SNV

Connecting People's Capacities

## AusAID

## Community-based Climate Change Action Grants Program

# Sowing the Seeds of Change: Community based climate change mitigation through sustainable rice production

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## 1. Executive summary

Rice production systems are vulnerable to climate change impacts as well as being the major contributor to greenhouse gas (nitrous oxide and methane) emissions in the agriculture sector (IPCC 2006)[1]. This has significant implications for Vietnam; as one of the top five countries to be most affected by climate change it is a nation reliant on rice production for national and household food security as well as economic development. Within this setting, the most vulnerable group within the population is the small holder rice farmer (McCarthy et al. 2011)[2]. Therefore there is a great need for rice production systems and those reliant upon them to be made less vulnerable and more resilient to the negative impacts of climate change, as well as to emit fewer harmful greenhouse gases and remain profitable for farmers.

Financed by the Community Based Climate Change Action Grants Program of AusAID with a total value of 2,996,640 AUD, this project will support and build the capacity of small holder rice producers and provincial agencies to reduce Greenhouse gas (GHG) emissions and improve small holder benefits from rice production in central Vietnam by introducing low emission production practices, utilizing renewable energy generated from rice residues and promoting the value chain of "green rice". The rice production system will be improved by applying the System of Rice Intensification; an innovative, efficient and environmentally sustainable production system that increases productivity of rice cultivation while reducing requirements for water, seed, synthetic fertilizers, pesticides, herbicides and labour, especially tasks performed by women, as well as reducing GHG emissions. Via an integrated approach the project will include; inclusive business[3] and value chain development to create growth, access to markets, jobs, capacity development, income increases and wealth for the poor; and explore bio-energy solutions utilising rice residue biomass to reduce GHG emissions and alleviate rice residue waste disposal problems. Integral to these actions will be raising awareness of farmers and local authorities about climate change and its impact on agriculture. Capacity building for local authorities will allow them to provide increased technical support and service delivery, ultimately enabling evidence based policies and market development to ensure increased resilience of the small holder rice farmers.

## 2. Situation Analysis

Climate change is one of the most pressing challenges facing communities today. The most vulnerable are the poor, of whom a large majority reside in rural areas and are dependent upon agriculture directly or indirectly for their livelihood. Strengthening agricultural production systems is a fundamental means of improving incomes and food security for the largest vulnerable group - the rural poor and food insecure. As a key economic sector, improving the resilience of agricultural systems is essential for climate change adaptation and ensure stable economic development. And, improvements in agricultural production systems offers potential to provide a significant source of GHG mitigation by increasing carbon stocks in terrestrial systems, as well as emissions reductions through improved production practices.

General consensus of the international community conclude that, though average global crop production may not change dramatically by 2050, certain regions may still see an average production

[1] IPCC. 2006. Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories

2 McCarthy, N., L. Lipper, G, Branca. 2011. Climate-Smart Agriculture: Smallholder adoption and implications for climate change adaptation and mitigation. FAO

[3] An Inclusive Business is a profitable and sustainable entrepreneurial initiative that seeks to contribute to poverty reduction by including lower-income communities within the value chains of companies as employees, suppliers, consumers or distributors, in a win-win situation.

drop and are more likely to face increased climate variability and extreme weather shocks even in the near term (IPCC 2001[4]). Studies about the potential crop impacts found that climate change could significantly impact agricultural production regions due to both changes in mean temperatures and rainfall as well as increased variability associated with both, and changes in pest and disease patterns (Lobell et al. 2008[5]). The Asia region is expected to be one of the hardest hit regions, with decreases in agricultural productivity between 15-35% (Stern 2006[6]). As such there has been a considerable increase in attention given to the role the agriculture sector plays in order to meet food security needs and achieve the MDGs. It is critical that agricultural systems move to more productive and sustainable levels, while addressing climate change. Improving small holder agricultural systems is a key response.

The agriculture sector in Vietnam is facing a number of challenges, most significant are the reduced available land area due to rapid urbanisation and industrialisation expansion and fluctuations in crop yields due to increased incidence of pests and extreme weather events. With the national trend in decreasing land area for cultivation, stable and increasing productivity is essential to ensure national food security and contribute to economic development via the emerging domestic and export trade opportunities. The most important agricultural crop in Vietnam is rice; it is the staple food crop in Vietnam, accounting for over 90% of all food grain crops grown, with over 80% of the total 11 million rural households involved in rice production (World Bank 2010[7]). Major challenges facing the rice sector include; shortage of rice as food insecurity still exists; limited land area and small size of farming plots (average 0.3 ha per household); conversion of land to other crop uses; low income from growing rice (low returns and increasing input costs); slow transformation of the agriculture sector and adoption of new technologies and science; increasing requirements for food quality, hygiene and safety; high post-harvest losses (average 11.6% and the Summer-Autumn crop up to 30%), with the processing and storage inadequate; integration to the world economic market has increased the competitive pressure to agricultural commodities produced domestically; and climate change.

Climate change is expected to cause temperature increases, a rise in sea level and an increase in the frequency and severity of natural disasters and extreme weather phenomena (storms, floods, droughts, hot/cold spells) as well as disease and pest incidents. This will have a significant impact upon rice production areas in the lowlands and coastal areas. In addition changes to water availability and flows will significantly impact rice production with higher probability of floods in the rainy season and increased risk of drought in the dry seasons. Fresh water demand is expected to increase by 18% of which 12% will be required for agriculture production (World Bank 2010)[9]. The water balance sheets up to 2020 indicated adequate fresh water to meet demand, but the lack of water in the dry season will likely increase; needing more irrigation works to effectively maintain and regulate freshwater resources and use. Coupled with frequent tidal flooding, sea level rise, and changes in river and stream flows, water will be an important issue for sustainable rice production.

Rice productivity varies by region with highest productivity in the Red River and Mekong River Deltas reaching 70 quintals[8] per ha. The central region of Vietnam still has low rice yields with an average of 50 quintals per ha. Yields are dependent upon geographical location, the capability and level of intensification of each region, with some regions hitting their yield ceilings and others maintaining lower levels with slower rates for yield increases. The central region is an example of the latter situation, with relatively slow production rate increases which has been attributed to natural disasters

[4] IPCC. 2001. Climate Change 2001: Impacts, Adaptation and Vulnerability. Report of the Working Group II. Cambridge: Cambridge University press.
[5] Lobell, D.M., M.D. Burke, C. Tebaldi, M.D. Mastrandrea, W.P. Falcon and R.L. Naylor. 2008. Prioritising climate change adaptation needs for food security in 2030. Science, 319 (5863): 607-610
[6] Stern, N., ed. 2006. Stern review: Economics of climate change. Cambridge University press: Cambridge, 712.
[7] World Bank. 2010. Policy research on Vietnam's food security and rice value chain dynamics.
[8] Quintal = 100kg

and storms, floods, prolonged cold, lack of suitable varieties (insect resistant and drought tolerant) and limited market opportunities resulting in low prices for rice, limiting farmer interest and investment in rice growing (World bank 2010)[9]. The reason for the slow improvement in rice production in the central region can be attributed to low income received from rice production as a result of low market prices and high production input costs. Productivity is also constrained by the small-scale and scattered production areas, limited technology applied to the production process, poor infrastructure as well as frequent natural disasters, typhoons, floods and disease. This is further exacerbated by the lack of planning and policy mechanisms to support improved rice production and the lack of integration of climate change issues into these policies. The question remains as to how to address all of these challenges?

There are considerable challenges to balance synergies between food security with adaptation and mitigation of the agriculture sector. The most significant is the knowledge gap; knowledge is needed to identify key policy and institutional arrangements that support small holder rice producers to increase their resilience to the impacts of climate change, improve livelihood opportunities and ensure sustainable production systems. Also important are practical assessments of the potential for linking mitigation finance to small holder agricultural transformations. In addition there is a need for supporting policies to boost rice production that manage land use; market development to improve the economic development of the sector; and an investment in capacity building and vocational training to increase the skills of labour. This project is aiming to fill some of these knowledge gaps and contribute to sustainable development of the rice sector for small holder rice farmers in the central region of Vietnam.

# 3. Project description

## 3.1. Objectives

Small holder rice farmers who apply System of Rice Intensification (SRI) will benefit from a more stable rice production system with reduced inputs and higher incomes from improved market opportunities; reducing the risk of households falling back into poverty as well as increasing food security and resilience to the variability and impacts of climate change. The awareness raising and advocacy activities for provincial, district, commune authorities and Community Based Organisations (CBO) will help strengthen their capacity to respond to climate change and minimize its impact on local communities. Furthermore the SRI and renewable energy generated from rice residues will reduce GHG emissions from these agricultural producers. The project objectives are to:

**i)** Reduce GHG emissions through the application of SRI to small scale rice production systems to selected communes in Quang Binh and Binh Dinh provinces of central Viet Nam.

**ii)** Generate renewable energy from rice residues of husk and straw to reduce environmental waste and contamination.

**iii)** Develop market linkages and create “green rice” market opportunities for rice produced by the SRI production system which will increase farmer incomes.

**iv)** Build capacity of provincial level stakeholders (farmer/community/government/CSO(Civil Society Organisation)/CBO) to implement projects to address the issue of CC and agriculture mitigation.

**v)** Create a knowledge platform to raise awareness and widely share lessons learnt from the project.

[9] World Bank. 2010. Policy research on Vietnam’s food security and rice value chain dynamics.

This project contributes to the three priority areas of Australia's aid program: 1. Human resource development: the capacity development and knowledge component activities aim to increase the capacity of local authorities, communities and farmers to understand and respond to the impacts of CC. 2. Economic integration: Lower input costs and market linkages that stabilize and enable market access for small holder rice producers will increase incomes from rice farming. 3. Environmental sustainability: The SRI requires less water, fertilizer and pesticide inputs, making more resilient systems which are environmentally sustainable, as well as achieve GHG ($CH_4$ and $N_2O$) emission reductions and increase soil carbon content levels compared to current continuous flooded rice production practices. Plus the use of rice crop residues and reduced wastage will reduce the negative environmental impact and potentially create renewable energy options.

The need for this project was identified and created at the local level in consultation with Provincial level authorities and the local communities. The main concerns identified by local communities were the reduced market price for their rice paddy; difficult growing situations (pests, lack of water, disease, changing weather and extreme hot/cold temperatures); and the need for supporting policies. At the Provincial level local authorities are implementing the New Rural Program are face challenges with achieving the program goals to increase farmer incomes, apply big scale field rice production systems, and increase rice productivity. At the national level the Government of Vietnam (GoV) priorities are to increase agricultural production by 20%; to reduce carbon gas discharge by 20%; and reduce poverty rate by 20%. Through the National Target Program to Respond to Climate Change (resolution No. 60/2007/NQ-CP dated 3/12/2007); Resolution No. 63/NQQ-CP dated 23/12/2009 to ensure national food security; and Ministry of Agriculture and Rural Development, Strategy for agricultural development in rural areas (2011-2020); New Vision in Agriculture; and Decision 3062 recognizing SRI technologies, the GoV is promoting the development of infrastructure, agriculture markets and value chains, and application of advanced science, technology and management to reform and improve production values. This project directly contributes to all of these priorities.

The target beneficiaries are small holder rice producers in Bing Dinh and Quang Binh provinces; specifically the project will aim to build the capacity and resilience of poor households who are most at risk from negative impacts from climate change.

## 3.2. Expected Outcomes

The impact to be achieved by this project is twofold; to reduce GHG emissions from rice production systems and to increase small holder farmer incomes. The Theory of Change and Result Chain (included in annex 6) describes and illustrates the project logic from interventions, through to output, outcomes and impact levels of the project. The project will deliver these impacts via four main activities approaches of the SRI production system, renewable energy, market linkages and knowledge management and advocacy.

The application of the SRI production system will contribute to increased income for small holder rice farmers and reduced GHG emissions caused by growing rice. To ensure farmers are willing to change production practices the project will raise awareness about and increase capacity of local government agencies, farmers, farmer cooperatives and Farmer's and Women's Unions. This will include technical, economic and environmental aspects about and reasons for adopting this production system. To prove effectiveness of this production system a demonstration pilot will be created and used as teaching and awareness raising resource to encourage SRI technology uptake.

The outcomes of the renewable energy interventions will be villagers will have increased awareness about using rice residues as a source for renewable energy and the impact of their usage on the environment. This will lead to RE technology options being identified, selected and applied at the household or community level which will result in better usage and less wastage of rice residues. This

will contribute to a reduction of GHG emissions that are caused by burning or dumping of unused rice residues.

The outcomes from the market linkage interventions are aimed at promoting the "green rice" product to achieve a higher income through premium product positioning. This will contribute to increasing the income of farmers as their SRI rice product will fetch a higher market price.

Knowledge management and advocacy interventions will result in raised awareness amongst farmers and local authorities about the impacts of climate change on agriculture especially its impact on rice production and the contribution of rice production to climate change. The active sharing of knowledge and exchange of evidence based lessons will contribute to uptake of new practices at the local level and development of supportive policies to support and increase the resilience of farmers. Such policies may include land use planning, selection of improved rice varieties, fertiliser management, use of pesticides and water management.

## 3.3. Project Strategy

Rice is grown in all regions of Vietnam with the largest production areas in the Red River and Mekong River delta areas. These areas are known as the "rice bowls" of Vietnam, with the highest levels of production from well organised and mechanised production systems which predominantly supply the export market. In contrast to these two regions the remainder of the rice growing areas (North Mountainous, North Central, South Central, Central Highlands and South East) in Vietnam lag behind the growth and development rates of these other two regions. Production in the non-rice bowl regions are typified by small holder rice producers who struggle to cope with improving their production systems and suffer many setbacks due to extreme and variable weather conditions. These small holder producers grow rice for household sustenance and sell the remainder of their rice for income and are highly vulnerable to negative impacts, such as climate change which can lead to food insecurity and risk of lapsing into poverty. The high vulnerability of these small holder rice growers and the challenging development issues faced by them make them ideal beneficiaries of this project. The project will be implemented in two provinces in the central region of Vietnam; Quang Bing in the north central and Binh Dinh in the south central region. The small holder rice growers in these provinces typify and well represent the challenges faced by the rice producers of the central region. By implementing the project in these two central provinces the project results and lessons learnt can be up-scaled to the other provinces in the central region of Vietnam. This project design has been developed in a collaborative manner with consultation of local authorities at Binh Dinh and Quang Binh as well consultation with farmers, farmer cooperatives and rice traders and millers to ensure that local priorities were understood and actions were designed to address these. We have taken lessons learnt and previous experiences to develop the project technical activities as well as implementation strategies and approaches. All project activities will be carried out in an inclusive and participatory approach; meaning activities will be discussed and designed with stakeholders at all levels, ensuring relevance, local ownership and sustainability.

The SRI system is currently applied to over 185,000 ha of rice production area in Vietnam. SNV, CASR@D and Oxfam America have undertaken a review[10] of the SRI practices and noted the success and challenges to implementing such a system. The primary lessons noted key elements to a successful design were the: increased capacity for local government agencies who support farmers to apply the SRI practices; the high participation/commitment level of farmers required; and the proper water management and infrastructure requirements for the SRI system. This project has included these key issues in our design and has specific activities to address each of these issues.

[10] SNV and Oxfam America (2011) Review SRI experience in Vietnam. SNV

Working with local government and stakeholders (Farmers and Women's Union) and rice farmers there was one key message which we have taken on board; to include and actively involve local agencies. The approach has been designed to deliver project activities in an inclusive and participatory manner. Specifically the technology transfer will involve local agencies allowing for capacity building, training and technical support to be given, and provided by SNV and CASR@D. This will ensure local authorities and stakeholders are capable of understanding and applying the SRI system and providing technical support to farmers. This approach will ensure the sustainability of the action after the project. In addition the involvement of all provincial agencies will enable policy development from evidence based results from this project, that support small holder rice producers and adoption and up-scaling of the lessons learnt.

The proposed activities and approach will lead to the achievement of the outcomes and deliver the desired impact of the project as the project addresses a number of levels to ensure sustainability of the actions. Project implementation focusses on the four pillars of technology transfer, renewable energy, value chain development and knowledge sharing, which are built on a capacity building platform to ensure increased capacity and ability.

**Technology transfer:** To apply the System of Rice Intensification which is an innovative, efficient and environmentally sustainable set of production practices, reducing requirements for water, seed, synthetic fertilizers, pesticides, herbicides and labour, especially tasks performed by women. The major benefits include reduced emissions of methane and nitrous oxide due to the reduced demand for water use of nitrogen-based fertilizer. Incorporating Renewable Energy technologies in the set-up of SRI makes the whole chain of production more sustainable. The abundance of rice residue biomass, straw and husks, creates an opportunity to generate Renewable Energy which is preferential to current waste disposal practices which emit GHGs, and create unhealthy fumes and dust emissions. This project will explore several bio-energy solutions (electricity, improved cooking/heating/cooling systems) which will be further defined after the residue use and energy feasibility study. These energy options will provide households and small companies with a clean, cheap fuel and creating a better environment for the surrounding families and animals. **Inclusive Business and Value Chains:** profitable and sustainable entrepreneurial initiatives that contribute to poverty reduction by including lower-income communities within the value chains of companies. The project will promote and support the design and implementation of inclusive business plans to include the rice farmers as suppliers into the value chains of companies. This will create growth, productivity and new opportunities for the company, and sustainable access to markets, jobs, income increases and wealth for the low-income population. **Knowledge platform:** Knowledge, experiences and lesson learnt will be complied, documented and disseminated to ensure benefits are shared, for farmers as well as for evidence based policy development and informed decision making at all levels. **Capacity building and awareness raising**: Farmers, local authorities, Extension officers and CBOs (Farmers and Women's Union) will have direct capacity building activities to raise awareness, understanding to support the technology transfer and ensure the inclusive business and value chain activities are sustainable. In addition the project activities will focus on good governance practices whereby SNV, CASR@D and local partner/participants will utilise participatory, inclusive and transparent approaches to ensure social, cultural, economic and environmental sustainability.

SNV's ultimate goal is to alleviate poverty, and we are striving to do so in a socially and environmentally sustainable way. SNV has been present in Vietnam for 15 years, working in close partnership with an extensive network of more than 200 local service providers. Through our advisory services to leading public and private organisations we catalyse innovative and strategic solutions that drive growth and performance while creating jobs and generating income as well as improving access to basic services for the poor. Our approach revolves around 'Market Based Solutions' that contribute to equitable economic development and focus on increasing incomes and employment and strengthen the environmental sustainability of agriculture production by promoting 'climate smart technologies' and

helping to minimize the environmental footprint of agriculture (reduce emissions, enhancing crop diversities); integrated systems that combine food production with potential renewable energies. We support Agriculture Extension Centres as extension service providers from commune to provincial levels to apply participatory agricultural extension practices as well as improved production practices. With CASR@D we will enhance capacity building and technology transfer opportunities, linking science and practice. CASR@D provides interdisciplinary research and development in the agriculture sector, and has been developing and researching the SRI practices since 2008 including research to achieve and measure emission reductions from rice production and advocacy for policy development. This collaborative effort allows us to reach and upscale the SRI production system.

As part of the Community Based Climate Action Grants Program of AusAID, this project will actively engage in networking, uptake of and sharing of lessons. This will be in conjunction with AusAID and also utilize national platforms such as the Climate Change Working Group. In addition this project will link closely (quarterly meetings) with the EDF project under this program which also focuses on mitigation in rice production systems. Key lessons and knowledge exchange areas will include feasibility of and access to mitigation finance and methods and processes to measure GHG emissions.

The outcomes and lessons from this project via the knowledge management and advocacy platform will be used to inform local and national government about rice production in the climate change context and how the resilience of small holder farmers can be enhanced while contributing to Government targets for food production and mitigation in agriculture. This will provide evidence based knowledge for better and supportive policy development for the agriculture sector.

## 3.4. Project activities

The project has five key activities:

1. Application of System of Rice Intensification (SRI) for small scale rice production systems;
2. Market linkages and "green rice" market opportunities for rice produced by the SRI production system;
3. Development of renewable energy options for utilizing rice residues;
4. Knowledge management and advocacy for a supportive environment for small holder rice producers; and
5. Project management which includes project monitoring and evaluation.

This project emphasises the participatory and inclusive approach, therefore all activities need the involvement of local stakeholders to direct and enable local ownership of activities. SNV and CASRAD emphasises the quality of outputs and sustainability of actions and shall therefore provide oversight and technical guidance to all activities ensuring quality of outcomes. The project detailed activity and implementation plan are provided in Annex 1. The theory of change and project result chain is provided in Annex 6. The following section will discuss the logic of the project interventions and how these achieve the impact level targets of reduced GHG emissions from rice production and increased farmer income.

**1. Systems of rice intensification:** SRI contributes to reducing GHG emissions from rice production systems by reducing the demand for water and nitrogen fertilizers. Methane emissions can be reduced by changing the water regime to making paddy fields alternately wet and dry limiting the methane that is produced from anaerobic soil conditions due to continuous flooding. With SRI methods irrigation requirement for paddy cultivation is reduced by 25 – 50%. Reduced water requirement for paddy means availability of more water for other crops, human labour and reduced ground water exploitation. Changing fertiliser use practices (minimising inorganic fertilisers) and increasing the use of organic manure can reduce nitrous oxide emissions. The improved water and fertiliser practices means the SRI

production system offers significant benefits that can increase the resilience and reduce vulnerability of small scale farmers to the impacts of climate change.

Activities in this component will start with raising awareness and building capacity for local authorities and farmers about the impacts of climate change on rice production systems as well as rice production systems contribution to climate change via its GHG emissions. To show the benefits of the SRI, demonstration field pilots will be set up in the first Winter/Spring crop (Dec 2012 to Mar 2013) which will serve as the training and demonstration sites to raise awareness and transfer technology about the production system. Through training and capacity building the necessary skills to implement SRI practices will be transferred to local authorities, farmers, and supporting organisations of Farmers and Women's Union. Framer groups including all farmers and farmer cooperatives, as well as specific women only groups will be established to facilitate the technology transfer and capacity building activities. This will allow for the SRI practices to be implemented to larger areas for the next Summer/Autumn crop. This implementation will be supported with technical assistance from the project (CASRAD and SNV) and local agriculture support agencies.

To ensure the projects activities are beneficial there will be an economic and institutional assessment of the demonstration plots to ensure sustainability of actions. Lessons from these studies will be integrated into future SRI project activities for streamlining.

The project will undertake monitoring of GHG emissions and determine the emission reductions that can be achieved by implementing the SRI production style system. There will also be an economic analysis of the feasibility to access various carbon market options with the emission reductions that can delivered under SRI. In addition an assessment of how carbon trading from agriculture may benefit and work in the Vietnamese context will also be carried out. This activity leads itself to close collaboration with EDF, and will be implemented jointly.

**2. Market linkages:** SNV uses the inclusive business approach[11] to promote and support the design and implementation of inclusive business plans' to sustainably include the rice farmers as suppliers into the value chains of companies. Achieved by establishing solutions to their requirements in terms of quality and quantity, which could include amongst others: forward contracts, financial services, technical assistance, insurance, organizational strengthening, and rice farming technology based on the System of Rice Intensification (SRI) for a greener production, with higher productivity, efficiency in inputs, and quality. As a result, it will create growth, productivity and new opportunities for the company, at the same time generate sustainable access to markets, jobs, capacity development, income increases and wealth for the low-income population; it is sustainable business for sustainable development.

Crucial to this activity is the SRI rice product market and demand study, this will assess the potential market size and identify market opportunities as well as identify key actors in the value chain. Of key importance to the rice demand study is the market opportunities which will influence variety selection for the SRI activity; as variety selection will affect grain quality and uses and hence market options. Working through companies in the rice sector such as the rice millers and traders, these companies will be linked to the rice farmers growing rice under SRI practices, they will be supported with capacity building activities for market strategies and development. Together with the farmers these companies will be leading the positioning of SRI rice into the market which is envisioned to have a higher price due

[11] An Inclusive Business is a profitable and sustainable entrepreneurial initiative that seeks to contribute to poverty reduction by including lower-income communities within the value chains of companies as employees, suppliers, consumers or distributors, in a win-win situation.

.[12] Africare, Oxfam America, WWF-ICRISAT Project (2010). More Rice for People, More Water for the Planet. WWF-ICRISAT Project, Hyderabad, India.

to its “green rice” qualities. This price premium will be passed along to the farmers who will benefit from income via the higher price for their rice product and increased yields from the SRI system.

**3. Renewable energy**: incorporating renewable energy technologies in the dissemination and set-up of SRI makes the whole chain of production more sustainable and represents a cradle-to-cradle approach. Until recently the development of renewable energy technologies and projects in Vietnam lagged behind due to the low electricity prices. Nevertheless now, due to increasing prices as well as more strict environmental regulation and legislations renewable energy starts to develop on its own. The vast majority of electricity supply in Vietnam originates from coal-fired, gas-fired and hydro-electric power plants. Nevertheless there is a big shortage yearly of electricity resulting in many power cuts for households as well as companies. To secure continuous production and access to energy (low efficient) individual back-up systems for (expensive and environmental unfriendly) fossil fuels such as diesel, need to be installed by communes and/or (small) businesses. While in the meantime there is an abundance of biomass in the country, including rice residues such as straw and husks which are dumped in rivers or on the side of the road, rotting or being burnt and emitting greenhouse gasses. Many people burn the residues openly, wasting the energy and create unhealthy fumes and dust emissions. This situation does create opportunities, and with both existing as well as new innovative technologies renewable energy can be generated from biomass. Either in a form of electricity, or in the form of improved, more efficient cooking and/or heating/cooling systems, providing households and small companies with a clean, cheap fuel and creating a better environment for the surrounding families and animals. As part of this project, several bio-energy solutions will be explored to be able to create the optimal situation for all parties involved. Some examples of integration are given below:

- implementation of one big power plant fed with rice residues who provides a whole commune or company with energy (either electricity or heat), and which is fed with residues from surrounding rice farmers (inclusive business), to
- the production of climate neutral bee-hive-like briquettes of rice husk (normally made of fossil fuel based binders with coal residues) that can be used in existing stoves already disbursed throughout the whole country, to
- the implementation of household size improved cookstoves using the residues to cook meals for both the families as well as the animals.

The actual choice and implementation of technologies depends heavily on the local situation as well as the local habits in cooking, energy generation and rice production. This activity will first assess the current usage practices for rice residues, and provide the communities with increased awareness about how these residues can be used to generate renewable energy, empower communities to make choices about the use of renewable energy and provide technical support to implement their selected RE options. In addition the options for sustainable financing mechanisms to enable the purchase and uptake of RE options will be assessed and if feasible linkages to such mechanisms established.

**4. Knowledge management and advocacy:** To maximise the benefits derived from the projects’ direct technical interventions, capacity building and awareness raising activities, the results and lessons learnt will be exchanged at the local, provincial and national levels. This will be by: documenting project activities; workshops to share and discuss activities and specific knowledge events via established platforms such as the Climate Change Working Group meetings, Ministry, regional and provincial meetings and exchanges with other projects under the Community-based Climate Change Action grants program and other donor funded programs. All knowledge from this project will be available via the project webpage (under the SNV website) in digital as well as hard copy and available in both Vietnamese and English to ensure access to interested parties.

***5.*** **Project management and project monitoring and evaluation:** Well-coordinated activities, strong project management and an effective monitoring and evaluation plan and implementation will ensure the delivery of the projects goals and objectives in a timely manner. The project monitoring and

evaluation plan is presented in Annex 4, it is recognised that the monitoring and evaluation plan and actions are dynamic and will be built upon during implementation of the project. The monitoring and evaluation activity is designed to involve all of the projects' stakeholders at all levels from community to government to ensure their engagement and contribute to local ownership.

*The project management, including roles and responsibilities are described in the following section.*
The project will be carried out in a participatory and inclusive manner, involving stakeholders at all levels from farmer, authorities, CBOs and private enterprises. At the beginning of the project the roles and responsibilities of each actor will be discussed and agreed upon. SNV is the project manager and is responsible for ensuring the project is implemented in line with the project document, outcomes and impacts are achieved, as well as managing the coordination and partnerships and deliver upon the reporting and financial management requirements of the project. SNV will also lead implementation of activities for the renewable energy, market development and knowledge management and advocacy actions and provide additional support to the SRI component. CASR@D as a partner in the project and is responsible for providing the technical expertise to implement the activities for the SRI component and its related capacity building activities as well as contribute to the knowledge management and advocacy actions. In addition the project will be implemented with local agencies. SNV, CASR@D and local agencies will contribute to the development phase by provision of SRI technical expertise to assist in selection of project sites and further elaboration of project activities.

CASR@D will lead activities to introduce and implement the SRI technology and production system as well as GHG measurement. Capacity building activities will be carried out in conjunction with CASR@D and local agencies. The project development phase will involve provincial, district and commune level authorities to assess potential implementation sites. These short listed sites will be further assessed at the local level using participatory approaches to include the farmers and CBOs in the selection and development of the project's interventions. This will ensure the project is relevant and that local stakeholders from farmer to government have an investment in the project.

Agriculture Extension Centre (AEC) and Plant Protection sub-Department (PPsD) are the local agencies to support implementation activities and direct beneficiaries of the project capacity building activities. AEC and PPsD will utilize their newly strengthened capacity to lead the local level implementation and farmer training activities. They will deliver technology transfer: the introduction of SRI production system with training and demonstration plots; Advisory services: on-site diagnosis and problem-solving to help farmers improve the SRI implementation, with customized information and advice; and Facilitation: working with farmers to help them solve their own problems, often through guided discussions and field trials to identify appropriate technologies. The project will also indirectly partner with private enterprises to promote a market led supply chain for "greener" SRI rice. These enterprises are an entry point of interventions to strengthen farm-agribusiness linkages or full vertical cooperation and to qualitatively and quantitatively improve the rice supply chain

Of significant concern to the project is the inclusion of marginalised people, especially women, children, poor and those with disabilities. To ensure they have the opportunity to benefit from the project as well as ensure their needs are taken into account and their voice is heard the project will actively strive for their inclusion. At the local level the project will include the Farmer's and Women's Union, village leaders and farmer producer groups as key stakeholders and groups. These groups will directly involve in project activities and have a lead role to ensure their community is adequately represented and participation of all. Coaching to these stakeholder's about how to encourage and involve marginalised people will be provided. Feedback from the community, including the marginalised people about their needs and requirements, will be sought and this knowledge shared within the community and with local authorities for improved understanding and awareness. Prior to implementation of project actions, each intervention will be assessed to determine its impact on the different groups to ensure it

is effective for all including women, poor and the disabled. Amendments to activities will be made if it is found to not benefit all groups.

The underlying platform of this project is capacity building; it is the integral component of all activities. The approach is to build the capacity of local authorities who support farmers with technical and policy inputs. To achieve this, the project will deliver all activities in conjunction with these local actors, including departments of agriculture extension, plant protection and cropping as well as community based organisations like Farmers and Women's Union. Training will be provided by CASR@D and SNV and will be applied at a number of levels. Training of trainers will be used to train agriculture technical support staff to upscale and expand knowledge; in addition there will be direct training programs for technical support staff and farmers. To ensure the effectiveness and uptake of the training events, coaching will be provided throughout the program to promote delivery of improved services to farmers. Capacity building, awareness raising and training will be across all areas of the project and will include agriculture and the impacts of climate change, technical knowledge and skills for SRI, renewable energy and market development and strategies. The increased capacity and raised awareness will be linked to the project results for evidence based lessons learnt. These will be used to inform policy makers to support the development of more informed and better targeted policies for small holder rice producers as well as provincial and national level agriculture sector planning.

Sustainability of the project is discussed in section 7 of this proposal document. The underlying principal and approach to achieve sustainability is based on inclusive development and capacity building. This is to ensure that the projects actions are relevant to the communities and that the communities, local government and community organisations have increased awareness and capacity to have ownership of the actions and continue with the actions after the project phase. Integral to this is the support of provincial authorities to ensure communities have an enabling environment to continue with the projects actions.

## 4. Monitoring and evaluation

Monitoring and evaluation will be applied at activity and project levels. At the project level, a comprehensive set of quantitative and qualitative indicators have been developed for impact, outcome and output monitoring. Impact, outcome and output descriptions are presented both in a results chain (Annex 6) and the corresponding indicators are presented in a logframe/monitoring plan (Annex 4). The M&E system's strength lies in the use of multiple data sources, including data collected and reported by the beneficiaries themselves. In all cases where it is appropriate and will provide valuable information for refining project implementation, indicators have been disaggregated by gender. SNV will employ a new online planning, monitoring and evaluation system to capture and share M&E information. This system offers an improvement on excel or word based monitoring systems by being accessible to all project managers and relevant stakeholders on an ongoing basis.

As a part of the baseline process, SNV will conduct an in-depth analysis to identify and assess other development projects and GOV funded activities that are relevant to this project. This will identify areas for collaboration, to share lessons learnt and ensure project results are attributable.

At the activity level, a protocol for monitoring the implementation and compliance for the SRI production system will be developed. The monitoring will be carried out at the field level by local authorities (the agencies providing technical support) as well as farmer's union and farmers applying the practices. This will be applied as part of the regular activity and routine of the farmer learner groups.

As part of the project's design there are several critical points for data gathering and analysis that will provide essential feedback to the implementation of the intervention. Data collection will be regular and ongoing and is first and foremost responsive to farmers and their cropping cycle rather than to

annual reporting requirements. The first critical review will occur after the first rice crop has been harvested, which is three to four months after the start of the intervention. At this juncture, both rice farmers and government partners will be asked to provide both their qualitative impressions and quantitative data on the pilot implementation of the SRI technology. This point-of-feedback is critical because the success of both awareness-raising activities and technical training will be assessed and it will enable project management to assess the data collected from farmer production log books to triangulate this information with data from the commune's records and from surveys. Female participation rates will also be assessed in several key components of the project and management will be able to respond early in the project's implementation if participation rates are not representative.

In addition to SNV staff, a number of stakeholders will be essential in the implementation of M&E system, including DARD, rice milling companies, C@SRAD, the Women's Union (WU) and the Farmers Union (FU). The stakeholders will be empowered to collect, manage and analyse monitoring data, and, with the aid of project management they will be assisted to in responding to the information and tailoring their own activities accordingly. For example, DARD in conjunction with the FU or WU will collect information on the participants at their training activities and depending on the representation of individuals, DARD will be able to change their activities and/or alter the awareness-raising to encourage the participation of marginalised groups. This approach has been successfully used by SNV in the past; with a tried and tested approach ready to engage, build capacity and create local level ownership of activities.

## 5. Reporting

The reporting schedule is outlined in the table below and consists of the Project design, six-monthly progress reports and the final report. Reports will include a brief summary of progress towards the project outcomes, the status of key performance indicators, and any challenges to implementation and how they will be overcome. All reports will be submitted using the appropriate template as provided by AusAID. SNV is the agency responsible for reporting to AusAID.

Table 1: Reporting schedule

| | | |
|---|---|---|
| **Project design** | *Draft* 25 May 2012<br><br>*Final* 31 July 2012 | First draft of project design including:<br>• Updated logframe; schedule of activities for the full project duration; and six-month mobilisation plan (for July to December 2012)<br>Completed project design document |
| **Report 1:** Annual plan for 2013 and implementation phase progress report | 30 November 2012 | Annual plan (January to December 2013) and progress report with financial acquittal (covering July 2012 to end of October 2012) |
| **Report 2:** Six-month progress report | 31 May 2013 | Six-month activity progress and financial acquittal report (covering November 2012 to end of April 2013).<br>Acceptance of this report will be the basis for the second tranche payment in June 2013. |
| **Report 3:** Annual plan for 2014 and six-month progress report | 30 November 2013 | Annual plan (January to December 2014) and six-month activity progress and financial acquittal report (covering May 2013 to end of October 2013) |
| **Report 4:** Six-month progress report | 31 May 2014 | Six-month activity progress and financial acquittal report (covering November 2013 to end of April 2014) |
| **Report 5:** Final Activity Report | 28 February 2015 | Activity and Financial report for the full project implementation period (July 2012 to 31 December 2014). |

## 6. Risk management

The major risks to the project have been defined under the following headings and are:

**Economic risks:** Complex negative economic and political incentives drive small holder producers, (land-use change, urban expansion, financial viability, labour availability, migrant labour, rice value chain). These complex incentives will influence the level of involvement and commitment of small holders in project activities. **Mitigation actions:** The project and partners need to fully understand these drivers influencing small holders including specific impacts on men and women as well as the poor. These factors will be taken into account during the design of project activities to reduce these threats and to focus on the poorest and women to ensure they benefit most from improved production systems. **Risk 2:** There may be limited interest from the private business sector and market for neither a "green rice" product nor a price premium to be paid to producers of rice using the SRI system. **Mitigation action:** The private business sector will be engaged through Public-Private partnerships to develop the market for green rice. The "green rice" market strategy and development activities will be based around a sound financial business plan to ensure economic viability and sustainability of the action.

**Socio-economic and cultural risk:** Women, disadvantaged, poor and ethnic group small holder producers may not have sufficient incentives to participate in project activities. **Mitigation actions:** The project will work closely with these groups, all project actions will be implemented in participatory process to inform and empower communities which will allow them to determine their own development path. Efforts will be made to ensure the voice and cultural aspirations of such groups are heard and included. The project will be transparent and ensure representation from all stakeholders.

**Institutional risk:** The project entities may not perform effectively and lack capacity to undertake the tasks required implementing the project successfully. **Mitigation actions**: The project provinces have been chosen in areas where the partners already have good relations with local government with committed support due to recognition of the need of this project and its benefits . The existing knowledge of the area and people and the trust that has been built up through previous actions together will help mitigate this risk and ensure the full commitment of all involved to reach the required commitment level for successful project implementation.

**Political risks:** A high level of policy support from the Government at national and provincial levels is required to develop improved agriculture production systems to combat CC with emphasis on low emission agriculture and enabling multiple benefits such as combining renewable energy and value chain development. **Mitigation:** All partners will continue close relationships with governments at all levels to ensure continued support for the project and transfer of evidence based knowledge and lessons learnt which will feed into policy and decision making process at national and local levels.

**Technical risk**: Significant expertise and capacity is required to implement SRI and measure GHG emissions. **Mitigation:** The project partner CASR@D has previous experience with SRI production systems, as well as measuring and monitoring GHG emissions. In addition, networks with knowledge institutions and experts in the field of CC and specifically with measuring and monitoring GHG emissions will be sought to build capacity and fill knowledge gaps. This capacity will be shared through the knowledge platform to exchange experience and technology for this component. This project will also cooperate closely with the other rice mitigation project to share lessons on this aspect. See annex 2 for further details.

## 7. Sustainability and capacity building

To ensure the sustainability of the action the project will focus on delivery of quality technical advisory services and actions as well as institutional arrangements, governance and economic viability of

activities. **Institutional settings**: The projects' activities will use the existing institutional setting and structures which are currently in place. As such this will embed the capacity and new technologies required for the SRI production system into existing agriculture support services such as the Agriculture Extension Centre, Plant Protection Department under DARD. Using existing channels and building capacity of these will ensure the capacity remains after the projects' intervention. This structure already has the endorsement from national authorities and local stakeholders. This will ensure local agencies have the capacity to deliver improved services to rice farmers. **Governance**: The project and partners will adhere to the four principles of good governance, namely inclusiveness, participation, accountability and transparency which will ensure local ownership and equitability. **Economic viability:** The SRI system has economic benefits in that it can reduce input costs and increase yields which will result in increased income for farmers. Long term economic benefits derived from SRI produced rice will require market development to establish the "green rice" brand and value chain. This value chain will be strengthened by the involvement of the private sector in "green rice" rice value chain and partnerships with small holder rice producers can create commodity security. **Social and Cultural sensitivity and inclusiveness:** Participation of women, disadvantaged, poor and ethnic minority groups as well as taking account of cultural and traditional knowledge. The project will ensure their representation in the project activities and as project beneficiaries. Linking and associating stakeholders, especially the private sector, within the project to promote inclusive partnerships that ensure small holder producers can benefit in the long term.

All activities of the project are in-line with the agriculture and rural development strategies of both implementing provinces. The Provincial DARD agencies have given their full support to the implementation of this project as it will help them to achieve their development objectives in the rice sector and enable them to scale up success from the project to remaining provincial sites.

## 8. AusAID safeguards and cross-cutting issues

During the development and implementation phases the project partners will pay specific attention to the cross-cutting issues. SNV will take an active role to ensure all issues are addressed to ensure policies and goals can be followed.

**Child protection**: SNV and project partners acknowledge the goal of AusAID's child protection policy "*To protect children from abuse of all kinds in the delivery of Australia's overseas aid program*". SNV adheres to the policies of AusAID as outlined in the "Child protection policy, January 2009" and will uphold these policy and the four guiding principles (zero tolerance of child abuse; recognition of children's interests; sharing responsibility for child protection; use of a risk management approach) throughout the life of the project. SNV will disseminate the AusAID policies and principles to partner agencies and collaborators to ensure activities are implemented in compliance of these standards. All SNV and CASR@D advisors will agree to and sign the child protection code of conduct.

**Environment**: As part of the project design an initial environmental assessment to identify environmental issues and potential environmental impacts has been conducted. A significant component of the project is the SRI production system; it is an environmentally sustainable production system that reduces requirements for water, seed, synthetic fertilisers, pesticides, and herbicides. This system has been proven (Oxfam 2010)[12] to be less demanding and intrusive on the natural environment making it sustainable and compatible to biodiversity conservation in a changing climate. During the implementation of this component, all interventions will undergo an environmental impact assessment

[12] Africare, Oxfam America, WWF-ICRISAT Project (2010). More Rice for People, More Water for the Planet. WWF-ICRISAT Project, Hyderabad, India.

to ensure there are positive impacts from the actions. This will be conducted after the specific activity interventions have been designed in cooperation with the project stakeholders. In addition the project is addressing the use of rice residues (straw and husk) as potential sources to provide renewable energy. This activity will assess the environmental and climate impact of residue use and feasible renewable energy options that have potential benefits to the environment and health. These will be monitored throughout the project.

**Inclusive development**: SNV actively promotes inclusiveness and an enabling environment for all, including disadvantaged, disabled, poor and minority groups. These groups will be specifically sought in pilot communes for inclusion in project activities. Capacity building activities with project stakeholders will include inclusiveness to promote the integration of these groups into not only this project but society and development actions in general. This adheres to the AusAID Development for All: Towards a disability-inclusive Australian aid program 2009–2014 overall goal of "*better lives for people with disability in recognition that they hold the same rights as all others*". The project's activities, all advisors and partners will follow the six guiding principles of: People with disability will play an active and central role; Our work will recognise, respect and promote rights; Our approaches will respect and build understanding of diversity; We will take into account the interaction of gender and disability; We will focus on children; We will actively promote and support people-to-people links and partnerships.

**Gender**: The project will promote gender equality and empowerment of women by ensuring that at least 50% of project beneficiaries are women. Specific efforts will be given to the second and third gender equality and women's empowerment pillars of increasing women's voice in decision making and leadership as well empowering women economically and improving their livelihood security. Following these two pillars women will be encouraged to actively participate and take a leading role in the training and capacity building activities; new rice production practices that typically reduce the labour requirement for women; partake in renewable energy activities through possible applications such as improved cook stoves; as well have access to improved inclusive business options for improved economic development. A significant role will be played by the local Women's union who will evolve in project activities and encourage and promote the role of women in the communities, ensuring the voice of women is heard, including specific women only groups.

**Disaster Risk Reduction:** The objective of the project is to address the effects of climate change on agriculture, specifically ensuring agricultural production in an increasingly volatile climate and mitigation of GHG from rice production systems; as such most actions directly include disaster risk reduction and climate change actions. The project has/will undertake the Initial Environmental Impact Assessment; climate change impact assessment of rice producing areas for site selection; awareness raising and capacity building about climate change and its impact on agriculture; promote contingency planning and incorporation of CC into local planning processes; encourage climate appropriate livelihoods; and promotion of market development for improved economic development potentials. These strategies will help to ensure project interventions lead to sustainable results which increase the resilience of the projects' beneficiaries to climate change. The project hopes to contribute to "climate proofing" rice production systems in the central region of Vietnam.

**Anti-corruption:** As commitment to sustainable development practices, SNV is committed to and adheres to anti-corruption practices and principles. These standards will be applied to the project at all levels. Specifically these standards will be explained to project partners and stakeholders and included in all project agreements such as the MoU with the Provincial People's committee as well as the Assignment Agreement with implementing partners such as CASRAD and DARD.

## Annex 1. Detailed Activity and Implementation Plan

| No. | Activity | 2012 | | | | | | | 2013 | | | | 2014 | | | | Responsibility |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | June | July | Aug | Sept | Oct | Nov | Dec | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | |
| **1** | **System of Rice Intensification (SRI) for small scale rice production systems** | | | | | | | | | | | | | | | | |
| 1.1 | Guidelines which are site specific detailing how to implement the SRI production system | | | | | | | | | | | | | | | | |
| 1.1.1 | Project design, technical assessment, criteria identification, selection of rice producing areas where SRI production techniques will be implemented, and local partner identification | | | | | | | | | | | | | | | | CASRAD, SNV, DARD |
| 1.1.2 | Site specific technical protocol design for SRI production system including adapted for each province | | | | | | | | | | | | | | | | CASRAD, SNV, DARD |
| 1.1.3 | Participatory building strategy and institutional plan for SRI realization with local authorities | | | | | | | | | | | | | | | | CASRAD, SNV, DARD |
| 1.1.4. | Editing the guideline for implementation materials for farmer and extension staff use | | | | | | | | | | | | | | | | CASRAD, SNV, DARD |
| 1.2 | SRI production system monitoring protocol developed | | | | | | | | | | | | | | | | |
| 1.2.1 | Baseline study on farmer practices, on rice production emission and post-harvest emission | | | | | | | | | | | | | | | | CASRAD, SNV, DARD |
| 1.2.2 | Design a SRI production system monitoring protocol to assess production uptake | | | | | | | | | | | | | | | | CASRAD, SNV, DARD |
| 1.2.3. | Training and capacity building for local partners to implement SRI practice monitoring system | | | | | | | | | | | | | | | | CASRAD, SNV, DARD |
| 1.3 | SRI production system demonstration sites established | | | | | | | | | | | | | | | | |
| 1.3.1 | Awareness raising and capacity building about SRI production systems and CC in agriculture to ensure effective transfer SRI technology to local authorities and farmers | | | | | | | | | | | | | | | | CASRAD, SNV, DARD |
| 1.3.2 | Voluntary SRI production groups are established according to the up scaling progress:<br>- Open farmer groups (men and women)<br>- Women only groups are established | | | | | | | | | | | | | | | | CASRAD, SNV, DARD |
| 1.3.3 | Training and coaching for local authorities and key farmers to implement SRI practices | | | | | | | | | | | | | | | | CASRAD, SNV, DARD |

| No. | Activity | 2012 | | | | | | | 2013 | | | | 2014 | | | | Responsibility |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | June | July | Aug | Sept | Oct | Nov | Dec | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | |
| 1.3.4 | Applying SRI production techniques in the field: first season demonstration crop, up-scaling for second third crops. | | | | | | | | | | | | | | | | CASRAD, SNV, DARD |
| 1.3.5 | Realizing with local authorities of SRI practice monitoring, data processing and feedback | | | | | | | | | | | | | | | | CASRAD, SNV, DARD |
| 1.3.6 | Monitoring of GHG emissions from adopted rice production systems | | | | | | | | | | | | | | | | CASRAD, SNV, DARD |
| 1.4 | Rice and carbon financing report | | | | | | | | | | | | | | | | |
| 1.4.1 | Feasibility study on carbon credit applicability and options for carbon financing | | | | | | | | | | | | | | | | SNV, CASRAD |
| 1.4.2. | Institutional option design for carbon credit project based on SRI | | | | | | | | | | | | | | | | SNV, CASRAD |
| 1.4.3. | Survey on economic results of SRI production | | | | | | | | | | | | | | | | CASRAD, SNV |
| 1.5 | Pilot GHG tool developed under the GHG VCA Assessment | | | | | | | | | | | | | | | | |
| 1.5.1 | Enable farmers to utilise the GHG phone application tool to upload fertiliser data | | | | | | | | | | | | | | | | CASRAD, SNV, DARD, FU |
| 1.5.2 | Linkage to enable verification from pilot site GHG emission measurements with GHG phone application tool | | | | | | | | | | | | | | | | CASRAD, SNV, DARD, FU, MARD |
| 1.5.3 | Review and lessons learnt from piloting GHG phone application | | | | | | | | | | | | | | | | CASRAD, SNV, DARD, FU, MARD |
| **2** | **Market linkages and green rice" market opportunities for rice produced by the SRI production system.** | | | | | | | | | | | | | | | | |
| 2.1 | SRI rice market and demand study | | | | | | | | | | | | | | | | |
| 2.1.1 | Conduct the SRI rice market and demand study | | | | | | | | | | | | | | | | SNV, LCB |
| 2.2 | Farmer Marketing group establishment | | | | | | | | | | | | | | | | |
| 2.2.1 | Assessment of SRI rice producers and collectors to set-up marketing groups | | | | | | | | | | | | | | | | SNV, LCB |
| 2.2.2 | Formal establishment and activity planning of marketing groups | | | | | | | | | | | | | | | | SNV |
| 2.2.3 | Internal regulations development | | | | | | | | | | | | | | | | SNV, LCB |
| 2.2.4 | SRI rice marketing strategies development | | | | | | | | | | | | | | | | SNV, LCB |
| 2.2.5 | Training and capacity building for SRI rice marketing | | | | | | | | | | | | | | | | SNV, LCB |
| 2.2.6 | Support, guidance and coaching for SRI rice promotional activities | | | | | | | | | | | | | | | | SNV |
| 2.3 | Creating linkages between farmers and companies | | | | | | | | | | | | | | | | |

| No. | Activity | 2012 | | | | | | | 2013 | | | | 2014 | | | | Responsibility |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | June | July | Aug | Sept | Oct | Nov | Dec | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | |
| 2.3.1 | Facilitation of match-making activities between SRI farmers and companies | | | | | | | | | | | | | | | | SNV, LCB |
| 2.3.2 | Feedback and coaching for the companies to develop inclusive business plans with SRI farmers | | | | | | | | | | | | | | | | SNV |
| 2.3.3 | Guidance and coaching for establishment mutually beneficial relationships | | | | | | | | | | | | | | | | SNV |
| 2.3.4 | Facilitation for contract farming | | | | | | | | | | | | | | | | SNV, LCB |
| **3** | **Renewable energy options for utilizing rice residues** | | | | | | | | | | | | | | | | |
| 3.1 | Development of a decision making guideline for rice residues usage for viable renewable energy options | | | | | | | | | | | | | | | | |
| 3.1.1 | Rice residue study to assess the opportunities for renewable energy | | | | | | | | | | | | | | | | SNV, LCB |
| 3.1.2 | Baseline study of GHG emissions for energy production | | | | | | | | | | | | | | | | SNV, LCB |
| 3.1.3 | Community engagement, awareness raising workshops and training about RE techs | | | | | | | | | | | | | | | | SNV, LCB |
| 3.1.4 | Piloting of selected RE technology options | | | | | | | | | | | | | | | | SNV, LCB |
| **4** | **Knowledge management and policy advocacy** | | | | | | | | | | | | | | | | |
| 4.1 | Project activities are documented and published | | | | | | | | | | | | | | | | |
| 4.1.1 | Exchange of experiences and knowledge among and between the different stakeholder levels | | | | | | | | | | | | | | | | |
| 4.1.2 | Policy lobbying to integrate low carbon rice production into local policy and service framework | | | | | | | | | | | | | | | | SNV, CASRAD |
| 4.2 | Exchange of experiences and knowledge among and between the different stakeholder levels | | | | | | | | | | | | | | | | |
| 4.2.1 | Advocacy to raise awareness about and promote agriculture sector development in the context of climate change | | | | | | | | | | | | | | | | SNV, CASRAD |
| 4.2.2 | Information dissemination about the results SRI production system; market development and renewable energy potentials in rice | | | | | | | | | | | | | | | | SNV, CASRAD |
| **5** | **Project management and monitoring and evaluation** | | | | | | | | | | | | | | | | |
| 5.1 | Project planning (master, annual and quarterly plans); coordination and management | | | | | | | | | | | | | | | | SNV, CASRAD |
| 5.2 | Project monitoring guidelines | | | | | | | | | | | | | | | | SNV, CASRAD |
| 5.3 | Kick-off workshop | | | | | | | | | | | | | | | | |
| 5.4 | Baseline study | | | | | | | | | | | | | | | | SNV, CASRAD, LCB |

| No. | Activity | 2012 | | | | | | | 2013 | | | | 2014 | | | | Responsibility |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | June | July | Aug | Sept | Oct | Nov | Dec | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | |
| 5.5 | Project monitoring and reporting | | | | | | | | | | | | | | | | SNV, CASRAD, DARD |
| 5.6 | Coordination meetings with EDF | | | | | | | | | | | | | | | | SNV, CASRAD |
| 5.7 | Project final evaluation | | | | | | | | | | | | | | | | External consultant |

## Annex 2. Risk matrix template

| Risk | Potential Impact on the project | Likelihood 1= very low 5 = very high | Impact (1= very low 5 = very high) | Risk (=Likelihood X Impact) | Management Strategy | Responsibility | Is the risk assessed through the M&E system? (Y/N) |
|---|---|---|---|---|---|---|---|
| **Contextual Risks** | | | | | | | |
| Complex negative economic and political incentives drive small holder producers. | Lack of participation by small holder rice producers | 3 | 3 | Small holder rice producers are reluctant to change rice production systems which will reduce GHG emissions | Understand situation of rice producers; awareness raising activities; participation payments for rice producers. | SNV, CASR@D, and DARD | Yes |
| **Design risks and assumptions** | | | | | | | |
| Women, disadvantaged, poor and ethnic group small holder producers may not have sufficient incentives to participate in project activities. | Minimal benefits and impact to women, disadvantaged and poor groups | 3 | 3 | Lack of participation by women, disadvantaged and poor groups. | Empower groups to ensure the voice and cultural aspirations of such groups are heard and included. Transparent project activities and ensure representation from all stakeholders. | SNV, CASR@D, DARD, stakeholders, WU? | Yes |
| Interest from the private business sector and market for “green rice” or a price premium. | No increase to income from green rice market | 4 | 4 | Limited green rice market development potential | Engage private business in private public dialogue; Awareness raising for consumers | SNV | Yes |
| A high level of policy support from the Government at national and provincial levels. | Poor and slow implementation of project activities | 2 | 3 | Lack of commitment and support from local authorities | Previous actions have proven commitment from stakeholders. Inclusion, participation and awareness raising to keep stakeholder informed and committed. | SNV, CASR@D, DARD, PPC | Yes |
| **Implementation risks** | | | | | | | |
| The project partners and stakeholders may not perform effectively and lack capacity. | Objectives of the project may not be met | 2 | 2 | Lack of expertise and commitment inhibits implementation of activities. | Project provinces and partners have been chosen with existing good relations and previous experience and | SNV, CASR@D, DARD, PPC | yes |

| Risk | Potential Impact on the project | Likelihood 1= very low 5 = very high | Impact (1= very low 5 = very high) | Risk (=Likelihood X Impact) | Management Strategy | Responsibility | Is the risk assessed through the M&E system? (Y/N) |
|---|---|---|---|---|---|---|---|
| | | | | | willingness to learn and build capacity. | | |
| Significant expertise and capacity is required to implement the SRI production system | SRI system may not be adopted by small holder farmers or poor results from implementation | 4 | 4 | SRI production will not increase yields and reduce production inputs and therefore not achieve GHG emission reductions | Specific awareness raising and capacity building activities are included in the project design to mitigate this risk. | SNV, CASR@D, DARD | Yes |
| Significant expertise and capacity is required to measure GHG emissions. | Inability to accurately measure and monitor GHG emissions | 5 | 5 | Cannot claim/prove GHG emission reductions due to project activities | Links will be made to other rice projects, institutions (including EDF Mekong action) to share knowledge and lessons learnt to apply best practices. | SNV, CASR@D | Yes |

## Annex 3. Detailed Monitoring and Evaluation Plan:

| | Intervention | Objectively Verifiable Indicators | How | Person in charge | Frequency | Feedback mechanism |
|---|---|---|---|---|---|---|
| **Impact** | | | | | | |
| | AusAID Program Indicator: | Number of men and women assisted in building resilience to climate change | | | | |
| | Project Impact Indicators: | Income increase for farmers (men/women) participating in SRI practice area<br>GHG emissions reductions will be assessed using two proxy indicators:<br>reduced amount (volume) of water used in the SRI rice production system and<br>reduced volume (tonnes) of fertilizer used by SRI farmers | - Household survey<br>- Production record book | - Household<br>- DARD and CASR@D | - Farmer group: weekly<br>- DARD and technical advisor CASR@D: weekly<br>- PM: end of crop (often quarterly) | Farmer group and DARD and SNV technical advisor to discuss the content, and technical advisor will inform PM. |
| **Outcomes** | | | | | | |
| **1** | **System of Rice Intensification (SRI) for small scale rice production systems** | | | | | |
| 1.1 | Local authorities capable of technical and policy support to farmers applying SRI practices | # of technical training events held by DARD | DARD training record | DARD | Annually | |
| | | # of farmers received technical training by DARD | DARD record on participants | DARD | Annually | |
| | | # of policies briefing events for farmers by DARD | DARD record of events | DARD | Annually | |
| | | # of people attending policy events (W/M) | DARD record on participants | DARD | Policy event-based | |
| 1.2 | Farmers (W/M) apply SRI production practices | Increasing area (ha) of rice production using SRI practices | Baseline | DARD | Per crop | |
| | | Number of farmers (disaggregated by women/men/poor) who use, on an on-going basis, SRI techniques | Commune record | DARD | Per crop | |
| 1.3 | SRI production system is in place in Quang Binh and Binh Dinh | Area (ha) of rice cultivation utilising the SRI techniques (W/M) | HH record book | DARD | Per crop | |

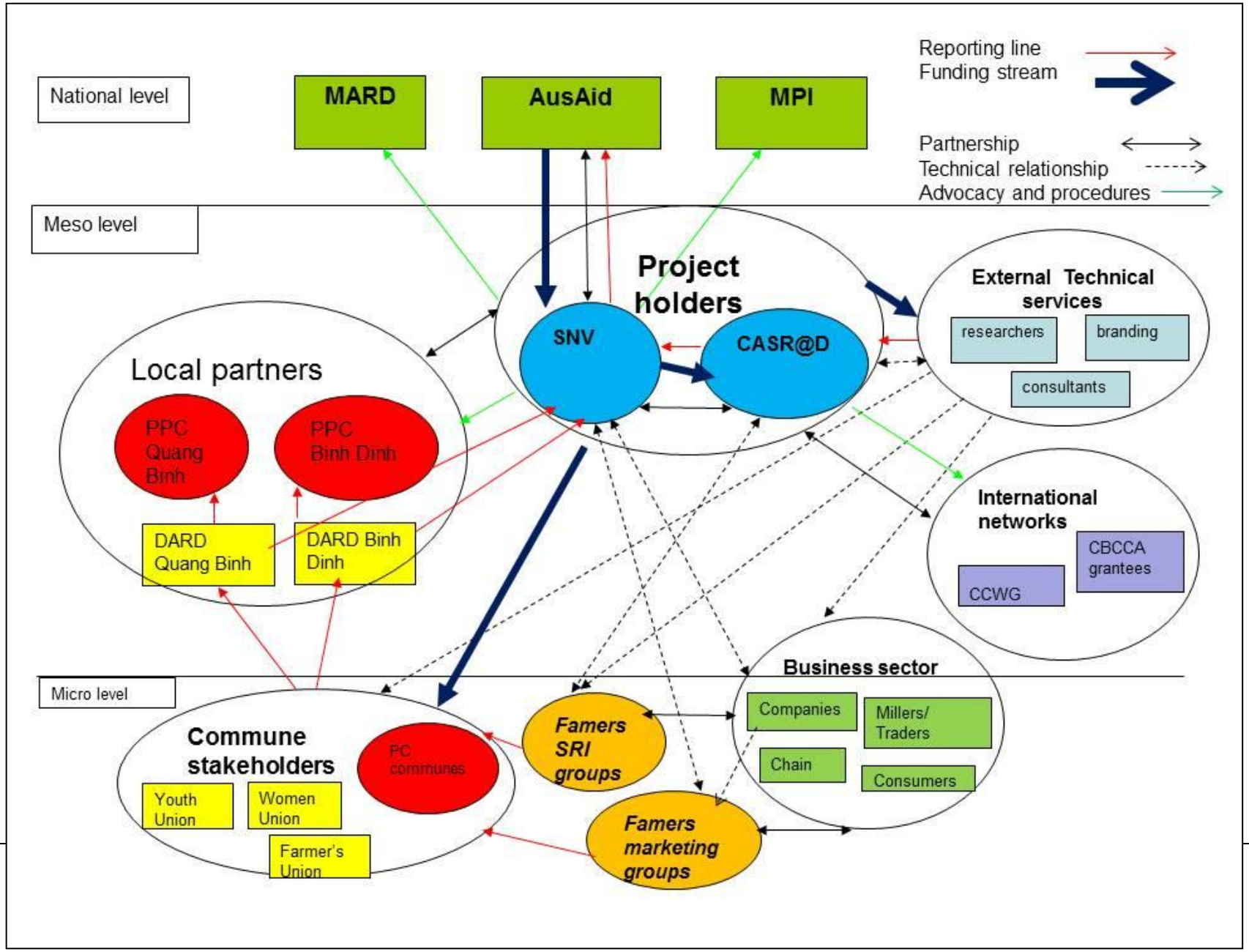
| | Intervention | Objectively Verifiable Indicators | How | Person in charge | Frequency | Feedback mechanism |
|---|---|---|---|---|---|---|
| | | Reduction in volume of synthetic fertiliser used by SRI farmers (kg/ha) | HH record book | DARD | Per crop | |
| | | Reduction in volume of water used by SRI farmers (m3) | HH record book | DARD | Per crop | |
| | | Reduction in #of application of pesticides used by SRI farmers | HH record book | DARD | Per crop | |
| | | Reduced labour requirement for rice production (days/crop) | HH record book | DARD | Per crop | |
| | | Increased rice yield (t/ha) | HH record book | DARD | Per crop | |
| | | Reduced in amount of seed (kg/ha) | HH record book | DARD | Per crop | |
| **2.** | **Market linkages and "green rice" market opportunities** | | | | | |
| 2.1 | Marketing group is actively promoting and marketing SRI rice | One "green rice" marketing campaign has been implemented by companies | The presence of marketing campaign | Companies | Once | |
| 2.2 | SRI rice product is delivered to millers/traders | % of SRI rice out of rice sole to millers and traders | The change in % of SRI rice out of rice sold to millers/traders | Companies | Annually | |
| 2.3 | SRI rice positioned as higher-value products and consumed in the target high-end markets. | The difference in price paid to farmers, in % terms, between SRI paddy rice and non SRI rice sold at premium (of equivalent quality grade) | Company record on rice supply | Company | Annually | |
| | | The difference in price consumed by consumers, in % terms, between SRI paddy rice and non SRI rice sold at premium (of equivalent quality grade) | Site observation in the market shelves | SNV | Annually | |
| | | SRI rice sold at selected markets | The volume of SRI sold to companies | Company | End of project | |
| **3.** | **Renewable energy options for utilizing rice residues** | | | | | |
| 3.1 | HHs are capable of using rice residue for RE | # of HH using new practices of using rice residue for RE | HH survey | Women's Union | Annually | |

| | Intervention | Objectively Verifiable Indicators | How | Person in charge | Frequency | Feedback mechanism |
|---|---|---|---|---|---|---|
| 3.2 | RE technology options are selected and applied | # of renewable energies adopted and used by HH (disaggregated by men/women) | HH survey | Women's Union | Annually | |
| 3.3 | Better usage of wasted rice residues | % unutilised husk used for renewable energy purposes | HH survey | SNV & WU | Annually | |
| | | % unutilised straw used for renewable energy purposes | HH survey | SNV &WU | Annually | |
| **4.** | **Knowledge management and policy advocacy** | | | | | |
| 4.1 | Raised awareness about agriculture and CC, particularly SRI and its benefits including GHG emissions and rice carbon finance | Provincial and district authorities mention SRI in agriculture development plan. | Provincial and district's agriculture development plan | SNV | End of project | |
| | | # of present SNV is invited to present at | The events SNV is invited | SNV | End of project | |
| **Outputs** | | | | | | |
| **1** | **System of Rice Intensification (SRI) for small scale rice production systems** | | | | | |
| 1.1 | Site specific SRI production system guidelines | 02 SRI implementation guidelines developed, one for each Province by November 2012 | The presence/absence of guidelines | CASR@D | Once | |
| 1.2 | SRI production system monitoring protocol | 01 Protocol manual to monitor SRI implementation activities is developed, discussed and shared with local authorities and farmers by January 2013 | The presence/absence of protocol manual | CASR@D | Once | |
| 1.3 | SRI production system field trials | Field demonstration sites established in each province for Winter/Spring crop of 2012. | The physical presence of field sites | CASR@D | First time in 2012; then follow up with consultation with the communes | |
| 1.4 | Rice and carbon financing report | 01 Rice carbon financing report completed by mid-2013 | The presence of report | CASR@D | Once | Circulation for technical comments and learning by partner. |
| 1.5 | Farmers (W/M) and local govt. | # of farmers have trained on SRI | Measure via the | CASR@D and DARD | Training-based | Activity design is |

| | Intervention | Objectively Verifiable Indicators | How | Person in charge | Frequency | Feedback mechanism |
|---|---|---|---|---|---|---|
| | are trained on SRI agriculture and Climate Change | (disaggregated by men/women) | participant list | (to do the list) | | subject to change based on the assessment |
| | | # of local govt. receiving training on SRI (disaggregated by men/women) | Measure via the participant list | CASR@D and DARD (to do the list) | Training-based | |
| 1.6 | Increased awareness of farmers (W/M) and local government about Climate Change in agriculture | When questioned, the # of farmers that are able to explain about CC in agriculture (disaggregated by men/women)<br><br>Use a scale-based indicator to judge the degree of awareness: 0. No idea; 1. Have heard; 2. Able to explain basic concepts; 3. Able to explain to others | HH survey | LCB | Baseline, after 1st crop and by end of project | |
| | | When questioned, the # of local government official that are able to explain CC in agriculture (disaggregated by men/women)<br><br>Same scale-based indicator | local government and stakeholders survey | LCB | Baseline, after 1st crop and by end of project | |
| 1.7 | Increased awareness of farmers (W/M) and local government about SRI | When questioned, the # of farmers that are able to explain about SRI (disaggregated by men/women)<br><br>Use a scale-based indicator to judge the degree of awareness:<br>0. No idea; 1. Have heard; 2. Able to explain basic concepts; 3. Able to explain to others; 4. Able to put into practice | HH survey | LCB | Baseline, after 1st crop and by end of project | |
| | | When questioned, the # of local government official that are able to explain SRI (disaggregated by men/women)<br>Same scale-based indicator | Local government and stakeholders including FU, WU survey | LCB | Baseline, after 1st crop and by end of project | |
| **2.** | **Market linkages and "green rice" market opportunities** | | | | | |
| 2.1 | SRI rice market and demand study report | 01 SRI market and demand report written by end of 2012 | The presence of report | SNV | Once | |
| 2.2 | Farmer marketing groups | # of representative (W/M) farmer marketing | Membership list; | SNV | Once | |

| | Intervention | Objectively Verifiable Indicators | How | Person in charge | Frequency | Feedback mechanism |
|---|---|---|---|---|---|---|
| | established | groups established | Group regulation signed by all members | | | |
| 2.3 | Companies and SRI farmer groups linked | Collective agreements signed between companies and SRI farmer groups | Collective agreements signed by all members | SNV | Annually | |
| 2.4 | Companies and SRI farmer groups trained and marketing strategies developed | # Marketing strategies developed by companies | The presence of marketing strategies | SNV | Annually | |
| | | # of farmer marketing group trained on marketing strategies. | Company record on participants | Company | Training-based | |
| **3.** | **Renewable energy options for utilizing rice residues** | | | | | |
| 3.1 | Decision making guideline for using rice residue | 01 Renewable Energy decision making guideline is developed by mid-2013 | The presence of the guideline | SNV | Once | |
| 3.2 | Decision making guideline for using rice residue is disseminated | # of reports distributed | The presence of report in workshops, meetings and events | SNV | Event-based | |
| **4.** | **Knowledge management and policy advocacy** | | | | | |
| 4.1 | Evidence based reports and publications derived from project activities disseminated. | 03 evidence based reports disseminated each year of the project | Reports presence on website for download, meetings, events and workshops | SNV | Annually | |
| | | | Copies of publications printed | SNV | Annually | |
| 4.2 | Workshops and meetings among policy makers and policy support at provincial and national levels | Number of events organized (disaggregated by types of organizations) | The organization of events | SNV | Annually | |

## Annex 4. Relationship Chart



# Annex 5: Theory of Change and Result Chain

**Theory of Change:**

Rice production systems are vulnerable to climate change impacts as well as being the major contributor to greenhouse gas (nitrous oxide and methane) emissions in the agriculture sector. This has significant implications for Vietnam; as one of the top five countries to be most affected by climate change it is a nation reliant on rice production for national and household food security as well as economic development. Within this setting, the most vulnerable group within the population are the small holder rice farmers. Therefore there is a great need for these rice production systems and those reliant upon them to be made less vulnerable and more resilient to the negative impacts of climate change.

The System of Rice Intensification (SRI) is an innovative, efficient and environmentally sustainable production system that decreases crop production inputs and increases yields. SRI rice will be marketed as a "green rice" aiming to achieve a premium product and higher income for farmers. In addition the utilization of rice crop residues (straw and grain husk) will be assessed for their potential to generate renewable energy. The SRI production system, market development and improved rice reside use is expected to result in reduced GHG emissions and increased income and resilience for small holder rice farmers. This is in line with Government of Vietnam priorities and 20/20/20 strategy: to increase agricultural production by 20%, to reduce GHG emissions by 20%, and reduced the poverty rate by 20%. At present there is more than 185,000 ha of rice produced in Vietnam with the SRI production technique; it is proven to increase yields, reduce water, synthetic fertiliser, and pesticide use. The Ministry of Agriculture and Rural Development via Decision 3062 recognizes the SRI technologies and is promoting the expansion of SRI practices to other rice producing areas in line with its 20/20/20 strategy.

The main assumption of the project is that changing production systems and market choices is a major risk for small holder farmers who have limited adaptive capacity and coping strategies for risks associated with change. To enable change increased awareness, understanding and capacity of farmers, with special attention to roles of men and women, and local authorities is required. These need to be integrated with increased technical support and service delivery from local agencies, enabling and evidence based policies and market development to ensure the required capacity is built, sustainable economic viability leading to increased resilience of the small holder rice farmers.

**Result Chain:**