

A GENDERED ANALYSIS ON ACCESS TO RICE FARMING TECHNOLOGY IN THE VIETNAMESE MEKONG DELTA: FROM POLICY TO PRACTICE

Nguyen Anh Minh,¹ Gomathy Palaniappan,² Jaquie Mitchell,³ Nguyen Hong Tin,⁴ Nguyen Thanh Binh⁵

I. INTRODUCTION

Viet Nam is an agricultural country with a large export market globally. The agricultural transition process has contributed to poverty reduction in rural areas, reflected in increased income from both

Acknowledgments: This study is funded by the ACIAR project AGB-2019-153. The Authors would like to thank the Institute and the participants of the interviews and workshops in the three provinces of Mekong Delta, Vietnam.

¹ School of Social Sciences and Humanities, Can Tho University, Viet Nam

² School of Agriculture and Food Sustainability (AGFS), The University of Queensland, Australia

³ School of Agriculture and Food Sustainability (AGFS), The University of Queensland, Australia

⁴ Mekong Delta Development Research Institute, Can Tho University, Viet Nam

⁵ Mekong Delta Development Research Institute, Can Tho University, Viet Nam

Nguyen, Palaniappan, Mitchel, Nguyen, Nguyen

agricultural and non-agricultural activities.⁶ However, climate change and related natural disasters recently have significantly impacted the agricultural sector.⁷ Under the impact of climate change, there has been a significant shift in the workforce from agriculture to non-agricultural sectors, specifically from approximately 65% in 2000 to 47.4% in 2012, 39.4% in 2019, and 29.06% in 2021.⁸ According to Viet Nam's forecasts, the effect of climate change will cause a total GDP reduction of seven tenths of a percent to two and four tenths percent by 2050. This results from both direct and indirect effects on crop productivity, such as adjustments to irrigation and water availability in agriculture.⁹

⁶ N. H. Nhuan, N. T. T. Huyen, & N. T. K. Ly, *Overview of Gender Mainstreaming in Agriculture and Rural Development in Viet Nam*, 65 THE VMOST JOURNAL OF SOCIAL SCIENCES & HUMANITIES 100 (2023).

⁷ V. Clement, K. K. Rigaud, A. de Sherbinin, B. Jones, S. Adamo, J. Schewe, N. Sadiq, & E. Shabahat, *Groundswell Part 2: Acting on Internal Climate Migration*, World Bank, Washington, D.C. (2021), <http://hdl.handle.net/10986/36248>.

⁸ International Labour Organisation, *Employment in Agriculture (% of total employment) (modelled ILO estimate)*, <https://data.worldbank.org/indicator/SL.A-GR.EMPL.ZS?locations=VN> (2021). General Statistics Office of Viet Nam, *Population and Employment* (2022), <https://www-gso.gov.vn/en/statistical-data/>.

⁹ Z. Liu, J. Lan, F. Chien, M. Sadiq, & M. A. Nawaz, *Role of Tourism Development in Environmental Degradation: A Step Towards Emission*

As Vietnam continues its impressive growth, agriculture has continued to play a key role. Even though there were global challenges in 2023, Vietnam was the only country that increased its exports to China (a key trade destination) in 2023. The increase in export volumes to China was driven by an increase in fruits, vegetables, and rice exports. In 2023 Vietnam's fruit and vegetable exports increased by 138.7% compared to 2022 earning the country an impressive 3.6 billion USD.¹⁰ This agricultural products export data could also be linked to previous data from 2020 and the first five months of 2021. According to data from the Ministry of Industry and Trade's Vietnam Institute of Strategy and Policy for Industry and Trade Data, the country's agricultural sector continued to play a crucial role in Vietnam's economic development. Vietnam managed to set a new national agricultural products export value of 41.2 billion USD in 2020 and

Reduction, 303 JOURNAL OF ENVIRONMENTAL MANAGEMENT 114078 (2022).

¹⁰ J. Miller, *Vietnam's Secret Weapon: Agriculture*, TRADE DATA MONITOR (Mar. 1, 2024), <https://tradedatamonitor.com/datanews/vietnams-secret-weapon-agriculture/>.

an impressive 22.83 billion USD in the first five months of 2021.¹¹ The Mekong Delta (MD) is one of Viet Nam's main agricultural production areas. This region is also particularly vulnerable to the impacts of climate change and sea level rise because of its low-lying position, making the region prone to flooding and directly threatening the livelihoods of local people. Many people are likely to be forced to migrate due to this critical situation.¹² This contributes to the feminization trend in agriculture in Viet Nam in general and the MD in particular, as men and young people often migrate to urban areas to find employment, leaving women - especially older women, to manage farms and take care of their families.¹³ The consequences of migration not only

¹¹ T. T. Q. Van, *Export of Key Agricultural Products of Vietnam: Opportunities and Challenges in the Coming Time*, Vietnam Institute of Strategy and Policy for Industry and Trade, <https://vioit.org.vn/en/strategy-policy/export-of-key-agricultural-products-of-vietnam--opportunities-and-challenges-in-the-coming-time-4384.4144.html>.

¹² L. N. Ngo & T. Q. Tran, *Gender Equity in Key Agricultural Policy Documents in Cambodia and Viet Nam from 2001 to 2021*, 9 SOCIAL SCIENCES & HUMANITIES OPEN 100830 (2024).

¹³ N. S. Linh, *The State of Gender Equality and Climate Change in Viet Nam*, *Institute of Strategy and Policy on Natural Resources and Environment*, UN Women and United Nations Environment Programme ISPONRE, Hanoi (2021), <https://asiapacific.unw-omen.org/en/digital->

make the labor burden on women at home but also create significant challenges for them. T. Ho's in "Leaving the Rice Field" a study conducted between May and July 2023 in Mekong Delta's An Giang, Kien, Giang and Cau Mau reported that climate change had triggered unpredictable weather patterns including prolonged droughts and rainfall and rising sea level leading to increased salinity.¹⁴ As a result, the region known as the "rice bowl" of Vietnam¹⁵ has found itself with freshwater shortages for rice growing primarily because of rising salinity levels caused by the seawater intrusion and intensive shrimp farming.

The phenomenon of a shrinking and sinking Mekong Delta resulting from the rising sea level among other challenges has led to a high outmigration rate. Many young, working-age adults who are unable to secure jobs in rural areas are leaving the Mekong Delta region to work in industrial zones in big cities.

library/publications/2021/04/the-state-of--gender-equality-and-climate-change-in-viet-nam.

¹⁴ T. Ho, "Leaving the Rice Field," Department of Geography, Indiana University, <https://www.weathermatters.net/thuy-ho>.

¹⁵ Ho, "Leaving the Rice Field."

For example, citing GSO,¹⁶ states that according to Vinh Thuan People's Committee 2022 statistics, 2,049 young people (14%) of the population left to look for work in industrial zones in the cities. This is way much higher than the 1.7% total outmigration of the whole province. The effect of this outmigration is that there is a growing shortage of labor in the agriculture sector with majority of the population left behind comprising children and the elderly.¹⁷

World Bank Group¹⁸ noted that Mekong Delta's ecosystem is facing worrying degradation stemming from both climate change and human activities. Statistics from Vietnam's Agriculture Ministry indicated that Mekong Delta was losing 500 hectares of land annually as a result of erosion. Studies have also shown up to four grams of salt water per litre in some upriver spots resulting from rising sea levels and the ensuing salinity intrusion. This scenario has been

¹⁶ Ho, "Leaving the Rice Field." GSO (2022).

¹⁷ Ho, "Leaving the Rice Field."

¹⁸ World Bank Group, "For Mekong Delta Farmers, Diversification is the Key to Climate Resilience" (Oct. 21, 2021), <https://www.worldbank.org/en/news/feature/2021/10/21/for-mekong-delta-farmers-diversification-is-the-key-to-climate-resilience>.

recorded as being four times higher than the tolerance level of most crops. According to D. H. Hai et al.,¹⁹ the rising sea level is an imminent and real threat to agricultural activities in the Mekong Delta. Their study projects what they term an “extreme” scenario of the sea level rising by eight centimeters by 2030, 21 cm by 2050, and a possible 70 cm by 2100. However, they also have a different possible scenario they call the “moderate scenario” whereby the sea level will increase by eight cm by 2030, 17 cm by 2050, and 41 cm by 2100. These models predict a situation whereby Vietnam's rice production would be affected negatively because the available land for rice farming would shrink. Further, in their study, Hai et al.²⁰ have reported that the southeast and lower southern sections of the Mekong River Delta are high risk areas. In a “moderate” scenario the Mekong Delta would lose 19% and five percent of the land area used for the production of rice and other crops respectively.²¹

¹⁹ D. H. Hai, V.Q. Nam, & A. Samadhiya, *et al*, *Unravelling the Economic Impact of Climate Change in Vietnam's Mekong River Delta and Southeast Region*, 5 DISCOV SUSTAIN 125 (2024).

²⁰ Hai et al, 5 DISCOV SUSTAIN 125 (2024).

²¹ *Id.*

In addition, H. L. Dang, T. T. Pham, and N. K. Pham²² agriculture is a critical sector in Vietnam with the Mekong-Delta being one of the two key rice producing regions in the country. The climate change triggered sea level rise in the Mekong Delta has led to an increase in soil salinity. Dang, Pham and Pam²³ aver that there has been a notable increase in soil salinity in the Mekong Delta as well as a substantial increase in salt water in rivers and on land. As a result, agricultural activities including rice farming have been severely affected in the Mekong Delta of Vietnam.

Further, according to Dang, Pham and Pham²⁴ salinity intrusion has affected rice production in the Mekong Delta of Vietnam and both men and women farmers are learning methods of adapting to the salinity intrusion induced challenges. It was noted that the farmers who undertook salinity intrusion related

²² H. L. Dang, T. T. Pham, & N. K. Pham, "Gender-Differentiated Impacts of Salinity Intrusion on Agricultural Production on Agricultural Production and Food Security. A Study in the Mekong Delta, Vietnam." *EjD Discussion Paper DP 24-06* (2024), <https://www.efdinitiative.org/publications/gender-differentiated-impacts-salinity-intrusion-agricultural-production-and-food>.

²³ *Id.*

²⁴ *Id.*

training recorded higher yields and income than those who did not. However, the main challenge remained that more male farmers than female farmers attended the salinity adaptation trainings. This glaring gender disparity placed women farmers at a disadvantage compared to male farmers. The main reason that fewer women than men attend the training is because, unlike men, women have family related responsibilities. Therefore, it is crucial that flexible training schedules are developed more so to cater to female farmers who have limited time because of family-related responsibilities.²⁵

According to the United Nations (UN) Women,²⁶ women also face barriers to training and agricultural extension, particularly access to science and technology and rural microcredit. Access to information about science and technology is crucial for women to help them apply smart agricultural practices

²⁵ *Id.*

²⁶ UN Women, *Phụ nữ hoạt động nông nghiệp và Tăng trưởng toàn diện ở Việt Nam*, NXB THẾ GIỚI (2016), <https://asiapacific.unwomen.org/sites/default/files/Field%20Office%20ESEAsia/Docs/Publications/2017/01/Female-farmers-and-inclusive-growth-VN.pdf>.

adapted to climate change. However, women continue to lag behind in terms of information availability and the application of smart agriculture practices including crop selection, soil testing, and weather forecasting because of time constraints and cultural and socioeconomic issues.²⁷ This reality highlights the urgent need to develop and implement policies that support women farmers, aiming to reduce their burdens and enhance their ability to adapt to climate change. In Viet Nam in general and the MD in particular, the legal system, along with national policies and strategies, plays an important role in emphasizing gender mainstreaming. Notably, the National Strategy on Gender Equality for the 2021–2030 period and the 2006 Gender Equality Law were introduced with the goal of continuing to narrow the gender gap, creating conditions and opportunities for women and men to participate and benefit equally in various fields of social life, contributing to the

²⁷ SNV, *Leveraging Digital Technologies to Empower Women in Agriculture*, 30/8/2021 (2023), https://www.snv.org/update/leveraging-digital-technologies-empower-women-agriculture_

sustainable development of the country.²⁸ Balanced participation between genders in management and technical aspects not only enhances economic efficiency but also contributes to risk reduction and sustainable community development. This study was therefore conducted to evaluate the effectiveness of ensuring that Viet Nam's legal system and policies and strategies are not only implemented on paper but also bring benefits to local people. Effective implementation of gender equality policies in agriculture will not only help Viet Nam move closer to its sustainable development goals but also make a significant contribution to improving the status and quality of life for women in the MD region.

II. LITERATURE REVIEW

Agriculture, particularly in developing regions like the MD, has long been influenced by gender-related factors, with women often facing disparities in access to resources, technology, and decision-making power.

²⁸ See Vietnam Gender Equality Law (2006).

Understanding these disparities is crucial for promoting gender equality and sustainable development. This literature review aims to explore existing research on gender-based access to agricultural technology, the role of women in agriculture, and the impact of policies on gender equality in the agricultural sector, with a focus on the MD.

USAID Learns²⁹ gender relations report argues that although Vietnam has made notable strides in social economic development, there remain inequalities in between men and women caused by persisting norms and beliefs about gender roles. In some studies conducted in the Mekong Delta, it was discovered that women's involvement in making decisions related to rice farming is marginal. Their input is confined mainly to crop selection and post-harvest crop handling. However, this varies from household to household and might depend on whether the husband lives with the family full-time or works

²⁹ USAID Learns, *Climate Resilient Agriculture in the Mekong Delta*, GENDER ANALYSIS REPORT, Hanoi, Vietnam (2023), https://pdf.usaid.gov/pdf_docs/PA00ZTR9.pdf.

away from home. Also, it has been noted many women did not participate in decision making concerning rice farming in Mekong Delta due to inadequate knowledge. However, training empowered women, and they participated actively in decision-making. The report also notes the gender inequalities in rice production in the delta. The generalized stereotype is that men do more work than women, but in reality, in many cases, men and women do almost the same amount of work.

Further, USAID Learns notes that "in the Mekong Delta, Women, ethnic minorities and persons with disabilities have unequal access to a range of critical resources, including formal education, agricultural extension services, *and land ownership*."³⁰ In the Vietnamese culture, women are sometimes disadvantaged regarding land ownership. USAID Learns³¹ has noted that in Vietnam, most of the significant assets are owned by men, while ownership of the small assets in a home is dictated by the accepted

³⁰ USAID Learns (2023) at 9.

³¹ *Id.*

social norms. It is normal for men to own land and other productive agricultural equipment. These social norms have turned out to be an impediment to many women in the agricultural sector. A very small number of women have land to their names in Vietnam (about nine percent) yet they make up the bulk of the agricultural workforce (about 60%). Lack of land ownership by women in Vietnam has a negative impact on their contribution to agricultural production. Farm improvement and adopting modern farming methods and technology are most of the times cost intensive. This reality calls for injection of capital e.g. to acquire modern farming equipment. One of the ways of raising this much needed capital is securing financing from formal financial institutions. However, the reality is that majority of women in agriculture cannot access this financing because they have no household land ownership certificate.

The crucial role that women play in agriculture, particularly in developing nations, has been emphasized by numerous studies. According to the Food and Agriculture Organization (FAO), women

account for 43% of the global agricultural workforce, with this figure being even higher in many developing regions.³² Despite their significant contributions, women often have limited access to essential resources such as land, credit, and technology.³³ These inequalities are often rooted in cultural norms and legal frameworks that prioritize male ownership and decision-making rights in the agricultural context.

Organisation for Economic Co-operation and Development (OECD)³⁴ indicates that many women in Southeast Asia live in rural areas. Forty-five percent of women aged between 15-64 years (approximately 107 million women) live in rural areas. This age bracket could be termed the working-age women age bracket. It is crucial that rural women in Association of Southeast Asian Nations (ASEAN) countries are empowered to participate in labor and entrepreneurial

³² Food and Agriculture Organization (FAO), *The Role of Women in Agriculture*, 3 FAO ESA Working Papers 1 (2011), <http://www.fao.org/docrep/013/am307e/am-307e00.pdf>.

³³ C. Doss, G. Summerfield, & D. Tsikata, *Land, Gender, and Food Security*, 20 FEMINIST ECONOMICS 1 (2014).

³⁴ OECD, *Strengthening Women's Entrepreneurship in Agriculture in ASEAN Countries* (2021), <https://asean.org/wp-content/uploads/2021/07/Background-Report-Strengthening-Womens-Entrepreneurship-in-Agriculture-1.pdf>.

activities. The agriculture sector has proven to be a major source of employment for women in ASEAN countries. The available data underscores the glaring need for countries to work on policies that empower women working in this sector, not only to empower them individually but also because of the crucial role agriculture plays in the development of these economies. The empowerment of women working in agriculture means that their increased incomes would lead to the improvement of their families' quality of life.

It is estimated that about 26.7% of ASEAN women work in the agriculture sector. However, the number of women working in agriculture within ASEAN varies from country to country. For example, in Lao PDR 70% of women work in agriculture, Myanmar 45% and 41% in Vietnam.³⁵ The report further underscores the importance of availing gender-sensitive training to rural women. Most of the training opportunities do not take into account the unique needs of rural ASEAN women, such as travel difficulties and social norms. As

³⁵ OECD (2021), at 14.

a consequence, many rural ASEAN women are disadvantaged because they access inadequate information on contemporary farming techniques and available financial options. A case in point is where the report notes that inadequate training has led to women using low-quality farm inputs such as fertilizer and a limited uptake of women-friendly farm equipment.³⁶ USAID Learns³⁷ report noted that extension officers have started making deliberate efforts to invite women for agricultural training. Despite this effort men have more opportunities for training than women. The report suggests various possible causes for this disparity. The report first cites “structural exclusion” whereby local governments in the Mekong Delta do not view women as potential beneficiaries of agricultural extension training.³⁸ As a result, the local governments tailor the training to suit the needs of male farmers, leaving out almost half the farming population (women). The formal invitations are also more often than not sent out to male farmers.

³⁶ OECD (2021), at 21.

³⁷ USAID Learns (2023), at 10.

³⁸ *Id.*

Also, USAID Learns³⁹ report notes that women in the Mekong Delta face some cultural norms that keep them from attending agricultural extension training. Some female farmers might feel intimidated by the presence of male farmers in the agricultural extension training. This is largely informed by the patriarchal nature of Vietnam whereby women are not very active in decision making in both their homes and in the community.

The USAID Learns⁴⁰ report has also noted that compared to men, women are disadvantaged regarding access to agricultural information. They have to find ways to gain agricultural information separate from the formal agricultural extension training given by the local government. Some of the informal methods they use to gather agricultural information, such as new technologies and new farming techniques, include learning from their villages, their friends, relatives, and the husbands who are willing to share with their wives.

³⁹ USAID Learns (2023), at 3.

⁴⁰ *Id.* 10.

In the agricultural sector, women's participation in home and community decision-making has been restricted by the division of labor based on gender and the additional duties imposed by social conventions. Although the government has provided preferential credit access to rural women, the link between this program and women's vulnerability to climate change or climate risks has not been clearly demonstrated. To better prepare women to adapt to climate change, it is essential to provide new technology and expand livelihood diversification opportunities.⁴¹ Therefore, access to agricultural technology is seen as a key factor in enhancing productivity and ensuring sustainability in the agricultural sector. However, research also indicates that women often face barriers in accessing modern agricultural technology, including limited access to education and training, cultural and social constraints, and lack of financial resources.⁴²

⁴¹ Linh, UN Women and United Nations Environment Programme (2021).

⁴² World Bank (WB), *Gender in Agriculture Sourcebook (English)*, Agriculture and Rural Development Washington, D.C.: World Bank Group (2009), <http://documents.worldbank.org/curated/en/799571468340869508/Gender-in-agriculture-sourcebook>.

According to C. M. Tuan, J. Y. Lee, R. M. Nayga, and D. T. Quach⁴³ in their study conducted in three provinces in Mekong Delta (Can Tho City, Cau Mau, and KienGian) empowering women in agriculture (specifically rice farming) leads to increased production. The findings of their study showed an increase of four hundred and fifty sevenths tons/ha and four and 35 hundredths tons/farmer. Another recorded positive aspect of empowering women in rice farming in the Mekong Delta increase in household income from rice farming. During the period of study, the available data showed that when women who are involved in rice farming were empowered, the household income from rice farming rose by 24.168 million VND (982.04 USD) per farmer and 2.805 million VND (113.98 USD) per hectare. Therefore, it goes without saying that empowering women involved in rice farming in the Mekong Delta leads to increased productivity and income.

⁴³ C. M. Tuan, J. Y. Lee, R. M. Nayga, & D. T. Quach, Can Women Empowerment Enhance Rice Productivity? The Case of Vietnam, SUSTAINABLE DEVELOPMENT 1 (2024).

Viet Nam's 2006 Gender Equality Law includes provisions guaranteeing women's equal rights in science and technology, among other sectors.⁴⁴ Vietnam 2006 Law on gender equality number 73/2006/QH11 recognizes the need to create equal opportunities for both women and men. Article Four of the law stipulated that:

The goals of gender equality are to eliminate gender-based discrimination, create equal opportunities for men and women in socio-economic development and human resource development, strive to reach genuine equity between men and women, establish and strengthen cooperative and supportive relations between men and women in all aspects of social and family life.⁴⁵

Therefore, it is important to note that Vietnam has provided in law the need to create an environment where women are given equal opportunities to grow all aspects of their lives.

⁴⁴ See Luật Bình đẳng giới năm 2006, số: 73/2006/QH11, ngày 29 tháng 6 năm 2006. Vietnam 2006 Law on gender equality No. 73/2006/QH11.

⁴⁵ Vietnam 2006 Law, No. 73/2006/QH11 (2006).

However, a look at OECD⁴⁶ report Strengthening Women's Entrepreneurship in Agriculture in ASEAN Countries shows that some of the stipulation of the Vietnam 2006 Law on gender equality No. 73/2006/QH11 are yet to be met.⁴⁷ For example, Article 15 of the states that

1. Men and women are equal in accessing and applying science and technology.
2. Men and women are equal in attending training courses on science and technology, dissemination of findings of scientific and technological researches, and innovations and patents.⁴⁸

However, the OECD⁴⁹ reports notes that many of the agriculture training programs target men farmers. Even when the training programs are meant to benefit women they fall short of considering the unique needs of women such as the training time slots. Such failings leave women in Agriculture at a disadvantage compared to men such as unequal access modern

⁴⁶ OECD (2021).

⁴⁷ Vietnam Gender Equality Law (2006).

⁴⁸ *Id.*

⁴⁹ OECD (2021).

farming methods and scientific development in the agriculture sector.⁵⁰

Resolution No. 28/NQ-CP which provides a long-term strategic framework for implementing gender equality from 2021 to 2030, was issued based on this law.⁵¹ This strategy sets specific goals to narrow the gender gap in key areas such as politics, education, health, labor, employment, and information and communication. The main purpose is to create an enabling environment where women and men can equally participate in and benefit from the achievements of social development, thereby contributing to the sustainable development of the nation.

The implementation of the Gender Equality Law⁵² and the National Strategy on Gender Equality in Viet Nam has made certain strides in improving awareness and practices regarding gender equality. However, effectively applying these policies still faces many

⁵⁰ *Id.* at 21.

⁵¹ See Vietnam Gender Equality Law (2006); Nghị quyết 28/NQ-CP ban hành chiến lược quốc gia về bình đẳng giới giai đoạn 2021 – 2030, ngày 03 tháng 3 năm 2021.

⁵² *Id.*

challenges. Significant changes in social attitudes and behaviors regarding gender, along with commitments from all levels of government, are necessary to achieve the ultimate goal of integrating gender equality policies into various aspects of social life, including issues related to access to technology in the agricultural sector. This will promote the sustainable development of the rice sector as well as contribute to comprehensive economic and social development in the MD in particular and Viet Nam as a whole.

III. METHODS

The study was conducted in three provinces in the MD of Viet Nam (An Giang, Dong Thap and Kien Giang).

These provinces were selected as research sites for the following reasons:

- They represent areas with diverse geographical and climatic characteristics, thereby providing a comprehensive view of gender differences in access to science and technology in agriculture.

- These are important rice-growing regions and are also the provinces most heavily affected by climate change such as flooding, salinity intrusion and extreme weather events.

Thus, access to modern research science and technology that is climate-adapted is crucial for people's livelihoods, particularly for female farmers.

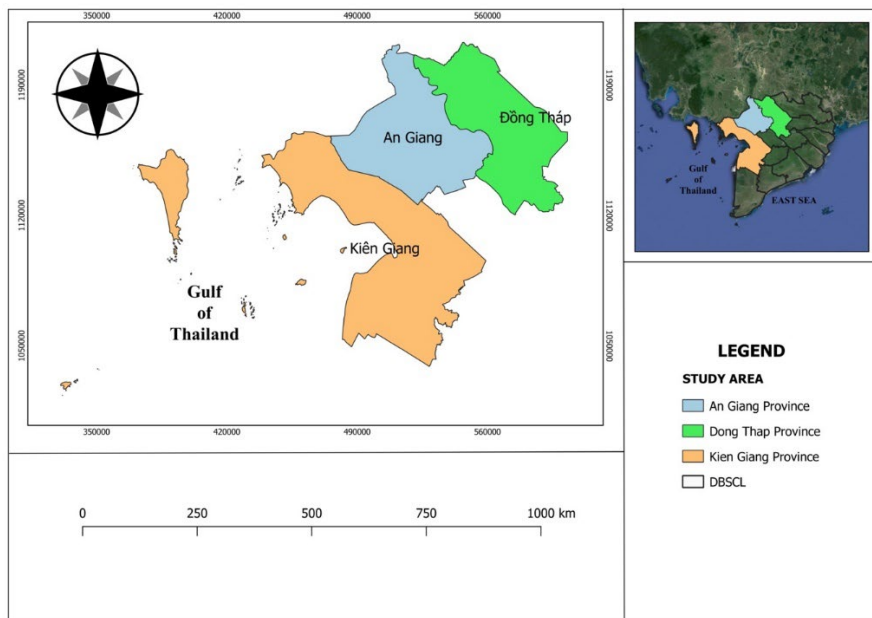


Figure 1: Research sites in An Giang, Kien Giang, and Dong Thap provinces

This study uses a combination of qualitative and quantitative methods to analyze gender differences in access to science and technology in agriculture in the MD. Specifically, the study was conducted through the following steps:

Initially, the study collected secondary documents on socio-economics and the application of science and technology in farming in the study area. After collecting and analyzing data at the desk, the next step was to collect data in the study area as follows:

- **In-depth interviews:** In-depth interviews were conducted with six key informants in the community, including both men and women, to collect their views, perceptions and experiences on accessing science and technology in agricultural production. These interviews aimed to further explore gender barriers in accessing information and technology.
- **Focus Group Discussions (FGDs):** A total of three FGDs were conducted in each province with the participation of male and female farmer groups in An Giang, Kien Giang and Dong Thap provinces. Three FGDs helped to collect collective opinions on the current status of access to and use of science and technology in agriculture, and

to explore gender differences in this process.

- Household survey: The survey was conducted on 135 households in the three study sites to collect quantitative data on the status of access to and application of science and technology. The survey focused on factors such as gender, education level, and participation in farmer organizations.

IV. RESULTS

A. General Information of Respondents

Table One below shows the demographic distribution of respondents from three provinces in Viet Nam: An Giang, Dong Thap, and Kien Giang. The table summarizes data on gender, education level, and participation in farmer organizations of 135 respondents.

Table 1. Demographic information of respondents

	Province (n = 135)						Total	
	An Giang		Dong Thap		Kien Giang			
	Count	%	Count	%	Count	%		
Gender								
Male	36	85.7	44	93.6	43	93.5	123	91.1
Female	6	14.3	3	6.4	3	6.5	12	8.9
Level of education								
Illiterate	2	4.8	3	6.4	2	4.3	7	5.2
Elementary	9	21.4	19	40.4	11	23.9	39	28.9
Secondary	17	40.5	16	34.0	24	52.2	57	42.2
High school	14	33.3	9	19.1	9	19.6	32	23.7
Farmers' organization								
Co-op	13	31.0	30	63.8	27	58.7	13	31.0
Farmers' group	9	21.4	7	14.9	5	10.9	9	21.4
None	20	47.6	10	21.3	14	30.4	20	47.6
Total	42	31.1	47	34.8	46	34.1	135	100.0

Sources: Survey Results in 2022

The distribution of data from Table One indicates a notable gender disparity within the survey sample, with men comprising 91.1% and women only eight and nine tenths percent. The predominance of male respondents can be explained by their role in agricultural production, as farming is traditionally viewed as a primary responsibility for men. Regarding educational levels, respondents varied widely, ranging from illiterate (five and two tenths percent), primary school (28.9%), secondary school (42.2%), to high school (23.7%). This diversity clearly reflects the educational challenges within the region. The gender and educational differences among respondents in An Giang, Dong Thap, and Kien Giang did not show significant variance, so no specific analysis was conducted for each region.

The data also reveals respondent participation in organizations such as cooperatives (31%) and farmer groups (21.4%). When comparing across provinces, it is observed that participation in cooperatives is higher in Dong Thap and Kien Giang compared to An Giang. However, participation in farmer groups is more

prevalent in An Giang than in the other two provinces. Overall, a large percentage, 47.6%, does not participate in any organizations, indicating barriers to accessing resources through these groups and underscoring the need to enhance support for connecting farmers with resources that can improve their production and livelihoods.⁵³

B. Assessing Men's and Women's Access to Science and Technology

1. Attending Training and Meeting

The study analyzed in depth the proportion of respondents participating in training distributed by gender groups, educational level and by local area to show how men and women have access to science and technology (Table Two).

⁵³ See T. Nhat Lam Duyen, R. F. Rañola, B. O. Sander, R. Wassmann, N. D. Tien, & N. N. K. Ngoc, *A Comparative Analysis of Gender and Youth Issues in Rice Production in North, Central, and South Vietnam*, 13 CLIMATE & DEVELOPMENT 115 (2020).

Table 2. Respondent training attendance rate

Training attendance rate (n = 135)					
		No		Yes	
		Count	%	Count	%
Gender	Male	51	37.8	72	53.4
	Female	6	4.4	6	4.4
Province	An Giang	20	47.6	22	52.4
	Dong Thap	14	29.8	33	70.2
	Kien Giang	23	50.0	23	50.0
Total		57	42.2	78	57.8

Sources: Survey Results in 2022

The analysis results from Table Two show a discrepancy among respondent groups in participating in training courses throughout the three provinces under study. Specifically, 58.5% of men attended training compared to only 50% of women. This disparity is evident not only in terms of gender but also across educational levels, where respondents with higher education levels are more likely to participate in training courses. For instance, respondents with a secondary education level had the highest participation rate (63.2%), followed by primary education (53.8%) and high school education (53.1%). Additionally, this discrepancy is also observed geographically, with Dong Thap having the highest participation rate at 70.2% compared to 50% in Kien Giang and 52.4% in An Giang.

Table Three further describes the number of respondents who participated in training courses (ranging from one to three classes, four to six classes, and seven to ten classes) across the three provinces of An Giang, Dong Thap, and Kien Giang. Data from Table Four highlights the issue of inequality in access

to training and scientific technology, making the disparity even more apparent. More specifically, at the one to three class level, a significantly larger percentage of men participated in training courses, with 92.2% of men attending compared to only seven and eight tenths percent of women. At higher levels, 100% of the participants attending four to six and seven to ten classes were men, with no data showing women's participation at these higher levels of training. This discrepancy not only highlights the difficulties in addition to reflecting the gender gap in training possibilities but also underscores the challenges in implementing gender equality policies.

The National Strategy on Gender Equality for the 2021–2030 term and the 2006 Gender Equality Law are two examples of policies that have established targets to achieve gender equality in all areas.⁵⁴ However, the information shown in Tables Two and Three indicates that a great deal more work is required to put these policies into practice and enforce them, especially in the agricultural sector, in order to

⁵⁴ See Vietnam Gender Equality Law (2006).

guarantee equal right participation in farming activities, especially for women.

Table 3. Percentage of respondents attending training course

Province	Gender	Number of training course attendance (n = 78)					
		From 1-3 classes		From 4-6 classes		From 7-10 class	
		Count	%	Count	%	Count	%
An Giang	Male	15	68.2	3	13.6	1	4.5
	Female	3	13.6	-	-	-	-
Dong Thap	Male	23	69.7	6	18.2	1	3.0
	Female	3	9.1	-	-	-	-
Kien Giang	Male	16	69.6	6	26.1	1	3.8
	Female	-	-	-	-	-	-
Total	Male	54	69.2	15	19.2	3	3.9
	Female	6	7.7	-	-	-	-

Sources: Survey Results in 2022

2. Evaluation of Knowledge Sharing Rate

The data in Table Four continues to provide information on knowledge sharing after attending training sessions in the three provinces of An Giang, Dong Thap, and Kien Giang. This allows the study to analyze the level of access to and application of new knowledge between male and female respondents.

Table 4. Knowledge sharing rate after attending training sessions by respondents

		Province (n = 135)							
		An Giang		Dong Thap		Kien Giang		Total	
		Count	%	Count	%	Count	%	Count	%
Sharing knowledge after training course	Yes	5	11.9	10	21.3	10	21.7	25	18.5
	No	22	52.4	24	51.1	21	45.7	67	49.6
		15	35.7	13	27.7	15	32.6	43	31.9
		Not sure							

Sources: Survey Results in 2022

Given that men made up the bulk of survey participants, Table Four represents the rate at which men share their knowledge with women following training sessions. In all, only 18.5% of respondents said they had shared knowledge following training, compared to 49.6% who said they had not shared and 31.9% who were unsure. When variations between regions were examined, An Giang had the lowest rate (11.9%), followed by Kien Giang (21.7%) and Dong Thap (21.3%). It was suggested by the majority of men that women were not involved in agricultural production or had less expertise than men, hence there was no need to share knowledge with women.

However, knowledge sharing between men and women after training sessions is essential because it improves the skills and understanding of both genders as well as represents a significant step towards promoting gender equality at the local level. The limited participation of women in meetings and training sessions, combined with the low level of knowledge sharing from men, has hindered women's ability to access the latest technologies and

information. This not only reduces their potential for personal skill and capacity development but also affects their opportunities to contribute to socio-economic development in general and agriculture in particular, thereby diminishing women's voices both within the family and the community.

C. Decision-Making Power of Men and Women in Accessing Science and Technology

Based on the above data table, it can be seen clearly, the difference between men and women in participating in decision-making and accessing science and technology in the agricultural sector in the three provinces.

Table 5. The percentage of decision-making power of men and women

	Decision-making (n = 135)					
	Meeting		Training course		Apply Science and technology	
	Male (%)	Female (%)	Male (%)	Female (%)	Male (%)	Female (%)
An Giang	85.2	22.1	90.0	17.5	96.0	7.7
Dong Thap	84.0	23.2	92.1	14.8	94.9	10.5
Kien Giang	80.9	27.2	90.4	20.0	94.8	14.1
Illiterate	85.7	20.0	92.9	12.5	94.3	13.3
Elementary	84.1	25.4	93.1	16.9	96.9	8.6
Secondary	82.8	24.5	89.5	18.2	94.9	11.2
High school	82.8	23.1	90.3	17.3	93.7	10.6
Mean	83.3	24.2	90.9	17.3	95.2	10.5

Sources: Survey Results in 2022

The findings from Table Five show a striking trend: men overwhelmingly dominate community

activities and training in the three surveyed provinces. In particular, the average participation rate of men in meetings is 83.3%, while for women, it is only 24.2%. Similarly, in local training sessions, approximately 90.9% of participants are men, compared to just 17.3% women. Men are also primarily using scientific methods in agriculture because of the gender norms that are in place in the society and their dominance in meetings and training sessions. This is demonstrated by the fact that women accept new agricultural technologies at a rate of just 10.5%, while males adopt new technologies at a rate of 95.2%.

This notable disparity not only draws attention to the unequal access to and usage of technology among the genders, but it also deeply reveals the social and cultural obstacles that rural women must overcome. The unpaid labor that women in rural areas commonly perform, such as childcare duties and housework, limits their time and capacity for engaging in specialized training programs or utilising high-tech agriculture. These obstacles not only limit personal

development but also hinder progress towards gender equality in rural communities.

To address these challenges, the effective implementation of policy and law currently is essential. Efforts must be made to break down cultural and traditional barriers and promote equal participation of women in all aspects of social and economic life, particularly in education and vocational training. There were no discernible variations between responder groups in terms of geography or educational attainment in this study. This implies that regardless of location or educational attainment, there is a fairly constant disparity in the participation in training programs and community activities. The observed discrepancy suggests that there would be numerous dangers and difficulties in implementing gender equality legislation in the future.

D. Perspectives on Gender Equality in the Study Area

Table 6. Research results on views on gender equality in the study area

Categories	Province (n=135)						
	An Giang		Dong Thap		Kien Giang		
	Count	%	Count	%	Count	%	
The perspective	Inequality	6	14.3	9	19.1	6	13.0
	Equality	33	78.6	38	80.9	40	87.0
	Unknown	3	7.1	-	-	-	-
Total	42	100	47	100	46	100	

Sources: Survey Results in 2022

The information from Table Six reflects evaluations of the gender equality situation in the MD across the research study. The majority of respondents in each province rated the gender equality situation as "Equality," with the highest percentage being 87% in Kien Giang and the lowest at 78.6% in An Giang. Nonetheless, a considerable segment of participants continues to view gender equality as "Inequality" with this perception ranging from 13% in Kien Giang to 19.1% in Dong Thap. Only a small percentage of respondents could not decide or were unsure how to answer.

The high percentage of favorable evaluations for gender equality suggests that laws and programs promoting gender equality are becoming more widely known and implemented in Vietnam. The public's knowledge of gender equality has somewhat increased as a result of local governments' investments, and these policies are being actively implemented. The study results, however, continue to show limitations with regard to women's access to and use of technology in agricultural activities, as well as their involvement in

meetings and training sessions. This points to a discrepancy between policy and practice, as social and cultural norms still prevent women from fully and effectively engaging in these activities. This gap not only prevents women from accessing cutting-edge agricultural technologies and methods, but it also stands in the way of rural communities' equitable and all-encompassing growth.

E. Discussion on Policy on Gender Equality in Access to Science and Technology

According to Article 15 of the Gender Equality Law 2006,⁵⁵ gender equality in the field of science and technology is regulated as follows:

1. Both men and women have equal access to and application of science and technology.
2. Both men and women have equal access to training courses in science and technology, as well as the dissemination of research findings, technological advancements, and inventions.

⁵⁵ Vietnam Gender Equality Law, Art. 15 (2006).

Although the Gender Equality Law 2006 and the National Strategy on Gender Equality 2021-2030 were designed to reduce gender gaps in areas such as education, labor, and information access, the practical application of these regulations in the daily lives of female farmers remains challenging.⁵⁶ Research indicates that while there has been some progress in implementing legal provisions for gender equality to ensure fair access to science and technology, there are still significant obstacles.

Particularly, because of social, cultural, and economic restrictions, women in the study region still have limited access to the most recent scientific and technology resources. In agriculture, men predominate in terms of training, decision-making, and technical execution; women, on the other hand, are less likely to be involved in significant choices or have access to technical training. Stereotypes that men play important and decisive roles in agricultural and communal activities, are reinforced by deeply

⁵⁶ See Vietnam Gender Equality Law (2006).

ingrained social ideas about women's roles, such as being limited to household duties.

Another issue highlighted by the research is the inconsistency in policy implementation across different localities. Although the participation of women in workshops and training has increased due to government and international organization support programs, this participation remains uneven and falls short of expectations due to a lack of support and encouragement from the community and family.

V. CONCLUSIONS

To achieve gender equality in access to science and technology, efforts from multiple fronts are required: policies must be implemented more effectively, coupled with raising awareness and changing attitudes within the community regarding the roles and capabilities of women in agriculture. It is essential to enhance training and specialized programs for women and create favorable conditions for them to participate in and contribute to decisions related to science and

technology, in order to fully harness the potential of both men and women in the agricultural sector.

The study also reveals a severe gender imbalance in agricultural production activities. Men predominantly access and apply science and technology, while women face significant challenges in participating in training and meetings related to agriculture due to cultural, social, and economic barriers. This results in limited access to information and new technologies, reducing opportunities for development and increasing productivity among women. Despite the implementation of policies such as the Gender Equality Law 2006 and the National Strategy on Gender Equality 2021-2030, the practical application has not been highly effective due to unresolved barriers.

Based on this, the study proposes the following recommendations:

- Enhance training and workshops for women: Develop specialized training and workshops for women in agriculture, focusing on modern farming techniques and the application of new technologies.

- Eliminate cultural and social barriers: Implement awareness campaigns on the roles and rights of women in agriculture to change social perceptions and eliminate gender biases.
- Ensure effective implementation of gender equality policies: Strengthen monitoring and evaluation of gender equality policies to ensure that support programs are not just on paper but provide tangible benefits to women.
- Establish financial support and facilitate resource access: Establish special financial support policies for female farmers, such as preferential credit programs, to enable them to invest in new technologies and expand production. Additionally, facilitate women's access to resources such as land and agricultural equipment.

These recommendations aim to bridge the gender gap in the agricultural sector in the MD, while promoting sustainable and inclusive development for rural communities.