

BUILDING GENDER EMPOWERMENT AND CLIMATE RESILIENCE THROUGH NATURAL FARMING SYSTEMS

A grounded perspective from
Bangladesh and Sri Lanka - 2025



ABOUT US



World Vision South Asia and the Pacific is a child-focused organisation working across ten countries, devoted to improving the lives of children, families and their communities around the world and creating lasting impact that will live on in generations to come. World Vision serves all people, regardless of religion, race, ethnicity, or gender.

ACKNOWLEDGEMENTS

Authors

Dr Jagjit Plahe

Lead Author
Monash University
Jagjit.Plahe@monash.edu

Jagjit is Associate Professor of International Political Economy. Her research interests include global governance, trade justice, and the management and organisation of equitable and sustainable food systems in Asia.

Dr Anjana Purkayastha

World Vision International,
South Asia & Pacific Region.
anjana_purkayastha@wvi.org

Anjana Purkayastha is the Programme Quality Advisor for South Asia and Pacific Region, World Vision International. She brings in years of experience in the development industry with special reference to Field Operations, Programme Quality, Research & Strategy. Her more recent research experiences are on Urban Resettlements and Gender Resilience. Some of her research interests include natural farming, cities & food and migration in the South Asia and Pacific region.

The Project And Research Methodology Was Developed By:

Associate Professor Jagjit Plahe
Dr Anjana Purkayastha
Olivet Visda
Mona Stella Mariano
Joan Sang
Philip Kames Ceriales
Shimu Karolin Shikder
Sabiha Ahmed
Keshini Soza

Data Collection Teams Bangladesh

Ruhila Parvin
Sabiha Ahmed

Sri Lanka

S. Kishokumar
V. Kesana
R. Thibisha
S. Vanaiya
Thavarasa Tharshanath
G. Divyapratha
Thenuja Manokaran
S. Keerthika

ACRONYMS

DS	Divisional Secretariat
FGD	Focus Group Discussion
GHG	Greenhouse Gas
HYVs	High Yielding Varieties
IPCC	Intergovernmental Panel on Climate Change
KOICA	Korea International Cooperation Agency
PAR	Participatory Action Research
RoL	River of Life
WV	World Vision
WHH	Women Headed Household
WVB	World Vision Bangladesh
WVSAP	World Vision South Asia & Pacific
WVSL	World Vision Sri Lanka

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EXECUTIVE SUMMARY

Women play a major role in natural farming agri-food systems including seed saving, sowing, transplanting, weeding, harvesting, processing, transporting and selling. As preservers of biodiversity and plant genetic resources, the overall role of women in agri-food systems is vital for food and nutritional security as well as in building climate resilience. According to the Food and Agriculture Organization (FAO), as the world grapples with transitioning to sustainable and resilient agrifood systems, it is crucial to focus on “gender equality and women’s empowerment”. While agroecology is underpinned by the principles of gender equality, as role of women is undermined in the transition from conventional to natural farming practices due to discriminatory social-cultural norms. Furthermore, top-down strategies to adapt to climate change are often technocentric and disconnected from local realities that women face in affected communities. There is an urgent call from practitioners and academics alike, for evidence-based research that bridges agroecology and gender equality and focuses on the lived, felt and embodied experiences of women. There is a gap in knowledge on the interactions between gender, agroecology and climate change.

World Vision (WV) is supporting several natural farming projects in South Asia & Pacific region which focus on improving gender equality through agroecology. Using a participatory action research approach (PAR) this joint study between Monash University and World Vision South Asia & Pacific region draws upon rich narratives from farmers (both women and men) in exploring and analysing the role of natural farming in women’s empowerment. We use visual methods, in this case drawings made by participants, through a participatory activity to understand the lived experience of farmers involved in natural farming projects over a period of three to four years. Through these drawings, we “hear” the perspectives of women and men from Sri Lanka and Bangladesh, whose voices are often absent in management and organisation studies. Using a counter-hegemonic narratives framework, we delve into the natural farming experiences of farmers through a tool known as the River of Life (RoL), where participants use the river as a metaphor to explain their journey. A total of 41 participants in Bangladesh and 72 in Sri Lanka, worked in groups to illustrate their natural farming stories through the River of Life tool.

Our study provides grounded perspectives on agroecology projects in Bangladesh and Sri Lanka. Participants in both countries faced many challenges along their natural farming journey: the RoLs show that women faced social stigma and gender discrimination making it challenging for them to adopt natural farming practices. They were also confronted with unforeseen problems such the COVID-19 pandemic, drought, floods and pest attacks. Despite these challenges women in both countries are overwhelmingly committed to natural farming due to the transformative changes it has created: they are achieving financial independence, in some cases for the first time. They are primary decision makers within their households when it comes to natural farming, instilling strong confidence in them. Natural farming is building both climate and household resilience to sudden shocks such as the pandemic and extreme weather events. This is largely due to the human agency of women, generated through training programmes, and the adoption of production methods which have regenerated land and water resources, led to an increase in biodiversity, and improved household level food security. Furthermore, women have formed networks of support and are sharing their natural farming knowledge with other women, building resilience in entire communities. Natural farming is thus transforming the socio-cultural and ecological fabric of the participants involved in the projects in Bangladesh and Sri Lanka, both at the household and at the community level.

This report is authored by Associate Professor Jagjit Plahe from Monash University (lead author) and Dr Anjana Purkayastha from World Vision South Asia & Pacific. They were supported by a team of researchers in WV Bangladesh led by Sabiha Ahmed and Ruhila Parvin, and in WV Lanka by Keshini Soza and Awanthi Jayasekara.



INTRODUCTION

The industrial food system was introduced in South Asia through the Green Revolution which transformed agriculture by introducing large scale mono-production of high-yielding varieties (HYVs) of crops. Typically, HYVs are dependent on irrigation and the extensive application of chemical inputs including pesticides, herbicides and synthetic fertilizers (Plahe et. al, 2017). While the Green Revolution led to an increase in agriculture production, over the past 40 years, yields have declined and industrial agriculture has led to the overuse of chemicals, destroyed farm biodiversity and according to the Intergovernmental Panel on Climate Change's (IPCC) the sectors of agriculture, forestry and land account now for close to a quarter of total anthropogenic Greenhouse Gas (GHG) emissions. The IPCC's warns that reducing emissions in the agricultural sector is key to limiting climate change in the 21st century. The Green Revolution has led to an agrarian crisis in South Asia and the Pacific, with farmers heavily dependent on costly farm inputs including branded seeds (Plahe et. al., 2017).

While the agri-food sector is a major contributor to GHG emissions, agriculture production, which involves millions of farming households, is highly vulnerable to climate change. Farming communities are the first to feel the effects of extreme weather events including fires, floods and droughts. Farmers are thus facing a livelihood crisis in the region which is worsening due to climate change. Fostering climate-resilient agriculture and food systems is vital to support livelihood security and decarbonisation.

One of the ways in which emissions from the agri-food sector can be reduced is through the adoption of agroecology. As a concept agroecology has evolved from the "science of sustainable farming" into "a discourse about whole food-system transformations and food sovereignty" (Behl et. al., 2024: 2). Gliessman (2012: 20), argues that agroecology is not just about shifting "food systems toward sustainability", but about creating a "balance between ecological soundness, economic viability, and social justice".

Dorin (2022:157) provides a comprehensive definition of agroecology:

“a land and labour productivity no longer based on a few large-scale mono-productions and the intensive use of water, fossil fuels, chemical molecules and laboratory genetics, but on a mosaic of localised agroecosystems that, each in their own way, stimulate biological synergies between many plant and animal species beneath and upon the earth’s surface, from soil fungi to cereals, pulses and trees, from bacteria or earthworms to large bovids.”

Women play a major role in agroecological food systems including seed saving, sowing, transplanting, weeding, harvesting, processing, transporting and selling. As preservers of biodiversity and plant genetic resources the overall role of women in agri-food systems is vital for food and nutritional security as well as climate resilience. According to the Food and Agriculture Organization (FAO), as the world grapples with transitioning to sustainable and resilient agrifood systems, it is vital to focus on “gender equality and women’s empowerment” (FAO, 2023:8). Behl et, al. (2024) argue that while agroecology is underpinned by the principles of gender equality, often the role of women is undermined in the transition from conventional to natural farming practices. This is often due to discriminatory social-cultural norms. It is therefore imperative for agroecology projects to promote initiatives specifically designed for women, where women are not just seen to be present (eg. as wives of farmers) but are empowered to lead natural farming projects and be equal if not primary decision makers. Behl et, al. (2024: 1) further argue that there is an urgent need for “evidence-based research” that bridges agroecology and gender equality “and explores the processes of change and the impact on women from their perspectives so that the complexities of their day-to-day lives are [better] understood”. There is a gap in the existing literature on the interactions between gender, agroecology and climate change. This project investigates and critically analyses the intersectionality between these areas and thus makes a novel contribution to agroecological studies.

Agroecology across the world is changing agricultural production, so that not only is it more sustainable, but it is also more “productive and more remunerative” and therefore is attractive to farmers. Small farmers in countries in the Global South are actively shifting away from the industrial food system, “constructing new realities and opening up future developments” (van der Ploeg, 2021: 279). The goal of agroecology however goes much beyond shifting conventional food systems to sustainable ones. Agroecology focuses on balancing “ecological soundness, economic viability” (Gliessman, 2012: 20) gender equality and wider social justice. Agroecology is therefore focussed on transforming socio-economic, cultural, environmental and discriminatory gendered systems.

In South Asia, an agroecological approach to farming is understood as natural farming. In this approach, chemical fertilisers are replaced with farm manure, native seed varieties are being saved and exchanged, and bio-fertilisers are being produced by farming families (Gregory et. al, 2017; Plahe et. al, 2017). However, agroecology is not singly focussed on sustainable production methods. It focusses on gender empowerment through training programs, financial inclusion, leadership in both agrifood production and distribution. In some cases, agroecology is undergirded by strong political support such as Sikkim (India) which has led to gender equality and transformational change to society and the environment (Chhetri, 2024).

World Vision (WV) is supporting several natural farming projects in South Asia which focus on improving gender equality through agroecology. This study focuses on agroecology projects in Bangladesh and Sri Lanka. Using a participatory action research approach (PAR), the project draws upon rich narratives from farmers (both women and men) in exploring and analysing the role of natural farming in women’s empowerment. The findings of this project are self-reported findings; we use visual methods (Rose 2015), in this case drawings made by the farmers through a participatory activity to understand the lived experience of farmers involved in natural farming projects.



Focus Group Discussions in Sri Lanka

METHOD

Over a period of eight months, a team of nine members from World Vision South Asia & Pacific (WVSAP), World Vision Bangladesh, World Vision Sri Lanka and a researcher from Monash University worked collaboratively to design this study.

Initial discussions focussed on assessing the impact of WV's natural farming projects in two different countries, Bangladesh and Sri Lanka. The research team deliberated on the best method to assess impact; WV staff members recommended the use of the River of Life (RoL) tool which they had previously used quite successfully to work with communities by giving them agency in reporting their experience and journey along a particular project experience. While WV in different countries has used this tool before, it has never been used to assess agroecology projects.

The RoL tool was designed by the team to fit the socio-economic, cultural and agroecological contexts in both countries. WV staff in both countries further refined the tool after conducting discussions with experts in their respective country offices. The teams in WV Sri Lanka and WV Bangladesh identified the geographic locations where they have been working for over a decade with communities in both countries, and where they have implemented natural farming projects. This was very important for this research project, because WV has been working with community members for a long period of time and has therefore gained a high level of trust from the participants of this project.

We conducted a grounded-theoretical approach in this project using the river of life (RoL) storytelling as a qualitative research technique that is designed for an individual or a group of individuals to reflect on a particular experience or journey as if it were a river (Carmody, 2023).



River of Life, Sri Lanka, Koralaipattu, Women's Group

RIVER OF LIFE STORY TELLING

Participants use the river as a metaphor for their experience:

participants deliberate upon key features of the river such as its shape, where a wide section for example represents a period when the experience was smooth, and a narrow section represents particular challenges and obstacles. Changes to the river as well as key features along the river also represent threats, opportunities, assistance, challenges and celebrations. This highly innovative, interactive, inclusive, empowering and flexible technique which allows for cultural specificities has been used by NGOs in the Global South, including those who work in community development, the youth sector, and gender. It is also used by academics working in collaboration with NGOs using participatory action research (PAR) which "prioritizes the value of experiential knowledge for tackling problems caused by unequal and harmful social systems, and for envisioning and implementing alternatives" (Cornish et. al, 2023). RoL is thus "applied as an interactive tool for deep reflection on people's experiences and events" (Carmody, 2023: 1). Ethics approval was obtained both from Monash University.



Women Focus Group Discussion in Sri Lanka

WV in both countries discussed the RoL tool and the Focus Group Discussion (FDG) questions in detail with staff and enumerators who conducted the field work for this project in various locations. All participants and WV staff were seated on the ground and discussed the RoL tool with group participants. Each group had up to twelve participants (men and women were in separate groups). Participants were given ample time to discuss the RoL tool, ask questions, clarify the use of symbols and features along the river. Each country developed a key for the river symbols and features (see pp: 24-25). These were translated from English into Bengali and Tamil.

Each group was given butchers paper, coloured pencils and felt pens to draw their RoLs. Participants were excited about having an opportunity to share their experiential knowledge through the RoL tool. Group members worked collaboratively to pictorially explain their natural farming journey. After each group developed their drawing, they reported what they had illustrated. Groups elucidated why they had used certain symbols and features along the RoL. WV staff then conducted FDGs with all group participants. Group reports and the FDGs were video, and audio recorded in the local language and then translated and transcribed into English. The results were checked and cross checked and details verified by the WV and Monash teams.

RESULTS



In 2023, Bangladesh was ranked ninth in the world for climate disaster risk by the World Risk Index. This risk is compounded by the country's high population density and heavy dependence on natural resources. The agricultural sector in the country can play a significant role in addressing climate resilience. WV Bangladesh has commenced several ecovillage projects around the country to empower women and develop climate resilience through natural farming. The WV Bangladesh team chose two eco-village projects for this study: one in the north and one in the south of the country.

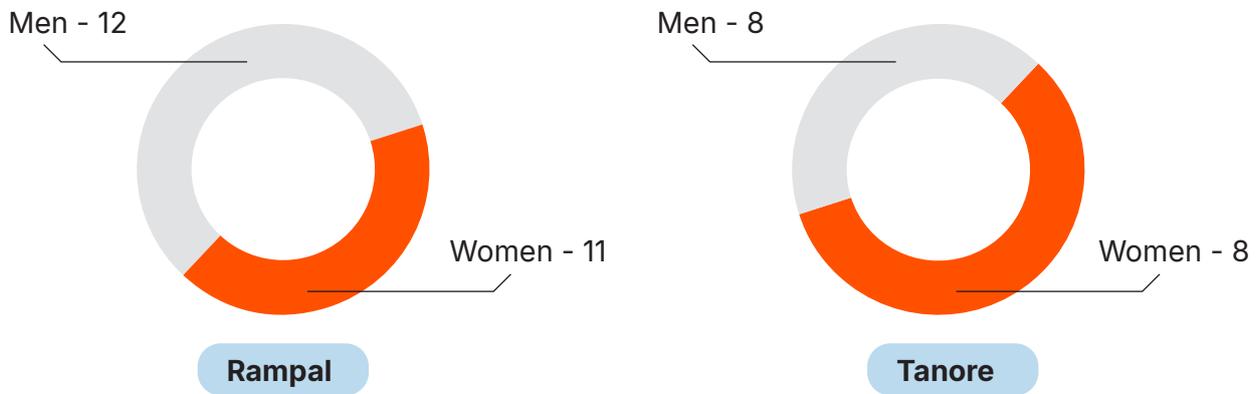


Similar to Bangladesh, Sri Lanka is highly vulnerable to climate change including floods, droughts, cyclones and landslides (World Bank, 2021). Climate change is a threat to the country's food and livelihood security. From 2013 to 2019, World Vision Sri Lanka (WVSL) set up several natural farming programs in the Eastern part of the country to assist women who were grappling with poor soil fertility and water scarcity, leading to low agricultural yields and financial struggles. Similar to Bangladesh, the projects were designed to empower women through natural farming practices. This study covered four villages where WVSL has set up natural farming projects: Vaharai, Eravurpattu, Kiran, and Koralaipattu. The projects commenced at different times spanning from 2013 to 2019 as detailed in the sub-section below.

In the following sub-section, we briefly describe the natural farming projects in both countries.

Eco-village projects in Bangladesh

Number of participants involved in River of Life Exercise in Bangladesh



World Vision Bangladesh (WVB) commenced an ecovillage project in Rampal, a subdistrict in Bagerhat district in 2019. Rampal is part of the Ganges tidal floodplain agroecological zone in the southern coastal region of the country. The region is prone to cyclones and to high soil salinity due to its proximity to the Bay of Bengal. The communities that WVB works within this region are highly vulnerable to climatic factors. In 2021, WVB commenced a similar ecovillage project in Tanore, in the North of the country situated in the high Ganges River floodplain agroecological zone, a key area among Bangladesh's 30 agroecological zones, known for its fertile alluvial soil. The Barind tract, which includes Tanore however frequently faces severe droughts, unpredictable rainfall, and extreme temperatures. These climatic challenges have led to significant water shortages negatively affecting soil fertility.



RoLs and FGDs were conducted with a total of eight groups in Bangladesh: four from Southern coastal region of Khulna with participants from Rampal, and four from Tanore which is in the Rajshahi Northern region of the country. In both geographic regions, two groups comprised women, and other two men. Using the symbol of green boats (organisations that helped them along their natural agriculture journey), all eight groups explained they received support and training from the government agriculture office as well as WV on natural farming practices.



Women Focus Group Discussion in Bangladesh

As the groups from Tanore explained:

“In August 2021 WV began to provide training. They trained us on how to make organic fertiliser through vermi-composting and how many days it would take to get the compost ready. Also, we were trained on how to make soil beds for farming. Periodically there used to be some follow ups. We also received training on sack farming. In 2022 from the agriculture office we received training on natural farming and in this training we received 22 types of seeds, and organic fertilisers for cultivation. The agriculture officers made provisions for any new farmer to receive this training just by showing their voter's identify card”.

The natural farming project in Bangladesh was primarily to support household food and nutritional security. However, as we explain in the findings section, some women began to sell excess food in the local community which provided them with income security as well as financial independence.

Participants from Bangladesh explained that they faced many challenges during their natural farming journey. In 2019, the year the ecovillage project commenced in Rampal, cyclone Fani significantly affected agriculture in the area due to flooding, the intrusion of saltwater into their agricultural plots and water logging. This was compounded by prolonged monsoon rains leading to flooding in the region from July to August 2019. Even though all groups in Rampal had received training and had commenced natural farming practices, in 2020, the COVID-19 pandemic disrupted their journey primarily due to lockdowns and travel restrictions. Farmers were not able to implement soil salinity management practices, receive agricultural inputs or further training during this period. The pandemic put huge financial strain on communities, reducing the capacity of trained farmers to invest in the resources required for their natural farming journey.

Groups in Rampal used the symbol of large crocodiles to mark the disruption to natural farming caused by the pandemic. They also used the symbol of large fountains to explain sudden/ unexpected changes along their journey. The rivers of all the four groups narrowed in 2020 signifying very challenging times during their journey. Several groups also used the symbol of unclear muddy waters signifying the confusion and lack of clear direction during the lockdowns and market closures. As the socio-economic and financial stress of the pandemic and climatic

factors began to ease, all four groups in Rampal reported a process of recovery and adaptation depicted by a widening of their rivers. Farmers invested in advanced irrigation systems, continued to cultivate saline resistant crop varieties on a larger scale, embraced crop diversification as well as better soil management practices. Farmers also began experimenting with integrated farming systems, combining crop cultivation with livestock rearing and aquaculture to maximise land use and income. These innovations, driven by a need to adapt to the ongoing challenges of salinity and unpredictable weather, showed promising results in improving food security and livelihoods.

While the ecovillage project in Tanore commenced in 2021, farmers in the area were still reeling from the effects of COVID-19. All four groups drew a narrow muddy river with large crocodiles when the project commenced symbolising numerous challenges posed not just by the poor quality of the soil, but also the effects of the pandemic on their agricultural practices and production. During the beginning of their ecovillage project journey, after receiving training on natural farming, local farmers adopted adaptive strategies such as rainwater harvesting, improved irrigation techniques, the cultivation of drought-resistant crops to enhance resilience through sustainable farming practices.



The rivers of the participants widened. However, 2022 proved to be a particularly challenging year for participants due a significant pest outbreak involving the insect “Maajra” (a stem borer) which caused substantial damage to crops and impacting yields. These obstacles tested the effectiveness of new farming practices and highlighted the need for more robust adaptive measures. The rivers of the participants narrowed in 2022 with symbols such as crocodiles and waterfalls signifying the challenges they faced. Farmers used natural remedies to address the pest outbreak, such as neem (*Azadirachta Indica*) leaf juice, which proved to be effective in managing the pest without relying on chemical pesticides. In some cases farmers were compelled to use small amounts of chemicals to control the Maajra pest. However, the use of neem leaf juice reinforced their belief in the potential of natural methods even during difficult times.



Men Focus Group Discussion in Bangladesh

In 2023, the rivers of the Tanore participants began to broaden as farmers obtained higher yields and therefore higher income, through natural farming practices. Participants used the symbols of purple stars and green boats to mark the assistance they received during this period from external organisations including WV. They also used the symbol of a green fish which represents a government helpline for farmers. In 2024, farmers faced flood conditions leading to the destruction of crops – the rivers of the four groups were narrower at this time. Despite this, farmers continued to practice natural farming with the firm belief that compared to conventional farming, natural farming practices led to better livelihood outcomes. We explain this further in the discussion section.

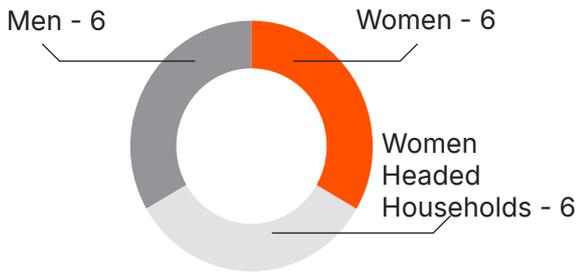


Various Focus Group Discussions in Bangladesh

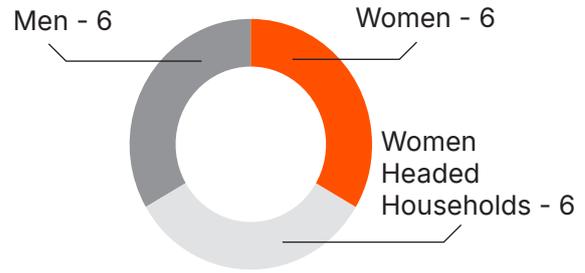


Natural Farming Projects in Sri Lanka:

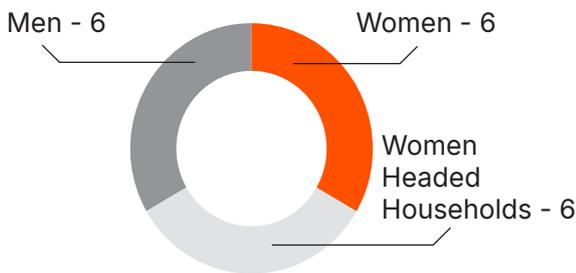
Number of participants involved in River of Life Exercise in Sri Lanka



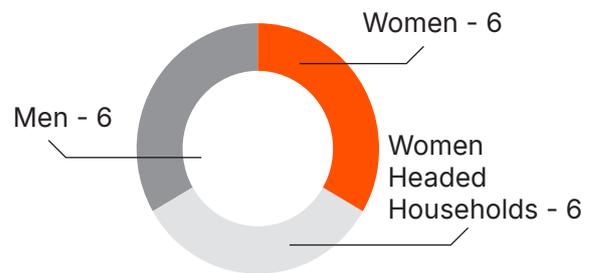
Vaharai



Koralaipattu



Kiran



Eravurpattu

As explained above, the natural farming projects in Sri Lanka commenced at different times spanning from 2013 to 2019 as detailed below.

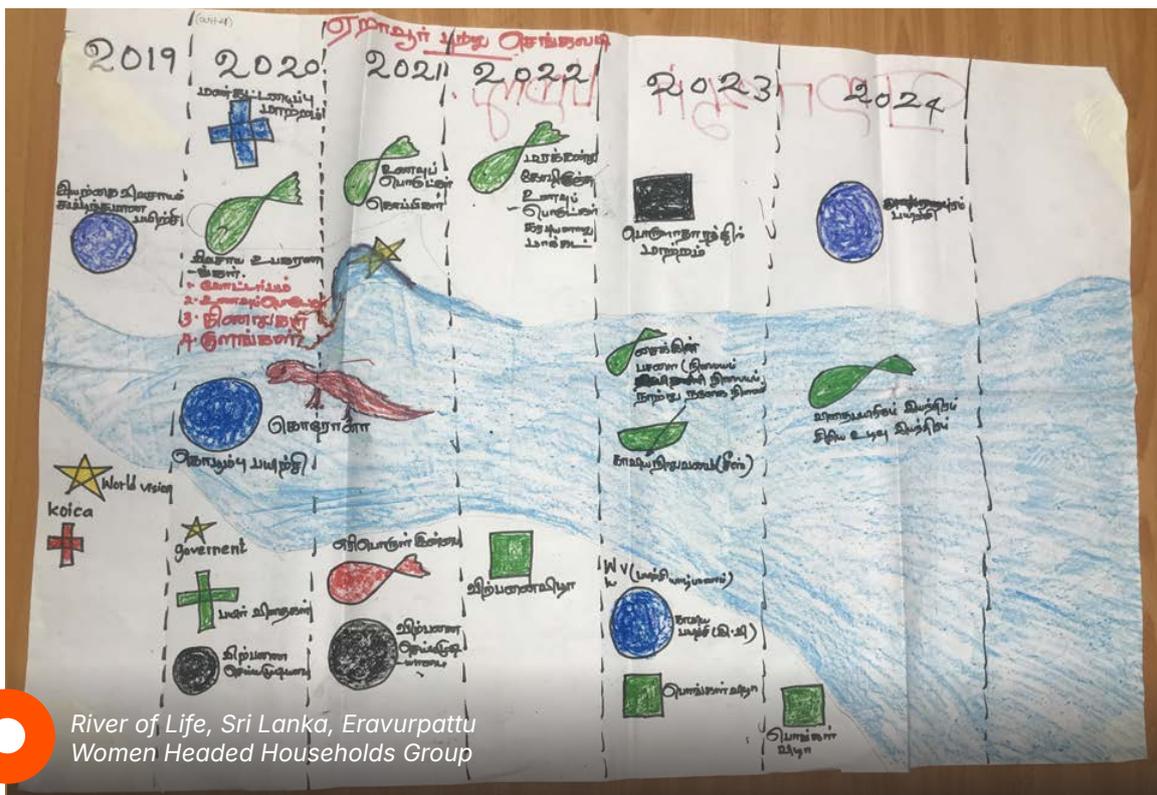
2013: WVSL embarked on a transformative journey with the women of Vaharai, Batticaloa, who were grappling with low agricultural yields and facing financial struggles.



2016: In the village of Koralaipattu, WVSL commenced a natural farming project in collaboration from Korea International Cooperation Agency (KOICA) and other partners including the Divisional Secretariat (DS) Office.



2019: A transformative project was launched to support women from women-headed households in Eravurpattu village in transitioning from conventional farming methods to natural farming. This initiative, facilitated by WVSL with financial assistance from the Korea International Cooperation Agency (KOICA), aimed to empower women, improve their agricultural practices, and enhance their economic status. In the same year WVSL commenced a project in the village of Kiran which was also funded by KOICA.



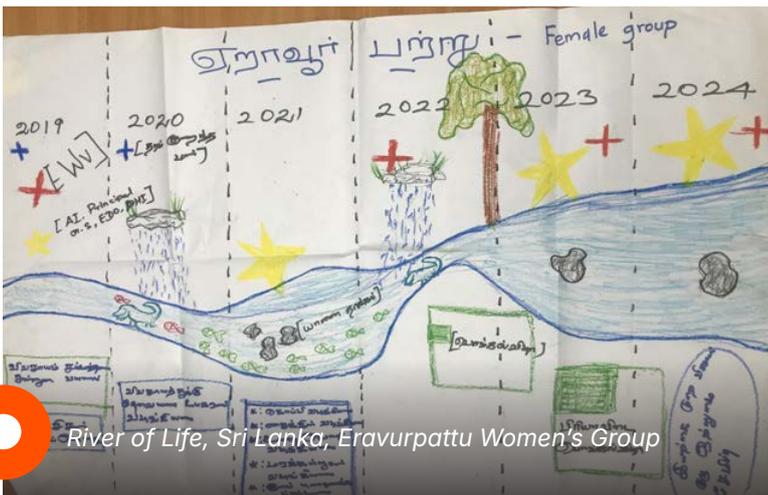
River of Life, Sri Lanka, Eravurpattu Women Headed Households Group

RoLs and FGDs were conducted with a total of twelve groups in Sri Lanka: three from each village, comprising women, women headed households (WHH) and men. Due to the civil war in Sri Lanka which spanned from 1983 to 2009, many of the households supported by WVSL in the Eastern region lost their male family members which is why a group of WHH from each village was included in this study.

All groups reported that they received comprehensive training on natural farming, and inputs such as natural compost fertilisers and compost-making machines (in the case of Varahi) which steered them away from chemical-dependent practices. Another point that came up in the FGDs was that the natural farming projects were collaborative often involving government offices such as the Divisional Secretary (DS) Office, Agriculture Department, KOICA and WVSL.

Similar to Bangladesh, the rivers of all the groups that participated in this study were quite narrow, constricted and muddy as they began their natural farming journey. Like in Bangladesh, the natural farming journey in Sri Lanka was not without its challenges. For example, in Koralaipattu one notable challenge was the invasion of wild elephants in 2019, which posed a significant threat to crops. Farmers were not able to acquire an electric security fence from the Divisional Secretariat.

The situation worsened in 2020, when the whole community faced a significant decline in production due to the COVID-19 pandemic, severe flooding, and ongoing issues with elephant attacks. Marketing of organic produce was extremely challenging due the pandemic lock downs. The Grama Niladhari (village leader appointed by the central government) played a crucial role in facilitating market access for the community. Participants from Eravurpattu were badly hit by the economic crisis of 2022 (following the COVID 19 crisis) when the price of petrol, diesel and kerosine prices increased dramatically. Transportation was disrupted and logistical challenges hindered farmers' access to local markets. This made it more difficult for them to find potential markets for their products and to sell them at reasonable costs. Most consumers at the time preferred affordability over organic goods. Participants from both villages drew waterfalls, stones and crocodiles to mark the challenges they faced during this period.

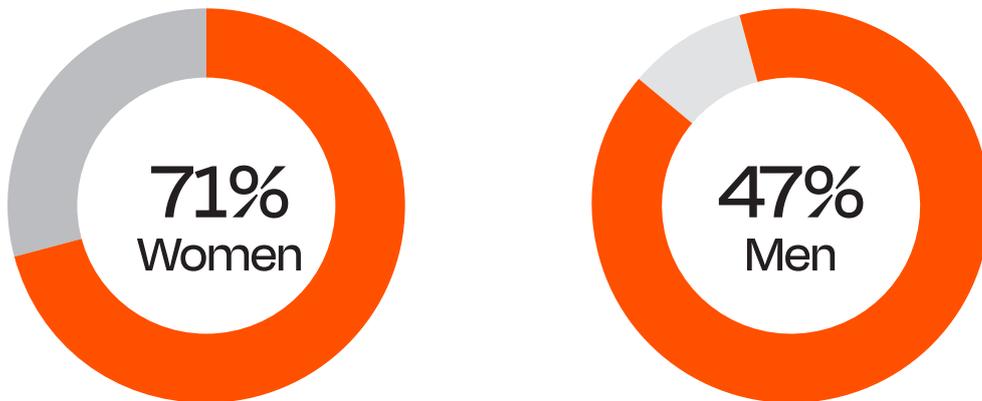


From 2023 to 2024, the rivers of the participants began to widen as the economic situation in the country improved. The women's group from Eravurpattu gained valuable lessons from their natural farming challenges: they became more aware of farm management and business activities. As we explain below, women developed a range of skills and personal attributes including decision-making, teamwork, communication, and increased confidence. Participants from Eravurpattu drew a large tree signifying growth and hope.

They also drew purple stars symbolising the help they received from WVSL, the local government and other community agencies. While the groups in Kiran also faced similar challenges as groups in other villages, they remain dedicated to enhancing their farming techniques and productivity. They reported feeling much better equipped to navigate future challenges such as droughts, floods, pest outbreaks, and fluctuating market prices. The women's group in Vaharai drew a wide river when they began their natural farming journey. The river narrowed as they faced similar challenges to those reported in other villages. Unlike all their groups in Sri Lanka, in 2024 the river of the women in Vaharai was narrower compared to when they began their journey. The main reason for this was due to the marketing challenges they faced. They called for innovative plans and supportive strategies to enhance their market access for natural farming products. Participants from this village reported that even though they faced challenges, they were strongly committed to natural farming because of the empowerment it brought to women, and to the livelihoods of their household and the wider village community.

DISCUSSION

Women across the world primarily work in agri-food systems which are a vital livelihood source for them compared to men:



71 percent of women compared to 47 percent of men in South Asia work in this sector. (FAO, 2023: 6).

Despite the fact that women and the families they care for, are more dependent on agrifood systems compared to men, research shows that the roles of women “tend to be marginalized” with poor working conditions (Behl, et, al, 2024).

The work of women is often irregular, informal, low-paid and highly labour-intensive. Furthermore, women’s access to key resources for agrifood production including land, economic resources, training and technology (including digital technology), financial literacy, knowledge about markets and access to markets lags behind men. Gender inequality in the region is strongly attributed to “discriminatory social norms” which negatively affect women and girls (FAO, 2023: 6-8).

World Vision’s projects in Bangladesh and Sri Lanka have specifically been designed with a vision of gender equality by empowering women through natural farming projects.

Four interrelated gender empowerment themes emerged from the RoLs and FGDs in both countries which we discuss in the sub-sections below.

a. Confidence building through training programs

In both countries, the RoLs illustrate that venturing into natural farming was a challenging process for women primarily due to existing socio-cultural norms. For example, in Bangladesh (Tanore) initially women lacked the support of family members who viewed farming as a male occupation and insisted that women should be veiled, and their work should be confined to the family home. Women also experienced ridicule and taunts from their neighbours. In Sri Lanka (Vaharai), cultural expectations posed barriers to women’s access to land, decision-making power and agricultural leadership roles even while many were heading their households. Natural farming training programs built the confidence of women to persevere with training initiatives and transition toward sustainable farming practices despite the socio-economic and cultural challenges they faced.

In Bangladesh women from Tanore received various types and levels of training including the preparation of different types of organic fertilisers including vermicompost. The training covered the preparation of natural inputs as well as new production techniques such as growing and harvesting crops in sacks. Importantly, monthly follow-ups with trainers were part of the training program providing women with opportunities to discuss their progress or any challenges they

faced. Similarly, across the four villages in Sri Lanka, women learnt how to (a) cultivate crops using organic methods (b) produce and apply organic fertilisers properly, and (c) implement effective harvesting techniques. Over time they gained other skills such as water management, crop diversification and pest management. Importantly, women in Sri Lanka also received financial literacy training (for example in Eravurpattu).

In both countries, training sessions laid the foundation for a significant shift in the mindset of women. Women in Bangladesh (Tanore) witnessed positive shifts in cultural attitudes toward their role in agriculture. As the local community began to recognise and value women's contributions to farming, it boosted the confidence of women involved in the project. While men initially had opposed the participation and leadership of women in the ecovillages in Bangladesh, in time, their perspectives changed. The men's group in Tanore commented on impact of natural farming training on women's empowerment in their village:

"As women receive more training, they become more knowledgeable in natural farming practices. The agricultural work empowers them and also enables them to contribute financially to their families. Community attitudes have changed. Women's participation and leadership in farming is viewed more positively. Ongoing skills development helps boosts their confidence and effectiveness in implementing natural farming methods".

A similar theme of empowerment emerged from the fieldwork in Sri Lanka. Women from Vaharai learnt how to cultivate crops in harmony with nature. They also embraced the art of producing organic fertilisers and pesticides. Equipped with this newfound knowledge, they carefully refined their techniques to enhance yields. The WHH group from Vaharai explained that in 2014, after they received training on how to operate sprinkler irrigation systems (provided by WVSL), their farming practices were transformed, addressing their water scarcity problems, further boosting their confidence in natural farming. Women in Eravurpattu reported a shift in their mindset when they realised that they had the capacity to manage farming activities independently. The training initiatives for women from Koralaipattu empowered them to take on leadership roles in farm management and in decision-making.

The men's group in Eravurpattu noted that women also felt empowered because the transition to natural farming had resulted in a significant reduction in health problems primarily due to the reduction in the use of pesticides. Women were thus farming with confidence and without fear of harmful side effects of chemical inputs. The men's group in Kiran offered further insights into how the training programs contribute to gender empowerment in their village:

"In our organic farming initiatives, we do not differentiate between the roles of men and women; instead, we divide tasks equally. This inclusive approach not only empowers women by recognising their contributions but also creates a more collaborative work environment. By engaging in gardening as a family unit, we effectively reduce costs associated with hiring separate employees, making it a more economical choice. This shared responsibility strengthens family bonds and increases the efficiency of farming operations".

b. Decision Making and Leadership in Natural Farming

In both countries, women's groups stated that natural farming promotes gender empowerment by providing women with opportunities to actively participate not just in farming, but importantly in decision-making in agri-food systems. In Bangladesh (Rampal), the men's group reported that supportive community attitudes towards women engaged in natural farming further encouraged the leadership of women in farming. Decision making boosted the confidence of women in managing their projects effectively. In Tanore, women lead the process of land preparation, which involves clearing and preparing the land for planting. They also lead the entire agricultural production process including producing bio inputs, creating beds for crops, and ensuring that crops receive adequate water and nutrients. Additionally, women handle weeding and harvesting tasks.

In Sri Lanka, all groups reported that the decision-making power of women related to agriculture had increased. In Kiran, as knowledge bearers, women were consulted about effective natural farming practices. Women also lead and contribute actively to discussions on planting systems and crop varieties with high yields and immunity to pests and disease. Women in Kiran formed and joined community groups that support natural farming. These groups played a crucial role in providing support, resources, and training to women farmers. Additionally, these women's organisations contributed to broader community development by empowering marginalised groups, including disabled persons, through economic initiatives and creating pathways for participation and empowerment.

Women in Varahai play an integral role at every stage of natural farming. The quote below sums up the decision making and leadership roles that women play in natural farming projects:

"From the moment we begin the cultivation phase until the final steps of marketing our produce, we are deeply involved in the success of our farming activities. Our journey begins with land preparation, working alongside fellow farmers to prepare the soil for planting. This involves tasks such as ploughing, levelling, and enriching the earth with organic matter to optimise fertility. Once the land is primed, we participate in seeding and planting each crop according to recommended practices to promote strong and healthy growth.

Throughout the growth cycle, we manage the farm. We apply organic fertilisers, which we also help produce using locally sourced materials. We are actively involved in natural pest and disease control. As our crops near maturity, we harvest the crop and post-harvest, we are involved in cleaning and sorting our products and preparing them for market. Together with our community, we discuss and determine fair prices for our products. We contribute to the marketing process, engaging with local markets, cooperatives, and consumers who value organic produce".

c. Financial Independence

In both countries, the RoLs and the FGDs reported that natural farming has led to financial independence which is a key feature for women's empowerment. The women's group in Tanore has taken on the responsibility of selling the produce themselves earning Tk 800-1000 (between US\$7-9) per month selling approximately 8-10 kg of vegetables per person. According to a men's group in Tanore:

“Natural farming plays a big role empowering women, particularly in rural areas. By giving women the opportunity to grow and sell produce, natural farming helps them gain financial independence and contribute to household finances. This not only increases their status within the family but also empowers them in the wider community. Women's involvement in natural farming can improve access to education for their children, healthcare, and other necessities, increasing their role and influence in society”.

Overall, in Bangladesh natural farming fostered independence in women, allowing them to play an economic role within the family. This signifies transformational change in communities where the role of women was previously confined to the home. While the ecovillage projects had aimed to improve livelihood security, the results of the project were far wider with some women gaining financial independence for the first time.

In Sri Lanka, in Varahai women experienced improved incomes and profitability from their natural farming efforts, creating financial independence but importantly reinforcing their self-confidence. There is a growing demand for organic food and women can thus earn more income. Women feel great pride in producing food which is “unspoiled” by harmful chemicals. Women have gained admiration and support of the community for natural farming. This support is very important in dealing with new challenges in organic farming such as pest attacks or marketing issues. The women's group in Koralaipattu noted that participating in natural farming has been transformative for gender empowerment. They explained that traditionally, their financial independence and decision-making power within households was limited; household expenses were predominantly covered by their husbands. However, through training programs, active natural farming initiatives and increased decision-making power, women have gained economic independence by generating income from the sale of their produce and practicing collective saving strategies.

A key difference between the natural farming programs in Sri Lanka and Bangladesh that we found in this study is that in Sri Lanka, women received training on financial literacy as part of their natural farming training package. This training gave them the skills to earn an income from selling produce and to save income. Importantly, WVSL assisted participants in setting up marketing facilities for organic produce. For example, in 2022 World Vision launched a marketing company in Eravurpattu known as “World Vision Nature Growers” dedicated to purchasing organic agricultural products directly from the farmers. The company provided valuable resources, including business plan development, training for value-added product production, and practical field training. However, the relationship between farmers and Nature Growers was not without its challenges. There were issues in sourcing products directly from farmers, particularly during the initial phase of establishing marketing operations. Farmers faced challenges in delivering the agreed quantities and quality of products on time and they had a strong preference for immediate cash payments rather than short-term credit terms (one-week payment cycles). Significant market price fluctuations left farmers with no choice but to sell their produce to middlemen at lower prices instead of honouring the fixed prices agreed upon with the Nature Growers. Farmers also experienced delays at collection points where personnel from Nature Growers could not collect the produce on time. This was a particular problem for farmers in remote or hard-to-access locations. This period was further complicated by external factors such as the national fuel shortage and the broader economic crisis. In time, the relationship between Nature Growers got better and has proven to be a helpful for farmers.

The women's group in Koralaipattu have been actively involved in organic produce marketing initiatives:

“As we have become more involved in decision-making related to crop selection, organic fertiliser use, and marketing strategies, we have gained confidence and independence. We also feel more capable of contributing actively to our household income. We can confidently speak up in any situation. One of our members has established a tiny eatery bringing change in our community. We also enjoy the process of carrying out natural farming related activities by ourselves on our property”.

The WHH group in Varahai reported that they were part of women's group that plays a pivotal role in providing members with financial assistance during challenging periods, and encouraging them to pursue entrepreneurial ventures, thereby fostering economic independence and enhancing their role in sustainable agriculture within the community. The natural farming products of women in Kiran gained organic certification, enabling them to sell organic vegetables more effectively. The provision of bicycles enhanced transportation, and they began producing certified organic and liquid fertilisers for sale to other farmers, a crucial development given the government's ban at the time on imported fertilisers.

The WHH group in Kiran explained that natural farming creates opportunities for direct marketing and establishing connections with consumers who value organic and sustainably grown produce. This contrasts with conventional farming, where the marketing chain involves intermediaries and larger-scale distribution channels. Given the marketing training and opportunities that women received in Kiran, their financial status significantly improved in 2022, when WVSL launched marketing facilities aimed at improving access for organic farmers. Despite challenges such as rising fuel prices which occurred at the same time, the training, decision making power and financial assets that the women developed over the years gave them the capacity to absorb and adapt to these shocks. Changes to socio-cultural norms and practices point to transformation changes in the villages in Sri Lanka.

d. Climate Resilience Through Natural Farming

Through the RoLs, in both countries, a strong theme of climate resilience emerged: all groups illustrated a narrow, sometimes muddy beginning to their natural farming journey, fraught with challenges including the COVID-19 pandemic and climatic factors. However, almost all the rivers that the participants drew for this research project showed that over the years, their natural farming journey has led to climate resilience. The rivers are broader and clear after a period of three to four years of practicing natural farming. The RoLs show that there is more livelihood stability despite catastrophic climate events and other challenges.

Participants from Rampal explained that:

“Natural farming methods enhance climate resilience by reducing the vulnerability of crops to extreme weather conditions, managing soil health, and better water use. They provide practical solutions for sustainable agriculture, particularly in areas affected by climate change”.

In Bangladesh, communities practicing natural farming began to focus on the concept of long-term sustainability. Using the symbol of green boats, all groups reported receiving continued assistance from the local government agriculture office and from WV. The assistance came in the form of training and crop production inputs. Participants explained that as farmers, they shared their experiences, knowledge and resources with each other. The rich sharing was not just about improving crop yields but also about building resilient communities in the face of climate change. During this time farmers set up better strategies to deal with soil salinity, flooding and unpredictable weather patterns.

A women's group from Tanore (Bangladesh) explained how natural farming practices build climate resilience in their region:

“In our experience, natural farming contributes to building climate resilience in our country by addressing specific challenges posed by climate change. For instance, it helps to deal with the effects of drought by promoting practices like vermi-composting and using fish tonic, which improve soil fertility and water retention. Natural farming methods are designed to adapt to irregular weather patterns. For example, raising tree bases to prevent water accumulation and storing used water for irrigation during dry periods. These practices help maintain agricultural productivity and support climate resilience in the face of changing weather conditions. Natural farming helps build soil health, through composting and water management techniques, which improve the farm's ability to withstand and adapt to changing weather conditions, making agriculture more resilient to climate change”.

Women's groups explained how they were using traditional methods to build climate resilience in their villages including the following:

Base Hole Method for Tree Crops:

A hole is made at the base of trees such as lemons and guavas, which is then covered with dung and leaves. This helps retain nutrients and prevents the roots from being exposed to excess water and nutrient loss during heavy rains.

Sack Farming for Shallow-rooted Vegetables:

Dung is mixed with soil inside a sack, and seeds are planted in it. The sack is then tied up high to a tree. This method is used for cultivating vegetables with shallow roots, such as gourd, brinjal (eggplant) and taro. This technique keeps the crops at a safe distance from salty water, preventing damage due to saltwater intrusion.

Loft Cultivation:

Vegetables can also be cultivated on elevated structures or lofts. During rain, the crops are covered with coconut leaves to protect them from excessive water. This method helps in utilising vertical space efficiently and keeps the crops safe from flooding.

A strong climate resilience theme also emerged from the findings of this study in Sri Lanka. Like the groups in Bangladesh, groups from Sri Lanka found that natural farming which focuses on the interaction between nature and agriculture including moving away from monoculture to multi-cropping farming practices builds climate resilience. This diversity in crops and plant species can better withstand unpredictable weather patterns and contribute to more stable yields. Women from Kiran explained diverse cropping systems in natural farming reduce the risk of crop failure due to extreme weather events. Techniques such as cultivating in bags, demonstrates adaptability to climate challenges, further supporting consistent yields even during periods of high temperatures or floods.

The women's group from Koralaipattu talked about how their farming practices are building climate resilience in their region:

“Natural farming significantly contributes to building climate resilience compared to conventional farming practices. Farmers engaged in natural farming have implemented innovative practices like polybag cultivation during the rainy season and using drip irrigation with wastewater bottles and clay pots in hot or drought conditions. We believe that these practices conserve water and help us deal with the impact of extreme weather events on our crop production. Additionally, our ability to select suitable crops for different seasons through the knowledge we have gained over the years further strengthens our resilience against climate challenges”.

Women from Eravurpattu talked about soil health and how this builds climate resilience:

“Unlike conventional farming, natural farming adopts techniques that enhance soil health and water retention. For example, practices such as mulching help to conserve soil moisture and regulate soil temperature, thereby mitigating the effects of heat waves and droughts. By maintaining organic matter in the soil through composting and cover cropping, natural farming improves soil structure and resilience to erosion, which is crucial in extreme weather conditions such as heavy rains or floods. Additionally, natural farming often includes the interaction between nature and agriculture along with diversified cropping patterns. This diversity in crops and plant species can better withstand unpredictable weather patterns and contribute to more stable yields”.

Sr. No:	Characteristics of rivers	KEY
1	Challenging times in the natural farming journey (e.g. starting organic farming)	Narrow river *Explanation of reasons inside a red circle
2	Creation of opportunities in natural farming (e.g. training, credit).	Wide river * Explain the reason in a green circle
3	Negative changes in natural agricultural processes (e.g. reduced yields)	Sharp bend in the river
4	Positive changes in natural farming practices (e.g. increased yields)	Wide bend in the river
5	Parts of the natural farming journey that were relatively easy (e.g. crops growing well)	There are no waves in the river
6	Parts of the natural farming journey that were relatively difficult (e.g. crops were not growing well)	Waves in the river
7	Sudden/unexpected negative changes in natural farming processes (e.g. insect outbreaks)	Fountain * Fountain Height - This will indicate how long the change lasted
8	During the natural farming journey where you were confused	The colour of the water is brown
9	During the natural farming journey where you had a clear idea of what was going on	There is no change in the colour of the water
10	People (family/neighbours) who support you in your natural farming journey	Red Star ** Mention who supported you
11	People who didn't support you during the journey (family/neighbours)	Yellow Star ** Mention who did not support you
12	Organisations supporting you in your natural farming journey (e.g. various NGOs)	Purple Star ** Mention which organisations supported you
13	Organisations that have not supported you in your natural farming journey (e.g. various NGOs)	Black Star ** Mention those who did not or were not able to support you

14	Anything else that supported your natural farming journey (e.g., availability of raw materials)	Green plus sign ** Mention who supported
15	Anything else that hinders your natural farming journey (e.g., poor soil quality)	Blue plus sign ** Mention the reasons for the interruption
16	Organisations that help in Natural Agriculture Journey	Green Boat
17	Organisations that did not assist in the natural farming journey	Red Boat
18	Accessible services/resources (e.g. helpline, equipment) on natural farming journeys	Green Fish
19	Services/Resources not available in Natural Agriculture journey	Red Fish
20	Obstacles that have seriously affected your journey (e.g.: Covid 19, natural calamities, salinity)	Crocodile ** Please specify the obstacles ** The size of the crocodile indicates the severity of the problem
21	Obstacles that have moderately impeded your journey (e.g. rising seed prices)	Stone ** Please specify the obstacles ** The number of stones indicates the severity of the problem
22	Obstacles that hindered your journey in a small way (e.g. cows/goats eating crops)	Small Stone ** Please specify the handicap ** The number of stones indicates intensity
23	Important events in your natural farming journey	The explanation (what and why?) is inside a blue square
24	Key lessons on your natural farming journey	The explanation (what and why?) is inside a blue circle
25	Major changes in your natural farming journey Major changes in your natural farming journey	The explanation (what and why?) is inside a black square
26	Pressures (e.g. economic pressures) on your natural farming journey	The explanation (what and why?) is inside a black circle
27	Celebrating natural farming journey	The explanation (what and why?) is inside a green square
28	Phases of your Natural Agriculture Journey Project	Draw horizontal lines in the middle of the river *Timelines need to be specified as well
29	Any additional Keys defined by you	

RIVER OF LIFE

Natural Farming Initiative

Women from Women-Headed Households in Eravurpattu Village, Sri Lanka



Group 2:

Women's Group, Tanore, Bangladesh



CONCLUSION AND POLICY RECOMMENDATIONS

This study provides grounded perspectives on agroecology projects in Bangladesh and Sri Lanka. Participants in both countries faced many challenges when they commenced natural farming including unfavourable climate conditions. The RoLs show that even after they commenced natural farming, women faced social stigma and gender discrimination. They also faced unforeseen problems such as those caused by the pandemic, drought, floods and pest attacks. Despite these challenges women in both countries are overwhelmingly committed to natural farming due to the transformative changes it is inculcated within them: they are much more confident, they feel they can deal with shocks such as adverse climate conditions and importantly they are achieving financial independence, some of them for the first time. As a result of these projects their households have better livelihood security and through natural farming practices, they are contributing to building climate resilience. Natural farming has transformed the socio-cultural fabric of the participants involved in these projects, both at the household and at the community level. The projects have led to women's empowerment and gender equality in both countries.

Given the findings of this study, we have the following recommendations:

1

Even though women have faced complex problems during their farming journey, all participants, including the men who participated in this study reported that women have an unwavering commitment to natural farming. Given the multifaceted and transformative changes that natural farming has brought to the women involved in this study, we recommend that World Vision continues to fund natural farming projects.

2

Women have greatly benefitted from financial training in Sri Lanka. It is recommended that such training be extended to all women engaged in natural farming projects in the two countries.

3

Women find it difficult to sell their produce without organic certification. We recommend engagement between the projects in Sri Lanka and Bangladesh to understand how organic certification can be achieved for example through Participatory Guarantee Systems (PGS) where farmers are involved in the certification process. As a research team, we are happy to connect World Vision to PGS training bodies in India that can train farmers on how to attain low-cost certification for organic products.

4

Women in both countries need access to training in marketing their produce. This is one of the biggest hurdles for organic farmers in the region. Sri Lanka has developed some practices such as establishing new marketing channels for farmers. This is one area where World Vision can help women achieve higher incomes.

5

At the request of the women who participated in this project, we recommend conducting follow-up studies to ascertain the impact of natural farming projects. If follow-up studies are conducted, then farmers should be involved in the design of the RoLs.

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