI provided an avenue for the confidence for us [women] ... I hope that ... because of the CTI political process, that women [will] get more recognized and more confident ... [T]here are lots of strong women that play an important role in the discussion, in the technical review ... [which] becomes an example for women ... [who are] not used to that environment – *Indonesian Woman from CT6 NGO*

Because the CT6 countries had never met exclusively in international forum prior to the launch of the CTI, much of this socialization is a direct result of the new network the US CTI program created. The strong female leadership from other CT6 countries exemplified at the meetings had an important empowering effect for other women. The CTI exposed women from more male-dominated societies to an environment where all participants, regardless of gender, religion, or ethnicity, were on a more level-playing field (US CTI representative, personal communication, January 15<sup>th</sup> 2014). As a result, women are beginning to come into strong leadership roles, which holds the potential to influence male perspectives.

Our NCC [National Coordinating Committee] is more than 60% women ... We talk marine science. This influences also the perspectives of the male in society as well—for us in Solomons. They will always laugh at us because they all say we'll run logistics but at the end of the day we'll be there debating on issues of national importance about marine and coastal resource management ... [CTI] is a good forum and a network within

women... There's a whole lot of need for opportunities in this sector for women participation not just at the community level but women playing a leading role. – *Female Solomon Islands Government Official*

US CTI representatives also acknowledged the potential for this kind of network to shift the perspectives of both women and men.

*Interviewer: What's your opinion on what others have said about these international meetings having the potential to shift or alter gender relations on a regional level?*

Informant: I think it's absolutely true ... [F]or example, we, meaning development practitioners ... are constantly aware that we are moderators. We have an impact. We have an influence. We're not neutral players in how things happen on the ground. So, we moderate to make sure that women are involved. And women take up that opportunity and it does change the gender balance. They take that voice when it's given to them ... I think it certainly can change the gender balance regionally.

Learning exchanges like the REX program create a unique environment where previously unconnected groups interact and accomplish goals at an accelerated rate (Bodin and Crona, 2009). It is possible that the accelerated rate of change can also occur for the empowerment of women. The ability of these types of exchanges to foster new social connections for women and to create an environment with female role models is evident in this study. Their participation had an empowering and profound effect on women's leadership development and confidence through the examples of strong women in the regional discussion.

However, the meaningful participation of women in REXs could be improved. One woman identified one obstacle for women's meaningful participation in REXs.

[The environment] is really intimidating ... there is a great potential for dialogue but it's not there. [This type of forum] has boundaries [and] it's time to go beyond those formalized settings. There's a huge potential that's wasted. - *Female Solomon Islands Government Official*

Communication motivation findings potentially explain the intimidating environment this particular woman identifies. Communication motivation findings indicate that women most frequently network with men for their access to technical knowledge and with women for their experience in CTI. By contrast, men seldom selected that they network with women for their access to technical knowledge, perhaps demonstrating that women in the CTI have inferior access. The potential lack of technical knowledge may intensify this intimidating environment for women, where the meetings are perhaps overly “formalized”. Furthermore, men also tend to network with more men than they do women, which make it crucial to involve men who are cognizant of women's participation. Moreover, to increase women's confidence in the regional discussion will require official meetings, like the REXs, to become less formalized.

#### *Obstacles to Participation: US CTI Program Design*

Through this study's investigation into the US CTI program, certain subtleties in the program's design were observed that might have served to hinder participation. Bringing awareness to this issue can provide useful information for improving gender mainstreaming efforts (Lee-Gosselin et al., 2013).

The US CTI program was not a formal gender program, such as there was no explicit mandate for gender mainstreaming in original program design and subsequent redesign (US CTI representative, personal communication, January 15<sup>th</sup> 2014; Baker et al., 2013). While the

program did not include specific pro-gender policies, according to the US CTI documentation, certain CTI officials did implement pro-gender actions for inclusiveness in regional exchanges and for staffing the Regional Program office (RPO) (Baker et al., 2013). However, due to USAID program policy and funding, participation in REXs often excluded NGO personnel. The NGO personnel, the majority of whom were women, were responsible for implementing community-level CTI activities. Because of the USAID policy, NCC nomination was often limited to government personnel, demonstrating one potential barrier to women's participation (US CTI representative, personal communication, February 6<sup>th</sup>, 2014).

One US CTI representative believed that the absence of gender mainstreaming within the program was one disadvantage.

Several of us were very interested in getting a gender component or gender integrated into the project from the beginning. And, quite frankly we were never successful at doing that ... It was a failing of the overall project I would say ... [S]adly this is somewhat typical of what happens. There's so many other demands or priorities that gender is seen as less important. – *US CTI Representative*

According to US CTI representatives, the project rejected a gender mainstreaming proposal because it was too costly. In turn, they requested Coral Triangle Support Partnership (CTSP) personnel to develop gender programs. However, this effort also failed because CTSP personnel felt they were already understaffed, that they were already implicitly addressing gender and also lacked technical expertise to design a formal gender program (personal communication, February 6<sup>th</sup>, 2014).

Moreover, other gendered-barriers for REX participation were also at work. For example, the REXs involved a significant amount of time and travel, which is often identified as a stronger

barrier for women's participation than for men, as women typically assume more familial responsibilities (Jogulu and Wood, 2011; Lee-Gosselin et al., 2013). Although US CTI documentation states the Program Integrator (PI) had pro-gender action requirements, some US CTI personnel raised concerns about the NCC REX nomination process. The consistency and reliability of the nomination process often varied by country and by NCC (personal communication, February 6<sup>th</sup> 2014). The following US CTI representative felt that the inconsistency was a barrier to women's involvement at the regional level and for connecting regional governance to the local level.

We're not bringing [women] to regional exchanges; we're not able to really actively involve them in technical working groups—then what happens? When you don't have a formal gender program? ... In many cases, where we were implementing on the ground, ... more than 50 percent of the cases, [the people invited to REXs] were not even people we worked with ... And so there's just that little subtlety in the way that women could and were able and empowered to be involved. That means that the responsibility for involving and empowering women in doing things on the gender side, fell to the local NGOs - *US CTI Representative*

Although these findings may suggest that US CTI program design may have been disadvantageous for women's participation, gendered approaches are fraught with challenges even in the most well designed projects (Daly, 2005; Lee-Gosselin et al. 2013; Rodriguez, 2013). Implementation of gender mainstreaming requires a high-level of understanding and technical knowledge (Daly, 2005). Because of this challenge, the expertise needed for gender mainstreaming is often seen as a lower priority, which, as seen in the case of the US CTI, often results in a lack of funding for gender mainstreaming efforts (US CTI Representative, personal

communication, January 15<sup>th</sup> 2014).

This study's dataset was not conducive to fully evaluating the gender components of the US CTI program, thus more research is needed to uncover why women were underrepresented at the regional level. Future programs should focus on the context-specific barriers to women's participation and other cultural or gendered-related factors that may hinder their access to the regional discussion. With a greater understanding of the factors that limit women's participation, perhaps more women with unrealized potential will be uncovered.

### **Conclusion**

Women are key players throughout the fish value chain from harvest to consumption, yet a gender imbalance remains in their participation in decision-making. Women across the world still face significant barriers to achieving higher-level positions within organizations across employment sectors. This case study on the US CTI program further exposes this gender imbalance, where women are more sparsely represented at the top, and disproportionately involved in lower levels of the US CTI hierarchy. In the social network analysis findings, individuals seldom communicate with women for their access to technical knowledge, which is an indicator of the systemic inequalities between women's men's technical capacity in this sector. According to a gender specialist, environmental decision-making power largely builds from having a strong technical background, thus the CTI should find ways to promote women in marine academic programs in the CT6 countries (personal communication, June 4<sup>th</sup>, 2014).

Although women were underrepresented in a number of these regional meetings, CTI provided many women a unique opportunity to enter the international arena. The progress in women's empowerment through the US CTI program, a program without formal gender mainstreaming, appears to be largely attributed to individuals who advocated strongly for and

encouraged women's participation. Through interview narratives and survey findings, it became apparent that women built their capacity and knowledge, and gained the confidence to take on leadership roles. Moreover, many of these women were also often instrumental in driving CTI implementation within their countries. These findings are key for empowerment as it demonstrates a tangible achievement of the US CTI's capacity building efforts.

Women currently lead four of the six CTI-established NCCs in countries where women have faced culturally constructed barriers to obtaining leadership positions. Interview narratives reinforced these findings and further indicate that the socialization of the CTI's diverse cultures, where women's roles vary by country, has profound implications for gender equity. Learning exchanges, which are intended to increase the speed at which change occurs, appear to have the potential to accelerate gender equity by challenging the way women view themselves and change men's perceptions about women's roles in society. The relatively neutral landscape in these regional meetings then has the potential to eliminate the inequalities throughout the various levels of marine management.

To summarize, survey results and social network analysis revealed: (1) women and men equally benefit from capacity building efforts; (2) regional exchanges created new and valuable social networks for women; and (3) CTI facilitated the leadership of women. In the CTI, women gravitated toward each other, established friendships, mentorships, and encouraged each other's participation. The evidence that women were empowered through their participation demonstrates how the creation of female learning networks and forums, which has been recently initiated in the CTI, should be encouraged. Women and men bring different and diverse skillsets, knowledge and experience, which are necessary for effective environmental management. For marine policy to be effective, policies must engage and be inclusive of both women and men

who impact coastal resources. Thus, using the US CTI as a model, adequate implementation of gender mainstreaming in programs and organizations may improve gender inequity and effectuate balanced environmental decision-making. Systematically creating these opportunities that aid their participation will hopefully lead to improvements in addressing gender issues that pertain to the environment and simultaneously advance women's roles in conservation and fisheries management.

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### Appendix

#### Appendix 1: Detailed breakdown of gender representation at regional exchanges

<b>EAFM</b>		
Location and Year	Women (%)	Men (%)
Putrajaya, Malaysia (2012)		
Country Participants	28	72
Resource Persons and Partners	26	74
Overall	27	73
Kota Kinabalu, Malaysia (2011)		
Country Participants	41	59
Resource Persons and Partners	17	83
Overall	31	69
Cebu, Philippines (2009)		
Country Participants	24	76
Resource Persons and Partners	39	61
Overall	30	70
<b>All EAFM Exchanges</b>	<b>29</b>	<b>71</b>

<b>MPA</b>		
Location and Year	Women (%)	Men (%)
Honiara, Solomon Islands (2013)		
Country Participants	38	62
Resource Persons and Partners	50	50
Overall	41	59
Sanur, Indonesia (2012)		
Country Participants	21	79
Resource Persons and Partners	36	64
Overall	32	68
Batangas, Philippines (2011)		
Country Participants	40	60
Resource Persons and Partners	47	53
Overall	42	58
<b>All MPA Exchanges</b>	<b>38</b>	<b>62</b>

CCA		
Location and Year	Women (%)	Men (%)
Dili, Timor-Leste (2013)		
Country Participants	25	75
Resource Persons and Partners	38	62
Overall	34	66
Honiara, Solomon Islands (2011)		
Country Participants	47	53
Resource Persons and Partners	45	55
Overall	46	54
Ancol, Indonesia (2010)		
Country Participants	38	62
Resource Persons and Partners	42	58
Overall	39	61
All CCA Exchanges	<b>40</b>	<b>60</b>

## Appendix 2: Women's Involvement in Government and Nongovernmental Organizations

Table 1: Gender breakdown of the NCCs \*\* needs to be updated

National Coordinating Committees	Number of Women	Number of Men	Female Focal Point?
Indonesia NCC	1	7	No
Malaysia NCC	4	3	Yes
Papua New Guinea NCC	3	4	Yes
Philippines NCC	3	1	Yes
Solomon Islands NCC	2	7	Yes
Timor-Leste NCC	0	4	No

Table 2: Gender breakdown of CT6 women's involved in CTSP (NGOs)

Country	Number of Women	Number of Men	At least one female Focal Point?
Indonesia	--	--	--
Malaysia	2	1	Yes
Papua New Guinea	4	5	Yes
Philippines	3	4	Yes
Solomon Islands	3	2	Yes
Timor-Leste	2	1	Yes

Table 3: Number of key CTI informants identified by the US CTI program for the final program evaluation (Baker et al., 2013). The data were collected from the evaluation report and ratios were calculated for easy comparison across countries.

Country	Number of Informants	Women (%)	Men (%)
Indonesia	29	31	69
Malaysia	27	<b>56</b>	44
Papua New Guinea	17	<b>76</b>	24
Philippines	37	43	57
Solomon Islands	29	41	59
Timor-Leste	23	17	83
United States	16	<b>63</b>	37
Thailand (USAID RDMA)	12	<b>50</b>	50
<b>TOTAL</b>	<b>192</b>	<b>44</b>	<b>56</b>

The PI and CTSP personnel identified key-informants; they included representatives from USAID, each program implementer, international agencies (such as the Asian Development Bank [ADB]), national and sub-national government ministry or agency staff, local NGOs, private sector and other beneficiaries (e.g. local fishers, community leaders, tourism operators, etc.) at the site level (Baker et al., 2013).