

GENDER AND CLIMATE-RESPONSIVE VALUE CHAIN: Analysis on the Rice Value Chain in Viet Nam



Implementation of the ASEAN Green Recovery through Equity and Empowerment (AGREE) Project in Viet Nam



GENDER AND CLIMATE-RESPONSIVE VALUE CHAIN: Analysis on the Rice Value Chain in Viet Nam

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LIST OF ABBREVIATIONS

1M5R	“One Must Five Reductions” model
3R3I	“Three Reduction Three Increase” model
FAO	Food and Agriculture Organization of the United Nations
FGD	Focused group discussion
GSO	General Statistic Office
GSVC	Gender-Sensitive value chains
KII	Key informant interviews
MARD	Ministry of Agriculture and Rural Development
MRD	The Mekong River Delta
OECD	The Organisation for Economic Cooperation and Development
PM	The Prime Minister
PPE	Personal Protective Equipment
RRD	The Red River Delta
SMEs	Small and medium-sized enterprises
SRI	System of Rice Intensification
SRP	Sustainable Rice Platform
UNEP	The United Nations Environmental Programme
USDA	The U.S. Department of Agriculture
WB	The World Bank

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EXECUTIVE SUMMARY

Across Vietnam, women play an important role in agricultural production and in coping with climate change that are causing serious impacts on agriculture and rural society. However, between genders, there are still differences in access to resources, opportunities, responsibilities and rights. So, the gender inequality may cause further negative consequences, especially in limiting women's capability to take action to apply climate-smart initiatives in agriculture. In other words, the more empowered women, the more sustainable development can be achieved. The aim of the study is to analyze gender issues and climate change adaptation of the rice sector, particularly, the roles of women and men, who work in rice value chains, on climate mitigation and adaptation practices; barriers and challenges that hinder women's and men's ability to participate in and access to resources and opportunities in low-carbon rice value chains; climate innovation practices or solutions may help women and men overcome gender-based constraints in rice value chains; and entry points for promoting and scaling women's empowerment and gender transformation in low-carbon rice value chains.

The rice sector plays an important role in Vietnam's economy. According to the GSO (2022), Vietnam has 4.1 million ha of rice land, accounting for 35.8% of Vietnam's agricultural production land. Regardless, Vietnam's rice industry still has many opportunities for development. Through the application of modern farming techniques and high technology, rice production will create more opportunities for farmers, especially the women, to increase their income

The research team collected the opinions of 124 participants in the rice value chain in 2 provinces through questionnaire interviews (94 farmers and related actors) and group discussions (30 farmers). In which, the research team interviewed 70 (by questionnaire) farmers with 54% female. The average age of rice farmers is from 47-62 years old, specifically: the Northern farmers have an average age of 61.3 years old, and the Southern farmers have an average age of 47.7 years old.

The research has evaluated six rice-farming models, including (i) 02 models of traditional practice in Thai Binh and Kien Giang province; (ii) 01 model of System of Rice Intensification (SRI) in Thai Binh province; (iii) 01 model of One must five reductions (1M5R), (iv) 01 model of Rice-shrimp intercropping, and (v) 01 model of Sustainable rice platform (SRP) in Kien Giang province. Information was collected via focused group discussion (FGD) and the key informant interviews (KII) with key stakeholders in the rice value chain.

Key findings

The results of the study showed that women participate differently in the value chain between the North and the South. Especially, in the production stage, females play an important role in rice farming in the North while males play that role in the South. In both regions, the climate-smart models have higher female participation than the traditional ones, which implies that the climate-

smart models tend to give chances for women to join better and more efficient rice-growing activities.

The gender constraints in Vietnam's rice value chain were found in the aspects of perceptions and decision power, access to financial, production, and communication resources, division of labor, and the health care of female farm workers. First of all, gender stereotypes still influence perceptions and decision power in rice farming and even in the rice business. Secondly, women farmers lack access to information on off-farm job opportunities, and are unequal in approach to vocational training courses and communication and discussion on work opportunities. Thirdly, in the case of the Northern provinces, all family labor share information on the household's production and economic activities (e.g. credit), but making decisions to take out the loan/credit is usually made by women (70% answer is women). Fourthly, women in the North seem to take responsibility for too many activities in their daily life rather than women in the South. Finally, the negative effects of the working environment and chemical residuals to the health of the women labor have not been paid due attention and yet to be introduced via training in public services and community activities.

Recommendations

To promote women's empowerment and gender transformation in low-carbon rice value chains, the study suggests three entry points including three aspects: increasing economic efficiency, improving social communication, and increasing farmers' health care.

1. Firstly, the study suggests that increasing the training should be a must, because it will promote the application of climate-smart models, then increase the farmers' income in the context of climate change. Besides the application of mechanization, there should also be a focus on increasing production efficiency by applying modes such as SRP, SRI, 1M5R, and Rice-shrimp intercropping, as well as reducing human workload, to help women have more time to enjoy their lives or earn more income from other off-farm activities. More importantly, job-creating (non-farm jobs) in the local areas should also be paid more attention to help farmers to gain more income.
2. Secondly, it is also necessary to run some social communication campaigns to support more participation of the family farm workers in training courses, especially in the North. To make this more effective, strengthening women's associations should also be launched. And finally, regarding farmers' health care, support towards increasing social insurance participation should also be considered.
3. Furthermore, it is necessary to raise awareness and convince enterprises to invest more in developing their farmers' community.

I. INTRODUCTION

1.1. Rationale and Scope

Across Vietnam, women play an important role in agricultural production and in coping with climate change that are causing serious impacts on agriculture and rural society. However, between genders, there are still differences in access to resources, opportunities, responsibilities and rights. So, gender inequality may cause further negative consequences, especially in limiting women's capability to take action to apply climate-smart initiatives in agriculture. In other words, the more empowered women, the more sustainable development can be achieved.

Vietnam is a country with great advantages in the production of rice, tropical crops, and aquatic products, and is a major exporter of agricultural products in Southeast Asia, and the third largest rice exporter in the world. According to the Ministry of Agriculture and Rural Development (MARD) (2022), Vietnam's rice exports in 2022 are estimated at more than 7.1 million tons, valued at 3.46 billion USD. Along with many trade agreements signed, it is expected that the rice industry of Vietnam will continue to grow in the future. In particular, in the Mekong Delta, rice is still the main agricultural production generating the main income for farmers. However, rice production is also an industry heavily affected by climate change (WB 2021). In response to the challenges posed by climate change, many climate change adaptation models in rice farming have been studied and applied in Vietnam.

This report will focus on analyzing gender issues and climate change adaptation of the rice sector in Vietnam.

1.2. A review of the rice value chain in Vietnam

1.2.1. Market status and outlook

Rice is one of the most important grains consumed by the world, accounting for 18.4% of the global grain domestic consumption, after corn and wheat (USDA 2022). This staple food is mostly produced and consumed in Asia (FAO 2021).

According to USDA (2022), global rice production has grown steadily over the last decade, with an average annual growth rate of 0.8%/year. Total productivity in 2021 tends to increase slightly, reaching 510.3 million tons, up 0.6% compared to 507.5 million tons in 2020. Of which, 10 countries with the largest rice production are China, India, Bangladesh, Indonesia, Vietnam, Thailand, Myanmar, Philippines, Pakistan, and Brazil. The total rice production of the top 10 countries accounts for 84.9% of the world's total rice production (milled). Ranking first is China with 149.0 million tons (accounting for 29.2% of the total rice production), followed by India with 125.0 million tons (24.5%); then Bangladesh, Indonesia, and Vietnam with the output of 35.9 million tons (7.0%), 35.4 million tons (6.9%) and 27.2 million tons (5.3%) respectively.

Global rice consumption has grown firmly over the last decade, with an average annual growth rate of 1.1%/year (USDA, 2022). In 2021, rice consumption worldwide reached 509.3

million tons, a slight increase of 2.1% compared to the previous year of 498.6 million tons. Of which, the 10 largest rice-consuming countries are China, India, Bangladesh, Indonesia, Vietnam, Philippines, Thailand, Myanmar, Japan, and Brazil. The total rice consumption of these 10 countries accounts for 79.7% of the world's total rice consumption, led by China with 154.8 million tons (accounting for 30.4% of the world's total rice consumption), India with 103.0 million tons (20.2%), then Bangladesh, Indonesia, and Vietnam with 36.7 million tons (7.2%), 35.6 million tons (7.0%) and 21.5 million tons (4.2%) respectively.

OECD report on 2022 forecasts world rice production will continue to increase by 1.1%/year during 2022 – 2029, while world rice consumption will continue to grow at a rate of 1.1%/year in the same time. Global rice consumption can gradually increase in the future because of population growth, however, the rice consumption per capita may reduce because of Asian changing food preferences (Durand-Morat & Bairagi 2021). Indeed, people will tend to consume other high nutritional foods such as meat, milk, and vegetables, as a result of their increasing income (Mohanty 2013; Mottalet et al. 2018; Bairagi et al. 2020). In Vietnam, according to the General Statistic Office (2021), in the period 2010-2020, Vietnamese people reduced rice consumption from 9.7 kg/person/month in 2010 to 8.1 kg/person/month in 2018 and only 7.6 kg/person/month in 2020.

Rice production, however, is vulnerable due to the impacts of climate change, including extreme weather events such as droughts and floods. Meanwhile, there is strong evidence of increasing demand for “green products” and rice is not an exceptional case. There are many “green” rice available in Vietnam such as “ecological” rice (from rice-shrimp or rice-duck models), organic rice or rice that has sustainable quality standards such as SRP, etc. According to a recent survey, demand for those “green” rice products is expected to double by 2025 (Sustainable Rice Platform 2022). MARD, with support from international organizations such as WB, FAO, IRRI, etc. is actively promoting climate-smart practices and “green” rice models to mitigate the climate change impacts as well as to increase the value of Vietnamese rice products.

1.2.2. Policy review

Vietnam’s government considers rice to be one of the most important sectors for food security. One of the most influential policies is Resolution 26/NQ-TW on agriculture, farmers, and rural areas issued by the Central Executive Committee dated August 5, 2008. This policy outlines the objectives for Vietnam’s agricultural sector until now. Some objectives of this policy are continuously improving the material and spiritual life of the rural population, harmonizing the regions, and creating faster changes in the areas with many difficulties; trained farmers have the same level of production as other advanced countries in the region and have enough political will to play a role in the ownership of new rural areas; build comprehensive and sustainable agriculture and a large-scale commodity production with high productivity, quality, efficiency and competitiveness and firmly ensure national food security... Based on the Resolution, series of sub-policies have been issued over the years, such as support policies and national programs on

seed development, rural infrastructure, agro-processing and mechanization, value chain and contract farming etc.

Recently, along with international integration, Vietnam has actively joined many international commitments. In the United Nations Climate Change Conference in Glasgow (COP26), Vietnam's Prime Minister Pham Minh Chinh stated that Vietnam will reach its net-zero carbon emission target by 2050. To achieve that target, in January 2022, the Prime Minister approved the "Strategy for Sustainable Agriculture and Rural Development, Sustainable period 2021-2030, Vision to 2050". In addition, MARD is developing a plan to reduce greenhouse gas (GHG) emissions in the agriculture and rural sector for the period 2021-2030, with a vision for 2050. Vietnam sets an overall reduction target of 250.8 million tonnes based on its NDC Plan including other sub-sectors such as Energy, Agriculture, Land Use, etc. Relevant to agriculture, key targets until 2030 include, at least 30% of the total irrigable dryland crop area, advanced and water-saving irrigation methods shall be applied.

The PM's Decision No.150/QĐ-TTg dated Jan 28th 2022 approved the *Sustainable Agriculture and Rural Development Strategies, 2021-2030*. With a vision towards 2050, Vietnam targets that by 2030, the GDP growth rate of agriculture, forestry, and fishery products will reach an average of 2.5-3% per year, the productivity growth rate of agricultural, forestry and fishery workers will reach an average of 5.5-6% per year; expanding and developing markets, especially export markets, with an average export value growth rate of 5-6%/year. *The main solutions include improving the quality of vocational training; transferring science technology and innovation; developing domestic and foreign markets to ensure stable consumption markets for agricultural products; promoting digital transformation in agriculture and rural areas; proactively adapting to climate change and managing risks.*

1.2.3. Key characteristics of Vietnam rice production

The rice sector plays an important role in Vietnam's economy. According to the GSO (2022), Vietnam has 4.1 million ha of rice land, accounting for 35.8% of Vietnam's agricultural production land. With the three cultivation seasons per year, Vietnam's rice area can reach 7.3 million ha. Vietnam produced 42.8 million tons of rice, which is equivalent to 27.1 million tons of milled rice, of which, 78% of total production is for domestic usage.

The Mekong River Delta (MRD) produces 55% of Viet Nam's rice volume and contributes 90% of total national rice export each year. Its annual yield reached 58.1 quintals/ha on average (GSO 2022). Some largest provinces producing rice are also located in this region. Specifically, by 2021, Kien Giang has 395.7 thousand ha of rice land, An Giang (242.3 thousand ha), and Dong Thap (221.6 thousand ha).

A prominent characteristic of rice production in Viet Nam is the tiny farm size and fragmented production. The national average paddy area in 2016 was 3,468 m²/household, an

increase of 1.28% compared to 2011 (GSO 2016). In particular, MRD had the largest average area of 11,786 m²/household (equivalent to 1.1 ha/household) in 2016.

Regarding export, Vietnam exported around 6.2 million tons of milled rice in 2021, and more than 7.1 million tons in 2022, achieving the position of the global second-largest rice exporter. Regarding value, rice export value reached 3.29 billion US dollars in 2021, and 3.46 billion USD, in 2022, accounting for around 15.2% of Vietnam's total crop export value this year, after cashew, fruits & vegetables, and rubber (Vietnam Customs Office 2022; MARD 2022).

However, this sector is threatened by many problems:

- Climate change causes the increase of sea-level which cut off Vietnamese rice area by land underwater and saline intrusion;
- Polluted environment, especially land, after a long time of pesticide overuse;
- Fluctuated market price.

Regardless, Vietnam's rice industry still has many opportunities for development. Through the application of modern farming techniques and high technology, rice production will create more opportunities for farmers, especially the women, to increase their income. According to IPSARD (2022), by-products from rice production such as straw and rice husk are also a great resource for other valuable commodities such as animal feed, mushroom cultivation, etc.

1.3. A review of gender-based issue in rice value chain¹

Women are the main labor force in Vietnam's rural areas (Barcucci, Cole & Gammarano 2021), who are about 58% of the rural population who join agricultural production activities (Bao 2016). Aside from their significant contribution as labor force in rice production, rural women have to do a lot of housework, such as cooking, cleaning, and caring children, and in the same time, working in agricultural activities such as growing rice and vegetables, raising livestock and aquaculture etc. Women is the main workforce but sometimes they are at a lower position than men in the social system as well in family, which is not commensurate for their role and contribution. Nhan, Anh and Liem (2014) indicated that only 25.3% of women have the right for managing assets and leading production activity.

Industrialization has withdrawn land from agricultural use. The lack of production land makes farmers go for other non-farm activities, and men are usually the one who going out for work while women tend to stay home for housework and agricultural activities. This situation is also caused by the social gender prejudices about the woman's role. Chien, Hoan and Huong (2017) and Chinh (2019) all agreed that the gender stereotype problem is popular in rural Vietnam and tagged women with the fixed role of houseworks. Besides, lacking men working on the farm

¹ This study focuses on understanding women's participation in rice value chain activities. Meanwhile, the reviewed research did not refer directly to women in rice farming, but to a group of rural women with a large proportion of women engaged in rice farming.

gives more health threats to women because they have to cover more hard and hazardous works that should be implemented by men such as plowing and pesticide-spraying.

Although women play an essential role in the food system and rural development (Tuyet 2017), they often experience disadvantages compared to men such as limited access to production resources and credit, unfair division of labor, and health threat.

2. *Regarding production resource access*, rural women have limited access than men to land, capital, or other resources. This makes them more dependent on men. Besides, due to this limitation, the woman can also suffer from narrower access to education, and training which have an important role in their self-development, so limiting their possible opportunities in work and life.
3. *Regarding access to credit*, although the national laws and policies affirm that women and men shall have equal access to credit, there are still significant disparities in reality. Importantly, due to not being the head household, women are sometimes not allowed to have their names on Certificates of Land Use Rights, which prevents them from applying for credit funds.
4. *Regarding the division of labor*, the difference in time distribution for housework between women and men is also a factor causing the gender and income disparity between men and women. Rural women usually have to handle most of the housework and take care of the family, while men are mainly responsible for working especially non-agricultural work. In other words, women often have to work longer than men, and this affects their leisure time and happiness. Institute for Social Development Studies (2015) showed that women do more agricultural work than men. While men engage in pesticide-spraying and land-preparing, women participate in most remaining stages from planting, fertilizing, weeding, harvesting, tending, processing, selling products, managing revenue, and expenditures.
5. *Regarding the health of female workers in rural agricultural production*, due to heavier division of labor, women are threatened with a higher workload that can seriously affect their physical and mental health (Thuy 2002). Specifically, women must cook daily meals for the family, take care of the children while still need to participate almost of rice production stages. Of which, their health is greatly affected by weather and field environment (Wocan Info 2018). As a result, environmental pollution in agricultural production and rural areas also affects the health of women more than men, because women are the main actors dealing with agricultural farming (Ministry of Labour - Invalids and Social Affairs 2010).

Some literature review indicated clearly that women plays the main role in rice growing at the Northern part of Viet Nam. However, regarding the Southern provinces where are the main rice production area of Vietnam, the research results are quite heterogeneous and not defined clearly which gender plays a more important part in rice growing (Gallina & Farnworth 2016). So, this possibly brings constraints to policymakers or program planners in finding an exact intervention to increase gender equity in the rice supply chain.

II. STUDY DESIGN

2.1. Objectives

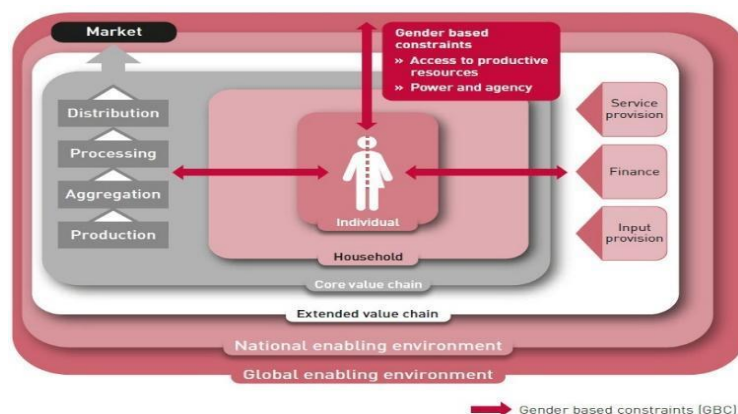
- To identify roles of women and men, who work in rice value chains, on climate mitigation and adaptation practice;
- To identify barriers and challenges that hinder women's and men's ability to participate in and access to resources and opportunities in low-carbon rice value chains;
- To identify climate innovation practices or solutions may help women and men overcome gender-based constraints in rice value chains
- To identify entry points for promoting and scaling women's empowerment and gender transformation in low-carbon rice value chains.

2.2. Methodology

The research team applied both desk study and field survey to perform the study. Of which, desk study is applied for conducting literature review, while the field survey is applied to find out the actual situation in two key rice production areas of Vietnam: the Red River Delta in the North, and the Mekong River Delta in the South. Analytical Framework

This report uses FAO's Gender-Sensitive value chains (GSVC) framework to develop the analysis (Figure 1). This framework is adapted by integrating aspects of low-carbon emissions in the gender analysis of agriculture value chains. Gender based constraints is used to look at restrictions on women's and men's access to resources and opportunities that can hinder their ability to participate in and access to benefits from agriculture value chains. As the core of the framework, the individual level can reveal interesting knowledge of gender diversity by their characteristics (such as gender, ethnicity, social group, age), abilities, and aspirations. Besides, the individual is also put in his own social relations to distinguish their social roles and access to social resources in the value chain. So, this approach can suggest more specific and exact interventions to change the situation.

Figure 1. FAO's Gender-Sensitive value chains (GSVC) framework



Source: FAO 2016

2.3. Data collection

This study reached out to a total of 124 respondents in the rice value chain in Thai Binh and Kien Giang provinces by administering *questionnaire interviews* (94 farmers and related actors) and *focus group discussions* (30 farmers). Interviews were also conducted with 70 farmers, 54% are female. The average age of rice farmers is from 47-62 years old, specifically: the Northern farmers have an average age of 61.3 years old, and the Southern farmers have an average age of 47.7 years old.

Table: Number of respondents by province, gender

Respondents	Kien Giang			Thai Binh			Grand Total
	Female	Male	Sub-total	Female	Male	Sub-total	
Interviews	26	32	58	20	16	36	94
Farmer	21	19	40	17	13	30	70
<i>Averaged age of farmer (years)</i>	<i>48.8</i>	<i>49.2</i>	<i>49.0</i>	<i>59.5</i>	<i>63.5</i>	<i>61.2</i>	<i>54.2</i>
Cooperative		4	4	2		2	6
Supplier	1	4	5		1	1	6
Trader/collector	3	1	4		1	1	5
Enterprise		3	3				3
Local officer (agricultural extension)	1	1	2	1	1	2	4
Group discussion	7	13	20	4	6	10	30
Grand Total	33	45	78	24	22	46	124

2.3.1. Research site selection

This report will focus on two key production zones including the Mekong River Delta (MRD) and Red River Delta (RRD). Of which, in MRD, the focused climate-smart models are One must five reductions (1M5R); Sustainable rice platform (SRP); and Shrimp-rice intercropping model, while in RRD, the focused one will be System of Rice Intensification (SRI). The target survey field in MRD is Kien Giang province, and in RRD is Thai Binh province.

In Mekong River Delta, Kien Giang, An Giang and Dong Thap are the three largest rice production provinces. Among them, Kien Giang has the highest area with 395.7 thousand ha, then An Giang with 242.3 thousand ha, and Dong Thap with 221.6 thousand ha. These three provinces all have 3R3I and 1M5R rice model, however, only Kien Giang has rice-shrimp model. Then, it is decided that *Kien Giang becomes the research site*. More detail is as Table below.

Table 1. Area of sustainable production application in the Mekong river delta (ha)

Province	Total paddy land	3R3I	1M5R	Rice-shrimp model
Dong Thap	221,554	23,572	22,442	n/a
<i>Ratio (%)</i>	<i>100.00%</i>	<i>10.64%</i>	<i>10.13%</i>	<i>n/a</i>

Province	Total paddy land	3R3I	1M5R	Rice-shrimp model
An Giang	242,337	19,042	17,883	n/a
<i>Ratio (%)</i>	<i>100.00%</i>	<i>7.86%</i>	<i>7.38%</i>	<i>n/a</i>
Kien Giang	395,695	25,625	13,645	25,000
<i>Ratio (%)</i>	<i>100.00%</i>	<i>6.48%</i>	<i>3.45%</i>	<i>6.32%</i>

Source: Compiled from local government's reports (2021)

In Red River Delta, System of Rice Intensification (SRI) has been applied as a new agricultural practice that arguably boosts rice production while decreasing the water usage. According to Guven, Tong and Ulubasoglu (2021), the first five provinces adopting SRI in Vietnam are Hoa Binh, Hung Yen, Ninh Binh, Quang Nam and Thai Binh. Among this provinces, Thai Binh is the largest rice production province with 153.2 thousand ha. More detailed data is as Table below. Thai Binh is also among the largest rice production provinces in Red River Delta. So, *Thai Binh is decided to become the research site.*

Table 2. Rice area in 2021 of the first five provinces adopting SRI (thousand ha)

Province	Total paddy land
Hung Yen	56.1
Thai Binh	153.2
Ninh Binh	71.8
Hoa Binh	38.5
Quang Nam	82.6

Source: GSO (2022)

One must five reductions (1M5R) program was certified in 2013, by the Vietnam Ministry of Agriculture and Rural Development, as a national approach to promoting the best management practices in lowland rice cultivation. The main idea behind 1M5R is the use of good-quality/certified seeds (One Must Do) as well as the reduction of seed rates, pesticide use, fertilizer inputs, water use, and postharvest losses (Five Reductions) (Tho, Dung, Umetsu 2021). In Kien Giang province (the target survey field), there is 13,645 ha of 1M5R, accounting for 3.5% of the total paddy land area. Of which, Tan Hiep district has the highest number of farmers adopting 1M5R practices, with 2,513 farmers. In Kien Giang province, Tan Hiep district has the largest proportion of 1M5R application areas, accounting for 12.67%, followed by Chau Thanh district (9.09%) and Rach Gia city (7.74%).

Table 3. 1M5R application in Kien Giang province by 2020

District	Paddy area (ha)	1M5R		
		No of farmers	Area (ha)	% area applied
Tan Hiep	36,803	2,513	4,664	12.67
Giong Rieng	46,654	830	1,430	3.07
Chau Thanh	19,000	1,121	1,728	9.09
Hon Dat	80,000	658	1,816	2.27
Giang Thanh	29,450	686	1,480	5.03
Rach Gia	5,506	219	426	7.74
Go Quao	25,249	649	1,282	5.08
U Minh Thuong	9,982	468	819	8.20
Total		7,144	13,645	

Source: Reports from DARD of Kien Giang province

According to Loan (2020), the CH₄ and N₂O emission in Kien Giang 1M5R model is lower than in the conventional model. Details are as tables below.

Table 4. CH₄ and N₂O emission from Kien Giang models

Emission type	Season	Model	Emission intensity (mg/m ² /hour)	Cumulative (kg/ha/season)
CH ₄	Winter spring	conventional	0.54 – 15.0	104.09
		1M5R	1.02 – 6.79	71.70
	Summer autumn	conventional	1.71 – 13.51	133.41
		1M5R	1.78 – 10.31	104.98
	Autumn winter	conventional	1.66 – 23.48	224.1
		1M5R	1.52 – 17.0	177.3
N ₂ O	Winter spring	conventional	0.077 – 0.260	0.323
		1M5R	0.068 – 0.264	0.294
	Summer autumn	conventional	0.110 – 0.331	0.457
		1M5R	0.122 – 0.311	0.419
	Autumn winter	conventional	0.097 – 0.306	0.432
		1M5R	0.089 – 0.274	0.379

Source: Loan, BTP 2020

The Sustainable Rice Platform (SRP) Standard for Sustainable Rice Cultivation is the world's first voluntary sustainability standard for rice. SRP is a multi-stakeholder platform, co-convened by United Nations Environmental Programme (UNEP) and the International Rice Research Institute to promote resource efficiency and sustainable trade flows, production and consumption operations, and supply chains in the global rice sector. The comparison between 1M5R and SRP is as below:

Table 5. Comparison between 1M5R and SRP

N	Indicator	1M5R	SRP
1	Fully crop calendar and record keeping	No	Yes
2	Assessment on heavy metals and soil salinity	No	Yes
3	Amount of fertilizers applied follow guidelines of local authorities	No	Yes
4	Using pesticides and fungicides to prevent insects and diseases	Yes	No
5	Using personal protective equipment (PPE) when applying pesticides	No	Yes
6	Designated areas for washing and changing PPE	No	Yes
7	Dispose pesticide containers properly	No	Yes
8	Safety instructions and first aid kit	No	Yes
9	Re-entry time after applying fertilizer is clearly informed to other people.	No	Yes
10	Burning rice straw and stubble	Yes	No
11	Evidences on labor right standards such as child labor, hazardous work, forced labor, discrimination, freedom of association,...	No	Yes

The rice-shrimp farming is a smart agricultural farming model, practiced in the Coastal of the Mekong Delta, where is affected by saltwater intrusion and cannot grow rice all year round. By improving the saline soil for growing rice, pathogens that damage shrimp will not be able to live in freshwater and the wastes from shrimp production will fertile the rice field. In addition, a large amount of rice straw and stubble decomposes, stimulating the growth of plankton as food for shrimp. In this model, farmers are not allowed to use pesticides, reducing the production cost from 20-30% compared to the conventional practice, and producing high-quality products that are more friendly to the environment and public health.

Kien Giang has the potential to produce a rice-shrimp farming system, especially in the coastal zones with favorable conditions such as in An Minh, An Bien, and U Minh Thuong districts. Today, the area of the rice-shrimp farming model is 25,000 ha, accounting for 6% of the total

paddy land area of Kien Giang. The 1M5R and rice-shrimp model comparison are shown in Table below.

Table 6. Comparison between 1M5R and rice - shrimp farming in Kien Giang

No	Indicator	1M5R	Rice-shrimp
1	Fully crop calendar and record keeping	No	Yes
2	Assessment on heavy metals and soil salinity	No	Yes
3	Amount of fertilizers applied follow guidelines of local authorities	No	Yes
4	Using personal protective equipment (PPE) when applying pesticides	No	Yes
5	Designated areas for washing and changing PPE	No	Yes
6	Dispose pesticide containers properly.	No	Yes
7	Safety instructions and first aid kit	No	Yes
8	Re-entry time after applying fertilizer is clearly informed to other people.	No	Yes
9	Evidences on labor right standards such as child labor, hazardous work, forced labor, discrimination, freedom of association,...	No	Yes

System of Rice Intensification (SRI) is an agro-ecological methodology for increasing the productivity of irrigated rice by changing the management of plants, soil, water, and nutrients. SRI has been applied as a new agricultural practice that arguably boosts rice production while decreasing water usage. According to Guven, Tong, and Ulubasoglu (2021), the first five provinces adopting SRI in Vietnam are Hoa Binh, Hung Yen, Ninh Binh, Quang Nam, and Thai Binh in the North region of Vietnam. Among these provinces, Thai Binh is the largest rice production province with 153.2 thousand ha. According to Ngo T D, et. al 2011, when applying SRI's five principles (Box 1), farmers can produce more rice while saving water, chemicals, and seeds and using less labor. The SRI system has helped improve incomes, and ensure food security while minimizing negative impacts on the environment and enhancing farmers' adaptability to climate change, and sustainability of the environment.

Box 1: Five principles of SRI

- *Age of seedling:* Transplanting seedlings with 2 - 2.5 leaves in normal soil; 4-5 leaves for saline soil

- *Number of stalks and transplanting distance:* Transplant 1 stem/clump, transplant shallowly to avoid damaging the seedling roots. Transplant with square eye sieve.
- *Water management:* Withdrawal alternately 3-4 times during the crop, especially after the first fertilizer application. Keep the soil moist.
- *Weeds and pests management:* Combine weeding and mulching, at least twice at 10-12 days, and 25-27 days after transplanting.
- *Nutrient management:* Fertilize according to the needs of the plant. Encourage the application of organic fertilizers, rotting manure.

2.3.1. Survey samples

There are six models investigated in this survey, such as:

In Thai Binh province --

1. Traditional
2. SRI models

In Kien Giang province --

3. Traditional
4. 1M5R
5. Rice-shrimp
6. SRP models

For each production model, there was 01 focused group discussion (FGD) conducted with the participants with 5 farmers. Besides, the key informant interviews (KII) were also conducted for each model group. Although the sample size is not large, it still covers almost key stakeholders in rice value chain. Specifically, samples for each model are as follows: 1 cooperative; 10-20 farmers; 3-5 other key stakeholders (middlemen, SMEs, input suppliers, local extension officers).

III. FINDINGS AND ANALYSIS

3.1. Major characteristics of interviewed farmers

Age: Most of the farmers are in middle or old- age with an average of 53.4 years old. In the North (Thai Binh province), the average age is 61.3 years old. Comparing the traditional and climate-smart models, there is nearly no difference between the two groups in age. In the South (Kien Giang province), the average age is 47.7 years old. Comparing the traditional and climate-smart models, farmers in the climate-smart models tend to have lower ages than the traditional one.

Income from paddy: The household income generated from paddy is 191.0 mil VND/year (approx. 8,145 USD/year) on average, accounting for 61.2% of total income of the household.

- (i) In Thai Binh province, the average income is 36.5 mil VND/year (approx. 1,556 USD/year), accounting for 53.6% of total income. According to the survey, climate-smart households seem to depend much on rice than traditional households.
- (ii) In Kien Giang province, average income is 306.8 mil VND/year (approx. 13,084 USD/year), accounting for 68.3% of total income. Farmers in almost models have main income from paddy with a proportion of above 70.0%, except for rice-shrimp farmers, who can also earn from shrimp production. Rice-shrimp farmers get the lowest paddy income of 110.4 mil VND (approx. 4,708 USD/year) per year as having only one paddy season per year, while other models having 2-3 seasons.

Table 7. The surveyed farmer characteristics of age and income from paddy

Model	Averaged age (years)	Income from paddy (mil. VND/year)	Income from paddy (%)
Thai Binh (Northern)	61.3	36.5	53.6%
Traditional	61.5	25.0	41.1%
SRI	61.1	45.3	63.8%
Kien Giang (Southern)	47.7	306.8	68.3%
Traditional	52.7	215.8	80.0%
1M5R	47.1	248.7	77.4%
Rice-shrimp	48.2	110.4	48.2%
SRP	42.8	652.4	74.6%
Average for all samples	53.4	191.0	61.2%

Source: Field survey

Seasons per year: In Thai Binh, farmers usually have 2 paddy-planting seasons per year, while in Kien Giang, rice-shrimp farmers have only 1 season, SRP farmers have 2.0 seasons, but traditional and 1M5R farmers have mostly 3.0 seasons.

Plantation area: Thai Binh farmers have low paddy area with the average of 0.5 ha/household, while Kien Giang farmers have a greater number at 3.4 ha/household.

Yield: Thai Binh farmers have lower paddy yield of 6.3 ton/ha than Kien Giang farmers with 6.6 ton/ha.

Productivity: The averaged productivity of Thai Binh farmers is 5.6 tons/year while Kien Giang farmers is 47.3 tons/year.

Table 8. The farmer characteristics of rice production

Model	Season per year	Area (ha)	Yield (ton/ha)	Production (ton per year)
Thai Binh (Northern)	2.0	0.5	6.3	5.6
Traditional	2.0	0.3	6.3	3.8
SRI	2.0	0.6	6.3	6.9
Kien Giang (Southern)	2.2	3.4	6.6	47.3
Traditional	2.8	2.0	6.5	37.4
1M5R	2.9	2.5	6.3	43.4
Rice-shrimp	1.0	2.2	6.3	13.5
SRP	2.0	7.0	7.2	94.8
Average for all samples	2.1	2.2	6.5	29.4

Source: Field survey

3.2. Gender and Climate Value Chain Analysis

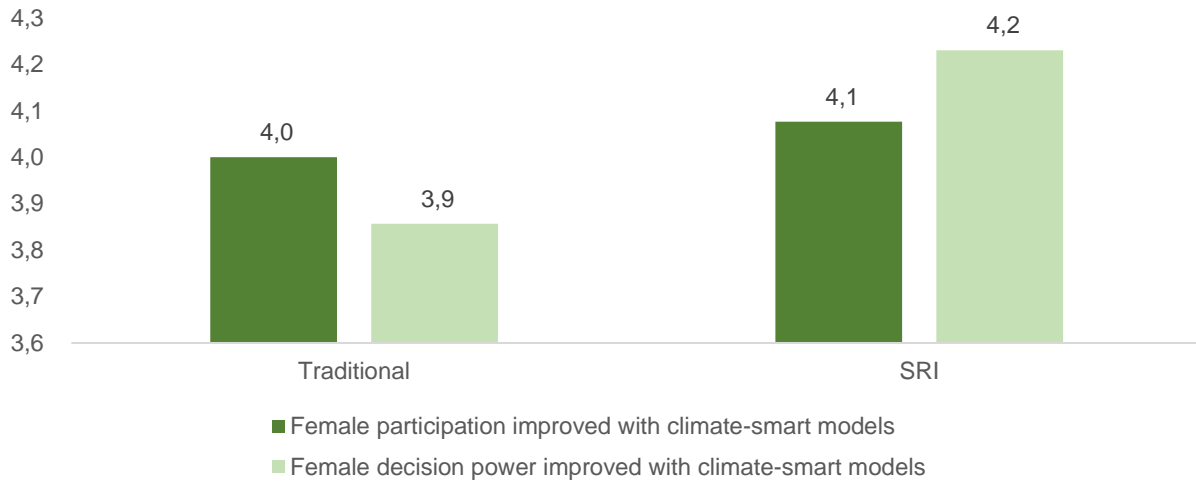
The study on gender aspects of the rice value chain was carried out by the research team in two provinces representing the two regions, including Thai Binh province representing the North region and Kien Giang province representing the South region. The following results are analyzed from the information and opinions of the stakeholders who are directly involved in the main stages of the rice value chain including farmers, traders, businesses, and local officials.

3.2.1. Climate smart rice production models in Vietnam

a/ Northern region

Farmers: Most farmers agree that the climate-smart model can increase female participation and decision power in rice growing. Their perception rate is around 3.9-4.2 (out of 5) points, which means around the “Agree” option. Women can be more involved in the management and selection of varieties and chemicals used in farming. Through a better understanding of quality and products from smart farming models, female farmers can access higher-value markets. There is no significant difference between the traditional and SRI group in choosing this option. Although traditional farmers did not practice the climate-smart models, but they had been introduced and aware that the new method can reduce input costs and reduce the use of labor, which benefit female farmers who are the main rice workers now. However, traditional farmers seem to be afraid of change, so they still hesitate to join the climate-smart model.

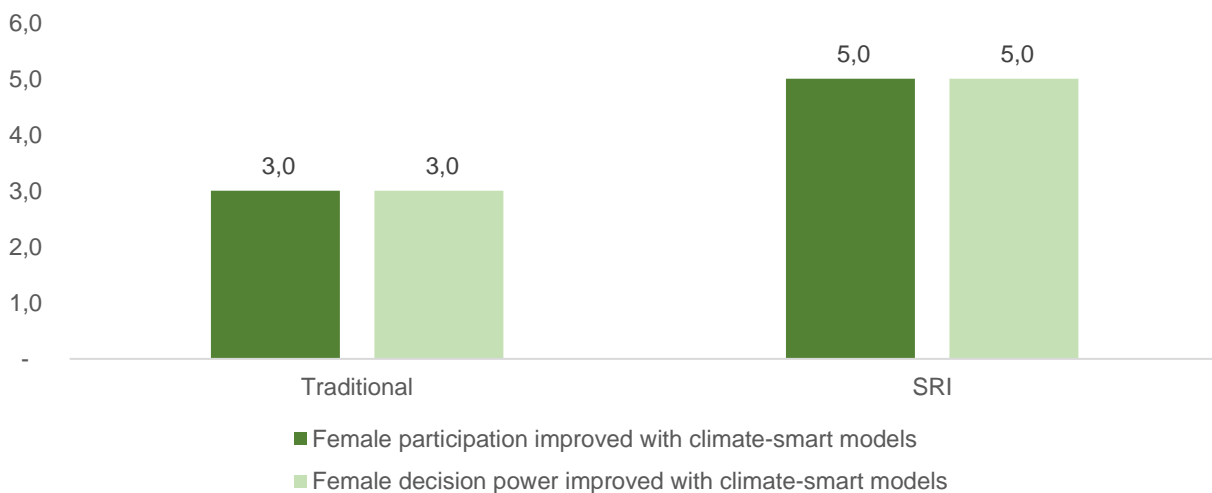
Figure 1. Northern farmers' perceptions on gender perspective of climate-smart models



Source: Field survey

Cooperatives: Traditional cooperatives are neutral on gender perspective of climate-smart models. They consider these models can bring neither positive nor negative results on gender matters. However, SRI cooperatives confirm that climate-smart models can help female farmers increase their participation and decision power thanks to having more training and group activities.

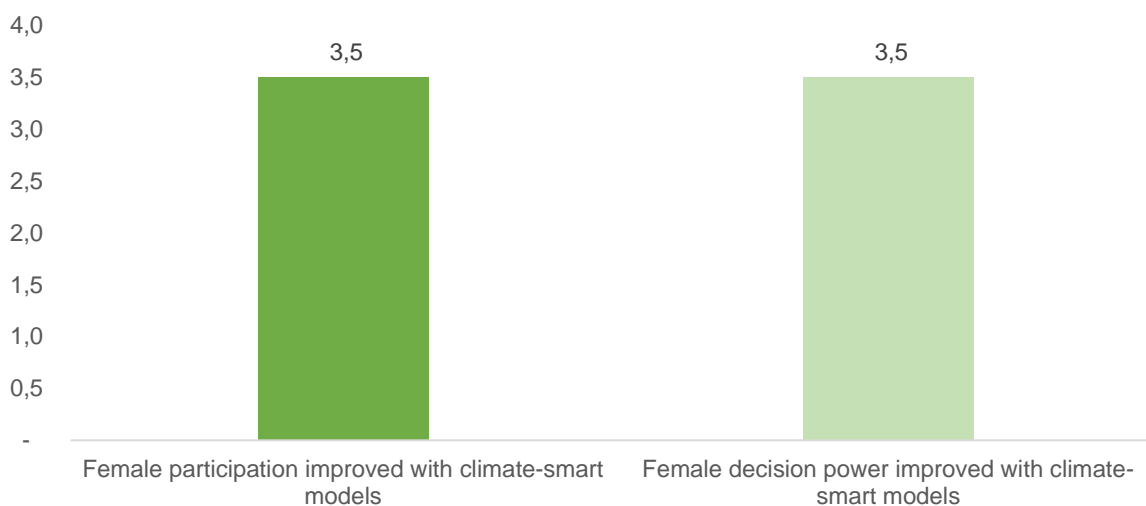
Figure 2. Northern cooperatives' perceptions on gender perspective of climate-smart models



Source: Field survey

Other trading stakeholders: Traders in the north consider that these models can slightly improve the participation of women in the rice value chain, however, they cannot figure out the specific difference between the two models. But they believe that the climate-smart models should have more advanced and supportive than the traditional ones in terms of gender equality.

Figure 3. Northern traders' perceptions on climate-smart models

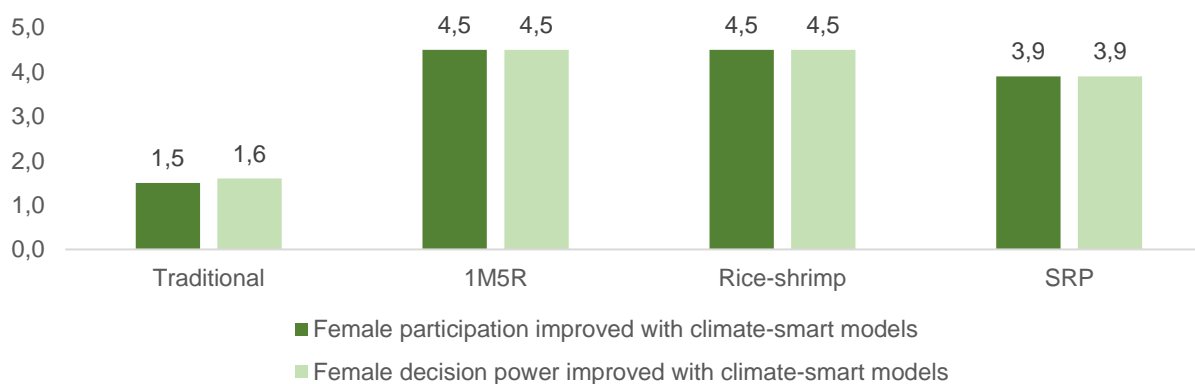


Source: Field survey

b/ Southern region

Farmers: Farmers in climate-smart models have a positive opinion towards the role of new models in increasing female participation and empower women in farm activities. In detail, 1M5R and rice-shrimp model's farmers are strongly agree that those models provide women better participation and stronger decision power (give 4.5 points for both criteria), while the SRP farmers give 3.9 points, which are all surrounding 'Agree' option.

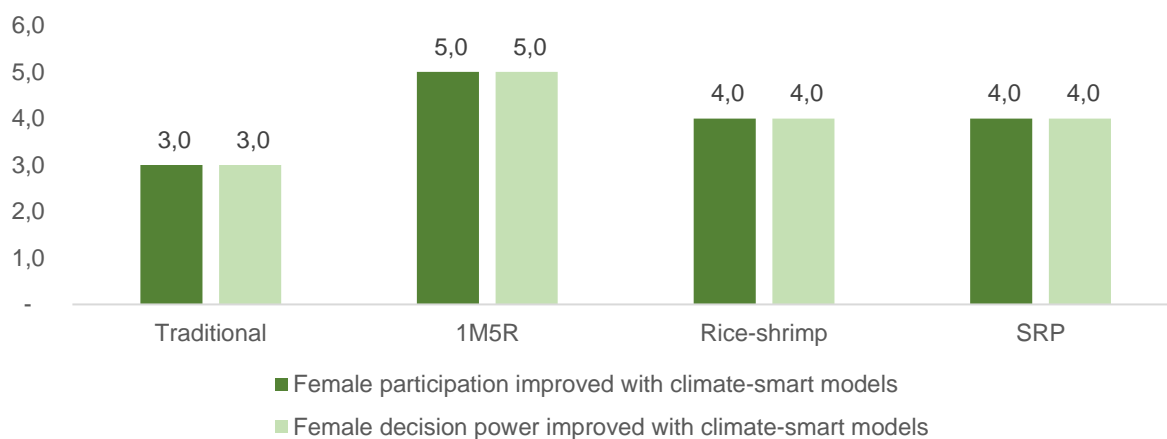
Figure 4. Southern farmers' perceptions on climate-smart models



Source: Field survey

Cooperatives: Traditional cooperatives have a neutral comment on the roles of these models in increasing female participation and decision power. However, 1M5R cooperatives confirm that climate-smart models can help female farmers increase their participation and decision power with a rate of 5.0 for both indicators. Next, rice-shrimp and SRP models also get a quite high rate of 4.0, which means 'Agree'.

Figure 5. Southern cooperatives' perceptions on climate-smart models

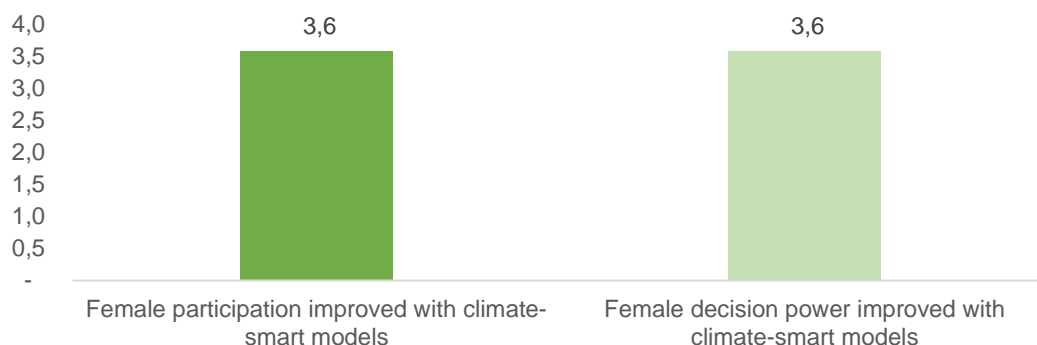


Source: Field survey

Other trading stakeholders: The remaining stakeholders in the rice value chain are mainly traders and the interview samples are not large, so their opinion will be integrated in this report, and their perceptions will not also be separated into different model types.

Regarding climate-smart models, the Southern traders think that these models can slightly improve the participation of women in the rice value chain, because thanks to training, women can have more knowledge, then they can exchange more information with women about rice growing and business.

Figure 6. Southern traders' perceptions on climate-smart models



Source: Field survey

3.2.2. Role of stakeholders in rice value chain by gender perspective

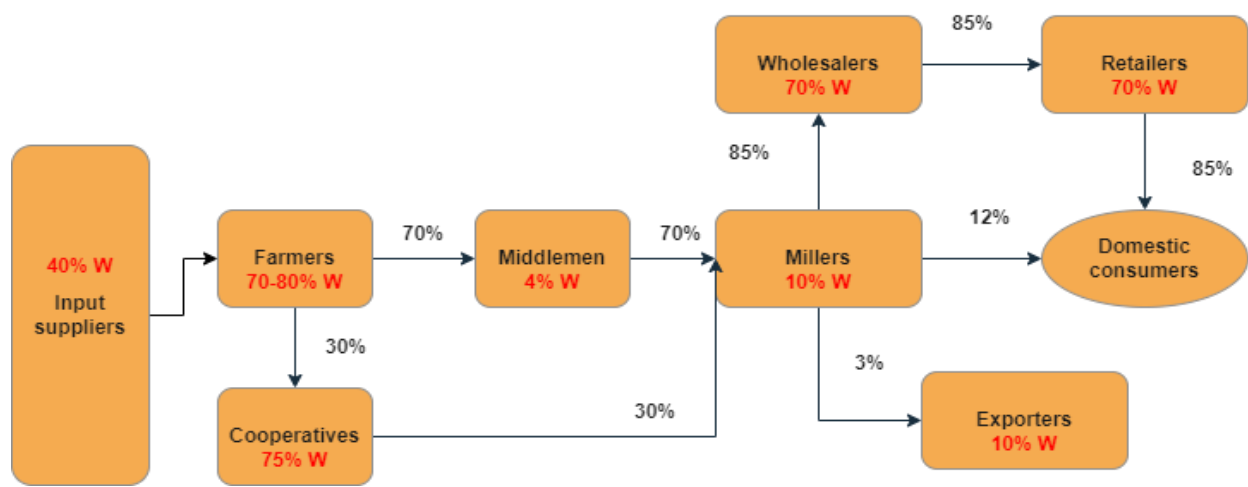
Based on the field survey in Thai Binh province (in Northern region) and Kien Giang province (in Southern region), the detailed rice value chains including gender participation are described as Figure 7 and Figure 9 below.

a/ Northern region

Regarding the rice value chain in Thai Binh province - a representative sample for Northern region, there are 8 stakeholders joining this chain, including input suppliers, farmers, cooperatives, middlemen, millers, wholesalers, retailers, and exporters. The rice output of the Northern region is mainly for domestic consumption, not for export. It is estimated from the survey that, only 3% of rice output is exported while 97% is for domestic consumption.

Regarding gender participation, it is estimated that in the input supplier stage, women account for 40% of gender participation. Their task positions are mainly supporting the male header in accounting work. In the farmer stage, 70-80% of participants are women, which was revealed through some focused group discussion (FGD). The FGD participants stated that because most of the men in the household have other off-farm work, so women have to take charge of agricultural production. Because of the large proportion of farming, women also proactively joined local cooperatives at the rate of 75%. However, at the middlemen stage, women do not join much, only 4% of middlemen are women because this work requires field trips and hard-working (in terms of transportation). At the miller stage, women also do not participate much, due to heavy dusk and lifting. However, among wholesalers and retailers, women are the main labor force with a proportion of 70%, because this work requires skillful communication and accounting capacity, which the women have relatively more advantages than men. At the exporter stage, the participants of women only take 10%, their tasks in these companies are mostly administration, human resource management, and accounting.

Figure 7. Women's Participation in Rice Value Chain in Thai Binh, Vietnam



Source: Field survey

Comparing the traditional model and climate-smart model (i.e. SRI model), there are no significant differences in gender participation in the value chain, except for the farming activities. In farming activities, mechanization and hiring wage labor have been gradually applied in the region over the year. Detailed data in the Table below.

Figure 8. Gender participation in rice growing in Thai Binh province

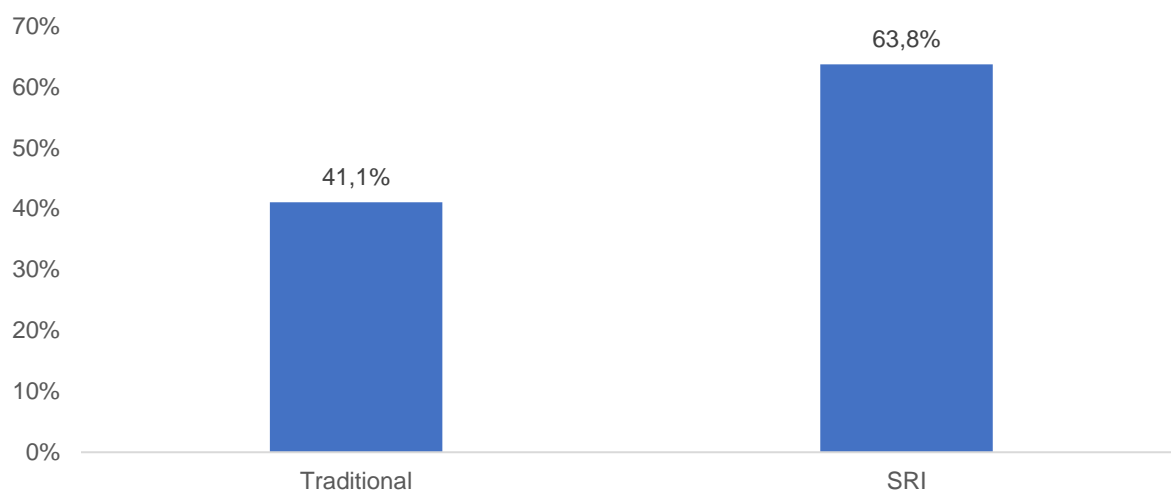
Farming stages	Traditional			SRI		
	M.rate	Man	Women	M.rate	Man	Women
Land preparation	61.5%	60.0%	40.0%	52.9%	43.8%	56.3%
Planting	38.5%	13.8%	86.3%	17.7%	19.8%	80.2%
Fertilizing	0.0%	23.9%	76.2%	0.0%	37.7%	62.4%
Pesticide-spraying	0.0%	54.6%	45.4%	5.9%	42.5%	57.5%
Harvesting	76.9%	66.7%	33.3%	58.8%	25.7%	74.3%
Transporting	15.4%	83.6%	16.4%	17.7%	53.6%	46.4%
Drying	0.0%	39.2%	60.8%	0.0%	30.8%	69.2%
Others (grass-cleaning or gap planting)	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
Average all stages	24.0%	42.7%	57.3%	19.1%	31.7%	68.3%

Source: Field survey

Note: M.rate is the abbreviation of 'mechanization rate'

In the Northern region, the main mechanization in farming include land preparation, planting, harvesting, and transporting. In the SRI model, farmers hire wage labor for spraying pesticide. Comparing traditional and SRI models, mechanization rate in land preparation, planting, and harvesting of the traditional model seems to be higher, specifically 61.5%, 38.5%, and 76.9% compared to 52.9%, 17.7%, and 58.8% respectively. It may come to the fact that rice growing in the traditional model is not the main income source of rice farmers. Based on the survey data, rice only accounts for 41.1% of the income of traditional households, while this rate in the SRI model is 63.8%.

Figure 9. Proportion of rice in total income of the Northern farmers



Source: Field survey

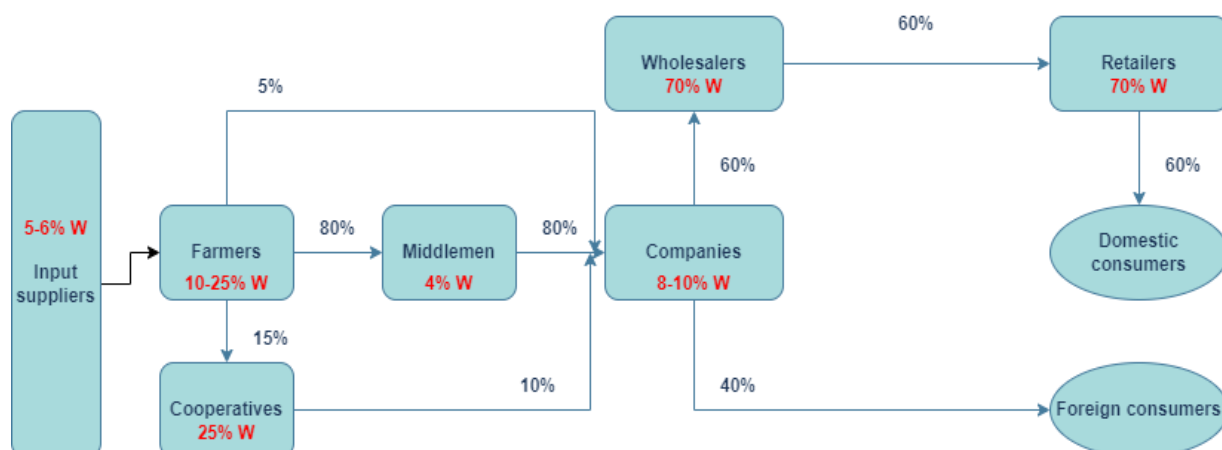
Regarding gender participation, it is a common situation in the Northern region that women are the main worker in rice farming (and in other agriculture activities as well). The average participation rates of women in rice growing is 57.3% (in traditional mode) and 68.3% (in the SRI model). This result is somehow matching with the FGD result of 70-80% of participants in rice farming are women.

Compared the two models, the climate-smart model has relatively higher women participation than the traditional one. Based on the field survey, following activities in the traditional model have higher women participation: planting, fertilizing, drying, and others (grass cleaning or gap planting), while in the SRI model women involve additionally in land preparation, pesticide-spraying and harvesting.

b/ Southern region

Regarding the rice value chain in Kien Giang province – a representative sample for the Southern region, there are 7 stakeholders joining this chain, including input suppliers, farmers, cooperatives, middlemen, companies, wholesalers, and retailers; of which, middlemen can play the role of millers; and companies can also play the role of both millers and exporters. The rice output of the Southern region is mainly for both domestic consumption and export. It is estimated from the survey that, 40% of rice output in this region is exported while 60% is for domestic consumption.

Figure 10. Rice value chain in Kien Giang province



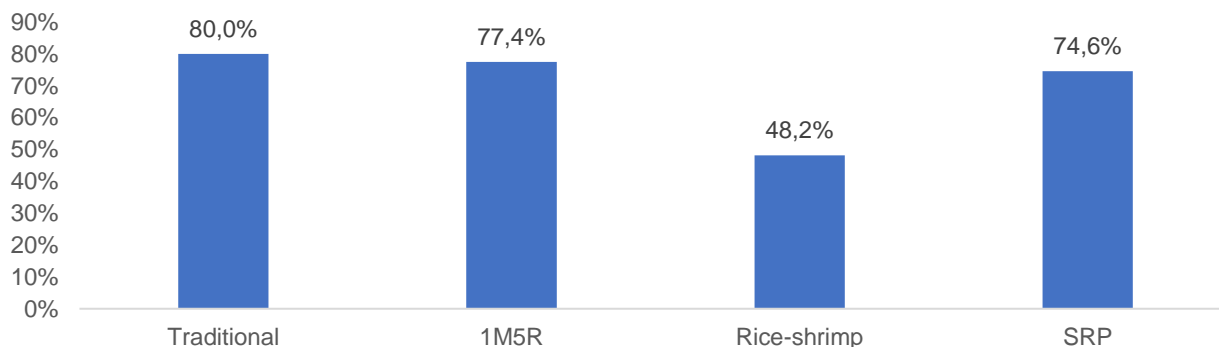
Source: Field survey

Regarding gender participation in the Southern region:

- It is estimated that in the input supplier stage, women account for only 5-6% of gender participation. Some input suppliers revealed that women are usually playing the role of sales or accounting, while men take large parts in running the business. It is a fact that the Southern region is the main source of agricultural products of the country, so the demand for input materials like varieties, fertilizer, and pesticides is more complicated and has higher quantity. Therefore, strong health for conducting heavy transportation and good knowledge of farming techniques and selling substances are preferred, which are not usually well-performed by women.

- In the farmer stage, only 10-25% of participants are women because, in the Southern region, agriculture is the main work for earning income, so the male participation is considered as a natural thing. Indeed, it is estimated that among survey farmers around 70% of their income goes from rice growing.

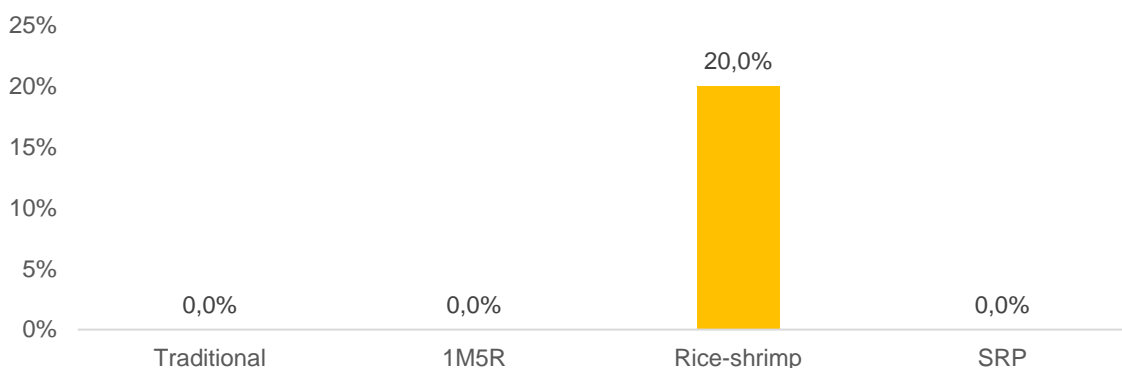
Figure 11. Proportion of rice in total income of the Southern farmers



Source: Field survey

Although rice-shrimp farmers have a lower share of rice in the total income, their shrimp-raising is accounting for around 40-50% of total household income. Regarding gender participation in the fishery, only a few women participate in this kind of production in the Southern region. Almost models have a female participation rate of 0.0%, only in the rice-shrimp model, the rate increases up to 20.0% because males need some additional support when feeding and harvesting the shrimp. Usually, the husband and wife will load the feed and net on the ship. While the husband feeds or harvests the shrimp, the wife has the role of keeping the ship balanced. In other models, the fishery is not popular, only some farmers have a small pond for raising fish, so the male farmers do not need support from the women. Indeed, some farmers also involve in fish or squid catching in the sea, but this activity is hard-working and require a long business trip of several weeks, so it is not usually joined by women.

Figure 12. Female participation in fishery in the Southern region



Source: Field survey

- Through asking the cooperative headers, it is revealed that only 25% of their cooperative members are women. This number also emphasized again the situation that fewer women take part in the rice value chain in the region.

- At the middlemen stage, women also do not join much, only 4% of middlemen are women. They are not the main runners of this business either. Usually, they are the wives who help their husbands with some accounting or cooking tasks. The middlemen in the Southern region usually travel far from home to collect rice in the surrounding province. Specifically, an interviewed middleman replied that he always goes around Kien Giang province, then An Giang province, Hau Giang province, Dong Thap province... for collecting rice. Every season, he will take some long business trips which can last around 7-10 days per trip. When buying rice, his team also needs to help farmers transport, and loading paddy on the ship, and usually this work can start from early morning until midnight. So, women are not suitable for this work because they need to stay home to take care of the children, as well as their health is not strong enough. Even middlemen who play the role of millers are also not welcomed women to participate in this work because the heavy dusk from milling the paddy is not good for women's health.

- At the company stage, women take the participation rate of 8-10%. Their roles mostly include marketing, sales, and accountants. Some companies have strong linkages with farmers also confirmed that women only can take part in the administrative work, while technique staff is always men because men can work and communicate more closely with rice farmers who are always men. Besides, the growing technique is also complicated and difficult to understand well, so not many women want to improve their knowledge toward this path.

- At the wholesaler and retailer stages, women are the main participants with a proportion of 70%, because this work requires skillful communication and calculation, which the women have more advantages than men.

Comparing the traditional model and climate-smart models (here to be the 1M5R model, rice-shrimp model, and SRP model), there are no significant differences among business stages in gender participation in the value chain, except for the farming stage. So, this farming stage will be focused on analyzing the difference in gender participation between the two groups: male and female. Detailed rate is as Table below.

The gender participation rate in each farming stage is estimated after removing the cases that hire mechanization or labor services. Indeed, in the Southern region, rice is mass-produced, so the application of mechanization is very wide compared to the Northern region. The Southern rice farmers tend to hire mechanization services to facilitate their farming. Especially, at the land preparation stage, 70-100% of farmers hire these services; at the harvesting stage, 90-100% of farmers involve in hiring; at transporting stage, 80-100% of farmers have this activity. Besides, the mechanization rate in other stages is planting (10-60%); fertilizing (0-50%), and pesticide-spraying (20-70%).

In the climate-smart models, mechanization is heavily applied in these stages: pesticide-spraying, harvesting, and transporting.

- The applied rate of the 1M5R model, rice-shrimp model, and SRP model in pesticide spraying is 40.0%, 60.0%, and 70.0% respectively, while the applied rate of the traditional model is only 20.0%. Indeed, these models usually have a linkage with some companies or are supported by some national extension development programs, so they may have better chances to apply new technologies, such as pesticide drones.

- In the harvesting stage, the applied rate of the 1M5R model, rice-shrimp model, and SRP model is 100.0%, 100.0%, and 90.0% respectively. The surface of the land field applied with climate-smart models is already transformed the get flatter, so it is easier for the farmers to rent the same mechanization service to harvest at the same time. Indeed, these rates are not so different from the applied rate of the traditional model with 90.0%, which implies a general picture of mass production in the Southern region that most of the land field surface is improved to apply with mechanization. It also should be noted that through FGD with farmers, it is revealed that the number of traditional farmers in the Southern region is not so high until now, thanks to the great

extension support from the government. The local extension staff in Kien Giang province stated that 70-80% of rice farmers can apply at least 1M5R at the moment, while the traditional rate is only 20-30%.

- In transporting stage, the applied rate of the 1M5R model, rice-shrimp model, and SRP model is 100.0%, 80.0%, and 100.0% respectively, which is nearly the same as the traditional model of 90.0%. In the rice-shrimp model, the rate is a little bit low because these farmers have not developed a close linkage with middlemen/companies who are usually the main transporters for rice farmers. Rice-shrimp farmers only produce one rice season per year, so they are not preferred customers for middlemen/companies compared to 2-seasons or 3-seasons rice farmers. Usually, the harvest by rice-shrimp farmers is also partly given/sold to relatives or acquaintances, so farmers will need to transport these parts by themselves.

Regarding gender participation, it is a common situation in the Southern region that women are not the main workers in traditional rice growing. If averaging all the participation rates of women in rice growing, the rate is 9.3% (in traditional mode), 37.4% (in the 1M5R model), 24.4% (in rice-shrimp mode), and 27.6% (in SRP mode) which are all lower than 50.0%. This result is nearly in line with the FGD result mentioned above that only 10-25% of participants in rice farming are women.

Compared to the four models, the climate-smart models have higher female participation than the traditional model (37.4%, 24.4%, 27.6% compared to 9.3%), which implies that the climate-smart model tends to give chance for women to join more deeply in rice-growing activities. Based on the field survey, there is no stage in which women participate much more than men in the traditional model. However, in the 1M5R model, drying and other (grass cleaning or gap planting) stages have higher women participation rates. In the rice-shrimp model, it is the drying stage; and in the SRP model, it is also the drying and other (grass cleaning or gap planting) stages.

Table 9. Gender participation in rice growing in Kien Giang province (%)

Farming stages	Traditional			1M5R			Rice-shrimp			SRP		
	Mecha	Man	Women	Mecha	Man	Women	Mecha	Man	Women	Mecha	Man	Women
Land preparation	100.0	-	-	100.0	-	-	90.0	70.0	30.0	70.0	100.0	0.0
Planting	10.0	81.1	18.9	10.0	61.1	38.9	60.0	82.5	17.5	10.0	86.7	13.3
Fertilizing	10.0	92.2	7.8	0.0	66.5	33.5	50.0	96.0	4.0	0.0	99.0	1.0
Pesticide-spraying	20.0	95.0	5.0	40.0	96.7	3.3	60.0	93.3	6.7	70.0	100.0	0.0

Farming stages	Traditional			1M5R			Rice-shrimp			SRP		
	Mecha	Man	Women	Mecha	Man	Women	Mecha	Man	Women	Mecha	Man	Women
Harvesting	90.0	100.0	0.0	100.0	-	-	100.0	-	-	90.0	80.0	20.0
Transporting	90.0	100.0	0.0	100.0	-	-	80.0	100.0	0.0	100.0	-	-
Drying	0.0	100.0	0.0	0.0	48.9	51.1	0.0	32.5	67.5	0.0	41.1	58.9
Others (grass-cleaning or gap planting)	0.0	66.7	33.3	0.0	40.0	60.0	0.0	55.0	45.0	0.0	0.0	100.0
Average all stages	40.0	90.7	9.3	43.8	62.6	37.4	55.0	75.6	24.4	42.5	72.4	27.6

Source: Field survey

Note: Mecha is the abbreviation of 'mechanization rate'

3.3. Constraints to Women's Empowerment in Rice Value Chain

3.3.1. Perceptions and decision power

a/ Perceptions

The first gender constraint in the rice value chain is the gender stereotype, which indicates the specific role of gender in rice farming and even in the rice business. *In the Northern region*, women are considered the main labor force in agricultural production. In the FGD with farmers, some female farmers even stated that agriculture is considered as the unimportant work in their daily living, while more important work should be non-farm activities such as work in industry factories and services. The men are expected to be the breadwinners of the family, so the unimportant work (such as agriculture) is for the women and men do the important work (non-farm works).

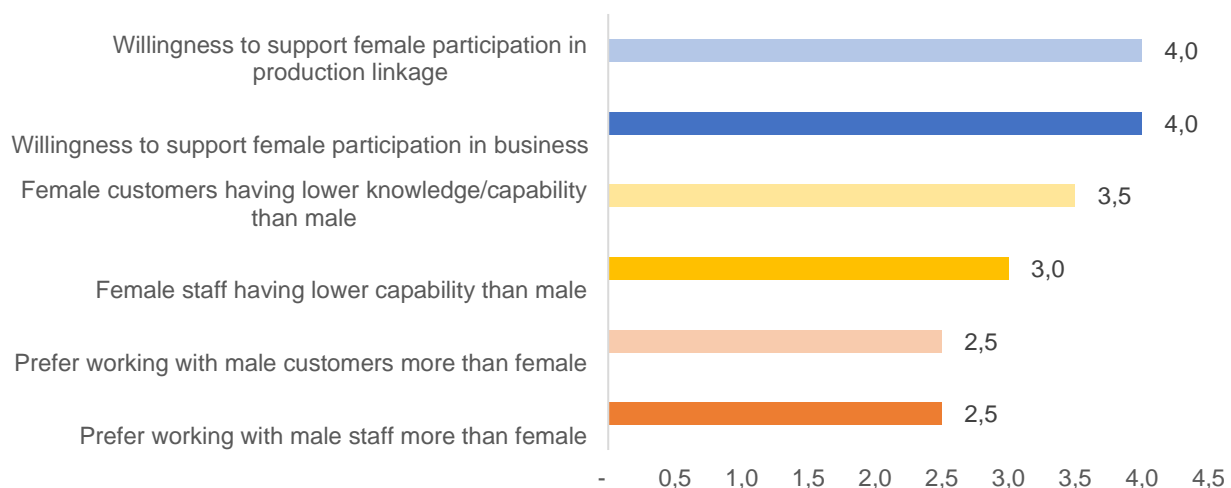
In the Southern region, men are considered the main labor force in agricultural production. Indeed, the farm size of the Southern region is significantly bigger than the Northern. Based on the survey, the farm size of Thai Binh province (in the North) is only 0.5 ha/household, while this indicator of Kien Giang province (in the South) is 3.4 ha/household, nearly 7 times bigger. This huge resource in farmland requires farmers to push more effort into producing. Besides, this resource (if effectively produced) can also bring enough income for the family. So, that is also reason why non-farm work is not as popularly conducted by Southern male farmers as Northern male farmers. In general, because there is the gender stereotype in paddy farming, which may prevent individuals from getting potential chances for development. For example, a wife in the

Southern region may think that she does not have adequate knowledge, and because this is men’s work, so she will not try to raise her ideas about anything in rice growing.

In the rice business, it is also popularly thought that paper works like daily takenoting and accounting are for women, while men will be suitable for technical and transportation works. Some specific preferences of rice business in terms of gender in both regions are as follows:

+ Northern: Regarding gender preference, Northern traders tend to slightly disagree about the statements “Prefer working with male staff” and “prefer working with male customers”. They noted that gender is not the matter, the matter is if the capability of the staff/partners is adequate enough or not. Regarding gender capability, traders have a neutral opinion towards the capability of female staff compared to male staff. However, they assess that female customers (mainly farmers) seem to have lower knowledge than males. Regarding willingness to support females, traders all agree that they will do their best to support more participation of women in the rice value chain.

Figure 13. Northern traders’ perceptions on gender preference, gender capability and willingness to support females

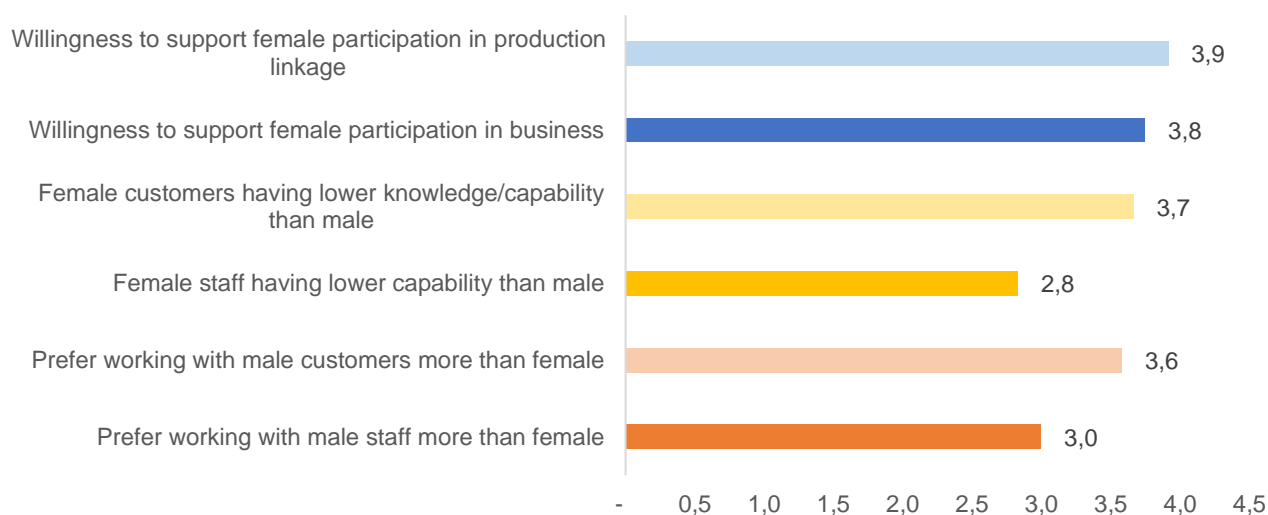


Source: Field survey

+ Southern: Regarding gender preference, Southern traders have a neutral comment on the statement “Prefer working with male staff” with the rate of 3.0 ‘Neither agree nor disagree’ because they think their staff is hired suitably depending on their position and capability, which is not related to gender matters. However, they want to work with male customers more than females. They rate the statement “Prefer working with male customers more than female” with 3.6 points on average, which is between ‘Neither agree nor disagree’ and ‘Agree’. Regarding gender capability, Southern traders nearly have a neutral comment on the statement “Female staff having lower capability than male” with the rate of 2.8, which is nearly the option of ‘Neither agree nor disagree’. Besides, they comment that female customers have lower knowledge/capability than males with a rate of 3.6, which is also the reason why they prefer to

work with males than females. Regarding willingness to support females, traders choose between 'Neither agree nor disagree' and 'Agree', which means they do not positively support this thing. For them, it is very difficult to support, because it is not the gender matter, but the work division matter. They do not have a strong belief that women can perform as well as the man in the rice value chain.

Figure 14. Southern traders' perceptions on gender preference, gender capability and willingness to support females



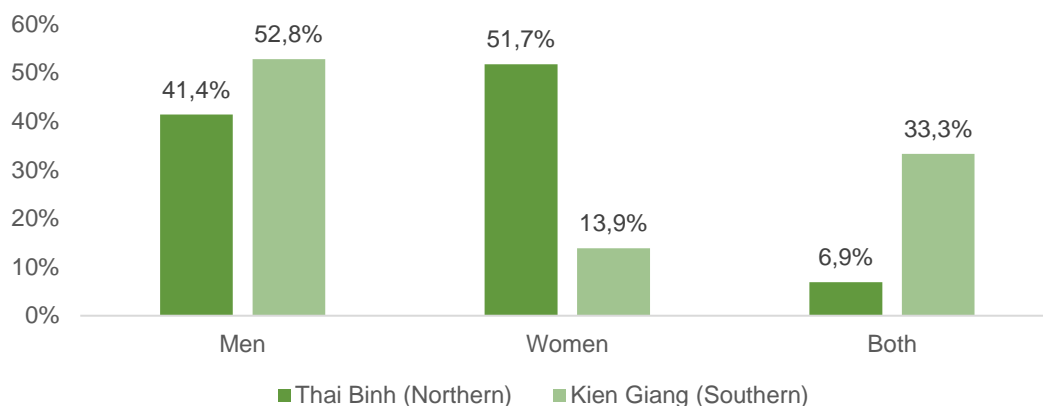
Source: Field survey

There is still some priority of rice businesses for male than women, especially in the South, but this discrimination is not so strong, because most business leaders focus on the capability of each individual when choosing their position. However, the leaders still keep in mind some fixed requirements of the work and forecast if any workers (in both genders) can perform well or not. For example, middlemen will not prefer to hire women for taking business trips to collect rice from farmers around provinces, which takes a long time and hard work, and is not suitable for women. Some Southern companies will also prefer to hire technical staff as men because they can make long business trips and communicate better with farmers who are usually men in the region.

b/ Decision power

Regarding the power of joining farmer groups and deciding production methods, these indicators are all affected by farmers' gender perceptions above. In Thai Binh province, because women are considered the main labor force in rice farming, their power on joining farmer groups and deciding production methods are also strong: 51.7% and 55.2% of the total households, respectively. However, the men's power in joining the farmer group in Thai Binh province is also high, which is 41.4%, but the male power in deciding production method is not high, only 24.1%. In Kien Giang province, the power of men on these two subjects is very strong at 52.8% and 45.9%, while the women's power is only at 13.9% and 16.2%.

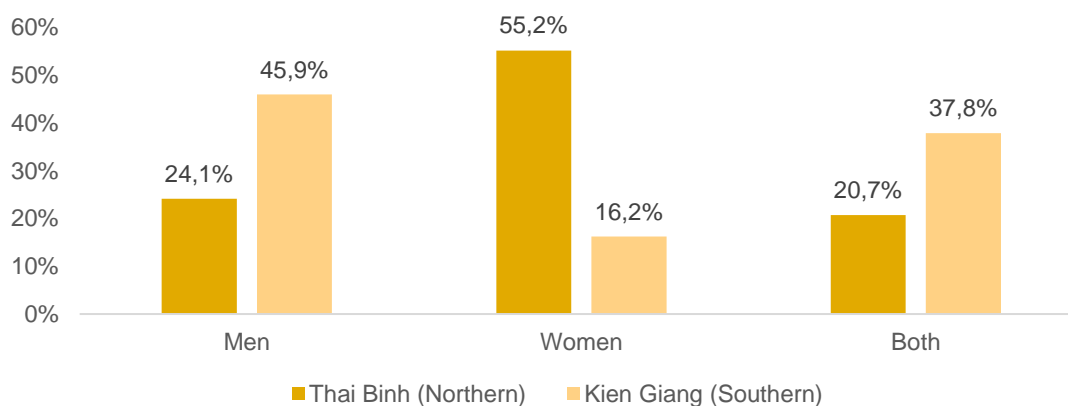
Figure 15. Farmers' decision power on joining farmer groups



Source: Field survey

Comparing the two provinces, Thai Binh seems to have a lower power-share between the two gender groups compared to Kien Giang. While Kien Giang has a rate of 33.3% and 37.8% in sharing power in these two subjects, Thai Binh has only a rate of 6.9% and 20.7%.

Figure 16. Farmers' decision power on deciding production methods



Source: Field survey

3.3.2. Access to resources

The results of focus group discussion with farmers in both Northern and Southern regions found no negative feedback from females relating to the land resource. The farmers stated that both husband and wife have their name on the Certificate of land use rights, so there is no matter with gender inequality. Indeed, based on Article 34 of Law on Marriage and Family No. 52/2014/QH13 issued by the National Assembly dated June 26, 2014, it is mentioned that *“for a common property which is required by law to be registered for ownership or use, both spouses shall be named in the ownership or use right certificate, unless otherwise agreed by the couple”*. Therefore, if the husband wants to sell the land, it is necessary to have an agreement with his wife. Regarding actual land usage, the farmers' feedback that it is depended on who is in charge

of rice production, and that one will regularly use the land more than the others. This situation does not relate to gender inequality, it is just the fact of labor division in the family.

The opportunities for changing off-farm work can be also considered as a production resource. However, the FGD survey reveals that female rice farmers seem to lack chances to swift their job. The male farmers in the North have their off-farm work, however, these works (mostly bricklayers) are not suitable for women. While in the South, farmers staying near the coastal line can also join fishery-catching activities, however, this off-farms work does not fit with women too. The women usually only support preparing the dried food, nets, or baits before the long trips of males. Although there are sometimes in a year that women can join some shellfish collecting on the shore, this income is not much, they usually collect shellfish for their daily meals. Indeed, some crafting work is also available for women, such as bamboo and rattan crafting in the North and water hyacinth knitting in the South, but due to its low income and lack of enterprises hiring them, so the female farmers gradually quit. In the North, most of the farmers also comment that because they are old, so they do not find any off-farm work that is suitable for them. In fact, business leaders also do not want to rent the old ones because they work inefficiently.

Communication accesses such as contacting traders, hiring mechanization services, and buying input materials can be considered important resources in rice production. It is found from the survey that these communication resources engage closely with the labor division in rice production. Specifically, in the Northern region where women mainly involving in rice growing, women take a strong power in contacting traders (with 63.3% of total respondents), hiring mechanization services (62.1%), and buying input materials (78.6%). In the Southern region where men are the main labor force in rice growing, their power in these indicators is 59.0%, 74.4%, and 69.2% respectively. Although it is understandable that the division of labor has a strong power in separating communication resources, this fact also implies a hidden matter that the supporters of rice growing (males in the North and females in the South) may have limits connecting to these resources.

Table 10. The gender power in communication resources

Communication resources	Men	Women	Both
<i>Contacting traders</i>			
Thai Binh (Northern)	16.7%	63.3%	20.0%
Kien Giang (Southern)	59.0%	28.2%	12.8%
<i>Hiring mechanization services</i>			
Thai Binh (Northern)	27.6%	62.1%	10.3%
Kien Giang (Southern)	74.4%	17.9%	7.7%
<i>Buying input materials</i>			
Thai Binh (Northern)	14.3%	78.6%	7.1%

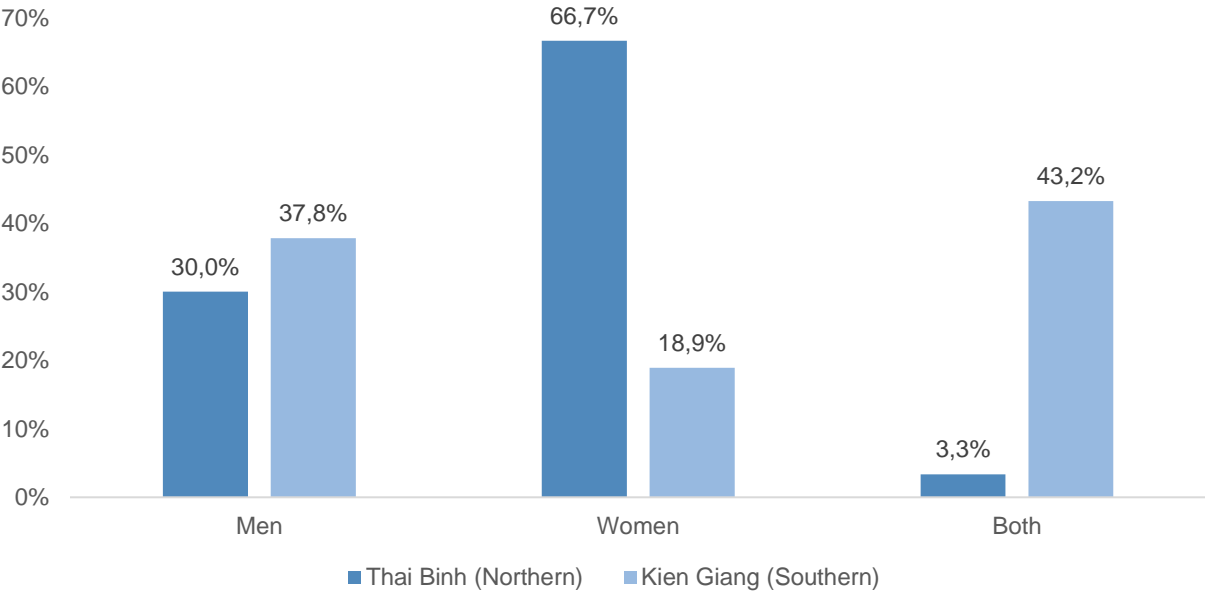
Communication resources	Men	Women	Both
Kien Giang (Southern)	69.2%	12.8%	17.9%

Source: Field survey

Readiness on Capacity Building

Regarding training course that is an important knowledge resource, women (in the North) are the main training attendees with a rate of 66.7%. However, in the South, the rate that both men and women in the family joining the training course is very high, at 43.2%, although men are the main rice workers in this region. In the North, this share proportion is very low, only at 3.3%. It implies that the male farmers in the North seem to have a little bit more conservative than female farmers in the South. Although they are all in the supporter position of rice growing, female farmers in the South tend to try to open their knowledge on rice growing more. This may result from the fact that rice growing is the main income of the Southern family, so they may have more motivation to advance their production. However, this unwillingness to study more of the Northern male farmers can also be a problem because, without more knowledge, they cannot support the women effectively; then, this can bring significant constraints to women in rice growing.

Figure 17. Farmers’ attending training course by gender

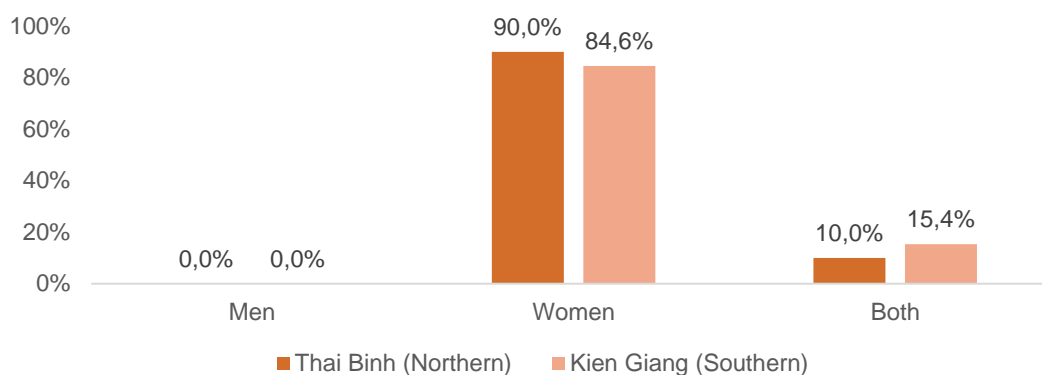


Source: Field survey

3.3.3. Financial resources

Interestingly, in Vietnam, even playing the role of main workers (in the South) or supporters (in the North), male farmers will never be allowed to decide to keep the income from rice growing. The survey found that 0.0% of men in both regions can keep this money, and only a small proportion can share this keeping with women, specifically 10.0% in the North and 15.4% in the South.

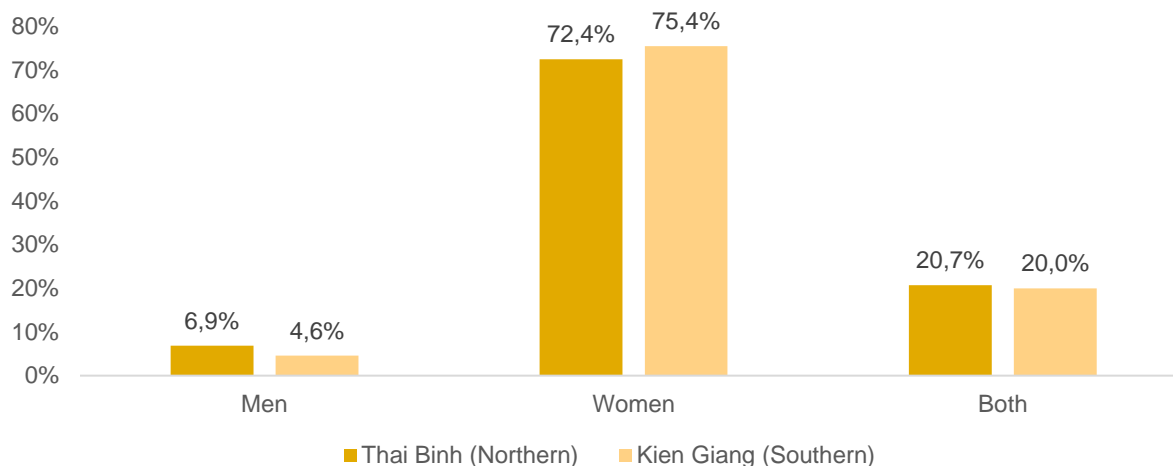
Figure 18. Farmers' power on keeping rice income



Source: Field survey

Although women have a strong power on keeping an income, this is not considered a constraint to men, because women also need to take care of family expenditures. Especially, 72.4% of women in the North and 75.4% of women in the South have to take care of this work by themselves. Only 20.7% of the Northern households and 20.0% of the Southern households can share this work with males.

Figure 19. Farmers' engagement on family expenditure



Source: Field survey

Regarding credit, the Southern farmers have a higher demand for borrowing money for developing their rice production than the Northern farmers, specifically, 75.0% of surveyed farmers in the South stated that they are having a loan, while this rate is only 33.3% in the North. It may result from the fact that the production area of the South is greatly bigger than the North, so the Southern farmers may need more capital to invest in their production. Regarding gender engagement in borrowing credit for rice production, in the North, 70.0% of the borrowing households have the power decision staying in the hand of women, while men only account for

30.0%. In the South, the sharing engagement between men and women is the most popular among borrowing households with a rate of 46.7%. This situation implies that the men in the North may have some limited awareness about the current loan of the family. It is possible because most of them are engaging in other kinds of off-farm work, so the borrowing decision is usually made by women.

Table 11. Farmers' engagement on borrowing credit for rice production

Borrowing credit	Borrowing	Men	Women	Both
Thai Binh (Northern)	33.3%	30.0%	70.0%	0.0%
Kien Giang (Southern)	75.0%	33.3%	20.0%	46.7%

Source: Field survey

Indeed, farmers do not usually borrow from the bank which requires many documents that need to be signed by both husbands and wives like Certificates of land use rights. They usually borrow from friends, neighbors, or relatives. In some cases, they also borrow from informal loan clubs. These clubs are founded by close friends, neighbors, or relatives who agree to contribute a fixed amount of money into a money pool. Each member will be withdrawn the lump sum (that they are expected to contribute to the club) in turn. Sometimes, if a member wants to withdraw the money (before his turn), he will need to pay some small interest like 1% over the lump sum for giving to the others who will withdraw after. Because all types of these borrowing are informal, it will be quite risky for the family if the borrowing is not being engaged by all family members, or at least both spouses. So, the case of the Northern farmers who do not have the shared engagement about the loan may cause possible conflicts for the family.

3.3.4. Labor division

It was mentioned above that rice production in the North is mainly conducted by females while in the South is by males. Besides, there is also a labor division in the household in other daily tasks.

Table 12. Gender participation in some other daily tasks

Other daily tasks	Men	Women
<i>Planting other crops</i>		
Thai Binh (Northern)	32.1%	67.9%
Kien Giang (Southern)	54.0%	46.0%
<i>Fishery activities</i>		
Thai Binh (Northern)	17.5%	82.5%
Kien Giang (Southern)	91.4%	8.6%

Other daily tasks	Men	Women
<i>Livestock-raising</i>		
Thai Binh (Northern)	21.5%	78.5%
Kien Giang (Southern)	35.0%	65.0%
<i>Agricultural hired jobs</i>		
Thai Binh (Northern)	25.0%	75.0%
Kien Giang (Southern)	50.0%	50.0%
<i>Off-farm jobs</i>		
Thai Binh (Northern)	76.1%	23.9%
Kien Giang (Southern)	95.0%	5.0%
<i>Housework</i>		
Thai Binh (Northern)	11.1%	88.9%
Kien Giang (Southern)	3.6%	96.4%
<i>Educating/taking care of the children</i>		
Thai Binh (Northern)	27.6%	72.4%
Kien Giang (Southern)	32.0%	68.0%

Source: Field survey

Off-farm jobs have a higher participation of men (76.1% in the North and 95.0% in the South), while livestock-raising, housework, and educating/taking care of the children are almost in charge by the women in both regions (more details in the Table above). Regarding planting other crops, fishery activities, and agricultural hired jobs, the participation of women in the North is higher than in the South, specifically 67.9%, 82.5%, and 75.0%, higher than 46.0%, 8.6%, and 50.0%, respectively. These numbers indicate that women in the North seem to have to take care of too many activities in their daily life rather than women in the South. Even in off-farm jobs which are supposed to be the role of men, in the North, there is still 23.9% of women needing to take care of these activities. This may be the reason why farmers in the North almost give the 'Agree' option to the statement that 'males should share housework with females', while the Southern farmers only rate it at 2.6. Indeed, the male farmers in the South seem to participate in almost income-raising activities of the family, while the women mainly focus on housework and children-caring. This labor division seems to get not much burden on women in the South, however, it also implies that they do not have enough experience and capability to gain more income by themselves, which can make them have a heavy dependence on men.

Figure 20. Average results for farmers' rating the statement 'males should share housework with females'

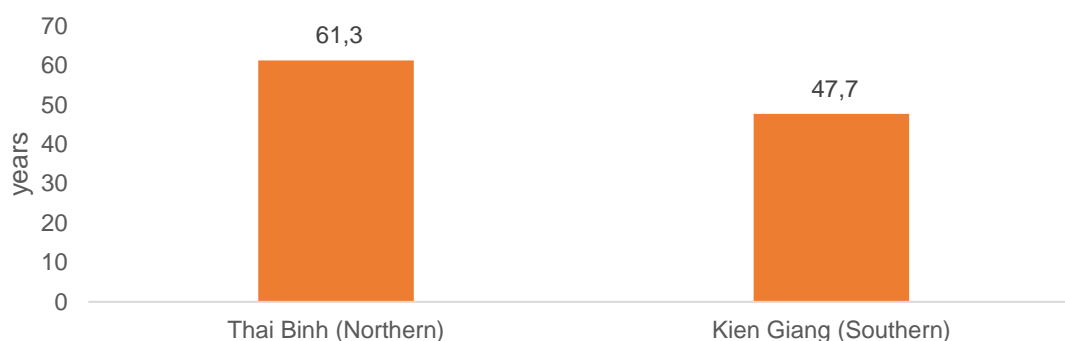


Source: Field survey

3.3.5. The health of female workers

Rice production is a labor-intensive activity. The working environment made farmers having negative health impacts from difficult weather condition and chemical residuals in the rice field, especially who are aging.

Figure 21. Average ages of rice farmers



Source: Field survey

It is revealed from the survey that, the average age of rice farmers is from 47-62 years old, specifically: the Northern farmers have an average age of 61.3 years old, and the Southern farmers have an average age of 47.7 years old. At these ages, people tend to have many health problems, for example, backache, muscle pain, and pain in joints, especially women who usually have weaker health than men. The older the farmers are, the more health problem they may face. Indeed, the Northern farmers who are older tend to have strict comments on the lack of health care/guidance in training courses. They rate 4.3 points, which means between 'Agree' and 'Strongly agree' for the statement that "women need more health care and health protection guidance in training courses". In the case of Southern farmers who are a little younger, their feedbacks are between 'Neither agree nor disagree' and 'Disagree'.

Figure 22. Farmers' opinion on necessity for health care and health protection guidance in training courses



Source: Field survey

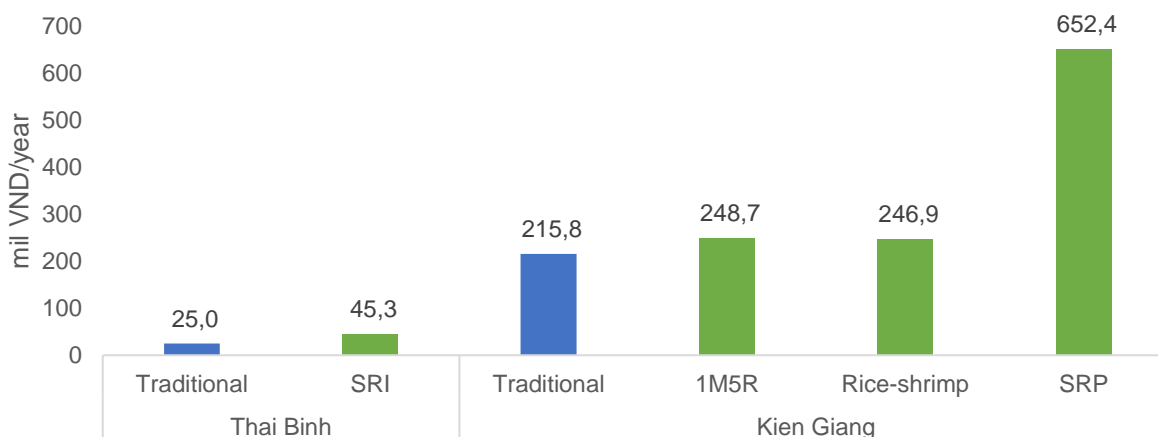
3.4. Effectiveness of applying climate-smart models and mechanization

3.4.1. Applying climate-smart models

The survey revealed that the income from climate-smart models is usually higher than from the traditional model. Indeed, if only calculating the rice income of rice-shrimp model, the income is lower than traditional model. However, if adding the shrimp income which is also an important part of this farming model, the rice-shrimp farmers still get a higher income compared to traditional model. It was investigated that, the average income from rice of rice-shrimp farmers is 110.4 mil VND/year, and shrimp income is 136.5 mil VND/year.

In Thai Binh, SRI farmers can get 45.3 million VND/year, 81.2% higher than traditional model. In Kien Giang, 1M5R farmers can get 248.7 million VND/year, 15.2% higher, rice-shrimp can get 246.9 mil VND/year, 14.4% higher, and SRP farmers can get 652.4 mil VND/year, 202.3% higher. Therefore, it is necessary to increase the application of climate-smart models, which help farmers to gain more income. Indeed, the more income will surely help farmers to strengthen the economic power for farmers in the society, even they are women or men.

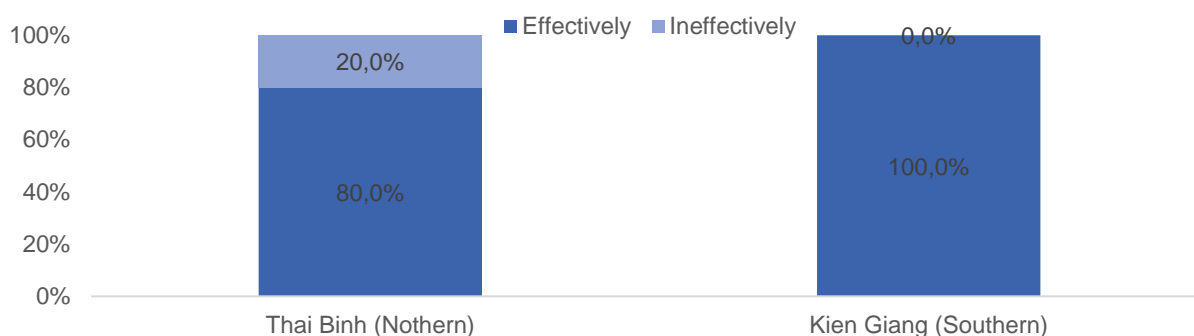
Figure 23. Income from paddy of farmers by models



Source: Field survey

+ Almost farmers in the two regions are agreeing that the training by production stages is very effective for them. Especially, 80.0% of Thai Binh farmers confirm that training by production stages brings good impacts for them, and 100.0% of Kien Giang farmers also state that. Besides, some of the farmers comment that the training courses are good, but if there are more extension staff coming to help and guide them directly on their farm, the effectiveness will be even greater. However, the interview with some extension staff in local regions in both provinces reveals that the number of extension staff is quite thin, so they cannot meet the demand of all farmers on guiding them directly. Even they also have to choose randomly the local communes to hold the training courses because they cannot handle all the areas at the same time. Therefore, the suggestion here should be increasing the number of training courses by enhancing the labor force of extension staff in the local areas.

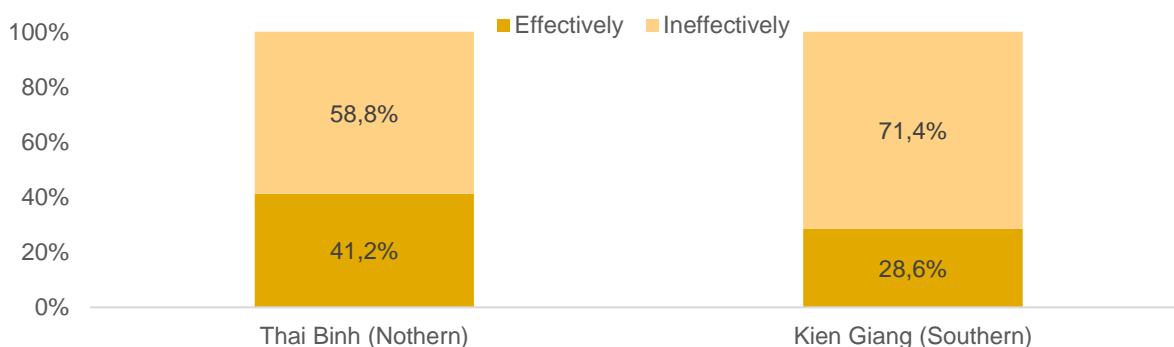
Figure 24. Farmers' assessment on training courses



Source: Field survey

+ Besides, farmers also comment that leaflets and handbooks are not strongly useful for them. Specifically, 41.2% of Northern farmers state that these materials increase their effectiveness in rice production for them, while only 28.6% of Southern farmers agree with this statement. Therefore, it is suggested that the extension budgets are used for leaflets or handbooks should be navigated to other more effective extension activities, for example, enhancing the extension labor force in the local areas.

Figure 25. Farmers' assessment on leaflets or handbooks



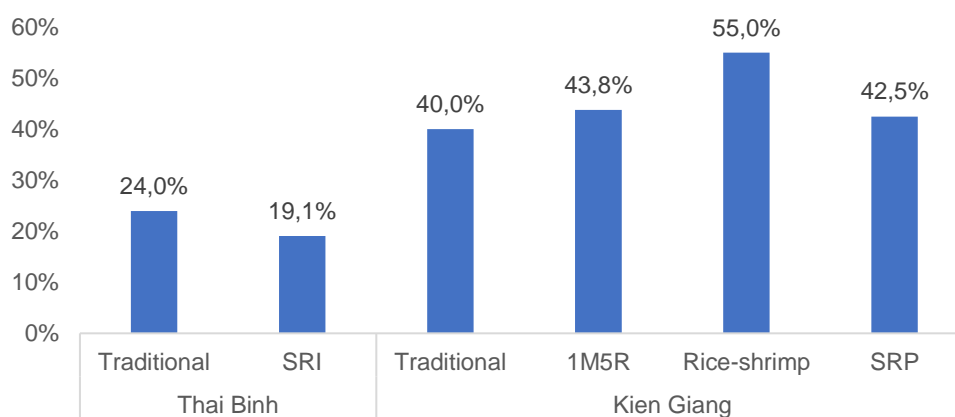
Source: Field survey

+ The farmers prefer the interesting contents (including video clips, and colorful pictures, etc.) that are integrated into training courses. These contents make the lessons more understandable and easier to remember. Besides the lesson forms (images, videos, etc.), the information of the training courses should also be paid attention, for example, some matter about health care and health protection guidance, which is found that have not been well-informed, should also be added in the training contents. In other words, it is necessary to improve the content-making capability for the extension staff in the local region too.

3.4.2. Application of mechanization

More application of mechanization can help farmers to increase their farming efficiency while still being able to save their energy to enjoy life. However, the application rate of mechanization in the survey is still low, especially in the North, the rate was around 20% only. In the South, the rate is higher at around 40-55%. Therefore, it is suggested that more initiatives about increasing mechanization application should be launched.

Figure 26. The mechanization rate in farming by rice models



Source: Field survey

However, to promote the mechanization application, the land consolidation should be sped up, especially in the North where has a very small farm size. Of which, the local government should become an active supporter to facilitate this process. Especially, it should effectively integrate activities from national and international projects to develop rural infrastructure in the paddy field, such as irrigation system, interior field traffic system. Besides, it is necessary to improve the capability of cooperatives in establishing Centers providing mechanization services in paddy areas.

In general, mechanization will reduce the overall time spent working in the fields for both women and men. Especially in the northern region, where women still participate in many farming jobs that require a lot of time and health such as rice transplanting, fertilizing, grass-cleaning, harvesting, drying, etc. Reducing time in the fields will help women have more time to take care of themselves, and invest in other potential activities that obtain more income for the family.

IV. CONCLUSIONS

The survey in Thai Binh (the North) and Kien Giang (the South) provinces revealed the gender role and gender constraints in Vietnam rice value chain varies. Based on this information, the report also recommended some solutions to promote women's empowerment, of which, some specific entry points were also withdrawn.

Gender roles: This report found out that women participate differently in the value chain between the North and the South. Especially, in the production stage, females play an important role in rice farming in the North while males play that role in the South. In both regions, comparing traditional and climate-smart models, the climate-smart model has higher female participation than the traditional model, which implies that the climate-smart model tends to give chance for women to join more deeply in rice-growing activities.

Gender constraints: The gender constraints in the rice value chain focus on five aspects: perceptions and decision power, production and communication resources, financial resources, labor division, the health of female workers. Regarding perceptions and decision power, the constraint is gender stereotype which indicates the specific role of gender in rice farming and even in the rice business. Regarding production and communication resources, the limitations stay on the lack of off-farm work opportunities and unequal gender participation in some communication resources and training courses. Regarding financial resources, credit information is not usually engaged by both spouses in the North. Regarding labor division, women in the North seem to have to take care of too many activities in their daily life rather than women in the South. Regarding the health of female workers, health care and health protection guidance in training courses should be paid more attention.

Recommended solutions include three aspects of increasing economic efficiency, increasing social communication, and increase farmers' health care. More details about the *entry points* are as follows:

+ Regarding economic efficiency, the report suggests that increase the training should be a must, because it will promote the application of climate-smart models, then increase the farmers' income in the context of climate change. Besides, application of mechanization should also be focused to increase the production efficiency, as well as reducing human workload, which surely help women to have more time to enjoy their lives or earn more income from other production activities. More importantly, job-creating in the local areas should also be paid more attention to help farmers to gain more income.

+ Regarding social communication, it is also necessary to run some campaigns to support more participation of the rice-producing supporters of the family in training courses, especially in the North. Besides, some measures for improving the capability of women associations should also be launched.

+ Regarding farmers' health care, the support towards increasing social insurance participation should also be considered. Besides, it is necessary to raise awareness and convince enterprises to invest more in developing their farmer community.

V. RECOMMENDATIONS

5.1. Increasing economic efficiency

It is necessary to boost income of rice farmers, because a higher income can enable farmers (both men and women) to have a better living standard and higher economic power in the society. This report suggests increasing farming income through: (i) spreading the application of climate-smart models; (ii) application of mechanization and advanced technologies; (iii) developing contract farming with rice exporters to produce premium products; and (iv) having additional income from side activities (e.g. raising animal like cattles, or homestay and farm tourism) and maximizing utilities of the waste and by-products (e.g. straw).

5.1.1. Boosting income through more applying climate-smart models

To increase the application of climate-smart models, it is necessary to increase the training. Indeed, through training, farmers can gain more knowledge, and then empowering their position in the rice value chain. However, it is necessary to indicate entry points in training that are suitable for taking actions.

In general, improving knowledge of smart farming models for women will help them develop their own family production plans. With a deeper understanding of climate-smart production, women and their spouse can work together to find income-enhancing opportunities. In addition, through attending training classes, women can build their own social network, thereby supporting each other in economic development.

5.1.2. Increasing application of mechanization

More application of mechanization can help farmers to increase their farming efficiency while still being able to save their energy to enjoy life. However, to promote the mechanization application, the land consolidation should be sped up, especially in the North where has a very small farm size. Of which, the local government should become an active supporter to facilitate this process. Especially, it should effectively integrate activities from national and international projects to develop rural infrastructure in the paddy field, such as irrigation system, interior field traffic system. Besides, it is necessary to improve the capability of cooperatives in establishing Centers providing mechanization services in paddy areas.

5.1.3. Developing contract farming with rice exporters to produce premium products; and having additional income from side activities and maximizing utilities of the waste and by-products

Other farming work: The FGD reveals that female farmers have great demand for training courses regarding other plants and livestock-raising, especially in the North where women take part in many agricultural farming activities. Therefore, it is necessary to open more training courses relating to other kinds of farming work. The detailed demand should be more carefully investigated in a bigger sample for getting the exact requirements and commodities that the farmers want to involve more.

Off-farm work: Based on the FGD, the farmers' feedback that the current traditional crafting which is suitable for female farmers cannot get much income. This is possible because there are not many enterprises working in this field. Therefore, if targeting to open more off-farm jobs for women, it is necessary to attract more investments in this crafting sector in the local area. For example, the local government should give some incentive policies for encouraging more enterprises to develop towards this crafting field. Possibly, this policy should integrate with the OCOP (One Commune, One Product) program to make the products get higher position in the market, then opening a more sustainable career development for females in the rural area.

5.2. Increasing social communication

Indeed, the labor division affects social communication, so the people who are in charge of the work will become the major communication hub of the family in terms of rice production. In the case of the North, it is the female farmer, and in the case of the South, it is the male farmer. This labor division is understandable. However, from the perspectives of some traders, especially companies, they prefer both husbands and wives should involve in the communication because in case the major workers are not available, the remaining family member (supporters) still have enough capability to deal with the matter with them. Therefore, it is highly necessary for *increasing the awareness and knowledge of these supporters about rice growing*.

However, this task is not easy because the labor division in the family may have a strong decision, and the supporters may not be willing to study. Therefore, it is necessary to encourage the farmers (major rice producers in the family) to ask their spouses to join the training course with them. Based on the survey, the Southern farmers do not face serious matters relating to joining the training course for both genders, but the Northern farmers do. So, it is necessary to run some campaigns to support more participation of the rice-producing supporters of the family in training courses, especially in the North. For example, campaigns planned and implemented by women's groups will make it more accessible to women. Another way is that training programs should require additional mandatory participation of both women and men. However, participation in training programs may affect the production and business activities of households during the

training period. Therefore, training programs need to be designed with financial support or time selection suitable for both men and women.

Through FGDs, it is also revealed that there are women's associations in the local area, but their activities are very limited, for example, spreading some information about gender inequality or domestic violence through giving leaflets, or holding some fan dance teams. Some interviewed female farmers wished that the women association could hold more training courses about agricultural production, or hold some classes about good ways to raise children; so, they will have a more happy community to join and share information. In other words, it is necessary to improve the capability of the women associations to get in touch more with local women, as well as support them to have better knowledge and happier life.

5.3. Increasing farmers' health care

In some households who the major rice-producers died, the supporters will continue the work, however, because of lack labor force and experiences, so they may face more vulnerable matters than other households. Therefore, it is also necessary for having more support for the farmers that their spouse was dead, especially for old farmers. Although the government issued some policies relating to the survivorship allowance, not all farmers joined the social insurance program. So, they become more vulnerable when getting older, and even when they died the spouse also gets more troubled too. Therefore, the support towards increasing social insurance participation should also be considered.

Besides, through the interviews with enterprises, it was revealed that enterprises have tried to develop a positive community including themselves and farmers who cooperate with them. Sustainable relationships with farmers can enable them to run their paddy-purchasing business more effectively. Some activities that enterprises include in their community development are supporting credits for purchasing input materials, buying paddy production, technical support... However, they have not run any activity relating to caring for the health of farmers or supporting female participation in the rice value chain. Therefore, it is necessary to raise awareness and convince enterprises to invest more in developing their farmer community, which will help them to strengthen their power in the long term. Some possible strategies are: (i) giving presents for women on special days such as International Women's Day, and Vietnam Women's Day; (ii) supporting farmers to take annual health checks; (iii) supporting farmers when they get illnesses or injuries...

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ANNEX 1: QUESTIONNAIRES



2022. Gendered
Rice valuechain_ qu

ANNEX 2: IMAGES OF THE FIELD STUDY

1. Cay Chom Hamlet, Linh Huynh Commune, Hon Dat District, Kien Giang Province



2. Muong 40 Hamlet, Tay Tien Commune, An Biên District, Kien Giang Province



3. Quynh Tho commune, Quynh Phu district, Thai Binh province



4. Vu Le commune, Kien Xuong district, Thai Binh province

