

Communication interventions for gender equality and social equity in aquatic agricultural systems: A review of the literature



COMMUNICATION INTERVENTIONS FOR GENDER EQUALITY AND SOCIAL EQUITY IN AQUATIC AGRICULTURAL SYSTEMS: A REVIEW OF THE LITERATURE

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LIST OF ABBREVIATIONS

AAS	CGIAR Research Program on Aquatic Agricultural Systems
ADB	Asian Development Bank
AIT	Asian Institute of Technology
AquaFISHCRSP	Aquafish Collaborative Research Support Program
Aus-AID	The Australian Agency for International Development
BRRRI	Bangladesh Rice Research Institute
BS	Banchte Shekha
CAGES	Caste Aquaculture for Greater Economic Security project
CARE Bangladesh	Cooperative for Assistance and Relief Everywhere Bangladesh
CBO	community-based organization
COREMAP II	Coral Reef Rehabilitation and Management Program, Phase II
DFID	Department for International Development
ERI	enabling rural innovation
FAO	Food and Agriculture Organization of the United Nations
FFS	farmer field school
FGD	focus group discussion
GAD	gender and development
GESE	gender equality and social equity
GINA program	Gender Informed Nutrition and Agriculture program
GJE	gender justice educator
GKT	Gono Kallayan Trust
GNAEC	Greater Noakhali Aquaculture Extension project
GOLDA	The Greater Options for Local Development through Aquaculture project
GQAL	Gender Quality Action Learning program
IAA	integrated agriculture aquaculture
IAAS	Institute of Agriculture and Animal Sciences
IATP	Integrated Agriculture Training Program
ICT	information and communication technology
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
IITA	International Institute for Tropical Agriculture
IPOPCORM	Integrated Population and Coastal Resource Management project
IRRI	International Rice Research Institute
IUCN	International Union for Conservation of Nature
LIFE	Locally Intensified Farming Enterprises project
MAEP	Mymensingh Aquaculture Extension Project
NAADS	National Agricultural Advisory and Development Services

NAARM	National Academy of Agricultural Research Management
NAIP	National Agriculture Imagery Program
NGO	nongovernmental organization
OECD	Organization for Economic Cooperation and Development
PBAEC	Patuakhali Barguna Aquaculture Extension project
PETRRRA	Poverty Elimination Through Rice Research Assistance (PETRRRA)
PHBM	Upper Mandrare River Basin Development project
PM&E	participatory monitoring and evaluation
PPABAS	Sofala Bank Artisanal Fisheries project
PRA	participatory rural appraisal
Project OM	Opportunities for Women of Low Income in Rural Areas project
ProPESCA	Artisanal Fisheries Promotion project
PROSAB	Promoting Sustainable Agriculture in Borno State
RFLP	Regional Fisheries Livelihoods Programme
RH	reproductive health
RSU	regional support unit
SARM	Sustainable Aquatic Resources Management program
SEAGA framework	Socioeconomic and Gender Analysis framework
SFLP	Sustainable Fisheries Livelihood Programme
SUCCESS	Sustainable Coastal Communities and Ecosystems program
SWOT analysis	strengths, weaknesses, opportunities and threats analysis
UNDP	United Nations Development Programme
USAID	The United States Agency for International Development
VO	village organization
2WT	two-wheel tractor

EXECUTIVE SUMMARY

Background

In light of recent calls to integrate gender equality and social equity (GESE) strategies into development projects, researchers have begun to explore the gender-related inequalities in aquatic agricultural systems (AAS) and agriculture. This literature review addresses a gap in existing research by identifying the role of GESE-related communication components in AAS and agricultural interventions.

This critical review of peer-reviewed and gray literature in AAS and agriculture will identify opportunities for future work and inform the design and implementation of relevant communication interventions.

Methodology

Six databases and publicly available information from 27 expert-recommended organizations were searched to identify relevant interventions. Relevant agricultural interventions with GESE-related communication components were also identified. Abstracts retrieved from the peer-reviewed literature were assessed based on inclusion criteria. All articles and gray literature publications had to be published in or after 2000 in English, French or Spanish and (1) refer to GESE and AAS and/or agriculture; (2) mention a GESE-related program or intervention; and (3) have a communication-related component. Full texts of relevant abstracts were then read and assessed for inclusion. All relevant texts are discussed in this report.

Articles identified

Three communication programs or interventions with a GESE focus in AAS were found in the peer-reviewed literature. Twenty-three communication programs or interventions with a GESE focus in AAS were identified in the gray literature. Nineteen agricultural communication programs or interventions were uncovered in the peer-reviewed literature. Most interventions were implemented in sub-Saharan African, South Asian and Southeast Asian settings and within these regions, Bangladesh and Vietnam were common settings for interventions.

Key findings

The most common communication strategies used were:

- training courses, group discussions and workshops to facilitate conversations about gender relations and improve capacity. Participatory methodologies were key to these strategies.
- self-help or women's groups as the means of improving technological advancement, women's participation and leadership, and livelihoods.

Less commonly used strategies included:

- media awareness campaigns
- GESE-focused community events

In addition, during the scan of the peer-reviewed literature and computer-assisted searches of the gray literature, several gender tool kits or manuals were identified that addressed ways for practitioners and program implementers to incorporate gender into aquatic agricultural and agricultural programs. These tool kits and manuals provided tangible steps and checklists for the development of future interventions, including gender analyses, participatory approaches to research, and the collection of gender-disaggregated data for better evaluation.

Six major conclusions were drawn from the 45 GESE-focused communication interventions reviewed and summarized in this report.

- Women's participation and women's empowerment were the focus of most relevant AAS and agricultural communication interventions.
- Communication programs can improve livelihoods beyond simply increasing involvement in AAS and agricultural activities.
- Few intervention components moved beyond women's issues to address gender relations or social inclusion for poor and marginalized men and women.
- Few articles provided more than limited information on the specific communication components used or their gender equality and social equity focus.
- Few communication interventions in AAS go beyond providing training and gender awareness to examine the effects of these specific components on productivity, livelihoods, social connectedness and household dynamics.
- Few communication interventions identified in this report provided comprehensive evaluations of communication components.

Recommendations

- Future interventions should move beyond the singular focus on empowerment to use multilevel approaches to communication that address inequality, social inclusion and power.
- Future work should address the intersectionality of different marginalized identities to inform more effective interventions.
- Communication interventions that better integrate GESE issues, include theoretically informed evaluations, and utilize more appropriate research methodologies are needed.

INTRODUCTION

In anticipation of developing and implementing a communication program to increase gender equality and social equity in CRP AAS (CGIAR Research Program on AAS), this review was conducted to learn about communication programs that have been implemented to date and the effects of those programs (to the extent such programs were evaluated) with the aim of informing the design and development of a program to promote and enable gender equality and social equity in AAS (AAS). This study aims to enhance the literature on gendered implications of AAS and agricultural technological advances (Quisumbing and Pandolfelli 2010) by focusing explicitly on communication interventions.

Many definitions of gender equity and gender equality have been used by international organizations such as the World Bank, ILO and FAO. However, these definitions are often inconsistent and confuse equity with equality. For the purposes of this report, we rely on FAO's definitions of gender equality and gender equity. According to FAO, "Gender equality is a state in which all people enjoy equal rights, opportunities and rewards, regardless of whether they were born female or male" (FAO 2009, 2). At the same time, "Gender equity means fairness and impartiality in the treatment of women and men, according to their respective needs" (FAO 2009, 2). The AAS program recognizes that gender and social equity, important in their own right, also contribute to achieving gender equality. This report is based on findings extracted from publications and reports that address both gender equity and gender equality.¹

Our understanding of women's roles, women's empowerment, and gender equity and equality, has evolved since the middle of the last century. Women in development programs of the 1970s focused singularly on women's roles in the economy and increasing production; this approach was criticized for ignoring the important role of gender and social relations in perpetuating inequality (Razavi and Miller 1995). Now termed gender and development (GAD) programs, these interventions utilize social and economic interventions to improve the status of women and reduce gender inequality in local economies and communities to improve health and well-being (Beetham and Demetriades 2007). However, in practice 'gender' is largely used as a synonym for 'women' even though the term was ostensibly adopted to include men as well as women and means the behavioral, cultural, sociological and psychological traits associated with masculinity as well as with femininity.

In research on AAS, which comprise both fisheries and aquaculture, the literature points to a profound lack of a comprehensive exploration of women's roles despite the important role of women in production and demonstrated associations between women's statuses and health outcomes, as well as a dearth of research on gender relations (Walker 2001; Bennett 2005; Padmaja and Bantilan 2008; Nozomi and Bene 2010; Fröcklin et al. 2013). Fröcklin et al. (2013) have argued that this is the product of the invisible contribution of women in fisheries and called for more in-depth analysis of women's roles in the value chain and the use of gender-disaggregated data. "...Women's gleaning of invertebrates and near shore fishing is largely undervalued and almost invisible in management plans and fisheries statistics" (Fröcklin et al. 2013, 951). Other scholars have suggested that in some settings, women's roles in production are less visible than in processing and marketing (Bennett 2005). Furthermore, researchers have cited the role of gender norms in relegating women to positions in the value chain that earn the least amount of income (Porter and Mbezi 2010). Importantly, these researchers have called for a more nuanced exploration of how gender norms are manifested in household relations and women's positions in value chains (Bennett 2005; Porter and Mbezi 2010).

The fact that no validated measure of women's roles and empowerment has been adapted or contextualized for use in the AAS context, and few have been adapted for use in agricultural systems broadly defined, points to the slow progress of gender integration into agricultural and AAS research and development programs. It could be that, unlike the field of public health, which has a wide range of gender indices and scales, aquatic and agricultural experts who are concerned largely with technology adoption have been less open to using, and less successful in integrating, social science theory and methods in agricultural research and development.²

Two additional important, interrelated areas were inadequately explored in the published literature: gender relationships beyond the home and changes in men's gendered roles as societies undergo social and economic development.

Even fewer studies regarding communication interventions were found that sought to examine social inclusion, which the World Bank defines as:

the process of improving the terms for individuals and groups to take part in society. Social inclusion aims to empower poor and marginalized people to take advantage of burgeoning global opportunities. It ensures that people have a voice in decisions which affect their lives and that they enjoy equal access to markets, services and political, social and physical spaces

- World Bank 2013

Given these known research gaps, it was recognized that there was a need to expand the search strategy to capture GESE-focused communication interventions.

A comprehensive literature review was performed to address the following research questions:

- What recent communication interventions or projects have been implemented in fisheries, aquatic agriculture and aquatic science that address gender equality and social equity?
- What are the characteristics – including geographic location, type of intervention, methodology, and evaluative strategies – of these interventions?
- Have any GESE-related AAS interventions incorporated a communication focus? Have any GESE-related interventions in agriculture incorporated a communication focus?

To determine the state of the existing research, a comprehensive literature review of recent (2000–present) peer-reviewed and gray literature was performed.

AAS communication interventions in the peer-reviewed literature

A search string was developed to examine recent peer-reviewed literature on gender equality, gender equity and/or social inclusion and AAS interventions that used a communication approach. Given the limited number of communication interventions addressing both GESE and AAS, this search was expanded to identify recent peer-reviewed publications that addressed both GESE and AAS in general. Abstracts were then reviewed to identify relevant communication interventions; “communication” was broadly defined and included not only interpersonal communication, peer education, group meetings, community-based activities, and mediated programming, but also training courses and workshops. Articles were limited to those published in or after 2000 to focus on recent research and development programs.

Terms such as gender equality, gender equity, social inclusion, gender bias, social cohesion and social equity were used to search for citations (Appendix I, Table 1). Terms such as aquaculture, floodplains, fisheries, coastal

systems and island agriculture were used to search for AAS-related work (Appendix I, Table 2). The search operator “AND” was used to search GESE terms in tandem with AAS terms. The search string was adapted for and used in six research databases: Pubmed, Global Health, Embase, CINAHL, Scopus and Web of Science. Relevant subject headings from each database were included in all searches.³ Articles with full texts, published in or after 2000 in English, French or Spanish were retrieved for analysis. Abstracts were reviewed for relevance based on the following inclusion criteria:

- reference to gender or social equity, gender equality, or social inclusion and AAS;
- any mention of a project, program, or intervention addressing gender equity, gender equality or social inclusion that relied on or incorporated a communication approach.

Full texts of relevant abstracts were read and summarized. Reference lists were reviewed for additional relevant publications. An Excel matrix was used to document articles citing key interventions.

AAS communication interventions in the gray literature

A list of organizations was compiled based on expert consultation with WorldFish and other experts at the Johns Hopkins Bloomberg School of Public Health. Organizations highlighted in peer-reviewed publications were included (Appendix I, Table 3). The website of each organization was searched for relevant recent reports, tool kits and other forms of gray literature. Links to full texts were retrieved and compiled into an Excel matrix. Gray literature publications were reviewed based on the inclusion criteria discussed above. Interventions identified were documented using the Excel matrix and relevant gray literature was read and summarized.

GESE-related communication interventions in agriculture

In light of the limited number of GESE-related interventions with communication components identified in AAS, a second comprehensive search of the peer-reviewed literature was performed to examine the communication strategies incorporated into recent GESE work in agriculture more generally. To accomplish this, an additional search string was developed (Appendix I, Table 4). The GESE search terms (Appendix I, Table 1) “AND” agriculture terms such as agriculture, farm and food production were used to identify potentially relevant articles. Results were limited to interventions by restricting results to studies whose titles and abstracts included terms such as intervention, project, program or campaign (Appendix I, Table 4). Finally, to identify only communication-related interventions, results were further limited to those relating to communication (Appendix I, Table 4). Terms such as communication, media, community mobilization, capacity building and training were used to limit the search. The search string was adapted for and used in six research databases: Pubmed, Global Health, Embase, CINAHL, Scopus and Web of Science. Relevant subject headings from each database were included in all searches.⁴ Articles with full texts, published in or after 2000 in English, French, or Spanish were retrieved for analysis. Abstracts were reviewed for relevance based on the following inclusion criteria:

- reference to gender equity, gender equality, or social inclusion and agriculture;
- any mention of a project, program, or intervention addressing gender equity or social inclusion;
- any mention of a communication-related component of the intervention.

Full texts of relevant abstracts were read and summarized. Reference lists were reviewed for additional relevant publications. An Excel matrix was used to document articles citing key interventions.



Woman walking from the stream, Senanga, western Zambia.

AAS communication interventions in the peer-reviewed literature

A total of 902 articles were identified from the selected search terms described in Appendix I (Appendix I, Table 1). After removal of duplicates, 592 abstracts remained. After review, 443 abstracts were rejected because they did not meet the search criteria. A total of 149 abstracts were selected for further review, with 61 full text articles that referred to a program, project or intervention in the abstract retrieved for analysis. Full text articles were reviewed and summarized. In total, 13 articles referenced 10 programs that incorporated a minimal reference to the role of GESE in their interventions. Of these, only four articles described three programs that included a communication component, broadly defined (Appendix I, Figure 1). Searches of articles' reference lists identified six additional projects, which are discussed in the gray literature section.

AAS communication interventions in the gray literature

After searching publicly available reports from relevant organizations (Appendix I, Table 3) and reference lists from relevant gray and peer-reviewed literature, 23 relevant projects were identified that addressed gender equality and social equity (Appendix I, Figure 2). Of these projects identified, one referred to a project already identified in peer-reviewed publications. It is discussed in the gray literature section.

GESE-related communication interventions in agriculture

A total of 696 articles were identified from the selected search terms described in Appendix I (Appendix I, Table 1). After removal of duplicates, 542 abstracts were reviewed for relevance. After the initial review, 446 abstracts were rejected because they did not meet the search criteria. A total of 96 abstracts were selected for further review, with 69 full text articles published in or after 2000 retrieved

for analysis. Full text articles were reviewed and summarized. Eighteen articles referenced 19 programs or interventions that included a communication focus in their GESE-related agricultural work (Appendix I, Figure 3).

Limitations

Although comprehensive, it is possible that alternative search terms could have improved the articles retrieved on GESE and AAS in the peer-reviewed literature. For example, terms such as "wetlands" or "rivers" may have retrieved additional citations. Additionally, in conjunction with the comprehensive search of the peer-reviewed literature, a search of gray literature from funding organizations was performed to gain information on projects, programs and interventions not reported in peer-reviewed sources. This search of the gray literature was limited to publicly available project descriptions, summaries and final reports from relevant organizations' websites. Websites were searched for relevant publications, but it is possible that some interventions with GESE-related may have been missed.

ROLE OF GENDER EQUALITY AND SOCIAL EQUITY IN IDENTIFIED PROGRAMS

In total, 45 programs, projects or interventions are discussed in this report. Several different strategies were used to incorporate gender equality and social equity into AAS interventions with a communication focus. Most common approaches included: (1) community engagement and mobilization through the formation of community groups (usually women's groups) to facilitate women's participation and training; (2) targeted technical training courses and capacity building activities for women; and (3) gender awareness training. Other approaches included community engagement or mobilization and awareness campaigns. Few interventions focused primarily on other poor and marginalized groups (e.g. social equity and inclusion). Among GESE-related communication interventions in agriculture, most focused on group-based training courses and the formation of self-help and women's groups. Other communication interventions used awareness campaigns and community events to address GESE. For a table that provides a summary of all included interventions, please see Appendix II (Appendix II, Table 1).

AAS communication interventions in the peer-reviewed literature

Peer education

A project that addresses both environmental and population concerns, IPOPCORM, being implemented in the Philippine coastal area, has three, linked primary project objectives: improving reproductive health outcomes for coastal communities; enhancing local or community-based management of marine and coastal resources; and increasing the general public and policymaker's awareness and support for linked reproductive health and coastal conservation activities (D'Agnes et al. 2005). Based on a quasi-experimental design, IPOPCORM's preliminary results found that the integration of reproductive health (RH) activities through peer education and improved contraceptive availability into coastal management projects had value added in that the RH component helped the project attract women to coastal management activities,

increasing their participation in community management boards and governance structures (D'Agnes et al. 2005). At the same time, men in the program became more involved in family planning decisions, which had traditionally been seen as a woman's issue. Importantly, mid-project monitoring results suggest that IPOPCORM integrated sites, compared with sites applying single-sector approaches, "generate better impacts on reproductive health and coastal management indicators." Moreover, synergy at the household level was found, with improvements in "the nutritional status of children under three, fewer respondents saying their families lack food, and an increase in average per capita income—particularly among women and fishers" (D'Agnes et al. 2005; Hunter 2008).

Training, group discussions, workshops

The USAID SUCCESS project (2005–2014) was a livelihood intervention designed for people working in aquaculture in Thailand, Tanzania and Nicaragua. Different livelihood approaches were undertaken in each country, including a mix of micro-credit, grants and technical support, use of participatory assessment to inform a local loan service, and the introduction of pilot enterprises that were new to the area. Additionally, training in product, entrepreneurship and marketing was provided in most settings. In an article exploring the economic and noneconomic benefits of the SUCCESS project, training courses in entrepreneurship and marketing were associated with better economic outcomes among participants. The authors hypothesized that involvement in livelihood activities would create stronger social ties. Therefore, in addition to the economic benefits, the effects of these livelihood interventions on individual, community, and political empowerment were measured, and researchers found that greater involvement in intervention activities resulted in stronger social relations. In Tanzania, this positive effect was especially true for women (Torell et al. 2010).

A case study of fishing communities in Mali relied on gender analysis in tandem with livelihood analysis to explore the gendered nature of the value chain (Tindall and Holvoet 2008). The article points out the disadvantages Malian women face, including lack of access to independent lines of credit, and social norms that prevent them from participating in decision-making and management. They also pointed to the multilevel gender vulnerabilities that restrict women's economic activities, such as collecting water, preparing food, etc. The analysis included a feedback step with theater, meetings and workshops on gender equity, but detail on the content of the workshops or on how feedback was organized was not provided. The authors argue that before making future investments and developments in the fisheries sector, it is vital to analyze and act upon the gender vulnerabilities beyond the fisheries sector so as to avoid and mitigate potentially adverse gender impacts.

AAS communication interventions in the gray literature

Training, group discussions, and participatory methods

Several projects have used targeted technical and capacity building training courses to address gender equity and social inclusion. Funded by UNDP, the Aquaculture Development in Northern Uplands Project (1999–2002) in rural Vietnam provided technical training to increase women's awareness of aquaculture techniques and improved opportunities. These approaches were used to reduce malnutrition, particularly among marginalized populations such as ethnic minorities. This project included "gender education" and focused on increasing women's participation in program activities. However, no details were mentioned about the gender education or training provided to participants (Kibria and Mowla 2004). Through a participatory rural appraisal (PRA) following the project using focus group discussions (FGDs) and interviews, researchers found that women's status in aquaculture activities increased and women's groups became more prominent and participatory in the project (Kibria and Mowla 2004). Training activities were shown to improve partner communication on aquatic agricultural topics, and women had increased responsibility in project management.

Three aquaculture extension projects, the Mymensingh Aquaculture Extension Project (MAEC; 1989–2003), the Greater Noakhali Aquaculture Extension Project (GNAEC; 1997/8–2006), and the Patuakhali Barguna Aquaculture Extension Project (PBAEC; 1997–2004) provided technical training courses, encouraged group formation, increased access to credit, and provided gender training during mixed (male and female) training sessions (Ministry of Foreign Affairs of Denmark 2008). PBAEC's gender strategy incorporated women into project activities, ensured that men and women were included in household-based activities, and used role-play activities to explore the everyday lives of participants (Mowla and Kibria 2006). Surveys were used periodically to explore women's participation and roles in decision-making. An OECD evaluation assessed the impact of MAEC and GNAEC on output, employment, women's empowerment and gender equality, among other indicators. The evaluation concluded that much of the training received by women was not used, due to existing socio-cultural barriers and norms. However, researchers showed that the GNAEC increased women's production-related decision-making power and involvement in credit, but final decisions ultimately remained in the hands of men (Ministry of Foreign Affairs of Denmark 2008). Decision-making power was gendered, with women having greater power over household purchases and men having greater control over larger financial decisions. Women's mobility was also increased in both projects. Women's participation in the PBAEC, however, was limited due to existing socio-cultural norms, education-related barriers, and other competing demands on their time (Mowla and Kibria 2006). For example, during the mixed gender training, men participated more than women. Therefore, the authors recommend separate training sessions as well as a separate gender program to ensure that sufficient resources are allocated to addressing women's participation and training.

The Artisanal Fisheries Promotion Project (ProPESCA), a seven-year project, was first implemented in Mozambique by the International Fund for Agricultural Development (IFAD) in 2011. It is a continuation of the Sofala Bank Artisanal Fisheries project (PPABAS) and aims to improve livelihoods of poor and marginalized populations by diversifying fishing practices, increasing output and income, and reducing poverty. The completion report for PPABAS called for more attention to be paid to gender equity (IFAD 2012). Therefore, in order to address issues of poverty, gender, and social capital, ProPESCA includes marginal as well as central fishing communities as their target population. They include a “gender mainstreaming” (undefined) approach that made efforts to ensure women’s participation, strengthen women’s leadership skills and roles in community organizations, increase access to credit and other resources, and increase literacy through facilitated training courses (IFAD 2010). Staff were also trained in poverty, gender and HIV/AIDS. The goals of the project included increasing fishing outputs and improving trade value.

Using a similar approach, the “Women’s participation in coastal resources management and livelihoods in Vietnam” project was implemented (2002–2005) by the International Marinelife Alliance (IMA) to encourage community-based resources management. As part of this project, gender training courses were administered to staff and community members. This project resulted in greater gender awareness among women by creating a space for them to discuss alternative livelihoods (Nguyen et al. 2003). This was a small-scale intervention, with 60 participants attending the gender training courses and the community forum. Similarly, a WorldFish project in Malawi, Adapting Integrated Agriculture Aquaculture for HIV and AIDS-Affected Households (2005–2006) incorporated training for community leaders on HIV/AIDS, gender, human rights and community relations in a one-year intervention that aimed to reduce poverty and improve outputs through integrated agriculture aquaculture (IAA), irrigation work, creation of fishponds and community monitoring. These training courses were then transmitted from the leaders to the community. The intervention provided training sessions for farmer extension

agents on leadership, community relations, communication, gender mainstreaming and HIV mainstreaming (Nagoli et al. 2009). In a summary of the results of their intervention, Nagoli et al. (2009) showed that fishponds were integrated into vegetable farming, household incomes increased, and malnutrition decreased through consumption of fish. However, Nagoli et al. (2009) reported that a comprehensive analysis of gender-related outcomes had not been performed.

The Coral Reef Rehabilitation and Management Program, Phase II (COREMAP II), which was implemented to address the livelihoods of families working in aquaculture in Indonesia, included gender training courses and capacity building. By focusing on women’s empowerment, researchers expected to see improved livelihoods at the household and broader community levels (Pehu et al. 2009). COREMAP II involved hundreds of villages and included a gender approach aimed to increase program participation and “economic and social empowerment” (Pehu et al. 2009, 588). In addition to training, COREMAP II relied on the formation of women’s groups. Short-term success was shown by: (1) demonstrated participation of women in the program; (2) women’s managerial roles in coral reef management and program implementation; (3) ample participation in women’s groups; and (4) training that facilitated women’s roles in communicating coral reef management information to other community members (Pehu et al. 2009). Similarly, CARE Bangladesh used a “gender mainstreaming” approach that facilitated the formation of male and female community groups, led by gender concordant trainers, in three projects: GOLDA (the Greater Options for Local Development through aquaculture) project, the Cage Aquaculture for Greater Economic Security (CAGES) project, and the Locally Intensified Farming Enterprises (LIFE) project. These interventions included hands-on educational training courses and opportunities to explore gender-related issues (Pehu et al. 2009). Pehu et al. (2009) briefly mention the improved productivity and increased income as a result of these different programs. The participants’ positive opinions about the gender sessions were mentioned, but the effects of these discussions were not assessed.

Similarly, the Regional Fisheries Livelihoods Programme (RFLP) for South and Southeast Asia aimed to increase empowerment, strengthen livelihoods and provide frameworks for future directions for sustainable fisheries in six countries: Sri Lanka, Vietnam, Indonesia, Cambodia, the Philippines and Timor-Leste. This strategy included efforts to increase women’s participation in project activities through targeted activities for men and women, and efforts to increase women’s participation in decision-making. In the initial phase of the project, capacity building to improve gender awareness among key stakeholders and gender analyses within project communities were discussed. This capacity building included a “gender session” for project teams. Discussions were facilitated with RFLP project teams and key stakeholders. Relevant information was published to increase community awareness. Gender analyses included assessment of gender-disaggregated activities, daily activities, resource mapping and mobility mapping (Lentisco 2012). Lentisco (2012) highlighted the different gender-sensitive indicators used to assess the impact of this program (p. 20–22). Impact assessments explored decision-making power and women’s time allocation and workload. In a gender impact assessment of RFLP in Indonesia, Fitriana (2012) used both quantitative and qualitative data to illustrate

- increases in women’s participation in the project and participant-reported barriers to participation;
- increased income for participants;
- limited changes in roles despite training;
- variable participation of women in community or public decisions;
- no change in mobility;
- no added workload or strain as a result of the interventions.

In the discussion of activities to impact community participation, Fitriana (2012) wrote, “the activities under these outputs use a practical approach to empower women individually in productive roles, but they do not really or specifically address the power structures and institutional constraints within society” (Fitriana 2012, 34).

Finally, funded by the Asian Development Bank (ADB), the Second Small-Scale Water Resources Development Sector project in Bangladesh included a gender action plan to: increase women’s participation in activities; increase their participation in water management, microfinance and training courses to increase their confidence, leadership and management skills. An information campaign using fact sheets and newsletters was used to disseminate key ideas from the program. These objectives were defined based on needs determined from gender analyses in the community. In the final report, data were provided demonstrating infrastructural development, participation of women in management, women’s receipt of training and microfinance, and increased employment of women as evidence of increased empowerment of program participants (ADB 2012).

Awareness campaigns and community events

Multiple programs funded by the USAID program Aquafish Collaborative Research Support Program (AquaFishCRSP) integrated gender into their work on aquaculture. The strategies aimed to increase and ensure participation of women in all projects and training courses but further integration of GESE was limited for many programs discussed (AquaFish CRSP n.d.). Two AquaFishCRSP programs also aimed to improve women’s status in the community. For example, in the gender plan for 2009–2011, researchers working in Mexico and Nicaragua proposed training courses, workshops and videos highlighting women’s achievements on television in order to: address potential for sustainable livelihoods; improve community capacity; and increase women’s participation. In a project in Cambodia and Vietnam, organized and more informal training courses were proposed to address women’s political positions, decision-making and socioeconomic status (AquaFishCRSP n.d.). These activities were mentioned briefly in the 2009–2011 gender plan, but further information on or analyses of their utility or effectiveness were not found.

A more obvious awareness campaign was used by BRAC in Bangladesh as part of the Gender Quality Action Learning Program (GQAL). This program was part of broader efforts by BRAC to address gender equity by engaging with both men and women in communities (Mahmud et al. 2012). This program began in 1999 and was piloted for village organization (VO) members from 2001–2003. An evaluation in 2004 demonstrated positive associations between training courses and increased decision-making and women's status, although more long-term behavioral changes were rarely observed. From 2005 to 2006, the GQAL program was facilitated in conjunction with other livelihood-focused intervention activities targeting poor populations in Bangladesh. As part of these efforts, the GQAL program included facilitated training courses on gender relations and norms. These allowed local community members to be trained as gender justice educators (GJEs) or peer educators. GQAL also included community meetings (courtyard meetings), an awareness campaign to address local attitudes and increase community mobilization, various forms of local theater, and organized workshops for project workers to follow up on intervention activities (Mahmud et al. 2012, vii). This intervention included several communication components, and its effects were assessed in 2011 using quantitative and qualitative research methods. Three districts were studied (Netrokona, Gaibandha and Rajbari) where the other livelihood-focused intervention activities were taking place. Within these districts, relevant outcomes (e.g. work responsibilities, norms, inequalities and community mobilization) were assessed in GQAL intervention and non-GQAL intervention areas. Mahmud et al. (2012) demonstrated several differences between GQAL and non-GQAL communities. For example, GQAL intervention communities had greater participation of men in household work, increased purchasing autonomy by women, increased perceptions that men's work and women's work was equal, reduced gender-based violence, increased mobilization around inequality and violence, greater access to health services, and increased perceptions that men and women had equal food needs. Often, GQAL was cited as one of the important reasons for these changes. However, as Mahmud et al. (2012) wrote, "The most visible effect of GQAL

program appears to be in changing perceptions and attitudes regarding gender roles in the household (less in altering actual practice)..." (p. 42). In their recommendations for future work, Mahmud et al. (2012) cited that projects should find new ways to engage women from different social contexts and address sexuality more overtly. Additionally, more attention should be paid to context. However, beyond qualitative identification of self-reported "drivers of change," Mahmud et al. (2012)'s impact assessment failed to distinguish the quantitative effects of GQAL components.

The Sustainable Fisheries Livelihood Programme (SFLP) aimed to reduce poverty in communities engaged in aquaculture in 25 African countries through a livelihoods approach (Westlund et al. 2008, 8). Supported by FAO and DFID (1999–2007), exercises and dialogues with community members, in conjunction with PRA, informed the components of 83 different community projects focused on improving livelihoods. Three pilot projects were also implemented in communities across 12 countries. Integral to the SFLP was the regional support unit (RSU), which acted as the communication team and developed newsletters, community theater, radio, videos, websites and libraries to increase exposure to SFLP activities. Although Westlund et al. (2008) cited that there was no unified communication strategy for the SFLP, the program used communication approaches to: increase exposure to SFLP messages; increase information-sharing between individuals and across communities; and in various SFLP activities (Westlund et al. 2008, 111). "At the same time as attention was given to institutional support and reinforcing capabilities and capacities at different institutional levels, innovative communication methods were used directly by the Programme and its partners in the planning and implementation of field activities" (Westlund et al. 2008, 113). This included dialogues to facilitate social communication between the community and the program. In certain communities, theater was used as the medium through which community assessments were performed or participatory monitoring was achieved. In Republic of the Congo, theater enabled community members to discuss sensitive issues such as HIV/AIDS. Information and

communication technologies (ICTs) were also used in various community-specific activities to encourage participatory monitoring. Finally, radio programs were developed in conjunction with community members to address various topics relating to fishing, income generation and microfinance. An evaluation of the effect of these radio programs in areas of Burkina Faso and Mali demonstrated increased awareness and willingness among institutions and administrative bodies to acknowledge local fishing concerns. These programs also increased participants' sense of social responsibility (Westlund et al. 2008).

To address gender equality and social equity specifically, the various SFLP projects created poverty profiles using the sustainable livelihoods approach. Their "gender mainstreaming" approach was informed by the United Nations Economic and Social Council (Westlund et al. 2008, 139). Components included: community-specific gender analyses, literacy training, support to local community organizations to incorporate gender and social inclusion into their goals, and capacity-building exercises. Gender was addressed at micro-, meso- and macro-levels (Westlund et al. 2008, 144). Additionally, "gender-sensitive microfinance" programs were implemented in Benin, the Gambia and Niger, but few specifics of the gender-sensitive approaches to these interventions were provided (Westlund et al. 2008, 106). Communication projects were also used to increase awareness of gender and social inclusion in multiple different settings. For example, theater activities in Republic of the Congo included women, and women participated in community dialogues in Cameroon. Across multiple communities, evidence suggested that the SFLP increased social, economic, and political empowerment at multiple levels (Westlund et al. 2008). Specific examples are available in Westlund et al. (2008, 150), but details on the time frame of these activities were not provided.

Two interventions also included brief references to programs to engage local communities. A program (2004–2007) implemented by the Sarawak Development Institute aimed to increase community participation with the ultimate goal of transforming individuals' livelihoods and quality of life to reduce

dependence on *terubok*.⁵ This occurred through participatory rural appraisal (PRA), efforts to build awareness, dialogues, and other capacity building components such as provision of credit (Annuar 2006). In addition, the Aquaculture Development Project (1998–2006) in Bangladesh targeted vulnerable populations such as those without land, marginal farmers, and women to increase their status in the community. Supported by UNDP, FAO and IFAD, this project included a community mobilization component to engage local NGOs and community groups, develop community infrastructure, increase production and reduce poverty (IFAD 1998). These programs were highlighted due to their relevance to the topic, but detailed information on the activities or evaluations of their impact were not found.

Formation of self-help groups and women's groups

Women's and community groups are often used as the delivery mechanism for technical and capacity-building training courses to participants, as referenced in gray literature documents. For example, the Caritas Fisheries Program incorporated gender equity and gender sensitivity into its aims in 2001 with the Sustainable Aquatic Resources Management (SARM) Program. Implemented by Caritas Bangladesh, this focus on gender equity was the result of observations that men had disproportionately benefitted from previous fishery development programs. Despite this focus on gender equity, Shelly and Costa (2002) provided no definition of what they meant by "gender equity" and "gender sensitivity" in their discussion of Caritas' programs. Nonetheless, SARM focused on the importance of the formation of women's groups, community mobilization and training, increasing community awareness and counseling in strengthening fisheries projects in order to increase production. The goals of SARM were to

- facilitate organization of community members;
- communicate information on aquaculture and fisheries management;
- improve fishponds;
- develop technical skills;
- increase awareness of sustainability and conservation in the community.

The design of this program facilitated women's participation both in program activities and production by: (1) increasing women's access to fishponds in the community; (2) providing counseling to help explore gender roles; (3) making training courses accessible to women; (4) increasing access to microfinance for women; and (5) providing women-specific training courses. An impact assessment of the Caritas program demonstrated increased participation among women in fish farming, higher standard of living, and greater harmony among women's groups (Shelly and Costa 2002). Women became pond owners, which Shelly and Costa (2002) cited as increasing women's "status both in the family as well as in the society" (p. 86). Additionally, women's group participants also played larger roles in local community decisions. Based on these demonstrated effects, the authors recommend that future interventions should address asset ownership, reduce gender-based discrimination, improve micro-credit programs, and address men's attitudes about women's roles.

Similar efforts by Banchte Shekha (BS) in Bangladesh as part of the Community Based Fisheries Management project formed women's groups to improve training and mobilization. The project included regular group meetings, training courses and the provision of small amounts of credit. In 1997, BS facilitated the formation of women-only groups and a fishery management committee was formed. Evaluation demonstrated increased fisheries resources, increased control and responsibilities given to women, improved participation, some immediate changes in socioeconomic factors (such as welfare, household use of credit, etc.), and regulatory changes based on the program such as the formation of the fishery management committee (Sultana et al. 2002). Women from households participating in the project fished more than women from households that did not participate. However, despite efforts to facilitate women's groups, Sultana et al. (2002) cited the limited understanding of women's roles in the fishery management committee.

Sultana and Thompson (2008) compared women-only, men-only, and mixed-sex community-based organizations (CBOs) in three different communities (Maliata Beel, Shuluar Beel and Goakhola Beel, respectively)

in Bangladesh. These groups were organized to manage local fisheries as part of the Community Based Fisheries Management projects. For a detailed figure representing BS's "women led" approach, please see Sultana and Thompson (2008, 57). Women from Maliata Beel and Goakhola Beel showed greater participation in community organizations and institutions, while women from Shuluar Beel (men-only CBO) were relegated to participation in NGO-facilitated groups only. Sultana and Thompson (2008) also showed that, based on FGDs, the men-only group had lower levels of trust and cooperation than the groups that included women. In communities where women participated in the CBOs, women reported being acknowledged by men, which increased their willingness to participate (Sultana and Thompson 2008). In addition, BS has also worked in other areas of Bangladesh, such as rural Jessore. Naved (2000) referred to these efforts as "consciousness-building efforts" (p. 7) that include a gender-sensitive approach. Educational training courses, credit provision and economic opportunities were facilitated through the formation of women's groups (Naved 2000). Naved (2000) also highlighted how pond ownership was awarded to women's groups in Jessore. Men were involved in production, and negotiations occurred with the women's groups and men that increased women's roles in income-related decision-making. Naved (2000) also claimed that women's roles and positions at the household level were strengthened through improved partner communication and shared decision-making, but little quantitative data were provided as evidence. Historical profiles, observation, social/resource maps, interviews, FGDs, mobility maps and impact flow charts were used as qualitative evidence. Despite these observed changes following BS's work, inequalities continue to exist in how men and women are valued in the local community as well as in men and women's power to make financial decisions.

The Empowerment of Coastal Fishing Communities for Sustainable Livelihoods project (2000–2006) was undertaken with support from UNDP, the Government of Bangladesh and FAO to improve the lives of poor people living in fishing villages in Bangladesh. Activities included increased access to information, skills training, mobilization and increased access to resources such as credit. This occurred through a self-defined, gender-mainstreaming approach that included the formation of both men and women’s groups. The formation of 248 organizations was used as evidence of successful community mobilization and organization (UNDP 2005). These organizations provided a space for previously marginalized people to “share experiences, identify their needs, pool resources and raise each others’ awareness socially, politically and economically” (UNDP 2005, iii). Increased knowledge, exposure to other types of livelihoods, and savings among the targeted poor population were also cited as impacts of this project, but there was little discussion of gender-related effects beyond participation in community groups. In their final report, UNDP cited the challenge of ensuring replicability and sustainability of the project and its effects. It also calls for the use of communication through newsletters, workshops and publications to increase awareness of the project and its effects.

Finally, the Small-Scale Aquaculture Program was implemented in several villages in the mid-hills of Nepal in 2010 with the support of the Asian Institute of Technology (AIT), the Institute of Agriculture and Animal Sciences (IAAS), and other smaller local organizations, to expand small-scale aquaculture and provide support for women’s farming groups. This project targeted women’s participation in program activities through the formation of women’s groups. Evidence of the success of the program included increased training of women, construction of fishponds, fish production and increased fish consumption at the family level, and greater knowledge of small-scale fish farming among women (Bhujel and Shrestha 2011). However, beyond the use of women’s groups as the mechanism through which this intervention was implemented, Bhujel and Shrestha (2011) highlighted minimal GESE-related outcomes.

GESE-related communication interventions in agriculture

Communication-focused programs, projects, and interventions targeting GESE in an agricultural context are discussed below. Many of these peer-reviewed studies included communication components such as training courses, discussions or participatory research methods. Also common were programs that encouraged the formation of women’s or self-help groups. Less common were awareness campaigns and local community events.

Training, group discussions and participatory methods

Participatory methods to integrate women into the design and implementation of group-based training modules have often been used in an agricultural setting. The Integrated Agriculture Training Program (IATP) was started in 2002 in Papua New Guinea with funding from Aus-AID. This project was built on collaboration from multiple stakeholders, including government and NGOs as well as research institutions. This intervention developed “people-centered training modules” that targeted people’s use of resources to address issues of poverty and resource sustainability (Cahn and Liu 2008, 136). Using a participatory approach, community members played essential roles in designing the modules based on community needs. To incorporate GESE into their program, women’s voices were included in the design phase of the project; women’s needs and barriers were incorporated into the design of training modules, and training was offered to both men and women as part of the project. The ultimate goal of these efforts was to achieve gender equality and empowerment. Modules addressed livelihoods, credit, bookkeeping and farm production, and training courses were offered to mixed (men and women), couple-based or women-only groups. To analyze the effects of this intervention on women, the project included women on the monitoring and evaluation team and looked at the effect of the program on gender relations. Out of this analysis, Cahn and Liu (2008) demonstrated that facilitating women’s engagement, both as participants and as trainers, was challenging due to larger structural inequalities, such as educational disparities or socio-cultural community norms about gender roles. The goal of addressing

women's empowerment was not achieved, due to unequal participation of women in IATP. Using qualitative stories from individual participants, Cahn and Liu (2008) demonstrated women's self-reported increased abilities and self-confidence as a result of participation in IATP. Challenges to this project were the lack of a comprehensive needs assessment of the communities prior to the intervention as well as a limited understanding of the importance of gender-related issues among stakeholders.

Using a community-driven participatory monitoring and evaluation (PM&E) approach, Njuki et al. (2008) worked with local communities to develop measures to assess the effect of the "Enabling Rural Innovation" initiative in Malawi. Their paper "describes a process of using an aggregation of the community indicators to allow for their comparison across six communities in Malawi, and to apply some basic statistical methods to compare the community perception of the achievement of the indicators across communities and gender" (Njuki et al. 2008, 635). The "Enabling Rural Innovation" program was designed to increase community capacity, entrepreneurial behavior, and access to markets as well as address issues such as gender, HIV, business skills and leadership for small-scale and poor farmers. Key to this initiative were participatory needs assessments, creation of farmer research groups, and emphasis on gender and wealth as priority issues. The farmers' groups were organized to increase capacity as well as social capital (Kaaria et al. 2008). To address gender equity:

the ERI process specifically uses gender-sensitive participatory tools to bring gender issues to the forefront and to create awareness of gender issues in a more systematic manner. Proactive strategies and gender-sensitive facilitation skills are used to build the capacity of both men and women farmers in identifying and evaluating a diverse range of market opportunities, and in experimenting with a range of crop and soil fertility management technologies

- Kaaria et al. 2008, 6.

Integral to this work was a community feedback phase that included both the dissemination of results and involvement of community members in the development of future plans. The participatory evaluation was intrinsically linked to the goals of the program and built upon program components to increase community capacity. Using data from household surveys in Malawi, Njuki et al. (2008) assessed community members' perceptions of changes to food security, income and women's empowerment. Respondents indicated that increased food security was associated with lower malnutrition. Community members also confirmed the purchase of assets as a result of programmatic efforts. Additionally, perceived increases in women's participation in community affairs and the number of women-held leadership roles were larger than the perceived changes to women's financial autonomy. Men and women's perceived changes in food security, incomes and women's empowerment were disparate, with men reporting greater changes in income than women. Differences were also observed between women in women-headed households and women in men-headed households. Additionally, in Kaaria et al. (2008) the discussion of lessons learned from the "Enabling Rural Innovation" program in other African countries revealed that increases in women's household decision-making were related to the type of entrepreneurial work and markets in which women participated. Additionally, gender-based income inequalities continued to exist between men and women, and poor farmers continued to experience barriers to markets.

A similar group-based learning approach was applied in Kenya. Duveskog et al. (2011) examined the benefits of farmer field schools (FFS) beyond farming-specific knowledge and skills. FFS is a participatory approach that brings farmers together in groups to study the 'how and why' of farming in direct learning experiences and encourages critical reflection within the context of group dialogue. This study was informed by Mezirow's (2000) transformative learning theory, where "learning is understood as the process of using a prior interpretation to construct a new or revised interpretation of the meaning of one's experience in order to guide future action" (in Mezirow 1996, 162). The study

site for Duveskog et al. (2011) was Kakamega district in western Kenya. This qualitative study relied on a series of in-depth interviews with 20 individuals; half had graduated from FFS about a decade prior to the study and half were more recent graduates or current FFS members. The interviews were augmented with observations, group and key informant interviews. The study found evidence of:

transformative learning beyond the initial educational experience (FFS), including on the participants' everyday lives. For example, changes in gender relations and family roles emerged as a significant result of this transformation in perspective, expressed in terms of a more equal balance of power among men and women in the household setting and in terms of beliefs about men's and women's respective roles in the practice of farming. In particular, this seems to have had a liberating effect on women, as they acquired greater opportunities to engage in decision-making and economic activity.

- Duveskog et al. 2011, 1540-41

The authors conclude by asserting that the enhanced agency and analytical skills gained through FFS participation are of particular importance because those capabilities can be applied in the market as well as in interactions with local service providers.

The Promoting Farmers' Innovation Program was also a FFS intervention that took place in southeastern Taita Taveta county in Kenya. Begun in 2001, this project was funded by the UN and put in place by the parastatal Coastal Development Authority. The FFS approach utilizes transformative learning theory to empower women and affect change in agricultural practices and women's roles. This project facilitated learning using groups where participants collaborated to identify problems and find solutions on an experimental farm. In their evaluation of this project, Najjar et al. (2013) explored the extent to which

learning (instrumental, communicative and transformative) was related to sustainability and gender equity in agriculture through qualitative interviews, FGDs and observation. Instrumental learning was identified in topics such as communication, health, environmental issues and farming skills. Although women were faced with certain barriers to applying some skills, they demonstrated improved public speaking and increased participation in the community. The intervention appeared to have different effects on men and women. For example, men gained a greater understanding of farm labor, women's roles and hunger, while women's learning was limited to women's roles. Transformative changes observed included shifts in norms around farming, including changes to how knowledge was gathered about farming (e.g. greater experimentation) as well as changes to inheritance practices (e.g. including women). Increased autonomy and a greater sense of group identity were also mentioned. However, despite these observed transformative changes as a result of the FFS approach, Najjar et al. (2013) called for future work to include gender analyses prior to the implementation of programs to understand preexisting barriers that may affect an intervention's success.

The FFS approach has also been used in Uganda (Friis-Hansen 2008) and India (Mancini and Jiggins 2008) with similar results. Friis-Hansen (2008) examined the effects of a FFS intervention (1999-2002) funded by IFAD and which aimed to form farmers' groups, increase capacity among farmers, and train extension workers to help farmers engage in experimental and experiential learning. The FFS approach was used to target women as well as illiterate and marginalized farmers in multiple communities. Farmers who had participated in a FFS had increased confidence, lower food insecurity and were more productive. A similar program organized by the National Agricultural Advisory and Development Services (NAADS) and implemented in the same district in eastern Uganda (starting in 2002) was briefly mentioned by Friis-Hansen (2008). This program was started in 2002 to help facilitate farmers' groups and encourage communication about local needs. The NAADS program targeted farmer empowerment based on the following definition: "A process that increases the capabilities of smallholder

farmers and farmers' groups to make choices and to influence collective decisions towards desired actions and outcomes on the basis of those choices" (as cited in Friis-Hansen 2008, 508). Using a strengths, weaknesses, opportunities and threats (SWOT) analysis, PRA ranking techniques and a survey, Friis-Hansen (2008) demonstrated a relationship between participation in FFS and NAADS farmers' groups and increased production, greater wealth and reduced poverty.

Similarly, FFS were also used in India to address environmental effects, work, management and farmer livelihoods comparing integrated pest management farms (with FFS) with nonparticipating farms (Mancini and Jiggins 2008). In some communities, FFSs included "gender sensitization" programs that facilitated discussion around gender relations. Mancini and Jiggins (2008) performed an evaluation (2002–2004) using the double-difference model as well as a sustainable livelihoods analysis, photovoice and analyses of the farm system. This evaluation demonstrated that FFS had differential impacts based on gender and participant wealth. In particular, women demonstrated increased confidence in communicating publicly as a result of participation in FFS. Mancini and Jiggins (2008) focused their manuscript on the strengths and weaknesses of participatory evaluations, concluding that the use of the sustainable livelihoods analysis and photovoice empowered local farmers to participate in the evaluation of the project.

These same approaches were implemented in Mexico to integrate interventions targeting economic and human capital. The Opportunities for Women of Low Income in Rural Areas project, or Project OM, was implemented in Mexico to improve production and skills in rural women. This pilot study included efforts to increase women's income and to incorporate a gender perspective in the provision of skills. Project OM included 13 projects in different areas that each attempted to integrate gender.



The main characteristic of all initiatives was the emphasis placed on linking two dimensions: on one hand, the productive dimension, to make economic activity performed by women sustainable; and on the other hand, the dimension related to the recognition of the women as transformation agents of their own situation

- Urquieta-Salomón et al. 2009, 30.



These programs included productive activities, which help women earn income, and capacity building activities. In the evaluation of this pilot study, Urquieta-Salomón et al. (2009) matched participants to women not participating in Project OM for comparison. This study demonstrated that women who had participated in Project OM showed increased participation in agriculture, but there was no difference in household food expenditures or women's roles in household income. Women who attended both capacity building and productive activities were less likely to view domestic responsibilities as women's work. Those who attended capacity-building activities demonstrated an understanding of gender (in)equality as well. There was also an overall effect of increased autonomy in financial decision-making, particularly among those who attended capacity-building program activities. However, the project had no effect on participants' administrative skills such as bookkeeping or applying for credit. Unfortunately, the evaluation of this pilot study (Urquieta-Salomón et al. 2009) included limited information on the specifics of each of the 13 projects affiliated with Project OM beyond the focus on women's capacity building and training activities.

Additionally, the Gender Informed Nutrition and Agriculture (GINA) programs in Mozambique, Nigeria and Uganda used integrated approaches incorporating training and community engagement to facilitate participation in intervention activities. GINA programs intended to improve nutrition among children (less than five years of age) using a gender lens. Although Lewis (2014) provided limited details on intervention activities, GINA programs included multidimensional components such as training courses to build capacity, efforts to increase access to resources for women, efforts to involve women in leadership, and attempts to ensure men’s participation in program activities. The formation of community groups was also important to ensuring community engagement of men and women in program activities. Each country had individual objectives, and individual communities applied a gender-sensitive lens to address community-specific challenges in order to accomplish the goal highlighted above. Through an analysis of qualitative interviews and archival data, Lewis (2014) demonstrated the importance of the gender dimension to the success of the GINA programs. These community-based programs were shown to reduce the number of underweight children as well as increase availability, knowledge and consumption of nutritious food items. They programs were also shown to improve women’s status, transform gender roles in agricultural production and processing, and increase women’s power in financial decision-making.

The Listening to Dragonflies project in Vietnam addressed community engagement through the administration of community workshops in conjunction with targeted training courses. This project was a “sustainable model of health behavior change” that involved the training of 13 women health advocates as well as 13 community leaders to address health in their communities (Petersen and England 2014, 10). The health advocates worked with families to discuss their understanding of illness and help them to establish health related self-efficacy; the community leaders worked with men to discuss illness, and explore how best to identify and address problems. As part of this project, workshops were organized to communicate health-related information

and to facilitate group-level problem solving and collective action. Petersen and England (2014) applied a feminist lens to critique the methods of this intervention and surprisingly cited the “demonstration” of women’s empowerment through the inclusion of women researchers and workshop facilitators as an important component of the Listening to Dragonflies project (Petersen and England 2014, 15). This problematic statement reflects a limited understanding of the meaning of empowerment and how it can be affected in development projects.

An essential aspect of this intervention, according to Petersen and England (2014) was challenging inequality. This is communicated clearly in the following quotation.

Thus, we are teaching skills that lead to empowerment of a people, even while conforming to the gendered roles. We position the women in each household as having more knowledge than their husbands on these family health issues. This approach is consistent with the cultural norm attributing household and health care to the women, yet it empowers women with additional knowledge to counteract the imbalance in power, and solicits the men through village leaders to make purchasing decisions based on the health information provided by their wives

- Petersen and England 2014, 16.

Despite these claims, Petersen and England (2014) made no assessment of the changes in empowerment among project participants. Additionally, the authors do not mention evaluations or impact assessments of this program, which greatly limits the ability to draw conclusions about the effects of this project.

Goodrich et al. (2008) examined the “new coalition research” approach, which was designed to help promote the purchase/rental and use of two-wheel tractors (2WTs) by farmers in Nepal’s *terai* (plains) (p. 645). Recognizing that purchases were low, the coalition decided to make the transfer-of-technology process more participatory, and agreed to focus on poverty-reduction and gender-equity issues. They did this by identifying and including the “poorest farmers” in a given village. Management committees, village motivators, and membership of newly formed groups were all required to include 50–60% women. (Nothing was said about the percentage of ‘poor’ or ‘marginalized’ required, if any.) As tractor tires could be rented for use during the harvest and the balance paid after the harvest, farmers who previously couldn’t afford to adopt the technology were encouraged to do so. Use of the technology was associated with increased task-sharing within the household, including men helping women with household chores and parenting. And because the 2WTs are relatively small, women were eager to learn how to drive them. Additionally, productivity increased (Goodrich et al. 2008).

Similarly, the second phase of the Upper Mandrare River Basin Development project (PHBM) in Madagascar aimed to incorporate participatory methods and a gender-sensitive approach into project activities. Gender-sensitivity training courses were provided for community leaders as well as family members and husbands of women to explore the “more active role of women” to gather their support for the project (Shapiro et al. 2010, 157). Following these training courses, community meetings were organized to facilitate discussion around women’s roles. Additionally, the project included posters and radio segments to address how to integrate women into development. Community participation, provision of small loans and training courses on cooking, nutrition, health and literacy took place. These efforts successfully increased women’s participation in the PHBM and women became more active in decision-making. Later, in 2006, a second project entitled “*Credit avec Education*” provided training sessions on credit and education to women in addition to the provision of loans. Men were included in initial meetings, with “solidarity groups” formed later to discuss and address health, business success, and confidence (Shapiro et al. 2010, 159).

Awareness campaigns

Some interventions identified the use of awareness campaigns to address GESE-related issues in agriculture. *Governanza con Capital Social* was a Canadian-funded project in Ecuador addressing human rights of potato and vegetable farmers (Cole et al. 2011). Emerging out of previous work to limit the use of pesticides through the Ecosalud project (2005–2008) and the observation that regulations monitoring pesticide use were not being implemented consistently, *Governanza con Capital Social* developed and disseminated information on “farmers’ rights”, provided training courses and facilitated community engagement and social action on rights-related issues. Individuals influenced by this campaign have played important roles in the formation of public policies and have monitored the implementation of these policies in their communities (Cole et al. 2011). Unfortunately, limited data on the details of this information are available, and no evaluation of the outcomes of these efforts was identified in the literature.

Poverty Elimination Through Rice Research Assistance (PETRRA) program worked in Bangladesh from 1999 to 2004 on 45 agricultural research management projects that were funded by DFID, IRRI and BRRI. This program embraced a “values-based” approach that influenced all levels of project design and implementation (Salahuddin et al. 2008, 620). This “values-based” approach focused on communication, participation, gender, partnerships and poverty as key program elements. Targeting poor farmers, these projects addressed multisectoral partnerships, technology and policy. Taking a participatory approach to research, PETRRA emphasized the importance of having poor farmers, including both men and women, actively involved. Over the course of the project, communication of results to farmers and other influential stakeholders became an integral output of PETRRA projects. A figure demonstrating the important role of program values in a selection of project outputs can be found in Salahuddin et al. (2008, 623). Unfortunately, Salahuddin et al. (2008) offered a limited description of intervention activities.

Community events

In addition to group-based training courses, discussions, and awareness campaigns, community events were also conducted to engage communities in agriculture-related projects. The CARE Rights-based Approach to Food Security project was implemented in response to seed-and-tools programs in Sierra Leone that unsuccessfully allocated resources throughout intended communities and inadvertently marginalized certain populations. This program was implemented by an administrative unit, with participants registering to receive rice or groundnuts. As part of this project, community members were active in discussions around inclusion. As a result of these discussions, "village peace and rights days" were organized (Archibald and Richards 2002, 364). These events lasted several days and were characterized by discussions about food access and vulnerability to violence as a result of war. Also essential to these events were discussions about and issues with registration and distribution of seeds as well as social inclusion. The seeds were also disseminated at these events. Discussions included people from local human rights organizations to encourage discussions about peace and human rights (Archibald and Richards 2002). However, Archibald and Richards (2002) do not discuss evaluations of the effects of these components of the pilot phase of CARE's rights-based project.

Similarly, in an effort to increase "women's empowerment" among farm workers, the National Academy of Agricultural Research Management (NAARM) farm in India developed a pilot study that used a three tiered approach: confidence building, capacity building and social change awareness (Sastry and Manikandan 2002). This included activities such as literacy programs, training courses, participatory dialogue to create action plans, the provision of equipment that could be used by both men and women and health campaigns. Sports events, counseling and lectures were used as ways to communicate information to women participants and their families. A qualitative and quantitative analysis of this pilot study reflected the importance of institutional support from the NAARM farm management, changes in farmers' behaviors, increased confidence and power in decision-

making among women, better commitment to work among women, and improved farm output and performance (Sastry and Manikandan 2002).

Formation of self-help and women's groups

Several interventions formed self-help and women's groups in agricultural settings. The Empowerment of Women in Agriculture project was a NAIP mission mode project and that was implemented in Rajasthan, India. Using the self-help group model, this program aimed to empower women. Intervention activities included "awareness camps" and training courses as well as the formation of self-help groups and provision of micro-credit (Meena et al. 2012, 238). In their evaluation of the effect of intervention activities on capacity building and social empowerment, Meena et al. (2012) explored women's confidence, self-esteem, decision-making, capacity enhancement, social empowerment and agriculture-related attitudes using information drawn from semi-structured interviews. Compared to women who did not participate in the intervention, women participants in the program had greater confidence, self-esteem, decision-making, capacity and empowerment (based on responses on a Likert scale). A more detailed description of the intervention components, including the details of the capacity-building training courses, was not included in this evaluation article.

Similarly, in their discussion of the Promoting Sustainable Agriculture in Borno State (PROSAB) project in Nigeria, Tegbaru et al. (2010) discussed the need to understand the multilevel set of socio-cultural factors that influence gender relations. The Canadian International Development Agency (CIDA) and the International Institute of Tropical Agriculture (IITA) funded the PROSAB project to address drought, soil fertility and Striga. Educational training courses were administered to both men and women. The project's self-identified "gender mainstreaming" strategy intended to increase women's participation in program activities and in decision-making and affect the formation of community groups and women's group farms (Tegbaru et al. 2010). To address issues of gender awareness, gender analysis training was provided, and women were encouraged to play leadership

roles in the community. Effects of these efforts were assessed based on changes in women's participation in the intervention as well as changes in income, community participation, engagement and access to resources. Tegbaru et al. (2010) demonstrated the outcomes of the project based on qualitative evidence, including improved mobility, social capital and networks. Women's self-efficacy in training other women demonstrated information dissemination to non-participants. Women increased their roles as leaders in the community, and reported higher incomes. Women's groups became official CBOs, which led to mobilization beyond simple dissemination of information. Most interesting in Tegbaru et al.'s (2010) analysis of the effects of this intervention was the idea that the observed effects were not due to the project's activities alone, but instead to the context in which they took place.

Finally, the review by Ahmed et al. (2011) of anti-poverty interventions in Bangladesh highlighted human capital, production and microfinance interventions and the important role of institutional support and dissemination to the success of these projects. In addition to discussing MAEC and BS, their review discussed work by the Gono Kallayan Trust (GKT) that ensured sustainability of the effects of their projects by encouraging the formation of women's groups. This organization's projects often provided training courses and credit to participants. Several programs were administered by GKT in Bangladesh, including the Homestead Vegetable Program that offered credit and organized market opportunities for poor women living in rural areas. This program allowed women to engage in agricultural work at home to reduce gender-related travel and mobility barriers. This focus on gender was also limited to including women in training courses and increasing access to agricultural technology. Although these components were shown to increase women's income, Ahmed et al. (2011) provided limited information on the role of communication in these intervention components and evaluative measures.



Husking rice, Khulna, Bangladesh.

GENDER EQUALITY AND SOCIAL EQUITY-RELATED MANUALS AND TOOL KITS

The search of the gray literature retrieved several manuals and tool kits providing suggestions for interventions planning to integrate gender equality and social equity into their objectives and aims. Although not citing specific programs or interventions, these publications may be useful in future work on gender equality and social equity in the context of aquaculture.

FAO has developed several field manuals and tool kits for the mainstreaming of gender in program design and implementation. This includes suggestions for the collection of disaggregated data, gender analyses and gender-sensitive monitoring and evaluation (Arenas and Lentisco 2011). They also suggest using the Socioeconomic and Gender Analysis (SEAGA) framework that includes a checklist for gender-sensitive interventions in aquaculture (Jong et al. 2013). IUCN has a similar manual about the integration of gender and participatory approaches into programs on

marine-coastal management (Salm et al. 2000). IFAD has published a set of recommendations on gender issues for individuals working in rural finance. This document includes suggestions for interventions and provides examples of gender indicators (Mayoux and Hartl 2009). IFPRI has as a similar tool kit (Behrman et al. 2012). Oxfam has also developed a set of suggestions based on work in fishing villages following the 2004 tsunami in India (Oxfam International 2008). Finally, the World Bank and several other contributing organizations have adapted information from the *Gender in Agriculture Sourcebook* into an e-learning module. This module is available at: http://www.genderinag.org/sites/genderinag.org/files/E-Learning_Course/module-13/story.html



Paddling for mudshells in Malaita, Solomon Islands.

The majority of communication interventions identified through this review focused on women's participation and women's empowerment. Women's groups and community groups, targeted training courses, and gender awareness training courses were the most common approaches to improving women's status, increasing women's participation in aquaculture, and addressing issues of equity and equality for women. Additionally, although many of the interventions highlighted in this review include 'gender' approaches or 'gender mainstreaming' strategies, their focus is limited to efforts to increase women's empowerment and participation in aquatic agriculture or agricultural activities, thus failing to address the complexities of gender relations, the role of men, and the barriers to women and men working together in their full capacity to improve livelihoods.

Communication programs can have additional, positive effects beyond promoting women's involvement in AAS and agricultural activities. The findings point to improvements associated with women's status in the family and the community, women's decision-making power, women's roles in agricultural processing and production, and program participation in reproductive health practices. Participation in several programs was found to be associated with a more equitable household division of labor and an increase in average per capita income. Additionally, this literature review identified several manuals and tool kits published by funding organizations that provide tangible, operationalizable suggestions for work on gender in AAS settings.

Only a few interventions went beyond a focus on women with the aim to improve gender relations or expand social equity for poor and marginalized men and women. Additionally, evident throughout the results section was the limited number of interventions addressing the intersections of multiple forms of oppression that work together to marginalize and make vulnerable particular poor and marginalized populations. For many communities, disparities exist not only on the basis of gender, but also as a result of the perpetuation of other social

and cultural inequalities relating to class, race/ethnicity, geographic location and other characteristics. None of the articles described multilevel communication approaches to affect barriers across social ecological levels.

The content of training courses and workshops remained unclear, and explanations of the role of gender equality and social equity were often brief and vague. In the programs and interventions discussed above, only a few focused on GESE as a major component of the projects. Despite the number of programs, projects and interventions using terms such as "participation," "empowerment," "training courses," "workshops" and "community mobilization," few articles or reports provided tangible evidence of what they meant by these terms and the activities performed. This makes it difficult, at times impossible, to know concretely what intervention works and how.

Few communication interventions in the AAS context go beyond providing training and gender awareness to look concretely at the effects of these specific components on productivity, livelihoods, social connectedness, and household dynamics. Some interventions made claims that such activities had an effect on household-level indicators; even fewer used quantitative evidence to support these claims, and none of the qualitative studies described the processes that led to the purported changes. Also missing were theoretical frameworks to guide the design, implementation and evaluation of GESE-oriented communication programs.

A limited number of communication interventions identified in this report provided comprehensive evaluations of communication components. Among those publications using quantitative evaluation methods, the quantitative evidence provided was largely descriptive and thus the statistical significance of relationships between participation in a communication intervention and gender-related outcomes were typically not assessed.

Recommendations. Future work on gender and social inclusion in AAS should move beyond women's empowerment training courses to incorporate broader approaches that address the underlying factors that perpetuate the marginalization of women and other groups in these settings. This would include interrogating gender and social norms that delimit everyday practices as well as working with actors at multiple levels and engaging with power to affect structural change. Research and interventions should explore the roles of poor and marginalized groups as well as the intersectionality of different marginalized identities, to determine how best to implement programs to reduce inequalities and enable broad-based empowerment. Also urgently needed are better specifications on how to incorporate GESE in the design and implementation of communication programs. Further attention should be given to determining when and how to use qualitative methods, when quantitative methods are better suited to answering research questions, and when to use mixed methods approaches to evaluate programs. Future programs should also use theories or theoretical frameworks to guide these evaluations. Finally, researchers

must think more critically about the appropriate application of methodologies to answer research questions to support both the creation of enabling environments and the design of effective interventions with and for people living and working in AAS.



Boat to Kompong Kor Sanctuary, Cambodia.

- ¹ As shown in Appendix I, gender equity and gender equality, as well as other terms such as gender relations were included in the search criteria (Appendix I, Figure 1). In reporting on any given article, we use the language used in that article – women’s empowerment, gender relations, gender equity or gender equality.
- ² Please see the companion report based on a scan of the literature on gender equity/equality scales and indices in health, agriculture and AAS (Underwood et al. 2014).
- ³ For a copy of the complete, adapted search string used for each database, please contact the corresponding author.
- ⁴ For a copy of the complete, adapted search strings used for each database, please contact the corresponding author.
- ⁵ An important component of this development activity was to help conserve terubok, a species of fish, in response to overfishing (Annuar 2006).

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APPENDIX I

GESE search terms		
gender issue*	women`s role*	social integration*
gender relation*	men`s role*	social disintegration*
gender identit*	sexis*	social acceptance*
gender equalit*	sex bias*	social isolat*
gender equit*	gender bias*	social marginalization*
gender inequalit*	feminis*	social alienation*
gender inequit*	sex discrimination*	social equalit*
gender inclus*	gender discrimination*	social inequalit*
gender exclus*	women`s right*	social inequit*
gender norm*	women`s status*	social equit*
gender ideolog*	women status*	social inclus*
sex role*	women`s liberation*	social exclus*
sexual role*	masculinit*	group membership*
gender role*	feminin*	social justice*
woman`s role*	social distance*	social discrimination*
man`s role*	social rejection*	stereotyping
	social cohesi*	

Table 1. Gender equality and social equity (GESE) search terms.

AAS search terms	
aquacultur*	fish pond*
aquicultur*	fishpond*
aquaponic*	fishing communit*
aquatic agricultur*	fishing village*
coastal agricultur*	fisherm*
hydroponic*	fisherwom*
flood plain*	fisherfolk*
floodplain*	fish value chain*
fish trade*	fish distribution chain*
fishing trade*	fish supply chain*
fishery	fish market*
fisheries	fishing market*
fishers	fish production*
fishing	fishing production*
fish farm*	fish industr*
fish culture*	fishing industr*
fishing culture*	aquatic inland system*
fish system*	island system*
coastal system*	island agricultur*
aquatic system*	mega delta
(fish* AND (crop OR crops))	mega deltas
(fish* AND (livestock))	river delta
(fish* AND crop AND livestock)	river deltas
(fish* AND crops AND livestock)	

Table 2. AAS search terms.

Organizational websites searched		
Aquaculture without Frontiers	BCC Working Group	BRAC
Dhansiri	UNDP	CARE
Oxfam	IUCN	FAO
Small Grants Program (SGzP) Malaysia	ICSF	USAID
OECD	Danida	West North West Artisanal Fisheries and Community Development Programme
IFAD	Solomon Islands Planned Parenthood Association (SIPPA)	IFPRI
Asian Development Bank	GTZ	CGIAR Systemwide Program on Collective Action and Property Rights
Banchte Shekha	Bangla Communications	Jita Bangladesh
Amaro Dhikar	WorldFish	Social Marketing Company

Table 3. Organizational websites searched for relevant gray literature in AAS.

Agriculture-related search terms	Limited to: Interventions	Limited to: Communications-related
Agricultur*	Program*	Communication*
Farm*	Project*	Health information*
Food production*	Intervention*	Media
	Campaign*	Community mobiliz*
		Educat*
		Advocacy
		Capacity building*
		Training*

Table 4. Search terms used to identify GESE-related communication interventions in agriculture.

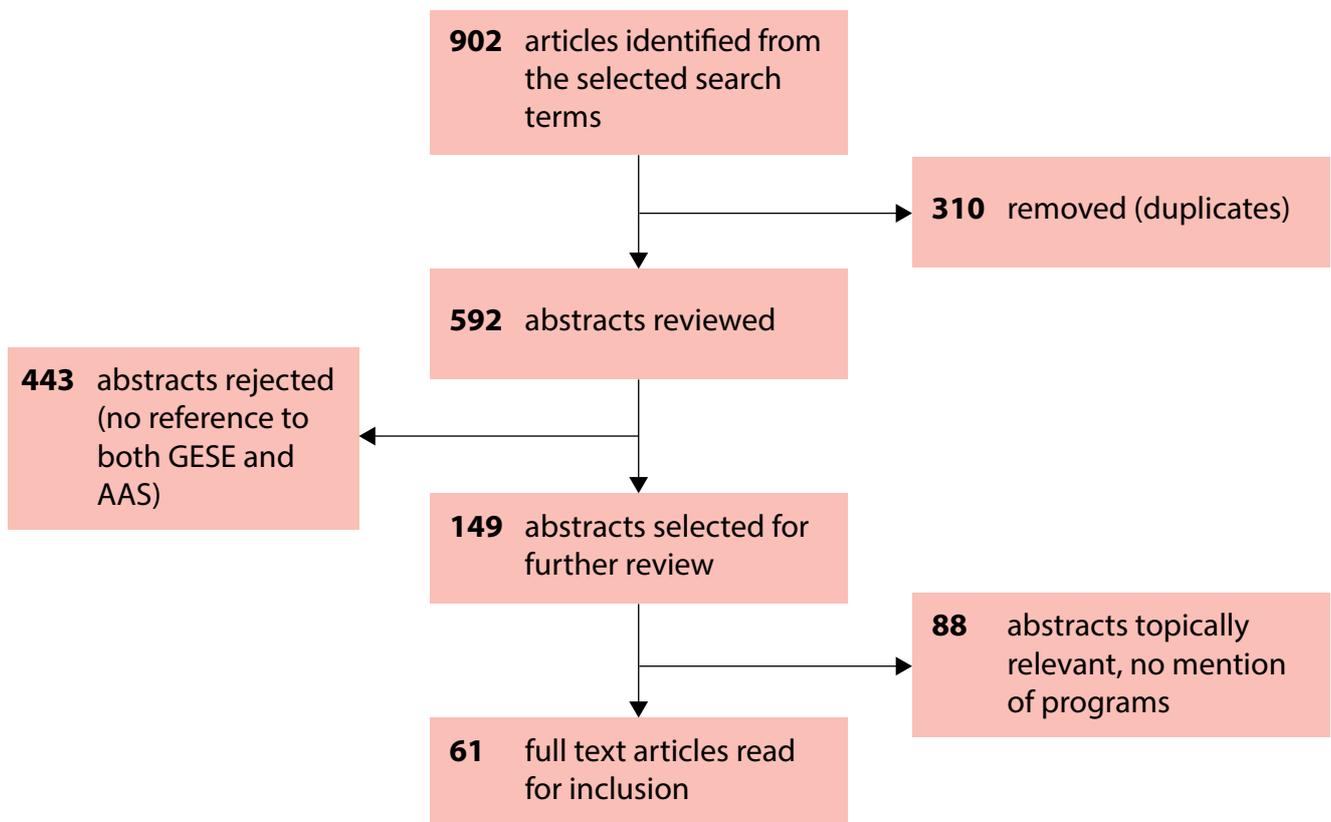


Figure 1. Flow chart depicting process used to isolate peer-reviewed literature relating to AAS for inclusion in this report.

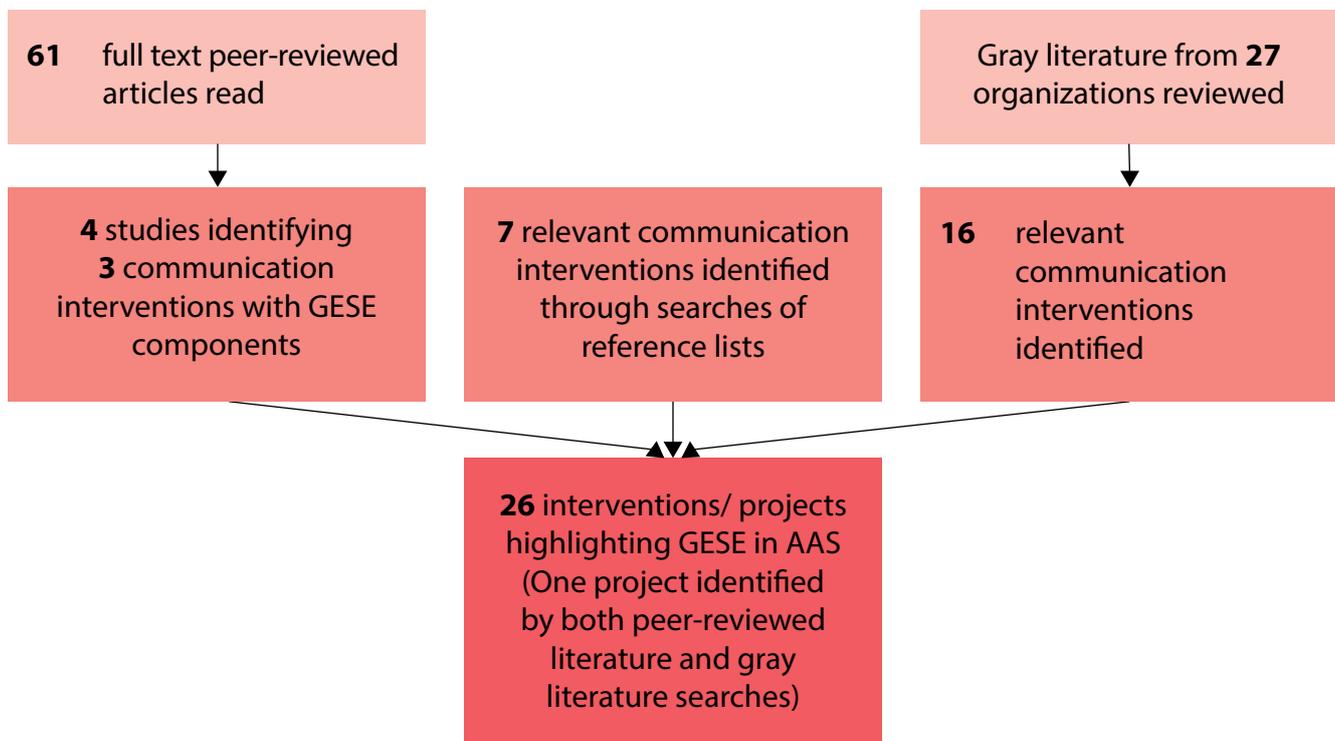


Figure 2. Flow chart depicting process used to identify AAS interventions (from peer-reviewed and gray literature sources) for inclusion in this report.

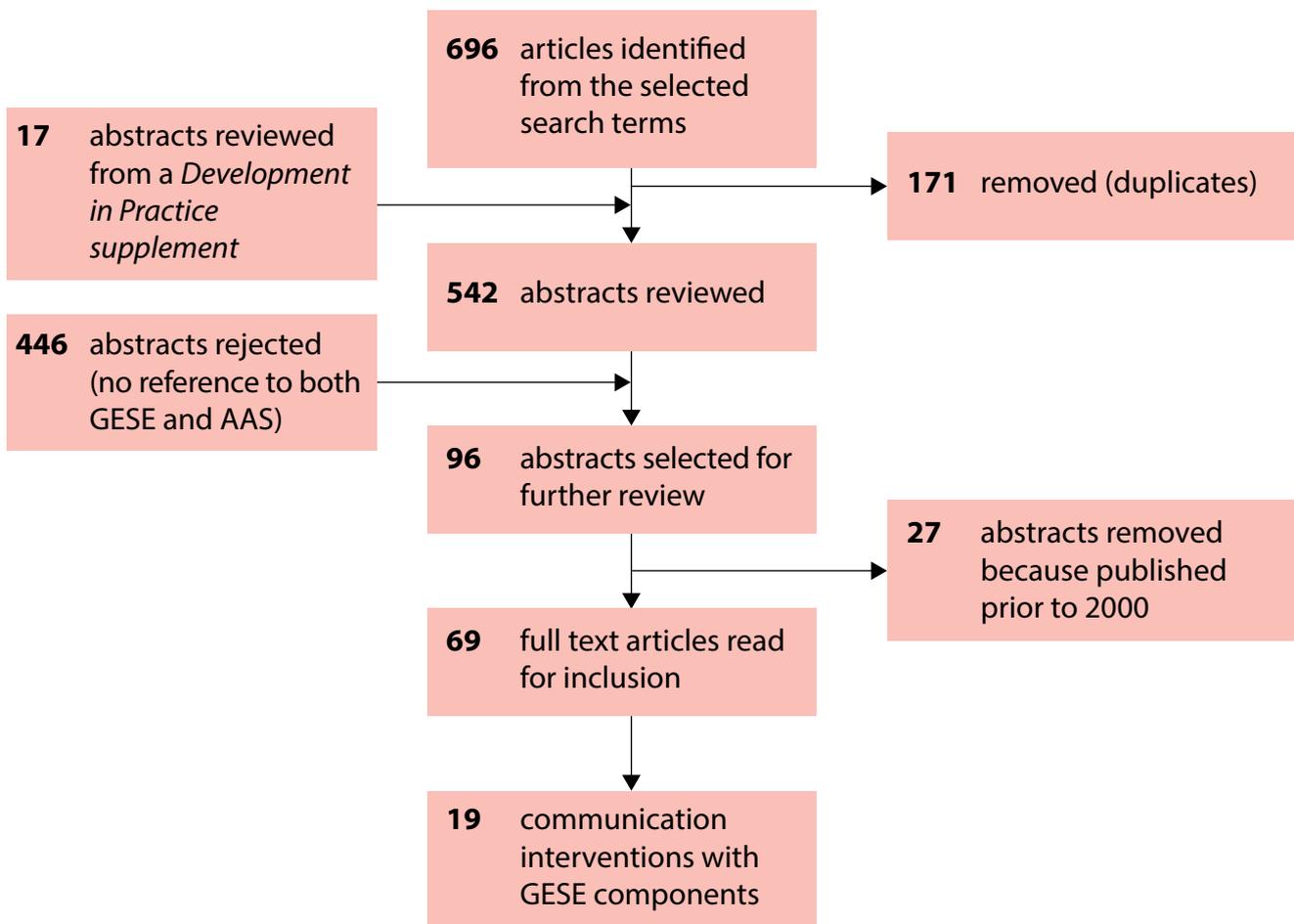


Figure 3. Flow chart depicting process used to isolate peer-reviewed literature relating to GESE-related communication interventions in agriculture for inclusion in this report.

APPENDIX 2

Peer-reviewed or gray literature?	Intervention title	Country	GESE communication component	GESE-related focus
Peer-reviewed	Integrated Population and Coastal Resource Management (D'Agnes et al. 2005)	Philippine coastal area	Peer education	Gender equality Increased women's engagement in coastal management activities, increased participation in management and increased role of men in family planning decisions.
Peer-reviewed	SUCCESS project (Torell et al. 2010)	Thailand, Tanzania and Nicaragua	Training programs	Social inclusion Improved social ties and relations as a result of intervention activities.
Peer-reviewed	Gender and livelihood analysis in Mali (Tindall and Holvoet 2008)	Mali	Feedback step included meetings, workshops and community theater	Gender equality Limited information available on intervention components.
Gray literature	Aquaculture Development in Northern Uplands project (Kibria and Mowla 2004)	Rural Vietnam	Training programs	Gender equality Increased women's status in aquaculture activities, increased role of women's groups in the intervention, and improved partner communication.
Gray literature	Mymensingh Aquaculture Extension project (MAEC)	Bangladesh	Training programs, formation of community groups	Gender equality Increased decision-making power in production, but effects were gendered and men often still had the final say.
Gray literature	Greater Noakhali Aquaculture Extension Project (GNAEC) (Ministry of Foreign Affairs of Denmark, 2008)	Bangladesh	Training programs, formation of community groups	Gender equality Increased decision-making power in production, but effects were gendered and men often still had the final say.

Gray literature	Patuakhali Barguna Aquaculture Extension Project (PBAEC) (Mowla and Kibria 2006)	Bangladesh	Training programs, formation of groups	Gender equality Women's participation in intervention activities was limited due to community norms.
Gray literature	Artisanal Fisheries Promotion Project (ProPESCA) (IFAD 2010)	Mozambique	Training programs	Gender equality and social inclusion Goals were to address issues of gender and poverty for poor and marginalized communities.
Gray literature	"Women's participation in coastal resources management and livelihoods in Vietnam" project (Nguyen et al. 2003)	Vietnam	Training programs	Gender equality Demonstrated increased gender awareness among women.
Gray literature	Adapting Integrated Agriculture Aquaculture for HIV and AIDS-Affected Households Project (Nagoli et al. 2009)	Malawi	Training programs	Gender equality Demonstrated integration of aquaculture techniques, increased income, and reduced malnutrition, but gender outcomes were not yet analyzed.
Gray literature	Coral Reef Rehabilitation and Management Program, Phase II (COREMAP II) (Pehu et al. 2009)	Indonesia	Training programs, formation of women's groups	Gender equality Increased women's participation in management and women's groups.
Gray literature	The Greater Options for Local Development through aquaculture (GOULDA) (Pehu et al. 2009)	Bangladesh	Training programs, formation of community groups	Gender equality Increased productivity and income, but limited information on the effect of the intervention.
Gray literature	The Caste Aquaculture for Greater Economic Security (CAGES) project (Pehu et al. 2009)	Bangladesh	Training programs, formation of community groups	Gender equality Increased productivity and income, but limited information on the effect of the intervention.
Gray literature	Locally Intensified Farming Enterprises (LIFE) project (Pehu et al. 2009)	Bangladesh	Training programs, formation of community groups	Gender equality Increased productivity and income, but limited information on the effect of the intervention.

Gray literature	The Regional Fisheries Livelihoods Programme (RFLP) (Lentisco 2012)	Sri Lanka, Vietnam, Indonesia, Cambodia, the Philippines, and Timor-Leste	Training programs	Gender equality Increased participation in project, but limited changes to women's roles or participation in community affairs in Indonesia (Fitriana 2012).
Gray literature	Second Small-Scale Water Resources Development Sector Project (ADB 2012)	Bangladesh	Training programs, awareness campaign (factsheets and newsletters)	Gender equality Increased managerial roles held by women. Increased employment of women. Limited information available on intervention activities.
Gray literature	Aquafish Collaborative Research Support Program (AquaFishCRSP) (AquaFish CRSP n.d.)	Mexico, Nicaragua, Boca Camichin	Training programs, workshops, awareness campaign (TV)	Gender equality Goal of activities was to increase women's participation in aquaculture and improve livelihoods.
Gray literature	Aquafish Collaborative Research Support Program (AquaFishCRSP) (AquaFish CRSP n.d.)	Cambodia and Vietnam	Training programs	Gender equality Goal of activities was to address political involvement, decision-making, and economic conditions. Limited information available.
Gray literature	Gender Quality Action Learning Program (GQAL) (Mahmud et al. 2012)	Bangladesh	Peer education, community events (community theater), awareness campaign	Gender equality Administered in conjunction with other efforts targeted at poor and marginalized communities. Changes to household roles, autonomy, gender attitudes, and community engagement were demonstrated.
Gray literature	Sustainable Fisheries Livelihood Programme (SFLP) (Westlund et al. 2008)	25 African countries	Workshops and dialogues, community events (community theater), awareness campaign (newsletters, radio, videos, websites, libraries), training programs	Gender equality and social inclusion Integrated gender-related activities with efforts to reduce poverty.

Gray literature	Sarawak Development Institute project (Annuar 2006)	Malaysia	Community dialogues, awareness campaigns	Social inclusion Limited information on intervention components.
Peer-reviewed	Enabling Rural Innovation Initiative (Kaaria et al. 2008)	Malawi	Training programs, formation of community "research" groups	Gender equality and social inclusion Addressed gender and wealth inequities and used participatory methods to evaluate effects.
Gray literature	Aquaculture Development Project	Bangladesh	Community mobilization	Gender equality and social inclusion Limited information on intervention components.
Gray literature	Sustainable Aquatic Resources Management (SARM) (Shelly and Costa 2002)	Bangladesh	Formation of women's groups to facilitate training programs and community mobilization	Gender equality Increased women's participation in production and improved status of women in household and community.
Gray literature	Community Based Fisheries Management projects (Sultana et al. 2002; Naved 2000)	Bangladesh	Formation of women's and community groups to facilitate training programs and community mobilization	Gender equality Increased control and responsibility allocated to women, but challenges remained in changing women's roles.
Gray literature	Empowerment of Coastal Fishing Communities for Sustainable Livelihoods Project (UNDP 2005)	Bangladesh	Formation of women's and men's groups to facilitate training programs and community mobilization	Gender equality and social inclusion 248 organizations provided a space to address marginalization and develop capacity.
Gray literature	Small-Scale Aquaculture Program (Bhujel and Shrestha 2011)	Nepal	Formation of women's groups to facilitate training programs	Gender equality Aimed to increase women's participation in intervention activities through formation of groups.
Peer-reviewed	The Integrated Agriculture Training Program (IATP) (Cahn and Liu 2008)	Papua New Guinea	Training programs (informed by participatory methods)	Gender equality and social inclusion Community needs (including women's voices) were incorporated into design of training programs to address empowerment.

Peer-reviewed	Farmer Field School Project (Duveskog et al. 2011)	Kenya	Formation of groups to facilitate discussion and experiential learning	Gender equality and social inclusion Increased agency and capacity among participants.
Peer-reviewed	Promoting Farmers' Innovation Program (Najjar et al. 2013)	Kenya	Formation of groups to facilitate discussion and experiential learning	Gender equality and social inclusion Increased community participation and autonomy among women Increased group identity.
Peer-reviewed	Farmer Field School Project and the (Friis-Hansen 2008)	Uganda	Formation of groups to facilitate discussion and experiential learning	Gender equality and social inclusion Programs targeted women as well as illiterate and marginalized farmers. Increased production and wealth as well as reduced poverty. Effect of participation in FFS and NAADS farmers' groups assessed together (Friis-Hansen, 2008).
Peer-reviewed	National Agricultural Advisory and Development Services (NAADS) Program (Friis-Hansen 2008)	Uganda	Formation of groups to facilitate discussion and experiential learning	Gender equality and social inclusion Programs targeted women as well as illiterate and marginalized farmers. Increased production and wealth as well as reduced poverty. Effect of participation in FFS and NAADS farmers' groups assessed together (Friis-Hansen, 2008).
Peer-reviewed	Farmer Field School Project (Mancini and Jiggins 2008)	India	Formation of groups to facilitate discussion and experiential learning	Gender equality and social inclusion Used participatory evaluation to demonstrate differential effects on participants by gender and wealth.

Peer-reviewed	Gender Informed Nutrition and Agriculture (GINA) programs (Lewis 2014)	Uganda, Mozambique, Nigeria	Training programs and community mobilization/engagement	Gender equality Increased women's status, transformed gender roles in production, and improved role of women in financial decision-making. Limited information is available on intervention components.
Peer-reviewed	The Opportunities for Women of Low Income in Rural Areas (Project OM) (Urquieta-Salomón et al. 2009)	Mexico	Training programs utilizing participatory methods to emphasize role of women as transformative agents	Gender equality and social inclusion Targeted marginalized women. Increased participation in agriculture and understanding of gender equality. Limited effects on food expenditures and income.
Peer-reviewed	Listening to Dragonflies Project	Vietnam	Community engagement via targeted training programs and workshops	Gender equality Goal was to challenge inequality, but limited comprehensive evaluation of inequality or empowerment.
Peer-reviewed	New Coalition Research Approach (Goodrich et al. 2008)	Nepal	Formation of community groups and community mobilization	Gender equality and social inclusion Targeted poverty and gender issues. Adoption of technology associated with increased productivity and greater sharing of household duties.
Peer-reviewed	Second phase of the Upper Mandrare River Basin Development Project (PHBM) (Shapiro et al. 2010)	Madagascar	Training programs in conjunction, community events, and awareness campaigns (radio and posters)	Gender equality Increased participation of women in intervention activities, increased role of women in decision-making.
Peer-reviewed	Governanza con Capital Social (Cole et al. 2011)	Ecuador	Awareness campaign to disseminate information, training programs, and community engagement	Social inclusion Focused on farmers' rights and social engagement.

Peer-reviewed	Poverty Elimination Through Rice Research Assistance (PETRRA) (Salahuddin et al. 2008)	Bangladesh	Awareness campaign included to disseminate results of research to community. Research informed by participatory methods	Gender equality and social inclusion Targeted women and poor farmers to address gender- and poverty-related issues. Limited description of intervention components provided.
Peer-reviewed	CARE Rights-based Approach to Food Security Project (Archibald and Richards 2002)	Sierra Leone	Community events to facilitate group discussions	Social inclusion Addressed marginalized populations in communities to increase their participation in intervention activities.
Peer-reviewed	Pilot study for the National Academy of Agricultural Research Management (NAARM) farm (Sastry and Manikandan 2002)	India	Community events to increase engagement with program activities, training programs, and dialogues with community members	Gender equality Program targeted women workers. Increased confidence, decision-making, productivity, and commitment to work were demonstrated among participants.
Peer-reviewed	"Empowerment of women in agriculture" project (Meena et al. 2012)	India	Formation of self-help groups to facilitate awareness camps and training programs	Gender equality Aimed to empower women Demonstrated increased confidence, self-esteem, decision-making, capacity, and empowerment among participants.
Peer-reviewed	Promoting Sustainable Agriculture in Borno State (PROSAB) Project (Tebgaru et al. 2010)	Nigeria	Formation of community groups and women's group farms	Gender equality Increased mobility, social capital, social networks, self-efficacy, leadership roles, and incomes were demonstrated among women.
Peer-reviewed	Gono Kallayan Trust (GKT) Homestead Vegetable Programme (Ahmed et al. 2011)	Bangladesh	Formation of women's groups encouraged to facilitate training programs	Gender equality Aimed to increase access to technology and income among women, but limited information is available on intervention components.



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About the CGIAR Research Program on Aquatic Agricultural Systems

Approximately 500 million people in Africa, Asia and the Pacific depend on aquatic agricultural systems for their livelihoods; 138 million of these people live in poverty. Occurring along the world's floodplains, deltas and coasts, these systems provide multiple opportunities for growing food and generating income. However, factors like population growth, environmental degradation and climate change are affecting these systems, threatening the livelihoods and well-being of millions of people.

The CGIAR Research Program on Aquatic Agricultural Systems (AAS) seeks to reduce poverty and improve food security for many small-scale fishers and farmers depending on aquatic agriculture systems by partnering with local, national and international partners to achieve large-scale development impact.

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