



Women's empowerment and gender equity in agriculture: A different perspective from Southeast Asia



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ABSTRACT

Women's empowerment is considered a 'prerequisite' to achieving global food security. Gender systems, however, are diverse and complex. The nature and extent of gender inequity and the conditions necessary to empower women vary across countries, communities and regions. The study of different gender systems is thus fundamental to capture cross-cultural variations in gender specific needs and constraints to effectively address gender gaps. Although the status of women in agriculture has received extensive attention in the literature in recent decades, a research gap persists regarding the state of gender inequity in Southeast Asian agriculture. The current paper contributes to the geographical scope of the literature by presenting empirical evidence of gender inequity from four Southeast Asian countries: Myanmar, Thailand, Indonesia and the Philippines. Using the framework recommended by the Women's Empowerment in Agriculture Index (WEAI), 37 focus group discussions were conducted with 290 women farmers in the above mentioned countries. The results reveal trends that contradict the conventional narratives of gender inequity in agriculture in certain domains of empowerment. In all four countries, women appear to have equal access to productive resources such as land and inputs, and greater control over household income than men. Important intra-regional heterogeneity is observed in terms of community-level empowerment. While women play an active role in agricultural groups in Thailand and in the Philippines, this is predominantly men's territory in Indonesia and Myanmar. These findings imply that country-specific gender intervention frameworks are necessary to overcome gender gaps in agriculture.

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1. Introduction

Women produce over 50 percent of the world's food (FAO, 2011) and comprise about 43 percent of the agricultural labor force, both globally and in developing countries (Doss, 2014). Additionally, women invest as much as 10 times more of their earnings than men do in their family's well-being, in areas including child health, education and nutrition (Duflo, 2012; Maertens and Verhofstadt, 2013; Quisumbing and Maluccio, 2000). Women's empowerment thus has a direct impact on agricultural productivity and household food security (Sraboni et al., 2014; Harper et al., 2013), and as a result it remains at the core of agricultural research and outreach practices in developing countries (Gates, 2014). Donor agencies, local governments and NGOs are increasingly

targeting women as priority clients and strengthening their investments to empower women and reduce inequity between sexes (Gates, 2014; World Bank, 2012). This sentiment has been echoed through the Sustainable Development Goals (SDGs) established during the United Nations Conference on Sustainable Development held in Rio de Janeiro in 2012 (United Nations, 2015): one of the 17 SDGs is "Achieve gender equality and empower all women and girls" (SDG#5) (United Nations, 2015).

Gender systems, however, are diverse and complex. They are determined by community norms and values (Mason and Smith, 2003). The nature and extent of gender inequity and the conditions necessary to empower women vary across countries, communities and regions (Jejeebhoy and Sathar, 2001; Alkire et al., 2013). For example, women in Southeast Asia are generally more empowered compared with women in other developing regions (Mason and Smith, 2003; IFAD, 2013). They have relatively higher decision making power at the household level and they are also more likely

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to have control over their own earnings (IFAD, 2013; Akter et al., 2016a). Further, gender inequity is a multidimensional concept (Alkire et al., 2013). The different dimensions of inequity, such as decision making power over production and income, may vary independently across and within communities (Mason and Smith, 2003). In some communities, women may enjoy considerable decision making power over production and input while they are disempowered with respect to asset ownership, control over income, or community leadership (Alkire et al., 2013). In order to design effective gender intervention frameworks, it is important to acknowledge the context and domain specific heterogeneity in empowerment. In sum, due to the multidimensional nature of empowerment and the diversity and complexity of gender systems around the world, the study of empowerment in different context is essential to capture the cross-cultural variations in gender specific needs and constraints.

The geographical bias in gender research leads to incomplete knowledge of region-specific gender gaps in agriculture. While women's empowerment in agriculture has received extensive attention in the literature in recent decades, empirical research has focused mainly on Sub Saharan Africa and, less commonly, on South Asia. In comparison, women's empowerment in agriculture in Southeast Asia has received limited attention. In 2014, the Food and Agricultural Organization (FAO) and the International Food Policy Research Institute (IFPRI) compiled the current state of gender research in agriculture in the book titled '*Gender in Agriculture: Closing the Knowledge Gap*' (Quisumbing et al., 2014). Table 1 provides an overview of the geographical scope of the book's chapters and the studies that are cited in those chapters. A majority of the studies were conducted in Sub Saharan Africa (59%) followed by South Asia (22%). Only 6% of the studies are from Southeast Asia.

The existing empirical studies of the 'gender in agriculture' literature consistently reveal that women lack access to and control over resources such as land and capital as well as agricultural inputs and technology such as improved crop varieties, training, information and marketing services (Fletschner and Kenney, 2014). Evidence also suggests that women have an unmanageable workload, they lack access to credit or have no decision making power over credit, and are poorly represented in agricultural and non-agricultural groups and organizations (Alkire et al., 2013; Akter et al., 2016b).

Is the story of women's disempowerment and gender inequity in Southeast Asia different than what we have learnt from the studies conducted in other regions of the world? Peterman et al.'s (2014) review of gender differences, which also acknowledges that the bulk of evidence on women's empowerment in agriculture comes from studies in Sub Saharan Africa, suggests that family farming systems in Asia might tell a different story. If region-specific information on gender gaps and gender needs and constraints remain unknown and unaccounted for, the commonly utilized gender intervention frameworks – designed based on existing knowledge and conventional narratives – will be incompatible with realities in less studied regions, and ineffective to bridge the gender divide. To ensure that development efforts are channeled in the right direction and in the right form, research focus needs to shift to regions that have been insufficiently explored in the past.

This paper aims to generate a better understanding of the global landscape of gender inequity by presenting evidence from the Southeast Asian region. We use a qualitative cross-country dataset collected from four Southeast Asian countries: Myanmar, Thailand, Indonesia and the Philippines. In addition to exploring overall regional trends, our study also examines intra-regional variation in women's empowerment in Southeast Asian agriculture.

2. Measuring women's empowerment

The definition of 'empowerment' varies across disciplinary traditions, domains and contexts. Most definitions focus on issues of gaining power and control over decisions and resources that determine one's quality of life (Narayan-Parker, 2002). Alsop et al. (2006) define empowerment as the capacity to translate choices into desired actions and outcomes given the *opportunity structure* within which one operates. Capacity is determined by *agency*, i.e. an actor or group's ability to make purposeful choices, and *opportunity structure*, refers to different aspects of the institutional context. *Agency* is analogous to asset endowment, including psychological, informational, organizational, material, social, financial, and human assets. *Opportunity structure* is measured by the rules, laws, regulatory frameworks, culture, norms and behavior of the formal and informal institutions of a society.

Empowerment in agriculture is generally defined as one's ability to make decisions on matters related to agriculture as well as one's access to the material and social resources needed to carry out those decisions (Alkire et al., 2013). The Gender and Agriculture Research Network of the Consultative Group of International Agricultural Research (CGIAR) recommends two indicators to track and evaluate empowerment (CGIAR, 2014). The first is women's control over productive resources such as land, livestock, water, forests, common property, seeds, fertilizers, machinery, financial assets, and the income from sales of crop, livestock or forest products. The second is women's decision making power over time-use and income, and their decision making power in groups and collective organizations.

The complex and multidimensional nature of empowerment makes it difficult to measure. This is especially true in the context of agriculture, where the concept of empowerment is relatively new. Researchers, practitioners and donors seeking to measure empowerment in agriculture do not yet have a widely accepted instrument at their disposal. The first comprehensive and standardized measure to directly capture women's empowerment in agriculture is the Women's Empowerment in Agriculture Index (WEAI), which was jointly developed by the United States Agency for International Development (USAID), IFPRI, and the Oxford Poverty and Human Development Initiative (OPHI) (Alkire et al., 2013). WEAI is a survey-based index reported at the country or regional level, based on individual-level data collected by interviews with men and women within the same households. WEAI evaluates five domains of empowerment: (i) production; (ii) income; (iii) resources; (iv) leadership; and (v) time. 'Production' and 'income' measure decision making power over farming, livestock, and fisheries, and control over income and expenditures. 'Resources' captures an individual's ownership, access to, and decision making power over productive resources such as land, livestock, agricultural equipment, consumer durables, and credit. 'Leadership' is measured through membership in economic or social groups and comfort in speaking in public. 'Time' assesses allocation of time among productive and domestic tasks and leisure activities. In addition to these five domains, the WEAI measures intra-household gender inequity by comparing the empowerment gap between the primary male and female in each household.

The WEAI has been applied in 13 countries of 5 regions of the world (Malapit et al., 2014). WEAI scores range from a high of 0.98 in Cambodia to a low of 0.66 in Bangladesh. Within Africa, West African countries have the lowest WEAI scores, followed by Southern Africa with higher scores, and then East Africa, with the highest scores. The index has also been used to study the relationship between women's empowerment and nutrition (Malapit and Quisumbing, 2015) as well as women's empowerment and food security (Sraboni et al., 2014).

Table 1
Geographical spread of gender research in agriculture. Source: [Quisumbing et al. \(2014\)](#).

Chapter number and name	General studies	Country and region specific studies					
		Total	Africa	South Asia	Southeast Asia	Latin America	Other
5. Gender asset gap	21	51	25	11	6	7	2
6. Gender equity and land	26	55	32	13	3	7	0
7. Nonland agricultural inputs, technology and services	20	66	50	7	2	5	2
8. Access to financial services	37	64	33	14	5	11	1
9. Livestock	32	86	64	16	1	4	1
10. Gender and social capital	21	49	15	22	6	6	2
11. Nutrition and health	35	38	25	6	3	2	2
Geographical spread			59%	22%	6%	10%	2%

The WEAI index is purely quantitative in nature, leading some to question whether a concept as intangible and unquantifiable as empowerment can be adequately captured by such an instrument ([Kabeer, 1997](#)). For example, a quantitative indicator will fail to capture the fact that although many women hold land titles, this is only for tax or subsidy purposes, and their spouses in fact make all the decisions about land utilization ([Deere et al., 2013](#)). It has also been observed that women have easy access to credit because microcredit organizations prefer women borrowers, but in many cases the loans are controlled by their male relatives ([Goetz and Gupta, 1996](#)). Such issues, which are subtle and not directly observable, play an important role in augmenting or impeding empowerment and can only be captured by qualitative studies ([Mason, 2005](#)). In general, qualitative methods that use in depth, unstructured or semi-structured interviews are more suitable than purely quantitative methods in identifying socio-cultural and religious norms and values that define gender relations in a society. These norms and values are central to understanding empowerment as opposed to simply measuring it ([Rao and Woolcock, 2005](#)). A quantitative empowerment study would typically estimate numerical scores to reflect the level of women's empowerment in different societies. The numerical scores can be used to estimate the impact of empowerment on education, food security and other development and welfare outcomes. However, such a quantitative analysis would not be effective in identifying the factors that lead to such differences in women's empowerment across different societies. Qualitative methods allow analysts to delve deeper into the social architecture and identify the formal and informal institutional rules that contribute to gender gaps in various societies ([Rao and Woolcock, 2005](#)).

The implementation of a quantitative study also poses an operational challenge, as it requires the use of an extended survey instrument that is both resource and time intensive. In addition, a purely quantitatively designed instrument can be cognitively demanding for the respondents, and the data collectors may struggle to understand the questionnaire and what answers to look for ([Johnson and Diego-Rosell, 2015](#)). Due to these challenges, particularly due to resource and time constraint, gender aspects are often excluded from institutional research priorities.

3. Method and materials

3.1. Method

The study uses a qualitative method and collects primary data through a series of focus group discussions (FGDs). A FGD is a qualitative data collection method that systematically and simultaneously interviews a group of individuals through guided discussion ([Babbie, 2011](#)). A FGD not only generates information on collective views but also reveals a rich understanding of the experiences and beliefs that lie behind those views. A standard FGD protocol (topic guide) was used in all countries to facilitate

discussions among group participants ([Appendix A](#)). The order in which the different domains were covered was determined by the flow of the discussion. The protocol contains specific questions related to the five WEAI domains of empowerment (production, resources, income, leadership and time). Two additional domains were included: health problems due to drudgery and women's access to extension service (information).

During the FGDs, the participants discussed issues pertaining to different domains of empowerment. The facilitator reminded the participants to relate these issues to the whole village to reflect what was commonly happening in the village, and not to limit their response to their individual experience. After a thorough discussion among participants, a consensus was reached among group members to describe their levels of empowerment on each domain.

3.2. Agriculture in the study area

The four countries included in the study are among the top ten rice producing countries in the world. Indonesia ranks 3rd, producing more than 50,000 metric tons of rice in 2012; Thailand, Myanmar and the Philippines rank 6th, 7th and 8th, respectively, each producing less than 50,000 metric tons ([FAO STAT, 2012](#)). The locations of the study areas by country are shown in [Fig. 1](#). In Indonesia, two areas were selected for data collection: Yogyakarta on the island of Java, and South Sumatra on the island of Sumatra. Yogyakarta is one of Indonesia's most productive rice growing regions ([Badan Pusat Statistik, 2015](#)), while the district of Banyuasin in South Sumatra has a large area of tidal swamp deltas that have been transformed into a major rice granary in recent decades ([Putri, 2013](#)). Because of the difference in rice farming systems between Yogyakarta and South Sumatra, the data collected from these two areas were analysed separately. In Thailand, data were collected in Chainat and Nakhon Sawan provinces in the Central Plains, which is known as the "rice bowl" of Thailand. In Myanmar, data were collected in Bogale and Maubin townships of the Aye-yarwaddy region, one of the most important rice producing areas, contributing 25% of Myanmar's rice production in 2013 ([Department of Agriculture Myanmar, 2014](#)). In the Philippines, data were collected from Quezon province, an important rice producing area located in Southern Luzon. A full list of the districts and villages covered in the study is presented in [Table 2](#).

3.3. Data collection

In total, 37 FGDs with 290 female farmers were carried out for the study ([Table 2](#)). The FGDs were conducted from May to July 2014 in the Philippines, Myanmar and Yogyakarta (Java, Indonesia), in January 2015 in South Sumatra (Sumatra, Indonesia) and in June 2015 in Thailand. The FGDs were facilitated by the authors of the study in collaboration with a local female facilitator in each country. Prior to the FGDs, the protocol was discussed in depth

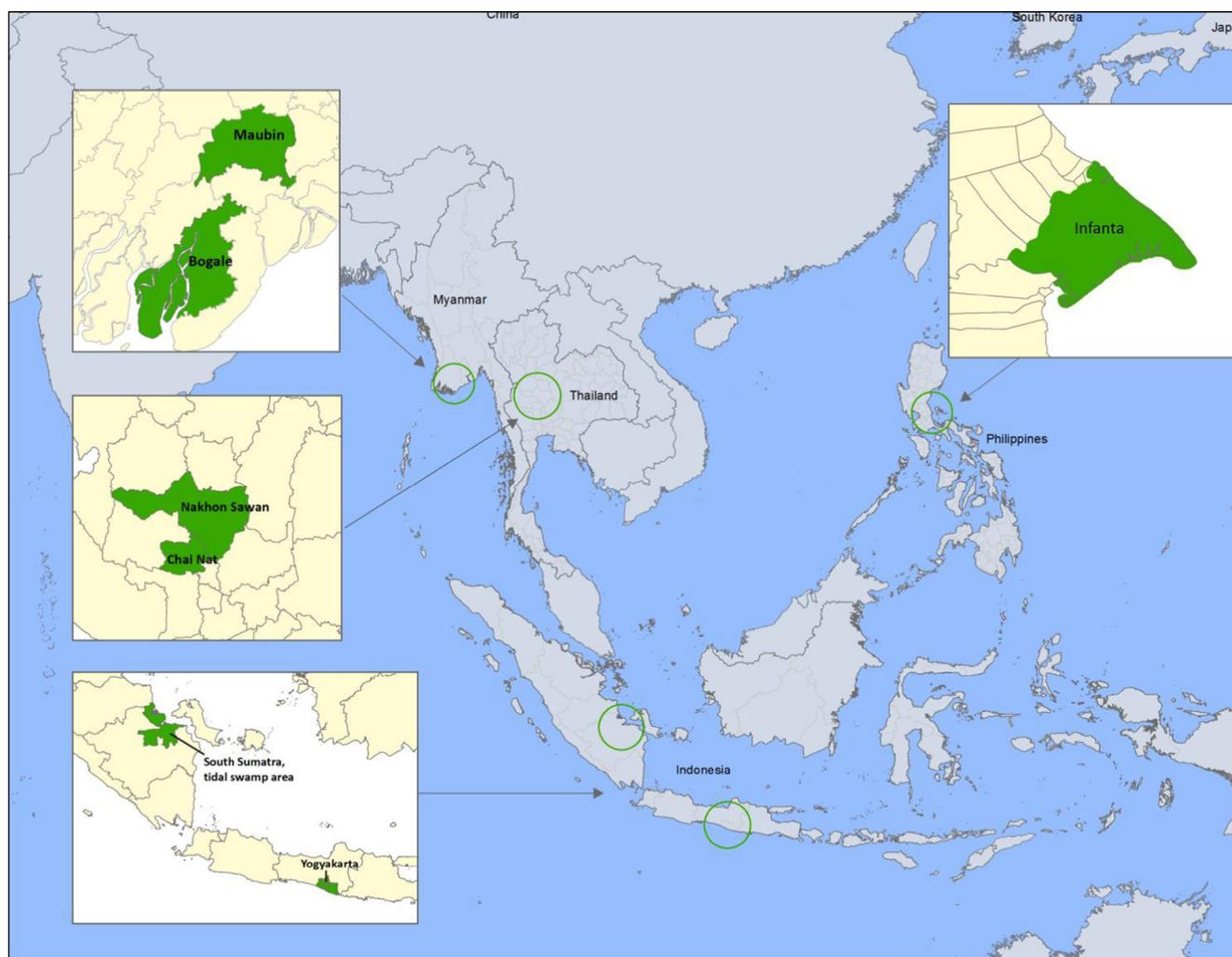


Fig. 1. Location of the study area. Source: Global administrative map - gadm.org.

Table 2

Districts and villages used for data collection and dates of the FGDs.

Country	Indonesia (Java)	Indonesia (Sumatra)	Myanmar	Philippines	Thailand
Region	Yogyakarta	South Sumatra	Ayeyarwady	Southern Luzon	Central plains
District	Berbah, Prambanan, and Piyungan district	Tidal swamp area, Banyuasin district	Bogale and Maubin township	Infanta Quezon	Chainat and Nakhon Sawan
Villages	Jogorejo, Madurejo, Srimulyo, Bokoharjo	Mekarsari, Saleh Agung, Saleh Mulia, Saleh Mukti	Nga Pi Thone Hle, Dar Chaung, Nga Gyi Gayat, Kone Tan	Abiawin, Balobo, Alitas, Silangan, Antikin	Sra Mai Daeng, Nong-Jikree, Sapan Song, Wang Yao
Date of FGD	20–28 May, 2014	18–23 January, 2015	26 June–2 July, 2014	10–11 June, 2014	14–17 June, 2015

with the local facilitator and general guidelines were laid out. The villages as well as the participants were selected together with the local extension agents from the collaborating national research centers or NGOs (Appendix B). Each FGD was attended by six to eleven women who were cultivators, laborers or family workers. The number of participants per group followed generally accepted guidelines for conducting FGDs (Morgan, 1998). The FGDs were held in the local community centers or in the house of one of the participants. On average, each FGD lasted for about 90 min.

3.4. Participants

Table 3 presents the socio-demographic characteristics of the participants. The average age of the participants is significantly

higher in the Philippines, Thailand and Yogyakarta (Java, Indonesia) than in South Sumatra (Sumatra, Indonesia) or Myanmar. Most of the participants are married. Participants' years of education is highest in the Philippines and lowest in Myanmar and Thailand. Land size and land ownership are different across the five study areas. In Indonesia, most farmers own land, but farm sizes in Yogyakarta (Java, Indonesia) are relatively smaller than South Sumatra and other study areas. While most of the participants from Yogyakarta and South Sumatra own land, they also work as wage laborers on other people's farms. Myanmar has the highest proportion of landless participants most of whom have income only from own farm. In the Philippines, land size is relatively smaller but most households own land. The biggest rice farms are found in Thailand followed by Myanmar.

Table 3
Socio-demographic and farm characteristics of FGD participants.

Country	Indonesia (Yogyakarta, Java)	Indonesia (South Sumatra, Sumatra)	Myanmar	Philippines	Thailand
Number of FGD's	9	8	6	7	7
Participants	67	80	45	47	51
Age (average)	49.9	36.7	41.5	55.0	52.7
Years of education	8.5	7.9	5.4	9.5	5.9
Married	90%	97%	89%	96%	78%
Land size (ha)	0.12	2.36	3.00	0.80	5.12
Ownership of land					
Landed	90%	95%	60%	94%	98%
Landless	10%	5%	40%	6%	2%
Engaged in wage labor					
Yes	75%	90%	42%	40%	37%
No	25%	10%	48%	60%	63%

4. Analytical approach

A hybrid process of inductive and deductive content analysis, proposed by [Fereday and Muir-Cochrane \(2006\)](#), is used for data analysis. Content analysis is a method for making replicable and valid inferences from qualitative or quantitative data. The hybrid process of content analysis incorporates both the inductive and deductive approach ([Fereday and Muir-Cochrane, 2006](#)). Inductive analysis, applied when knowledge about a phenomenon is fragmented ([Elo and Kyngäs, 2008](#)), involves the search for patterns emerging from raw data through multiple readings and interpretations of the raw data. Deductive analysis, in contrast, analyses data to test prior assumptions, theories, or hypotheses. It involves a template in the form of codes as a means of organizing the text.

After each FGD, the principal scientist and local facilitator reviewed and summarized the discussion. All FGDs were audio recorded and the English translations were subsequently transcribed. Once the data files were cleaned and put into a common format, the analysis commenced with a close reading of the text. The first step of the analysis was to develop a summary of each FGD in relation to each of the domains presented in the topic guide. Next, the findings of all FGDs conducted in each country were compiled into individual country reports. The third and final step was to look across reports, summaries and transcripts to establish key findings specific to the empowerment domains across the countries, illustrating this with quotes. To facilitate deductive analysis, we used a codebook that had been developed a priori, based on the WEAI framework. The data were coded based on the seven domains listed in the FGD protocol, i.e. (1) production, (2) resources, (3) income (4) leadership, (5) time, (6) health problems related to drudgery and (7) access to extension services or information. For example, control of income was coded as 0, 1 or 2 if participants in a FGD concluded that women have no, partial or full control over household income. The same codes were used for each country. In addition to the numeric codes, a descriptive paragraph was included along with each observation to reflect further details of the nature of the response. The principal scientist and local facilitators then reviewed and assessed the summary reports to conduct inductive analysis. Specific themes were developed based on the emergence of patterns in the summary reports. This process included open coding of categories followed by grouping several categories under higher order categories. For example, production decisions made at the community level were not part of the deductive analysis. During the review of the summary reports, the authors identified this as an emerging theme and hence coded this feature to include it in the data analysis.

5. Results

5.1. Women's role and decision making power in rice production

Across all study sites, there are common patterns in the division of labor among men and women. Specific tasks done mostly by men include seedbed and land preparation, fertilizer spraying and pesticide application. Some tasks are shared between men and women, including transplanting, weeding, manual harvesting and post-harvest activities. Only women are involved in the preparation of lunch and snacks for hired laborers and their delivery to the field. Land preparation is mainly undertaken by men. Women in the Philippines mentioned that they clear and maintain the paddy bund (dikes). In Yogyakarta (Java, Indonesia), Myanmar and the Philippines, manual transplanting¹ is a common practice for crop establishment, while in South Sumatra (Sumatra, Indonesia) and Thailand, rice is broadcasted². Transplanting is commonly conducted in groups, mostly consisting of women, although men can be involved and assist with pulling and distributing seedlings.

During the growth phase of rice, most women spend time on weeding. Applying fertilizer and pesticides is considered a man's job. Manual harvesting is the standard practice in most areas, apart from Thailand and some villages of South Sumatra (Sumatra, Indonesia). In these locations, a combine harvester is commonly used for harvesting. In most places, manual harvesting is done by female laborers, except in South Sumatra, where seasonal male labor is hired for this task. These laborers temporarily migrate from other islands of Indonesia such as Java or Kalimantan. Food preparation for laborers, described as a very time consuming task, is predominantly women's responsibility in South Sumatra.

Women's decision making power in rice farming varies across and within countries. In South Sumatra (Sumatra, Indonesia) and Myanmar, men take a lead role in the field. Nonetheless, men listen to women's opinions and in many of the FGDs (50%), participants mentioned that husbands and wives make decisions jointly. In Yogyakarta (Java, Indonesia), decisions regarding rice farming are made by the community or farmer groups instead of households (78% cases). Women in these locations have minimal influence on community-level decision making. The highest amount of women's involvement in decision making in rice farming is observed in Thailand and in the Philippines. In Thailand, in half of the FGDs, participants mentioned that they have sole decision making power in rice farming, while in rest half of the cases, deci-

¹ Manual rice transplantation is a labor intensive practice of crop establishment in which rice seedlings are grown in a nursery and are planted into rice fields.

² Broadcasting is a relatively less labor intensive practice in which rice seeds are sown directly in the rice field.

sions are jointly made with their husbands. In the Philippines, all rice farming decisions are jointly made by husbands and wives.

5.2. Women's access to resources

Women participants in Indonesia (both Yogyakarta and South Sumatra) mostly are unaware of their land ownership status. In two-thirds of the FGDs conducted in Indonesia, participants mentioned that they own the land but were unsure whether the land was formally registered under their names. In general, most participants in Indonesia believed that all family resources were owned by both husband and wife, and they considered it unnatural for assets or decision-making about assets to be split after marriage. In Myanmar, women participants mentioned owning land in only two cases. In the rest of the cases (60%) where the household owned land, it was registered under the husband's name. A similar tradition was observed in the Philippines, where in most cases land is formally owned by men but women have joint decision making power over land utilization. In Thailand, the pattern of land ownership is mixed. In 40 percent of the FGDs, participants mentioned that they have access to and decision making power over land in practice but are unsure of the formal ownership status. In 30 percent of the FGDs, participants mentioned that new property (land as well as house) is commonly registered under the wife's name because men tend to avoid paperwork and prefer to work in the field.

In all study sites, participants emphasized that, regardless of the formal asset ownership status, decisions about the purchase and sale of land, house or major family assets are made together with their husbands. Day-to-day household management decisions (such as the purchase of groceries or clothes and expenditure on school fees) are commonly undertaken by the wife alone. Decisions about credit are also made in mutual agreement in all countries. Credit is most often used to purchase agricultural inputs, but is also utilized to fulfill daily household needs. This happens more frequently during the month prior to a new harvest. Men have more experience with credit needs for rice farming, while women are more knowledgeable about credit needs for household expenses. A high credit dependency is observed in all countries, mainly due to the high input cost of rice farming (including the cost of labor, seeds, fertilizer and pesticides). Access to credit is not a major challenge for most participants. In Yogyakarta (Java, Indonesia), informal women's groups play a dominant role as the source of credit. In 78 percent of the cases, participants in Yogyakarta mentioned that they borrow money from female credit groups. In other locations, credit is obtained from government banks and non-government organizations.

5.3. Women's access to and control over income

Rice farming is the main source of income for almost all participants of the study areas in four countries. This income is in numerous cases augmented by income from wage labor on other farms. For many farmers, wage labor constitutes a substantial part of their income and is used to cover the shortfall between rice harvests. Additionally, women grow vegetables, raise poultry and livestock, engage in aquaculture and arboriculture, work as teachers or own small businesses. Men earn additional income from construction, hunting or fishing, or working as a laborer in nearby cities. While alternative income sources are available, off-farm income generating opportunities are insufficient in all study sites. Women in the Philippines (30% cases) and Thailand (12%) mentioned that they were looking for more opportunities to boost their income.

In all study sites, the income of the husband and wife is pooled as family income and in most cases (90%) is managed by the wife. In one of the FGDs in the Philippines (Alitas), the participants mentioned

that they are responsible for deciding on the sale of crops and livestock and retain the money they earn from the sale. In other cases, the common practice is for men to sell the produce and collect the money and then hand it over to the women to pay for household expenses. In four cases (one in South Sumatra (Sumatra, Indonesia), two in Yogyakarta (Java, Indonesia) and one in the Philippines), participants mentioned that household income is managed by both husband and wife. Women make decisions about savings, food and non-food expenditures, and household needs (such as education and medical expenses). Participants in South Sumatra mentioned that sometimes a small proportion of the pooled household income is given to the men for their expenses, such as tobacco consumption. However, women decide the amount to be given and monitor how the money is spent.

In all study sites, decisions about large expenses are made together (95% cases). Participants noted that priority expenses include inputs for rice farming (including the costs of labor, seeds, fertilizer, pesticides and machinery) and children's education. Other priorities are daily household needs, food and transportation.

5.4. Leadership and membership in organizations

Women's membership in agricultural and non-agricultural organizations and leadership responsibility are different across the study areas. In the Philippines and Thailand, women in all FGD locations are active members of female-only as well as mixed agricultural and non-agricultural organizations. These organizations have clear governance structures with positions such as president, vice president, and treasurer. In the Philippines, women play strong leadership roles in these organizations. In fact, in all cases, the organizations based in the FGD locations in the Philippines had a women president. In Thailand, women do not have as prominent a leadership role as in the Philippines. Only in one of the nine FGD locations in Thailand, participants indicated that some of the local organizations were led by women.

In Indonesia, women are members of religious groups, neighborhood organizations and small informal credit groups, but there are only a few female agricultural organizations in Yogyakarta and South Sumatra. Participants in only one FGD location in South Sumatra mentioned about the presence of a mixed farmer group of which both men and women are active members. In two other FGD locations of South Sumatra, participants mentioned that agricultural groups existed, but they were not very active. Most agricultural organizations in Indonesia have only male members, and those organizations play a crucial role in agricultural decision-making, especially in Yogyakarta. Decisions about variety selection, planting dates and irrigation schedules are made at the community level, where women have no presence or voice. When women are part of an agricultural organization in Indonesia, it is a women-only group without any decision-making power.

In Myanmar, there are no formal opportunities for women to organize (e.g. for micro-credit or economic activities), but there are strong informal linkages between women in rice farming communities. Men also have fewer initiatives to organize themselves into farmer's groups in Myanmar as compared to the other countries. The only time women are members of an organization is during the planting season, when they work as part of a transplanting group. But outside the transplanting season this group remain inactive.

5.5. Time and drudgery

A significant factor influencing time distribution for women in all study sites is the seasonal workload. While there are not enough hands during the peak seasons, particularly planting and harvesting, the periods in between are characterized by a lack of sufficient

productive activity. During the planting and harvesting seasons, women work in the field for 1 or 2 months in groups from early morning till late evening. In addition to farm work, women perform household chores, including cooking, laundry and cleaning, and looking after their children or grandchildren.

The seasonal work load appear to be most acute for the female farmers in the Philippines among all the study sites. In three out of the seven FGDs in the Philippines, the participants described the periods of intense workload as “exhausting” and “tiresome” while the participants of two other FGDs in the Philippines stated that they prioritize farm work over household work during peak seasons. A mother of a young children from the Philippines said, “I am upset when I cannot take care of my children and if within a day I cannot wash our clothes, the load for the next washing will be doubled, which is more tiresome.” FGD participants in the Philippines mentioned they not only work on their own farm but also work as hired labor on other farms to earn extra money. A tenant farmer from the Philippines described how she allocates her time across peak and off peak seasons: “The month when I am in the field every day from 5am to 9pm is in June. I do transplanting in our farm and I get hired as a transplanter in other farms in this village and nearby villages. In contrast, in January, I stay at home all day. I schedule my farm activities and household chores in a way so that I do not have to sacrifice one activity for the other.”

In Indonesia, in general participants feel that they have enough leisure time. In South Sumatra, the lack of work during the off peak season is considered a bigger problem than work overload during the peak season. In Thailand and Myanmar, workload does not appear to be a big problem for women even during peak season (80% and 70% of the cases respectively). Free time is used for prayer, shopping, watching television or listening to the radio, and chatting with friends and family. Although workload can be a burden, participants from Indonesia, Thailand and Myanmar mentioned that they prefer the busy periods to the lean ones. One female farmer in Myanmar said, “After a long day of transplanting, we eat together and take a good night’s rest. The next day, we are again ready for work”. Women are generally proud of their contributions to farming and family income.

The most commonly experienced health problem due to workload, mentioned in 70% of the FGDs in all study sites, is back pain or body pain more generally. In three FGD locations in the Philippines, women mentioned about other injuries such as snake or insect bites, cuts from knives or sharp tools, and skin damage due to extended exposure to sunlight. Most women in the study sites do not seek medical help to ease the pain. They simply take rest or use home remedies such as body massage or use medicated patches to reinvigorate the strained muscles. In Thailand, all women farmers undergo monthly medical checkups and biannual blood examination to safeguard against pesticide contamination. Participants in the Philippines mentioned they regularly receive vaccines, e.g. anti-tetanus.

5.6. Access to extension services

In more than half the FGDs in Myanmar and Indonesia, participants stated that they lacked access to formal extension service. This statement was echoed by one of the few female extension officers in Yogyakarta: “Most extension officers are men and they do not visit the female farmers although the women are much more active and receptive to new information”. Conversely, in Thailand and in the Philippines, women have direct contact with the extension officers. In the Philippines, women participate more actively than men in most agricultural meetings organized by the local extension office. Men in Thailand and in the Philippines prefer to work in the field and are not very interested in attending trainings or meetings. However, they listen to the information conveyed by their

wives. One female farmer in Thailand said, “While my husband is in the field, I attend the trainings to learn about new techniques and cropping practices. Afterwards, I discuss this with my husband and we implement these new methods in the field”.

6. Discussion

The existing empirical studies of gender in agriculture literature consistently show that women lack access to and control over resources and income. Consequently, the CGIAR Gender and Agriculture Research Network strongly emphasizes improving women’s control over resources and income (CGIAR, 2014). The results of our study, however, show that in the study areas of the four Southeast Asian countries studied, women have equal access to productive resources such as land and inputs, and greater control over household income than men. These findings are consistent with the empirical evidence of women empowerment in non-agricultural sector of Southeast Asia (Mason and Smith, 2003; IFAD, 2013). The gender difference in access and ownership to resources and income is likely to be specific to farming systems of Sub Saharan Africa and South Asia. In Sub Saharan Africa men and women grow different crops in demarcated plots (Duflo, 2012; Udry, 1996), while in South Asia, the agricultural production system is heavily male dominated, and women’s role is limited to post-harvest activities (FAO, 2011; Akter et al., 2016b). In contrast, in the small-scale rice-based farming systems that predominate in Southeast Asia, where husbands and wives work together in the same fields and agricultural inputs are a family’s most important source of income, there is little to no opportunity for such inequities to emerge. This farm-level equity is also mirrored in mutual asset ownership. Although formal land ownership by women is uncommon in our study areas, women have equal access to land and joint decision-making power about the purchase, sale or utilization of land to a point where formal land titles become irrelevant.

A second fundamental discussion in gender equity deals with control over household income as well as control over one’s own income. Research shows that households do not always act in a unitary manner and spouses can have conflicting preferences in terms of the use of income (Haddad et al., 1997). Previous findings from Sub Saharan Africa show that men take over crops or livestock from women (FAO, 2011) or even sell the crops grown by women and confiscate the income (Gates, 2014). Interestingly, in our study areas, control over household income is disproportionately concentrated towards women. Women make the majority of household expenditure decisions alone, and men only occasionally take part in decision-making on major expenditures. This finding reinforces women’s crucial role in managing household budget and thus underscores their potential to act as catalysts to achieve food security, health and education.

Due to the importance of family farming in Southeast Asia, our study gave special attention to collaboration between husband and wife in the field. Across all the study sites, task division between husband and wife in the field is similar, although the intensity of the role played by men and women to perform each task varied. Men take a lead role in land preparation and pesticide and fertilizer application, while women are predominantly involved in crop establishment, weeding, harvesting and post-harvest activities. Women’s workload in rice farming varies between the lean and peak seasons and across farming practices. While peak seasons such as planting and harvesting periods are characterized by heavy workloads both in the farm and in the house, women lack sufficient economic activities during the lean season. In areas such the Philippines, where manual transplanting is a common practice of crop establishment, women’s drudgery is much more acute than in areas such as South Sumatra and Thailand where broadcasting

is more dominant. The level of mechanization also affects women's workload during peak seasons. Labor-saving technologies such as combine harvesters, drum seeders and mechanical transplanters have alleviated women's drudgery and workload in Thailand and South Sumatra (Sumatra, Indonesia) while in the Philippines, where farming practices are still highly non-mechanized, women are overwhelmed by the heavy peak season workload and consequently suffer from numerous health problems.

Besides comparing our findings with the more general narrative of gender equity in agriculture, we examine intra-regional heterogeneity. Although women's access to assets and control over income are fairly homogenous across the study sites, women's decision making power in agricultural production varies substantially. In the production domain, women in Thailand are the most empowered, followed by the Philippines and then Myanmar. Indonesian women have the lowest empowerment. Although women farmers in the Philippines are the second most highly empowered in the production domain, they are the least empowered in the time and drudgery domain. Women in the Philippines are overburdened by farming and household responsibilities, which leads to low wellbeing in general and in specific cases leads to poor health. Except for the Philippines, in all other countries, women appear to have a manageable workload and sufficient time to relax.

The third major difference across the four countries is the degree of women's engagement in agricultural and non-agricultural organizations. In Thailand and in the Philippines, women play an important role in the community and are active in agricultural groups, but men dominate community decisions in Indonesia and Myanmar. In Indonesia, women participate in neighborhood or religious groups, but these groups have no influence on farming decisions. Women's low representation in formal groups leads to a lack of access to extension services in Indonesia and Myanmar where women are keen to participate in meetings and trainings, but invitations typically only extended to men. This is because women in these countries are not yet considered as farmers (Quisumbing and Pandolfelli, 2010). This misconception has been addressed in the existing literature (Ragasa, 2014) but is still ignored in the field.

The inter-country heterogeneity might be linked to socio-political values, culture, religion or family systems. Thailand and the Philippines are predominately matrilineal societies (Mason and Smith, 2003). Indonesia, on the contrary, has a large Muslim population where religious restrictions impede women's mobility outside the house and prohibit communication between the sexes. Previous studies in Indonesia identify the gender of the extension staff as a barrier for women's access to information (World Bank and IFPRI, 2010). This could be one of the reasons for women's lack of access to extension service in Indonesia, where the extension staff are predominantly male. Myanmar's long history of civil war and military government might be partly responsible for women's lack of representation in community and agricultural groups and organizations. Indeed, women's political representation in Myanmar is significantly lower than in other Southeast Asian countries. In 2014, women comprised 5.8% of the national parliamentary decision-making bodies in Myanmar (Minoletti, 2014), while in the Philippines, Indonesia and Malaysia, women's representation in parliament stood at 27%, 18% and 16% (Minoletti, 2014).

7. Conclusion

Gender equity remains at the core of the new paradigm governing agricultural research and outreach practices in developing countries. Despite the importance of gender equity in achieving

food security, addressing and measuring it in a meaningful and practical manner remains a key challenge for practitioners, donors, and researchers. The present study develops and implements a domain-based qualitative instrument for measuring women's empowerment using the WEAI (Alkire et al., 2013). Our qualitative instrument can be used as a quicker and cheaper alternative under circumstances when the resource and time to conduct a full blown quantitative study are insufficient. This instrument can be also used to validate the results of a quantitative study or as a complementary measure to address questions that a fully quantitative study is unable to accommodate.

Our study contributes to the understanding of the geographical scope of the gender gap in agriculture by presenting empirical evidence of gender equity from Myanmar, Thailand, Indonesia and the Philippines. The results reveal regional trends that contradict the conventional narratives of gender inequity in agriculture that have emerged from the studies of farming systems in Sub Saharan Africa and South Asia. Development programs thus should be cautious when extrapolating findings or frameworks from a specific geographical area into global policy guidelines. The CGIAR program, for example, focuses on the improvement of women's control over resources and over their own income (CGIAR, 2014). Although improvement in these areas is necessary in many countries, such principles are unlikely to be relevant in our study areas and in similar places, where men and women have fairly equal control over resources and income. Although there are similarities across the four countries studied on some domains of empowerment such as access to resources and control of income, inter-country differences are observed in terms of time and drudgery, access to extension service and leadership. Such differences reinforces the need for domain specific empowerment assessment framework and context specific gender intervention plan to effectively eliminate gender gaps in agriculture.

Our study used a structured framework for qualitative data collection and a combination of deductive and inductive approaches for data analysis. Although qualitative methods overcome some of the shortcomings of quantitative methods, they suffer from a number of limitations. The most important limitation is the lack of generalizability. Since qualitative studies are in depth and more rigorous than the quantitative studies, they can accommodate only a small number of individuals, making generalization difficult (Mason, 2005). Qualitative methods are also prone to subjective interpretation and therefore are difficult to replicate. Despite our attempt to ensure objectivity and replicability of qualitative data, this study suffers from a lack of generalization of results due to small sample size per country. To address these concerns, scholars have recommended a mixed-method approach that integrates quantitative and qualitative methods (Mason, 2005; Rao and Woolcock, 2005). A mixed-method approach overcomes the shortcomings of each individual approach and yields insights that neither can produce on its own. Finally, the scope of our work is limited to one to two districts in each of the countries studied. Hence, the findings cannot be generalized for the entire country or region. Future work should be carried out using a mixed method approach in other districts of these four countries and other countries of Southeast Asia to test whether similar traditions of women's empowerment are prevalent there.

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Appendix A. Topic guide of the focus group discussions

- (1) Production
 - Participation in rice farming and specific roles
 - Collaboration in the field
 - Decision making in the field
 - Decision making about inputs
 - Reason for decisions made
- (2) Resources
 - Ownership of land and house
 - Ownership of assets (livestock, equipment, durables, ...)
 - Decision making about purchase and sales of land, house and assets
 - Official registration of assets
 - Household decision making
 - Credit: Access, reason and decision making
- (3) Income
 - Sources of income
 - Control over use of income
 - Management family budget
 - Expenditure posts
- (4) Leadership
 - Overview of different organizations
 - Membership/Leadership
 - Organizational structure and influence
 - Public speaking
- (5) Time and drudgery
 - Daily activities
 - Workload
 - Seasonal workload
 - Health related risks
 - Leisure activities
 - Balance workload/leisure
- (6) Access to extension service
 - Access to training
 - Access to agricultural information
 - Access to agricultural technologies.

Appendix B. Collaborating NGO and national research institutes

Country	Local partner
Indonesia	Assessment Institute for Agricultural Technology (AIAT) Yogyakarta and South Sumatra
Myanmar	Department Of Agriculture, WeltHungerHilfe and GRET
Philippines	Infanta Integrated Community Development Assistance Inc (ICDAI)
Thailand	Rice Department and Chainat Rice Research Center

References

- Akter, S., Erskine, W., Branco, L.V., Agostinho, O.F., Imron, J., Spycykerelle, L., 2016a. Gender in crop production in Timor-Leste. In: Nesbitt, H., Erskine, W., da Cruz, C. J., Moorhead, A. (Eds.), *Food Security in Timor-Leste Through Crop Production*. Proceedings of TimorAg2016, an international conference held in Dili, Timor-Leste, 13–15 April 2016. ACIAR Proceedings No. 146. Australian Centre for International Agricultural Research, Canberra. 187 pp.
- Akter, S., Krupnik, T.J., Rossi, F., Khanam, F., 2016b. The influence of gender and product design on farmers' preferences for weather-indexed crop insurance. *Global Environ. Change* 38, 217–229.
- Alkire, S., Meinzen-Dick, R.S., Peterman, A., Quisumbing, A.R., Seymour, G., Vaz, A., 2013. The women's empowerment in agriculture index. *World Dev.* 52, 71–91.

- Alsop, R., Bertelsen, M.F., Holland, J., 2006. *Empowerment in Practice: From Analysis to Implementation*. World Bank Publications, Washington, DC.
- Babbie, E., 2011. *The Basics of Social Research*. Wadsworth, Belmont, CA.
- Badan Pusat Statistik, 2015. *Produksi produk luas (Wide scale rice production data)*. URL: <<http://www.bps.go.id/linkTableDinamis/view/id/866>> (accessed: February 21, 2015).
- CGIAR, 2014. *Common gender & empowerment IDO*. CGIAR Gender and Agriculture Research Network. Montpellier, France. URL: <<https://library.cgiar.org/handle/10947/3171>> (accessed: October 10, 2014).
- Department of Agriculture, 2014. *Department of Agriculture Annual Report*. Ministry of Agriculture and Irrigation, Nay Pyi Taw, Myanmar.
- Deere, C.D., Oduro, A.D., Swaminathan, H., Doss, C., 2013. Property rights and the gender distribution of wealth in Ecuador, Ghana and India. *J. Econ. Inequality* 11 (2), 249–265.
- Doss, C., 2014. If women hold up half the sky, how much of the world's food do they produce? In: Quisumbing, A.R., Meinzen-Dick, R., Raney, T.L., Croppenstedt, A., Behrman, J.A., Peterman, A. (Eds.), *Gender in Agriculture*. Springer, Netherlands.
- Duflo, E., 2012. Women empowerment and economic development. *J. Econ. Lit.* 50, 1051–1079.
- Elo, S., Kyngäs, H., 2008. The qualitative content analysis process. *J. Adv. Nurs.* 62 (1), 107–115.
- FAO, 2011. *Women in agriculture: Closing the gender gap for development*. In: *The state of food and agriculture*. FAO, Rome, Italy.
- FAO STAT, 2012. *FAOSTAT-Statistical Database*, 2012.
- Fereday, J., Muir-Cochrane, E., 2006. Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *Int. J. Qualitat. Methods* 5 (1), 80–92.
- Fletschner, D., Kenney, L., 2014. Rural women's access to financial services: credit, savings, and insurance. In: Quisumbing, A.R., Meinzen-Dick, R., Raney, T.L., Croppenstedt, A., Behrman, J.A., Peterman, A. (Eds.), *Gender in Agriculture*. Springer, Netherlands.
- Gates, M.F., 2014. Putting women and girls at the center of development. *Science* 345, 1273–1275.
- Goetz, A.M., Gupta, R.S., 1996. Who takes the credit? Gender, power, and control over loan use in rural credit programs in Bangladesh. *World Dev.* 24 (1), 45–63.
- Haddad, L., Hodinott, J., Alderman, H., 1997. *Intrahousehold Resource Allocation in Developing Countries: Models, Methods, and Policy*. Johns Hopkins University Press.
- Harper, S., Zeller, D., Hauzer, M., Pauly, D., Sumaila, U.R., 2013. Women and fisheries: Contribution to food security and local economies. *Marine Policy* 39, 56–63.
- IFAD (International Fund for Agricultural Development), 2013. *Gender and Rural Development Brief Southeast Asia*. Rome, Italy. URL: www.ifad.org/gender/policy/gender_e.pdf (accessed: June 2, 2015).
- Jejeebhoy, S.J., Sathar, Z.A., 2001. Women's Autonomy in India and Pakistan: The Influence of Religion and Region. *Popul. Dev. Rev.* 27, 687–712.
- Johnson, K.B., Diego-Rosell, P., 2015. Assessing the cognitive validity of the Women's Empowerment in Agriculture Index instrument in the Haiti Multi-Sectoral Baseline Survey. *Surv. Practice* 8 (3).
- Kabeer, N., 1997. Women, wages and intra-household power relations in urban Bangladesh. *Dev. Change* 28, 261–302.
- Maertens, M., Verhofstadt, E., 2013. Horticultural exports, female wage employment and primary school enrolment: Theory and evidence from Senegal. *Food Policy* 43, 118–131.
- Malapit, H.J., Sproule, K., Kovarik, C., Meinzen-Dick, R.S., Quisumbing, A.R., Ramzan, F., Hogue, E., Alkire, S., 2014. *Measuring progress toward empowerment: Women's empowerment in agriculture index: Baseline report*. In: *Feed the Future*. IFPRI, Washington, DC.
- Malapit, H.J., Quisumbing, A.R., 2015. What dimensions of women's empowerment in agriculture matter for nutrition in Ghana? *Food Policy* 52, 54–63.
- Mason, K.O., 2005. *Measuring Women's Empowerment: Learning from Cross-National Research*. In: Narayan, D. (Ed.), *Measuring Empowerment: Cross-Disciplinary Perspectives*. World Bank Publications, Washington, DC, pp. 89–102.
- Mason, K.O., Smith, H.L., 2003. *Women's Empowerment and Social Context: Results From Five Asian Countries*. Gender and Development Group, World Bank, Washington, DC.
- Minoletti, P., 2014. *Women's participation in the subnational governance of Myanmar*. Discussion Paper No. 3, the Aisa Foundation, Yangon, Myanmar.
- Morgan, D.L., 1998. *The Focus Group Guidebook*. Sage Publications, London.
- Narayan-Parker, D. (Ed.), 2002. *Empowerment and Poverty Reduction: A Sourcebook*. World Bank Publications, Washington, DC.
- Peterman, A., Behrman, J.A., Quisumbing, A.R., 2014. *A Review of Empirical Evidence on Gender Differences in Nonland Agricultural Inputs, Technology, and Services in Developing Countries*. In: Quisumbing, A.R., Meinzen-Dick, R., Raney, T.L., Croppenstedt, A., Behrman, J.A., Peterman, A. (Eds.), *Gender in Agriculture*. Springer, Netherlands.
- Putri, N.E., 2013. Sustainability of tidal region transmigration in the district of Banyuasin, South Sumatra. *Int. J. Humanities Appl. Sci. (IJHAS)* 2, 93–95.
- Quisumbing, A.R., Pandolfelli, L., 2010. Promising approaches to address the needs of poor female farmers: Resources, constraints, and interventions. *World Dev.* 38, 581–592.
- Quisumbing, A.R., Maluccio, J.A., 2000. *Intrahousehold Allocation and Gender Relations: New Empirical Evidence From Four Developing Countries*. IFPRI, Washington, DC.

- Quisumbing, A.R., Meinzen-Dick, R., Raney, T.L., Croppenstedt, A., Behrman, J.A., Peterman, A., 2014. *Gender in Agriculture: Closing the Knowledge Gap*. Springer, Netherlands.
- Ragasa, C., 2014. Improving gender responsiveness of agricultural extension. In: Quisumbing, A.R., Meinzen-Dick, R., Raney, T.L., Croppenstedt, A., Behrman, J.A., Peterman, A. (Eds.), *Gender in Agriculture*. Springer, Netherlands.
- Rao, V., Woolcock, M., 2005. Mixing Qualitative and Econometric Methods: Community-Level Applications. In: Narayan, D. (Ed.), *Measuring Empowerment: Cross-Disciplinary Perspectives*. World Bank Publications, Washington, DC, pp. 285–306.
- Sraboni, E., Malapit, H.J., Quisumbing, A.R., Ahmed, A.U., 2014. Women's empowerment in agriculture: What role for food security in Bangladesh? *World Dev.* 61, 11–52.
- Udry, C., 1996. Gender, agricultural production and the theory of household. *J. Pol. Econ.* 104, 1010–1046.
- United Nations, 2015. *Transforming our world: The 2030 Agenda for Sustainable Development*. United Nations, New York, USA. URL: <http://www.un.org/pga/wp-content/uploads/sites/3/2015/08/120815_outcome-document-of-Summit-for-adoption-of-the-post-2015-development-agenda.pdf> (accessed: December 02, 2016).
- World Bank and IFPRI, 2010. *Gender and Governance in Rural Services*. World Bank, Washington, DC.
- World Bank, 2012. *World Development Report 2012: Gender Equality and Development*. World Bank, Washington, DC.