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 the Millennium Development Goals. Gender systems, however, are diverse and complex. The nature and extent of gender inequality and the conditions necessary to empower women vary across countries, communities and regions. The study of different gender systems is thus eminent to capture the cross-cultural variations in gender specific needs and constraints. Although the status of women in agriculture has received an extensive attention in the literature in the recent decade, research gap persists regarding the state of gender equality in Southeast Asian agriculture. The current paper contributes to the geographical scope of the literature by presenting empirical evidence of gender equity from four Southeast Asian countries, namely Myanmar, Thailand, Vietnam 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 abovementioned countries. The results reveal regional trends that contradict the conventional narratives of gender equality in agriculture. In all four countries, women appeared to have equal access to productive resources such as land and inputs; and a greater control over household income than men. Important intra-regional heterogeneity was observed in terms of community level empowerment. While women played an active role in agricultural groups in Thailand and in the Philippines, this was predominantly men's territory in Indonesia and Myanmar. These findings imply that region specific gender intervention framework is necessary to effectively address gender gaps in developing countries.

1. Introduction

Women produce over 50 percent of the world's food (FAO, 2011) and comprise about 43 percent of the agricultural labor force globally and in developing countries (Doss, 2014). Despite women's significant contributions to agriculture as cultivators, laborers and family workers, they face barriers and inequalities in terms of access and control over resources such as land, capital and credit as well as access to agricultural inputs and technology such as improved crop varieties, training, information and marketing services (Fletschner & Kenney, 2014; Kieran et al., 2015). These factors impede women's ability to improve agricultural production and the well-being of their families (Ragasa et al., 2013). Women farmers' lack of access to land, credit, inputs and extension services reduce their farms' productivity by 20-30 percent than farms operated by men (Quisumbing, 1996; FAO, 2011; Akter et al., 2015). Gender inequality also hinders the progress in other development outcomes such as family planning; maternal, newborn and child health; nutrition; education; and food security (Duflo, 2012; Gates, 2014).

In addition to the intrinsic value of women's empowerment from fairness and social justice perspectives, empirical evidence suggests a strong instrumental rationale for ensuring a gender inclusive process of growth and development (Duflo, 2012). Women invest as much as 10 times more of their earnings than men do in their family's well-being such as child health, education and nutrition (Duflo, 2012; Maertens and Verhofstadt, 2013; Quisumbing and Maluccio, 2000). Empowering women thus have a direct impact on society's development (World Bank, 2012). Hence, women's empowerment is considered a "prerequisite" to achieving the Millennium Development Goals and it remains at the core of the agricultural research and outreach practices in developing countries (United Nations, 2005; Gates, 2014). Donor agencies, local governments and NGOs are increasingly targeting women as their priority clients and subsequently strengthening their investments to empower women and reduce the inequality between sexes (Gates, 2014; World Bank, 2012).

Gender systems, however, are diverse and complex. They are determined by community norms and values (Mason & Smith, 2003; Rahman, 2000). Hence, the nature and extent of gender inequality and the

conditions necessary to empower women vary across countries, communities and regions (Jejeebhoy & Sathar, 2001; Alkire et al., 2013). For example, women in Southeast Asia are generally more empowered compared with women in other developing regions (Mason & Smith, 2003; IFAD, 2013). They have relatively higher decision-making power at the household level and they are also more likely to have control over their own earnings (IFAD, 2013). Further, gender inequality is a multidimensional concept (Alkire et al., 2012). The different dimensions of inequality, such as decision making power over production and income, may vary independently across and within communities (Mason & Smith, 2003). In some communities, women may enjoy considerable control over household income while they are disempowered with respect to production decision. In sum, due to the multidimensional nature of empowerment and the diversity and complexity of gender systems around the world, the study of different gender systems is eminent to capture the cross-cultural variations in gender specific needs and constraints.

In 2014, FAO and 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 different chapters that focus on gender issues at the farm or household level. The table shows that a majority of the empirical studies focused on Sub Saharan Africa (59%) and South Asia (22%). In comparison, an acute research gap regarding the state of gender equality persists in Southeast Asia (6%). This gap impedes our understanding of the region specific gender needs and constraints and makes the commonly utilized gender intervention frameworks inadequate to effectively correspond with local realities. In their review of gender differences in nonland agricultural inputs, technologies and services, Peterman, et al. (2014) acknowledge that the bulk of evidence comes from studies in Sub-Saharan Africa and highlight the possibility of different findings in family farming systems in Asia. For the increasingly intensified development efforts to be channeled to the right direction and in the right form, research focus needs to be shifted on the regions that have been insufficiently explored in the past.

>>>>> Insert Table 1 Here<<<<<<

Given this background, this paper aims to contribute to the geographical scope of the literature. Our main objective is to generate a better understanding of the global landscape of gender inequality. Using a qualitative cross-country dataset collected from four Southeast Asian countries, namely Myanmar, Thailand, Vietnam and the Philippines, we test whether the conventional narratives about gender inequity and women's disempowerment hold true. More specifically, whether the story of women's disempowerment and gender inequity in Southeast Asia are different than what we have learnt from the studies conducted in other regions of the world. In addition to understanding the overall regional trend, our study also examines intra-regional variation in women empowerment.

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 the quality of one's life (Narayan, 2002). Aslop et al. (2006) defined empowerment as the capacity to translate choices into desired actions and outcomes. Capacity is determined by agency, i.e. an actor's or group's ability to make purposeful choices, and opportunity structure, i.e. the aspects of the institutional context within which the actors operate. Agency is often considered analogous to asset endowment including psychological, informational, organizational, material, social, financial, and human assets. The opportunity structure is measured by the rules, laws, regulatory frameworks, culture, norms and behaviour of the formal and informal institutions of a society.

Empowerment in agriculture is defined as one's ability to make decisions as well as the access to material and social resources needed to carry out those decisions exclusively on matters related to agriculture (Alkire et al., 2013). To operationalize this definition for tracking, and evaluating empowerment, the Gender and Agriculture Research Network of the Consultative Group of International Agricultural Research (CGIAR) recommended two indicators (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 participation in making decisions over own labor, own income and the decisions made in groups or collective organization.

The complex and multidimensional concept of empowerment makes its measurement a challenging task. Particularly in agriculture, the concept of empowerment is quite new and hence, measuring empowerment in the context of agriculture in a meaningful and practical manner remains a key challenge for donors, practitioners and researchers. A widely accepted instrument that can be routinely used to measure empowerment in agriculture is yet to emerge.

The first[1] comprehensive and standardized measure to directly capture women's empowerment in agriculture is the Women's Empowerment in Agriculture Index (WEAI). This index was jointly developed by the United States Agency for International Development (USAID), the International Food Policy Research Institute (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 interviewing men and women within the same households. WEAI evaluates five domains of empowerment, namely (i) production; (ii) income; (iii) resources; (iv) leadership; and (v) time. 'Production' and 'income' measure one's decision making power over farming, livestock, and fisheries; and control over income and expenditures. 'Resources' captures 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, a unique feature and important contribution of the WEAI is that it measures intra-household gender inequality by comparing empowerment gap between the primary male and female within each household.

[1] A relatively simpler index, known as Women Empowerment Index (WEI), was used by Paris et al. (2008).

The WEAI has been applied in 13 countries in 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 relation between gender and nutrition (Malapit & Quisumbing, 2015) as well as gender and food security (Sraboni et al., 2015).

Despite being an important first step toward operationalizing the concept of empowerment in agriculture, the WEAI has limitations. Its implementation poses significant challenge from an operational perspective as it requires the use of an extended survey instrument which is resource and time intensive. The index is highly quantitative in nature and the computation methodology is complicated. The sole reliance on quantitative method raises the concern whether a concept as intangible and unquantifiable as empowerment can be adequately captured by a purely quantitative measure (Kabeer, 1997; Baden, 2014). Kabeer (1997) argued that empowerment is not only qualitative but also subjective. Thus empowerment should be measured in terms of one's own interpretation. It was also pointed out that a quantitatively designed WEAI is cognitively demanding, and often the data collectors struggled to understand the questionnaire and what answers to look for (Johnson & Diego-Rosell, 2015).

3. Method and Materials

3.1. Method

The study uses primary data from four Southeast Asian countries, namely Indonesia, Myanmar, Philippines and Thailand. A qualitative approach was considered most appropriate for data collection in view of the limitations of the quantitative approach discussed in the previous section. The theoretical framework of the WEAI was used as the basis of the qualitative data collection protocol. This approach offers much deeper insights in the different dimensions of gender equity and is more user friendly (i.e. less resource and time intensive) than the quantitative WEAI instrument. The qualitative approach also allowed to go beyond the fixed set of questions and explore additional areas connected to women's

empowerment. For example, while women's access to assets and income is well covered in the WEAI, women's access to extension services is not. We also target some issues directly linked to rice farming such as division of labor and health problems linked to drudgery.

Focus group discussions (FGDs) were used for data collection. FGD allows discussion among participants and thus helps elicit collective experience. A standard FGD protocol (i.e. topic guide) developed based on the WEAI framework was used in all countries to facilitate discussions (see Appendix A). The protocol contains specific questions related to different domains of empowerment (i.e. production, resources, income, leadership and time). The order in which the different domains were covered, was determined by the flow of the discussion.

3.2. Data collection

In total, 37 FGDs with 290 female farmers were carried out in four countries. Data were collected from May to July 2014 (Philippines, Myanmar and Indonesia, Java), in January 2015 (Indonesia, South Sumatra) and in June 2015 (Thailand). The FGDs were facilitated by the lead author of the study[2] in collaboration with a local female facilitator. Prior to the FGDs, the protocol was discussed in depth 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 (see Appendix B).

Each FGD was attended by six to eleven women who were cultivators, laborers or family workers. The number of participants per group was based on the general guidelines for conducting FGDs (Morgan, 1998). The FGDs were held in the local community center or in the house of one of the participants. On average, each FGD lasted about 90 minutes. After the discussion, the participants completed a short questionnaire covering socio-demographic and farm characteristics.

[2] In the Philippines, the FGDs were led by a local colleague.

3.3. Analytical approach

All FGDs were audio recorded and the English translations were subsequently transcribed. After each FGD, the principal scientist and local facilitator reviewed and summarized the discussion. The themes of the WEAI were used as framework for data analysis. The first step of the analysis was to develop a summary of each FGD in relation to each of the WEAI themes. Secondly, individual country reports were developed compiling the findings of all FGDs conducted in one country over the time span of 14 months. The third and the final step was to look across reports, summaries and transcripts to establish the detail of the themes across the countries, illustrating this with quotes.

3.4. Study Area

Rice is the most important agricultural crop in all four countries. They are among the top ten rice producing countries in the world (Figure 1). Figure 2 presents the location of the study areas within each country. In Indonesia, two areas were selected: Yogyakarta on Java and South-Sumatra on the island of Sumatra. Yogyakarta is one of the most productive rice growing regions in Indonesia (Badan Pusat Statistik, 2015). The district of Banyuasin in South Sumatra has a large area of tidal swamp deltas that have been transformed into a major rice granary over the last decades (Putri, 2013). Because of the difference in rice farming systems between South Sumatra and Yogyakarta, these two areas will be discussed separately. In Myanmar, data were collected in Bogale and Maubin townships in the Ayeyarwaddy Region. This region is one of the most important rice producing areas in Myanmar, contributing 25% of the national rice production in 2013 (Department of Agriculture, 2014). However, the region was severely affected by Cyclone Nargis in May 2008 which killed over 140,000 people most of whom were farmers (Htwe et al., 2013). In the Philippines, data were collected in Quezon province, an important rice production area in Southern Luzon. In Thailand, data were collected in Chainat and Nakhon Sawan provinces in the Central Plains, which is known as the main “rice bowl” of Thailand. All selected villages are reported in Table 2.

>>> Insert Figure 1 Here<<<<

>>> Insert Figure 2 Here<<<

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3.5. Participants

An overview of the sample characteristics per country are provided in Table 2. The average age of the participants was significantly higher in the Philippines, Thailand and Yogyakarta (Indonesia) compared to South Sumatra (Indonesia) and Myanmar. Most of the participants were married. Years of education was highest in the Philippines and lowest in Myanmar and Thailand. Land size and land division was different in the five areas. In Indonesia, most farmers had their own land but farm sizes in Yogyakarta (Indonesia) are small. While most of the participants had land, they also worked as wage laborers on other's fields. In Myanmar, many landless women in rural villages only have income from farm labor. In the Philippines, land size was relatively small but most households owned land. The biggest rice farms were found in Thailand but almost 40% of the participants earned additional income from wage labor.

>>> Insert Table 2 Here<<<

4. Results

4.1. Production

The role of husband and wife in rice farming was discussed in the start of each interview. Table 3 summarizes rice farming activities in each country by gender. While most areas still relied on traditional cultivation practices, rice farming in Thailand was highly mechanized. Several activities like land preparation and harvesting but also broadcasting, pesticide and fertilizer application on the larger farms were carried out by specialized service providers.

>>> Insert Table 3 Here<<<

Land preparation is mainly a task for the men due to heavy labor requirement, except for Infanta, Philippines. Several women do clearing and maintenance of the bunds in this region. In Yogyakarta (Indonesia), Myanmar and Philippines, transplanting was common practice as crop establishment method while in South Sumatra (Indonesia) and Thailand rice was broadcasted with additional replanting afterwards. Transplanting is commonly done in groups and those groups mostly consist of women. Men were involved in this task and assisted with pulling and distributing seedlings. During the growth phase of rice, most women spend time on weeding. Applying fertilizer and pesticides was considered men's job. Manual harvesting was common practice in most areas except for Thailand and some villages in South Sumatra (Indonesia). In these locations, combined harvester was preferred. Manual harvesting was done in most places by female laborers, except in South-Sumatra where seasonal male labor was hired. Laborers temporarily migrate from different islands in Indonesia such as Java or Kalimantan. The main task of the women in South Sumatra was food preparation for all the laborers which seemed a very time-consuming task. "*One of the main advantages of the combined harvester is that we do not have to wake up at 2.30 in the morning to cook for all the laborers" (female farmer, South Sumatra)*. In Myanmar and Thailand, rice is sold as wet paddy while in the other countries rice is dried by the farmers. Family farming was the most prevalent system in our study areas.

Many women in the four countries were satisfied with their decision making power related to their engagement in rice-farming activities. There were individual differences among the participants in terms of their involvement in decision making but much broader cross-country differences were also apparent. Women's involvement in decision making as well as their participation in rice farming appeared to be highest in Thailand and the Philippines. Participants in these countries indicated that several activities were discussed in advance with their husbands such as selection of variety, type of fertilizer, insecticides and herbicides, irrigation and harvest. The participants pointed out that their advice was taken seriously and often followed. *"We always consult with our husbands but what we really want is that they to listen to us" (female farmer, Philippines)*.

In Indonesia and Myanmar men mostly took a lead role in the field. Nonetheless, the participants mentioned that the men listen to the women's opinions and in many cases decisions are jointly made. In Indonesia however, several decisions in rice farming systems are made by the community instead of the households. Women there tend to have minimal influence on community level decision making. This topic will be discussed further in the leadership section.

If families were involved in other agricultural activities besides rice farming (such as vegetable growing, tree crops, livestock raising), this was mostly led by the wife. When autonomy in decision making was discussed, both for rice farming as well as other activities, most participants stated that they were able to make the decisions they preferred because it was the right thing to do in their opinion, not out of fear or under social pressure. However in Indonesia, participants felt restricted in their choices due to community decision making.

4.2. Resources

Family resources in Indonesia were generally owned by both husband and wife, and decisions about assets are made together. The participants acted surprised by questions about asset ownership and found it unnatural if assets or decision making about assets would be split after marriage. In the Philippines and Myanmar, property such as house and land was usually registered under the husband's name. In Thailand, land and home ownership depend on who inherited property from his or her respective family. However, new property (land as well as house) was commonly registered under the name of the wife. The Thai participants mentioned that their husbands did not like the paperwork and preferred to work in the field. In all countries, participants emphasized that decision making about the purchase and sale of land, house or major family assets were made together with their husband. Day-to-day household management decisions (such as purchase of groceries or clothes, expenditure on school fees, etc.) were commonly taken by the wife.

Decision making about credit was done in mutual agreement. The largest part of the credit was used in most cases to purchase agricultural inputs but also to fulfill daily household needs. This happens more frequently during the month prior to a new harvest. Men had more experience with credit needs for rice farming while women had more knowledge about credit needs for household expenses. High credit dependency was 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 was not a major challenge for most participants.

4.3. Income

In all countries, the income of the husband and wife was pooled as family income and this was almost in every case managed by the wife. *"In the field, the rice is from my husband, but after harvest it's mine" (female farmer, Yogyakarta).* Women make decisions about savings, food and non-food expenditure and the household needs (such as education, medical expense). Decisions about large expenses were made together. Many participants confirmed that inputs for rice farming (including costs of labor, seeds, fertilizer, pesticides and machinery) together with children's education are priorities. Other priorities are daily household needs, food and transport costs. In South Sumatra, men's expense on cigarettes was also frequently mentioned as a major expense.

The main source of income for almost all participants in the four countries was rice farming. This income was in numerous cases complemented with income from wage labor in other farms, performed by both men and women. For many farmers, wage labor constituted a substantial part of their income and was used to cover the shortfall between two harvests. Besides income from rice farming (through harvest or labor), most households had additional off-farm income sources. Women grew vegetables, raised poultry and livestock, engaged in aquaculture and arboriculture, worked as a teacher or owned small businesses. Men earned additional income from construction, hunting, fishing and migration labor in nearby cities. While alternative income sources were available, the current off-farm income generating activities were insufficient in some areas. Several women mentioned that they were looking for more opportunities to

boost their income. This was mentioned most frequently in Myanmar where women's participation in rice farming was the lowest. "*We hear already for a long time that industry will come to this area and we look forward to that but we do not know if the rumors are true" (female farmer, Myanmar).*

4.4. Leadership

Membership of organizations and leadership responsibility were different in the four countries. In the Philippines and Thailand, most women were active members of female only as well as mixed village and agricultural organizations. These organizations had clear governance structure with positions such as president, vice president, treasurer, etc. In Thailand, women traditionally played strong roles in village leadership and community development. In the Philippines, farmers' organizations in the past used to have only male members but now female members are participating and taking over important roles such as leader or treasurer.

In Indonesia, women were member of religious groups, neighborhood organizations and small credit groups but there were only a few female agricultural organizations in Yogyakarta and South Sumatra. There were almost no organizations mentioned where both men and women were active members. Most agricultural organizations had only male members and especially in Yogyakarta, those organizations played a very important role in agricultural decision making. Decisions about variety selection, planting dates and irrigation schedule are made on a community level where women have no voice. If women were part of an agricultural organization, it was a women-only group without any decision making power on a community level.

In Myanmar, there were strong, informal linkages between women in rice farming communities. *"When someone needs support with a wedding or other ceremony, the women of the community will all come to help her" (female laborer, Myanmar).* However, there were no formal initiatives among the women to organize themselves (e.g. for micro-credit or economic projects). The only time women were member of an organization was during the planting stage of rice to work as a transplanting group. During these two

months, one member organizes the work schedule but outside the transplanting season she does not lead any other activities. Also among men, there were fewer initiatives to organize themselves into farmer groups compared to the other countries.

One problem linked to the lack of women's organization was that most participants in Myanmar and Indonesia lacked access to extension service. "*A big difference between the male and female farmer organization of our village is that the extension officer only visits the male group" (female farmer, Yogyakarta).* This issue was mentioned in almost all FGDs and this was confirmed by one of the few female extension officers in Yogyakarta: "*Most extension officers are men and they do not visit the female farmer organizations although the women are much more active and receptive to new information*". In Bogale township (Myanmar) which was severely hit by cyclone Nargis in 2008, a number of international aid agencies and NGO's are supporting the local female communities.

In Thailand on the other hand, women were leading most organizations and they were the ones to have direct contact with the extension officers. Men preferred to work on the field and were not interested in attending trainings or meetings. But they tend to listen to the information they receive from their wives. *"While my husband is on the field, I attend the trainings to learn about new techniques and cropping practices. Afterwards, I discuss this with my husband and we will try these new methods in the field" (female farmer, Thailand).*

4.5. Time

"Normally I wake up at 4.30 am but during the harvest I have to wake up at 2.30 to cook for the laborers. First I pray and after that I have to cook and prepare the children for school. I go to the rice field until 11am and from 1pm until 4pm. When I am back, it is time to prepare the dinner and feed the ducks. And after dinner there is some time to relax and pray. Friday is a more relaxed day because I visit the market and in the afternoon there is a religious gathering" (female farmer, South Sumatra).

A significant factor influencing time distribution for women in rice farming is the seasonal workload. While in many places there are not enough hands during the peak seasons such as crop establishment and harvesting, periods in between are characterized by a lack of sufficient productive activity. Most women were happy with the busy periods because of the abundance of work and income (from wage labor as well as the harvest). During the transplanting season, women work 1 or 2 months in transplanting groups from early morning till late evening. The intense workload during this period leads to health problems such as back and shoulder pain, headaches from dehydration and rheumatism. Firm work can be a burden at that time but these periods were generally preferred over the lean periods. Women were generally proud of their important contributions to firming and family income. 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"*. In Thailand, all farmers underwent monthly medical checkup and donated blood twice a year for blood inspection on pesticide contamination.

Other activities performed by women consisted of household chores such as cooking, laundry and cleaning. Also looking after their children or grand children took up a large part of their time. However, farm work was considered as the main priority: *"I do all farm activities and leave behind household chores, since farming is my major source of income and the source for my household expenditure" (female farmer, Philippines).* Participants felt that they had enough leisure time and the lack of work was considered as a bigger problem than work overload. Free time was used for prayer, shopping, watching television or listening to the radio, and chatting with friends and family.

5. Discussion

Our study contributes to the understanding of the geographical scope of gender gap in agriculture by presenting empirical evidence of gender equity from Myanmar, Thailand, Vietnam and the Philippines. The results reveal regional trends that contradict the conventional narratives of gender equality in agriculture. The existing empirical studies in the gender in agriculture literature consistently showed that

women lack access to and control over resources and income. Consequently, the CGIAR Gender and Agriculture Research Network strongly emphasizes on the improvement of women's control over resources and income (CGIAR, 2014, Russell et al., 2015). The results of our study shows that in all four countries women have equal access to productive resources such as land and inputs; and a greater control over household income than men. The gender difference in access and ownership to resource and income is specific to farming systems of Sub-Saharan Africa where there are demarcated plots as well as crops for men and women (Duflo, 2012; Udry, 1996). In small scale rice farming systems where husband and wife work together in the same fields and agricultural inputs are used in consent for their most important revenue, opportunities for such inequalities appear nonexistent. This household level equity was also visible in mutual ownership of assets and women's control over income, a key topic in gender research. Interestingly, access to and control over household income seems to be disproportionately concentrated towards women. In all four countries, women makes majority of the household expenditure decisions alone. Men only occasionally take part in decision making when a decision about a large spending is involved.

Due to the importance of family farming in rice, collaboration of husband and wife in the field was given specific attention in our study. Task division between husband and wife in the field seemed to be fairly similar in the different countries. Men take a lead role in land preparation and the application of pesticides and fertilizer while women are primarily involved in crop establishment, weeding, harvesting and post-harvest activities. In terms of women's work burden in rice farming system, the results of our study show that women experience more difficulties with seasonal workload particularly during crop establishment and harvesting seasons. Periods in between are characterized by a lack of sufficient economic activities. Labor-saving technologies such as combined harvesters, drum seeder or mechanical transplanter have the potential to alleviate women's drudgery and workload during peak periods and thus improve rural women's well-being. However, these technologies do not solve the problem of inadequate income-generating opportunities for women. These findings suggest the need for a holistic view of rural

development instead of focusing on firming in isolation. Meinzen-Dick et al. (2014) focus on the need to expand the definition of agricultural research beyond field crop production to include homestead gardens, postharvest processing and supply chains.

Besides comparing our findings with the more general narrative of gender equity in agriculture, we also focus on intra-regional heterogeneity. The biggest difference across the four countries was the role of women in the community. While women play an important role in community and are active in agricultural groups in Thailand and the Philippines, men dominate community decisions in Indonesia and Myanmar. Women participate in neighborhood or religious groups but these groups had no influence on community or farming decisions. Women's lack of access to extension and information was also common in Indonesia and Myanmar where men were mostly invited to meetings or trainings while women were also very interested to join. This could be due to the reason that women are still not widely recognized as farmers (Quisumbing & Pandolfelli, 2010). The idea that information provided to men will automatically 'trickle down' to the women was only true in some cases. This misconception has been emphasized in the existing literature (FAO, 2011; Meinzen-Dick et al., 2011; Ragasa, 2014), but is still ignored in the field. These differences might be potentially linked to socio-political values, culture, religion or family systems. Thailand and the Philippines both have matrilineal lines that dominate instead of the patrilineal one (Mason & Smith, 2003). Indonesia, on the other hand, has high proportion of Muslim population where religious restrictions impedes women's mobility outside the house as well as limits communication between opposite sexes. Previous studies mentioned the gender of extension staff as a barrier for women's access to information (Due et al., 1997; 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 staff appeared to be predominantly male. Myanmar's long history of civil war and military regime are partly responsible for the tradition of women's lack of representation in the community. Women's representation in Myanmar is low even at the national level. Women comprise 5.8% of the national parliamentary decision-making

bodies in Myanmar in 2014 (Minelotti, 2014). In the Philippines, Indonesia and Malaysia women hold 27%, 18% and 16% decision making positions in the parliament in 2014 respectively (Minelotti, 2014).

6. Conclusion

We conclude that the gender roles in the agricultural system in Southeast Asia are different than the widely studied systems in South Asia and Africa. Hence, the nature and extent of gender inequality and the conditions necessary to empower women are different in these countries. Although there are similarities across these countries in some dimensions of gender equality such as access to resource and control of income, inter-country differences were observed in terms of decision making power, access to extension service and leadership. These results imply that country specific gender intervention frameworks need to be developed to effectively address gender gaps.

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Table 1: Geographical spread of gender research in agriculture

		Country and region specific studies					
Book chapter	General 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%

Based on the book: Gender in Agriculture: Closing the Knowledge Gap (2014)

Table 2: Overview of data collection

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	20-28 May, 2014	18-23 January, 2015	26 June - 2 July, 2014	10-11 June, 2014	14 – 17 June, 2015
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
Landless	10%	5%	40%	6%	2%
Work as laborer	75%	90%	42%	40%	37%

Table 3: Rice production activities across gender

	Indonesia (Yogyakarta)		Indonesia (S. Sumatra)		Myanmar		Philippines		Thailand	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Seedbed preparation	x	x				x	x	x		
Land preparation		x		x		x	x	x		x
Crop establishment										
Transplanting	x	x			x	x	x	x		
Broadcasting				x						x
Re-planting			x						x	
Crop management										
Fertilizer application		x		x		x		x		x
Pesticide application		x		x		x		x		x
Weeding	x	x	x	x	x	x	x		x	
Harvesting										x
Manual harvesting	x				x	x	x			
Prepare food for labor			x		x					
Post-harvest activities	x		x	x			x	x		

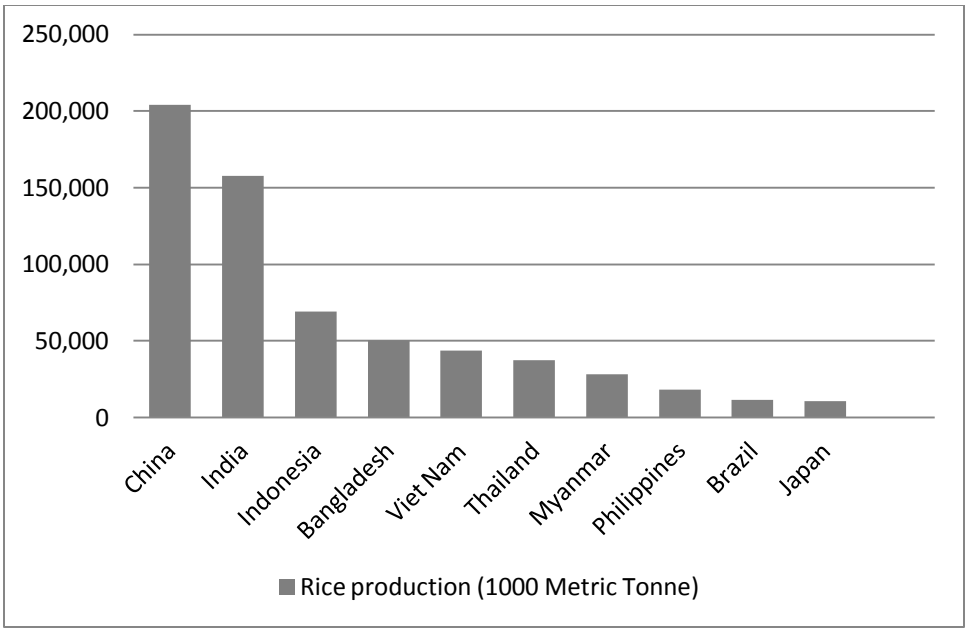

Figure 1: Top 10 rice producing countries in the world (FAOstat – 2012)

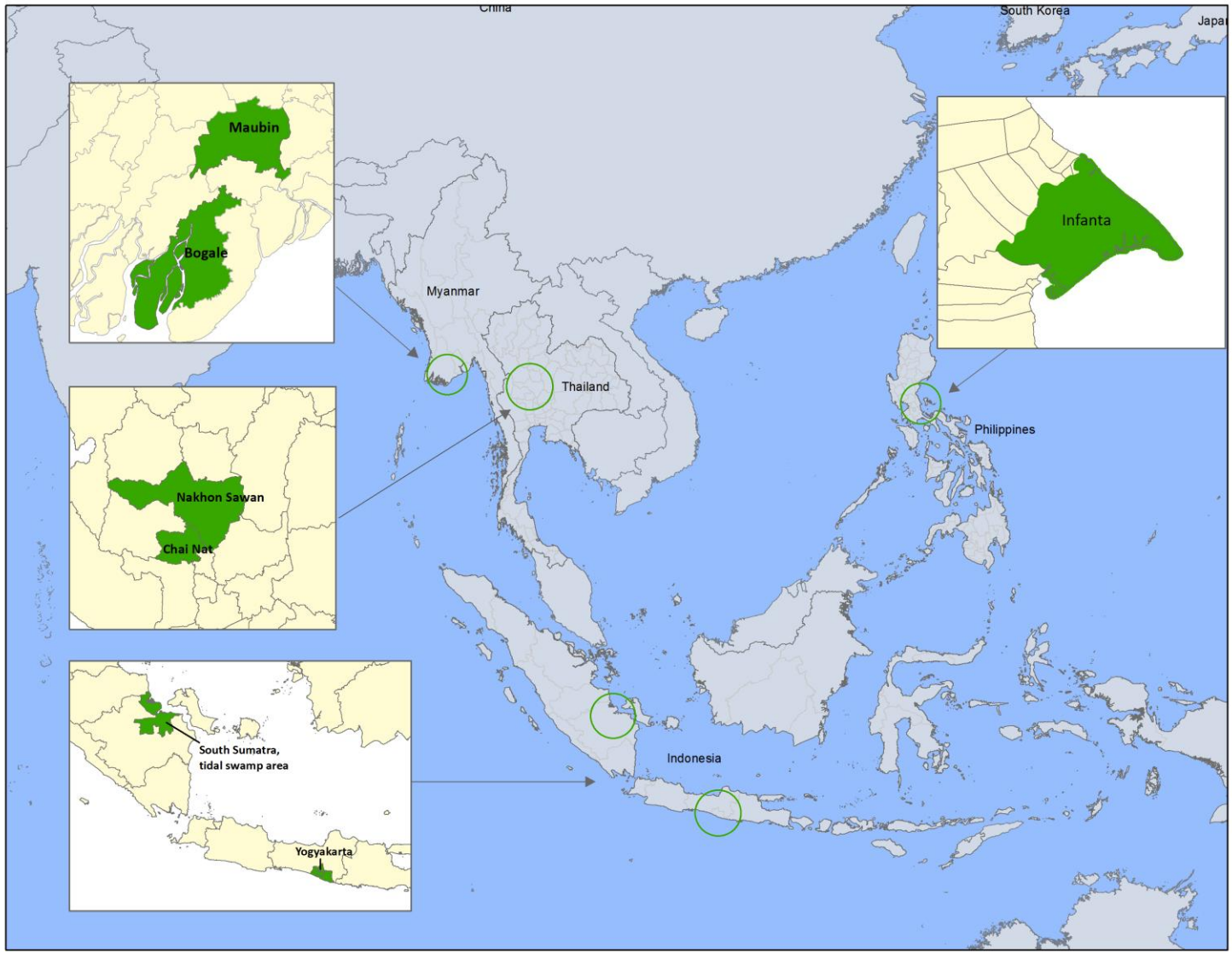

Figure 2: Map of research areas

Appendix A: Topic guide of the focus group discussions

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

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

Income

- Sources of income
- Control over use of income
- Management family budget
- Expenditure posts

Leadership

- Overview of different organizations
- Membership
- Organizational structure and influence
- Public speaking
- Access to services for organizations
- Individual access to services

Time

- Daily activities
- Workload
- Seasonal workload
- Health related risks
- Leisure activities
- Balance workload/leisure

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