



The Journal of the Asian Fisheries Society

GENDER IN AQUACULTURE AND FISHERIES: THE LONG JOURNEY TO EQUALITY



SPECIAL ISSUE

Gender in Aquaculture and Fisheries: The Long Journey to Equality

Papers from the 5th Global Symposium on
Gender in Aquaculture and Fisheries
12-15 November 2014
10th Indian Fisheries and Aquaculture Forum
Lucknow, India

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Guest Editors

Nikita Gopal
Meryl J Williams
Marilyn Porter
Kyoko Kusakabe



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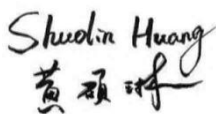
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Message from the Past and Current AFS Presidents

The 10th Indian Fisheries and Aquaculture Forum held during November 12-15, 2014 at Lucknow, India, was also the host to the 5th Global Symposium on Gender in Aquaculture and Fisheries (GAF5). This event continued the women/gender and fisheries Symposia held by the Asian Fisheries Society (AFS) in the previous six triennial Asian Fisheries and Aquaculture Forums, starting in 1998 with the 5th Forum. The Society is the only fisheries and aquaculture professional body to regularly conduct gender themed symposia. Through its active Indian Branch, AFS provided GAF5 with the platform for fisheries and gender researchers, development specialists and advocates to share their knowledge and network. We are pleased to note that GAF5, attracted many new participants, especially young students and researchers, as well as experienced experts. GAF5 session formats were varied to suit their topics, and included oral and poster presentations, award winning documentaries and videos, and dedicated workshops and panel discussions. The presenters and audiences engaged actively, in the formal sessions and informally during the breaks.

This is the third Special Issue on gender in aquaculture and fisheries published by the Asian Fisheries Science journal. In 2012 and 2014, we published Special Issues containing papers from GAF3 and GAF4. The themes captured in the present Special Issue cover gender in aquaculture development, the conduct of small scale fisheries and global policy developments affecting them, in post-harvest activities, and in fisheries and aquaculture institutions.

We congratulate the Co-editors and the authors for producing this Special Issue. A special note of thanks to Nikita Gopal, the chief editor and the head of the Programme Sub-Committee for GAF5 for providing the leadership to produce this Special Issue on gender in aquaculture and fisheries, which we are pleased to commend to you.



Shuolin Huang
Past President (2013-16)
Asian Fisheries Society



Joykrushna Jena
President (2016-19)
Asian Fisheries Society

Acknowledgements

The 5th Global Symposium on Gender and Fisheries (GAF5) was held during 12-15 November 2016 in Lucknow, India at the 10th Indian Fisheries and Aquaculture Forum (10ifaf). While every other GAF has been held in conjunction with the Asian Fisheries and Aquaculture Fora, this was for the first time that one was held at an Indian event. The event was successfully held with the support of many organisations and individuals, who have helped us along the journey to GAF. Grateful thanks to the Asian Fisheries Society, the Asian Fisheries Society-Indian Branch, the Local Organising Committee in India under Dr. J. K. Jena, who is also the incoming President of AFS, the Indian Council of Agricultural Research, Network of Aquaculture Centres in Asia-Pacific (NACA), United States Agency for International Development MARKET project (USAID-MARKET), Norad (Norwegian Agency for Development), Marine Exports Development Authority (India), National Fisheries Development Board (India), ICAR-National Bureau of Fish Genetic Resources, Aquaculture without Frontiers and the presenters and their host organisations.

The GAF5 was unique in its mix of programmes. It started off with two plenary talks and had four regular sessions with 11 presentations. A special country session titled *Focus India* was introduced for the first time and this is to be continued in subsequent GAFs, focussing on the host countries. In *Focus India* eight presenters presented gender work from India. There were also three Special Workshops – one on *Towards GAF 101 – Mainstreaming Gender into Aquaculture & Fisheries Education* led by Marilyn Porter; a second, led by Dr. Cherdsak Virapat (Director General, NACA), on the *NACA-MARKET Thematic Studies on Gender in Aquaculture in Cambodia, Lao PDR, Thailand and Vietnam* project which had six presentations of work carried under the project in the countries of the Lower Mekong region; and a third one on *Gender Aquaculture and Fisheries Writing*. GAF5 also had a Panel Discussion on *SSF Guidelines from a feminist perspective* with three presentations followed by in-depth analysis and discussion. A unique feature of GAF5 was a separate session

for invited films where six films and videos were screened, all dealing with various aspects of women in fisheries and aquaculture.

As with previous GAFs, GAF5 also attracted a large number of participants, including those who chose to attend the event after their presentations at other sessions in the main event. The venue was never short of people engaged in discussions making the proceedings very lively. The extra effort taken by the hosts to make GAF feel at home is gratefully acknowledged.

The publication process, which has followed a similar pattern to that of past GAF events, has been exhilarating. The patience of the authors and co-authors of the 12 published papers, to attend to the revisions required, is greatly appreciated. Also gratefully acknowledged are the help rendered by Prof. Mohamed Shariff, Editor and Ms. Choo Poh Sze, Assistant Editor, Asian Fisheries Science Journal for their comments and suggestions in finalising the papers in this Special Issue.

We are also very thankful to our reviewers who have met our tight schedules and deadlines and obliged us in bringing out this Special Issue.

Disclaimer

The contents of the papers and other articles of this Special Issue represent the views of their authors. They do not represent the views, position or policies of the Asian Fisheries Society or any of the other organisations acknowledged above.

Guest Editorial: The Long Journey to Equality

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This Special Issue of Asian Fisheries Science journal includes 12 papers and a report based on the presentations and posters of the 5th Global Symposium on Gender in Aquaculture and Fisheries (GAF5) held during the 10th Indian Fisheries and Aquaculture Forum, November 2014, Lucknow, India. GAF5 was the seventh women/gender Symposium organised by the Asian Fisheries Society (AFS), and the first to be held in conjunction with a national AFS branch forum. For each event, the proceedings or selected papers have been published (Williams et al. 2001; Williams et al. 2002; Choo et al. 2006; Choo et al. 2008, Williams et al. 2012a; Gopal et al. 2014). This is the longest continuous series documenting women and gender issues by a professional fisheries society.

In this Guest Editorial, we reflect on the “long journey” to addressing gender equality in aquaculture and fisheries, the emerging trends that we saw in GAF5, and the trends more generally in gender in the fisheries and aquaculture sectors. We also provide an overview of the papers in this Special Issue.

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The long journey

The long journey of the AFS gender group is partly due to the nature of its work, and partly due to the lack of progress on gender equality in the fisheries and aquaculture sectors themselves.

The Asian Fisheries Society (AFS), through its Indian Branch, held its first women in fisheries event in 1990 (Gadagkar 1992). AFS gradually built on this start with other national, regional and global events as Meryl J Williams (2014a) described in her essay on Dr M.C Nandeesh, the initiator of most of the early events.

The AFS gender activities have been shaped by the nature of AFS as a professional society promoting interactions and cooperation among scientists and others concerned with sustainable utilisation, cultivation, conservation and development of aquatic resources. AFS works by addressing fisheries issues, linking fisheries scientists, developing young scientists, promoting global cooperation, encouraging network formation and disseminating information through publications.

Unlike most other professional fisheries and aquaculture societies, AFS has given priority to women and gender equality as fisheries issues. To address gender equality, AFS has held regular symposia and published their results through peer reviewed literature. Members of the AFS gender group have also worked with professional societies such as the International Institute of Fisheries Economics and Trade (IIFET), the World Aquaculture Society and others to support gender sessions at their events.

The regular AFS Gender in Aquaculture and Fisheries (GAF) symposia have evolved to become more focused on key themes and priorities, and have varied the formats of the sessions to suit needs, such as workshops, e.g., on gender in aquaculture research planning, and feminist research methodology (GAF4), panel discussions and video presentations. Following extensive discussions, and in response to requests, a training workshop in basic gender research methodology - GAF 101 - will be held at GAF6.

Since the early 2000s, AFS has augmented its gender symposia work with electronic lists for sharing new research, events, employment and

consultancy opportunities, and discussing relevant topics, such as suitable tertiary course materials on gender in fisheries. The gender group also hosts a substantial website, <http://genderaquafish.org/>, which contains materials from all past symposia, news and links. A new section of the website is being developed, called Discover GAF, that will contain authoritative but easy to understand materials on topics on women/gender in fisheries and aquaculture. Two early model presentations are now available, on gleaning and women divers (<https://genderaquafish.org/discover-gaf/>). The gender group also reaches out to different, but overlapping audiences through its social media, namely a Facebook page (<https://www.facebook.com/AFS-Gender-in-Aquaculture-and-Fisheries-181176555231544/>) and Twitter feed (@Genderaquafish). Key members of the AFS group also contribute regularly to gender in fisheries newsletters of other like-minded partners, especially the Women in Fisheries Information Bulletin of the Secretariat of the Pacific Community, and *Yemaya*, the gender newsletter of the International Collective in Support of Fishworkers.

All of these activities have depended on the strong support of successive AFS Councils, many generous symposia donors, from time to time the support of mainstream institutions such as WorldFish Center, NACA and the Indian Council for Agricultural Research, the volunteer work of key gender group members, and the many presentations from those engaged in relevant research and development activities. The gender group, however, is not in a position to develop and conduct its own projects, other than run the symposia, publications and social media, nor engage in advocacy, e.g., for gender equality. To a large extent, therefore, the size and quality of the symposia and their products is a mirror of what is being invested in GAF generally. Despite the long journey to date and the gradual strengthening of the AFS gender group's capacity, our assessment is that the investments are far too modest and totally inadequate to the needs.

The AFS gender group is now becoming a formal GAF Section of AFS, a step that may give its work greater profile and outreach. Given the slow and long journey so far, however, the AFS Section and its partners urgently need to leverage their modest achievements in terms of knowledge to increase greatly the global quantum of GAF research, development and application. We need a much higher level of investment so that the theory, methods and tools for addressing gender inequality in aquaculture and fisheries become well

developed and disseminated. To make this leap will mean making the case for gender equality and social justice and the impacts for society, using as a base the present knowledge and theory.

Trends in addressing gender equality in aquaculture and fisheries

Less than two years has passed since we last reviewed trends in how the aquaculture and fisheries sectors were addressing gender equality (Gopal et al. 2014). In the interim, few dramatic changes have occurred. One important development is the incremental but important advance of gender equality on the fisheries policy and action agenda, e.g., the gender equality provisions of the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (VG SSF) (FAO 2014). Inevitably, the new directions and opportunities bring teething problems. Typically, gender actions are introduced through audits, followed by small projects, conducted by new actors or contracted actors working within existing cultural norms inside mainstream fisheries/aquaculture institutions, households and communities. This pathway soon tends to lead to loss of enthusiasm and lack of momentum, or even resistance by the status quo. These teething problems are exacerbated by the fact that the conceptual basis for introducing gender equality is weak. For example, development projects to empower women may simply introduce more work for them without changing their powers of self-determination (Choo and Williams 2014), and tools to support the interventions often are lacking. We explored the issues of conceptual shortcomings in our previous Guest Editorial (Gopal et al. 2014) and so we will not revisit the issues here, although they persist and, given the greater interest in gender, are even more urgent.

As more agencies begin to pay greater attention to gender equality in their work, the lack of experience within institutes and the dearth of experienced experts become challenges. GAF5 contained many presentations from research and development workers who were new to gender studies, although often highly experienced in technical fields of aquaculture and fisheries. Many of the studies presented were new works in progress, often in preliminary stages, and so relatively few were ready for publication. The present volume thus contains fewer papers relative to the number of oral and poster presentations than for other GAF events.

A networks meeting at GAF5 noted that several new gender in fisheries/aquaculture networks had been created, e.g., the Women's Network of Aquaculture without Frontiers, and the Gender in Aquaculture Group established by the Network of Aquaculture Centres in Asia-Pacific. It also noted that longer running groups such as Aktea in Europe, WinFish in Philippines and the Mekong Network for Gender Promotion in Fisheries Development continued to operate.

To further its own work, the informal group present at GAF5 established a working group to advise the Asian Fisheries Society (AFS) on formalising the AFS Gender in Aquaculture and Fisheries (GAF) group. In April 2016, the AFS Council approved the creation of an AFS GAF Section (GAFS). This is only the second such specialist section in the AFS, the other being the Fish Health Section. It is also a world first for an aquaculture/fisheries society.

The draft objectives of the GAFS are to promote cooperation, increase awareness of the importance of gender and more particularly women, in fisheries and aquaculture, advocate for the advancement of women within the sectors, and promote the establishment of local gender networks.

To illustrate the type of work underway, we now focus on examples from the United Nations Food and Agriculture Organisation (FAO), which though a unique global body, serves as a useful barometer of interest in gender in aquaculture and fisheries. We also briefly mention recent reviews of gender work in the western Pacific region, an area thought to have one of the highest rates of women in fisheries (Harper et al. 2013).

FAO's gender activities

The FAO work on gender in fisheries and aquaculture often has global reach and can provide models for others to adapt. It also faces similar opportunities and challenges in what priority and resources to apply to gender, tending to neither lead nor lag behind regional, national and local bodies. We have also reported at some length on FAO's previous work and since our last brief survey (Gopal et al. 2014), this work has continued to expand its normative, project and information activities.

Normative activities that address gender equality are the above-mentioned VG SSF, and the proposed Global Work Programme for Advancing Knowledge on Rights-Based Approaches for Fisheries.

The SSFG promote a human rights based approach and include a specific chapter on gender equality and equity among the guiding principles. Throughout the text, gender is referred to, stressing that the improvement of livelihoods and the reduction of vulnerability in small-scale fisheries requires addressing gender issues. FAO intends to develop widely applicable guidance to raise awareness, and support advocacy and capacity development activities on the application of the relevant principles of the SSF Guidelines.

Typical of its recent greater recognition of the role of women in fisheries in its mainstream documents, FAO published a report on the technical and socio-economic characteristics of small-scale coastal fishing communities, acknowledging the role of women and of gender equality (FAO 2016a).

FAO has also been working for several years to develop the knowledge base for rights based approaches to fisheries, and now is at the stage of proposing a Global Work Program on this (FAO 2016b). The proposed Programme mentions the knowledge strategies for addressing gender inequality and promoting women's involvement in fish supply chains.

At the regional level, two significant FAO-led projects, the Bay of Bengal Large Marine Ecosystem (BOBLME) project, and the EAF (Ecosystem Approach to Fisheries)-Nansen project are starting to address gender issues. The BOBLME project has taken its gender assessment (Brugere 2014) and put gender considerations into the BOBLME Strategic Action Programme (SAP) that will be implemented in the second phase of the project. The SAP includes a gender target, and regional and national gender actions. The SAP has high-level endorsement by the countries, and therefore, future commitment to gender sensitive actions. In addition, the BOBLME Project, as the pioneer on gender, produced a generic brochure on mainstreaming gender in LME projects to inform current and future LME projects (BOBLME 2016).

The FAO EAF-Nansen project, operating in Sub-Saharan Africa, undertook its first ever gender audit and drew up recommendations for

addressing gender equality in project management, project activities and dissemination (FAO EAF-Nansen 2015).

FAO work on climate change and disaster management is slowly beginning to incorporate gender activities. Global Environment Facility climate change adaptation projects in fisheries and aquaculture, e.g., in Myanmar, Benguela Current LME and Bangladesh, will undertake gender-specific vulnerability assessments and promote gender differentiated adaptation plans to support adaptation in the value chains. A special session on gender and climate change will be held in the forthcoming FishAdapt: Global Conference on Climate Change Adaptation in Fisheries and Aquaculture (August 2016).

FAO considers gender mainstreaming as one of the overarching principles in responding to disasters. The Fisheries and Aquaculture Emergency Response Guidance (Cattermoul et al. 2014) provides indicators and guidance notes for the mainstreaming of gender in relief interventions. A practical example of gender-specific interventions include the work FAO is doing in Somalia where women were trained in boat building (<http://www.fao.org/blogs/blue-growth-blog/promoting-gender-in-fisheries-activities-in-somalia/en/> accessed 18 June 2016).

More and more FAO projects are including gender elements. By region, just a few are mentioned here.

In West Africa, the five-year FAO-GEF CFI (Global Environment Facility, Coastal Fisheries Initiative) project on achieving sustainable environmental, social and economic benefits has a focus on women fish processors and their organisations. It will cover Cape Verde, Cote d'Ivoire and Senegal and is expected to start in October 2016.

Completed in October 2015, the programme "Fishing along the Lagos-Abidjan corridor: Building partnerships to empower women and youth in matters of reproductive health," will go into a second phase focusing on youth reproductive health and youth employment. Important interventions will be on gender issues in female youth employment and enterprise development. This work is linked to the FAO regional programme "Strategic response to HIV/AIDS for fishing communities in Africa," started in 2012, that builds a

regional response to issues arising from migration and mobility in the fish sector. One of the programme areas is the Lagos-Abidjan corridor, where fishing communities, landing sites and fish markets are targeted and youth and women in the fishing communities are key actors in prevention approaches combining value chain upgrading or livelihoods diversification interventions with HIV counselling, sexually transmitted disease screening and family planning.

In late 2014, the project “Support to artisanal inland fisheries: Dissemination of post-harvest techniques in North-Western Angola” helped reduce post-harvest losses in five small-scale riparian fishing communities, with women at the center of the intervention.

In South America and the Caribbean, FAO projects involving gender have included those on the mollusc gatherers of Costa Rica, women in aquaculture in Chile, Colombia, Paraguay and Peru, and scoping studies for the Caribbean.

On the Pacific coast of Costa Rica, mollusc gatherers from about 1,000 families are mainly women and in many case the partners of fishermen, or single mothers. However, their work is not legally recognised, affecting the sustainable use of the mangroves and driving the collectors into illegality. In Chomes, Puntarenas, a group representing these women has organised “Coopemoluscos R.L”, a collective to develop their work in sustainable and decent conditions. With the support of FAO and Coope Soli Dar R.L. (a professional cooperative with the aim to promote sustainability), a partnership was developed to obtain official recognition of their work and to legally use the product and fight for their rights as mollusc gatherers. Today, the women have a government compromise to recognise an official sustainable use permit for six months, as a first step to cover about 50 women shellfish harvesters over labour rights and access to health, retirement pensions and social security. This is the beginning of a process to make mollusc gathering visible and empower the women harvesters in the framework of SSFG.

FAO has studied and will shortly publish studies on the contribution of women in the fisheries and aquaculture sectors in Chile, Colombia, Paraguay

and Peru, based on national reports and their synthesis. A Policy Note will also be produced

Under a Letter of Agreement with FAO, the Centre for Resource Management and Environmental Studies (CERMES) of the University of West Indies in Barbados, is preparing a scoping study on gender in fisheries from a fisherfolk perspective.

FAO's Asian activities are in the analytic phase and focus on women and men's division of labour and time use in rice shrimp farming in Soc Trang province, Vietnam, and comparative case studies of women's empowerment in aquaculture in Bangladesh and Indonesia.

FAO has a long history of work on small scale fish processing technology for women but with a predominantly technical focus. It has continued to expand its approaches and focus more on the needs of the women through such work as the FAO-Thiaroye Fish Processing Technique (FTT) (Ndiaye et al. 2014). The FTT capitalised on the assets of the last generation of improved fish-drying kilns, e.g., Banda, Altona, and Chorkor, and corrected limitations that undermined the working conditions and livelihoods of women fish operators. An ember furnace, a fat-collection tray, and an indirect smoke generator system were added. The new structure is multifunctional and considered gender sensitive for fish smoking, cooking and drying. Also, it yields safe and premium quality end-products, implying better opportunities for increasing women fish operators' incomes, including through potential access to international markets. By controlling heat and smoke emitted during smoking, the drudgery of women, and health, occupational and safety hazards are reduced. In African countries where it has been trialled, namely Angola, Côte d'Ivoire, Gambia, Ghana, Guinea-Bissau, Tanzania, Togo and Senegal, the FTT-Thiaroye has achieved significant post-harvest benefits to women fish processors. The use of this technique has also expanded to Asia, where it is being piloted in Sri Lanka.

In terms of information activities, in addition to promoting the results of the above work, FAO has made a major step towards engendering its fisheries statistics. The "Guideline to Enhance Small Scale Fisheries and Aquaculture Statistics", presents a methodology for data collection that includes the

contributions of women (FAO 2015). For the first time, the biennial FAO State of Fisheries and Aquaculture Report provides gender disaggregated data for six countries from 2010 to 2014 (Australia, Chile, Japan, Mauritius, St Lucia and Sri Lanka) (FAO 2016c).

Little recent interest on gender in western Pacific fisheries

Three recent overviews of the attention to women's contributions to Pacific island countries' fisheries found little progress had been made since the completion of the 2008 major coastal fisheries study led by the Secretariat of the Pacific Community (SPC) (Williams 2014b; 2015; and Gillett 2106). Indeed, in the last 25 years, attention to women in fisheries seems to have waxed and waned in the work of the SPC (Williams 2014b).

The Special Issue

The event, GAF5, comprised contributed presentations addressing a wide range of topics, many of which are reflected in the selected set of papers in this Special Issue of *Asian Fisheries Science*. For simplicity, we have organised the papers into the following sections: aquaculture, small-scale fisheries, post-harvest and fisheries and aquaculture institutions, communities and gender. Not only are the topics covered in the Special Issue varied, but so too are the types of papers, which are classified as: research papers (as defined for regular volumes of *Asian Fisheries Science* journal), technical papers (containing significant new technical information gathered from original studies), and short communications (on development work, surveys or projects). Although the selected papers represented those from the more mature studies presented at GAF5, they report, in general, on research in its earlier stages. We consider this a potentially healthy sign of the greater interest in gender studies in aquaculture and fisheries, but we are also aware of the need for some urgency in proving up promising directions.

Aquaculture

Three papers addressed gender in aquaculture settings. These were concerned with the results of different gender and learning approaches.

Cathy Farnworth and colleagues compared two approaches to transform gender relations and improve fish production in Bangladesh. They compared the “Shaded pond” project that applied a social learning and gender accommodative approach, and the Gender Transformative Approach in Conventional Training (GTA-CT), that took a transfer of technology and gender transformative approach. The former integrated the gender perspective into their social learning approach, while the latter provided explicit gender training alongside fish production training. The result was that in both cases women participated more in household decision making and improved their confidence level. The authors pointed out that how knowledge was transferred is important rather than whether gender training was provided or not to improve women’s active engagement.

Seila Chea and her colleagues similarly noted that engaging women in the process of knowledge and skill development is important to ensure women benefit most from aquaculture projects. They studied the “WISH-pond” project in Stung Treng, Cambodia. This project facilitated transformative learning in peri-urban households for small-scale aquaculture. Promoting women’s participation was incorporated in the project design, and the exploratory study suggested that the community science approach, where the drive of the research comes from fish farmers themselves, facilitated women’s skill improvement.

Liya Jayalal, in her paper on ornamental fish value chains in two places in Kerala, India, observed that though the culture of ornamentals is a growing business and an attractive livelihood option for women, it is not always taken up with full energy, mainly due to lack of family back up. Women taking credit almost always divert that credit for other household related uses. Where it has been taken up as a family enterprise, the results have been encouraging.

Small-scale fisheries

Five papers addressed small-scale fisheries, covering topics from as broad as the way gender is included in the global Small-Scale Fisheries Guidelines, to as specific as the little-documented fishing methods of women in traditional fisheries and how making a documentary film helped women enhance their narrative skills and human capital.

By applying a gender lens to the Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the Context of Food Security and Poverty Eradication (VG SSF), Cornelia Quist provides an overview of the articles of the VG SSF that are important for gender equality and gives clear views on the strengths and weaknesses. She notes that the VG SSF contain weaknesses with respect to gender equality. They are only voluntary and couched in the context of existing, and therefore unequal, laws and institutions, and are overly reliant on mainstream technical measures rather than transformative social change. Cornelia Quist's paper does, conclude, however, that the VG SSF does open up space for action and programmes and hopefully more resources to support gender equality.

In their innovative approach Enrique Poblacion, David Monforte and Alberto Castro explored the role of film making in recognising and making visible the work and lives of women divers of Timor Leste. As they engaged in the film making process, the women enhanced their narrative capabilities and in so doing enhanced their "human capital."

Surendran Rajaratnam and his colleagues analysed women's involvement in fisheries in the Barotse Floodplain in Zambia. They demonstrated how gender norms and power relations restrict women's access to resources and prohibit them from benefiting from fisheries, making them rely on others. Women non-resident fish traders are able to negotiate and establish different relations with fishers than in the case of resident women. However, still, the non-residents' weak bargaining power can result in sex-for-trade relationship in order to secure fish supply.

Focusing on an area of North Eastern India, Shaikhom Inaotombi and Prabin Mahanta make women's role in the fishery more visible by exploring the ways in which local women's traditional knowledge influences women's participation in fisheries, in particular in the gear and unique methods they have developed. They argue that protection of such methods will strengthen women's position in the fishery even as it changes.

P. Sruthi and her colleagues examined gender roles in the Vembanad estuarine system in Kerala, India. She found that whereas men fished in both marine and inland waters, women only fished in inland waters, using primitive

traditional gear like scoop nets, that have not seen much evolution except in terms of the materials used. The women's fishing was declining, however, and young women shunned fishing.

Post-Harvest

Two papers addressed post-harvest topics, both concerned with women and fish trade.

In her carefully observed study of the processed fish traders of Tonle Sap Lake on the borders of Cambodia and Thailand, Kyoko Kusakabe argues that while collective action clearly benefits the female processors, the competitive nature of the existing value chain and the relationship between different actors with different powers, together with their market vulnerability prevent them from taking full advantage of their situation, and this, in turn, pushes them further to depend on Thai traders.

Bibha Kumari described the situation of fish traders in Patna fish market in Bihar, India. She noted that since the early 1990s, men fish traders have increased and the proportion of women traders decreased. The main reason is that the market places are insecure and lack facilities. The women traders' experience and fear of sexual harassment pushed the women to choose even more casual trading options such as moving from place to place.

Fisheries and Aquaculture Institutions, Communities and Gender

Meryl Williams' more general piece looks at the unequal and uneven progress towards (possible) gender equality in the fisheries and aquaculture sectors. She recognises the long term and persistent efforts of individuals and NGOs, such as the Asian Fisheries Society, but is much more critical about the role of established fisheries and aquaculture institutions, arguing that rather than taking gender equality seriously they tend to "outsource" gender concerns to informal networks, consultants or NGOs.

To illustrate the challenges faced when mainstream aquaculture institutions decide to include gender in their programs, Arlene Nietes Satapornvanit and her colleagues examine the processes involved in conducting a multi-country project in Cambodia, Laos, Thailand and Vietnam. They found

that, despite a certain willingness to introduce gender, the government agencies tend to have insufficient capacity and tools to make much progress. At this stage of introducing gender equality objectives, the officers felt they needed support and collaboration from regional bodies such as the Network of Aquaculture Centres in Asia-Pacific (NACA) and access to knowledgeable experts from other countries.

Conclusions

Despite the richness of the articles in this issue and the research on which they are based, much work remains to be done. The potential of a field of academic research that encompasses both social and natural sciences is significant. Ideas and practices can move to and fro between previously closeted academic disciplines. Practical, field based research can draw on the theoretical work of academic researchers; academic researchers can learn from and incorporate the realities in the field and practical knowledge being generated. Above all, GAF can provide practical and theoretical support to the increasing numbers of young researchers who are eager to incorporate gender concerns into their projects.

We are encouraged to see that an international organisation such as FAO is taking gender concerns into consideration in its program, and that many networks are emerging. The regular GAF events of the AFS also show that more and more researchers are interested in studying gender and fisheries/aquaculture, both from among the social scientists and fisheries biologists. Thus the GAF events create a unique forum for social and natural sciences to meet and discuss, which is often not the case in other disciplines.

There is still much work to be done in both developing and disseminating theory and methods that are relevant to researchers in gender and aquaculture and fisheries. This Special Issue is thus part of a larger endeavour to develop and sustain a growing population of well-informed gender specialists in fisheries and aquaculture. For gender research, tools development and dissemination is required in fisheries and aquaculture. However, we are concerned that a much bigger agenda than presently envisaged by mainstream institutes and funders is required to make progress.

The history of GAF development shows that we now have a sound platform to move ourselves wider and deeper – training new researchers and sustaining and developing more research from more diverse angles to have a more complex and nuanced understanding of GAF. For this, we call for more resources to facilitate the growth of an area of research that has a potential to influence and shape multi-disciplinary approaches in social and natural sciences.

The work has not finished, but it has now begun.

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RESEARCH PAPERS

Research Paper

How are Fisheries and Aquaculture Institutions Considering Gender Issues?

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Abstract

Dedicated fisheries and aquaculture institutions such as departments of state and of universities, and specialist research institutions play critical roles in key sectoral matters such as fisheries management and fish health. They pay little attention, however, to seemingly less urgent issues such as gender equality and equity. The present paper examines how, despite headwinds, existing and new institutions such as networks have launched a variety of gender activities. The institutions' work can be grouped into four categories: diagnostic exercises leading to action, human capacity development including network formation, development projects, and embedded gender policies and programs. The gender networks, mainly comprised of committed volunteers, have tended to substitute for in-house full time experts and thus the progress on addressing gender issues is fragile and measured in decades. In the fish sector, an activist campaign is needed now to generate urgency and more action on gender. The campaign, addressed to sectoral leaders and workers, must be based on a compelling case for gender equality, with measureable impacts in social and economic terms.

Introduction

Although distinguished by certain unique characteristics, the fish sector – fisheries, aquaculture, pre and post- harvest activities and fish value chains - is embedded in the global economy and attracts major technological and capital investment in production, processing and trade. Its actors, networks and businesses are highly masculine in personality. Gender and class hierarchies structure relationships between labour and ownership. In most fishery pursuits,

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women and poorer men who labour in the sector have negligible profile and influence.

Social and global movements such as feminism and the adoption of the 1979 United Nations Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) would have been expected to influence the roles and status of women in economic sectors such as fisheries. These movements, however, were too abstract and remote from the more proximate and dominant fish sector concerns over legal and economic change, e.g., the 1982 United Nations Convention on the Law of the Sea. Also, then and now, mainstream institutions viewed the sector as essentially masculine and women's inequality and rights as unimportant.

In the present paper, I contend that these realities continue to present major challenges for achieving gender equality. Gender, gender equality and gender equity are rarely embodied in current fish sector standards, policies, and strategies and therefore in the work of the sector's institutions. Women's interests and voices are seldom represented in business, policy and advocacy networks. Gradually over the last 30-40 years, however, some promising signs of positive moves towards considering gender issues have emerged, mainly arising through individuals and institutions inside the fish sector. These fragile developments can be traced in analysing the work of existing and new institutions.

Employment within the fish sector is gendered, leading to multiple pathways to gender inequality, particularly in the different opportunities for women and men and the quality of their engagement and benefits. Two broad and intertwined concerns are to first achieve social justice and support the wellbeing of those in the sector, and, second, to improve the contributions of women and men to the social and economic development of the sector and its environmental sustainability.

Social justice issues, broadly, are just beginning to be inserted into the public discourse on fish, following more than two decades of policy and external advocacy focus on economic growth and resource and environmental sustainability. One pathway to awareness of these issues has been via resource and environmental concerns that led to efforts to eliminate so-called IUU

fishing – illegal, unreported and unregulated fishing. This route stumbled across many instances of social injustice, such as the work conditions at sea and on land. Another route was via moves to address the gap between the rights to resources of small scale and industrial scale actors, resulting in the adoption of the 2014 Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication. Of these two routes, however, only the Small-Scale Fisheries Guidelines addresses gender inequalities.

One reason that the gender dimension of social justice in the access to and distribution of fish gets little attention is that fisheries institutions focus mainly on the primary production of fish, rather than on the whole supply chain. Lentisco and Lee (2015) attempted to broaden the concept of women's access to fish. They suggested that women's access could be termed primary, secondary or tertiary, according to whether women themselves catch fish or finance fishing operations, obtain fish through kin and other relationships, or whether they purchase it under market conditions for trade or own use.

In economic terms, women make up 47% of the fisheries supply chain workforce (World Bank 2012), and a substantial but unknown percentage of the aquaculture workforce. Numerous studies have indicated that their labour in the fish sector tends to be predominately in lowly paid or even unpaid work, suggesting that their economic contributions would be less than their level of participation indicates, thus leaving room for making that contribution greater. Moreover, many women are used as an opportunistic workforce, e.g., in fish processing factories, they often lack job security and, being invisible as an interest group, their needs are ignored in major sectoral changes. For example, women in Kerala, India, who relied on obtaining fish from beach landings lost their access when ports were constructed (Gopal et al. 2014a), and other cohorts of women were then employed in factories processing the catch. On the other hand, changes have brought opportunities and granted agency to many women (Chao et al. 2002; Shanthi et al. 2012; Soejima 2014).

Fish sector policies and practices frequently are gender blind, (FAO 2012; Brugere 2014 and FAO EAF-Nansen 2015) and hence risk being gender biased. Women's and men's work is affected in different ways by rapid value chain changes. For example, women's employment in the Norwegian salmon

farming industry fell from 20% in 1990 to 9% in 2010 as large vertical integrated companies took over small family farms (Maal 2013); women and men are affected differently by disasters and disaster recovery (Defiesta and Badayos-Jover 2014); women in some countries cannot register as fishers (e.g., women divers in Japan, Lim et al. 2012); and in fish sector households, unpaid work is disproportionately women's responsibility (e.g., women in a Philippine fishing community, Siar and Cañeba 1998).

Despite the gender differences in the fish sector, women – and men – often are not conscientised to the inequalities. Elite women, and men, are likely satisfied with their opportunities and do not seek greater gender equality.

Although work along the supply chain is highly differentiated by gender, sex-disaggregated data are not available (Monfort 2015). Women's contributions, which can be substantial, are therefore only available from a few point estimates and case studies. For example, Harper et al. (2013) estimated that Pacific women's inshore fish catches are worth USD110 million, and, with multipliers, a full economic contribution of USD363 million.

These examples show that gender differentials matter for individuals and society and suggest that gender deserves more serious attention. The present paper examines what a selection of new and existing institutions has been doing to address gender in the fish sector.

Materials and Methods

The present study uses mainly secondary materials in the period from 1980 to the present, although in several instances, I have been a witness to or a participant in the events analysed. I analyse a selected set of actions by fish sector institutions and individuals, and their impacts on the visibility and actions to support women and promote more equal gender relations in aquaculture, fisheries and fish supply chains. The year 1980 was chosen because it marks the potential start for detecting impacts of the adoption, in 1979, of the United Nations Convention on the Elimination of All Forms of Discrimination against Women (CEDAW).

The actions analysed included events, such as workshops, conferences, publications and the formation of networks, associations and formal organisational structures of relevance to the gender theme. The selected actions are not exhaustive and the sources are restricted to those in the English language. Due to my professional bias and the lack of ready access to documented histories, it also ignores a body of institution building at the grassroots level. The list is based on my direct participation and on a desk study of other events and written materials from the literature and internet searches of institutional material. An effort has been made to locate the earlier attempts at institutional focus on women (later gender) in fisheries. This is not a review of research papers on women/gender in fisheries.

Coming from a natural resource management background, I interpret the term “institution” according to Elinor Ostrom (2005): *Broadly defined, institutions are the prescriptions that humans use to organise all forms of repetitive and structured interactions including those within families, neighborhoods, markets, firms, sports leagues, churches, private associations, and governments at all scales.* Several of the institutions referred to in the following are formal organisations, others are less formal associations, and some are informal groups, including the open women/gender in fisheries and aquaculture group of the Asian Fisheries Society that has coalesced to conduct symposia and related activities on gender in aquaculture and fisheries. The institutions included in the present analysis are comprised of activists, researchers and their professional societies, and officers of national, regional and international organisations and ministries. Within the realm of the topic of women and gender in fisheries, aquaculture and fish supply chains, I attempt to trace awareness, interest and action using data on policies, events, research literature, and development projects.

Results

The work of fisheries and aquaculture institutions is the locus of many and varied stimuli and expectations, leading occasionally to gender initiatives, often launched into considerable headwinds, followed by varying degrees of success and perseverance. Both the headwinds and the types of gender initiatives that have emerged are examined.

The headwinds that challenge gender initiatives

The visibility of gender, especially gender equality, as an issue in the fish sector first should be calibrated against the visibility of the fish sector itself and then against that of other themes within the fish sector. Typically, the fish sector is viewed as a minor element in the agriculture and food sector. More recently, however, it has achieved some prominence because of the high value of international trade, concerns over fish stock sustainability (overfishing) and the trend of fish prices to rise compared to the price of comparable food commodities such as that of red meat (HLPE 2014). Within the fish sector, the visibility of gender is greatly overshadowed by that of other drivers such as economic globalisation, resource and environmental sustainability, aquaculture development, and governance reform. These other issues receive much more attention, action and funding, and may have impacts that create greater gender inequality, as Bodil Maal's example in the Norwegian salmon aquaculture industry showed (Maal 2013).

Despite these headwinds of visibility of and within the fish sector, attention to gender issues has been stimulated and expectations raised to a certain extent by external developments, but more strongly by the endemic actions of individuals, institutions and events.

At the global scale, we would have expected that the United Nations Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), adopted in 1979, might have triggered attention and action. The response of the fish sector, however, was minor.

Some early gender initiatives that may have been stimulated by CEDAW, such as the April 1987 FAO workshop on women in aquaculture, did not refer to CEDAW. The FAO event was funded by Norad and the Aquaculture Development and Coordination Programme of FAO and the United Nations Development Programme. Likely, the workshop was indirectly stimulated by the gender-aware strategies of the United Nations and development assistance agencies that CEDAW stimulated. Its conduct illustrates many of the fundamental challenges that are still being faced by efforts to address gender inequality in the fish sector.

The workshop (FAO 1987), was attended by 29 women experts in aquaculture (painstakingly described as the “principal participants”) and eight observers and other participants, mainly male aquaculture experts. The welcome by the then head of the FAO Fisheries Department reflected the thinking, still current in some quarters, that women experts, although their fields of knowledge may be highly specialised in technical areas, would naturally, as women, also “therefore have specific knowledge on the current status of women's participation in the sector.” He further noted that, “as you all ably demonstrate, aquaculture is proving to be a very appropriate sector for the employment of women, much to their economic and social benefits.” This emphasis on the economic contributions and benefits of women to the aquaculture supply chain is an appropriate role for FAO as an applied technical agency. The final conclusions of the Workshop were that “the need is for more well-directed efforts to involve women and to confirm their impact on the industry” (FAO 1987). The papers delivered by the women “principal participants” stressed that efforts should be appropriate to the country, industry and social context, but the ensuing history indicated that these words were not taken much further at the time, especially with regard to understanding social context.

In her feminist analysis of the 1987 FAO workshop report, Elizabeth Harrison (1995) noted the simplistic separation of women's from technical issues but noted that this would be expected from technical organisations staffed and set up to deliver technical interventions. She worked on one project of FAO that began its planning around the time of the workshop. In translating project plans into action on the ground, the efforts to involve women and youth had no specific budget and mainly focused on finding work activities for (already busy) women. The inevitable simplifications made “from Rome to the fish ponds” ignored household complexities and existing gender relations, and the priorities and incentives of the different actors all along the project chain (Harrison 1995).

Entwined individual interests, organisations and major events often have more powerful fish sector impacts than distant global instruments such as CEDAW. A watershed publication, the edited volume, “To Work and to Weep: Women in Fishing Economies,” (Nadel Klein and Davis 1988), drew worldwide academic attention to women in fisheries, and continues to be a classical reference. It reflected studies in anthropology and sociology and laid the

foundation of knowledge of women's roles and positions in fishing-based communities. Place and experience may have been important in stimulating this publication. Jane Nadel Klein and Dona Lee Davis worked in Newfoundland, Canada, which, shortly after their book was published, became notorious worldwide as the focal site of the Canadian cod fishery collapse. Publicly, the impacts of the cod fishery collapse were not perceived as gendered, but in reality they were (Davis 2000; Neis 2000). In endeavouring to portray the reality and advocate for attention to the women's losses, the advice of gender and fisheries researchers on the frontline was marginalised in the policy and post-collapse adjustment programs. With help from the network (FishNet), Barbara Neis reflected on how researchers' constructions of power and activism needed to adjust to local social realities of the women, a lesson for future gender researchers in the era of resource decline and natural calamities (Neis 2000).

Another seminal publication, "Women's fishing in Oceania" by Margaret Chapman, is a similar anchor for studies on women's fishing in the Pacific. In 1989, the Secretariat for the Pacific Community (SPC, then the South Pacific Commission) commenced its first efforts to assist women. It used women in fish processing as its entry point, and later, although with sporadic efforts, conducted other studies and projects on women, men and, to some extent, children in fishing, fisheries management and science. Despite establishing in 1997 a very important periodical, *Women in Fisheries Information Bulletin*, SPC has not given special space to women/gender in its fisheries and aquaculture priorities (Williams 2014a).

In 1990, the Asian Fisheries Society India Branch held the first women in fisheries workshop (Gadagkar 1992). This event was identifiably initiated by Dr Mudnakudu C Nandeesha (India), who went on to stimulate efforts by the Asian Fisheries Society that continue to this day (Williams 2014b) and which are described in more details below. In the International Institute for Fisheries Economics and Trade, global professional body, Professor Stella Williams of Nigeria has been the instigator of efforts for that body to pay greater attention to gender equality.

Modest as most of these founding actions by individuals and organisations were, they led to a burst of actions in the latter 1990s and early 2000s, raising expectations among the actors that women and gender had finally

arrived as a legitimate priority theme on the fish sector agenda. With hindsight, a sign that these expectations were inflated lay in the key global fisheries policy instrument of the period, the 1995 Code of Conduct for Responsible Fisheries. The Code did not make any mention of women and gender in its articles. Consequently, the Code did not contain a policy platform for gender equality, and its detailed implementation over the last two decades focused squarely on technical, legal and fishery production and sustainability matters (FAO 2012).

In the decade starting approximately in the mid-1990s, more people became interested in gender, new institutions such as networks were formed and conferences held. These will be analysed further below. Beneath this appearance of progress, however, a decade later the reality emerged that too little of this led to action on the ground, including support for women/gender projects and in depth research. In development terms, this peak of activity coincided with the period (1997 to 2001) of the lowest rates since 1960 of overseas development assistance (as a percentage of gross national income of the OECD donor countries) (<https://data.oecd.org/oda/net-oda.htm> accessed 26 June 2015). Thus, for developing country activities, available funds would have been highly competitive, and sufficient only for low cost efforts such as conferences and networks. Activities that would need a strong case for larger, more expensive interventions were at a special disadvantage as a strong case had not yet been made, successful development interventions were lacking and funds were scarce. Nearly two decades later, we are faced still with fundamental questions of how to avoid the “pitfalls of development projects” that aim to empower women (Choo and Williams 2014), and in finding evidence that gender makes a difference in fish sector development endeavours, e.g., in fisheries governance institutions (Leisher et al. 2015).

The current context for gender in the fish sector can be summarised as a lack of attention, resources and moral support, coupled with resistance from mainstream actors who are not convinced that gender inequality is real or that it matters, disillusionment among gender professionals and a genuine lack of tools and knowhow. Despite this rather challenging overview, the actual work on gender of fisheries and aquaculture institutions bears closer examination.

What Fisheries and Aquaculture Institutions Do?

Different institutions move at different rates when they decide to address gender, but across the landscape, five types of activities are discernible. These are: (1) diagnostic exercises leading to action, (2) human capacity development, (3) development projects, and (4) embedded gender policies and programs.

Typically, fish sector institutions are unused to addressing gender issues and thus, once an institution decides to embark on gender work, an early response is to diagnose the institution's mandate with respect to gender, usually by calling in outside expertise, and from this to develop options for action under the mandate. The reason for starting gender work is never an acute gender-related problem needing solution, in contrast, say, to new fish health work that may be demanded when a fish disease breaks out, or new resource management directions when a fish stock collapses. Gender diagnostic efforts, therefore, tend to be less urgent and problem focused, and their results are less likely to be implemented.

The rather low-key manner in which the United Nations Food and Agriculture Organisation (FAO) deals with gender in fisheries and aquaculture is a case in point. FAO's 2011 State of Food & Agriculture report was a special issue on the gender gap in agriculture but it also contained a brief treatment of women in fisheries and aquaculture (FAO 2011). In Shanghai in 2011, this report set the stage for a special one-day workshop supported by FAO after the Asian Fisheries Society's 3rd Global Symposium on Gender in Aquaculture and Fisheries (GAF3). The workshop provided advice to FAO on key issues (FAO 2012). FAO Fisheries and Aquaculture Department followed this with their own internal gender stocktake. The stocktake identified a large array of challenges facing the Department and formulated a program of action, starting with a gender strategy, through to tracking and assessing the progress of mainstreaming in FAO's work (FAO 2013). Although this has led to greater attention to gender in FAO fisheries and aquaculture field projects and policy advice, to date it has not led to internal high level gender expertise. For example, FAO Globefish commissioned Marie Christine Monfort to undertake a report that addressed the under-recognition of women in the private sector in the seafood industry, using enterprise statistics and case studies (Monfort 2015).

Another global diagnostic analysis which made some mention of women was the World Bank report, with FAO, on the numbers of workers in small scale fisheries. Called “Hidden Harvest,” it provided an estimate of the percentage and number of women in the whole of the world fisheries workforce (47% and 56 million women) and a summary table for women in fisheries workforces in its 10 case study countries (World Bank 2012). As full and part time workers were lumped in the statistics, and little further data or information were provided, however, these figures are tantalising but inconclusive, and remain to be substantiated and acted upon, e.g., in implementing better gender disaggregated statistical systems.

On a regional scale, several bodies have started to consider gender issues in their mandate areas. The intergovernmental Network of Aquaculture Centres in Asia Pacific (NACA) started by adopting a gender mainstreaming policy in 2012, then scanned for possible project directions (Anon. 2014), and, in 2013, launched its first project, the MARKET project in the Lower Mekong countries (<http://genderaquafish.org/gaf5-2014-lucknow-india/> accessed 29 June 2015). These efforts used the expertise of existing partner groups and mentors.

Two major institutionalised projects used a different approach. They conducted gender desk audits to help guide future work: Bay of Bengal Large Marine Ecosystem Project (Brugere 2014) and Ecosystem Approach to Fisheries (EAF)-Nansen project of FAO and Norway (FAO EAF-Nansen Project 2015).

The CGIAR research system has used yet another approach by basing its work on the conceptual framework of the Gender Transformative Approach. In the fish sector, this approach was incorporated into the Aquatic Agricultural Systems Program (Kantor and Apgar 2013; Ferrer 2014).

In India, the Indian Council of Agricultural Research (ICAR) developed a “Gender in Fisheries Roadmap” for its research institutes and bureaus, containing strategies for mainstreaming gender in research and outreach (Gopal et al. 2012). This approach was based on a review of ICAR’s own gender work, lessons from the work of the International Collective in Support of Fishworkers (ICSF), and a one-day brainstorming session leading to concrete themes. The themes identified were: (1) assessment of gender roles and analysis of gender

issues; (2) opportunities and constraints in performing gender roles; (3) power and decision making; (4) capabilities and vulnerabilities with respect to shocks; and (5) future strategies for mainstreaming gender equity and empowerment.

As some of the foregoing diagnostic examples show, fish sector institutions often lack gender expertise or have not yet made coherent plans for using in-house experience. To overcome these human capacity shortcomings, various human capacity development tactics are used, from forming gender networks, designating gender focal points, training staff, hiring consultants, appointing new staff and creating gender policies.

Networks, formal and informal, are the most popular, varied and externally visible institutions manifesting fish sector interest in gender, although the networks themselves are often modest and fragile. Networking is a method for aggregating the interests of several actors, many of whom are only able to devote part of their professional time to gender issues. The people involved in gender networks are from diverse backgrounds in government, academe, grassroots organisations, research and development agencies and grassroots organisations. Nevertheless, even modest, often interlinked network activities have persisted or the people involved have continued to be engaged through other institutions. A one-off group action was the Iloilo Resolution produced by the UNDP Women in Fisheries Asia-Pacific Regional Workshop (UNDP SU/TCDC 1995) and delivered to the 4th World Conference on Women in Development, Beijing. Many of the people involved in the Workshop and its product are still active in the Asian Fisheries Society gender activities and have been influential in generating new networks and activities in their home countries.

Some networks have helped create potentially powerful platforms for future action. In 1997, the International Collective in Support of Fishworkers (ICSF) launched *Yemaya*, its newsletter on women and fisheries. From this base of gender information grew the consultative and extensive outreach work of the International Collective in Support of Fishworkers (ICSF) that resulted in gender being included in the 2014 Voluntary Guidelines on Securing Small Scale Fisheries in the Context of Food Security and Poverty Eradication (SSFG). ICSF's 2010 inclusive workshop "Recasting the Net" (ICSF 2010) and

related consultations were critical to this achievement. Many long term actors in other gender networks took part in these efforts.

The Guidelines have a dedicated gender article (8. Gender Equality), as well as several other references. Katia Frangoudes and Nalini Nayak (Frangoudes and Quist 2014; Nayak 2014) cautioned that both opportunities and threats arose from this structure, and a more transformative agenda would have been possible had gender been integrated throughout. Also, the SSFG tend to make “gender” and “women” synonymous, losing nuances of gender relations and power.

Beginning in India in 1990, a global group, largely of researchers, educators and government fisheries and aquaculture officers, eventually became active through the Asian Fisheries Society. This group grew out of people associated with earlier events led by Dr M.C. Nandeesh (Gadagkar 1992; Nandeesh and Heng 1994; Nandeesh and Hanglomong 1997 and Williams 2014b). The central events of the period were the 1998 Symposium on Women in Asian Fisheries (Williams et al. 2001), the 2001 Global Symposium on Women in Fisheries (Williams et al. 2002), the 2004 the first Global Symposium on Gender in Aquaculture and Fisheries (GAF) (Choo et al. 2006), and subsequent GAF symposia (2007 GAF2 (Choo et al. 2008), 2011 GAF3 (Williams et al. 2012a), 2013 GAF4 (Gopal et al. 2014b) and 2014 GAF5 (Gopal et al. 2016).

One growing concern of the Asian Fisheries Society network has been to improve the quality of gender research and development, despite the lack of resources devoted to the field. Most, although not all, presenters were fish biologists or economists who recognised the ethical importance of bridging the gender gap and added gender as a variable in their studies. Many of the presenters were only able to attend the gender symposia because they were also funded to present papers in mainstream sessions – gender research was not their main or “day job” (Williams and Choo 2014).

Much new gender research responds to the idea that women’s work in the fish sector needs to be documented, typically leading to descriptive studies on the division of labour by gender. In 2013, this prompted Marilyn Porter to

deliver a lecture and hold a workshop on the importance of sound social science concepts and qualitative study methods in gender studies (Porter 2014).

Conceptual development and analysis has been far rarer, but does exist, e.g., covering more sophisticated cases in interesting contexts and presenting counterintuitive opportunities for women in Cambodia (Kusakabe and Sereyvath 2014) and Japan (Soejima 2014). Choo and Williams (2014) stressed the importance of using feminist empowerment frameworks to design interventions that help women reach the empowerment level of control, i.e., the level when women take action and achieve gender equality in decision making to have direct control over their access to resources.

For a long time, the group that organised the Asian Fisheries Society gender efforts was not a formal network or association, although informal network meetings were held in conjunction with the symposia. At GAF5 (2014), however, the informal network decided to constitute itself formally under the Asian Fisheries Society. Despite its informality, however, the Asian Fisheries Society network has its own website (<http://genderaquafish.org/>) and communicates and disseminates information via several electronic social media channels.

The period of the late 1990s to the early 2000s was an active time for gender network creation. In 2000, two Asian formal networks of note were the Mekong Network on Gender in Fisheries, (formed after an active period of national network creation between 1997 and 2000, and the Philippines WinFish network. The former has inter-governmental character and is supported by the regional Mekong Region Secretariat and its Fisheries Program. The latter is a network of independent gender and fisheries experts, based in academe and taking its zeitgeist from Philippine national action on women's empowerment.

In Europe, a new network was formed in 2006, named AKTEA, the European Network of women's organisations in fisheries and aquaculture. AKTEA links researchers, women in the sector and their organisations. It arose from an earlier conference (Frangoudes and Pascual 2004) and successful advocacy on European Union (EU) policies affecting women's entitlements in the sector (Frangoudes and O'Doherty 2006).

Other professional fisheries/aquaculture societies are showing an interest in women/gender. The International Institute for Fisheries Economics and Trade held gender sessions in their 2012 and 2014 biennial conferences and plans to make a more concerted effort in 2016. Even so, economists have been notable by their near total absence from women/gender research in the fish sector, despite the rich material available (e.g., Williams 2014c). The World Aquaculture Society has made efforts to develop gender sessions at its recent annual conferences (e.g., Kim et al. 2015), despite, in my personal experience, strong resistance from a few senior women in the Society.

In 2014, the development charity, Aquaculture without Frontiers, established a Women's Network and created a Woman of the Month award to recognise outstanding efforts in line with their mission to help low income people through aquaculture.

Some grassroots organisations are finding their voices and developing action to suit their operating and economic needs. For example, Chix Who Fish, a group of women fishers formed on the northeast coast of the United States of America and made their first campaign the design and manufacture of female-friendly wet weather fishing gear. In Australia the Women's Industry Network Seafood Community (<http://winsc.org.au/>) represents women throughout the sector. WINSC seeks to build the profile and capacity of women and is very concerned with shoring up support for commercial fish production and the communities that depend on it.

As part of a slowing rising tide of gender activity, many government fisheries agencies have designated gender focal points; staff are receiving training in basic gender concepts, and new staff are being appointed to look after gender. Gender staffing policies are finding their way into many workplaces, mandated by national legislation or growing awareness of the importance of gender equality principles, or both.

The level and location within the organisation of new gender subject experts is of paramount importance. In a LinkedIn discussion I started in 2014, gender experts in agriculture, fisheries and forestry organisations were reported to be typically young, had little experience in the expert areas of the sector (or little experience in gender studies if coming from a technical background), had

a high turnover rate, were overloaded with work and expectations, but, in contradiction, often their leaders were not convinced of their importance. Some social scientists reported that they deliberately avoided becoming gender experts at the start of their careers in case they would be doubly undervalued as simply women researchers, working on women's issues.

Not only does gender research in the fish sector attract many researchers relatively untrained in gender research, but the sector has also lost some of its stronger gender researchers. Lacking funds and interest from the mainstream, the most experienced social scientists studying gender in the sector have drifted towards studying gender in other, better-funded domains, such as migration, transport, climate change and violence against women.

Finally in terms of human capacity, an additional challenge we have experienced in the Asian Fisheries Society Symposia is that a gulf exists between the biotechnical experts attempting gender work, and the gender experts involved in fish sector studies. The work each group does is separated by their different conceptual approaches and the ensuing gap urgently needs to be bridged.

Intermittently, broad fisheries development projects incorporate gender elements. In recent years, even some sustainable fisheries projects are beginning to consider incorporating work with women, but these projects are too preliminary to yet provide progress reports.

In the 2000s, FAO hosted two multi-country projects that included gender elements. The first was the Sustainable Fisheries Livelihoods Programme in West Africa (1999-2006), which, out of its work, developed a credible gender policy (FAO 2007). However, once the project was completed, interest in the network of gender focal points gradually diminished, reported Katrien Holvoet (Williams and Choo 2014). The second project, the Regional Fisheries Livelihoods Programme for South and Southeast Asia, had a gender component (Lentisco and Alonso 2012), which one evaluation considered under-resourced and requiring more comprehensive tools (Bueno et al. 2012).

Hillary Egna, Director of the long running AquaFish program funded by the United States Agency for International Development, reflected on 30 years

of achievements in educating and training women in aquaculture research in its partner countries. She found mixed results as, for example, many highly educated women educated in the program were not retained in upward career streams (Egna et al. 2012).

Major breakthroughs on the policy and program front are still elusive. In small scale fisheries, the human rights and gender equality principles embodied in the SSFG are potential bulwarks for future policy action, but the implementation mechanisms and priorities for the Guidelines will be subject to negotiation and interpretation. How much priority will countries give to achieving gender equality? Some clues as to the likely challenges in implementing the provisions of the Guidelines may be gleaned from the negotiations over the final form of the Guidelines. Svein Jentoft (2014) pointed out that some national delegates wanted less gender-specific language and that gender and women's references were successfully and strongly defended by the non-government organisation delegates. Clearly, concerted action is needed still to achieve progress with gender equality through the Guidelines.

Recently, a variety of institutions have taken their first steps on the journey to address gender quality. For example, with help from FAO, the New Partnership for Africa's Development (NEPAD) developed a policy brief on gender and youth in fisheries and aquaculture policy (NEPAD 2014).

As a result of the development of capacity through networks and other means, nevertheless, additional visibility for gender issues and small policy toeholds have been made. In 2010, the decadal FAO-NACA (Network of Aquaculture Centres in Asia Pacific) Global Conference on Aquaculture included, for the first time, a part chapter on gender (Williams et al. 2012b), and recognition in the Phuket Consensus.

Recommendation 5: Support gender sensitive policies and implement programmes that facilitate economic, social and political empowerment of women through their active participation in aquaculture development, in line with the globally accepted principles of gender equality and women's empowerment.

Another example is the report on fish, food security and nutrition to the United Nations Committee on Food Security that highlighted the importance of gender issues (HLPE 2014).

With such patchy interest in addressing gender issues, an impatient observer could ask: “how long will real change take?” In the livestock sector, the International Livestock Research Institute (ILRI) of the CGIAR examined its efforts and found that it had taken nearly a decade to get substantive gender activity underway. From recognising their need to address gender, ILRI took two years to do their first gender audit, followed by four years to recruit their first gender expert, another year to develop a gender strategy and then two to three years before projects were up and running (Galie et al. 2014). In total, this was nearly a decade. Many of the above examples of institutional action show that this may be a typical rate of progress, and does not even begin to indicate when real social and economic change will occur.

Discussion

The present paper has examined how formal and informal fish sector institutions have attempted to address gender issues, responding to stimuli external and internal to the sector, and often meeting with headwinds.

That gender initiatives have been launched at all is due in part to larger social and political forces, such as CEDAW and feminism, but in larger measure to more local and direct stimuli. These latter include the actions of leaders acting in professional societies and industry, e.g., Dr M.C. Nandeesha, Prof Stella Williams and Marie Christine Monfort, specific events such as gendered impacts of fisheries crises such the collapse of the Canadian cod stock, and the leading ideas of academics through seminal publications such as those by Chapman (1987) and Nadel-Klein and Davis (1988).

Such bottom-up initiatives struggle against the headwinds they meet. These headwinds start with the complete lack of awareness of gender in major policy statements such as the 1995 Code of Conduct for Responsible Fisheries. The lack of awareness may also stem from the perceived lack of urgency in achieving greater gender equality, compared to, for example, the need to address fish health and resource management issues. Other social issues, such as

the exploitation of many fish workers, have generated a sense of urgency not seen before in the fish sector.

Early efforts to address gender, for example by the 1987 FAO women in aquaculture workshop, revealed confusion over what to do. The leaders tasked women technical experts – not extension or development experts - to advise on how women could make a greater economic contribution (FAO 1987) by giving the women some activities in a project, with little regard for their social place and existing workloads (Harrison 1995). Even today, some new initiatives still focus on finding “magic bullet” ideas to promote women’s work in the fish sector, contributing to the “pitfalls of development” (Choo and Williams 2014). Furthermore, gender researchers working in the fish sector work across a patchwork of issues, lacking consensus and critical mass on key themes. These contrasts to the field of gender in agriculture research in which substantial focus is going to gender and each of three themes: land tenure, technology transfer and cash transfer mechanisms.

Lacking sound knowledge of what to do, priority themes and frequently strained for adequate resources, gender work struggles to achieve its objectives in development projects (e.g., Bueno et al. 2012) and/or to be sustained after a project is over (e.g., Williams and Choo 2014).

Lack of awareness, understanding and knowhow, and insufficient resources are each significant headwinds in their own right, but they are often underlain by overt or covert institutional resistance to gender as a sectoral priority. Rarely is such resistance documented.

Despite the headwinds, in many fish sector institutions, many initiatives on gender are progressing, particularly along four useful and non-exclusive, pathways: diagnostic approaches, human capacity development projects and, more rarely, embedded in sectoral policies and programs. Examining these pathways shows that each makes a useful contribution to helping meet the headwind challenges, but also leads to the conclusion that a more coherent approach is needed in order to make real progress.

Diagnostic approaches are essential in helping understand the context, current situation, the opportunities and even to start to suggest how to proceed.

However, as many diagnoses are carried out by competent consultants hired to overcome the lack of internal capacity, then the institutional leaders may not own the outcomes, and hence not allocate the necessary resources to implement the recommended actions. Even if the diagnosis is accepted, urgency of action may be lacking, especially if additional resources are considered rather than a redirection of existing resources.

The apparently healthy generation of new, often informal, institutions in the form of gender networks, can be interpreted in two ways. On the positive side, networks strengthen the sharing and therefore spread of knowledge and experience in the current environment of scarcity of gender expertise. On the negative side, most networks have grown up in the absence of full time dedicated gender experts in mainstream institutions. Therefore, the networks tend to act as a “patch” to cover up the lack of depth of the mainstream institutions, rather than a mechanism to join up strong existing expertise.

In terms of their effectiveness in generating policy progress, I note that the FAO and ICSF have used existing networked gender experts to bolster the case for including gender in the Small Scale Fisheries Guidelines. Other examples of effective outcomes from networking also exist. Network generated events and their products, e.g., publications, websites and social media, have also started to establish the bona fides of gender studies and the utility of their results in mainstream fisheries and aquaculture institutions. The Asian Fisheries Society events and products are good examples. Again, without the networks, such progress is not possible as the mainstream fish sector institutions are not themselves progressing professional development on gender issues. Finally, networks are spreading awareness of gender issues, in the absence of more mainstream action.

Gender projects are commendable and often have untraced legacies in terms of the human capacity they build, but unless key gender elements are sustained by the implementing agencies, and/or the project partners and recipients, little residue may remain.

Few examples of gender work fully embedded in programs and policies yet exist. Candid assessments, e.g., Galie et al. (2014) indicate that institutions may take as long as a decade to become operational on gender projects. By

themselves, these points show the lack of achievement on gender. Early indications are that the SSFG contain the possibility of progress in small scale fisheries, but that the resistance to a focus on gender in some countries as mentioned by Jentoft (2014) must be overcome if the gender provisions are to become a priority against many competing provisions of the SSFG.

Diagnosis, human capacity development and embedded gender policies and programs are all needed. To achieve a sense of need and urgency on gender issues, the fish sector requires a much more compelling case for social justice and economic contributions, well beyond the current descriptive of women's sectoral work that disregard the empowerment of women and men. In social and economic terms, the impacts of gender-based interventions will need to be evaluated.

This case will need to be tailored to each context, e.g., actual social realities of people working in the sector, the fishery, supply chain, country, and culture, and the case promoted to the relevant decision-making institutions in the company, the community, the ministry or the fisheries management body. Mainstream fish programs must include planned and funded gender elements, taking into account roles, responsibilities, the effect of gender relations and power structures. The programs and the organisations that run them will need their own, in-line gender experts to work closely with the technical experts.

Conclusions

Gender issues, particularly matters of gender equality and equity, are of social and economic importance to the fish sector, and the women and men who work in it. Despite a lack of awareness and resources, and even some intrinsic resistance to addressing gender, the fish sector has generated a number of active gender networks. These have created formal and informal institutions that have raised the profile of gender issues, in some significant cases helping ensure that gender is included in new global reports and policies, such as the Voluntary Guidelines on Small Scale Fisheries.

Rather than acting as forums in which existing institutional experts share their knowledge and coordinate their work, the networks are tending to substitute for full time gender experts in institutions. Mainstream institutions,

therefore, continue to treat gender issues as peripheral, low priority matters, outsourced to consultants if addressed at all. As a result of this marginalisation of gender expertise and know-how, the professional development of gender research is slow and relies on part-time, personally committed volunteers. This is a different situation to that in any other expert field. Under current priorities, decades, not years, are needed to instigate professional gender programs in fish sector institutions. For the products of such professional work to be translated widely into action in the field will take even longer. If a grassroots revolution calling for gender equality was simultaneously underway, this might not matter. However, since women and many lowly paid men fish workers are neither empowered nor conscious of their lack of power, marginalised and weakly developed professional gender advice is a critical weakness. While networked professionals dedicate themselves to keeping the wheels of research and development turning, the fish sector sorely needs a more radical and direct fish sector campaign for gender equality.

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Research Paper

Gender Inequalities in Access to and Benefits Derived from the Natural Fishery in the Barotse Floodplain, Zambia, Southern Africa

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Abstract

People living in and around the Barotse Floodplain are some of the poorest in Zambia due to many factors restricting their abilities to engage in activities to secure food and income. Women, and in particular resident women, are especially constrained given certain gender norms and power relations that hamper them from accessing and adequately benefiting from the natural fishery. Resident women typically rely on other, less remunerative means to secure their livelihoods. Having greater capital, education and confidence, non-resident women fish traders have different relations with fishers but their negotiations can still put them at a personal and economic disadvantage in securing access to fish. This paper employs a social relations perspective to investigate the role that institutions play in producing and reinforcing gender inequalities within the natural fishery value chain. Qualitative data from two studies carried out in 2013 were analysed. Findings show how deep rooted certain norms, practices and power relations are and their influence shaping women's (and men's) participation in key nodes of the value chain. The paper suggests options that include approaches and interventions that recognise the centrality of social relations in determining constraints and opportunities for women and men dependent on the Barotse Floodplain fishery.

Introduction

Women's participation in small-scale capture fisheries varies greatly depending on the specific context. A study using data from nine low-income

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countries found the share of women working in small-scale capture fisheries ranged from 4% in Mozambique to 57% in Cambodia to 73% in Nigeria (Weeratunge and Snyder 2009). In Asia, especially in the Mekong region, women participate in almost all activities in the fisheries sector from the manufacturing of fishing gears to fish processing (Siason et al. 2002). In parts of India women net prawns from backwaters and process, sort, and market fish, and in the Philippines women fish from canoes in coastal lagoons (Kusakabe 2003; Gopal et al. 2014). Women in the Pacific Island of Kiribati fish peanut worm at low tide, dry and either keep it for household consumption or sell it in local markets. They also play a major role in the island's coastal fisheries, specifically small-scale processing of seafood for the domestic market (Campbell and Hanich 2014). In the Solomon Islands, women participate in gleaning and sale of marine resources (Kruijssen et al. 2013).

In Africa, more than one-fourth of the people working in the fisheries and aquaculture sector are women with a great majority of them being involved in inland fisheries as processors (69.2%) rather than fishers (6.7%) (De Graaf and Garibaldi 2014). In sub-Saharan Africa (SSA) more specifically, women are involved in post-harvest activities such as fish processing, selling and trading as well as harvesting fish, supplying boats and fishing materials and providing men with credit (Cox 2013). In West Africa, women market as much as 80% of seafood ([http:// www.fao.org/ docrep/ 013/ i2050e/ i2050e00.htm](http://www.fao.org/docrep/013/i2050e/i2050e00.htm)_accessed 04 July 2015). In the coastal areas of Sierra Leone, women purchase and process fish and sell it in local markets or to traders for further inland distribution (Thorpe et al. 2013).

Zambia is a landlocked country in the southern region of Africa and is endowed with a significant number of rivers, lakes, streams, floodplains, and wetland areas. Natural fisheries provide an important source of income, especially for women and marginalised populations, who have limited alternative income opportunities (Musumali et al. 2009). People living in or along wetlands in Zambia such as the Kafue Flats in Southern Province rely heavily on natural fisheries in addition to small-scale farming and livestock production (Lungu and Husken 2008). Women fish on a smaller scale using baskets in certain unique areas or in the tributaries near their homes and use the fish for consumption or for local sale (Merten and Haller 2007; Haller and Merten 2008).

The Barotse Floodplain, located in Western Province, is an important yet under-researched natural fishery in Zambia. The floodplain is part of the larger Zambezi River basin. Fish from the floodplains are considered an important source of protein and income for Lozi-speaking people of Western Province (Van Gils 1988; Turpie et al. 1999). Fishing is highly seasonal due to the natural flooding cycle and an imposed fishing ban that occurs every year from December to March. Fishing conditions are best when floodwaters recede (generally in June/July) and fish begin to migrate back to the main channels. Simwinji (1997) classified the governance of the fishery as an open or free-access system (Madzudzo et al. 2013), although the traditional authority operating in the province ensures a level of governance of the fishery together with the Department of Fisheries working under the newly formed Ministry of Fisheries and Livestock. Nonetheless, some fishers fish during the off-season and use illegal gears (Turpie et al. 1999; Madzudzo et al. 2013).

A number of different fishing methods are used to capture fish such as using nets and baskets. Women and men differ in the methods they use to catch fish, although Turpie et al. (1999) found that men comprise the majority of the fisher population. Post-harvest, fish are mostly sun dried. Within the value chain, women typically perform fish drying (Baidu-Forson et al. 2014). In their broad study of the Zambezi River Basin wetlands, Turpie et al. (1999) concluded that men dominate as the harvesters of natural resources (including fish) and women mainly participate in value-adding activities given their gendered role as caretakers of their families and their lack of mobility to engage in activities distant from their homes.

Norms and power relations that constrain women from accessing natural fisheries and participating in key profitable nodes of the value chain are often unexplored by research and development organisations working in such contexts (Lentisco and Lee 2014). Women often process and trade fish to meet certain basic household needs, thereby complementing the fishing activities performed by men (The WorldFish Center 2010). Women who become involved in trading fish typically do so because performing such a role within this node of the fish value chain requires less capital compared to fishing with relatively expensive gears (Béné and Merten 2008). The women's role, therefore, is a function of their lack of access to micro-credit and other necessary resources. Such inequalities in opportunities stem from attitudes,

beliefs, practices and “rules” dictated by social institutions that ultimately confine women to participating in less-profitable nodes of fish value chains (Weeratunge and Snyder 2009).

WorldFish and its partners are currently carrying out research in and around the Barotse Floodplain. The research adopts a gender transformative approach that aims to uncover and address the social norms and power relations that limit poor women’s and men’s involvement in aquatic agricultural livelihood activities (CRP AAS 2012; Cole et al. 2014a; 2014b; 2015; Rajaratnam et al. 2015). The approach uses a social relations framework (Kabeer 1994), described next, to examine the role institutions such as the family or community play in producing and reinforcing gender inequalities. This paper is particularly interested in the role social institutions play in influencing how women participate in the natural fishery value chain and why they may benefit less than men from the opportunities the fishery creates. Qualitative data collected during two different studies conducted in the floodplain were analysed for the paper and are described in the Methods section. Key results are presented and discussed and the paper concludes by providing options for consideration by research and development organisations working in the area. In particular, the paper focuses on approaches and interventions that enable women and men to critically reflect on and begin addressing the harmful norms and power relations that most often limit poor women from accessing and benefiting from the Barotse Floodplain fishery.

Social Relations Framework

Our research adopts a gender transformative approach. The approach is informed by Naila Kabeer’s social relations framework (Kabeer1994), which can be used to better understand the complex ways institutions, and their associated formal and informal rules, influence power relations between different social groups. Such power relations disproportionately shape livelihood options and wellbeing outcomes within and across groups. Institutions include those at the local level, e.g., the household and community, and also those larger structural systems such as the market and State. The main aims of the social relations framework (Kabeer and Subrahmanian 1996; March et al. 1999) are to: 1) analyse existing gender inequalities in the distribution of resources, responsibilities, and power; 2) analyse relationships between people,

their link to resources and activities, and how they are modified through institutions; and 3) emphasise human well-being as the goal of development.

According to Hillenbrand et al. (2014), the social relations framework is less prescriptive and at its core appreciates complexity, and is therefore not commonly adopted and used by development practitioners compared to more conventional gender-analysis frameworks such as the Harvard Analytical Framework. The latter framework tends to guide analyses of differences between women and men as the goal is to identify gender gaps and subsequently fill them (Okali 2012). It fails, however, to shed light on the complex relationships between women and men and the changes in relationships over time (Locke and Okali 2010) and the diverse causes of gender inequalities at the varied institutional levels (Hillenbrand et al. 2014). It is argued that such an understanding enables the design of more holistic research and development programs and policies that help transform gendered power relations and assist poor and/or marginalised women and men to achieve their practical and strategic life goals (March et al. 1999).

The social relations framework as used in this paper aims to uncover some of the norms and power relations that cause gender inequalities within key nodes of the natural fisheries value chain. The main research question the paper asks is “what are the norms and power relations that limit certain social groups, e.g., women, and in particular, resident women of the Barotse Floodplain, from accessing the local fishery and benefiting from its resource base?” The paper distinguishes “resident” women from “non-resident” women. Residents are those who are typically *Lozi*- or *Mbunda*-speaking people who come from the local area. Non-residents are those people who come from outside the Barotse Floodplain, e.g., from urban centers in Zambia, or from neighboring Angola or the Democratic Republic of Congo, to purchase and process fish and then transport it back to their places of origin for sale to consumers.

It is hypothesised that by exploring the main research question using sound concepts and analytical tools, research and development stakeholders will better understand the attitudes and practices of people residing in this context. Thus, they will be able better to design and test interventions with women and men residing in the floodplain that aim to transform the norms and power relations that create gender inequalities. It is hoped that such research and

development efforts will help reduce gender gaps in access to and benefits derived from the Barotse Floodplain fishery, improve gender relations, and ultimately achieve more sustainable development impact for all. A simplified impact pathway to change is depicted in Figure 1.

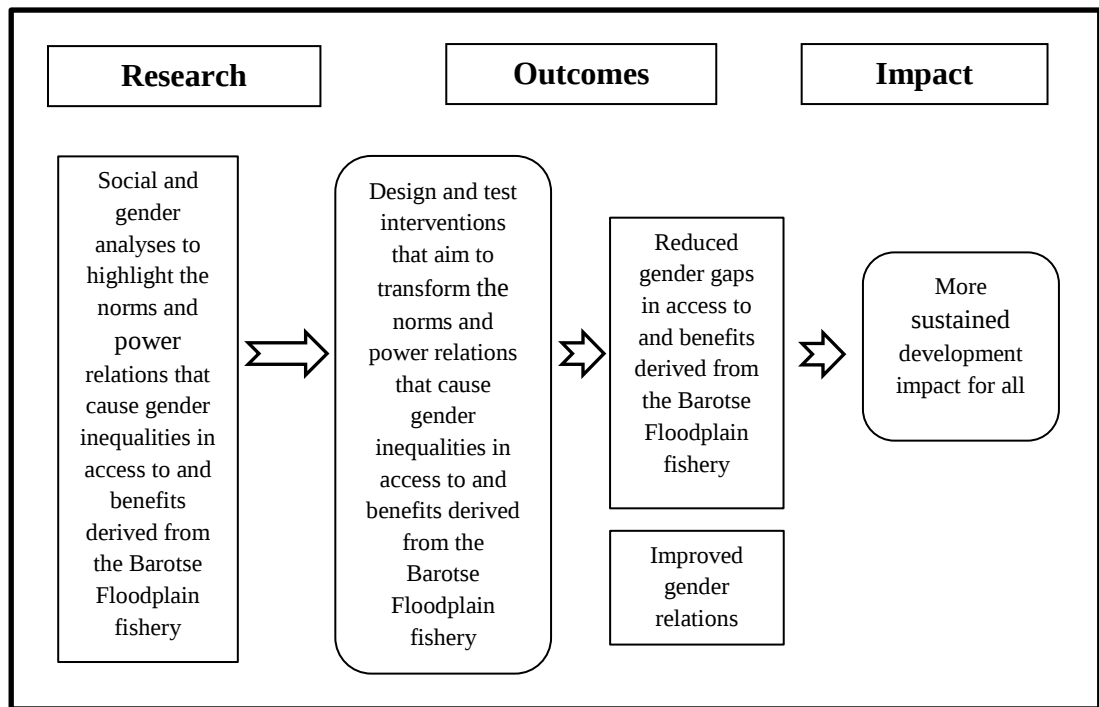


Fig. 1: Simplified gender transformative impact pathway

Materials and Methods

This section briefly describes the two studies carried out in and around the Barotse floodplain by WorldFish and partners including staff from Department of Fisheries. The first study was a gendered participatory fish value chain (FVC) study conducted in mid-2013 under the WorldFish-led research program called Aquatic Agricultural Systems (AAS). The study was carried out with mainly fishers, traders, and processors living and/or working in and outside fishing camps in the Barotse Floodplain. A value chain can be described as, “the full range of activities that are required to bring a product (or service) from its conception through the different phases of production to final consumers and disposal after use” (Kaplinsky and Morris 2001). Women and men were purposively selected by the study team based on their involvement in the natural fishery value chain, e.g., as fishers, fish processors or traders. This paper

analysed the content from seventeen focus group discussions from seven fishing camps (Table 1) that explored the norms and power relations that limit poor women's and men's participation in key nodes of the value chain.

The second study was a social and gender analysis (SGA) conducted in late-2013 with women, men, and youths who live in ten communities in which WorldFish carried out research from 2012 through 2015 under the AAS program (Table 1). The ten communities are located in four districts in Western Province, specifically Lukulu, Kalabo, Mongu, and Senanga districts. Overlap in the data collected by the two studies exists, given some fishing camps that acted as study sites for the FVC study are linked to some of the communities where the SGA was conducted. The SGA primarily collected qualitative data using focus group discussions (Rajaratnam et al. 2015). Focus groups with women and men were organised separately so that both groups could freely discuss the topics under investigation. Study participants were asked to discuss social, material, and natural resources, wellbeing and inequality, seasonality, gender norms and trends, among other topics.

Table 1. Study of communities and fishing camps in the Barotse Floodplain, Western Province, Zambia

SGA Communities	FVC Study Fishing Camps
Kabula	Marana
Kapanda	Mulembe
Lealui	Likomokelo
Mapungu	Liyoyelo
Mwandi	Nebubela
Nalitoya	Makandaula
Nanikelako	Sikwenga
Nembwele	-
Sifuna	-
Situlu	-

The first author analysed the content of the data from the two studies. The analysis was guided by a directed content analysis approach, in which the coding framework utilised was derived from theory and research findings (Hsieh and Shannon 2005). Relevant data from the focus group discussions

were clustered under the codes derived from Kabeer's proposition of inter-related dimensions of social relationships, which are rules, resources, people, activities and power (March et al. 1999). The next section presents the results from the analysis that helped explore the research question

Results and Discussion

Gender norms and power relations prohibiting women from accessing and benefiting from the Barotse Floodplain fishery

The analysis for this paper focused on relationships, and to some extent negotiations, between women and men who are both highly involved in certain nodes of the natural fishery value chain, while less active in other key nodes for a number of complex reasons. Men are the primary fishers and women tend to predominate in the processing and trading of fish. As is common in all societies, girls and boys in the Barotse Floodplain learn such roles as children through attitudes, beliefs, values, and examples their parents, grandparents, and others enact through everyday interactions that over time become quite normalised and unquestioned. Such gender socialisation (UNICEF 2007) means that the identities of girls and boys are formed based on their sex and expressed through their roles and behaviors when they become adults. It is of little surprise then that the value chain could be characterised as being relatively sex-sequential or even -segmented, whereby men make up the vast majority of fishers (especially for commercial gain) and women comprise the greater proportion of fish processors. Many value chains take on such an appearance in this context (Farnworth 2011). The trend becomes slightly blurred when we move further down the chain as both women and men participate in the trading of fish.

Generally, gender norms and patterns are rigid in the Barotse Floodplain, and according to the content analysed from focus group discussions, very often disadvantage women in relation to men. Men, for example, are the main breadwinners, devoting much of their time to earning cash by participating in activities such as fishing. Women carry out biological roles of child bearing and other tasks socially assigned to them, within their homes. Examples of men performing the latter roles are rather circumstantial as reflected through the following comment made during a SGA focus group discussion:

A married man can only help in the cooking when the wife is sick or not around because Lozi culture does not allow. When a man helps the wife to cook he is considered to be not normal. (Men's focus group, Kapanda Community)

Although gender roles within a particular context can be rigid, both women and men engage in reproductive and productive activities to differing degrees and in different ways (Kwashimbisa and Puskur 2014). In one fishing camp, it was reported that women are becoming increasingly involved in making decisions that were customarily made by men in the past. Some married women are now making decisions about selling fish, vegetables, livestock, and importantly, regulating the cash earned within their households. During a SGA focus group discussion, the following comment was made:

[Women] were not able to make decisions in big matters [in the past]... [They decided on] small matters such as house work, cooking, [etc.]. We can now make decisions on buying things. I can buy and inform my husband later, buy uniforms for our children without telling my husband, even other household goods. (Women's focus group, Lealui Community)

Women's increased decision-making powers, it was felt, serve a purpose within the home that suggests women are actually safeguarding cash generated by men when fish, for example, is sold locally to traders or in distant markets. According to women who participated in the FVC focus group discussions, men tend to misuse the cash they generate from such sales. A similar trend was found when analysing the data from the SGA, specifically men's propensity to misappropriate the cash they generate from the sale of natural resources or after marketing their cash crops. Such a finding that women are becoming increasingly involved in making important economic decisions (e.g., how cash gets spent) is not uncommon within the literature as women are typically reported to spend income earned to ensure food and nutrition security within their homes (World Bank 2009; FAO 2011; Van Ameringen 2014). Arguably, this could be viewed as women taking on yet additional responsibilities as caretakers; no doubt a reflection of powered gender relations within the household (Cole et al. 2015).

Gender inequalities in fishing activities

In both studies, focus group participants generally reported that women are not intensely involved in fishing. Men commonly fish using boats and canoes and with nets. Women who fish do so by using baskets made from tree roots, sometimes using spears, and during times of the year when floodwaters are low. They do not typically fish in deeper waters, but rather in canals or smaller streams, given the methods they use. Women do assist their husbands, or other relatives to manage larger nets that require a boat, typically owned or paddled by men (Farnworth et. al. 2015). Their unequal access to the Barotse Floodplain fishery is reflected in the following comment made during a focus group discussion:

We do not have similar access to these resources. Men have more access than women because men are strong[er]. For example, in lagoons, men get a lot more of the fish than women. Men catch fish all the time while women have to wait for the dry season to use the fishing baskets. (Women's focus group, Lealui Community)

Some women and children accompany men on fishing camps to perform certain roles, for example, removing fish that are caught in nets. Women most often process fish men catch by first removing the scales, gutting and then drying them. Both girls and boys acquire the knowhow to fish, scale, gut and sun-dry fish at an early age. Nonetheless, it was believed that children are taught to perform roles in line with their gendered identities:

Boys have also learnt how to fish while girls just stay at home and cook waiting for boys who have gone to fish. (Women's Focus Group, Mwandi Community)

Girls work with us, we teach them women's work such as cooking, washing plates, sweeping, cultivating. They also go to school and [help do] most of the work which we do. (Women's focus group, Mapungu Community)

Another reason why women are not regarded as the primary fishers is because many women find it difficult to acquire the necessary fishing gears such as canoes, boats, paddles, and nets. A small number of women do own

fishing gears, although in general, husbands make the decisions about when and where to fish and with what gears during cases when married women and men fish together. Married men also decide whether or not to sell the fish that is caught and whether to process fish that are unsold. Women thus play a significant role assisting in catching fish and carrying out subsequent post-harvest activities, although make fewer decision on when and where to fish, which fish get sold to the market or which get processed, and as a corollary then, which fish get consumed within their homes.

Although a dual system of governing the floodplain is in place, focus group participants felt the traditional authority controls access to fishing grounds. Men comprise the majority of traditional leaders. Water bodies used for fishing are allocated by the traditional authority and inherited, much like land, over time. Men primarily inherit these water bodies. Those from outside a particular village must pay a fee to fish in a water body owned by a village resident, and thus, men mostly benefit from this local tenancy agreement. Resident women have the right to fish in local water bodies. Focus group participants did not feel resident women were discriminated against fishing in local water bodies. However, it was clarified that resident men benefit more from fishing in these water bodies given they “are so much into fishing.” In most fishing camps, non-resident fishers are required to pay *mubingu* (a payment in cash or in kind) to an *induna* (a local headperson) who represents the traditional authority.

Illegal fishing is common in the floodplain for a number of reasons. It is believed that men are the primary group of people who fish during the fishing ban and/or use illegal fishing nets. Illegal fishing, it was felt, is contributing to the noticeable lower stocks of fish in the Barotse Floodplain fishery (CRP AAS 2013). It was argued during focus group discussions that some residents of the floodplain do not have other livelihood options and must use illegal methods or they cannot survive. Fishers from outside the floodplain also fish illegally, and local enforcement efforts usually do not succeed in prohibiting them from fishing illegally. Furthermore, it was explained that some village *indunas* perpetuate illegal fishing activities by demanding higher rates of *mubingu* payments from fishers using illegal gears in their controlled water bodies. Again, since *indunas* are typically men and men fish illegally, men are thus the

main beneficiaries of gains achieved through fishing or helping facilitate fishing during the off season and by using illegal gears.

Differences in experiences in trading fish

Participants of the FVC study reported that women were predominate in the fish trade in their communities although some men trade as well. When we take a closer look at the social groups who comprise fish traders, we find that non-resident women from outside floodplain villages or fishing camps primarily trade. Non-resident women traders bring in relatively large sums of capital to purchase fish. They have greater abilities to interact and negotiate with fishermen as their level of education seems to be higher than local, resident women. The way non-resident women traders relate to fishermen showcases a level of confidence in what they do. They move easily from one location to another, again, given their access to cash. In Marana fishing camp, as one example, most of the traders who come and camp were said to be non-resident women from Mongu and Kaoma (within Western Province) or originate from Lusaka, Kitwe, Solwezi (distant towns within Zambia) and as far as from bordering countries such as Angola and the Democratic Republic of Congo. They reside in fishing camps for a specified period of time, buy fresh fish, process and transport them for sale in markets located in their respective towns.

Non-resident women traders prefer to trade dried fish because it is seemingly easier to transport with fewer losses compared to fresh fish that needs to be transported with more care and within a shorter period of time. Transporting fish using boats and canoes that are mostly operated (if not owned) by men incurs costs and reduces the likelihood of resident women trading as they lack capital to trade fresh fish and the ability to travel frequently. Focus group participants from Makandaula fishing camp reported dried fish are also preferred because they are lighter for resident women who engage in such trade to transport by foot than fresh fish. Preference towards trading dried fish can also be attributed to women's negotiation skills as women tend to take more time negotiating, which impacts negatively on the quality of fresh fish being traded (Farnworth et al. 2015). In Likomokelo fishing camp, traders were said to vary by the fish species they trade. For example, resident women traders prefer to buy barbels and other small fish species because they are cheaper and easier to trade/barter.

Given their mutually benefiting nature, bonds between fishers and fish traders exist. There was general consensus that relationships between resident and non-resident fishers, fish processors and traders are amicable. For instance, when there is a local funeral, traders from outside a village or fishing camp contribute fish to help enable funeral activities to proceed according to local customs. Mutually-benefiting relationships between fishers and traders are also maintained by traders providing fishers with inputs and money in the form of credit in return for fish. Although positive relationships were reported to exist between fishers and traders, the contrary was also said to be true. Differences in relationships between fishers and traders can be attributed to the location and size of fishing camps. Nebubela fishing camp, for example, is a trading node where more people pass through to trade, compared to other fishing camps, and therefore, long-term relationship may not be necessary in this particular location.

Fishers during focus group discussions also expressed some mistrust they feel about some traders who come to purchase their fish. They recalled incidences when local *Lozi*- or *Mbunda*-speaking people pretend to be non-resident distant traders in order to purchase fish without establishing good relationships with fishers. These people do not contribute in kind during traditional ceremonies or when some kind of assistance is needed by fishers. They also do not buy or sell fish on credit, but use a barter system instead that is arguably viewed as exploitative from a local perspective. Women and men participants of a focus group discussion in Marana reported some traders who underpaid them for fish they provided, attributing their 'loss' to non-resident women traders' superior negotiation skills. In actuality, the smaller profits made are due in part because of the smaller volumes of fish residents trade and the need to sell their fish to earn cash to meet their basic needs (Farnworth et al. 2015).

Resident women traders were said to be able to negotiate for fish more patiently, with some offering sexual services in return for fish they receive from fishers. Male respondents from Likomokelo fishing camp reported female traders to "lean their thigh" on male fishers as a way to negotiate for lower-priced fish. One of the reasons given by a male focus group participant concerning how some resident women allegedly provide sexual services in exchange for food or cash is:

Because when they face hunger, girls or women seek help from men for cash or food in exchange for sex. (Men's focus group, Mwandi Community)

In another mixed-sex focus group held in Makandaula fishing camp, a male member cited an example of three non-resident women traders who visited their fishing camp with supplies of food and T-shirts. They were alleged to provide sexual favors in exchange for fish. Some fishers were also reported to refuse to sell their fish to such women traders if the latter do not accept their proposal for sex. High competition and scarcity of fish are among the factors that create spaces for fishers to coerce women traders to engage in sex-for-fish (Bene and Merten 2008). Married fishers who engage in the fore mentioned sexual relationships were reported not to bring cash or food back to their families and attribute their loss to poor fish catches. Studies in Zambia (Chabwela and Haller 2010; Merten and Haller 2007) and in other parts of Africa have revealed similar findings where women and men are involved in sexual relationships in exchange for fish (Chigwedere 2000; Ouma 2005; Kambewa et al. 2009; Kweni et al. 2012).

Although women generally were said to have better negotiation skills, they were also found to have barriers in communicating with traders from larger markets. This is especially true for women who assist their fisher husbands to trade their catches. Resident women's lack of education affects their ability to count and their lack of access to market information on current fish prices hinders them from negotiating competitive prices. Such circumstances also explain in part why resident women traders are less likely to engage in long-distance trading outside the floodplain.

Depending on the location of a fishing camp, some men fishers sell fresh fish, others sell processed fish. For example, at one fishing camp located near the provincial capital, Mongu, fresh fish are most commonly sold. Not all fishers have canoes or boats, and thus are required to rent when transporting fresh fish to distant markets. Such rentals obviously decrease the profits they make.

Resident women's engagement in other activities

Given the norms and power relations that restrict resident women's involvement as fishers, and in many ways fish traders in their local environments, resident women tend to primarily engage in fish processing but also other activities such as agricultural crop production, piecework (casual labor), mat making (using reeds or papyrus), beer brewing, among other livelihood activities. Resident women's access to and use of natural resources in the floodplain is greatly influenced by the gendered division of labor. In the Barotse Floodplain women's primary roles as caretakers of children, elders and the sick, and in performing other tasks such as cooking and washing clothes stems from gender socialisation from early childhood. Ultimately, resident women's involvement in these tasks restricts their mobility and limits the time they have to engage in higher cash-earning tasks within the natural fishery value chain including fishing and trading in distant markets.

Norms and power relations that become institutionalised promote and legitimise the livelihood activities undertaken by resident women and men in the floodplain. It ensures men's authority and control over women and further promotes activities and practices that are most likely to secure men's privileged position within institutional hierarchies (Kabeer 1994). These norms and power relations can be viewed as harmful because they create and perpetuate inequalities that disadvantage one social group (women) and advantage another (men). Resident women's unequal involvement in lower cash-earning livelihood activities outside the natural fishery value chain, it is argued, becomes necessary to generate income to secure food and other basic necessities for them and their family members. The underlying causes of these inequalities have to be understood in context in order to provide a space for women and men to reflect on and question them if any kind of transformative change is to occur (Cole et al. 2014b). Failure by research and development organisations to better understand the causes of inequalities in women's participation in key value chain activities and benefits derived from the Barotse Floodplain fishery could not only result in poor developmental outcomes, but could also further exacerbate gender inequalities in this setting.

Conclusions and Recommendations

This section presents recommendations for programmatic investments by research and development stakeholders. Specifically, it advocates for the design and testing of social change and technical interventions that enable women and men to address the norms and power relations that restrict certain social groups, in particular resident women, from equally engaging in and benefiting from the natural fishery in the Barotse Floodplain.

The findings presented in this paper revealed contextual, structural and systemic gender-specific barriers, which limit women's abilities to properly engage in productive, economic and technical activities within the natural fishery value chain. The rooted norms within the household and community indicate that women are less likely to participate in fishing and benefit from the value-added activities they perform. Fishing, value adding and marketing are in many ways performed sex-sequentially (and often in sex-segregated fashion), with women and men taking on specific roles at particular nodes of the value chain. As a result, neither men nor women possess a full understanding of the fish value chain and of how the roles, responsibilities and relations of different actors intersect and interact at different stages. Gender relations are socially, culturally and historically constructed and they can be re-constructed (Agarwal 1997). They are not static. They are changing processes that are positioned within the natural fishery value chain as well as within the household, community, and state. Gender relations continuously reorganise and are relevant to production processes, adoption of technologies and economic activities.

However, what is important from the results presented in this paper is that processes of change are taking place and they can lead to increased opportunities or the formation of better conditions that could enable resident women in particular to benefit more from the structures and systems in place. This paper has highlighted that such processes of change include resident women's greater decision-making powers on how cash from fish sales get spent, some owning and controlling fishing gears, and becoming more involved in trading fish, albeit within their locale and under other restrictions. More importance has to be given to women's inclusion, participation and decision making if they are going to benefit from and adapt for change. They can become equal partners to men. Women play key roles within and outside the

value chain and should not be seen as disembodied social categories, but rather active participants who process information and strategise in their interactions with local actors as well as outside institutions (Maertens and Swinnen 2009). Raising awareness about gender equality, ideally through critical reflection processes, can empower and improve women's participation in the natural fishery value chain and other livelihood activities (Lentisco and Lee 2014).

The benefit from women's participation in a more inclusive value chain is that it places them in a more equal partnership with diverse groups of men who are part of different and wider social structures with diverse identities such as age, class, religion, and kinship that influence their relationships. These spaces foster enabling conditions for reciprocal respect and include men as objects of attention to become aware of unjust exclusionary norms and practices (Cornwall and Rivas 2015) embedded within structures and systems. The findings call for a shift of concentrating on women as a homogenous group to working with them as more diverse individuals that are closely related to girls, boys, and men in a more just and fair manner. This requires a change directed towards a clear recognition of the centrality of social relations within households and collective groups. In this case, social relations are integral to the natural fishery value chain and projected development pathways (Okali 2011).

Different strategies may be necessary to achieve equitable outcomes for women and men and different groups of women. Through gender analyses, researchers are entailed, first and foremost, to ask questions about the differences between women's and men's activities, roles, and resource to identify the developmental needs of women and men. Assessing such differences also makes it possible to determine women's and men's constraints and opportunities within the natural fishery value chain. However, gender analyses need to be complemented with processes of gender learning and understanding of the institutional environment.

In the end, the goal for any inclusive value chain is to bring stakeholders together to gain collective awareness of the system and structures that they are a part of, building trust amongst them and generating and sharing knowledge and opportunities for joint action. Through this collective action, stakeholders develop and strengthen capacities that will become important assets in not only sustaining and supporting the sustainability of the fisheries sector but also in

fostering institutions accountability in the sector. Continuous monitoring and reflection during the processes is critical to make adjustments along the way. Evaluations are recommended in order to influence policy making at system and sectoral levels.

Stakeholder platforms and networking are essential elements to ensure that the views of all groups are reflected in the functioning of the system, integration, selection of public actions, evaluation of outcomes and impacts, and ensuring commitment of all actors. Therefore when analysing the fisheries sector, these will reveal successes and failures in relation to governance and policymaking. Conclusions can be valuable in regards to the principles and opportunities for improving the governance of innovation systems. Policymakers can best approach the fisheries to align their development priorities and the demands of beneficiaries, especially female producers by considering power dynamics and relations.

The institutional challenges and constraints identified in the paper need to be recognised and addressed in future action plans and stakeholder activities at provincial, district, and program levels to properly achieve the development outcomes. These must be complemented with tailored approaches and tools adapted to the capacity needs of people as well as their socio-economic contexts (Jutting et al. 2010). Overall, the transformation of institutions and the development and implementation of policies require a profound understanding of the dynamics of power relations in the specific context and the contribution of decision makers who are determined to support learning processes that promote change and transformation.

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Research Paper

Linking Gender, Diving and Filmmaking: Conceptualising Film Outcomes as Narrative Capital Gains in the Making of *Wawata Topu* (Women Divers) in West Atauro, Timor-Leste

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Abstract

Wawata Topu is a documentary portraying a group of women divers in Atauro Island, Timor-Leste. Initially aimed at increasing the visibility of women's roles in the fisheries sector, the filmmaking process brought along a practical negotiation between the community and the filmmakers on the topics to be included in the film. This paper describes the filmmaking process, reports on the final contents of the film, and explains the reasons the different themes were included. Based on a previous theoretical exploration on the notion of narrative capital, we suggest that this process of negotiation resulted in the enhancement of the women's narrative capabilities. After the release of the film, the protagonists were able to transform their enhanced capacity to be heard and acknowledged into social and symbolic resources leading to economic and health benefits.

Introduction

With the sun rising in the background, Sara wakes early from bed in the morning; she ties her hair in a ponytail and leaves her modest palm leaf house to start her work as usual. We repeated this scene several times, as our presence with the camera created some excitement among the local children who followed us around Sara's house. That morning, it was raining and the children could not make the difficult, hour long walk to school in the nearby village. We

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told Sara to do just what she usually does: “we will follow you”. After the first day of shooting we were impressed with her capacity to “play herself” in our presence throughout her daily activities. We repeated this scene several times, although we did not use it in the final cut of the film *Wawata Topu* (diver women in Rasua language).

Our presence filming in the small hamlet of Adara inevitably interfered with the daily lives of the inhabitants. But by getting Sara “acting as herself” we were pursuing the specific objective of “raising visibility” about the crucial roles these women play in the fishing sector and in the local economy at large. In this vein, *Wawata Topu* inscribes itself in a tradition of filmmaking aimed at boosting positive social transformations by using audio-visual ethnography as a tool. This is as old as the film genre, as pointed out by Ruby (1977) in regards to Vertov’s aim to create consciousness among the audience with his works in the 1920’s. In his definition of ethnographic film, Marcus Banks (1992:117) states that “an intention – to make a film” and “a reaction – the response of the audience to the physical manifestation of the event (the film)” are critical issues. The film can however produce changes amongst two different collectives: the audience and the protagonists. In a paper written before his death in 1984, Donald Snowden, one of the initiators of the Fogo process, pointed to the role of video as a tool to facilitate the establishment of lines of communication within a village or area, and between the village and distant decision makers (Crocker 2008). The establishment of lines of communication was in short what *Wawata Topu* accomplished.

Building upon a previous theoretical exploration (Alonso-Población et al. 2016), in this paper we use the notion of narrative capital to conceptualise and interpret the outcomes of the filmmaking process. On the basis of Bourdieu’s notions of the operation of power within fields (Bourdieu 1991; 2002), we understand narrative capital as all narrative resources that are mobilised by social agents to access other types of resources and ultimately accrue some quotas of power (Alonso-Población and Fidalgo-Castro 2014, Alonso-Población et al. 2016). This process of narrative capital transferred into other types of resources is conceptualised as transformations of capital (Bourdieu 2000). As pointed out by Watts, one critical aspect for accruing narrative capital is the agents’ narrative capabilities, or as put by the author, the capacity to be heard and acknowledged (Watts 2008).

From this theoretical conceptualisation, we suggest that ethnographic filmmaking can trigger practical dynamics at the social, economic and symbolic levels by enhancing the protagonists' narrative capital. In contrast to projects focusing on economic issues, which are dominant within the fisheries development area, the use of the notion of narrative capital brings to the foreground the multi-dimensional nature of power. It implicitly calls attention to the need for development interventions to take into account narrative aspects in boosting social transformations, especially when they are aimed at promoting gender equality.

Timor-Leste's fisheries sector

After independence in 2002, Timor-Leste attracted the attention of many foreign researchers and observers (Gunn 2007; McWilliam and Traube 2011). However, with few exceptions the fisheries sector has not been included among the preferred topics of research by social scientists. The exceptions include an overview article by McWilliam (McWilliam 2003) that addressed fisheries briefly, and descriptions of productive practices and interesting insights into the interconnections between fishing, religious regimes and identity (Bica 2011).

Currently, the fishing fleet is dominated by small-scale operators (Alonso-Población et al. 2013; Alonso-Población 2013). Availability of fishery products in the country is below regional averages (AMSAT Int. 2011a) and the sector faces crucial challenges triggered by market constraints (Hartmann 2010; Alonso-Población 2013) and eating patterns (Alonso-Población 2013). Little documentation is available on the fisheries sector during the Portuguese colonial period (16th century to 1975) and the Indonesian occupation (1975-1999), but the few available sources report on a long fishing tradition present in the Island of Atauro (Anon 1916; Magalhães 1918a and 1918b; Figueiredo 1966, 1968; Thomaz 1977; Barros Duarte 1984). Members of the Moana Expedition called attention to the ability of the Atauro dwellers in the art of spear fishing (Gorsky 1957) and later on, as part of his ethnographic explorations, Barros Duarte described how the inhabitants of the island started diving at the young age of six or seven years old (Barros Duarte 1984). No specific references are made to women fishing in these texts.

During Indonesian occupation, the New Order regime promoted the establishment and development of fisheries cooperatives (The Provincial Government of East Timor 1986) and introduced new fishing techniques in the pursuit of a production revolution (Gunn 2003). The newly formed organisations received boats, nets and engines along with technical training. However, the operation of the cooperatives was hindered by the regular bribes requested by the Jakarta political and military elites, who received a percentage of the catches in the form of money or fish (Gunn 2003). Along with the new fishing nets, use of cyanide, fish bombing and other unsustainable fishing practices were common during this period (De Carvalho et al. 2007; MAFF 2001), leading to signs of overexploitation at some specific fishing grounds. Right after independence in 2002, indicators of overexploitation were reported at the north-eastern reefs of Atauro Island (Wong and Chou 2004) as well as in the nearby area of the capital Dili (Deutsch 2003).

In 1999, the United Nations (UN) sponsored referendum for independence which resulted in a rejection by the vast majority of Timorese to integration with the Indonesian State, was followed by a violent campaign by East Timorese pro-integration militia supported by members of the Indonesian military, which lead to widespread destruction of fishing vessels, gear and infrastructure (MAFF 2001).

Following independence in 2002, efforts were made to boost production and a regulatory framework was developed (Guterres 2003). However, these measures have had little influence in triggering significant changes in the sector (Alonso-Población et al. 2013).

Gender and fisheries

If the knowledge available on the fisheries sector is still scarce, even less is known about the women's contribution. Within the fishing communities, women have crucial roles in craft making, household labour and livestock rearing, mending nets (Baticados 2005), post-harvest and drying (De Carvalho et al. 2007), financial management (AMSAT Int. 2011b), seasonal shore fishing (Palmer and do Amaral de Carvalho 2008), shellfish gathering and reef gleaning (De Carvalho et al. 2007; Alonso-Población et al. 2013).

However, their contribution remained unseen for most institutions and external observers and has even been considered “marginal” (Lloyd et al. 2012) at specific locales in the country.

Materials and Methods

Wawata Topu- The Film Project

The *Wawata Topu* project aimed to address the aforementioned lack of attention to women’s work in the fisheries sector in Timor-Leste. However, our immersion in the community raised additional goals which we considered important to pursue, that ultimately shaped the topics addressed in the final cut of the film (more details on the filmmaking process are in Alonso-Población et al. 2016).

In 2012 we learned about the work of the women divers through the East Timorese photographer Nelson Turquel. He had been invited by a local Catholic priest to join him on a short trip to the islands’ west coast where he first encountered some of the women divers in Adara. He spent a couple of days in the community forging good relationships with its dwellers, and bringing back a series of stunning pictures featuring a group of women fishing underwater while using wooden and plastic goggles, wearing flip-flops and dressed with their *lipa* (tube cloth that Timorese women and men wear wrapped around their waists) as they do both in and out of the water. David Palazón, (Co-Director and Co-Producer) had already worked with Nelson on many different arts projects and Enrique Alonso (Co-Director and Co-Producer) had worked for a number of years in the fishing sector in the country, both as a researcher and practitioner. One year after Nelson’s visit, we decided to put together a concept note to raise funds to develop a film and a photo book (eventually not pursued) in order to raise the visibility of the women’s work. We considered that by doing so, we would be able to contest the lack of attention to their work so that they would ultimately be able to benefit from specific policies and programmes by national institutions and international organisations. Their work could serve as well to counteract common notions of gender inequality in the country, and even serve as an inspiration and model for other Timorese women due to the implicit contestation of common notions on women’s work. Furthermore, the interest in making such a film did not lie solely in forging changes in local conceptions

about gender roles, but also in contributing to the filmography on Timor-Leste, which during the last decades had primarily focused on stories relating to war, suffering and grief.

The Secretariat of the Pacific Community became interested in funding the film, so we quickly moved to the pre-production phase in order to implement the project. In order to do so, the team, composed of David Palazón (artist), Enrique Alonso (anthropologist), Nelson Turquel (photographer) and Mario Gomes (production assistant) moved to Adara in June 2013, staying there for an initial period of ten days. The shooting continued until September, as additional field visits were necessary to gain further footage. In order to build an environment of confidence and feedback, we organised a communal dinner on the first night accompanied by a ceremony where the diver women received a selection of pictures taken by Nelson the previous year. As part of the engagement with the community, every night we projected on a white sheet the footage of the day as well as a selection of short films about Timor-Leste. However, we realised that our evening audience were much more interested in watching themselves in the daily footage, rather than watching short films displaying rituals and dances from mainland Timor, which they regarded as backwards practices. In Atauro Island, a Protestant Church (Assemblies of God) promoted a rupture with all regarded as traditional. In contrast, the Catholic Church, which is dominant in the main island, achieved only a partial conversion (Bicca 2011).

As the filmmaking progressed alongside the evening projections, a sort of engagement with the community emerged, bringing about a process of dialogue and negotiation around the very content of the film to be made. In this vein, we considered *Wawata Topu* as a collaborative effort (Alonso-Población et al. 2016), as some of the topics were suggested by us or by the very need to provide complete explanations to the audience on certain issues, while the protagonists requested other themes they considered relevant to be depicted in the film. All suggestions were included in the final version of the documentary, a 33 minute film built upon life stories, interviews and footage of the daily work of the diver women and the dwellers of Adara. A critical issue was to edit the narrative of the film combining all of these topics and avoiding an extensive use of a subjective voice over. In order to materialise this collaborative effort, we first developed a list of potentially interesting topics to be included prior to the

fieldwork phase, while the final script was developed on a *post-hoc* basis. In this regard, it is worth providing some details on these themes and explaining why they were addressed and integrated in the film.

Introducing the Community: Adara

Adara is a small fishing village located on the western side of the island of Atauro. The island is 140 km² with 8,602 inhabitants (NSD 2010), and is approximately 25 km from the capital Dili, surrounded by the Indonesian islands of Alor and Wetar. From the Portuguese time, the island was used as a prison, so the South-eastern side of the territory received many immigrants.

In contrast with the majority of inhabitants on mainland Timor, who consider themselves Catholic, Protestantism (Assemblies of God) is the dominant religion within the island (Bica 2011:25). Its villagers speak a form of the Wetarese language (Hull 1998), locally referred to as Rasuah or Duadua. The hamlet of Adara is inhabited by 318 dwellers who mostly practice a mixed livelihood strategy, combining livestock rearing, small-scale agriculture (specially maize), harvest of forestry resources, and small-scale fishing, including spear gun fishing and reef gleaning.

Life stories: Sara, Angelita, Dina.

Every morning Sara and Angelita feed the animals, harvest vegetables and fruits, grind the maize and prepare the daily meals for the household members. Despite her young age, Angelita is one of the main pillars within her household. She supports her family with the fish she catches while diving and fish netting with her father. As she explains, her mother became sick and can no longer participate in fishing activities. Sara, who was 18 years old at the time of the filming, lost her father some time ago. She left school due to her father's illness, when he was no longer able to generate enough income to support the family. She was the only one who was able to help him with the fishing, and together they were able to pay for the studies of some of her brother and sisters. Dina is 37 years old and mother of two. In her own words, she had to withdraw her older son from the school. In front of the camera, she recounts that they were abandoned by her husband and explains that she is not "strong enough" to provide for all her children's needs, including schooling expenditures.

Wishes, aspirations, contradictions.

Sara and Angelita were the younger protagonists of the film. When we asked them about their aspirations and wishes for the future, they developed a similar response: they wanted to get married to someone from outside their home hamlet Adara, so that once the intended husband would have paid the “*barlake*” (bride price) they could leave the hamlet and go to live with the man’s family. Dina, in contrast expresses her wish for her sons to marry a woman who can help her with her work, even suggesting that she is saving money for them to pay the “*barlake*”.

The “*barlake*” is a controversial issue amongst gender practitioners in Timor-Leste (Haider 2012; Khan and Hyati 2012; Niner 2012; Wigglesworth 2015). We felt that in understanding the expectations and prospects of the women divers, the audience would need to know more about the local interpretations, reasons and operation of the marriage arrangements. “*Barlake*” is conceptualised as a gift to the parents of the marrying woman for their effort in raising her, the payment should bring along the completion of the marriage process, so that the woman can move to the man’s family household. If the “*barlake*” is not paid, the Adara hamlet’s chief says, “*He [the man] has to come back here to live with the woman’s parents*”. Albertina states that she does not want her male sons to leave once married; in her own words: “*it is wrong*”. Following on from this, Agustinha provided her own interpretation: “*once the elders cannot keep catching fish, male sons can do it for them*”. Paradoxically, she is herself an experienced diver and fisher. We considered depicting all of these contradictions crucial in the film, so the protagonists, as well as the audience, could confront their own gendered interpretations of the work.

Formal education: new possibilities for social mobility?

A visual description of contemporary life in Adara required reflecting on the importance given by the local dwellers to the new opportunities to access formal education provided to the youngest generation. In this regard, the protagonists expressed their willingness for us to raise visibility about the difficulties their sons and daughters had in getting to school. The path to the school is almost an hour long walk along the coast, passing through several beaches, rocky walkways and forest paths all the way to the village of Atekru,

where the primary school is located. Accidents are common among the kids and eventualities such as high tides or rain can make the journey to school quite risky. In order to call attention to this issue, we walked with the children to school and presented the issue with a song performed by them as a soundtrack. The women's request to show the audience this issue responded to their willingness to call the attention to the government authorities about the difficulties children of the community face to get formal education, so that it could be improved.

“A Man and a Woman are One Life”: Discovering Social Boundaries

In the words of Albertina: *“Men and women are one life. This is a good life”* [*“Feto ho mane moris ida deit. Moris di’ak maka ne’e”*]. She explained how she and her husband cooperate while fishing: when she steers the engine, her husband fishes and vice-versa. This is the same with Delfina and Isaul, who both share the fishing with nets in pairs. They also explained about their sons studying in the capital and the need to work in partnership to provide them with support while studying. However, not all dwellers of Adara have the chance to work alongside their partners. In contrast to them, Dina, one of the women divers, explained that she cannot afford her sons' schooling expenses and finds it difficult to meet basic needs for her household.

This socio-economic condition had a narrative parallel. After the initial excitement of acknowledging our interest in making the women divers the protagonists of a film, the first days of shooting were a bit frustrating. Although the underwater filming was already underway, during the first three days, we were not able to shoot the women divers recounting their life stories. When in front of the camera, they only talked about issues related to diving. They spoke very timidly. One day we asked them to have a meeting; we all sat together and had a conversation about what interested us as filmmakers and what they expected from their roles in the film. Albertina was included in the group. She was the first one to talk and seemed the bravest speaking in public. Timidly but progressively, the women divers started to join the talk delineating what became obvious: the availability of adult manpower in the household production unit seemed to be a determining factor in the stories of *Wawata Topu*. Unfortunately, the entire footage shoot on that day was ruined, as the tapes sold by the electronics shop in Dili had been exposed for too long to the heat and

humidity of the tropics. After this hindrance, it was time to start again. Obviously, not all wanted to recount their stories again in front of the camera — as some referred to problems of alcohol among the men, disabilities or other kinds of personal issues. It was our duty to respect their wishes. However, that conversation served as an ice breaker and brought us closer to the heart of their personal matters.

Origins: Maríá Cabeça, the pioneer woman diver

Maríá Cabeça told us she was 71 years old. She is married, but she and her husband never had any children. Since the day we met her, we felt she had some kind of special charm. Although she lived in the neighbouring hamlet of Atekru, all divers in Adara pointed her out as the woman who first went diving. She explained that women did not go diving at all, back in the days when she decided to dive along with the men. When asked on her decision to dive, she states clearly to the camera: *“There was no money or food; so we went diving [...] because we were hungry... we went diving” [Osan la iha, hahán moos la iha; bá luku [...] tamba hamlaha... bá luku]*. The linkage between the origin of women diving and poverty confirmed an initial observation: those women who were diving as their main livelihood occupied a low status in the collective. The availability of adult manpower in the household units seemed determinant in establishing this economic boundary. Maríá Cabeça recalled that after she learnt spear-gun fishing from watching men diving, she was followed by more women from the hamlet. In her own words, *“next day we were all diving”*. As a pioneer she had to deal with sexist comments coming from some men, who asked her to stick only to the agricultural tasks. Her contestation to gender roles was a central theme to be depicted in the film.

(Dis) valuing their own work?

Sara, Angelita and Dina go diving every afternoon, and every Saturday morning they go to sell the fish at the Beloi market. However, they explain that their daily catches are not big enough to be dried and sold in the market, so they are intended for household consumption. Instead they sell the “big fish” caught by men during the week. In this vein, a further interesting topic to be depicted in the film was the discourse on the value of the work. We soon realised that these women divers did not value their own work equally to the men’s — or to the

children's diving, which is conceptualised merely as an entertainment. In the words of Dina: "*they (women) only fish once per day, they catch small fish and the catch is intended for household consumption*". On the contrary, men dive two or three times per day, catch bigger fish oriented for market trading. However, they did not emphasise the fact that in order to get income from their catch, men depend on them to sell their bigger fish at Beloi's Saturday market.

Market and health

Every Saturday, women from Adara walk between three and four hours to reach the market of Beloi. Starting at night, they walk through the coast up to the neighbouring beach of Arló. At the crack of dawn, they start trekking up the hills that cross the center of the island. Loaded with palm leaf baskets and plastic bags full of dried fish, they arrive early in the morning at the market, where they await the arrival of the ferry, which brings most of the potential consumers from Dili. Once the ferry boat departs in the afternoon, the market is over. Against images of the market, Dina explains the profit margins she gets from selling the men's fish. At the end of the day, all the economy of the hamlet depends on the women's role as fish sellers.

The path to the market brought a new issue to our attention to address in the film. Specifically, the health problems they face from their daily work and weekly excursions to the market, as well as the lack of health facilities in the hamlet. This issue was brought to our attention by the women themselves on various occasions, and we were asked directly to include a section about this issue in the film, so that the women could direct the attention of the state institutions towards the vulnerable situation they face given their geographical isolation.

Engaging filmmaking with community-led initiatives: Tourism as an alternative livelihood

Over the last few years, Adara and the surrounding areas have experienced the development of some tourism initiatives. At the time of our project, a foreign operator was offering expensive trips to dive the coral reefs around the west coast of the island and camp on Adara's stunning beach. However, the local inhabitants were concerned about the few benefits they were

receiving from such activities, reduced to the piecework wages obtained by young males for unloading equipment and carrying food from the boat. Furthermore, Indonesian builders instead of the local dwellers had been hired to build the bamboo cabins where the tourists camped at night. The community was then willing to take ownership of the tourist sector in a way that all villagers would receive a share in the profits. In coordination with the hamlet's chief, the promoters of the community-based initiative organised an association formed by the women who wanted to take part in the initiative. The members agreed on developing a rotating system by which each day a visitor stayed in the cabin, one group of women would prepare the meals and obtain the corresponding income for their work. The first cabin, fully built by local dwellers, was completed in September 2013.

On several occasions both the women divers and other dwellers from the hamlet expressed their willingness to develop a complementary livelihood from tourism. In this case however, instead of addressing this topic in the film, we decided to use the documentary as a means to boost the tourist visits to the newly built cabins.

After the film shoot in June 2013, the post-production continued up to September, followed by an accompanying marketing campaign and social media page. However, before the final result was released to the wider public, the first version was shown to Dina, Sara and Angelita —the women who recounted more intimate stories, in order to seek their approval. Once granted first by them and then by all involved, the premiere screening was organised in the hamlet. The event had a double aim. First of all, to give back the resulting film to the protagonists, and secondly, to promote the newly opened guesthouse, which the women expected as a complementary source of income to their fishing activities. In order to do so, the screening was organised for around 30 guests from the expatriate community, mostly formed by aid workers living in Dili. These were at the time, the main consumers of domestic tourism offered in the young nation. However, domestic tourism options are limited, mostly available as weekend trips and predominantly having the capital of Dili as the main departure point, with destinations as far as 10 hours drive away. Tourism is one of the focal economic sectors in the government's plan of transition to a non-oil economy and is included in the National Development Goals (RDTL 2011). Hence, we considered that the event would be the perfect opportunity for

promoting the newly completed cabin of Adara. Before the screening, a big meal for all hamlet dwellers and foreign visitors was organised and the event was closed by a handover of DVDs and a public acknowledgement of the participants in the making of *Wawata Topu*.

Results

The outcomes of the project can be summarised as increased public recognition at local, national and international levels as well as the opening of new livelihood opportunities.

At a national level, the film was screened in several locations in the capital city of Dili, particularly during the 2014 International Women's Day events, and at the Xanana Cultural Center, at Fundação Oriente and during the official celebration commissioned by the Secretary of State for Promotion of Equality. On the international scene the film has been screened at a total of 24 international festivals in Australia, Asia, North and South America and Europe, and is currently available free on the internet (<https://vimeo.com/81265144>, accessed 22 June 2016). But the most important event for the film protagonists occurred in November 2013, during the National Day of Timorese Women, when they were awarded by the Secretary of State for Promotion of Equality of the government of Timor-Leste. Maria Cabeça, the pioneer woman diver was granted the Woman of the Year Award for her determination in contesting social barriers and getting to dive along with men. Maria left the island for the first time in her life to attend the invitation to the capital and to receive the award in a public event with the participation of the political and social elite as well as the national media.

Financially speaking, the promotion of the local guesthouse during the initial release and through the Facebook fan site helped boost the number of tourist visits. Currently, the community members have already built a second and third cabin and the occupation has increased significantly since then. In March 2014, the inhabitants of Adara received the visit of the current President of the Republic, who knew about the film and the local project and publicly recognised the value and economic function of this small social business. Managing the impact and the flow of tourists is a new challenge that the community will have to deal with. However, for the moment, tourism is starting

to be seen as a real source of income and the women have started to complement their wages with their work at the small cabin-resort.

Another source of income has arisen, namely, selling the film's DVD to the visitors. As the guests expressed their interest in obtaining copies of the film, the protagonists started to sell them. In managing the savings arising from the sales, they decided to use the association established for the work at the cabin-resort. Currently, discussions have already started among the members of the women's association in order to decide how to invest the common savings from the DVD film sales.

Finally, the community was able to get a health clinic built in the hamlet. Given the increased public exposure of their narrative, the dwellers of Adara used further chances after the development of the film (such as the President's visit) to call the government's attention to their isolation and risk when it comes to health facilities.

Despite all these immediate results, some challenges remain that will require further monitoring and research. Among them, the potential impact of double burdening associated with the new livelihoods among the women divers, the equity of benefits arising from tourism, the potential problems resulting from the flow of tourists and the current government developments in the tourism sector on the island.

Discussion

If intention and results are critical aspects of ethnographic filmmaking as defended by Banks (1992), it is crucial to bring to the fore theoretical approaches that allow nuanced understanding of the complex dynamics of social change and the multidimensional aspects of power, including the narrative domain.

Conceptualising results as transformations of capital

Although *Wawata Topu* was not intended to be a participatory film, we consider that the ethnographic material, either visual or in the form of text, is the result of multi-layered and overlapping dialogues (Alonso-Población 2014) between co-authors (film protagonists, editors, directors). As can be inferred by

the account above, this nuanced social interaction encompasses emotions, moral obligations and reciprocity.

In a theoretical discussion about the inter-linkages between narrative and power, Watts (2008) argues that narrative capital constitutes more than a good story to tell (the value of the story itself); it encompasses also the way it is told. It is precisely in the way stories are told that a critical aspect of social reproduction lies, as those with more institutional cultural capital (formal studies, for example) or social capital (social networks) will have more chances to be heard (see the examples provided in Alonso-Población and Fidalgo-Castro 2014). Based on his fieldwork among patients with dementia, Baldwin (2010; 2013) introduced the notion of “narrative dispossession”. The initial silence during the first days of shooting and the avoidance by some of the women divers of recounting their life stories in front of the camera, revealed that they could be considered narrative-poor (Alonso-Población and Fidalgo-Castro, 2014). Not because they did not have a good story to tell, but because they lacked the symbolic and social capital to be heard. What the film provided was only a tool to enhance what Watts refers to as “narrative capability” (Watts 2008) or the capacity to be heard and acknowledged. This narrative capital enhancement passed through several processes that included different modes of collective action. First during the very shooting process, while including all the community members, it was focused on the women divers. The interest that we showed in their life narratives set an initial stage of recognition. Secondly, the first screening of the film (in which they were put at the centre of the stage), was participated by community members and foreign visitors, brought along a further tacit recognition (internal and external) of the value of their narrative. Thirdly, the awarding of the Women of the Year Prize implied the incorporation (in an object –the prize, and a ritual –the ceremony held in the capital of Dili during the National Women’s Day) of the credit granted by political elites and the nation as a whole. After the Women of the Year award in 2014, the film also received the “Chandrika Sharma” Special Prize at the Film Festival “Fishers of the World,” and the Best Foreign Documentary at the American Online Film Awards. The statuettes are kept by the protagonists in Adara. Fourth, the interest by foreign visitors in meeting them and getting copies of the DVD set a further level of recognition for their narrative. In sum, this enhancement of their narrative capabilities through the film was converted into economic capital (through the increased visits by foreign tourists and through the sale of DVDs),

social capital (through the establishment of social networks beyond the local arena to the capital of Dili) and symbolic capital (the awards).

As explained by Goodson, contrary to other types of capital, narrative capital can counteract the “old patterns of cultural capital and social elitism” (Goodson 2007) as, in contrast to educational credentials, narratives can be easily accrued by everyday experience (Alonso-Población and Fidalgo-Castro 2014). However, not all collectives have the chance to be heard and acknowledged. We suggest that one of the project’s main results was enhancing the women’s narrative capital, specifically raising the capability dimensions (Watts 2008), and that female agents had the capacity to further mobilise and transform these narrative capital gains into social and symbolic gains, and ultimately into economic and health benefits. For this reason, we contend that conceptualising film outcomes in terms of capital gains accrued by collective agents might help us in better understanding social dynamics and non-economic dimensions of power. We have shown that enhancing narrative capability, despite a modest result, can be a useful tool in triggering social negotiations and boosting transformative dynamics.

Conclusions

In this paper we have suggested that the film *Wawata Topu* had as its only primary outcome raising narrative capital through enhancing women’s narrative capabilities. Economic benefits arising from the new opportunities, health benefits and social and symbolic gains as derived from their contact and acknowledgement by social and political elites and international audiences are secondary but not less important outcomes which can be conceptualised as transformations of capital. Yet, these transformations of capital were performed by the women themselves, who mobilised the leverage gained to mobilise further resources.

As a final remark, it is worth recalling and rethinking our initial aim when planning the *Wawata Topu* project, namely, raising visibility of women’s roles in the fisheries sector. The act of “making visible” emphasises the roles of the brokers (in this case the filmmakers, those who “make visible”), hindering the negotiation process involved in the filmmaking practice and the transformative capacity of the protagonists. On the contrary, recognising the

negotiation encompassed during the filmmaking process and describing the further results achieved arising from the agents' further use of the new resources accrued - that we conceptualise as narrative capital, portrays a different conceptualisation of the women, emphasising their transformative capacity as agents of change.

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Research Paper

Women Fish Processors in Cambodia: Challenges for Collective Business

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Abstract

One of the ways that small-scale fish processors are able to improve their position in the value chain is to get organised. However, there are many limitations for women fish processors to do so. By analysing the situation of women fish processors in Battambang, Cambodia, the study found that the reasons women have difficulty in organising collective business are not only the characteristics of resources (fluctuating and diminishing supply of fish) or user groups (and women's time poverty) but the gender power relations that make it impossible for women traders to work collectively. The particular nature of product and market make women processors dependent on Thai traders. Hence they compete rather than cooperate to sell to the Thai market, under the absence of any support to collectively negotiate and improve their position in the value chain.

Introduction

Fish processing is one of the occupations where women are heavily concentrated, especially in small-scale enterprises. However, there are many limitations that women entrepreneurs face including barriers in access to capital and technology (Siddiqui 2012; Mayoux 2001). One of the ways to overcome such limitation is to organise themselves into a community enterprise, cooperative, or joint enterprise (Jones et al. 2012; Bernard and Spielman 2009). However, despite all the advantages of cooperatives/collective business, it has not become a dominant form of enterprise among women fish processors in Cambodia. This paper explores the particular nature of the commodity chain

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and the product to find out why women entrepreneurs have not been successful in working together in fish processing enterprises within the particular context of Cambodia.

Women small-scale enterprises

There is a direct relationship between women's independent income and their empowerment, a factor that emphasises the importance of support for women's enterprises (Chen et al. 2004; Singh 2012; Kabeer 2012). There is, however, considerable debate over whether women's independent income through their own enterprises also increases women's bargaining power vis-à-vis men and other members within the family. The relationship between economic independence and women's position in the household is complicated (Kabeer 2012). In Mali, women's participation in shea cooperatives contributed to better recognition and higher respect from men in the community as well as the authorities (Oxfam 2013). In contrast, in South Asia, women are reluctant to utilise their economic power to improve their status, fearing it might offend their husbands and prompt them to leave (James 2012). Although there might not be a direct link between women's independent income and women's empowerment, there is little doubt that better access to and control over resources and assets boosts women's self-confidence and increases their options.

Women-owned enterprises often remain small and face various limitations, including lack of access to credit and production technology; lack of education, labour, formal job experience, self-confidence, market information and networks, time and mobility, representation and visibility; difficulty in juggling between productive and reproductive work; as well as gender discrimination in the market and legal formalities (Siddiqui 2012; Singh 2012; Mayoux 2001; Kuada 2009). Women producers have weaker bargaining power with buyers and occupy less profitable sectors of the economy (Jones et al. 2012). Women often earn less economic return for their efforts when compared to men (Chen et al. 2004).

Various kinds of support have been provided to women's small businesses, such as micro-credit and training. One of the most effective ways to support women's enterprises is to organise them into groups in order to enhance

their ability to gain access to resources and achieve better terms of trade (Peterson 2014, Jones et al. 2012; Hassan et al. 2013 and Bernard and Spielman 2009). The advantage of organising women's enterprises into associations is that it brings women's voices and representation to the attention of policy makers, and helps women gain access to business development services (Vandenberg 2006). Women's groups can gain attention from external donors and improve their access to resources (Peterson 2014), and by working together, women producers can achieve economies of scale and also negotiate for support from local authorities (Jones et al. 2012).

However, marketing cooperatives do not always work positively for their members. Based on a review of literature on collective action in natural resources management, Markelova et al. (2009) identified three factors that are important for collective action: characteristics of resources, characteristics of user groups, and institutional arrangements. They further argued that the degree of predictability, mobility, storage of resources and technologies are important variables, and that perishable and high-value products with higher returns can better offset the cost of organising for collective action. Strong leadership and governance by democratic principles are crucial characteristics of successful users' or producers' groups, a view supported by Jones et al. (2012). Institutional arrangements are important. For example, in the case of Mali's shea cooperatives, favourable government policies which encouraged the formation of women's groups and cooperatives, and the 2006 agricultural orientation law which addressed the issue of gender equality, both strengthened women's collective actions (Oxfam 2013).

This paper follows the Markelova et al. (2009) review of collective action in natural resource management to analyse the case of Cambodian women processed fish traders. According to their classification, Cambodian processed-fish traders have fulfilled most of the factors that would facilitate collectivity, including (i) fish is a perishable and high-value commodity and (ii) the government provides some support to encourage formation of collectives. By such accounts, collectivisation should be beneficial to traders, and yet the efforts towards collectivisation have not been successful. This paper examines why processed fish traders in Battambang, Cambodia do not work collectively though it is supposedly more beneficial for them to work together.

Materials and Methods

This paper is based on a series of interviews with fish processors in Battambang province in Cambodia in January 2013. The paper draws from a larger research project on fish border trade in Cambodia. In 2012-2013, we interviewed 46 respondents (32 women traders, 10 men traders and 4 couple traders). Among these interviewees were fish paste (*prahok*) producers/traders, who used to be in one company, but have now divided into three. We have interviewed all these three companies (4 women, 2 men). The information below is largely from the in-depth interviews with these three companies. All the names used are pseudonyms.

Results

Fish processing in Cambodia

Although everyone agrees on the importance of fisheries for the Cambodian economy, it is difficult to get an exact and consistent figure with respect to the production and export of fish and fish products. In 2008, total fish production (both inland and marine) in Cambodia was reported at 527,000 tonnes in 2008 valued at 1.2 to 1.6 billion USD, employing 6 million people (40% of the population) full time and part time (Golub and Varma 2014). Most of the fish supply is from freshwater, amounting to 422,000 tonnes of the 527,000 tonnes (Golub and Varma 2014). Although fisheries are seen as a male occupation, the value chain does not support this concept. Fewer women than men are seen only in the actual catching of the fish. Post-harvest distributions as well as processing are both largely dominated by women. Globally, 47% of all people involved in fisheries are women; in Cambodia, it is 57% (Golub and Varma 2014).

The amount of fish exported from Cambodia peaked in 2004-05, and then gradually decreased, becoming one-sixth of the peak amount by 2008. Surprisingly, recorded fish exports are not large. Only 30,000 tonnes were exported in 2011 according to the Fisheries Administration (FiA) statistics, while the Ministry of Commerce records showed only 1,600 tonnes (Golub and Varma 2014).

According to Seang Tana and Todd (2002) (cited in Fisheries Administration 2009), freshwater fish are marketed as fresh fish (57%), fish paste (*prahok*) (19.6%), salt dried (9%), smoked (5.7%), sun dried (4%), fermented (2.9%). In the year 2000, the Department of Fisheries recorded that 33,751 tonnes of fish were processed, and 18,140 tonnes (54%) of it was exported (<http://www.mekonginfo.org/assets/midocs/0003355-farming-trade-marketing-and-processing-of-fisheries-and-fisheries-product-review.pdf>_Accessed 14 April 2015). Chun Sophal (2010) in *Phnom Penh Post* (<http://www.phnompenhpost.com/business/fish-exports-climb-30m-concerns-grow-over-stock>_accessed 14 April 2015) reported that in 2010, Cambodia exported 10,000 tonnes of processed fish. This paper focuses on freshwater fish processing, specifically on fish paste (*prahok*) producers. *Prahok* is a salted and fermented fish, which is a popular condiment for Khmer cuisine and takes more than three months to produce (Norng et al. 2011).

Fish processing in Tonle Sap Lake area in Cambodia existed even in the pre-colonial period, i.e. before the late 19th century. The freshwater fishers of Tonle Sap not only produced for home consumption, but in the 1960s and 70s, they exported to Thailand as well. During the Pol Pot regime, this activity stopped but revived after the liberation. There was plenty of fish in the Tonle Sap, and since all people around the Tonle Sap Lake were engaged in fish processing, production was high. Initially, they catered to the small domestic market, but with urbanisation and the opening of the border with Thailand, much of the processed fish was sold outside the area. Most of the enterprises in the 1990s and early 2000s were own-account or small-scale individual enterprises in the Tonle Sap area. In 2005-06, Fisheries Administration (FiA) decreed that in each province, only one company would be officially allowed to export processed fish to Thailand. This prompted fish processors to come together to form a company. The purpose of the government was to encourage people to work together and merge capital, so that they would be able to deal with Thai traders as equals. However, organising fish processors did not progress as intended by FiA, and now FiA allows several companies to operate in each province.

The following sections discuss the fish processing groups in Battambang province, Cambodia. Battambang is one of the major provinces for freshwater fish processing. The trajectory of the processors in coming together and then

breaking up is described in detail. Through analysing their experiences, the barriers to collective business in fish processing in Cambodia can be explored.

Fish processing in Battambang

A collective fish processing company was established in 2005, under the direction of FiA. There were eight *prahok* processors (six women and two men) in the province, and all of them came together to form one joint company. They gathered all the produce from all members in a common place, and then, supplied each of the members' regular customers in turn.

Before the company was formed, one of the main problems faced by fish processors was the lack of regular suppliers of fish. Fish processors need to give advance payment to suppliers to ensure that they get enough fish. With harsh competition and fluctuation in fish catch, lack of regular supply of fish was a key constraint for fish processors. With the establishment of the company, processors gained access to more capital, and with that, they were able to offer advance payment to suppliers, thereby acquiring a steady supply of fish as well as a larger quantity of fish from a larger number of suppliers.

But they had problems when they were selling to their customers. Before forming a company, each processor already had his/her regular customers. Maintaining relations with regular customers is very important for processors, since this is key to their business stability. Initially, members did not have any problem in sharing regular customers with each other. At that time, they were trading around 8,000 tonnes per year. One of the members said that she was able to double her business after joining the company. However, some members started to feel that eight people were too many to manage, and in 2006, the company split into two with four members each – Company A (four women members) and Company B (two women, two men members). After the split, the amount of fish traded by the companies decreased and Company A said that it went down to 2,000 tonnes. Sophea, Sokha, Jaria and Theary were members in Company A and did not have large capital, so they were not able to keep their capital with the company throughout the year. They divided their profit once a year during the New Year, and returned all the investment to each member. They bought as much fish as possible during the fishing season and built up stocks so that they could continue to process fish during the closed

season (June to September). However, their business slows down during the closed season as their stocks are not large enough.

Company A used to sell to three Thai traders. But in 2008, they decided to select only one, since it was too difficult to keep meeting the demands of all the three and maintain good relationships all around. As Sokha mentioned, it is better to stick to one customer, since other Thai traders might not make payments.

The Cambodians felt that it was difficult to find a sincere Thai trader who would not cheat them and who would pay regularly. Cambodian processors' bargaining power vis-a-vis Thai traders is weak, and their major concern is not the low profit margin but whether or not they can get paid. Therefore, it is crucial for fish processors to have a close relationship with Thai traders.

In 2009, Sophea split from Company A and started to operate on her own, because of conflict over management styles. In the same year, Sophea married off her daughter to the adopted son of the Thai trader, and monopolised the sales of processed fish, which made it impossible for the other three members (Sokha, Jaria, and Theary) to sell to this trader. So, the three had to go back to the two Thai traders with whom they severed relations in 2008, and resume sales with one of them. While Sophea was able to export more than 1,000 tonnes in 2011, Company A with the other three lost USD 80,000. This made life difficult for Sokha, Jaria and Theary of Company A, and they had to develop other income sources outside the company. As Jaria says:

It is difficult to do business here, since there is too much competition.

As for Company B, after the split with Company A, they needed to borrow USD 50,000 from the bank, since they did not have enough capital to buy fish. Company B has a woman president and a woman vice president, and the two factory managers are men (since men members are minor shareholders). Company B is operated by all the four members, but business was not good and they incurred a loss of USD 10,000 in 2011.

It is noted that both Companies A and B are run by women. Fish trade is considered women's work. Men help in business, since the business is

profitable and needs considerable labor; but still fish trade remains women's business. Some women are able to expand their business. But the social status of fish business is not high – it is considered hard, smelly and insignificant business run by women as a secondary income for the family, despite the fact that in many households, women are the main breadwinners. Due to such attitudes, women fish processors are unable to wield much political clout and negotiation power with authorities. Women face multiple problems in running such businesses, but collective business is still not their first option. In order to understand better why collective business did not work out in Battambang, below, we examine the personal trajectory of three members of Company A in detail.

Sophea (former Company A member)

Sophea's education was stopped in 1986, and she started to help her mother in processing fish. She got married in 1990, and started her own business selling processed fish as a wholesaler. She started exporting to Thailand in 2005. She is a large trader, selling more than 50 trucks with 20-30 tonnes per transaction to the border town of Poipet. She buys semi-processed *prahok* (head and intestines removed and lightly salted) and completes the final processing at her place, since salting requires good technique.

She joined the company in 2005 and was able to access even larger capital to expand the business. However, she had difficulty in working with many people. She is used to running the business independently and making business decisions alone, so she felt that consulting with other partners was cumbersome and led to a loss of business opportunities. Once she had an order of 100 tonnes and she managed the sales alone without discussing them with others. Other members were very angry and hence Sophea decided to withdraw her capital from the company and continue to do business alone. She also wanted to give priority to her regular customer, which other members did not agree to, so it was not possible for her to work with others.

She has a very close relationship with her Thai customer. When she does business, she can borrow money from a private exchange service in Battambang provincial center. The Thai customer sends payment to this exchange in Thai currency, and she receives the money in Cambodian currency. The transaction

fee is lower than that at the bank. She can also get money in advance a few days, since the exchange service knows that payment is sure to come from Thailand. Such an arrangement allows her to conduct business without any significant loans from the bank.

Her husband is an alcoholic and she needs to keep him in a rehabilitation center from time to time, so she runs the business all by herself. This is a disappointment for her, since when she got married, he was an employee of a factory and she expected that she would be able to depend on his income. Her dreams of being a full-time housewife did not materialise, and now she concentrates on her business. She elaborated on her frustrations with her husband as follows:

I want to divorce him, but he said that if I am to divorce him, I have to leave the house. It is difficult to be a woman..... I am not able to go to Poipet myself, since my husband gets jealous..... I feel tired, but I cannot quit my business because I still have children to support.

Her first daughter was married in 2009 to the adopted son of her Thai regular customer. This made it easier for her to solidify her relationship with the Thai customer, and also made it easier to get advance payment from the Thai customer. Her second daughter was married to a Cambodian businessman, but based on her experience Sophea believes it is not good to depend on the husband, so she is planning to start up a salt business for her daughter to run.

In order to do business, she has to fight with authorities, but she has so far been successful in negotiating, not by working collectively with other processors but by complaining and dealing with government officers individually. For example, in Battambang province, as part of the city planning exercise, provincial officers tried to move the trading place of processed fish and also to charge fish processors a business operation fees similar to that being charged to fresh fish traders. She and other processors complained to the province and they were successful in removing the collection of fees. However, the complaints were raised individually, as she said:

I often argue with officers or go to negotiate with the higher ranked officers in the province when I face irrational demands. So the officers say that I am a “pathakham batbao” (protestor).

With sound financial backing from her Thai customer, she is able to purchase fish from various provinces all year round. Thus, she has enough fish to continue processing at full capacity even during the closed season, unlike other members of Company A. At the same time, her experience in negotiation with authorities is that individual negotiation works and collective negotiation is unnecessary. Hence she has very little motivation to work with others.

Sokha (Company A)

Sokha's husbands as well as her parents-in-laws were all large scale fishers. She initially was fishing with her husband, but later started her own fish processing business in 1980. Her mother-in-law was also working in fish processing. Since 1986, Sokha has sent processed fish to Poipet to sell to Thailand. In 2004, she traded only 5 to 10 tonnes per day. When Sokha joined the Company in 2005, she was able to double her production and could trade 10 to 20 tonnes per day (sometimes 30 to 40 tonnes). Although she is still working with Jaria and Theary in Company A, even after Sophea left and set up her own business, she expressed difficulty in working with others:

It is easier to do business alone. Also, the Thai customers become confused, since they cannot order directly from us personally like before. In theory, it is good to work as a company, but in reality, it does not work like that.

Jaria (Company A)

Since 1983-1984, Jaria's mother has carried out fish business at the market, and Jaria took over the business from her mother. She married a school teacher in 1990 and expanded her processed fish wholesale business in 1995. In 1997, her husband quit his teaching job and started to help her in the business. In 2000, she further expanded the business but limited her expansion as she did not want to borrow money from the bank. She also expresses difficulty in working collectively:

Company is difficult when there are a lot of shareholders, since we cannot agree with each other.

But at the same time, she sees the merit in working together:

I think it is better to have one company per province. Now, there is no way for us to ensure that the Thai traders will pay up when we sell on credit. Since Cambodian traders are competing with each other, Thai traders can take advantage of that and not pay. If Cambodian traders are united, we can pressure Thai traders to pay up.

What we can see from Sophea, Sokha and Jaria's cases are that each of them had experience in running a fairly large business independently. Such experience and confidence made them feel that it is more difficult to work together than do business alone. The key factor that helped Sophea to break off independently, while Sokha and Jaria remained with the Company, was that Sophea was able to secure her market by building a strong relationship with a large Thai customer.

Discussion

Markelova et al. (2009) identified three factors important for collective action in natural resources management: characteristics of resources, user groups and institutional arrangements. This paper used this classification to analyse whether these factors apply to processed fish traders. Characteristics of resources are examined through a discussion of how fish as a product affects collective action. Characteristics of user groups are discussed through an analysis of the company members, and institutional arrangements reviewed include government support and the processors' relationship with Thai buyers.

Fish as a product

Does the particular characteristic of fish as a product facilitate Cambodian freshwater fish processors to work collectively? There are several characteristics of processed fish in Cambodia. One is that it is seasonal. Fish for *prahok* is available only for 3-4 months a year, and if one cannot stock enough fish for the whole year, the business can run only for half a year. That is the case for Sokha, Jaria and Theary in Company A and all members in Company

B, but Sophea was able to buy enough fish to last for the whole year thanks to her sound financial backing due to her relationship with the Thai trader.

The second characteristic is the diminishing resources and price fluctuation. As respondents said, the price of freshwater fish is very volatile in Cambodia. Respondents also said that freshwater fish availability in Tonle Sap Lake has decreased since 2009. Further, FiA (2009) data shows that fish production peaked in 2004/2005 and, since then, it has been gradually decreased. Therefore, processors need to compete for scarce fish resources. The third characteristic is that fish is extremely perishable. Markelova et al. (2009) concluded that perishable but high-value products are best suited for collective marketing, as the high returns can offset the organising costs. For such products, transaction costs become higher because of transportation and marketing, and working collectively can reduce such costs. Fish in Tonle Sap Lake is a perishable and high-value product, but Cambodian traders are not able to take advantage of this nature of the product, because of other factors as discussed below.

Characteristics of the group members

Women fish processors in Companies A and B were engaged in fish processing business individually on a fairly large scale even before they came together to form a company. Frocklin et al. (2013) said that women do not have access to high value fish and profitable markets, due to women's reproductive roles. Near the Tonle Sap, Cambodia, women processors tend to have less capital, and hence they also have lower access to fish. Therefore, initially, coming together to form companies was beneficial for all the respondents we interviewed. The joint company boosted their capital and they could buy much more fish than when they were doing it alone. However, the nature of their relationship with Thai customers as well as the volatile fish market did not allow them to continue with such collectivisation. Because fish supply is so volatile and because there are very few Thai traders, especially reliable Thai traders accessible at the border, Cambodian processors were extremely dependent on a small number of Thai buyers. As seen in Company A, conflict between processors over their regular Thai customers caused the breakdown of the joint companies.

Women entrepreneurs have no formal or informal support for their business and have to do business in a volatile market without any protection. For survival, they need at least one reliable factor, and the only reliable factor is the Thai buyer. This is unfortunate and ironic, since these very Thai buyers dominate the value chain and determine the unequal terms of trade, which causes considerable suffering to the Cambodian traders. This fact was also noted by fresh fish traders who were also called to form associations. However, no association of fresh fish traders have been formed. As one fresh fish trader, who attended a meeting organised by FiA regarding forming an association with other fish traders, noted:

The most important part of any trade is regular customers. Trade depends completely on this. The regular customer in Thailand will set the price, but she makes sure that I will also have some profit.... Everyone wants to keep good relations with their own customers, so there were conflicts regarding which customer will be given priority.

Institutional arrangements

The Fisheries Administration (FiA), aside from organising meetings, provided training and advice to support fish processors' joint companies. For example, FiA advised fish processors to put *prahok* in containers labeled with the name of the company as part of a marketing and branding strategy and for quality assurance. However, this was not successful. The Thai customers wanted to buy only fish (and not the container). So, after one year, the fish processors stopped packaging and branding *prahok*.

Other than such sporadic advice and suggestions, there is no other government support for fish processors. There is no quality control or support to improve the quality of *prahok*. As one member of Company B said:

There is no differentiation in price according to quality of prahok. All prahok are sold at the same price.

The lack of support from FiA or other domestic organisations makes it difficult for fish processors to improve their income except through creating stronger linkages with the Thai traders. This is done through increased communication with Thai traders and accommodating each and every demand

of the Thai traders, such as how much to sell, when, and at what price and quality. Such dependence on Thai traders is further strengthened since the number of buyers and the number of markets for *prahok* is quite limited. Again, the member of Company B said:

It is not possible to sell to Phnom Penh, since the demand is not enough. The price in Phnom Penh is the same as that in Thailand, but we do not take the prahok to Phnom Penh as the market is too small. Since the price is the same, it is actually less expensive to transport goods to Phnom Penh [since there is no need to pay fees at the border]. Though it is more profitable to sell domestically, the quantity we can sell is too limited. Therefore, domestic retail price [of prahok] is higher than the retail price in Thailand.

Markelova et al. (2009) argued that perishable goods are more suitable for collective action. However, fluctuating prices, decreasing supply of fish combined with limited markets, a heavy dependence on Thai traders, and lack of government support discouraged fish processors from coming together as a collective. Through experience, women processors found that the business is more stable if they have support from Thai traders, rather than from each other.

We argue that it is not only the characteristics of resources or user groups but the power relations including gender power relations that make it impossible for women traders to work collectively. Barham and Chitemi's (2009) study on Tanzania farmer groups showed that higher female ratios in leadership showed weaker performance, since women did not have enough time to invest in looking for new markets. Cambodian processed fish traders similarly suffer from time poverty that restricts their market channels and their power to negotiate with others.

As Jones et al. (2012) noted, collective actions are important for women, who have few resources, to develop their business. Casual observation leads to the perception that fish processing can be a good sector to organise for collective business, especially since it fulfills at least two of the three factors that Markelova et al. (2009) flagged as important for collective action – characteristics of product and institutional arrangements. Fish is a perishable commodity, a key product characteristic for collective action. The Cambodian

government's policy to facilitate collective business fulfills the requirement for institutional arrangements.

However, a closer look into their business shows that the businesses did not have a good leader to organise them or set up a functional governance body, i.e., they did not fulfill the key factor in the characteristics of user groups as listed by Markelova et al. (2009). Further, although the government policy supported women's enterprises to collectivise, the support was sporadic and did not make much impact. The instability and unpredictability of fish supply coupled with the diminishing fish supply made fish processors feel extremely insecure in their business, and therefore, increased their dependence on Thai traders. Thus, they saw little merit in working together, given the severe competition to secure fish supply and meet the demands of the customer. Therefore, though fish processors are a good target for collective business at first glance, the nature and circumstances of the business is not conducive for collectivisation.

However, we further observe a key factor missing in the analysis by Markelova et al. (2009). An analysis of power relations within the household and in the commodity chain will reveal the difficulties women traders face in coming together as a formal collective organisation. By looking at gender relations in the household and commodity chain, we can develop a more nuanced understanding of their business. For example, fish as a product is relevant not only because it is perishable and unpredictable (in terms of supply), but also because it allows us to understand the involvement of women and their way of operating the business. Cambodian women processed fish traders, because of the particular nature and image of the product, are able to wield considerable control over their business. As seen in the cases, fish business is often passed on from mother to daughter. The business requires human connections which are developed over several years of relationship and market route building, rather than land or other property. Therefore, it is important for women to pass down social capital for fish business to their daughters. This explains why women processors highly prioritised their relations with Thai traders. It is such connections that are the most valued business asset.

At the same time, the dependence of women fish processors on Thai traders also reflects their inability to develop alternative markets. Women's time

poverty in managing both the household and business (given the absence of involvement from men in both spaces) aggravates the situation. Women do not have time to go and explore markets, as Barham and Chitemi (2009) noted in their research in Tanzania. Sophea mentioned three reasons to explain why she does not go to the border market by herself anymore: (1) other people tell her husband that it is not good to let a woman go to Poipet alone, which makes him jealous; (2) there is no one to look after the family; (3) she is afraid that she will lose some regular customers who come to her house to buy. Her gender roles, her relationship with her husband as well as gender norms bind her to the house and make it difficult for her to travel around and develop new markets.

Conclusions

Analysing the reasons why women fish processors in Battambang, Cambodia had difficulty in organising collective business, we found three key areas: (i) the fluctuating and diminishing supply of fish; (ii) the dependence on Thai traders; and (iii) lack of government support to collectively negotiate and improve their position in the value chain. Further, the study also pointed out that gender norms attach fish-related businesses to women creating a certain value to women's fish business, thus making social capital the most important asset to be protected and passed on to their daughters. Gender norms and roles also place women in a sedentary position creating barriers in the search for further markets. It is important to analyse the power relations that are embedded in women entrepreneurs' daily lives, and the support/resources that they have, in order to organise women entrepreneurs in ways that can change social and familial power relations for their benefit.

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Research Paper

The Role of Gender in the Development and Adoption of Small-Scale Aquaculture: Case Study from Northeast Cambodia

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Abstract

In Stung Treng Province north-east Cambodia, WorldFish in partnership with the Fisheries Administration (FiA) and the non-government organisation, Culture and Environment Preservation Association (CEPA), used community science to improve the uptake of small-scale aquaculture (SSA) by communities with limited space and experience of fish culture. The project was funded by the Wetlands Alliance Program and the SSA system, called “WISH-Ponds” that combines the words “Water and Fish” to reflect the integration of water and fish cultivation with water for storage and vegetable growing. WISH used participatory action research to establish a system of transformative learning in peri-urban households in northeast Cambodia, to assess and evaluate the costs and benefits of establishing SSA in the community. The WISH-Pond system has also been designed to promote the role of gender within the process of SSA development. This paper describes the WISH-Pond system and how research has been used by the community to test and develop aquaculture ponds that meet the needs of households, women in particular. This paper explores the role of gender in community science and in the development and adoption of SSA systems as an alternative livelihoods and contributions to improving management of wetland resources.

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Introduction

In Cambodia, aquaculture is one of the fastest growing food production sectors and contributes one sixth of the country's total fish production of 745,065 tonnes (FAO 2015). The Aquaculture Development Plan of Cambodia (2000-2020), produced by the National Fishery Administration (FiA), aims to expand aquaculture production to at least 300,000 tonnes of fish per annum by 2020 to maintain an annual per capita consumption level of 30 kg (Joffre et al. 2010). However, to meet this demand, a significant increase in total aquaculture production is needed. Ultimately, this will require different implementation strategies across the sector that target both small and large-scale aquaculture developments.

The aquaculture sector is often considered a male domain due to the intensity of the system and the way it depends on the adoption of new technology and techniques. However, rural women's involvements in aquaculture activities are important for several reasons including improving family nutrition and household income. In the floodplain of the Tonle Sap system, women's participation in fisheries ranges from approximately 50% in fish culture activities and 85% in marketing (ADB 2007).

Extensive homestead pond culture is the most common aquaculture system, promoted primarily for improving food security of rural poor households as they require limited resources such as land, labor and inputs. The promotion of aquaculture as a development strategy for women has been partially based on the perception that it could be an extension of women's domestic tasks, integrating with other housework such as childcare, home gardening and household chores (Brugere et al. 2001). The WISH-Pond system aims to empower women as a critical element to promote food security and income generation in peri-urban households through the adoption of new technologies and techniques. The empowerment perspective focus on gender relations reported by Economic and Social Commission for Asia and the Pacific (Brugere et al. 2001) focuses on changing the balance of power in households. Hence, the challenge for women's empowerment comes not so much from reversing existing power hierarchies in a society but rather empowering women to make their own choices, to increase their own sense of self-reliance and to identify with their own inner creativity and set of values. The goal of the

empowerment perspective is therefore to challenge and change existing gender relations. An important step in this process is to better understand respective gender roles in the households. The WISH-Pond project has been piloted in northeast Cambodia and implemented by a mix of different approaches including field visits by technical experts, group meetings with farmers, village training sessions, field monitoring and coaching of farmers to explore progress, challenges and solutions in testing the WISH technology and making sure both men and women farmers have equal opportunity to access the knowledge and information of small scale aquaculture.

This paper describes a process by which community science was used to help peri-urban households to test WISH-Ponds as a potential new SSA technology. It also provides a gender assessment of the different roles and tasks of men and women in households to test small scale catfish culture production: pond preparation, pond management techniques, supplementary feeding, best management practices, harvesting and marketing of fish products. This paper tries to answer the main research question: how does the WISH technology benefit men and women, and how does this technology empower women in promoting food security and income generation in their households.

Gender and the WISH-Pond system

Gender is socially defined as the relationship between men and women, not related to biological characteristics. Gender refers to socially-determined ideas, practices and attributes of men and women, including female and male roles. Gender relationships and patterns show differences in division of labour, access and control over the production of resources compared to accruing benefits as well as decision-making on developmental matters and skills, particularly in science and technology (Kingiri 2010).

ESCAP 2014 recognised that women continue to take primary responsibility for unpaid work, particularly domestic and caregiving work, and comprise the majority of temporary, low-paid and low-skilled jobs. In promoting women's economic empowerment, agencies need to strengthen efforts to achieve equal employment opportunities, to support women entrepreneurs, to support work-life balance and to address restrictive gender stereotypes, and strengthen efforts to achieve equal employment opportunities

that enable women to realise their full potential and to achieve their career and family aspirations. In advancing gender equality and women's empowerment, improving women and girls' participation in education as well as formal and informal trainings is associated with their economic empowerment, food security and poverty reduction. Therefore, to design and implement the WISH-Pond project, cultural norms and gender issues in the target community have been explored and investigated.

In the past, traditional and cultural norms of rural communities in Cambodia have constrained villagers, especially women, from adopting new technologies. In this paper, WISH technology is defined as practices or techniques, know-how and skills that are used to enhance productivity and save or reduce inputs costs such as labour or energy. Before 2010, villagers in Stung Treng, northeast Cambodia, were not interested in growing fish in their backyards. Villagers thought that fish lived in rivers and many fish were abundant, so why would they want to raise fish? Growing fish on land sites (plastic, cement tanks or earth ponds), might face a curse from god, like thunder, to the pond or to humans, according to Mrs. Song Chandai, a farmer in Kamphon Village. In the past, villagers kept young girls working at home. They did not want girls to go on to higher education. Therefore, for several reasons, a majority of girls in the communities dropped out after finishing primary school. Girls had to look after young sisters or brothers while their parents were busy with their livelihoods. When the girls grew up, they were married and took care of husbands, children and household chores. This leads to passive female participation and a lack of empowerment in a number of jobs.

Community science and the WISH-Pond system

Two models of research can be applied to generate knowledge and data to better understand the contribution of SSA to communities in Cambodia. The first is empirically-based research carried out by researchers who identify a problem and develop questions and methods to generate data independent of those who are being studied (German and Stroud 2006). The aim of this research is to make conclusive statements about a problem or issues of interest. The target audience of research under this model is the managed primary decision maker outside of the physical area of study. The research results are used to guide decisions in applying policy or an intervention. By contrast, the

second research model actively seeks to engage people who are being researched in the research process itself by working with them to identify research questions, design studies, collect and analyse data and apply results. In this paper, the term community science is used to describe this second process.

While empirical research is typically non-participatory, community science engages people in the research process. In the context of development and changes that occur within communities, the notion of community science can be conceived as research in development (R in D). This is research and research methods that function as learning processes that link and operationalise research for development (German and Stroud 2006). In practice this research represents a series of participatory methods and techniques that bridge the gap between research and development and engages people to learn about their environment and the changes that occur in its development (Ibid).

Similar to empirical research, community science identifies problems and employs various participatory methodologies to generate knowledge and learning. The knowledge obtained in this process is not used to prove or falsify hypotheses but rather to help construct a better understanding of reality, to reduce risks about the subject of enquiry and to predict with more certainty future outcomes.

The participatory research approaches and methods used in community science are part of a spectrum of science emanating from empirical research, through action research (AR) and moving towards participatory action-learning (PAL) (Table 1). The WISH Pond research is at the end of the research process where research is carried out by the community for the community applying PAL approaches. These approaches adopted for the introduction of the WISH Pond aimed to build research capacity and confidence within the community to design questions, indicators and key learning from adopted WISH technology (Johnstone et al. 2012). Throughout, the project team wears a gender lens to investigate gender relationships and roles in implementing the WISH-Pond technology.

Table 1. Typology of community science methodologies (adapted from German & Stroud, 2006)

Method	Who defines research / data characteristics	Research outputs
Participatory Action Learning	- Community involved in defining research - Lessons integrated in change process (transformative learning) - Data capture informal	- Approaches that ‘work’ relative to development goals / change process defined by beneficiaries - Applied to guide a change process
Action Research	- Research defined by community and off-site result users - Data capture relatively fixed but able to interpret emergent realities	- Generates general principles about development / change process - To help guide the development / change process
Traditional Empirical Research	- Research defined by decision makers, development agencies, resource users, policy makers - Data capture systematic	- Conclusive statements about subject of enquiry - Applied to guide decision-making

Main Objectives

The objectives of this paper were: (1) to explain a process of how to engage farmers (men and women) in designing and developing the WISH-Pond project and how the WISH technology benefits community households, women in particular and (2) Better understand the roles of male and female farmers and the distribution of benefits in households that participate in the WISH-Pond system.

Materials and Methods

Development of the WISH-Ponds

Initially, fifteen households from one village, Kamphon, in Stung Treng Province were engaged in this 2011 study and partnership with the government of Cambodia’ Stung Treng Fisheries Administration Cantonment (FiAC) and NGO Culture and Environment Preservation Association (CEPA). Both these partners have been supporting SSA in Stung Treng Province in north eastern Cambodia since 2009 and have been funded as part of the Wetlands Alliance Program (WAP). The WISH-Ponds are much smaller than the extensive fish ponds

normally supported by development projects with pond size varying between 8 and 20 m².

The WISH-Ponds have been targeted at rural and peri-urban households that do not have access to or ownership of large areas of land but want to increase their water storage capacity and produce fish for household consumption and sale. The ponds can support a more intensive production system and are stocked using African catfish *Clarias gariepinus* (Burchell, 1822) (600 per pond), because this species can live in poor quality water conditions and fingerlings are available from local hatcheries (Kwasek et al. 2015).

The village of Kamphon was used for this case study; it is located on the Sesan River. The village has 494 households and a population of 1,702 people (Commune Data Base 2010). The livelihood of the community is dependent mainly upon agriculture, animal raising, construction work, petty business and fishing. However, since the construction of the Yali Dam in Vietnam in 1993, livelihoods have been impacted through changes in water levels that have caused losses in habitat to the flooded forest and deep-pools. This has reduced wild-fish catches and consequently the availability of fish protein that constitutes up to 85% of the total protein intake of Cambodians (IFReDI 2012).

Results

WISH-Pond farmers were selected through discussion and negotiation with the Kamphon Village Community Savings Groups (KCSG). The KCSG was established in 2009 and had 27 members.

Historically, women farmers usually had limited access to extension services for development projects as men were often the people called in for training and meetings on new technology or management practices. There was also a perception that if extension services were given to a member of the family, the knowledge will pass on to other household members, including female members. However, men do not transfer extension knowledge to them. To benefit all family members, particularly women and children, the WISH project was designed to supply equitable and inclusive women's access to new technology and training through different scales of transfer of knowledge at village level and household level. Through field monitoring and coaching,

project staff went to farmers' doors to check on daily records. To better understand the costs and benefits of the WISH-Pond, target farmers were asked to complete a daily data record. Since many can't read and write, they used a picture-based monitoring sheet. The data included financial costs, time spent on different tasks and gender roles to assess the division of labour between men and women in different activities.



Fig.1. The different WISH-Pond designs and systems in Stung Treng Province, NE Cambodia (left to right): concrete tank, plastic pond, plastic pond in timber frame.

A total of 10 households, including seven female farmer-headed-households, agreed to take loans through the KCSG. These were selected using criteria developed by the saving group, which included families dependent on fishing for home fish consumption and for sales, and female headed households with children. Out of these households, four constructed cement ponds and six plastic lined ponds. A further five households that had existing plastic ponds also agreed to participate in the research monitoring system.

After selection, all farmers went through a number of capacity building sessions including basic small scale aquaculture and best management practices, and how to complete daily records. FiAC and CEPA worked together and engaged in the research process by providing technical support and assessing the quality of data collected by fish producers. By involving the community and local partners in research within the study, the aim was to provide a more

sustainable basis for the adoption of SSA. The responsibilities for the construction of the ponds were designated in each household and the data fields for monitoring identified and agreed during discussions and training with the KCSG (Table 2).

Gender assessment of households involved in WISH-Ponds

The WISH-Pond system aims to empower women as this is a critical element in the promotion of food security and income generation in a household. Following the introduction of WISH-Ponds by each household a gender assessment was carried out to assess the division of labour and other benefits between men and women at the household level.

Table 2. Data fields collected during the production cycle

Data fields		Details
Construction	• Labour	• Time (hours) multiplied by average labour cost (USD)
	• Materials	• Cost of cement, wood, plastic lining (USD)
Feeds	• Pellets	• Quantity of pellets purchased and used (USD kg ⁻¹)
	• Natural feeds (<i>termites, red ants, snail, frogs, worm</i>)	• Time (hours) spent collecting termites multiplied by average labour cost (USD) • Number of kg (cups) of termites used per day
	• Agriculture feeds (<i>rice, rice bran</i>)	• Cost of product (USD) multiplied by cooking time costs
Fish health	• Deaths	• Number of fish deaths per cycle
	• Water change	• Time, quantity and cost of water changes
Harvesting	• Feed conversion ratio	• Kg of feed that produces one kg of fish • Kg of fish produced in total
	• Consumption	• Kg consumed by household
	• Selling	• Kg sold • Market value (USD) of fish sold

Due to gender norms and levels of education, most technologies or a technology that became commercially profitable were taken up by male members of the household, thus restricting women's activities. But the WISH-Pond technology was introduced through consultation with target farmers on how pond design and technology could be easily taken up by both men and women and could benefit all. For example, as both male and female farmers found difficulty calculating feed ratios, they agreed on a type of basic measure,

such as a used condensed milk can, to measure feed for feeding their fish (Kwasek et al. 2015).

Women and men farmers undertook different activities during the development and adoption of WISH-Ponds. Data on gender and activities indicate that men were mainly involved in construction, changing water and pumping of water for harvest, otherwise the majority of WISH-Pond activities were carried out by women including making supplementary feed, feeding, harvesting and marketing.

Decision making in households was mainly done by men because they were household heads and the main providers of incomes, women-headed households being the exception. For SSA pond adoption was presented as a joint decision between men and women. Most women and/or children attended the WISH-Pond training and also were members of the savings group that decided when to take more credit and repay loans.

Table 3. Role of men and women in the development and adoption of WISH-Ponds

Activities	Men	Women
Decision making	- Most male headed households have control over decision making in the family and on adopting SSA	- Most of the women do not make decisions alone for developing and adopting SSA and need to discuss this with their husbands
Capacity building	- Men do not participate in capacity building and spend time on other activities or wage labour away from village	- Women participate in technical training and share results or challenges among the team
Pond construction	- Main physical activity carried out by the man; involves digging ponds; - Cement pond is normally prepared through hired labour	- Supporting men by piling up dirt, preparing plastic
Access to credit	- Participation of men in savings group is limited	- Women participate in savings group, and access credit for buying new plastic, new fingerlings or feed
Making Fertilizer	- Men not engaged in this activity	- Women and children responsible for collecting cow dung and herbs to make fertilizer at the start of raising fish.
Access to feed	- Men spend between 1 to 4 hours looking for natural feeds such as termites one or two times per week. - Men drive motorbikes or travel with a neighbour's truck to the	- Women spend up to 2 hours every day looking for natural feed around home or in rice fields. - If money is available they buy pellets for fish but the market is about 15 km from the village and

		forest and come back with a few bags of termite.	transport is expensive
Feeding fish	-	Men make lights to attract insects at night for fish.	- If pond is nearby home, women will manage and feed fish.
	-	Sometimes men spend time feeding fish while women are busy	- Sometimes their children or old people help while they are in the rice field.
Maintenances / changing water	-	Most men are responsible for draining and changing water by a pump machine	- Women collect water from ponds every day and for watering home gardens
Fish disease	-	Some male farmers are late to report to their group or experts on abnormalities in their fish, such as fingerlings gasping at the surface of the pond. After some fish die, they call for help.	- When fish get diseased, women try to look for help from their group and sometimes from experts. They try to test different ways of tackling the disease
Harvesting fish	-	Men pump water and help their wives transport fish for sale	- Daily harvesting - women decide to harvest and also collect a few fish each day for cooking or processing
	-	Sometimes men collect a small amount of fish to eat with their friends during leisure	
	-	Men help wives and children in draining water and sometimes catch fish with cast nets	
Marketing fish	-	Men not involved in marketing or selling of fish	- Women collect fish to sell to their neighbours and relatives
			- Women look for a fair price for selling fish and some act as middle (wo)men to transport fish products to consumers
			- Money from selling fish is managed by wives to spend on daily food, buying new fingerlings or paying back credit loan
Record daily data	-	Men do not note down data every day	- Most women are illiterate and have problems reading and writing
			- To complete the forms, they ask their children or husbands to record the daily data
			- Women spend their free time discussing results with their team when recording data

Only 13 households (eleven female farmers) provided daily data over the 3-month period (90 day growth cycle, Table 4).

Each pond used the same number of fingerlings (600 fingerlings). Households used three kinds of feed that included: fish-feed pellets, natural

feeds such as insects, termites, worms, snails, frogs and red ants that were collected everyday by women farmers nearby their houses and from the rice fields and river bank, while men sometimes went to the forest for hunting and logging and gathering termites. Lastly, agriculture products of rice-feed prepared for pigs were mixed together with rice barn or broken rice. The cost of the feeds was estimated at USD 40 per cycle, mainly derived from the cost of pellets with half the feed coming from natural feeds. From the gender data it appears that collecting and preparing feed is primarily a women's activity as they forage for natural feeds every day whilst men spend only one or two days per week looking for feed.

Table4. Summary of the data presented as an average per household for the 90-day production cycle

Data fields		Average per household (n= 13)		Results
Construction	• Labour	• Cost of an SSA pond (3x4m)		USD 158
		• Cost of cement pond		USD 295 (n=4)
	• Material cost	• Cost of plastic above ground pond		USD 89 (n=3)
		• Cost of a plastic below ground pond		USD 57 (n=3)
Feeds	• Pellets	• Percentage of pellet feeds used per cycle		40% (29 kg)
		• Total cost of pellet feed per production cycle		USD 32.68
	• Natural feeds	• Percentage of natural feeds used per cycle		49% (35 kg)
		• Total cost of natural feed per production cycle		USD 5.70
	• Agriculture feeds	• Percentage of agricultural feeds used per cycle		11% (7 kg)
		• Total cost of agricultural feed per production cycle		USD 1.68
	• All feeds	• Total cost of all feed types per production cycle		USD 39.02
		• Cost of all feed types per day		USD 0.43
Fish health	• Deaths	• Number of fish deaths per cycle		37/ 600
		• Percentage of deaths per pond		6%
Harvesting	• Feed ratio	• Feed conversion ratio		1.68
	• Consumption	• Quantity of fish produced per cycle		42.38 kg
		• Quantity consumed by household		17.69 kg
	• Selling	• Quantity sold		20.23 kg
		• Value of fish sold		USD 38.94

Women have been well-known in improving families' food security and nutritional outcomes (Kawarazuka and Bene 2010). The WISH Pond also proposed to improve food security and income generation from selling surplus fishes. Women appear to have control over the harvesting and marketing of fish. They earned income from fish sold of approximately USD 39 per cycle and consumed fish valued at USD 33. They used the money they made from selling the fish to purchase food and household items. It is clear also that women make the decisions with regards to feeding the family, and both men and women report that they use the pond to take fish to feed friends and family on a regular basis.

Significantly, although women found it difficult to record data about the pond, they would ask their children to complete the forms. Mrs. Vann Dymom said:

My children helped me to record the information on fish raising every day. And all family's members helped me to feed fish and change water and harvest fish for consumption and for sale.

Women do use the results for discussion with other farmers and project staff. In addition, most farmers, women in particular, favoured the building of cement ponds. Not only were they easier to manage but they also provided a useful water store for vegetable gardening, which tends to be women's responsibility in Cambodia. This is an important aspect in better understanding the role gender can play in community science and contributing to decision-making about the adoption of SSA by the household.

Discussion

Results show that households have used WISH-Ponds to produce additional household income and also to support food security with half of the product used for consumption and the rest sold for income. Most households reported using the pond like a "refrigerator" instead of fishing in the river they now had fish at home. Discussions with the farmers' group about data and ways of improving the efficiency and benefits from SSA have resulted in a series of recommendations on loan repayments with most concluding that the ponds had reduced their reliance on catching fish from the river and allowed more time to

invest in other livelihood opportunities. This included growing vegetables or raising animals around the home and also highlighted the importance for women who could spend more time taking care of children and undertaking pond management activities rather than spending time away from home looking for casual labour opportunities or working in the rice fields. The study indicates how costs can be reduced by introducing a modality that allows households to develop their own pond construction methods. This has meant that costs and techniques vary between households and result in some people borrowing more whilst others less. The approach creates a platform for innovation that enables households to explore different techniques to improve the WISH-Pond product. This was particularly relevant to cement ponds perceived to be the most desirable as it provides easy to manage ponds particularly for women and also provided a useful water storage facility for watering the garden. The gender analysis generates more detailed data about how an SSA invention affects both women and men in households.

Applying a community science approach has improved the knowledge and skills of women and enabled them to participate more effectively in aquaculture activities. This is illustrated by the daily recording of activities by men, women and children. Engaging households in the recording of data also provides equity of knowledge between women and men in SSA development, and a better understanding of the costs, benefits, and opportunities between genders. Both sexes are encouraged to do research through the identification of research questions, designing studies, collecting and analysing data and applying the results.

Conclusions

WISH-Ponds provide a potentially more sustainable method for introducing aquaculture to households and especially for women who have limited experience in growing fish. The approach involves households in research and in generating data and this provides reliable data and a better understanding of how SSA can be developed and adopted as a new livelihood activity. However SSA is most likely to be sustained in households where there are multiple livelihoods.

The development of WISH-Ponds through the saving group has been successful and has also allowed members and particularly women to access credit to improve or expand their ponds. This has had a positive influence on self-reliance and sharing roles with husbands and children in developing and adopting SSA. Promoting SSA is a challenging task. Long term commitment support in terms of financial, technical and marketing are a must when SSA expands to many villages in this province or competes with imported fish from neighboring countries.

Although the study presented only a limited sample of households, it did provide powerful evidence that women can play an important role in aquaculture activities, and therefore designing SSA systems so they meet the needs of women is fundamental. Involving women in SSA provides a mechanism to build self-confidence through a better awareness of the gender divisions of labour, and it provides access to knowledge as well as networks for mutual help and support between producers.

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Research Paper

NACA/USAID Thematic Studies on Gender in Aquaculture in Cambodia, Lao PDR, Thailand and Vietnam

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Abstract

The Network of Aquaculture Centres in Asia-Pacific (NACA) conducted the project “Thematic Studies on Gender in Aquaculture in Cambodia, Lao PDR, Thailand and Vietnam”, a component of the USAID (United States Agency for International Development)-funded Maximising Agricultural Revenue through Knowledge, Enterprise Development, and Trade (MARKET)) project in 2014-2015. MARKET Project was aimed to strengthen the ASEAN (Association of Southeast Asian Nations) institutional platform for improving regional food security. Aquaculture has been identified to be important to food security, and mainstreaming gender into MARKET’s activities in aquaculture value chains is crucial to inform policies and decisions which will be gender sensitive and balanced so the vulnerable members of the value chains are not marginalised and neglected.

The studies on gender in aquaculture in Lower Mekong Initiative countries, namely Cambodia, Lao PDR (Lao People’s Democratic Republic) ,Thailand and Vietnam, consisted of assessments on the current status of gender policies relevant to aquaculture, key issues in women’s empowerment and participation in aquaculture value chains, and identifying organisations working on promoting gender in aquaculture. Case studies on women’s involvement and gender issues in selected aquaculture value chains in each country were also

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produced. In this paper, we focus on the process, challenges and opportunities of running a project which introduces gender studies into mainstream aquaculture institutes.

Introduction

The Network of Aquaculture Centres in Asia-Pacific (NACA) is an intergovernmental regional organisation promoting rural development through sustainable aquaculture to improve rural incomes, increase food production and foreign exchange earnings, and diversify farm production (NACA 2015). The Gender Programme at NACA was established in 2012 to ensure that NACA implements the action plans on gender mainstreaming within its activities. With a continued interest in embracing gender integration among relevant agencies, NACA aims to build up capacity of members in gender mainstreaming in all its undertakings, and motivate support and action globally. Insufficient capacity for gender research and application among stakeholders is a hindrance to effectively implement programmes integrating the gender dimensions in development.

In 2012, the 23rd NACA Governing Council recognised the importance of creating greater opportunities for women and promoting gender equality in the aquaculture industry, and endorsed a proposal to add gender as a cross-cutting theme for the NACA Work Plan. As per the 2012 briefing note of the NACA Gender Mentor, Dr. Meryl Williams (Williams 2012), considering women and men within a gender framework fits well with the Vision of NACA, and many NACA member states and key agencies in the Network are beginning to pay greater attention to women and gender. Thus NACA has the requirement to address gender in its work programme and operations, and the opportunity to lead and work with member governments to address gender in the burgeoning aquaculture sector. NACA member countries produce nearly 90% of world aquaculture production (NACA 2015).

Along with fisheries and agriculture, aquaculture is still considered as mainly an area only for men. Due to this, women's roles and contributions have not been reported and/or highlighted and not even accounted for in statistics, development programmes and in institutions that serve them. This is misleading considering that recent reports and studies, though few and incomplete, have revealed that women are present and oftentimes play major roles in various

nodes of the aquaculture value chain. However due to insufficient gender-disaggregated data, it is quite difficult to get accurate and comprehensive numbers. For example, the High Level Panel of Experts Report on Food Security in 2014 cited that nearly 50% of the 120 million workforce in fisheries and supply chains are women; whereas in the aquaculture sector, of the 38 million workforce, the male-female ratio is not known (HLPE 2014).

Interest in women and gender in aquaculture has still not gained a major footing in most mainstream aquaculture institutions. However, gender activists and advocates continue to be active in conducting research and interventions, as well as in organising women/gender symposia and promoting the issues through social media. These efforts need to be integrated with mainstream aquaculture initiatives. Gender experts need to engage with aquaculture stakeholders such as technical, business, and institutional actors, in order that the agenda of gender integration does not just remain the domain of gender experts and social scientists, but is fully integrated with the work of policy makers, technologists, practitioners and other relevant stakeholders. For their part, the mainstream aquaculture practitioners need to develop ownership of the aims and approaches to gender integration and gender equality.

During 2014-2015, UN Women reported that, based on a study of 83 countries, at least 50% of the world's women are in paid wage and salary employment (up from 40% in 1990), but women earn 10-30% less than men for the same work (UN Women 2015). However, the aquaculture and fisheries sectors do not have these same specific statistics because of the lack of efforts to collect gender-disaggregated data and undertake gender-sensitive research.

The USAID/MARKET Gender Project

For one year during 2014-2015, NACA conducted the “Thematic Studies on Gender in Aquaculture in Cambodia, Lao PDR, Thailand and Vietnam”, a component of the USAID-funded Maximising Agricultural Revenue through Knowledge, Enterprise Development, and Trade (MARKET) project. The overall USAID-funded Project aimed to promote more sustainable and efficient use of aquatic resources (from aquaculture and fisheries) in the Southeast Asian region, with special emphasis on the Lower Mekong Initiative (LMI) countries. The main MARKET Project began in 2011, and was

implemented by Nathan Associates, Inc. in partnership with the Association of Southeast Asian Nations (ASEAN). It is part of Feed the Future, the US Government's Global Hunger and Food Security Initiative. The MARKET Project also aimed to strengthen the ASEAN institutional platform for improving regional food security. Aquaculture has been identified to be important to food security, and mainstreaming gender into MARKET's activities in aquaculture value chains was crucial to inform policies and decisions which will be gender sensitive and balanced so the vulnerable members of the value chains are not marginalised and neglected. The Project is guided by the USAID Gender Equality and Women Empowerment Policy, which states that "societies with greater gender equality experience faster economic growth, and benefit from greater agricultural productivity and improved food security" (USAID 2012).

Information on gender in aquaculture value chains in MARKET's focus countries is either insufficient or non-existent, as most of the efforts on aquaculture development through government initiatives and development interventions have been planned and directed without consideration of gender differences (NACA/USAID/MARKET 2014). From observations and information from key stakeholders, in the absence of documented evidence, half of the workforce in aquaculture value chains may be women, taking up various roles, mainly less paid jobs, and in some cases, considered informal and therefore unpaid. In most gendered studies on fish supply chains, households, livelihoods and labor, the overall value of the supply chain and the well-being of the households are much reduced when inequalities exist. These have been recognised mainly by the more global development organisations, e.g., the Food and Agricultural Organization (FAO) which published a report on good practices and policies to eliminate gender inequalities in the fish value chains (Dey De Pryck 2013). However, translation and adaption of these guidelines and policies for interventions and application on the ground could prove challenging to the less equipped.

The gender studies in aquaculture implemented by NACA and described in this paper were conducted to gather information, raise awareness and advocate for improved recognition of gender roles, policies and programmes in aquaculture for sustainable and responsible development. The thematic areas planned for examination were as follows: aquatic health management,

environmental governance, aquaculture improvement projects/better management practices and standards and feed management. As gender disaggregated data on the specific themes were lacking, the studies looked at more general aquaculture practices in overview, and in particular aquaculture industries, considering that this was a preliminary study on gender in aquaculture issues. It was envisioned that further studies would build on this base and look into these themes.

Being a very applied project, the MARKET project's gender element was targeted at understanding the gender dimension in selected kinds of aquaculture and at various scales, from an overall desk study to individual case studies. The gender project sought to find a way forward for helping aquaculture using greater gender equality. The purpose was not primarily to promote gender equality in its own right, but to see how gender equality/inequality may relate to the performance of particular aquaculture enterprises.

Materials and Methods

Project activities consisted of assessments of gender in aquaculture in Cambodia, Lao PDR, Thailand and Vietnam through a desk study and in-country field research. The latter involved case studies on selected species in the production node of the aquaculture value chain, and the dissemination and presentation of findings and recommendations to relevant stakeholders, followed by developing a regional gender in aquaculture practitioners' network (Fig. 1). The gender desk study national assessments looked at the current status of gender policies relevant to aquaculture, key issues in women's empowerment and participation in aquaculture value chains. Organisations were identified that were working on promoting gender in aquaculture. Case studies focused on women's involvement and gender issues in selected species-specific grow out systems in each country.

Project implementation process

In late 2013, NACA was contacted by the USAID-MARKET Project Team to explore the possibility of implementing the Thematic Studies on Gender in Aquaculture in the LMI countries. After signing an agreement in

early 2014, NACA sent out a call for Expressions of Interest to individuals to conduct the desk study on gender in aquaculture in the four LMI countries and selected a suitable expert, Dr Cecile Brugere. NACA mobilised its member countries within the LMI to appoint their gender teams to implement the project in-country. A Senior Scientist from India, Dr Nikita Gopal, was commissioned initially to coordinate the project remotely on a part-time basis, working with the NACA-based Programme Manager.

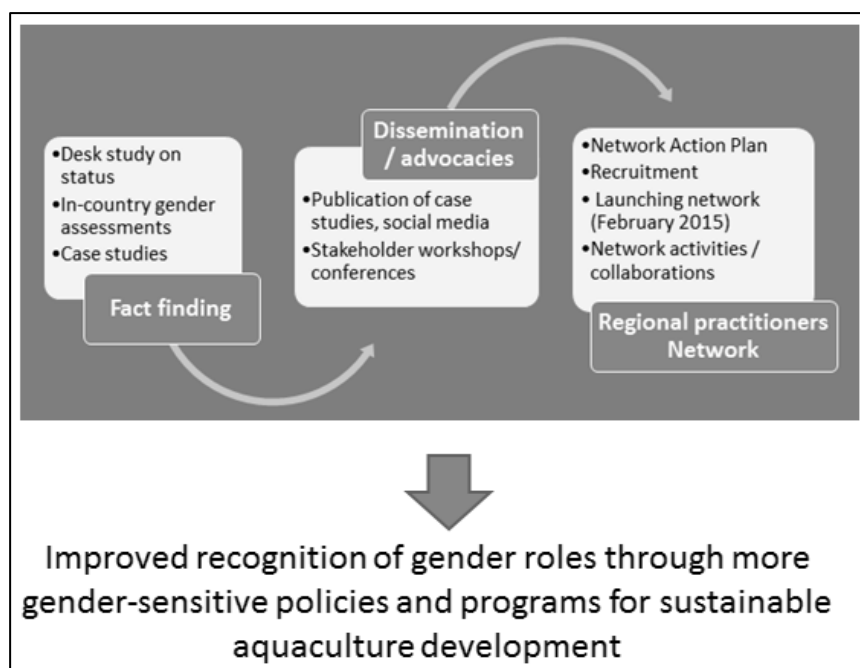


Fig. 1. Flow chart of activities to achieve project objectives

A 2-day Planning Workshop was then organised in June 2014 to bring the partners together. The workshop held in Bangkok, Thailand from June 5-7 2014, was organised to plan the future project work and had participants from all the target countries. The project was outlined from the USAID point of view and the details of the expected outputs described by NACA, who was responsible for implementing the project. A gender expert from the Asian Institute of Technology (AIT), Bangkok, Thailand, Dr Kyoko Kusakabe, introduced gender concepts and methodologies, outlining the importance of looking at gender and the subtle observational aspects of data collection with respect to gender. The methodologies to be used for the study would be basically social science methodologies, but with a gender dimension included.

The workshop decided on the immediate and the long term tasks to be accomplished, which were to design the Country Assessment and Case Study work plans.

The results that emerged in the workshop were on the researchable issues/hypothesis; fine tuning of the objectives; identification of the research frame, scope/sites; information collection and methods and analysis. The country teams carried out a brainstorming session to arrive at the tentative work plans and the value chains were finalised. The group decided that the whole value chain would be mapped for gender roles, issues and opportunities; and selected nodes in the value chains would be studied in more detail to assess in depth the gender dimensions.

Following the June 2014 Planning Workshop, a Gender Coordinator was hired in mid-August 2014 on a part-time basis, solely for this project. The outputs from the Planning Workshop, especially questionnaires, the outline of assessments and case studies, were then refined together with the Letters of Agreement with specific country implementers. By the beginning of September 2014, the LoAs had been signed by the implementers' authorised signatories. Field work for gender assessments and case studies started once the agreed budgets were released. The assessments also included updating and refining information in the Gender Desk Study.

A three day Synthesis Workshop was then conducted in late September and early October to assess the status of the in-country gender assessments and the case studies. Time was a constraint considering that project teams started work around the middle of September. Clarifications on the field situation and methodology were made and discussed, and each country team also prepared a work plan to meet project time lines. A one day training workshop on gender integration in the workplace was also conducted, to discuss USAID's gender initiative, approaches and the gender dimensions framework delivered by USAID and MARKET representatives. Participants, including those from India and regional organisations working on gender, shared experiences.

Also during this workshop, preparations were made for the upcoming NACA/USAID/MARKET Special Workshop at the 5th Global Symposium on Gender in Aquaculture and Fisheries (GAF5) held in November 2014 in

Lucknow, India. It was planned that all outputs would be presented during this Special Workshop. Thus it was targeted to complete all in-country gender assessments by then.

In addition, the Regional Gender in Aquaculture Practitioners' Network was initiated during the workshop where the participants brainstormed on the need for a network, its rationale and objectives, and potential activities. The 22 workshop participants comprised 13 women and 9 men from five countries and four regional organisations. These people then became the founding members of the network. The regional scope of the network was within ASEAN initially and will eventually include the whole Asia-Pacific region where NACA has members.

During the last month of the project, in February 2015, USAID organised a regional gender workshop wherein the results of the gender assessments and case studies were presented to a diverse group of people such as academics, researchers, government officers, and development workers in ASEAN. Successful gender sensitive interventions in aquaculture, fisheries and related fields by NGOs in the region were also presented. Unfortunately, the representative from the ASEAN Secretariat on Gender was not able to attend. Also given the early stage of the project results, mainstream aquaculture practitioners were not invited to the workshop.

Results

Desk Study

The Desk Study of the gender situation in the specified countries examined available research papers, policies and projects. The results revealed that large knowledge gaps exist regarding women's participation in the various nodes of the aquaculture value chains. Moreover, it was pointed out that there are crucial gaps in information and knowledge regarding the nature and effects of the social and cultural contexts, such as the dynamics of gendered participation, decision-making, control over income, professional choices and opportunities. It emphasised that "equal opportunities for men and women should be the ethos that drives all initiatives seeking to improve the efficiency and fairness of aquaculture value chains" (Brugere et al. 2014). Furthermore,

the authors suggested that priorities should be on finding niches in aquaculture value chains where women and men can transform the socio-cultural constraints that limit their development, into something which can benefit them.

A number of areas for research were suggested by the desk study but, despite their importance, they were outside the scope of the present project, such as studies on how social networks and social capital affect aquaculture communities according to gender, and how identities affect changing work roles. Another potential area for research was on governance and rights, i.e., determining how men and women participate (or not) in aquaculture governance structures at all levels. Another interesting research topic suggested was on markets and migrations, concerning how changes in markets affect livelihoods and the overall impact of markets on poverty and how these impacts differ according to gender. Lastly, research on gender-differentiated perceptions of wellbeing was considered useful as well. The Desk Study report was also given to the country implementers who were requested to update the sections of the report relevant to their own countries. The updated version was then integrated into the country gender assessments.

Gender Assessments

Each country enumerated a number of national policies related to gender equality and women's involvement. This indicated that, at the national government levels, concern for and awareness of gender equality and women's empowerment existed in all countries. Implementation of actions on these gender concerns in aquaculture was through the national agencies responsible for aquaculture development. The level of integration and implementation at the local level varied depending on the capacities of the agencies to integrate gender within their institutions and among their stakeholders. Development and grassroots organisations have been active in integrating gender in their own interventions. Despite the policies and budgets allocated to gender mainstreaming, no continuous plans and specific actions were formulated to apply these on the ground. Whereas every country had reported various policies to promote gender equality and women's empowerment, their implementation at the lower levels was varied. As pointed out in the Desk Study by Brugere et al. (2014), overall in the countries, there are "various levels of commitment and degrees of success," despite concern for gender equality among countries. In

addition, the performance of these countries in the Global Gender Gap Index suggested that their efforts did not really result in major improvements in women's conditions and positions in these societies.

Specifically for aquaculture, decision makers, technical fisheries officers and extension workers seemed to lack the capacity to translate these national policies into their mandates.

The lack of gender disaggregated data at all levels of aquaculture initiatives and statistics showed that gender was not integrated into project work plans, interventions and programmes, including extension and training. For example, in most of the organisations or institutions providing extension and training, even basic records, such as the respective numbers of women and men who receive extension services or who attend training courses, are not available.

Women do participate in aquaculture in varying degrees and at various levels, but mainly this participation is undocumented. Women are involved especially in small scale farms as well as in other nodes of the aquaculture value chain. Often times they work alongside the men, or they have their own activities. For example, both husbands and wives are involved in pond or cage farming, and when a husband has to do business outside the farm, the wife may be responsible for the day to day activities, such as feeding, and monitoring feeding and water quality.

National census taking and projects will need detailed research planning, design and data collection. In addition, available secondary literature is not sufficiently comprehensive to provide information on the current situation. Few longitudinal studies have documented changes in women's empowerment, participation, and areas in the value chains benefiting women. Most studies focus only on roles and divisions of labor, but still lack analysis of causes, effects, benefits and quantitative information. For example, Table 1 shows an overview of the available gender/women's literature in Thailand, starting from 1995; papers related to women and gender in aquaculture were few (8-21%).

Case studies

The case studies on species-specific aquaculture farming systems (Table 2) were conducted with the following objectives: mapping of gender roles,

analysis of gender aspects related to division of labour, decision making process, benefit sharing and access to resources, and determining the issues, needs and opportunities in fish health management, farm management and BMP (Best Management Practices), feed management, processing, food quality and safety, and marketing. Information was obtained through key informant interviews and face to face surveys among women and men farmers, as well as focus group discussion and in-depth surveys of selected women.

Table 1: Overview of the available literature on women/gender in aquaculture value chains in Thailand. (Source: Brugere et al. 2014).

Type of literature	Academic papers	Books	Grey literature*	Total
Number of publications retained for the study	21 (55%)	3 (8%)	14 (37%)	38
Number of publications specifically addressing women/gender in aquaculture in Thailand	5 (13%)	3 (8%)	8 (21%)	16 (42% of total retained)
Actual period of study	1995 to 1999	2000 to 2005	2006 to 2010	2011-2014
Number	4	5	6	1
Percent (to Total)	11%	13%	16%	3%

* Grey literature: Anything not published in an academic journal or a book, i.e. reports (including FAO reports), research institutes' monographs, students' thesis (MSc/PhD), etc.

Table2. Country-specific case studies on women involvement in grow-out culture systems

Country	Species	System	Study Site
Cambodia	Freshwater species	Ponds	Takeo, Kampong Speu
Thailand	Marine shrimp	Ponds	Chanthaburi (East)
Thailand	Tilapia	Cages	Sakhon Nakhon (northeast)
Vietnam	Marine shrimp	Rice-shrimp rotation in ponds	Soc Trang (Mekong Delta)
Vietnam	Red tilapia	Cages	Tien Giang (Mekong Delta)

These case studies were the first attempts by the project implementers, all aquaculture experts, to look at gender issues. Thus, as the case with new

entrants to gender mainstreaming, they had to look initially at the roles of women and men in specific value chains. In this case, it was decided during the MARKET Gender Project Planning Workshop that due to time constraints and limited resources and experience, case studies should focus only on the grow-out node and on specific systems in each country. In addition, an in-depth look at the dynamics and power relations was not possible given the time frame and training needed, and it could be a follow-on activity as aquaculture researchers gained more capacity through training and mentoring. This is an emerging issue that all those wanting to start gender projects should consider early on.

Aquaculture has great potential as a women's enterprise because of its accessibility and manageable activities as long as supported technically and financially. Based on the case study, the successful woman in small scale aquaculture experienced a number of challenges and failures but she tried to learn and seek support both from the government and NGOs. Now everything has changed, in her social and economic status, which can be a good model as an opportunity for the households who are now engaged in small scale aquaculture. – Cambodia Case Study of a successful woman entrepreneur in aquaculture

Dissemination

The dissemination strategy involves informing the ASEAN and LMI industry stakeholders and policy makers of the findings and recommendations from assessments, enjoining private sector and non-governmental organisations to work together to disseminate findings, develop action plans with organisations (private sector, NGOs), and publications, media, social networking, and campaigns.

Information gathered had been disseminated to various aquaculture stakeholders. At the end of the project, the recommendations were presented to the ASEAN regional task force for public-private partnerships, as well as at the Women in Aquaculture and Fisheries Session of the World Aquaculture Society Conference. More dissemination in other forms will be done to inform relevant stakeholders of the recommendations specific to them, especially through NACA's Information and Communications Programme, which manages the NACA website, and publishes the Aquaculture Magazine and Newsletter.

Project recommendations have been categorised according to target stakeholder groups, namely regional bodies (Association of Southeast Asian Nations [ASEAN], FAO Regional Office for Asia and the Pacific [FAO-RAP], Southeast Asian Fisheries Development Center-Aquaculture Department [SEAFDEC-AQD]), country governments, development agencies, education and training institutions, research institutions, private sector, NGOs, civil society and farmers' groups/clubs. However due to budget limitations, especially post-project, extensive travel related to dissemination is not possible and, as a fall-back, this will have to be done through meetings organised by NACA for other purposes, provided that gender is on the agenda, which is often not the case. Having a gender project implemented by NACA such as this, and having somebody working for the Gender Programme, gave an impetus for NACA which also then considered gender on its agendas, such as during the Technical Advisory Committee (TAC) meeting in March 2015, the Governing Council Meeting in May 2015, and in meetings and activities with FAO on Sustainable Intensification of Aquaculture Documentation of Success Stories.

Regional Gender in Aquaculture Practitioners' Network

Aquaculture practitioners and interested stakeholders are advocating for gender integration and mainstreaming in aquaculture activities. With a number of women already involved in aquaculture and working alongside the men, the learning and experiences gained need to be built on and shared to create more awareness on the need for gender integration in aquaculture initiatives. The network objectives had been identified, as: promoting gender integration in aquaculture; advocating for and advance the status of women; assisting/mentoring practitioners in gender integration in projects; information exchange and experiences sharing; capacity building; promoting collaboration; and establishing mechanism in response to emerging issues at regional level.

A simple network action plan was formulated, with NACA's Gender Programme Manager acting as the Network Coordinator. In order to ensure sustainability of the network, it is important for members to feel ownership of the network they have established, and to have sufficient resources and good financial management and practices, including regular exchange of information and communications, formal and informal meet-ups, support from governments especially the work places of members, incorporation into country members

policies for gender integration and to engage the private sector and educational institutions.

Challenges faced in gender mainstreaming

A number of challenges were faced in implementing this project which introduces gender studies in aquaculture through partnering with mainstream aquaculture institutions. People in these institutions considered gender in aquaculture to be still a novel idea which was considered mainly the domain of NGOs and social development practitioners. Due to the lack of gender sensitisation and dissemination within technical aquaculture institutions, and despite national and sometimes institutional policies on gender equality, it was challenging to obtain in-depth gender analysis from the in-country implementers. It was clearly necessary for researchers to have more training, capacity building and mentoring on gender analysis and integration tools which they could apply in the workplace. In itself, involvement in the project was like training. To meet this need, during the workshops a one day training session on gender topics was arranged, such as on gender research, integration, and practical ways to integrate gender in the workplace.

I learned how to identify gender roles in aquaculture, which activities women are involved in at each node of the aquaculture value chain, how much males and females contribute to aquaculture activities. The most useful result in implementing this project was to see that the role of women in aquaculture will become recognised. – Female project implementer

The fact that the research partners were not full-time gender researchers although some of them were gender focal points and had some training, made implementing this project an additional task for them, as they had to also attend to their full-time jobs (Table 3). As practiced, organisations tended to assign their gender focal points out of their existing workforces. There are no dedicated gender experts who oversee gender integration or mainstreaming in the aquaculture institutions. Even at NACA with its resolution to put the gender agenda into all its programmes has not yet decided to establish a full-time permanent position for coordinating its gender initiative. At the moment, a gender person is used on an *ad hoc* basis.

One of the challenges was how to obtain information directly from the women who are engaged in aquaculture and how to quantify the values that each gender contributed to aquaculture. In order to overcome these challenges, female researchers should be the interviewers for women respondents as it will be easy for them to talk to and to communicate with the women. If the respondents are men, the interviewers need to pay more attention to ask the information on women's roles. – Female project implementer

Table. 3. Positions of project implementers in their own organisations

Role in Project	Position in Organisation	Gender
Team leader	Fish Expert, National Gender Focal Point	Female
Team member	Human Resources Manager	Male
Team member	Shrimp Expert, Head of Department	Female
Team member	Fishery Biologist	Female
Team leader	Deputy Director General, Senior Research Scientist, University Professor	Female
Team member	Senior Officer, Climate Change	Male
Team leader	Fisheries University lecturer	Male
Team member	Economics University Lecturer	Female
Team member	Economist and Planner, Vice Director	Female

The prevailing socio-cultural stereotypes in relation to gender roles in aquaculture activities may prevent an efficient gender analysis especially if the technical researchers themselves accept these stereotypes and status quo rather than confront and analyse them through a gender sensitive lens and social research approach. For example, a male and a female researcher each insisted that women should only be given opportunities where they did not have to travel, even though this was clearly contradicted by the successful case studies. There is much to be done to achieve sensitisation or transformation of the technical or aquaculture mindset into being more gender sensitive. However if awareness campaigns and capacity building are effectively run within an organisation, then this should be achievable. This again links with the policies of the national governments, wherein gender equality and women's empowerment are included and translated into practical means.

A model to follow could be the Philippine Commission on Women (PCW) established by the Philippine government, and which has been active in promoting gender and development (GAD) principles to all government agencies at various levels, and also to other non-government institutions and individuals with similar advocacies. The PCW has several initiatives that enjoin both the public and private sectors including civil societies across different age groups, as they hold events for awareness and action. It is thus important for countries within the ASEAN region to learn from each other as their cultures and social constructs are similar, rather than coming from outside the region wherein their ways might not be culturally appropriate and barriers may be erected even at the first step.

Opportunities for NACA and partners

Having pointed out some of the challenges above, NACA's involvement in the implementation of this gender project enabled NACA and partners to identify their capacities and limitations in relation to gender research and integration. There is much room for improvement, and interest and intent on gender mainstreaming are just beginning. The emergence of the agenda to place importance on gender equality, and especially women's empowerment and youth development in projects and initiatives is an opportunity for NACA and its partners. The 5th Sustainable Development Goal states "Achieve gender equality and empower all women and girls". All the remaining 16 SDGs can be achieved only if a gender sensitive approach is applied, considering that the goals refer to development and improvement of certain topics for all. NACA can streamline its various programmes in line with these SDGs.

Organise some workshops to share not only the results and experience from the project but also approaches and methodologies. Develop more projects/studies on gender based on the case studies that we have done. –
Project Implementer

As NACA has a large network of collaborating governments and research centres distributed throughout the Asia-Pacific region, it has a major role to play to effect transformation within the system and in the attitudes of officials and researchers with regard to integrating gender in the workplace and in their initiatives. NACA can leverage aquaculture development to contribute

to the improvement of the Global Gender Gap Index (GGGI) of its member countries who are lagging behind. For example, among the LMI countries implementing this project described in this paper, none was within the top 10. In the 2014 GGGI report, out of 142 countries, Lao PDR was ranked at 60, Thailand at 61, Vietnam at 76 and Cambodia at 108 (WEF 2014). National level initiatives and efforts have to link with concrete implementation to improve the GGGI. The more gender is mainstreamed at higher governance levels, the more gender issues will feature in national fisheries and aquaculture policy documents.

With the support of the development and international communities which are the main donors for integrating gender into initiatives (USAID 2012; HLPE 2014), NACA can develop programmes that adhere to these principles in order to take the lead in the region for gender mainstreaming within the technical community, to achieve NACA objectives as well as meet the SDGs.

In order to effectively implement a gender research project by mainstream aquaculture institutions, some toolkits should be developed, to quantify values for gender analysis for project implementers to follow. Gender analysis in aquaculture should be linked with other aspects such as policy, women's rights, social roles, and in most nodes of the supply chain instead of just aquaculture farmers. – Project Implementer

Thanks a lot and I hope we can put more effort to strengthen gender and development in aquaculture and fisheries sector for the whole region. My organisation welcomes any cooperation and we are strongly committed to support the NACA in all areas of actions. – Project Team Leader

Conclusions & Recommendations

Both government institutions and non-government organisations show initiatives and efforts to promote gender in aquaculture through their policies and interventions. However, the degree of implementation especially of policies to the grassroots levels and the smaller governmental units may be different in each country. The differences may be due to insufficient capacity of fisheries officers and technologists to integrate gender aspects into the work place. Some development organisations, NGOs and social researchers have the expertise and

experiences in gender sensitive project implementation and these needs to be shared and disseminated among the mainstream aquaculture and fisheries community to help build up their capacity.

A growing interest and capacity in gender integration in aquaculture and fisheries should lead to actions, such as increasing capacity to implement effective gender programs; promotion of equal opportunities; and understanding participation and benefits in various nodes of the aquaculture value chains in order to create enabling environments for entrepreneurship, bring about empowerment and change and to communicate, disseminate, educate and network.

The importance of having a gender lens in all undertakings, from governance down to grassroots development interventions, is stressed. As the population is composed of both women and men, with different needs and responses, it is no longer enough to just generalise across the population and provide “one size-fits all” initiatives.

In the same way, it is then important for us in the aquaculture and fisheries sectors to consider at all times whether what we are doing promotes equality and equity between genders. We can ask ourselves whether our efforts and initiatives provide identical rights and opportunities to both men and women leading to equality, and whether there is fairness and justice in handling and treating the marginalised, leading to equity.

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TECHNICAL PAPERS

Technical Paper

A Gender Analysis of the Adopted Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication: Constraints and Opportunities

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Abstract

The Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (VG SSF), endorsed by the 31st Session of the Committee on Fisheries (COFI) in June 2014, are a major achievement towards ensuring secure and sustainable small scale fisheries. Significant is that the VG SSF make a serious attempt to include the role of women in small scale fisheries; they address issues of importance for women's lives and livelihoods and attempt to ensure gender sensitive policies and measures. By applying a gender lens to the VG SSF, this note synthesises all the articles of the VG SSF of importance for gender equality in small scale fisheries and assesses the opportunities and limitations. The note concludes that the VG SSF, despite several weaknesses, do provide an opportunity for a transformative plan of action for implementation and key strategies are identified.

Introduction

National fisheries policies and international fisheries conventions, codes of conduct and other instruments, including the 1995 FAO Code of Conduct for Responsible Fisheries, generally are gender-blind. This contributes to discrimination, exploitation and marginalisation of women in the fisheries

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sector. For countries that have adopted these instruments, this means that they have lost and are losing the crucial potentiality of women's contribution to sustainable development of the sector as well as the well-being of fishing communities and families.

The Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (VG SSF or the Guidelines), endorsed by the 31st Session of COFI in June 2014 looks to make a crucial shift in this regard. This paper seeks to put into perspective the Guidelines in the context of gender and discusses the implications for implementation of the same from a gender perspective.

Materials and Methods

The Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (VG SSF) was published in 2015 (FAO 2015). The foreword says *The Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (the SSF Guidelines) is the first internationally agreed instrument dedicated entirely to the immensely important - but until now often neglected – small-scale fisheries sector.* The note that follows is an analysis of the content of the VG SSF. It focuses on the references in the various chapters and clauses of the guidelines from a gender perspective and attempts to discuss the implications.

Results & Discussion

Understanding the Guidelines

The Guidelines recognise the importance of adhering to human rights standards and gender equality as fundamental to development and the vital role of women in small scale fisheries, and say that equal rights and opportunities should be promoted. They also recognise the importance of encouraging women's leadership and the elimination of prejudicial gender-based customary practices. The Guidelines make a serious attempt to be inclusive by referring to all actors and all activities in small scale fisheries – pre-harvest, harvest and post-harvest, both commercial and subsistence and by emphasising the

community and inter-sectoral dimensions of small scale fisheries and the interdependency of activities in the community. In many sections the phrases “both men and women” or “including women” occur with specific attention on marginalised and vulnerable groups.

The Guidelines have a special chapter on Gender Equality (Chapter 8 of Part II of the Guidelines that deals with key issues of importance for “Responsible fisheries and sustainable development”). The text of this chapter has references to strategies such as gender mainstreaming and establishing policies and legislation to challenge discrimination against women and realise gender equality in small scale fisheries development.

From a gender perspective it is of particular importance that the text of this Chapter says: *States should endeavour to secure women’s equal participation in decision making for policies directed towards small scale fisheries.* And specific attention is paid towards encouraging women’s participation in fisheries organisations.

It also says that: *States should adopt specific measures to address discrimination against women, while creating spaces for civil society organisations, in particular for women fish workers and their organisations, to participate in the monitoring of their implementation.* The chapter also includes references for women’s equal access to extension services and technical access, including legal support and the development of “better technologies of importance and appropriate to women in small scale fisheries.”

The Guidelines provide several references that address key issues of importance to women in small scale fisheries and communities and the promotion of equal rights and opportunities in small scale fisheries development. These are about:

- Protecting and securing women’s tenure rights (Chapter 5.3, 5.4 and 5.12)
- The Guidelines support equitable distribution of benefits yielded from responsible management of fisheries and eco-systems, rewarding small scale fishworkers both men and women. Equal

participation of women in fisheries management should be ensured (Chapter 5.15 and 5.18)

- Women's rights of social development, employment and decent work (Chapter 6.2, 6.4, 6.7, 6.13)
- Support for woman's role in the post-harvest chain (Chapter 7.2).
- The most explicit reference from a gender perspective is the one which deals with violence and where the text says: *All parties should take steps to institute measures that aim to eliminate violence and to protect women exposed to such violence in small scale fishing communities. States should ensure access to justice for victims of violence, abuse etc. including within the household and the community* (Chapter 6.9).

The Guidelines emphasise the importance of policy coherence and the promotion of holistic and inclusive development strategies, with special attention to be paid to ensuring gender equity and equality. In Part III of the document "Ensuring an enabling environment and supporting implementation." there are some important references to:

- Gender sensitive policies in spatial planning (Chapter 10.2)
- Production of gender-disaggregated data in official statistics (Chapter 11.1)
- Recognition of the specific knowledge of women fishers and fishworkers (Chapter 11.6)
- Integration of gender analysis in SSF research and programme planning in order to inform strategies for ensuring equitable benefits for men and women in fisheries. (Chapter 11.10)
- Design and use of gender sensitive approaches, indicators and data, for monitoring purposes to capture how interventions have contributed towards social change (Chapter 11.10, 13.4).
- Ensure the equitable participation of women in representative structures in small scale fisheries subsector along the entire value chain.
- Enable women to organise autonomously at various levels on issues of particular relevance to them. (Chapter 12.1)
- Securing "the effective dissemination of information on gender and women's role in small scale fisheries and to highlight steps that need to be taken to improve women's status and their work." (Chapter 13.3)

Implications for implementation of the Guidelines from a gender perspective

The Guidelines recognise the importance of adhering to human rights standards and gender equality as fundamental to development. The Guidelines have several references that address women in small scale fisheries and communities and the promotion of equal rights and opportunities in small scale fisheries development. Nevertheless these references are generally found rather scattered in the text and are not very explicit.

While having a specific chapter on Gender Equality could be considered as a major strength of the Guidelines, it could also be seen as a weakness. From a gender perspective, the Guidelines would have been much stronger if gender had been integrated as a cross-cutting issue. By cross-cutting issues we mean that general principles such as human rights, rights of indigenous peoples, gender equality, and a sustainable environment cut across other issues. For example, the issue of sustainable resource management will affect men differently than women, where women of the community do not have the right or opportunity to participate equally and have no access to decision making on the resource management measures. Or many indigenous communities generally do not have individual rights to resources, so how for example will the introduction of an individual quota regime affect such communities? Such interactions of issues would need to be highlighted in the text and addressed in the implementation of the Guidelines.

Not only would this have led to more systematic and explicit references to key issues of importance to women in small scale fisheries and communities, but also where and how these differ from those of men. Key issues include voice and decision making, education and knowledge, decent work and income, livelihood opportunities, appropriated technology, and issues that affect women specifically, such as reproductive health and rights, violence against women, women in conflict areas and areas with environmental/natural resources crises or displacement due to land grabbing or development projects and export- oriented growth policies.

Nowhere in the document, not even in the chapter on Gender Equality (Chapter 8), is it explained what gender issues in small scale fisheries are exactly and what are the impacts of the unequal social (power) relations

between men and women for a sustainable development of small scale fisheries and the well-being of communities. Women of small scale fishing communities generally have become marginalised in the fisheries (value) chain, if not pushed out of it; they have limited access to resources; their work, knowledge and capacities are generally poorly recognised and valued; and their interest is often not represented. For instance when fishermen insist that locally consumed varieties of fish can now be exported because it is more lucrative for them; this denies women fish for local sale and processing and also food for the local communities (Salagrama 2012). Women also struggle with the burden of double workloads, productive and domestic, and poor working conditions as the state does not feel it is important to make investments in such supportive infrastructure while it may subsidise inputs in fishing (Vijayan 1992). Lack of legal protection and social security, taboos and prejudices, and often also sexual violence and psychological humiliation all take their toll on women and these are little addressed.

There is a tendency in the Guidelines to rely on gender mainstreaming and other measures of a more technical nature – making sure that policies are in place, for example, or promoting procedures – instead of advancing a substantive agenda for social change. Practice has shown that “gender mainstreaming” is a concept which generally is poorly understood and applied.

Researchers, policy makers and practitioners are often blind to social differentiation, including gender. Although generally development interventions are thought to be “gender neutral”, this is rarely the case. In addition, “women in development” interventions often do not pay any attention to inter- sectionality, to how social inequalities such as those based on class, ethnicity and age impact women in particular contexts in distinctive ways. Projects and programmes often bring new resources such as training, tools, technology, credit, assets, etc. and often new institutional arrangements, e.g., co- management, access rights systems, are created through which benefits can be claimed, such as access to decision making. Existing social inequalities, and in particular gender inequalities, will influence who is able to take advantage of these opportunities and who is not.

The emphasis of the Guidelines on an inclusive approach (women,

vulnerable groups, indigenous communities) can be considered as one of the strengths of the Guidelines. However an inclusive approach is no guarantee for equal benefits of policies and programmes. In many societies women (and women's organisations) in small scale fisheries are also often subjected to patronising attitudes of policy makers or leaders of fishers' organisations or male family members, with little opportunity to make their own decisions on issues of importance to their lives, livelihoods and wellbeing. There are many examples of micro-credit or assets like fish ponds given to women of fishing communities, but then the benefits of these being claimed by their husbands or other male family members.

A major limitation of the Guidelines is their voluntary nature and this is explicitly emphasised in Chapter 2 (Nature and Scope) the text says these guidelines should be interpreted and applied in accordance with national legal systems and their institutions. This reference is repeatedly made in the Guidelines. National legal systems and their institutions generally reflect prevailing gender relations and other social inequalities. In societies with rigid gender relations, what this means is that the text of the Guidelines concerning gender equality and women's participation may not be applied or be applied in only a limited way.

To achieve gender equality in small scale fisheries development it is vital to ensure that both men and women are recognised for each of their important roles and receive equitable distributional benefits and thereby sustain small scale fisheries as a whole. This needs the following six measures. First, women's equal rights to participate in all aspects (including decision making) of resource management as well as in the social, economic, political, cultural and organisational life of artisanal and small scale fishing communities should be recognised and promoted. Second, women's work (paid and unpaid) should be made visible, e.g., through the collection of gender disaggregated data, recognised and explicitly valued in both inland and marine fisheries in all aspects of the fisheries chain. Third, the problem of the "double work load" that women carry needs to be recognised, by means of an equal division of domestic and community work between men and women and access to public services, such as child care services, community restaurants, etc. that relieve the domestic workload. Fourth, women should be guaranteed full access to legal protection and social security systems, and rights related to

health, social security and retirement. Fifth, any cultural value system that promotes and “legitimises” oppression, exploitation and even violence against women must be changed. Sixth, national budgets must be made gender responsive to ensure that they take account of the needs of women and girls, and men and boys equally and investments are made in gender responsive awareness and capacity building programmes and in increasing bargaining power of women.

For example, Community-based Resources Management (CBCRM) is a form of co-management, where a community-based approach is seen as an opportunity to foster empowerment of local resource user groups by recognising their rights, knowledge and needs and enhancing their chances and capacities to see their needs and protect themselves against powerful interests from outside the community. Decision making about access to coastal resources, conflict resolution and sharing of responsibilities and benefits is the exclusive right of the community members. This implies active participation of the community members and an equitable sharing of rights and responsibilities. Such forms of community-based resource management provide the opportunity to reduce or avoid intra-community and intra-household conflicts and inequities, including those related to gender. There are several success stories of CBCRM projects where access rights of women are guaranteed and women take a lead role in the management of the resources and have benefitted from the results (Quist and Potalan- De la Cruz 2008).

The integration of a gender perspective in small scale fisheries needs an action plan that would imply actions that make visible and challenge the underlying root causes of gender injustice and inequality, including those resulting from patriarchal norms. The international Shared Gender Agenda agreed in July 2010 at the international workshop “Recasting the Net: Defining a Gender Agenda for Sustaining Life and Livelihoods in Fishing Communities” (ICSF 2010) can be an inspiration for this.

In these respects, women fish workers, representatives of fish worker organisations and non- governmental organisations (NGOs), social activists, policy makers and researchers need to work together in three major ways.

First, they need to apply an in depth gender analysis of fisheries (resources and chain) and the policies, institutions and organisations that specially affect women of fishing communities: What are the social norms, values and practices that determine gender roles and gender power relations? What determines marginalisation, exclusion, exploitation, discrimination of women: at the household level, at the community level, at the working place, at the market place? This will necessitate that institutions and organisations also examine their own practices and policies and ensure that their members and staff are aware of and understand these issues.

Second, they must identify and give voice to the strategic needs of women in small-scale fisheries and fishing communities and not only their practical needs. Strategic needs are issues that 1) are key to women's empowerment like voice and decision making, education and knowledge, decent work and income, appropriate means of production, and 2) affect women specifically, such as reproductive health and rights, violence against women, women in conflict areas and areas with environmental/natural resources crises or displacement due to land grabbing or development projects.

Third, they must monitor and nurture social change, finding evidence of change of gender relations and related norms and practices and of realisation of women's rights, and of participation of both women and men in this process. And in this we need to link all levels: micro, meso and macro. Searching for locally adapted practice, identifying how successful approaches, such as alternatives from below may be brought to scale. The crucial importance of early and regular documenting and monitoring should be taken to heart. All need to join hands to develop functional systems by which knowledge is accumulated and shared.

Key to the above is the need to identify those models of development that exacerbate gender inequities through their exploitative approach to both natural and human resources and to strive for alternative, transformative approaches to development that seek to eliminate unequal social relations and thereby promote a human rights-based and sustainable small scale fisheries development.

Conclusion

It remains to be seen how the Guidelines will be interpreted and applied by States and other relevant parties, including fisheries organisations. Women's rights and gender issues are generally seen as issues of a sensitive nature and often meet resistance, denial or are accorded low priority.

In small scale fisheries, development policies have traditionally targeted women as fish processors and fish vendors and women's groups typically received micro-credit. Fisheries-related development policies have targeted men as exploiting, and sometimes managing, resources whereas women have been excluded from planning "mainstream" fisheries development (FAO 2007). And if women of fishing communities have access to these "mainstream" fisheries programmes and projects it is often through a male family member, e.g., husband, father, brother, rather than holding rights of their own. Without recognition of the prevailing gender and other social relations, and their value systems, social inequalities will be reinforced or worsened.

In general the text of the Guidelines easily can be interpreted as if the terms "gender" and "women" are synonymous. The message "Stop fixing women, start fixing the context" looks to be applicable here.

The Guidelines certainly open up opportunities for actors in the small-scale fisheries, including women, to make their voices heard, work together and lay down their agenda. However, it should be ensured that they are not approached as merely "objects of development solutions", but as "agents of social change". Therefore it is of crucial importance that civil society organisations, including women-in-fisheries organisations, promote a human rights-based approach to small scale fisheries development and jointly work out an action agenda for implementation of the Guidelines that focuses on transformative change for an equitable, gender, and sustainable small scale fisheries development.

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The author wishes to dedicate this note to Chandrika Sharma, who is missing with flight MH370 and whose sincere commitment to gender justice in fisheries will not be forgotten.

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Technical Paper

Gender Relations and Improved Technologies in Small Household Ponds in Bangladesh: Rolling out Novel Learning Approaches

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Abstract

Gender-transformative engagement in the management of household ponds in Bangladesh for improved fish production relies on working with the complexities of gender relations in combination with a readiness by formally-trained scientists to allow women and men farmers to “follow the technology”. Innovative methodologies for technology development and dissemination need to focus on promoting farmer adaptive capacity and enabling farmers to take charge of their own learning. This is not a gender-neutral process. Working with development partners, value chain actors, communities, families and individuals to remove gender-based constraints to women's full participation in managing household ponds is essential. So too is continually demonstrating the benefits of more equitable gender relations in terms of improved production and productivity, better intra-household food and income security and stronger, more flexible livelihood planning. The present study examines two projects drawn from the work of WorldFish and its partners in Khulna Division, South West Bangladesh that are compared and discussed. The cases used an analytical framework based on different gender and learning approaches to compare the outcome of the two field projects, each located in different quadrants of the framework. It found that effective gender-transformative engagement in the aquaculture sector is predicated on more complex understandings of gender in combination with a readiness by formally trained scientists to allow women and men farmers to “follow the technology”. Innovative methodologies for technology development and

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dissemination should focus on promoting farmer adaptive capacity and enabling them to take charge of their own learning. For further work rigorous research designs are required for better understanding of what works in applying gender transformational approaches. Women are, however, empowered even without “transformational” training on gender when access to knowledge and resources is possible along with purposive targeting.

Introduction

Cornwall et al. (2004) remark that “Gender” is now well established in development discourse, but the extent of change in women's lives does not match this discursive landslide. Diluted, denatured, de-politicised, included everywhere as an afterthought, “gender” has become something everyone knows that they are supposed to do something about.” WorldFish, a member of the Consultative Group on International Agriculture Research (CGIAR), is tackling this issue by experimenting with “gender-transformative” methodological interventions in the aquaculture sector (Farnworth et al. 2015; CGIAR 2012). Such methodologies put the political back into gender. They involve working with target communities to reflect on and challenge existing gender relations and develop new behavioural models.

This paper discusses emerging findings from the application of gender-transformative methodologies in work in progress in household pond systems in Bangladesh. WorldFish technology interventions in the country are disseminated in association with National Agricultural Research System partners (NARS), and others. They focus on improving the production and productivity of the target agricultural system. The purpose is to strengthen household food and nutrition security as well as increase incomes. At the same time, WorldFish is experimenting with different methodologies to address gender. These methodologies can be broadly divided into two families. One involves “social learning” and is implemented in the “Shaded Ponds” project discussed in this paper. The second inserts “transformative” learning on gender norms and relations within an otherwise formal technology transfer dissemination model. This paper also discusses the “Gender-Transformative Approaches in Conventional Training” (GTA-CT) project. Both projects are relatively new, with implementation commencing in 2013. A comparative study is helpful, even at this early stage, because empirical information on the value of an explicit gender transformative approach in development implementation is limited. It is important to start incorporating learning into on-going and planned

work about what works, where, how and why. The empirical data in this study were obtained during a rapid assessment conducted by WorldFish staff and external consultants in 2014 in two research sites in South West Bangladesh.

The aquaculture sector in Bangladesh is widely considered a male occupation and business. Indeed, men tend to manage commercial ponds away from the homestead, but in some rural contexts women provide labour, family or hired, to commercial aquaculture, with the extent of their presence influenced by a combination of religious/cultural norms and asset poverty (Belton et al. 2014). However, household ponds, operated by approximately 20 per cent (4.27 million households) of the rural population (Belton et al. 2011) often belong to the whole family, and in some cases several related, or extended, families. Such ponds are typically very small in size (2,023-6,070 m²) and are used for many purposes including washing clothes and utensils, watering animals, and bathing. Fish are harvested from most household ponds and contribute importantly to household food security and nutrition, with people in rural areas mostly consuming carp of various types, and small indigenous fish such as *Amblypharyngodon mola* (Belton et al. 2011).

Several studies show that when families invest in managing household ponds, women conduct a significant percentage of the management tasks. These include feeding and fertilising, limited harvesting using push nets and hooks, and fish sorting, processing and drying (Shirajee et al. 2010). Women sometimes conduct farm gate sales. Other studies indicate lesser participation with women only feeding fish and fertilising ponds (Danida, 2008). Men are typically involved in stocking, harvesting using cast nets and marketing fish in formal markets (Rahman et al. 2011; Shirajee et al. 2010). However, there are also many household ponds where very few management tasks are regularly performed, either by women or men, apart from basic stocking and occasional feeding with food left-overs (USAID-AIN, 2014). Yields are generally low due to ineffective management, largely as a consequence of a lack of technical know-how on how to increase productive capacity. The household pond is often under-utilised in the assumption that investments will not yield benefits sufficient to justify the time and money involved.

Materials and Methods

First, we present the analytical framework of the study, briefly describe the two projects in relation to the framework, and the research questions and project evaluation approaches. Then, we describe the methodologies for each of the two projects.

Analytical framework of study and overviews of component projects

We set out the dimensions characterising the gender and learning approaches informing the two technology dissemination models developed by WorldFish, Bangladesh in relation to their work on household ponds in Figure1.

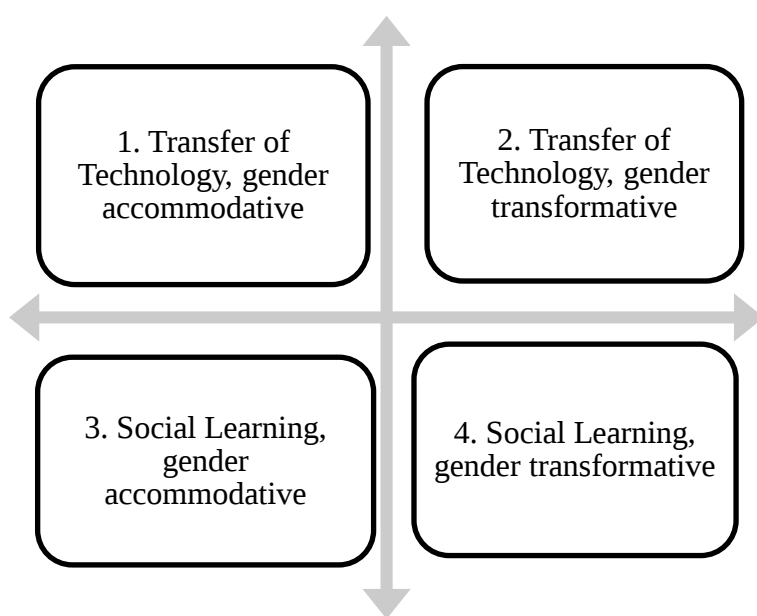


Fig. 1: Analytical framework for gender and learning dimensions of technology dissemination methodologies. The four quadrant framework is based on two alternative learning approaches, namely transfer of technology and social learning, and two alternative gender approaches, namely gender accommodative and gender transformative.

The WorldFish Gender-Transformative Approach in Conventional Training (GTA-CT) pilot (within the Cereal Systems Initiative for South Asia in Bangladesh, CSISA-BD) falls in Quadrant 2. It focuses on raising awareness of, and stimulating reflection on, gender relations in association with a “conventional” i.e. transfer of technology approach to delivery of technical

knowledge on household pond aquaculture. Conventional training in the CSISA-BD project comprises eight training sessions providing technical know-how on fish and associated vegetable production using intensified methods. The training sessions are followed by coaching and demonstrations, for instance in a demonstration pond. The innovation has been to add modules to every session on gender. These aim to be gender-transformative because they encourage deep reflection on gender and social norms, and encourage the rehearsing of new behaviours. Each farmer group consists of approximately 25 members.

The GTA-CT approach is a pilot within the CSISA-BD project. This is a five year USAID funded project working through a partnership between three CGIAR centres: International Rice Research Institute (IRRI), WorldFish and International Maize and Wheat Improvement Center) CIMMYT. It aims to test and disseminate new cereal system-based technologies in six hubs that are expected to increase family income by at least USD 350 per annum for 60,000 farming families. The project works with value chain actors to improve access to information on where to source quality inputs and strengthen market linkages. Training sessions, demonstrations and linkage events, for instance, bringing beneficiaries into contact with value-chain actors are the principal means by which aquaculture technologies are promoted.

The impulse for integrating gender transformative approaches into the conventional training offered in this project arose from a study conducted in 2013 (Morgan et al. 2015) which showed that even when women are targeted directly for technology dissemination, take up is constrained due to the complex set of gender relations within which technology adoption decisions are made. The study also found that the demonstration farmer model hampers women's active participation, as the additional inputs these lead farmers receive as an incentive for demonstrating learning to others led to conflicts within the family of those women not receiving them (Morgan et al. 2015). The GTA-CT pilot is summarised in Table 1.

The “Women-Led Participatory Action Research on Homestead Shaded Pond Aquaculture” (Shaded Ponds) project falls in Quadrant 3. It embraces an accommodative approach to gender integration within a social learning model. Its purpose is to strengthen the research and analytical capacity of women household pond managers. Its approach is broadly aligned with social learning

methodologies. Specific attention is paid to fostering the women's abilities to devise their own research agendas, set research parameters, and share and evaluate findings with other women participants in a rolling process. Analyses are fed into the following season's research. Women are target beneficiaries but there is no specific effort to engage with the underlying causes of gender inequality. Each farmer group consists of approximately 12 members.

Table 1. Summary of the GTA-CT Pilot

Project	Partners	Target Group	Technology x Methodology Combination	Material Support
Gender Transformative Approach in Conventional Training (2014 pilot; revised approach to be tested at scale 2015-2016).	WorldFish/ CSISA	Women; some sessions with spouses/ mothers in law; community members.	Technical sessions on fish and vegetable culture, input use, pond management, nutrition education and market links across production cycle; Gender integrated in all technical sessions.	Free mini packet of vegetable seeds/ seed voucher ¹ , 100 g of mola seed, Training manual, record book, training allowance per participant.

The Shaded Ponds project is a stand-alone project and is a joint initiative of multiple CGIAR Research Programs (Climate Change, Agriculture and Food Security (CAAFS) and Aquatic Agricultural Systems (AAS)), the CSISA-BD project, WorldFish and Aquaculture for Income and Nutrition (AIN) project. It grew out of earlier WorldFish projects in southern Bangladesh which reported shading of household ponds through fruit and other trees as a significant production constraint to fish farming. Women prefer to maintain the shaded character of ponds close to their homes because they are reluctant to fell valuable trees, and because the pond is used for personal hygiene such as washing and bathing. The trees help to ensure privacy. As a consequence of these issues, and because the water is relatively saline in many areas where WorldFish operates, fish production is typically low or zero. In recognition of the potential productive value of these ponds and the need to adapt production to women's preferences, WorldFish initiated research into how to adapt

¹ In some cases, CSISA-BD has provided vouchers so that the women can collect the free vegetable seeds from the dealers themselves and thereby build connections with them.

technologies to strengthen production in these adverse aquatic conditions using participatory action research methods. The Shaded Ponds project is summarised in Table 2.

Table 2. Summary of the Shaded Pond Project

Project Name	Partners	Target Group	Technology x Methodology Combination	Material Support
Shaded Ponds research project (2013 - open ended).	WorldFish: CSISA/AIN/CCAFA/AAS.	Women	Monthly participatory action research (PAR) sessions across production cycle. Gender not discussed.	Quality fish fry of species suited to shaded pond provided free for research purposes. Magnifying glass, record book, weighing scales per group.

Field research for this study was conducted in 2014 in two sites with very similar participating farmers in terms of assets and location. They lie within a climatically and agro-ecologically homogenous part of South West Bangladesh - Khulna Division: Faridpur District and Khulna District. Khulna Division is highly vulnerable to climatic shocks. Khulna District has, however, more problems with saline water intrusion than Faridpur District. A large number of households manage under-utilised very small ponds. The GTA-CT groups, based in Faridpur District, are mixed in terms of religion with Hindu and Muslim participants. The Shaded Pond groups in Khulna District comprise Hindu members. Despite religious differences all the women have similar mobility constraints and household responsibilities which make it difficult for them to work outside the household. Prior to the projects none of the women had participated in training on aquaculture. Both research sites lie a similar distance from large urban centres. Controlling for as many variables as possible, including agro-ecological and cultural variables, allowed for a strong analytic focus upon the methodologies themselves.

The core research question informing this study was: which combinations of technology and methodology have the most potential for adoption, adaptation and sustained use of the technology, and for transforming gender relations for women's and men's economic, social and personal empowerment?

Extensive semi-structured questionnaires were drawn up. These aimed to facilitate discussion of the actual technologies participating farmers had learned across the production cycle, discussion on the gender training, and wider discussion on changes in personal status within the home and the wider community. Some questions on changes in household nutrition were posed, but the responses are not discussed in this paper. The semi-structured questionnaires also encouraged discussion of the methodologies themselves, by asking participants to reflect on the efficacy of particular approaches in terms of building their capacity to understand and manage the technologies.

Small group discussions (SGDs) were held with women and men farmers separately. In Faridpur District, SGDs were held with farmers involved in the GTA-CT pilots. In Khulna District, participants were drawn from members of the Shaded Pond projects. In each location, four SGDs were held, two with women and two with men. The participants were selected by the project officers based on their willingness and availability. Roughly equal numbers of women and men participated in the SGDs, with approximately eight in each SGD. This represents approximately one third of GTA-CT members in a given group, and two thirds of a given Shaded Pond group. In each case, women were interviewed in their capacity as direct project beneficiaries. Men were interviewed in their role as household members and thus indirect beneficiaries. In total eight SGDs were held. Extensive key informant interviews were carried out with headquarter and with project field staff to obtain a detailed understanding of the project training methodology and how gender is conceptualised by project staff and in the documentation.

Project methodologies

Gender Transformative Approach (GTA) in Conventional Training

The process of identifying target women farmers with homestead ponds involves WorldFish together with local partner NGOs, and meeting Union Parishad (village-level decision-making bodies) members to explain their programme. Following this, community meetings are held during which WorldFish explains why they wish to work with women. Women frequently do not participate in such meetings, so subsequent small mixed gender group meetings are held in different parts of the village. Men are encouraged to

motivate their wives and other female household members to join the project. Each woman's group has 20 to 25 members.

Technology x Methodology Intervention

In the GTA-CT methodology, WorldFish has re-designed the conventional technology training package developed by CSISA. The methodology was modularised to interact with the different stages of the production cycle and designed to address the social and gender issues that may emerge as a result of applying the technology-related learning. The gender modules build on consciousness-raising exercises adapted from the Helen Keller International (HKI) gender and nutrition training manual, "Nurturing Connections." Whilst the standard CSISA training curriculum dedicates just half an hour in total to a gender awareness exercise, gender is part of every technical training session in the GTA-CT.

The starting point of the gender transformative training offered in this project is the understanding that intra-household gender relations form a potential constraint to women's ability to effectively work with, apply and share in the benefits of improved household pond technologies. Training focuses on interrogating gender norms. Collaborative intra-household decision-making is encouraged, and work is conducted to create an enabling environment at community level through deliberative targeting of community members. The current curriculum is shown in Table 3.

In the field, each session is organised as follows. Two hours are spent on technology training and the third hour is spent discussing gender issues. The 20-25 members of the training group are assisted to form smaller "learning cells" of five members who are neighbours. Changes in production and in knowledge, attitudes and practices (both technical and social) are monitored among participating women and their spouses through survey research methods and process documentation.

Material support is offered to all participating farmers (Table 1). Farmers also are provided with the contact details of fish seed suppliers. The GTA-CT continues the regular linkage event provided by CSISA-BD towards the end of the production cycle. This brings together value chain actors and

community members. However, the key difference is that whilst this event showcases successful producers, it also carries out a gender norms exercise from “Nurturing Connections” with community members, and a local theatre group performs skits with gender messages.

Table 3. Gender-Transformative Approach in Conventional Training: Pilot curriculum

Conventional Technical Training on Homestead Ponds	Accompanying Gender Sessions developed from HKI Nurturing Connections Manual: sample activities
Introduction, rules, commitments	Demonstrating and building trust (whole family)
Pond Preparation	Power hierarchies; obstacles to listening
Stocking Management	Interactions between identity and decision-making
Post-stocking management	Who decides about the pond (whole family)
Horticulture and family nutrition	Intra-HH allocations of food and power; self-esteem building
Harvesting, restocking, marketing, income, expenditure	Assertiveness training
Gender Awareness/ Nutrition Education	Exploring gendered behaviours (with husbands)
Linkage event with value chain actors, community members, etc.	Community Theatre skits on gender and livelihoods, Community meeting on gender norms
Project review, future planning	Change in gender norms over time

Women-led participatory action research on Homestead Shaded Pond Aquaculture (Shaded Ponds)

In 2013, Shaded Ponds began work with eight communities, forming women's groups of up to 12 members. Selection criteria included presence of a shaded pond on or near the homestead, management largely conducted by women, and an indication of interest by women farmers in project participation. WorldFish staff work directly with the women as co-researchers.

The technology and methodology combination aims to balance a women farmer-led research process with formal research hypotheses and parameters. The research process is facilitated by WorldFish staff, and WorldFish has its own technical as well as sociological research interests. Women farmers conduct research on technologies in their own ponds as opposed to demonstration ponds, with support from WorldFish in developing experimental designs. They are shown how to record the results and report back to their group on a weekly basis with their findings and any challenges they have encountered.

WorldFish staff guide the research process through conducting monthly visits, providing advice and information at different stages in the production cycle and obtain updates on farmer learning. The word “training” is deliberately avoided by staff, with meetings being construed as events in which discussions and idea-sharing take place. However, expert trainers are involved in sharing technical information about pond preparation, stocking etc. generally through hands on learning approaches. At the end of the first production cycle in 2013, the women's groups came together for an end of year sharing workshop.

The project is working in two zones: fresh water and saline. Different fish species thrive in different zones and so the farmers are experimenting with various fish species in order to contribute towards species recommendations for particular habitats. In the first cycle of the project, farmers decided to experiment with *Cyprinus carpio* (Linnaeus 1758) carp), *Oreochromis niloticus* (Linnaeus 1758) (GIFT Tilapia) and various indigenous species, especially *Amblypharyngodon mola* (Hamilton 1822). These species were released into a cluster of ponds. A different cluster released other species. In the second cycle, farmers worked with species selected from the first cycle's learning and experimented with different stocking densities.

Results

Selected results are presented project-wise. We start with the GTA-CT pilot and conclude with the Shaded Ponds project.

Gender Transformative Approach (GTA) in Conventional Training: Beneficiary appraisals of the learning approach

In the SGDs, women and men respondents considered that the overall training had led to a more scientific understanding of how to support healthy pond functioning and how to intervene appropriately. They associated improved knowledge resulting from the training with higher social standing and participation in community level knowledge sharing networks. Improved knowledge was considered to strengthen women's voice in intra-household decision-making processes, between spouses and with other family members. It was clear that the main attraction for trainees was the technical training and potential for improved fish production. Respondents viewed the gender-focused

modules of the training as separate from the technical training. However, the women valued the engagement of their spouses and other family members in the gender training sessions since this made them more open to women's participation and helped them to implement their technical training.

We were taught in practical, hands on way and so we found the training easy. We now have the belief and self-confidence that we can continue with fish culture. Because our husbands, fathers- in-law, and mothers-in-law were included in some sessions, it was easier for them to understand what we told them. They don't create any barriers to our participation (combined testimony from several women SGD participants).

Women and men reported the following examples of applications of women's knowledge and skills:

Earlier we released fish without preparing and cleaning the pond. Now we clean the pond before releasing fish and feed them regularly. Male members like it. They trust us to manage the pond and it enables them to earn another source of income. (Woman SGD participant).

Earlier we used to hire labour for liming in the pond. We used to guess how much lime to use. Now I know the actual amount of lime that is required per decimal. (Woman SGD participant).

After the training, the social status of the whole family, and my wife's, increased. Sometimes villagers ask us about fish culture. This never happened before and that makes us proud. (Man SGD participant).

We do fish farming in a jointly owned pond. My elder brother mainly looks after the pond. After the training my wife told us how to follow the proper method for fish farming and my elder brother took it positively. So bit by bit changes come to my family, I think this training has increased my wife's importance to our family. (Man SGD participant).

We have a jointly owned pond, so my wife does not speak about fish culture very openly in front of all male members. My wife waits for the right time and suggests to me what she thinks about any decision. I accept

her suggestion if it is useful and share with others. (Man SGD participant).

Women-Led Participatory Action Research on Homestead Shaded Pond Aquaculture (Shaded Ponds): Participant assessments of the methodology

Women considered the initial support they received from WorldFish as important for their learning process. However, they also valued their relative independence from WorldFish because they felt this encouraged them to develop new ideas and use technologies in different ways. Many respondents associated their increased knowledge with enhanced recognition and value in the family, and some to increased recognition in the community. Men concurred with these assessments, linking them explicitly to women's enhanced technical skills and decision making capacities. Regarding the training methodology, women said:

We women wouldn't go down into these ponds. But when Shumonaapa [the trainer] said that she wants to "do battle" [judhdha in Bengali] in these ponds with us women, we got eager. We said, "let's see if we women can do it". If we don't understand something from the training, we ask each other. If someone came and told us to put Rui and Katla (species of fish) in my shaded pond, that wouldn't feel good for my confidence. We have learnt to make the selection ourselves and see which one isn't working well and which is working well. We told them to give us a book because we can't remember everything. If they would give us a book, it would be good. If not everyone, maybe a book for every four of us. If the book is with one of us, then we can read it from time to time. But WorldFish staff forgets a lot of things. (Several women SGD participants).

Shumonaapa (apa means sister) brought a man from Khulna to show us how to kill predatory fish and use lime. He explained and then showed us practically. He took us to the pond, made us melt the lime and made us apply it. Then he made us spread the retinol powder to kill the predatory fish. He didn't teach everything at one go. He comes often. (Combined testimony from several women SGD participants).

Women reported the following examples of applications of their knowledge and analytical skills:

After a few months I harvested fish for home consumption. While I was cutting the fish, I noticed that the fish stomach contained a lot of fat. A few days later, when I checked another fish it seemed to me have less fat and to be generally weaker. I realised that the fish were not getting an equal share of the food. I decided to give more feed to improve their growth rate.

I observed that catfish (magur) do not come to eat in the day time. They hide in another layer. So I started to give feed at night. The catfish now come out and eat the food.

This year I modified the culture system from last year. WorldFish suggested we continue fish polyculture in the shaded pond, but my shaded pond is already full with fry. This time I released all of my fish seed to my sunny pond. I want to see what happens to the production.

Discussion

The investigation by the study team sought to understand which combinations of technology and methodology hold the most potential for fostering adoption, adaptation and sustained use of the target technology together with transformation of gender relations for women's and men's economic, social and personal empowerment.

From the results, it can be concluded that regardless of the combination, many women and men participants believe women now participate more effectively in intra-household decision-making processes. With specific regard to household ponds, both men and women report that women now play a stronger role in contributing to discussions around how to manage ponds across the production cycle. Women exhibit higher levels of confidence when discussing fish farming ideas with their husbands and relatives, in community level meetings, and with other actors. Over and beyond this, women's increased capacity to plan and manage the pond, and their increased technological knowledge, is seen by the immediate family, and in part by the wider

community, as conferring transferable skills relevant to wider decision-making processes. With respect to empowerment, men remain the key decision-makers in all areas. However, women have become more influential. This is because women are seen as making a stronger economic and food security contribution to the household and, critically, because they are considered to have become better, more capable thinkers. Based on the findings, it seems that these changes can be attributed.

These are positive results given the broader context, discussed earlier in the paper, of women's relative lack of agency in Bangladesh. Regardless of whether training has been offered on gender, women appear to have been empowered and gender relations partly transformed. We must conclude that with or without “transformational” training on gender, women are empowered by the mere fact of access to knowledge and resources coupled with purposive targeting. However, previous experience (Terry, 2014) suggests that such empowerment may constitute a temporary blip with gains easily lost in a relatively short period of time.

Our findings show, though, that *how* knowledge is transmitted may affect the depth of women's confidence in relation to discussing and applying technical knowledge. The learning by doing approach in the Shaded Ponds project has enhanced the analytical skills of many of the women co-researchers. This is demonstrated through the number of comments women respondents made regarding their ability to independently apply learning to solve problems they had identified in their ponds. By way of contrast, women in the GTA-CT pilot reported that they were able to directly apply the technologies they had learned. They attributed this largely to the participation of men in the training and to the communication skills they had developed. Over the longer term it is possible that since women and men in the GTA-CT pilot were not trained in setting up their own research, they may be restricted in their ability to adapt their technologies to changing scenarios.

The Shaded Pond project is constructed around a formal-trained scientist-farmer scientist interface whereby the farmers draw down and manage the intensity of technologies and information packages, such as saline-tolerant fish, created in the formal knowledge system. The premise underpinning the Shaded Ponds approach is that farmer participants are free to express their

agency and develop their knowledge in guided conditions. Our discussion above on gender relations shows that this is not necessarily the case. Women are located within gendered power relations that limit their agency relative to men at a range of levels. The GTA-CT confronted this issue directly by devising interactive sessions which enable women and men to explore gendered power relations, rehearse new models of behaviour, and develop improved models of intra-household communication. The ultimate goal is improved family well-being. This gender transformative model, however, was developed in specific relation to household pond management. It is not clear whether participants will experience spill-over effects into other domains of intra-household decision-making. Again, over the longer term this may well restrict their ability to adapt decision-making to changing scenarios.

It would be useful to enhance the participatory element of future adaptive research so that women and other stakeholders take the lead in setting up research which they can then manage themselves. As discussed earlier, it would be particularly valuable scientifically if they could work closely with formally trained scientists to set up mutually acceptable research parameters. The Shaded Pond research project provides a basis upon which to build. Adding in the gender-transformative training piloted in GTA-CT project would facilitate this process. As noted, the aim of the gender transformative training is to assist farmers to take charge and shape social dynamics in an initially guided learning process. Taking charge is self-evidently a critical component of developing agency. Combining the two methodologies would enable practice to shift to Quadrant 4 of Fig. 1: Social Learning, Gender-Transformative. In this way adaptive analytical skills in relation to both aquaculture systems and the social environment within which managers of household ponds enact their lives will be fostered.

Conclusions

The overall objective of this paper is to contribute learning from an early stage of developing gender-transformative interventions in aquaculture. Insights will inform on-going debates and empirical experimentation around operationalising gender transformative methodologies.

Our findings suggest that effective gender-transformative engagement in the aquaculture sector is predicated on two primary ingredients: more complex understandings of gender in combination with a readiness by formally trained scientists to allow women and men farmers to “follow the technology”. Innovative methodologies for technology development and dissemination should focus on promoting farmer adaptive capacity and enabling them to take charge of their own learning. This is not a gender-neutral process. Designing and testing, under different agro-ecological and social conditions, the efficacy of a combined gender transformative farmer scientist-formal scientist interface approach to aquaculture technology transfer is an important first step toward defining aquaculture research for development practice that is both socially and technically robust. In order to move work forward, rigorous research design is required to better understand what works in applying gender transformational approaches. Based on this, and evaluations of other innovative gender transformative approaches in technological interventions, a suite of project-relevant research questions to build on the emerging understandings provided here should be developed.

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SHORT COMMUNICATIONS

Short Communication

Fisheries Related Traditional Knowledge of Meitei Community of Manipur, India

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Abstract

Traditional Knowledge (TK) possessed by different communities is often closely linked to their way of life. The present study tried to document the TK of Meitei community in Manipur state in North East India, especially with reference to fisheries, through the Participatory Rural Appraisal method. Results showed that women are a very prominent presence in the fishery related activities in Manipur. They carry out fishing using traditional, simple and easy to manoeuvre gear. Women are also active in processing fish to meet household needs as well as for sale of dried, smoked and fermented fish in the markets. Marketing is almost entirely dominated by women, an example of which is the very unique exclusive women's market *Nupi Keithal*. Community fishing practices is also a unique cultural heritage of Manipur where women also participate along with the men.

Introduction

Women play an important role in small scale fisheries production and its development, which is usually undervalued and ignored while developing fisheries management plans and policy (Pauly 2006; Engelman et al. 2009; Sharma 2011). However, their contributions in reducing vulnerability and building resilience in a community are important (Engelman et al. 2009; Chen 2000; Kebe, 2009). The participation of women is affected by regions; social and cultural values and traditions; and technologies (Clayton and Savage 1974). Women are seen to be more involved in activities that require low investments

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and can contribute to family incomes (Francis 1995; Ogutu 1988; Medard and Wilson 1996). With the advent of technology, a movement has arisen to relook at traditional knowledge (TK) especially with the background that TK has stood the test of time and proven to be resilient and sustainable. According to the Convention on Biological Diversity (CBD), *Traditional Knowledge refers to the knowledge, innovation and practice of indigenous and local communities around the world*. Traditional knowledge can be a tool for sustainable development. In the case of fisheries, TK includes local skills, techniques, wisdoms, beliefs, costumes and folklore in relation to fishes held by the aboriginal people of a community over successive generations. The state of Manipur in north east India is largely populated by the tribal communities and among them the traditional knowledge system continues to dominate most aspects of their life and living. Unlike other communities and societies, women have always had an important position in Manipuri Society. The purpose of this study was to assess the traditional knowledge possessed by different ethnic groups in Manipur and to document them with regard to women's role and participation in fisheries.

Materials and Methods

The study was conducted in the state of Manipur in North East India which is situated between 23°83'N – 25°68'N latitude and 93°03'E – 94°78'E longitude. Based on the settlements of the identified target ethnic group/community, the Meitei, four districts viz; Thoubal, Imphal East, Imphal West and Bishnupur were selected for the study. From these four districts, 11 villages were further selected for conducting detailed investigations. Participatory Rural Appraisal (PRA) methodology was adapted to suit the objectives of the study as well as taking into consideration the limitations in the field. The discussions were kept flexible and care was taken to be sensitive to the lifestyle of the Meitei community. Investigations were conducted on different types of fishing gears, fishes used in traditional medicine, custom and beliefs. In the first stage information was collected from officials of Government Fisheries Departments and other governmental agencies working in the area, and in the second stage, a survey was conducted among fishers/farmers of the aboriginal community, particularly women of different areas. Triangulation of the information collected was done by information

collection from a cross section of individuals in the community who were selected randomly.

Results and Discussion

It was observed that like any other fisheries, men and women played differential roles in the Meitei community of Manipur as well. Women in the study area were equally active in fish harvesting along with the men. Interestingly, both women and men fishers use predominantly traditional fishing gears. Men (72%) dominated in the preparation and maintenance of gears and crafts. Modern gear was also observed but only 13% of the women respondents had ever handled such gear. Fishing was carried out either collectively (in certain seasons) or individually.

Community Fishing Practices

Community fishing is unique in terms of its cultural heritage of Manipur and it has played a significant role in the socio-economic and food security of the ethnic communities in the state. It has also ensured that there is better participation of women in the fisheries sector. In most cases, these practices are observed as a part of their traditional festivals or customs that have been ingrained in the community (Gurumayum et al. 2006). Some of the practices of community fisheries observed during the study are described below.

Long khonba: It is a type of community fishing exclusively performed by the women folk of Meitei community. Post monsoon, groups of women move to the waterlogged swampy areas, including shallow rivers, wetlands, marshy and other low lying paddy fields (Fig. 1) for fishing. *Long* is a type of gear made of bamboo splits which are woven into a half-elliptical shaped basket (Fig. 2). They also usually tie a bamboo basket called *Tongol* at their waists for keeping the harvested fishes (Fig.3). The indigenous gears are light weight and can be easily handled by the women folk.

Loo thumba (Fixing of 'Loo' trap): *Loo* is a conical shaped traditional fish trap made by splitting a large bamboo into different thin line rods which are tied together by threads of cane. It has a wide mouth opening and gradually tapers towards the end (Fig.4). With the help of these traps fishes are caught from rice fields or rivulets through infiltration. *Loo* is fixed in the narrow channels on the

bunds of the rice field. Along with the water current fishes are trapped inside the *Loo*. The trapped fishes are collected every 2-3 hours. *Loo* is a light weight gear and *Loo Thumba* is performed by both men and women (Fig. 5).



Fig. 1 Long Khonba Community fishing



Fig. 2 Long



Fig. 3 Tongol



Fig. 4 Loo/Looshang



Fig. 5 Loo Thumba' fishing

Ishitpa: *Ishitpa* is again carried out post monsoon in the swampy areas, wetlands, marshy or other low lying water logged areas generally in rice fields. A group of persons or members of family including the men, women and children participate in this fishing activity. The selected site is partitioned into two by creating a bund out of mud. Water from one portion is manually removed to the other portion using a scoop water bailer called *Istop*. The fish that are found in the area where the water has been drained are trapped using bare hands by the women.

Kommenba: This is again a unique fishing practice of the Meitei community in Thoubal district. It is carried out in the rice fields just after the rice is harvested. The fields will still be swampy and water logged. Straw from the harvested rice is spread over the fields leaving behind small stretches uncovered (Fig.6). Traditional traps called *Taichep* are fixed in these uncovered portions overnight (Fig. 7). They are rectangular traps one side of which is open with a inward valve. Thus, the fish which move inside are trapped and cannot get out. These traps are light weight, small sized and easy to handle operated both by men and women. As the oxygen level in the straw covered areas falls, fishes move towards the uncovered area where the traps are fixed.



Fig. 6 Kommenba



Fig. 7 Taichep

Phum namba: In the wetlands of Manipur, particularly Loktak Lake in Bishnupur district, many perennial, circular or semi-circular floating mats

called *phum* are constructed using weeds, macrophytes and other organic matter. These *Phums* are preserved for a few months. Sometimes, villagers including women add nutrients such as rice husk powder and other aquatic plants for encouraging fish aggregation inside the core of the *Phum*. All these *Phums*, along with the fish, are harvested during the lean season, usually October to March. This type of harvesting is known as *Phum Namba*.

Traditional gears used by women

Most of the traditional fishing gears in Manipur are fabricated using locally available, light weight and less costly materials and are proved to be women friendly (Chanu et.al 2015). They have evolved in conjunction with the fishing methods practiced and based on the operation. Most of the gears are pliable to both women and men.

The *Longthrai* is a scoop net made of nylon net fitted on a circular bamboo ring which is attached to a bamboo handle. The gear has a wider circular mouth and tapering end (Fig. 8). It is operated only in shallow waters, mainly small channels. *Longthrai* is scoop net. *Longoop* is a bell shaped trap operated by both men and women. It is made up of split bamboo strips with narrow mouth and broad bottom for operation in shallow water bodies (Fig. 9). It is immersed in shallow and muddy waters where the fishes are seen and trapped.



Fig. 8 Longthrai



Fig. 9 Longoop

Kabow loom is again a trap which is used with or without bait. The trap has

tapering ends and a broad middle which has a window with valve which prevents fish trapped inside from escaping (Fig. 10). Catfishes and other live fishes are mostly captured by these traps. One end of the trap is closed and the other end open with a detachable cover. Through the open end the fish trapped inside can be retrieved.

Nupée een is a fishing gear that is specially made for women. It is a popular and widely used gear operated in most communities of Manipur. The frame of the gear is made of two long bamboo poles of 10 to 12 ft which are tied at the middle. A net with a mesh size of 0.5 cm is fixed at the four ends of the frame. The flexible frames bend into an arc. A bamboo pole called a *Poura* is fixed at the middle of the cross and acts as lever for lifting the net (Fig. 11). One rope is attached to this pole to lift the net.



Fig. 10 Kabow Loo



Fig. 11 Nupée een

Post-harvest activities

Like women in other fishing communities Meitei women of Manipur are also active in post-harvest activities like sorting, packaging and preservation (Devi and Kanta Singh 2015).

Traditional methods of fish processing

Processed or cured fish is not only an important dietary food of the people in the region but also a means of livelihood especially for women (Devi and Bagga 2006). In Manipur, fresh fish and dry fish are equally preferred and in high demand. Different preservation and processing methods such as drying, smoking, fermentation, making fish paste etc. have been performed by women

since time immemorial.

Drying: Dried fishes are in high demand in Manipur. Large scale fishing is usually done during the rainy season. After selling raw fishes to traders/consumers, the unsold fishes are dried/smoked in order to prevent spoilage and preserved for use during the lean period. After sorting fish are spread over flat, shallow bamboo baskets called *Kharai* kept on bamboo poles and dried in sun for 7-15 days (Fig. 12). Another method employed was letting the fish dry from the heat over the burning embers of a kitchen hearth. The fish are spread on an iron mesh and hung over the fireplace at a height of 3 to 4 feet during night time (Fig. 13). It is the women who are actively involved in these activities.



Fig. 12 Sun Drying of Fish



Fig. 13 Smoking of fish in kitchen

Such processed fish is locally called as *Nga ayaiba* which were stored for the rest of the year. *Ngammu* (*Channa orientalis*), *Ngakha* (*Puntius manipurensis*), *Ngapemma* (*Colisa faciatius*), *Ngakra* (*Clarias batracus*), *Samjet nga* (*Anabas tesdudenius*), *Ngasep* (*Mystus bleekeri*), *Ngapai* (*Notopterus spp.*), are common fish species used for drying. Fish is also dried using a bamboo or metal skewer over the hearth. Fully dried fish are packed in baskets for market or stored in bamboo containers called *Ngarubak*.

Smoking: Smoked fish was also popular in the state. Many families have a separate area in the kitchen for smoking fishes (Fig. 13). Fresh fishes are spread over the '*Kharai*' over a raised platform fixed with bamboo poles. On the ground below a pit is dug where the fire is set and the smoke spreads over the platform. All the activities related with smoking are performed by women.

Fermentation: When the weather is humid, drying is very difficult and during

such times the semi-dried fishes are fermented, which is a choice food item of Manipuri people. The fermented fish is locally known as *Ngari*.

Small and medium size dried or semi-dried fishes (mostly, *Puntius sophore*, *Setipinna phasa* and *Gudusia chapra*) are kept in an earthen pot, tightly packed and the pot sealed airtight. Fishes are then allowed to ferment anaerobically in the earthen pot for about 4-6 months (Fig. 14). The final product is a solid sticky substance with a strong pungent odour. It is cooked and is also an ingredient in other dishes and is also consumed as such with rice

Grinding: Semi-dried small fishes (usually *Puntius* spp.) are ground into powder or paste form by mixing with slices of semi dried petioles of *Arum* (*Colocasia* spp.). Fish paste *Hentak* is prepared exclusively by women using a traditional grinder called *Sumbal* and it is stored in small earthen pots for more than one year (Fig. 15).

Manipuri women, including Meitei women, are also experts in marketing. *Nupi Keithel* is an exclusively womens' market. Women from far away districts bring and sell fishes and other items on a daily basis. This traditional market is about a century old.



Fig. 14 Fermentation of Fish in earthen pots



Fig. 15 Grinding of Fish in traditional mortar to make fish paste

Besides markets, *Nupi ngami marup* (*marup*=cooperative) are women fisher associations formed for promoting income generation through fish culture practices. The women members of *Nupi ngami marup* share common economic needs and undertake fisheries related activity by participating directly in decision making and sharing the benefits on an equitable basis. Associations strengthen the existing income generating activity of members and also help the

members to start new activities.

Conclusions

In Manipur, the Meitei women folk are engaged in different activities of fisheries in addition to their household work. Their participation in fisheries is strongly connected with Traditional Knowledge (TK) transferred over successive generations. Women fishers dominate in different fisheries activities in the state, except in fabrication of craft and gear. Traditional knowledge and practices have been sufficient to sustain livelihoods in the past but in a world of rapid globalisation pressure on resources has been increasing. Thus, this knowledge needs to be preserved for sustainable development in the region. Women cannot operate most of the modern tools and with time the traditional ways of doing things may be lost. However, a blend of traditional knowledge with modern scientific technologies may assist in economic improvement of the local community in the state.

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Short Communication

Gender Roles in Fisheries along the Vembanad Estuarine System

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Abstract

The Vembanad estuarine system situated in the state of Kerala, India, is one of the largest on the West Coast of India. Spread across the districts of Alappuzha, Ernakulam and Kottayam, it is rich in aquatic bio-diversity. The estuarine system serves as a source of livelihood for the inland fishing community. About half the total fisherman population of more than 200 thousand in the inland sector in Kerala is concentrated in these three districts. This paper tries to document the fishing methods and tries to understand the challenges faced by women in fisheries whose fishing activities are confined to the inland water bodies. Women carry out fishing activities in the kol lands which are fed by the estuarine system of the Vembanad Lake. Traditional techniques are used and the activity tends to provide a better living than the subsistence level. This involvement is declining with the younger generation showing no interest in carrying the activity forward. Drudgery and legal issues with respect to rights to fishing in these waters are recurring concerns.

Introduction

An estuary is a semi enclosed coastal body of water which has a free connection with the open sea and within which the salinity is measurably different from the salinity in the adjacent open sea. Estuaries are among the most biologically productive (ICMAM 2002), dynamic ecosystems, varying in physico-chemical properties and supporting highly diverse flora and fauna (Pritchard 1967). The estuarine system which spreads over 1.422 million ha is an integral part of fisheries in India which makes a significant contribution to

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production (<http://ecoursesonline.iasri.res.in/mod/page/view.php?id=146934>. Accessed 20 January 2016). This system forms part of the rich and diverse inland water resource available in India. Kerala, on the south west coast of India, is endowed with rich freshwater and brackish water resources. The state has a total estimated freshwater area of about 0.332 million ha consisting of reservoirs, rivers, ponds, tanks, irrigation tanks and paddy fields; and 0.126 million ha of brackish water resources consisting of 0.065 million ha of brackish waters, 0.046 million ha of backwaters and canals, 0.013 million ha. of prawn filtration fields. The estuaries of Kerala are rich, with more than 200 resident, migratory and shell fish species (Asha et al. 2014; Binoy 2008). The inland fish production and culture, which is mainly traditional in nature, provides a major source of livelihood in the rural areas. The sector is a potential employment source for the rural women. The total population of fisher folk, who depend for their livelihood on the inland waters of the State, is around, 0.23 million and which accounts for 0.69% of the State's total population. The active fishermen of the inland sector were estimated to be 0.052 million. The Inland sector of the State contributes around 0.149 million metric tonnes of fish, which accounted for a net value of 14,988 million INR during the year 2012-13 (Government of Kerala 2013).

The Vembanad Estuarine system, declared as a Ramsar site, is the largest in the state of Kerala and serves as a source of livelihood for more than half of the total inland fishing population of the state. With a length of 96 km and surface area of 1512 Km², it spreads across three districts of Kerala, viz., Kottayam, Ernakulam and Alappuzha (Mogalekar et.al. 2015). The local fishing communities were traditionally involved in the conservation and management of the estuarine resources on which they depended for their livelihood. With change in time such positions of authority and ensuing responsibilities were taken over by the State government. As a result of centralisation in control, and little involvement of people in management of the resources, there was widespread resort to destructive fishing methods which led to the deterioration in the availability of estuarine resources (Kumar and Priyadarsanan 2012).

According to Mishra (2011), 72% of the workforces in the inland fisheries sector were women. Fisherwomen had diverse roles in the inland sector which involves grading and segregation, selling, drying, and prawn and fish seed collection. Besides they are also engaged in net mending and carrying

food to the river banks for the fishermen engaged in fishing activity (Chandra and Sharma 2014). Usually it is seen that the domination of men ends at the riverbank in terms of fishing activity. Along the Vembanad estuary various indigenous fishing methods are followed. The fishing technique followed by the women in this region is especially unique needing a lot of skill and dexterity. The present study was carried out to identify the gender roles and activities among the fishing communities along the Vembanad estuarine system and to understand the issues and challenges faced by the fisherwomen in these areas.

Materials and Methods

The study was carried out in the Pallithode area of Kuthiathod Panchayath of Kerala, India. A village Panchayath forms the basis of the local self-government at the village level in India. Pallithode village lies in the Alappuzha district of Kerala and shares its borders with Ernakulam district. The sea lies towards the west of the village and the estuary passes through the village almost parallel to the sea. *Kol* (also referred to as *kole*) lands in the village are fed by the estuary and are used for rice cultivation. A sizeable population in the village depends on fishing for its livelihood, both marine and inland. The study focuses on the fishermen and women who depend on the *Kol* lands and the channels linked to the estuarine system for their livelihood.

Fishermen and women were interviewed personally using a semi-structured questionnaire with open ended questions. Case studies are used for explaining the distribution of time for work among men and women.

Results

Marine fishermen in Pallithode area are largely Christians and the inland fishermen are Hindus. Fishermen and women had a minimum level of schooling with a majority having finished primary school. The educational status of their children was better though most of them have only secondary or senior secondary level education. All the families interviewed fall in the BPL¹ (Below

¹BPL: Below Poverty Line is an economic benchmark set by Government of India to identify the people who are in real need of Government aid. The criteria for identifying people below the poverty line varies from state to state within the country but is broadly based on income.

Poverty Line) category. They depend on the government subsidised Public Distribution System² (PDS) for their daily basic consumption requirements. They have very small land holdings and these are basically comprised of just about enough space on which to build a house. Generally the houses are built close to shore and there is a constant fear of rising water levels. In this area houses being washed away during rains or bad weather is a common phenomenon (<http://www.thehindu.com/news/cities/Kochi/monsoon-sea-merciless-on-chellanam/article7454606.ece>_Accessed on 12 January 2016).

The inland fishery is dominated by fishers who depend almost exclusively on the inland water systems for their livelihood. There are exceptions, where the men also go fishing in the sea. The marine fishermen, however, also fish in inland waters during the peak season of fish availability in the inland sector or during off-seasons in marine fishing. Women from both inland and marine fisher households are engaged in fishing activity, which is confined to inland water bodies (Fig. 1). The fishers use various types of cast nets (locally called *veeshuvala*) or scoopnet or hand net (locally known as *vattavala*) (Fig. 2). Pots are used to store the fish catch. Earlier earthen pots and wicker baskets were used for this. But today aluminum pots are used as they are more durable and do not break easily, unlike earthen pots (Fig. 3). While cast nets are operated by men the other gears are exclusively operated by women. The women are especially adept at using their hands and feet for trapping fish. The *vattavala* or scoop nets used by them have a mesh size of 12 mm to 26 mm. The diameter varies between 22 cm to 65 cm. The cast nets operated by them vary with a mesh size of 18 mm to 28 mm with a length of 2.5 m to 4 m. The *vattavala* is used for scooping fish from water. When men and women fish together the men operate the cast net and the women hold the *vattavala* or scoop net into which the catch from the cast net is transferred. The fish is then removed and stored in the pots fastened to the waists of the fisherwomen. The mouth of the pot is also covered with a mesh and the pot lies immersed in the waters during the entire period of fishing. The depth of waters in *kol* lands, where the women fish, is generally 2 to 5 feet deep. Normally, the fishers have to give one-third of their catch to the owner of the field as a fee for providing them access to the land. Once the rice is harvested and water enters into the

²PDS: Public distribution system is the scheme operated by Government of India to ensure food security in the country through efficient procurement, storage and distribution of essential food grains at subsidised prices to poorer sections of the society.

field they can fish in the fields without giving any share to the owner, in the intervening period before the land is readied for the alternate fish culture.



Fig. 1. Women engaged in fishing



Fig. 2. Fisherwomen holding vattavala or scoop net



Fig. 3. Pot used for storing fish

The fisherwomen aged between 45 and 70 years have been carrying out this activity for close to two decades and were well experienced. The majority of women fishers started carrying out this activity after relocating to their marital residences, as most of their husband's kin were involved in such activities. The fishing methods have remained traditional without any influx of

technology. The younger generation, however, was not interested in getting involved in this work.

The post-harvest activities included sorting and marketing of fish and are mainly carried out by women. After taking a share for household consumption, the catch is taken to the nearby market for auctioning. A commission of 10% is paid to the auctioneers. Decision making power regarding consumption and selling of fish caught is vested with women. The fishing activities done by women support their families in the form of consistent income throughout the year, as compared to their male counterparts whose incomes are irregular. A time analysis of fishermen and women involved in inland fishing in Pallithode area is given in Table 1.

Table 1. Time analysis of fishermen and women involved in inland fishing

Time Gender	3.00 am to 4.00 am	4.00 am to 8.00 am	8.00 am to 10.00 am	10.00 am to 2.00 pm	2.00 pm to 6.00 pm	6.00 pm to 9.00 pm
Women	Getting ready for Fishing	Harvesting Sorting	Auctioning and Marketing Peeling	Household work Peeling	Leisure	Household work/ Leisure
Men*	Getting ready for Fishing	Harvesting	Leisure/ Work related to household (if any)			

* Men are full time marine fishermen

Case study 1

Lalitha (50 years) has been fishing in the inland waters of Vembanad estuary for the past 25 years. Her husband is an active marine fisherman. She started engaging in this activity after her marriage. This was also because other women members of her husband's family, also in the neighbourhood, used to fish in a similar way. She goes along with other women of the village in a group to the small tributaries or channels linked to Vembanad Lake. They start early in the morning and cover the distance by walking. The fishing season starts in March and she uses a scoop net (*vattavala*) and is also experienced in using her feet for trapping fish. The main catch includes *Macrobrachium rosenbergii* (De Man, 1879), *Etroplus suratensis* (Bloch, 1790), *Etroplus maculatus* (Bloch, 1795) and *Mugil cephalus* (Linnaeus, 1758). Her daily income ranges from

INR 30 (approximately USD 0.44) to INR 500 (approximately USD 7) depending on the season. The catch is divided into three parts out of which one part is given to the owner (the household which stays near the waters where the women have fished and who 'own' the water body). A second portion, generally comprising of good quality and bigger fish, is reserved for household consumption and the rest given for auction to a middleman. A commission of 10% has to be paid to the middleman for taking the catch to the auctioning centre. She goes fishing almost throughout the year, excepting the monsoons when the water level rises and they are not able to find a footing at the bottom of the channels. The income from fishing is used for household consumption and other personal expenses. Lalitha has full freedom in deciding how to spend the money and is independent as far as her personal expenses are concerned. Her contribution to the overall family income is well recognised. The main constraint she faces is obtaining permission from the 'owners' of the channels or partially enclosed water bodies to carry out fishing operations. Some of the 'owners' hire outside labour for harvesting fish from these water bodies. This puts the women at a disadvantage as they are no longer able to fish in these waters and have to walk from 5 to 10 kms every day to find other suitable fishing sites.

Case study 2

Revamma (46 years) had started doing this job at a young age even before she was married. After her marriage she started accompanying her husband Ponnappan for fishing in the inland waters of the Vembanad. They have one daughter and two sons, all school going. This activity is their only source of livelihood. While Revamma uses pots and scoop net (*vattavala*), her husband operates the cast nets (Fig. 4). They give one-third of the catch as payment for using the water bodies to the 'owners'. They seldom take the catch for household consumption preferring to sell the prime quality catch. The final decision, whether a portion of the catch can be taken for household consumption or not, is taken by the husband. Both husband and wife together take the catch for auction and a commission of 10% is paid to the auctioneers. They have no savings and all the income is used up for maintaining the family. Whenever they are not able to go fishing, they source fish from the auction centre on credit and sell it door to door or in wayside or distant markets. After coming back from work Revamma has to carry out household chores while her

husband compensates for the sleep he had to sacrifice in the early morning. The major constraint faced by them is the time spent for fishing, as they leave home early in the morning and are insecure for their children. They are forced to leave their children alone at home and by the time they return from fishing and marketing the children have already left for school.



Fig. 4. Fisher couple showing the cast net and scoop net

Discussion

Most of the women working in this sector started engaging in this activity after settling into their marital homes and starting to accompany the other women in the area. Most of them are middle aged or old but do not want to give up the activity as it fetches them the additional income required for their families or to meet their own personal expenses. Despite initiatives from the Government in the form of employment guarantee schemes (for eg., The Mahatma Gandhi National Rural Employment Guarantee Programme or the MNREGP, which assures 100 days of employment in a year in rural areas with minimum wages), they still prefer to carry out fishing, as it is remunerative, especially in peak seasons.

Since there is very little saving from the activities they engage in, most of the women are indebted to local money lenders. There is very little dependence on organised credit (Gopal et.al. 2012) even though all of them have savings accounts in nationalised banks as the wages from the government

sponsored employment guarantee schemes are routed through these banks (GoI 2013). The micro finance institutions run by caste based organisations like 'Micro Finance Programme' by Sree Narayana Dharma Paripalana Yogam (SNDP) (Bhaskar 2015) and other private financial institutions run by local people also cater to their financial needs. Though the private financial institutions have high lending rates, there are fewer official formalities to meet.

The fisherwomen consider their work profitable but they do not wish for the next generation to undertake this activity. They don't want their children to face the physical difficulties and want them to get educated and enter other professions. Women belonging to the younger generation are not involved in harvest activities and they have little interest in the same. They consider the activity as having a lower status in society. Younger women go for prawn peeling in sheds owned by private entrepreneurs and get wages from INR 200 to INR 250 (approximately USD 3 to 3.5) on a weekly basis.

One of the major constraints faced by women involved in fishing in these areas is the nature and time of work. Their reproductive roles are disturbed especially with relation to caring for their children, creating a sense of insecurity both among women and children. Another issue they confront is the distance from their home to the work place, with minimal transportation facility as they leave as early as 3.00 am. They usually fish in *kol* lands which are under the ownership of private individuals who use the lands for prawn culture or rice cultivation. Sometimes women have little or no access to these potential fishing areas near their residences because of restrictions by the actual 'owners' of *kol* lands. Conflicts with the owners are common and several legal issues need to be sorted out before this access can be guaranteed (NSSO 1999; Chopra and Dasgupta 2002).

Conclusions

It is evident from the above discussions that the traditional fishing methods followed by women for their subsistence are slowly declining with the younger generation showing no interest in carrying the activity forward. The income from this is important to sustain the family. Reducing drudgery and sorting out issues of use of the common property in a more equitable way is an

important aspect in ensuring that this can continue to be a profitable avocation for the women of the community.

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Short Communication

Decreasing Trend in Participation of Women in Fish Marketing in Patna, Bihar (India)

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Abstract

In the fisheries sector, participation of women is generally after the fish is harvested. This may be a tradition evolved around the need for rest and relief for the men folk after long spells of hard toil in the waters. Fish retailing has been mainly a women's domain all over India, both in the inland and marine sector. Women take the twin responsibilities of fish trading and taking care of family. The Government of Bihar, India has earmarked areas for fish markets in the city of Patna, but often the space is constrained and consumers find it difficult to purchase fish from there. Many fish vendors thus occupy the pavements in different locations. This is also a cause for concern. In Patna, the proportion of women in fish markets has been decreasing over the past decade or so. The main reasons are insecurity, lack of basic facilities, literacy etc. Harassment from different quarters, such as the men retailers, administrative and the municipal authorities have been reported. In fact most women vendors accepted that lack of protection was the main problem they faced in their work. Some women fish vendors were mobile vendors because they felt that this was a safer way to ward off harassment. Apart from these issues, women have practically no technical knowledge on fish handling, preservation and pre-processing, which could be used for developing their trade.

Introduction

The state of Bihar in northern India has one of the lowest GDPs in the country. More than 70% of its population is dependent on agriculture and allied activities like aquaculture, dairy, poultry, etc. Bihar has varied aquatic resources of 3,200 km of rivers, 100,000 hectares floodplain wetlands, 9,000 hectares of oxbow lakes, 7,200 hectares of reservoirs and 69,000 hectares of ponds and

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tanks (<http://ahd.bih.nic.in/Docs/ICAR-Report-Fisheries-Dev-Bihar.pdf>. Accessed 20 December 2015). The fishermen community constitutes about 14% of the total population of Bihar. About 80% of the fish production is from capture fisheries and the rest from culture fisheries (Jha 2009).

Patna is the capital and largest city of Bihar. It is also the second largest city of Eastern India, and in 2011 had an estimated population of 1.68 million. The modern city of Patna is situated on the southern bank of the river Ganga with many of its tributaries also straddling the city. The long riverine system is a resource for fisheries. However, the fish catch in the Ganga has declined by almost 69% in a decade affecting an entire way-of-life for the fishing community in the state capital (Mirza 2004).

Fishing in the rivers is through a contract system where an individual or a cooperative society takes a lease on the right to fish in a particular stretch. Individuals further employ fishermen to do the actual fishing. The harvested fish is auctioned at the banks of the river to vendors or middlemen, who in turn sell to consumers or to fish sellers in the market. Only a few consumers bought fish from the landing centres (Honkanen et al. 1999; Sharma and Khajuria 2009).

Women are an integral part of the fisheries and they are active in processing, marketing and selling the catch, though their primary responsibility is in their roles as caregivers to the family (Kumar 2010; Olufayo 2012; Biswas and Rao 2014). There have been studies on fish markets in India especially with reference to the unorganised retail sector (Tietze 2004). There are issues of facilities available for retailing and also safety and security of the women. The present study examines the existing conditions in the fish markets of Patna, Bihar vis-à-vis women and tries to identify specific issues which are barriers to their participation in the system. An attempt is also made to provide some action and recommendations which can improve the involvement of women.

Materials and Methods

The study was conducted during the post monsoon season of the year 2014. A brief survey was conducted to learn the status of markets with reference to consumers' preferences which are largely determined by the

availability of the variety of fish in the markets. Proximity to residential areas, general hygiene and other factors like prices were determinants that attracted consumers. Five sites (S1 to S5) were selected of which three were government allotted fish markets and two sites, both roadside/pavement markets, were markets operating in unauthorised places, but are very commonly seen in fish trade.

Interviews were conducted at each of the sites with the sellers as well as the consumers using a questionnaire. The participant observation method also was used for collecting first-hand information.

Results

Patna is a centre of fish import for the state of Bihar. The local production has not been able to meet the demand of consumers. The total fish production in Bihar is 280,000 tonnes against the annual requirement of about 450,000 tonnes (Jha 2009). It depends on supplies from other state, especially from the southern state of Andhra Pradesh. Generally whole fish either in live condition or in ice is preferred by the consumers and frozen fish is rarely seen, except in bigger super markets. Generally inland fish is preferred by the consumers and marine fish is rarely seen. Though a policy was formed to earmark areas for fish marketing very little attention was paid to constructing proper markets (Sathiadas and Kumar 1995). Rapid urbanisation has, however, led to increasing demand and the inability of designated markets to meet the same. The schematic representation of the fish marketing in Patna, Bihar is given in Fig. 1.

There are about ten government designated markets in Patna, but it was observed that fish sellers also retailed fish from encroached road sides and pavements inside residential areas in the city. Rather than go to designated markets, consumers preferred “closer to home” roadside/pavement markets. Women were also seen to move from place to place to sell their fish, stopping at each place for some time. From the available records it was observed that in 1994, the number of women fish sellers was more than the men but the situation has changed drastically in two decades (Table. 1). In markets where women continue to dominate, like market S2 in the study, they have been getting the help of their husbands and sons with regard to safety and security.

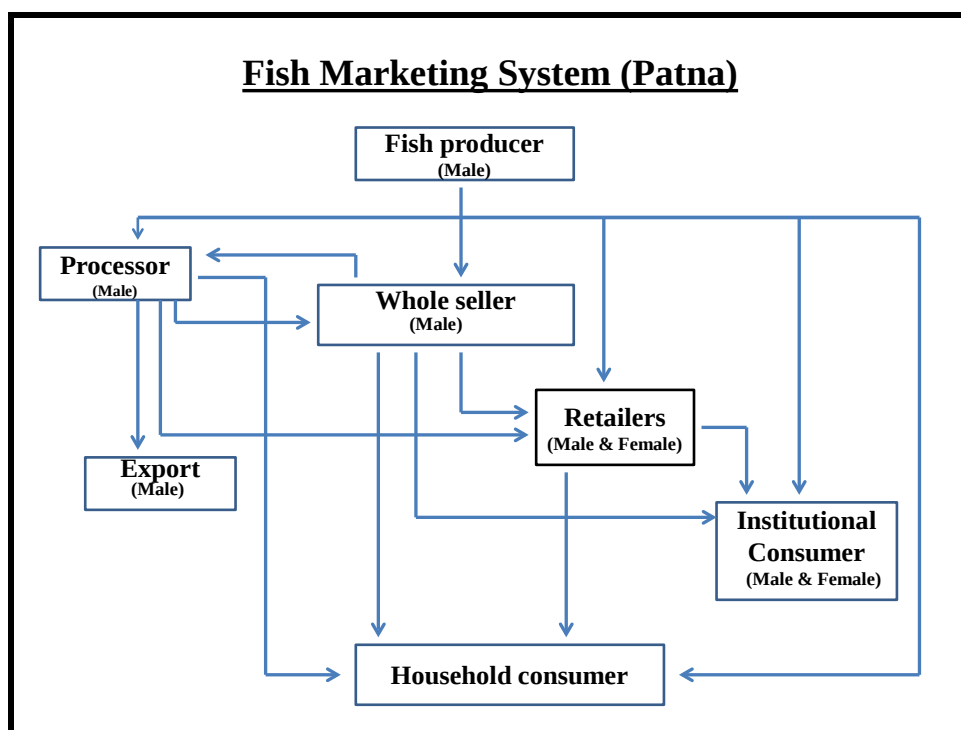


Fig. 1: Fish Marketing System (Patna)

Table. 1: Number of men and women fish vendors on different sites in Patna in the year 1994, 2004 and 2014. (S1 to S5 are the different markets selected - S1: Boring Road crossing, S2: Hartali More fish market, S3: Raza bazaar fish market, S4: Ashiana more road side, S5: Razapur bridge pavement).

Site	1994		2004		2014	
	Men	Women	Men	Women	Men	Women
S1	09	11	11	09	15	11
S2	03	08	04	08	04	11
S3	05	04	07	01	09	01
S4	00	04	05	06	10	08
S5	03	07	04	07	09	09

The number of men fish sellers had been continuously increasing since 1994 in comparison with women fish sellers. Though the absolute number of women fish sellers had increased the percentage of participation declined from about 61% to 47%. In 2004 the numbers of women fish sellers were much lower than 1994 and 2014. This was mainly because of safety and security issues

(Nidan 2010). Poor infrastructure, unsafe and insecure places to sell, poor personal hygiene and health, harassment from different quarters, such as the men retailers, administrative and municipal authorities etc. compel the women to move away from taking up this avocation. Even though many of the women had more than two decades of experience, the men sellers did not give the women their due in marketing space as well as believing that they were not capable enough to manage marketing aspects like fluctuating prices. That is what made the women shift to unauthorised spaces inside residential areas, which were comparatively safer. Most women fish sellers accepted that in 1994 the market was much safer and that then they had independently traded their fish in the market and had a better say in its functioning, but that conditions had changed in the ensuing two decades. Now, by 2014, most of the markets were male dominated and the overall management of markets had passed into male hands and women had to simply follow the rules laid down by them.

Discussion

Women have been reported to be more involved in post-harvest activities than men (Barman 2001; Nandeesha 2004; Nwabueze 2010) and to be important in marketing as agents, auctioneers, retail and itinerant stall holders. The women also take care of preservation of the fish that is not sold fresh. Almost all the women were either middle-aged or old and had lower socio-economic status (Felsing et al. 2000). Unmarried or young women do not get involved in marketing of fish (DFID 2003). Women having small children or those who have no other care giver support at home could not undertake fish marketing. In some cases family members lent a helping hand in the fish markets. In general, the participation of women has been declining. The main reason was that they were afraid of the harassment they faced from different quarters. Mobility in vending activity was a way to ward off harassment. Moreover the women were reluctant to sit in a market place because most of the other vendors were men (Nidan 2010). A majority of women vendors stated that lack of protection was the main problem they faced in their work place. Lack of basic facilities such as toilets and drinking water etc. are also affecting the participation of women (Mugaonkar et al. 2011; Suddhawati 2013). Some indirect factors were also noticed for the fall in participation of women like the influx of more fishermen in retailing activity.

A local fisherman remarked that: *Fishing in Patna, which provided livelihood to thousands and was regarded to be the backbone of freshwater fishing, is no more the lucrative business that it used to be a decade ago. Fish trading work is regular and has fixed timings unlike going for fishing.*

Conclusion

Patna is an old and fast growing urban area. Fish is a priced food item here. Though women of the fishing community of Patna are more literate than those in other places of the state Bihar (India), their participation in marketing activities has been declining for the last two decades. Safety and security issues can be mitigated if properly designed markets are constructed with adequate facilities for women to ply their trade without fear of exploitation and harassment.

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Short Communication

Workspace of Women in the Small-scale Ornamental Fish Value Chain in Kerala

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Abstract

Aquarium fish keeping is one of the most popular hobbies in the world. The growing demand of aquarium fish has evolved into a USD 8 billion industry globally. It has the potential to become an important source of employment and income, especially for empowering women financially, as it can be taken as a leisure time activity and allows balance between productive and reproductive roles. The present study was conducted in Panangad and Kotatt regions which belong to Ernakulam and Thrissur districts respectively in Kerala, India. The study attempted to identify the gender activity profile in ornamental fish culture and compare the attitude of the women in undertaking the activity in two selected survey sites, one a rural area (Kotatt) and one a semi-urban area (Panangad). The attitudes of the women in both areas were marked against a 5 point Semantic scale. It was found that the attitude of women in Panangad towards ornamental fish farming was negative with scores more towards the negative adjectives describing the culture. They felt that the culture was a loss making activity, having no impact on their economic status. The families in Kotatt region had a more positive attitude towards the culture. They felt the farming was stimulating and fetched them profits and better economic opportunities.

Introduction

The ornamental fish industry evolved as a means to cater to a popular hobby. Although the global ornamental fish trade is relatively small when compared to the food fish industry, it nevertheless makes significant contributions to the trade of freshwater and marine aquatic products. The

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estimated retail worth of the global ornamental fish trade is more than 8 billion USD (Silas et al. 2011) while the annual trade value was estimated to be 15 - 25 billion USD (Ploeg 2009). Aquarium fishes are both wild caught, and captive bred at aquaculture facilities, with over one billion fishes traded through more than 100 countries during 2000 (Whittington and Chong 2007). The rich piscine diversity of Indian waters supports over 300 varieties of indigenous ornamental fish species. Despite this, India stands 29th in the list of global ornamental fish trading countries (Fossa 2012) with exports worth 1.17 million USD in the financial year April 2009 - March 2010 (Nair 2012). In addition to export, the trade is growing internally due to the domestic demand with exotic species bred in captivity dominating transactions. The domestic trade in India was worth 100 million USD and was growing at an annual rate of 20% (<http://www.celkau.in/Fisheries/CultureFisheries/Ornamental%20Fishes/gelinformation.aspx> _ accessed 24 January 2015). The state of Kerala on the south west coast of India is a prospective one in the trade of ornamentals with the state standing second in the overall trade of the same (Ramachandran 2002a and b; Shyma 2008; Sekharan 2006; Kurup and Antony 2010; Nair 2012).

Ornamental fish business has been recognised as an avenue of employment for women in various countries (Lee 2005; Jayashankar 1998; Bertram 1996). In India many women have taken up ornamental fish breeding or farming as a backyard activity especially in rural areas (Sahoo et al. 2011). Ornamental fish farming is considered a good avenue for women as the culture practice involves relatively simple techniques and small capital investment. A backyard pond or a little space to setup some fish tanks can help women carry out the operations while being able to balance both family chores and productive roles in the culture. The present study was done in an attempt to: (a) identify the value chain of ornamental fish in Kerala state; (b) identify the gender activity profile in ornamental fish culture; and (c) compare the attitude of the women in undertaking the activity in two selected survey sites, one a rural area and one a peri-urban area.

Materials and Methods

The study was carried out in 2014 in two places purposively selected for the study, Panangad and Kotatt. Panangad falls under the Kumbalam *Grama Panchayath* (a *Panchayath* being the village local self-governance unit) of

Ernakulam district in Kerala, India. Kotatt falls under the Chalakudy Municipal area of Thrissur District of the state (a municipality is the urban local self-governance unit). Panangad is a coastal village where the main occupation of people is fishing and an ornamental fish culture programme was initiated by Kerala University of Fisheries and Ocean Studies (KUFOS), Panagad (then called the College of Fisheries, Kerala Agricultural University), in association with the Panangad Integrated Development Society (PIDS) and Rotary Community Corps (RCC), Panangad for empowering women in the area. The programme was carried out as part of a project which was operational between 2007 and 2010 with an aim to develop entrepreneurship in this potential field of employment generation. Panagad had the advantage of having plentiful availability of freshwater throughout the year (<http://www.aquaculturewithoutfrontiers.org/wp-content/uploads/2014/11/7.-Anna-Mercy.pdf> accessed 12 November, 2015). Kottat also was identified by the Department of Fisheries, Kerala state, as an important centre for ornamental fish culture especially by women.

Focus Group Discussions (FGDs) and interviews using a semi-structured questionnaire were used. Personal communication was carried out with the officials of Department of Fisheries, Kerala state. The activity profile and gender needs analysis was elaborated using the Moser Gender Framework (March et al. 1999). The attitudes of the women in Panangad and Kotatt regions involved in culture practices were measured using the Semantic differential rating scale (Osgood et al. 1957). For this, six respondents were selected from each area. The respondents were asked to rate ten bi-polar adjectives describing ornamental fish farming against a 5-point scale. The blanks were numbered from 1 to 5 and then the responses were averaged for each dimension. The average was plotted on a form to show the attitude of the respondents.

Results

The value chain for ornamental fish in the state of Kerala is rather short and is almost similar for both exotic ornamental fish and wild caught ornamental fish. Fish collected from the wild or seed of exotic fishes that are procured from outside are reared in hatcheries. These are then marketed either in the domestic market or exported. In the domestic market both wholesale and retail sales occur. For the most commonly reared ornamental fish like goldfish

(*Carassius auratus*), the cost of fry at the first level is around 50 paise per piece (1 INR = 100 paise; 50 paise is approximately 1 US cent) and at the hatchery stage the price rises to about INR 3 per piece (approximately 5 US cents). The whole sale prices are INR 18-20 (approximately USD 0.27 to 0.30) and the retail prices INR 25 to 30 (approximately USD 0.37-0.45). Basic inputs at the wild collection stage are the craft and gear required for fishing. Feed and medicine are used in hatchery management. The rest of the expenditure is on transportation of the fishes for marketing. The results of the survey carried out are presented as cases below.

Case I- Panangad region

Panangad is in Kumbalam Panchayath of Ernakulam district, Kerala. The region has several Self-Help Groups (SHGs) of women engaged in ornamental fish farming. Self-Help Groups are independent groups formed by the women of a particular area engaging in micro-enterprises like making and marketing pickles, homely snacks etc. SHGs have been a great source of empowering women through self-employment (Gupta 2007). Their main source of capital investment is the special subsidies granted by government in addition to small compulsory savings of the group members.

In ornamental fish culture, each group or unit is called a cluster and there are six such clusters in the area selected for this study. Each cluster includes three to four women who engage in the culture activities. All the units are homestead units and were set up by availing of the ornamental fish assistance schemes from various agencies including export promotion agencies like Marine Products Export Development Authority (MPEDA), Kochi, and Kerala, India. Each cluster had secured initial financial assistance of INR 75,000 (approximately USD 1100). This initial fund helped them in setting up the tanks and buying equipment such as aerators, filters, medicines, feed, equipment for packing etc. More than 60% of the women had attended short term training provided by MPEDA and the KUFOS.

All the culture related activities of the units like raising brood stocks, feeding, changing water and other activities were managed by women themselves. These were manageable by women mainly because the scale of the units was small. Though these women received financial and technical support,

they reported in interviews that the business was not bringing them enough profit and they had to source additional financial inputs themselves. They also opined that the culture practice consumed their time and effort. Another major issue cited was lack of family support for the culture activities. It was also understood from the interviews that women also diverted financial assistance received to meet household purposes. After initial enthusiasm in starting the units, the groups showed little interest in maintenance and upkeep of the tanks, checking water quality parameters or proper quarantining of the fish. There was also a lack of interest in venturing into or exploring new market opportunities.

Case II- Kotatt region

Kotatt comes under the Chalakudy Municipal area of Thrissur District, Kerala, India. This district is situated adjacent to Ernakulam district where Panangad is located. It is predominantly dominated by agriculturalists and a majority of the population depends on agriculture which is the main source of income. Twenty-five families in the area were involved in ornamental fish culture. These families were once mulberry farmers, but as a result of losses faced in mulberry cultivation, they shifted to ornamental fish farming. They began ornamental fish culture without enquiring about the financial assistance schemes that were provided by various government organisations. Thus, all the investment that went into the preparation of ponds or culture tanks were met by the families. They had also not secured any professional training but took help from a local person who had some technical knowledge regarding different aspects of ornamental fish culture. The local resource person gave advice regarding water quality parameters, breeding, maintenance etc. It was observed that though these families did not have any technical knowledge, they still were very enthusiastic about ornamental fish farming. The activity became integrated into their daily routine along with other agricultural activities. The culture was a household activity for them. Both the husband and wife were involved in all the activities. Men were actively involved in constructing tanks, preparing ponds, setting nets over the ponds so that leaves did not fall into the ponds, quarantining, administering medicines, caring for brood fish, packing fish and transporting them. Besides these culture activities, men were also engaged in various agricultural activities. Women were primarily responsible for the family chores. Along with it, they also were engaged in culture activities such as feeding the fish, exchanging water, removing waste, cleaning premises and

packing fish. The families sold fish both as wholesale (the local resource person who gave them technical advice sourced the fish), as well as carried out direct retail sales. The family members reported that ornamental fish culture fetched them a monthly income of about INR 15,000 to 20,000 (approximately USD 223-297). It was only their personal interest in ornamental fish culture that kept them in the business. They reported that if they had obtained financial assistance they would have developed their business even better. They were also interested to know and try out culture of new or exotic varieties of fish which could fetch them more money. The gender activity profile of both the study areas is shown in Table 1.

Table 1. Gender activity profile in the cultured ornamental fish value chain

Activities	Panangad		Kotatt	
	Women	Men	Women	Men
Productive				
Selection of breeders	✓			✓
Breeding	✓		✓	✓
Nursing	✓		✓	✓
Rearing	✓		✓	✓
Feeding	✓		✓	✓
Water quality check			✓	✓
Cleaning the premises	✓		✓	
Packing	✓		✓	✓
Retail Marketing			✓	
Wholesale Marketing	✓		✓	✓
Export				
Income generation	✓		✓	✓
Employment	✓		✓	✓
Reproductive				
Childcare	✓		✓	
Food preparation	✓		✓	
Caring the elders	✓		✓	
Washing & Cleaning	✓		✓	
Health related			✓	
Community Involvement				
Attending training	✓			
Attendance at meetings	✓	✓	✓	✓
Religious meetings	✓	✓	✓	✓

Since there was marked difference in the attitude of the SHGs in Panangad and the households in Kotatt towards ornamental fish culture, the attitudes were compared and analysed using Semantic differentials (on a 5 point scale)

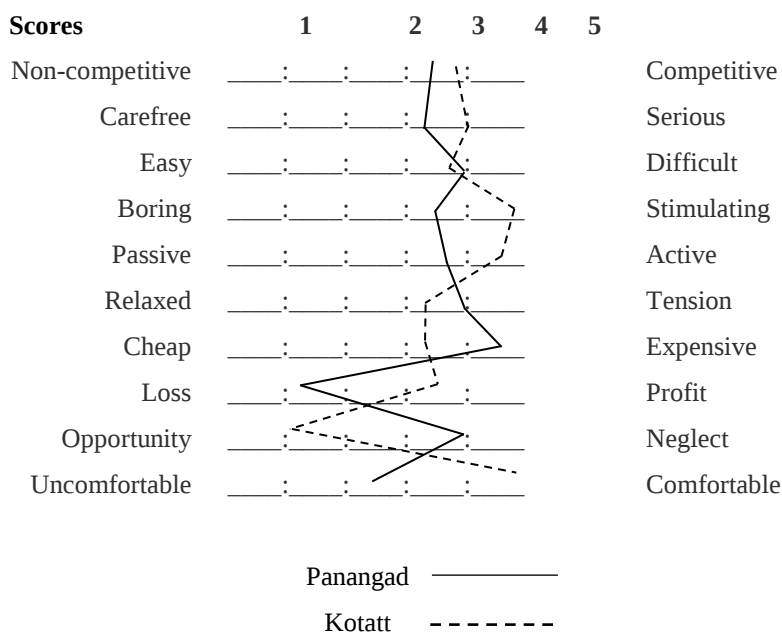


Fig. 1 Semantic differential chart comparing the attitudes towards ornamental fish farming

From Fig. 1, it can be observed that the attitude of women in Panangad towards ornamental fish farming was negative with scores more towards the negative adjectives describing the culture. They felt that the culture was more loss-making with more expense involved in it, giving them no better economic opportunities. Most of them took the activity in a carefree or casual manner thereby not giving due importance to different parameters involved in the culture. The families in Kotatt region had a more positive attitude towards the culture. They felt the farming to be more stimulating, fetching them profit and also giving them better economic opportunities.

Discussion

From examining the value chain of ornamental fish trade in the present study, it was found that there was an incremental value added at each stage in the chain. From the two different cases of Panangad and Kotatt regions, it can

be seen that providing financial assistance and professional training in the field alone may not improve the economic conditions of the women. An important factor in the case of SHGs in Panangad was that the women in the groups lacked the support of their families and also they were more interested in utilising the financial assistance received for meeting household expenses (Ferrer and Barrido 2011; Lentisco and Lee 2015). Lack of support must have led to lack of enthusiasm and that is a probable reason why they did not look for new market possibilities or attempt breeding ornamentals which could have fetched them better prices.

The ornamental fish trade needs large numbers of species or varieties and large quantities of each (Sane 2007). Non-uniqueness and limited specimens discouraged importers trading with India initially (Kawada 2007). The families in the Kotatt region explored ways to venture into new markets by experimenting with new species and their breeding technologies. Their enthusiasm fetched them better prices and also a better market. They were able to meet the orders placed by the customers. Their business was more profitable even without availing of government benefits. If they had been aware of the available financial schemes and the ornamental fish culture training, they may have been able to boost their businesses (Mukherjee 2014; Rameshan and Shaktivel 2014; Shaleesha and Stanley 2000).

Conclusions

The earning potential of small scale ornamental fish farming is not well understood and is not being exploited in a technology-driven manner. The simple technique involved facilitates the enhanced involvement of women without affecting their reproductive roles. Government and government institutions have come up with numerous schemes and projects to help women come forward in the sector. But this study of two contrasting cases in Kerala, India shows that ornamental fish farming could be more successful and beneficial for its participants, particularly women, if those promoting and undertaking the same had better understanding of the available financial and technology assistance and the capacities and aspirations of the families (women and men) involved.

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ANNEXES

Appendix I

GAF5: List of Reviewers

1. Anne Coles
2. Arathy Ashok
3. Aswathy .N
4. Cecile Brugere
5. Danika Kleiber
6. Holly Hapke
7. Kyoko Kusakabe
8. Leela Edwin
9. Linda Cullum
10. M. Harikrishnan
11. Marilyn Porter
12. Meryl J. Williams
13. Nikita Gopal
14. P.K.Sahoo
15. R. Narayana Kumar
16. Rekha Mehra
17. Swatilekshmi P.S.
18. V. Kripa
19. Vipin Kumar V.P.

Gender in Aquaculture and Fisheries: The Long Journey to Equality

Report on the 5th Global Symposium on Gender in Aquaculture and Fisheries (GAF5), Lucknow, India 12-15 November 2014

From beginning to end, GAF5 participants shared the aspirations and frustrations of the long journey to gender equality, and the long way still to go. The greater commitments to gender equality in policies and by aquaculture and fisheries agencies are heartening developments. Of growing alarm, however, is the erosion of women's positions in mainstream aquaculture and fisheries value chains and increasing difficulties in vanishing traditional resource systems. Attempts are being made to redress this and improve women's opportunities with new aquaculture and post-harvest technologies and approaches that may carry better prospects and create more equality. Aquaculture and fisheries are very diverse, and so are the societies and gender norms in which they operate, as reflected by many papers that presented diagnoses of specific cases.

During the inaugural function of the 10th Indian Fisheries and Aquaculture Forum (10ifaf) which hosted GAF5, the Asian Fisheries Science Journal Special Issue 27(S), comprised of the synthesis and papers of GAF4, was officially launched. GAF5 was inaugurated by Ms. Leena Nair, Chairman, Marine Products Export Development Authority (India) with the official party also comprised of Dr. J.K. Jena, Convener, 10ifaf, Dr. Meryl J. Williams and Dr. B. Meenakumari, Co-Chairs GAF5, Dr. Cherdasak Virapat, DG NACA and Dr. Nikita Gopal, Program Chair, GAF5. The inauguration demonstrated the commitment of senior leaders and their institutions to gender equality and their interest in taking the GAF agenda to a wider platform.

Given the greater recent focus this still-small field of effort is receiving, GAF5 was very pleased to welcome many new researchers and development experts who are starting to work on gender within fisheries and aquaculture institutions and development agencies, and in non-government organisations (NGOs).

GAF5 was supported by the Asian Fisheries Society, Asian Fisheries Society Indian Branch, Indian Council of Agricultural Research, Network of Aquaculture Centers in Asia-Pacific, United States Agency for International Development MARKET project (USAID-MARKET), Norad (Norwegian Agency for Development), Marine Exports Development Authority (India), National Fisheries Development Board (India), National Bureau of Fish Genetic Resources, Aquaculture without Frontiers and the presenters and their host organisations.

A long journey and a long way to go

The opening address by **Meryl J Williams** tracked action on gender in aquaculture in fisheries, using the 1979 adoption of the United Nations Convention of the Elimination of All Forms of Discrimination against Women (CEDAW) as the starting point for the journey. She likened the ups and downs along the journey to the peaks and troughs of the Gartner Hype Cycle, with a peak of expectations in about 2000, followed by a trough ten years after, and a slow and hopefully more sustained rise in action and capacity since. Mapping activity from around the world, she classified aquaculture and fisheries organisations into pioneers, the majority and the conservatives that are yet to address gender. She concluded that although the Asian Fisheries Society was a pioneer, it still lacked a vision and strategy for greater effectiveness on gender and needed to strengthen its Genderaqua fish platform.

Several participants shared their own experiences of peaks and troughs in interest in gender in fisheries in their own regions, and in other fields such as health and development. With the strong privatisation trends in aquaculture and fisheries working against women's interests, gender efforts have been slow to show impact. GAF still needs more planning to achieve the scale where it can reach governments with any chance of major impact. Fisheries NGOs are not active in major gender forums.

We face a challenge also in stimulating young researchers to get involved in this field. How can we excite their interest?

This report of GAF5 explores the rich material presented under five themes: (1) greater policy and institutional commitment to gender equality; (2) the eroding position of women in aquaculture and fisheries; (3) new technologies for women and new gender equality approaches; (4) diagnosing diversity and enabling action; and (5) GAF101, networks and GAF information.

Best Paper

Winner

1. S. Inaotombi (presenter) and P.C. Mahanta: Aspects of Traditional Knowledge on Women Participation in Fisheries: A Case Study from Manipuri Women of North Eastern India. [National Bureau of Fish Genetic Resources, ICAR]

Highly Commended

1. Surendran Rajaratnam (presenter), Steven Cole, Catherine Longley: Gender Inequalities in Access to and Benefits Derived from Natural Fisheries in the Barotse Floodplain Western Province, Zambia [WorldFish].
2. BibhaKumari: Decreasing Trend in Participation of Women in Fish Marketing in Patna, Bihar. [Department of Environment and Water Management, A. N. College, Patna, Bihar, India]

Best Posters

1. P. Sruthi, Liya Jayalal, Nikita Gopal: Gender Roles in Fisheries along the Vembanad Estuarine System. [Central Institute of Fisheries Technology, ICAR]

1. Greater policy and institutional commitment to gender equality

The Small-Scale Fisheries Guidelines

One of the achievements of 2014 was the adoption of the Voluntary Guidelines on Securing Sustainable Small-Scale Fisheries [SSF Guidelines] as the first major fisheries legal instrument that includes gender equality aspirations. From a feminist perspective, the International Collective in Support

of Fish workers, which had been a critical civil society partner of FAO and countries in developing the Guidelines, led a panel of presentations and discussion on the Guidelines. According to **Nalini Nayak**, the SSF Guidelines presents a comprehensive and integrated document, covering the whole of the value chain and with a multi-disciplinary approach, but the implementation, which is still being developed, holds threats along with opportunities. The threats include interpretations of governance, rights and wealth creation that are at variance from those of women and other small-scale fishers especially with the ingress of powerful funders and policy advocates with their own social and environment agendas.

Katia Frangoudes analysed the main framework of the Guidelines, pointing out the strengths and weaknesses of having a stand alone article (Article 8) on gender equality, rather than gender being a more cross-cutting issue. Women and gender appear to be used as synonyms in the Guidelines, indicating that little effort has yet gone into understanding the root causes of women's inequality, especially the powerful patriarchy of the sector and society, and curtailing the possibility of transformative approaches to gender relations. Katia raised the critical question: "how will states implement women's equality when experience shows it is a sensitive issue, usually facing resistance, never given priority?" She recommended that women and marginalised groups build autonomous organisations to promote a human-rights based approach to the SSF sector, including advocating that the implementation plan for the SSF Guideline must focus on transformative changes for equitable, gender-just and SSF sustainable development.

Institutional commitments

For the first time, GAF5 was privileged by the very active participation of key institutional leaders.

In her plenary talk, Dr. **B. Meenakumari** (Deputy Director General (Fisheries Science), Indian Council of Agricultural Research [ICAR]), set the scene for women in India's fish sectors. She said that "ignoring women will be ignoring a large portion of the sector and taking away a large part of the pool of expertise." In government fisheries research, women professionals have

increased by nearly 10% over the last decade and now comprise 20%. Case studies of gendered workspaces revealed more involvement of women in inland compared to marine fish supply chains, but women dominate in the post-harvest sector in both supply chains and support productive and reproductive work. In aquaculture, women entrepreneurs are rarely visible but some success stories have been documented e.g., Shanthi (2012). ICAR research institutes are working on women-friendly technology interventions and recognise that these must also be life-friendly to safeguard women's well-being, often in the face of industry-wide technology shifts that have been responsible for marginalising women. In recent years, ICAR has engaged and led more frequent gender and women's events and studies, and insists on gender being an element in all projects. ICAR has been a consistent and active supporter of AFS GAF events, including hosting GAF5.

Dr. **Cherdsak Virapat**, NACA Director General, indicated in his inaugural address and in the NACA Special Workshop (below) that NACA and its member countries would be giving much greater prominence to gender work.

2. The eroding position of women in aquaculture and fisheries

From traditional fisheries, to mainstream fisheries, aquaculture and fish markets, women are losing out to modernisation, conservation, coastal engineering and in the face of natural disasters.

Fading traditions and darkening modernisation

In Manipur state of northeast India, women in indigenous communities are as much involved in the fish supply chains as men, but usually in lesser and less remunerative roles that vary with time, place, region and community. **S. Inaotombi** found that efforts to get women involved in mainstream fishing activities usually failed due to invisible forces. Traditional fishing practices, however, do not require the strength and money needed for more modern variants, and so women are able to undertake these efficiently. Several forms of traditional fishing are undertaken by groups, some exclusively of women or women and children, such as the *long khonba*, a type of meshing in waterlogged areas. Women's cooperatives, women-only markets (*nupikeithel*), traditional fish processing and fish-related rituals of religious,

medicinal and life-stage significance are also important vehicles that have nurtured women's fishing for centuries but are now being lost and ignored. Scientific knowledge can contribute to sustaining women's involvement but only if it fits into and does not deny the structure and content of the traditional knowledge.

Fish marketing in Patna, the capital of Bihar state in north India is undergoing a transition from women dominated marketing (60% of marketers 20 years ago) to declining women's participation compared to men's (45% now), according to **Bibha Kumari**. The marketers explain the slide in women's share of the marketplace as due to problems of physical safety and hygiene, especially with road-side stalls, lack of means to participate, concentration of product outlets as aquaculture develops, and the prevalence of fishermen in the city who also market their own declining fish catches to support their families. To overcome the negative impacts of these changes, a comprehensive program of action, including education (awareness creation and training) for the couples, not just the men, is needed.

Women fish vendors in the busy Mumbai fish markets suffer increasing competition for fish, poor fish handling conditions for their work, and they lack political power, according to the results of the study by **Shudawathi Peke**. State and private sector interventions to upgrade market infrastructure, however, lead to losses for the women, such as lack of fish drying spaces and no places in new markets for street vendors who lead a tenuous existence as it is. More seriously, many market places are being eyed by the building sector as new residence and building sites. The study showed that building women's collective capacity could really lead to their having greater sway, but many loopholes such as lack of knowledge of the opportunities and unequal power, thwart the women's progress.

Technological changes in the traditional ring seine fishery of Kerala has had continuing impact on women's employment, **Leela Edwin** and her colleagues reported in their poster. In the main, women now have difficulty accessing the fish to market them, and other activities are taken over by organised male labour.

From a gender perspective, **Dinesh Kapilly** looked at the 500 year old “Sea Court,” or “*Kadal Kodathy*” (“*Kadakkodi*”), a local community-based judiciary system of the coastal fisher folk in the Malabar Coast of Kerala. He found that the temple-based system does not welcome women into its processes, even though the processes deal with social and family issues, disputes on assets, and fish-catching and marketing related issues. The *Kadakkodi* tries to associate more with women on environmental issues such as environmental protection, anti-sand mining action, and marine turtle protection. Where it still operates, women publicly consider the system’s performance to be “fair,” but privately may not be comfortable. Though the system works well at present in certain places like Kasargod, its future say over certain fisheries matters cannot be predicted owing to the lack of legal protection by the Government on the verdicts issued by the *Kadakkodi* as it is strictly controlled by the community leaders/ representatives.

In the Vembanad estuarine system of Kerala, women undertake many fishing roles within their family units, and the benefits are restricted by the family fishing assets and access, such as to privately controlled fishing areas, according to the poster by **P. Sruthi** and her colleagues.

Environmental and climate change

On the coast at Pekalongan, Java, Indonesia, **Indah Susilowati** reported that climate change was causing severe coastal erosion, and more extreme weather events, causing many fishermen to leave to find work elsewhere and the women to cope with the challenges of maintaining income and shouldering their family duties alone. Many women took on side jobs, networked to build social capital as a safety net and yet still find themselves working harder for less, and they need better and more options to ensure their survival.

Marieta Bañez Sumagaysay presented early results from studies on the women fishers who, in Leyte, Philippines in November 2013, weathered Super Typhoon Yolanda (Haiyan). Within the first 48 hours, the women had to confront acute and traumatic events such as finding food and water, identifying and dealing with the dead and lost livelihood assets and housing. These conditions led to chaos and heightened their concerns for safety and health. Though suffering many natural disasters in the past, they did not understand the

possibility of storm surges as high as coconut trees and were not prepared for it. Nevertheless, out of chaos, resilient and innovative tactics of survival emerged, ranging from looting for food before relief arrived, and pooling resources and services for collective benefit and safety.

Conservation and land reclamation

Shifting Under currents: Seaweeds Collectors of Gulf of Mannar, directed by Rita Banerji for the International Collective in Support of Fishworkers (ICSF), was introduced by Shudawathi Peke. It shows and tells, in their own words, of the lives and livelihoods of women divers who collect seaweed in the Gulf of Mannar Marine National Park off the south Indian state of Tamil Nadu. “Necessity pushes the women to sea,” although their efforts are outlawed under the Park regulations despite the women rejecting the government accounts of their negative impacts, especially in view of those of other large scale users.

Those who talk in the film agree on the need for conservation, but the women divers and their supporters want proper debate on how to protect livelihoods of those who have depended on the environment.

In a massive tidal reclamation project at Saemangeum in South Korea, **Sun-ae Li**’s poster reported how men and women fishers had lost their livelihoods when the embankment was finally closed in 2006 and the enclosed land desalinated, and the valuable common orient clam collecting grounds lost. Many fishermen have left the area, hollowing out the population and leaving behind mainly elderly people. Women, who formerly had several jobs, including in farming, continue to find work, whereas men tend to be alienated and unemployed or have resort to marginal illegal fishing.

3. New technologies for women and new gender equality approaches

New aquaculture technologies

As an ICAR institute generating freshwater aquaculture technologies, the Central Institute of Freshwater Aquaculture (CIFA), Bhubaneswar, Odisha, India has implemented projects to introduce promising technologies (carp

culture, ornamental fish farming, post-harvest technologies and value addition) to women, often through Self Help Groups, and to investigate the impacts, reported **P. Jayasankar** in his presentation and short film. The impact of assessment show that women can succeed, but still they remain in restricted roles and face social taboos, often living in remote areas. A major lesson at the institutional level is that all technology adoption has to be linked to socio-cultural aspects, including age, rural-urban location and the resources.

U.L. Mohanty continued through the value chain and showed by presentation and films how CIFA links the products from aquaculture to value addition, giving women additional livelihood options. CIFA has created and demonstrated to women a wide range of options for fish processing and marketing. They include developing fast food such as tilapia drumsticks and deboned carp, fish noodles, new hygienic fish vending vehicles, teaching women the intricacies of using solar dryers and the *paniki* or *boti*, a traditional filleting tool.

Through her presentation and short films, **B. Shanthi** explained the success by women and men of the Irular people, formerly nomadic tribal people of Tamil Nadu, India, in brackish water aquaculture, namely crab fattening in tide fed ponds and pens, sea bass pen culture, farm made fish feeds, ornamental fish farming, pond polyculture of crab and sea bass, and mushroom farming. The agro-industries were technically backed by scientists of the Central Institute of Brackishwater Aquaculture, and through Self Help Groups. The Irular people earned extra income and the project promoted the value and need to conserve the brackish environment, built self-confidence to the extent that the community has become a role model for similar communities in India. This new option for livelihood can be passed onto the next generation. The projects connected the people to further assistance from government bank loans and international donors.

V.P. Vipinkumar, though his presentation and film, showed the assessed impact of mussel farming introduced to 11 women's Self Help Groups on the Malabar Coast, Kerala, India using a Self Help Group Dynamics Effectiveness Index. Age, occupation and fishing experience were not related to

the Index but participation, group atmosphere and the achievements of the group were very important in the Index.

Madhumita Mukherjee of the National Fisheries Development Board, India described the parlous conditions under which many families live in the Sunderbans (West Bengal) on the coast of the Bay of Bengal, suffering eroding land and severe weather. Many women still eke out a meagre living from tiger prawn post-larvae collection and are constrained by many family obligations from taking up new opportunities. Paradoxically, West Bengal is also the centre of Indian ornamental fish farming that involves 20-30,000 women. About 25 years ago, the industry emerged from local initiatives when people started keeping aquarium fishes in earthen tubs (*“mazla”*), leading to successfully establishing a few breeding units for some common fishes, e.g., gold fish, mollies, platties, sword tails. Women in peri-urban areas are particularly successful; enjoying the benefits of both village and city life, but the industry faces several problems. It now needs better connections with laboratories, and coordination among the industry in the Sunderbans.

In a poster showing the ornamental fish industry in Kerala (wild caught and exotic species), **Liya Jayalal** and colleagues found that women-led units usually failed but those led by men and their spouses were successful. Women need greater awareness in order to become more capable in the commercial value chain.

In discussions on the Indian experience with technology adoption and Self Help Group effectiveness, GAF5 participants highlighted the need to: (1) develop technology and disseminate it using the perspective of sustaining people's life systems, especially taking into account women's social positions; (2) monitor the indebtedness of the women; (3) understand market preferences, e.g., tilapia is not acceptable in all areas; (4) link water pollution cleaning technology with aquaculture given the increasing water quality problems.

Trying new approaches and questioning accepted solutions

In Bangladesh in homestead ponds or *ghers*, **Nasrin Sultana** examined four types of training approaches that targeted women in projects by WorldFish and others. The ponds were used for carp polyculture and shrimp with carp

polyculture. Three of the four forms of training intervention did not have gender elements specifically, although one, the participatory action research, targeted only women. The fourth, the gender transformative research, had a gender strategy. On the basis of the interventions, she observed that projects needed to get beyond conventional methods of training, including training lead farmers and targeting only women, because “gender relations affected the technology, its adoption, use and the distribution of benefits. Women and men share the pond tasks, share the decisions related to pond and execute the technology together. It is not only the women who manage the ponds alone.” However, challenges to more gender sensitive approaches remain, especially as both women and men fear to contravene social norms that restrict the mobility of women, e.g., affecting their ability to sell fish in markets.

In her paper on Cambodian women in the cross-border fish trade with Thailand, **Kyoko Kusakabe** dwelled deeper into the assumption that women gain from greater collective voice and bargaining power. In an area she has studied in depth for more than a decade, she traced the impacts of policy and regulatory shifts and the views of the traders. The efforts since 2010 to organise the traders have largely failed as the trade is predicated on increasing competition among Cambodia traders for raw material and existing personal linkages between Cambodia and Thai traders. Kyoko concluded by raising the question for her study area: depending on the structure of the value chain, are horizontal linkages really useful?

All over the world, women are a major component of the labour force in fish processing factories, not least in Kerala state, India, which has over 100 factories. Accepted wisdom is that conditions in factories are poor and need to improve. In Kerala, they seem to be improving, but for an unexpected reason. In Alappuzha district, local women’s labour has not been sufficient and so women and men from Assam and other northern states have been recruited. **Chacko Babu** and colleagues looked at the numbers and conditions of workers, finding different aspirations among the different types of labour, but overall improving workers conditions in the face of a shortage of workers.

Among the vulnerable communities of the Barotse Floodplain, Western Province, Zambia, gender inequalities give women little access to natural

fisheries resources. Using a mix of social, gender and fish value chain analyses, **Surendran Rajaratnam** and colleagues have been laying the ground work for a gender transformative approach, recognising the special challenges for poor and older women. The long transformative road will require investment in strengthening gender capacities and skills, fostering a new gender-aware view of the world among government fisheries staff, their partners and women and men in the communities.

As part of the invited film session of GAF5, **Enrique Alonso**, co-creator of the acclaimed documentary “**Wawata Topu**– Mermaids of East Timor,” introduced the film and its impact on the women it features. He observed that the film created narrative capital for the women and thus devolved agency to them. By building their narrative capability through and after the film, their good story was able to be heard and is now leading to economic improvements, such as through the well-patronised guest houses they have built for tourists and sales of the DVDs. The East Timor President has visited and the main protagonist was named Women of the Year.

4. Diagnosing diversity and enabling action

Action that is informed by good knowledge of actual conditions, opportunities and underlying constraints is important in any development context, but arguably more so in efforts to create gender equality because many causes of inequality are invisible. Given that attention to gender is still receiving attention for the first time, many of the GAF5 papers reported diagnostic work, revealing a great diversity of circumstances.

NACA-MARKET Special Workshop

The Network of Aquaculture Centres in Asia-Pacific (NACA) and the USAID MARKET¹ project led a Special Workshop based on their thematic studies on gender in aquaculture in Cambodia, Lao PDR, Thailand and Vietnam, chaired by Cherdasak Virapat (DG, NACA) and co-chaired by Arlene Nietes Satapornvanit, Nikita Gopal and Gladys Villacorta. In his introduction,

¹ Maximising Agricultural Revenue through Knowledge, Enterprise Development and Trade

Dr. Virapat pointed out that mainstreaming gender is difficult and much background knowledge is not available. The NACA-MARKET project seeks to turn this around by synthesising existing knowledge and conducting case studies to provide insights into how to mainstream gender. Gladys Villacorta said that the MARKET project overall wanted to identify opportunities for improved women's participation. Nikita Gopal noted that the project scientists were not gender experts, and so the gender experts had been brought in to advice.

Arlene Nietes Satapornvanit kicked off the project presentations with an explanation of the case study approach, which is designed to examine gender in the thematic areas of aquatic health management, environmental governance, aquaculture improvement, better management practices and standards and feed management. She gave an overview of the results of the substantial desk study of existing country policies, guidelines, participation and practices in the four Indo-China countries. She concluded that the most commonly documented facets were the involvement of women in the grow-out (production) and post-harvest (from sale to processing) stages of value chains and these efforts mainly described divisions of labour but rarely analysed the reasons behind or the resulting impacts on women. Also, the field lacked systematic reviews of literature at national levels, especially those that made full use of materials in local languages. The project ultimately aims to create a regional practitioners network to share and grow knowledge and advocate action of the results of gender studies.

In the dialogue following, NACA indicated that it would definitely be using its various other aquaculture networks and partnerships to make gender a cross-cutting issue in their work on markets, sustainability, livelihoods, food security and nutrition and animal health. Gender experts recommended that the case studies and similar projects look to go more deeply in their examination of gender, especially to link it to fundamental issues on markets, the environment and food safety.

According to **Amonrat Sermwatanakul**, gender issues have not been considered an obstacle in Thai society as development, including in shrimp aquaculture has surged. Little is known about the gender dimension but the Thai

government is now starting to pay more attention to it. She and her colleagues are studying small scale shrimp farmers in Chantaburi, Thailand, profiling the shrimp farms and farmers, and the gender roles on the farm. Small scale shrimp farming is a family business and farm operations are closely linked to household operations. Most female shrimp farmers split their time between household chores and farm work, whereas male shrimp farmers spend more hours on farming activities. Women are not likely to be more active unless relieved of some of their household duties. Women receive a fair share of benefits from farm earnings

In the case study of tilapia cage culture by contract farming in rivers in Sakhon Nakhon, northeast Thailand, **Kanit Naksung**, women comprise 20% of the registered tilapia cage owners. The case study found that women tended to stock their cages more densely than did the men, had fewer cages, used less labour and obtained higher profits per kg of fish produced. Little is known, however, of the market price negotiations and risk factors in the system. Kanit stressed the need to look at the whole farming system including the women's household roles as well as cage farming roles, and the social dynamics in which profitable cage farming had brought men back to working at home in this region.

In Vietnam, red tilapia is a major industry in the Mekong Delta region, but women's roles in the value chain have not been studied previously, said **Truong Hoang Minh**. His case study was carried out in Tien Giang province. The study documented women's and men's roles along the value chain. Despite women being active throughout, men dominate activity in this capital-intensive industry, where production operations are frequently located far from the house and not always considered safe for women. Men are critical at key stages, such when obtaining loans as the owners of property. At the stage of harvest and price negotiation also men dominate. Women dominate in buying and selling in local markets, and also in work in export processing factories.

The rice-shrimp rotation value chain in Soc Trang Province, Vietnam, is another export-oriented value chain, according to **Nguyen T.K. Quyen**, but the farming is mostly small-scale and extensive. The gender roles along the value chain had many similar patterns to those of the red tilapia farming, but in the

case of obtaining credit, women and men were equally likely to be responsible, although men typically still dominate land ownership. Although women are involved in most on-farm activities, men are the more active. Overall, in the grow-out farming, women are involved mostly in supporting work and household tasks, but they are in charge of managing household savings and control the finances, are equally involved as owners and managers in the middlemen stage, and as employees in processing plants. Women are also lacking in technical training.

Since these studies have examined activities all along the value chain, one suggestion to the researchers is that they go beyond just divisions of labour and roles in decision making and also look at how value increases up the chain. The researchers were also urged to consider reframing women's safety as conditions subject to violence by some men, which was really the issue to be addressed.

According to **Kao Sovityea**, aquaculture production in Cambodia has grown from 14,000t in 2002 to 74,000t in recent years, but little is known about the number of households involved. A number of studies validate that women are intensely involved, although largely in unpaid roles. In Takeo and Kampong Speu, where aquaculture is intensifying, the NACA-MARKET case studies found that women are involved in more aquaculture activities than men, possibly due to an outmigration of men. No women attended the available training courses, however, due to their household commitments. Kao Sovityea told the story, starting in 1998, of the initial failure and eventual success of one woman and her household in Kampong Speu. Despite the early failure, she persisted, obtained training from the PRASAK organisation, and kept trying to produce fingerlings, in which she succeeded in 2000, growing them by herself. Through daily practice and training from different providers including in Thailand, Vietnam and Indonesia, she perfected the breeding, spawning, nursing and grow-out, and she and her family gradually built up the size and assets of the business, winning local and national recognition, including a gold medal from the Minister of Agriculture, Fisheries and Forestry.

Diversity in aquaculture and fisheries

Women's contribution to the rapid aquaculture development of Bangladesh has been recognised, but largely in the homestead ponds, and much less so in commercial aquaculture. **Karolina Kwasek** reported on a preliminary study involving fish producers, dealer/traders, feed processors, and those in local handmade mills to assess the role and empowerment potential of women in the commercial supply chain. In this sample, only six percent of workers were women, and these were mainly in fish production. The employers were generally well disposed to employing more women because of their perceived advantages as workers, such as their trustworthiness, dedication to work and lower cost, but only 30% planned to engage more women in their workforces. If women to have a greater role and more rewarding employment in commercial aquaculture, then much more needs to be understood about the social and workplace constraints involved.

Working conditions and worker welfare on shrimp farms and other parts of the value chain are receiving more attention in Thailand and exporting countries, including in certification schemes concerned with not just sustainable, but also ethical shrimp production. Despite this, **Arlene Nietes Satapornvanit** pointed out that gender and quality of life issues have still not penetrated the discourse. Her study of Thai and immigrant farmers focused on the production stage of the value chain, in small, medium and large scale farms. Among the migrants from Laos and Myanmar, rice farming and construction work were the workers most common previous occupations. Many workers, including the Thais, were employed as couples, but under a range of business and family-like conditions such as employing couples and employing only men and their wives contributing unpaid support or working in separate occupations. Generally, the workers reported an improved economic, social and physical quality of life on taking up shrimp farming work. Issues still remain, however, such as couples' salaries, access to training for women and non-Thais in their own languages, and migrant status. In the ensuing discussion, GAF5 participants suggested looking in more depth at family labour as this often produces vulnerabilities; the constraints on employing single women; and going beyond the sustainability dimensions to look in more depth at matters such as welfare, social protection, and accident insurance.

In her plenary talk, Dr B. Meenakumari stressed the immense size and diversity of fisheries in India. This is well illustrated in inland fisheries. In his major cross-country study of six states, **Ganesh Chandra** found a spectrum of patterns of gender engagement. On a composite measure of women's empowerment based on measures for drudgery, livelihood, a matrix of fishing activities and from focus group discussions in case study, Gujarat women scored highest on empowerment, followed in order by Madhya Pradesh, Assam, Odisha, West Bengal, and Bihar.

What special functional role could women play in co-management and conservation of fisheries in reservoirs and rivers, asked **Lalit Tyagi**, in looking at gender roles in fishing cooperative societies in four Indian states (Himachal Pradesh, Madhya Pradesh, Odisha and Uttar Pradesh). At present, women often play passive rather than active roles, although this varied with activity and state. He found that the conservation orientation of people tended to vary more by state than gender, but more research is needed to understand the reasons for this. The women and men have been stressed by decline in resources, but will reducing fisherwomen's vulnerability and marginalisation increase their incentives and capacity to contribute to responsible and responsive resource management?

5. GAF101, networks and GAF information

Marilyn Porter led a Special Workshop – “Towards GAF 101 - Mainstreaming Gender into Aquaculture & Fisheries Education” – to gather participants views on the why, who, how and what of basic introductory gender education for fisheries and aquaculture. A rich and wide range of views were contributed and argued, leading Marilyn to conclude in the final meeting of GAF5 that the priority seems to be a beginners course, starting with a one-day workshop prior to GAF6, aimed at those coming fresh to gender in fisheries and aquaculture. Other high priority areas are “train the trainer” courses for planning officers on the ground, delivered in house rather than online. The key challenge to institutionalise any training will be getting to the senior bureaucrats, who will not be amenable to the desired 5 day course – but whose interest could be captured by a set of points to be delivered in half an hour.

Recounting how women in professional positions in aquaculture are often isolated and reluctant to speak out on feminism and women's rights, **Chloe English** developed the case for a call to action by women in the sector. She urged that they: "speak up because we need: a diversity of decision makers; to adapt approaches from companies in other progressive industries; and to connect as individuals to share ideas and support each other." She reported that the new Women's Network that Aquaculture without Frontiers is establishing is being created to help meet the need to connect.

In the seafood industry, "women are like oxygen, rare at higher altitudes," according to the data analysed by **Marie Christine Monfort**, holding only 1% of the top positions such as chairperson, CEO or president in the top 100 seafood companies. Speakers at industry conferences are rarely women, although some slight improvement has been noted in the last few years due to the action of activists. She outlined steps to make the case for the value to the industry of having more women in key positions, and developing an international network to advocate for and mentor women for the benefit of the seafood industry. In debate on the presentation, participants argued both about the innate fairness of women having more access to leadership power, versus the probability that women in large vertically integrated corporations would adopt patriarchal approaches and have little positive impact on helping achieve gender equality, food security and nutrition in fisheries.

Built as an independent and open network in 2000, the Network for Promotion of Gender in Fisheries Management and Development (NGF) in the Mekong River Basin is one of the longest running gender networks. **Dong davanh Sibounthong** described the shape, achievements and challenges experienced by NGF. While being a major support for sharing information and growing knowledge on women and gender in the sector, it still struggles with limited national capacity that affects members' ability to contribute, and low priority for financial support compared to other fisheries activities. In the ensuing discussion, suggestions were made that the network may need to reach out more to the non-fisheries women's units in the regional governments and to look into the underlying resistance from men in the agencies who do not see the importance of these "women's issues."

Since late 2010, the Genderaquafish.org website has been operating in its present form, gradually growing in content and usage. In 2014 it attracted visitors (18,500) from over 160 countries. Thanks to an initiative from Danika Kleiber, a special workshop at GAF5 was conducted by Meryl Williams and Piyashi Deb Roy to canvass ideas for topics that participants would like to see covered and aggregated on the website. The lists will be further developed and will form the basis for a new topic profiling system on Genderaquafish.org.

GAF5 BACKGROUND INFORMATION

GAF5 was supported by the Asian Fisheries Society, Asian Fisheries Society Indian Branch, Indian Council of Agricultural Research, Network of Aquaculture Centres in Asia-Pacific, United States Agency for International Development MARKET project (USAID-MARKET), Norad (Norwegian Agency for Development), Marine Exports Development Authority (India), National Fisheries Development Board (India), Aquaculture without Frontiers and the presenters and their host organisations. It was held as part of the 10th Indian Fisheries and Aquaculture Forum hosted by the AFS Indian Branch at the National Bureau of Fish Genetic Resources, Lucknow, India, from 13-14 November 2014. All supporters are gratefully acknowledged.

GAF5 was the 7th women/gender in fisheries/aquaculture symposium in the series hosted by the Asian Fisheries Society (AFS, www.asianfisheriessociety.org) over the past 16 years. Founded in 1984, AFS is a non-profit scientific society that promotes networking and co-operation between scientists, technicians and all stakeholders involved in fisheries (including aquaculture) production, research and development in Asia. Its ultimate objective is to enhance food security and income-generating opportunities for fisheries workers via sound management practices, environmentally sustainable development and efficient utilisation of the aquatic resources.

GAF5 received over 50 stimulating contributions: 21 oral presentations, including 8 in the Focus India sessions; 6 films and videos, 9 posters, 3 special workshops, including one with 6 oral presentations; one panel discussion comprised of 3 speakers and audience discussion; and one meeting.

Presentations covered global and regional issues and specific issues in 11 countries of **Asia**: Bangladesh, Cambodia, India, Indonesia, Korea, Philippines, Thailand, Timor Leste, Vietnam; **Africa**: Zambia; **Regions**: Lower Mekong River.

Credits for Photos in GAF5 Collage: (l. to r.) U.L. Mohanty (India), B. Shanti (India), Arlene Nietes Satapornvanit (Thailand), L. Tyagi (India), Dinesh Kaippilly (India).

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