

2nd FCN-LCF Coalition – Strategic Plan

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2nd FCN-LCF Coalition – Strategic Plan

(June 2011 to December 2012)

1. VISION

The Vision of the 2nd FCN-LCF Coalition is that small and marginal farmers substantially contribute to global climate integrity and become models for small holder farming the world over, by adopting Low Carbon Farming.¹

2. MISSION

4 Participating NGOs, through this 1½ year Pilot, will develop capabilities and new age business skills to tap carbon resources and incentivise a scale up of Sustainable Agriculture practices amongst 23,000 small and marginal farmer families so that they gain steady income and have enhanced food security.

3. CORE VALUES

A. Commitment to Small and Marginal Farmers	Although 4 Participant NGOs will take the lead in all negotiation and project management, carbon revenues that flow as a result of these transactions will benefit Small and Marginal farmers and improve their lives.
B. Centralism of Farmer Organisations	The success of efforts will depend on institutional mechanisms, set up by each Participant NGO, for representation and collective decision making by Participating Farmers.
C. Special Emphasis on the Participation of Women & Youth	Farming, especially the labour and attention intensive variety promoted by Sustainable Agriculture, cannot be carried out without the active a wholehearted participation of Women. They are not just a source of unpaid/cheap labour for households. Instead, Women will be empowered to become decision makers in family cultivation. Youth have the capacity to take the lead in making a clean break from the loss making business of subsistence cultivation. Young men and women in farmer families will be the ones who will apply cutting edge science required in Low Carbon Farming.
D. Concern for Environment	The key value on which this 2 nd FCN-LCF Coalition is built is a respect for the Environment and a determination to reverse and restore the damage that has been done through mainstream agricultural practices.
E. Unity in Diversity	We understand that there cannot be a single grand design for all constituents to follow. Diversity in regional situations will be integrated under overarching strategic objectives.
F. Transparency and Accountability	A high level of transparency and accountability will be ensured amongst Participant NGOs through sharing, discussion, and using good communication tools and technology. Willingness to work together subsumes mutual respect and a

¹ Low Carbon Farming = Sustainable Agriculture *plus* the Generation of verified Carbon Credits

	spirit of equal partnership. Everything will be demystified and simplified for small and marginal farmers to understand.
G. Business Sense with Ethics	We recognise that we have to modify typical NGO attitudes and transact with the Business sector on business terms. At the same time, we are conscious that the Business environment is rife with practices which may not always be ethical or acceptable. We will firmly steer clear of dubious practices and transactions which can jeopardise its moral stature.
H. Professionalism and Efficiencies	The 2 nd FCN-LCF Coalition will strive for the highest quality based on integrity and reliability.
I. Innovative Thinking/Technologies	We recognise that this is a “green-fields” area. The 1 st FCN-LCF Coalition, with Science supplied from EDF, New York, has already blazed a trail by developing a Methodology and focusing international attention on Low Carbon Farming. However, actual Emission Reductions for various Crop(s) and SA (package of) Practices have not yet been established. We are committed to join them in the same spirit of innovativeness.

4. OBJECTIVES

4.1. Goal

Small Holder Farming establishes Viable Climate Mitigation Strategies through LCF

4.1. Purpose

NGO Capabilities Enhanced and LCF Model demonstrates Viable Small Holder Farming

4.2. Objectives

1. 4 Participating NGOs Learn to Access large Carbon Resources
2. Farmer Organisations formed as Instrumentality to Aggregate Carbon Credits & take LCF Forward
3. All Participating Farmers change to Sustainable Agriculture practices
4. 2 Field Laboratories Set Up to measure GHG Emissions
5. Emission Reductions Calculated

5. SITUATION ANALYSIS

5.1. Low Carbon Farming

5.1.1. Scope

The farm sector offers significant opportunities for carbon sequestration and emission reductions. Emissions from farming contribute 14% of global Greenhouse Gases. In India, farming contributes to 28% of the national GHG emissions. Low Carbon Farming practices offer farmers the opportunity to capitalize on the carbon market, as they shift to agricultural methods that are more sustainable, involving lower input costs that result in reduction and sequestration (improved soil carbon content) of carbon emissions in the process.

The situation is that Sustainable Agriculture cannot be scaled up due to market failure due to the exclusion of social and environmental costs and benefits from the transaction. These costs and

benefits are known to all stakeholders but traditionally there has been no mechanism to bring them into market considerations.

The Carbon Market attempts to correct elements of this market distortion by paying for social and environmental benefits produced by farmers and reckoned in terms of Emission Reductions.

5.1.2. Strategy

Agricultural VER Projects support sustainable farming by encouraging farmers to adopt a basket of practices that reduce/minimise/remove the use of synthetic fertilizers (CH₄ avoidance and N₂O deduction) while, at the same time, improving soil carbon content. This is done through reduced tillage, precision fertilization, anaerobic composting, using organic fertilizers, mulching, intercropping, multi-cropping, and a horde of techniques specially designed for particular regions, populations and climatic zones. Taken together, we term them as “Sustainable Agriculture (package of) Practices” or “SA”.

Carbon sequestration activities include planting fuel, fodder and fruit trees, and protecting those that are already there on the farms. Fast growing vegetation that do not encourage nesting by vermin can be planted on field bunds and boundaries, or on plots that are not currently utilised to maximum potential. This vegetation can be used for mulching.

Planting multiple crops on the same field support biodiversity. Proper crop mixes, based on science and demonstrated results, promotes resilience by bringing about a balance in the farm ecology and reducing the risk of crop failures due to pest attack. Multiple cropping also reduces the financial risk exposure for farmers against erratic and spatial rainfall.

5.1.3. SA Technologies

To reduce agricultural CO₂, CH₄ and N₂O emissions and sequester Carbon:

- Use reduced or no-tillage farming
- Alter crop mixes and rotations
- Change the timing, amounts, and frequency of the use of fertilizers and other inputs that use energy
- Change the mix of irrigated versus dry land
- Increase irrigation efficiency
- Change the management of livestock manure
- Change the types of livestock and their diets to reduce the release of methane from their digestive tracts
- Change approaches to managing water and straw in rice production
- Increase irrigation efficiency
- Change the timing, amounts, and frequency of the use of fertilizers and other inputs that use energy
- Convert cropland to grassland
- Improve the quantity and quality of forage on grazing land, and move herds more often
- Plant trees

5.2. Background

5.2.1. FCN Members & Low Carbon Farming

The Fair Climate Network supports its Members to develop Energy CDM Projects that generate CERs and claim carbon revenues for the sustainable development of the poor. Except for a single Afforestation/Reforestation CDM registered by ADATS, no one has ventured into Land Use and Land Use Change (LULUC) projects.

But the reality is that a large number of FCN Members are grassroots NGOs, keenly involved in Sustainable Agriculture (SA) efforts. They have developed remarkable technologies that go by various terms like organic farming, chemical free cultivation, low external input sustainable agriculture, permaculture, etc. These have resulted in shifts in cropping patterns and cultivation practices, and demonstrated drought resistance. They have shown these techniques as workable on demonstrations that range from small pockets in scattered villages to hundreds of hectares in contiguous tracts.

Scaling up these Sustainable Agriculture practices is the challenge. This will be possible if the small and marginal farmers were given an incentive to adopt the new practices.

Quantifying methane avoidance in practices currently being propagated under Sustainable Agriculture, introducing new practices to further bring down the carbon footprint, and claiming Emission Reductions to earn carbon revenue could be the solution.

Low Carbon Farming therefore becomes a serious concern for the Fair Climate Network.

5.2.2. Ecological Regeneration

Low Carbon Farming creates conditions for a healthy farm ecosystem and vice-versa, healthy ecological conditions and sustainable practices support low carbon farming. Biomass needs to be established in terms of vegetation and cattle, organic waste from livestock. Biodiversity through birds and insects. These form critical elements in Low Carbon Farming. The reduction and eventual elimination of agro-chemical intervention is a must. Adequate vegetation produces adequate Biomass which goes into the soil in order to enrich it with carbon. Tree cover, along with medicinal herbs, produce fodder, fibre and fruit.

In semi-arid drought prone regions, long term investments are needed to promote the above described basic elements of ecology. Only then will the milieu be hospitable for Low Carbon Farming. Serious and heavy investments are needed to bring diversified vegetation and a balanced/healthy animal population – both of which are severely depleted in the past years through mainstream practices propagated by “modern agriculture”. This will automatically add other biodiversity in species of birds, insects etc.

Such investments would themselves be a measure of carbon sequestration. Long term measures should form a substantial part of efforts undertaken in order to secure the future of Low Carbon Farming.

5.3. History of FCN & Sustainable Agriculture

5.3.1. The Long Journey

This journey began when 9 FCN Members attended a half day meeting in December 2008, where we explored the possibilities of bringing Sustainable Agriculture within the realm of CDM. We looked at the CDM cycle, enumerated existing methodologies, and came to the sobering conclusion that there wasn't much scope to interpret existing SA practices of grassroots NGOs within the Clean Development Mechanism of the UNFCCC. In spite of that, we decided to list our current practices in organic farming, low external input sustainable agriculture, permaculture, *et al*, and re-examine possibilities once more.

Four months later, in March 2009 we again took a detailed look at CDM methodologies in agriculture sector, which is dominated by methane avoidance projects, and none on Sustainable Agriculture. Here our resolve to find a solution got steeled. Soon after in July 2009 the second day of our FCN Meeting was entirely devoted to discussions on the scope of agriculture in CDM. The first glimpse of hope emerged in this meeting with a better understanding of the VER route, Voluntary and US markets.

5.3.2. FCN-EDF Collaboration

It was decided to set up a long-term collaboration between Environmental Defense Fund (EDF), New York, and the Fair Climate Network. EDF Staff visited 4 grassroots NGOs, including ADATS, SEDS, AF and Sacred, from 19 to 25 January, and held discussions with PWDS, a SA Network from Tamil Nadu. Zach Willey, a Senior Economist at EDF, specializes in developing economic solutions to greenhouse gas emissions and natural resource degradation problems in terrestrial ecosystems. A synopsis is available in our Library at <http://www.fairclimate.com/library/topic/3> On 26 and 27 January, they met with various scientists from SAN, ICRISAT and CRIDA at Hyderabad. A Synopsis of Sustainable Agriculture practices observed in the field visits are also in our library. On Friday, 29 January 2010, we held a round-up meeting at the FCN Tech Team office in Bangalore where it was decided to take the collaboration forward.

The EDF-FCN partnership would explore the viability of procuring Verified Emission Reductions (VERs) from the cultivation of small and marginal farmers. In the first 1½ to 2 years we would:

1. Inventorise current farming practices and calculate the Baseline Emissions in 4 regions where Accion Fraterna, SEDS, Sacred (a Scindea partner) and PWDS work
2. Develop Methodologies that clearly identify new practices that need to be adopted to reduce emissions
3. Calculate pragmatic Emissions Reductions that can be achieved by adopting these new practices

This partnership would increase the reach of both parties. EDF is a science based organization that has worked for the last 10 years to develop methodologies and demonstrate VER generation potential for the agricultural sector across the globe. They have completed 100 plus projects in the USA and are currently engaged with the farming sector in China and Vietnam.

EDF would provide the scientific backup and support for the LCF Coalition Programme, and are committed to the long haul that any serious work in agriculture entails. Participant NGOs would delineate project boundaries, establish tenure, and develop carbon contracts with farmers.

FCN would manage NGO dynamics and bring latent potential to the table.

5.3.3. The 1st FCN-LCF Coalition

A month later in March 2010, 5 Participant NGOs met at Bagepalli, along with Richie Ahuja of EDF, for a full day to take matters forward. We first reviewed what had happened in the past 15 months. Then the role of EDF to provide scientific advice and access US carbon markets was thoroughly discussed. A formal decision was taken to form the LCF Coalition Programme of the Fair Climate Network and take it forward in a phased manner. Once more, 11 representatives from the 5 Participant NGOs, along with Richie Ahuja from EDF sat for a full day with FCN Staff, at Bagepalli, to finalise a project application submitted to EED, Germany, to support the 1 year Pilot Phase of the 1st LCF coalition for training, capability building and capital investments.

A 1 year Pilot Phase was supported by EED, Germany, and EDF. Huge progress was made by the 5 Participant NGOs who proved that Low Carbon Farming was doable, measurable and provable.

Please find details at <http://www.fairclimate.com/library/topic/3>

In December 2010, a presentation was made on this project at CoP 16, Cancun, where Low Carbon Farming got international recognition. Several months later, we developed a Methodology to measure Emission Reductions from Crop(s). Currently, in this 2011 crop season, we have set up GHG Laboratories at 4 NGO sites where we will be measuring emissions on Mainstream and SA Reference Plots. After 3 crop seasons, in early 2014, we will have sufficient data to calibrate the DNDC Model and calculate actual emission reductions on particular fields in 4 sub Agro Ecological Zones. This 6 month phase is being supported by EDF, New York, who also provide us with the Science.

5.3.4. The development of an LCF Methodology

The FCN Tech Team started looking at *existing* methodologies where LCF could fit in. The key concerns were the diverse nature of small holding farming with many variants of SA practices. To our dismay, we found that all existing methodologies focused on large farms. We quickly realised that we needed to develop a separate methodology which incorporated diverse small holder agriculture and allowed for flexibility.

Review of existing methodologies

Emission factors are of 2 types:

1. Area based emission factors – emissions per unit area of land
2. Mass based – emissions per unit quantity of fertilizer or manure applied

CDM methodologies adopt a mass based approach – emissions calculated per unit mass of manure or fertilizer. VCS methodologies, on the other hand, consider area based approaches where emission factor for a given area of land under certain crop-management is derived and used. Assessing emissions in SA practices requires a combination of both.

Existing VCS and CDM methodologies were not directly suited to include Low Carbon Farming as a project activity. The closest methodology we found was VCS' Sustainable Agriculture Land Management. However, each farmer family would have a unique set and extent of practices which they would want to adopt. This would include not just land management, but activities that may range from manure management, altered crop rotations, fertilizer application rates, methods and timing.

GHG emission levels of individual practices through each of these practices would be different. This required a method to calculate emissions from various processes, rather than from just the ones for which CDM methodologies exist (E.g. manure management). A recent methodology approved under CDM for SRI in Paddy provides a strong boost in this direction. The big challenge was to include dry land cropping.

It should be noted that although there exist different methodologies for particular aspects like manure management, the source for basic calculations is the "IPCC Good Practice Guidance for Greenhouse Gas Inventory". But to date, there are no emission factors in the IPCC emission factor database that can be used to estimate emissions based on VCS or CDM tools. Further, there is a lack of 'emission factors' for different sets of practices.

It was clear from the review of existing methodologies and tools that there were none directly applicable to Low Carbon Farming. Aspects pointing to the need for a new Methodology were:

- Different Methodologies adopt different rigour for emissions assessments, and this is further limited by (non)availability of 'emission factor' data
- There is more scope and importance given to agricultural land management in VCS than in CDM. In the later, no direct agriculture land management are considered under mitigation. Only isolated and atomised aspects of farming, like manure management, are referred.

Our Evolving Methodology

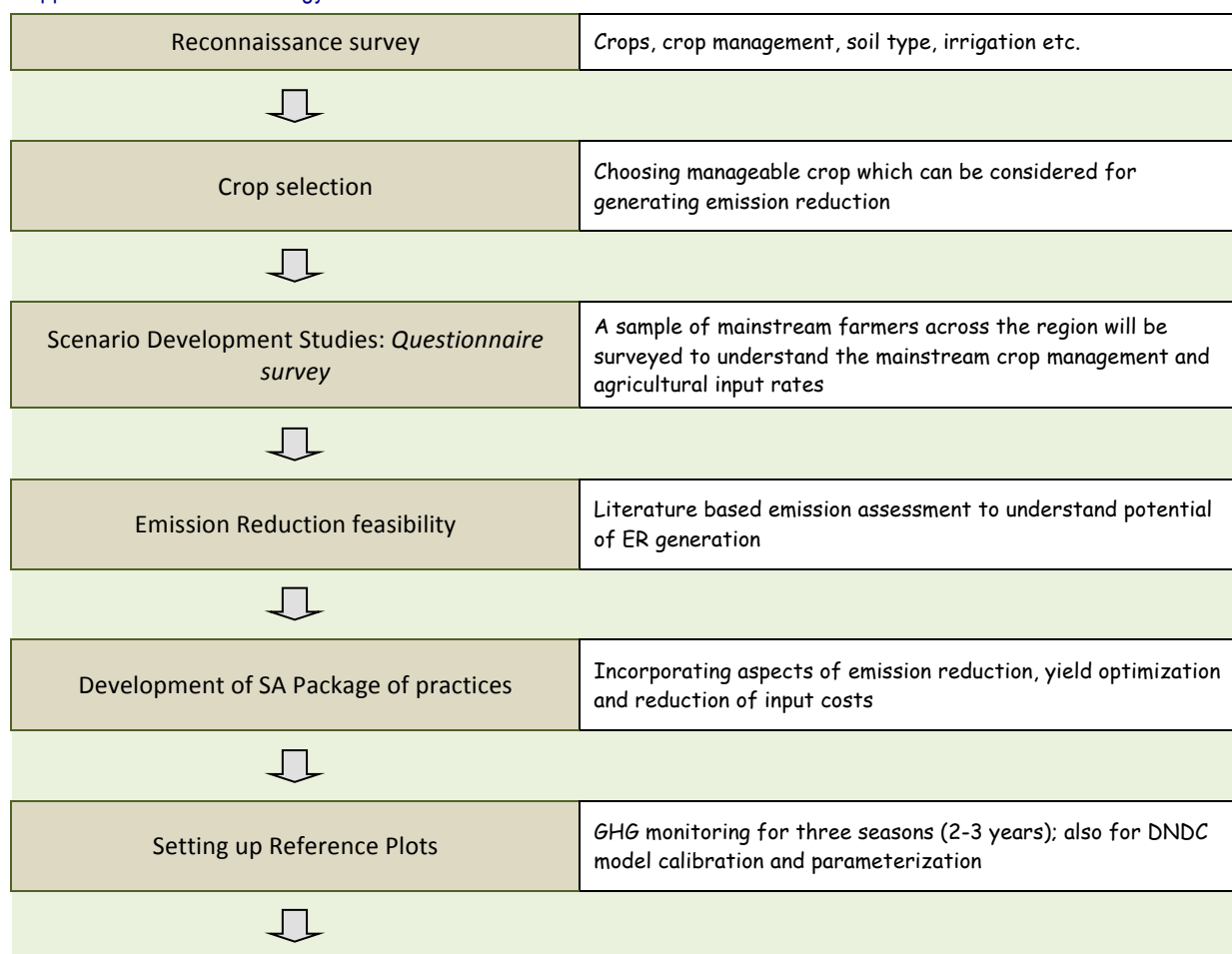
We realised that Low Carbon Farming needed an area based approach whose key features had to be:

- Open and flexible to include different crops and systems and small holder farmers
- Package of practices developed with the Partner NGOs specific to the region/communities, - the components of the package was interpreted under 3 GHGs:
 - i. N₂O emission reduction:
 - Practices reducing direct and indirect emissions from different cropland soils.
 - Mainstream agriculture is characterized by above excess application rates and low nitrogen use efficiency farming practices (such as single dose)

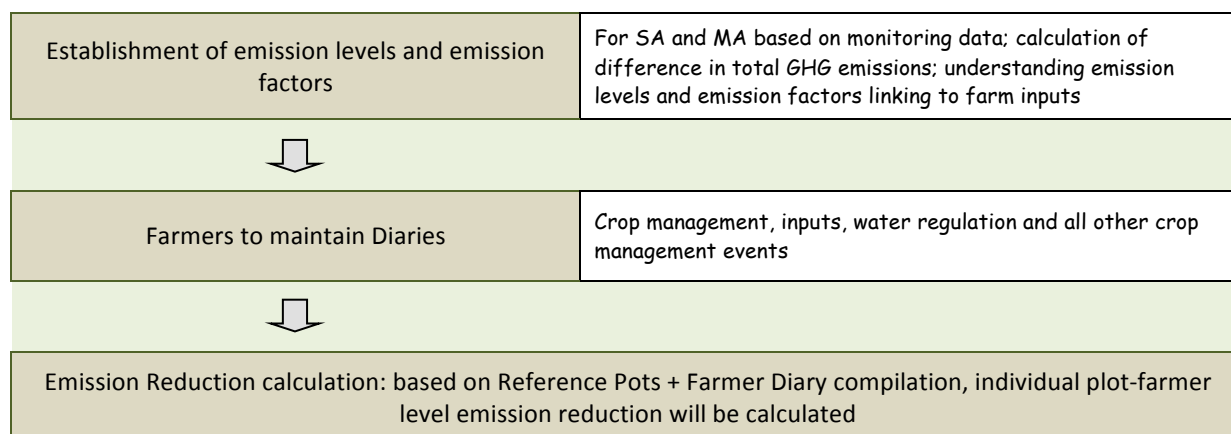
- ii. CH₄ emission reduction:
Water management and organic matter management
 - iii. CO₂ Sequestration:
Organic matter management, tree planting, mulching etc.
- Field based actual measurements built in as the heart of the methodology meeting the maximum rigour requirements
 - Farmer Diaries as tools to assess plot level mitigation efforts
 - DNDC simulations to estimate process based emission reductions ²
 - Emissions calculations at the plot levels calculated based on process simulation (DNDC), driven by farmer-plot specific applications and management
 - Reference Plots accurately measure differences in Mainstream and SA practices, and calibrate and incorporate crop-management-ecology details of farming into DNDC and arrive at relationships linking farm inputs to GHG emissions
 - Carbon sequestration measured over longer time periods (> 5 years)

When monitored for 3 continuous years, Reference Plots elucidate emission factors for specific crop-region-management.

Application of the Methodology



² The De-nitrification Decomposition (DNDC) Model needs to be fed in with more than 100 factors or parameters for each cropping pattern, in each sub Agro Ecological Zone (AEZ), in order to calculate GHG Emissions from agriculture. About 20-25 of these parameters can be got only through continuous monitoring during the plant/crop growth cycle.



5.3.5. This 2nd FCN-LCF Coalition

Once we had the Methodology in place, the Fair Climate Network decided that we were ready to set up the next FCN-LCF Coalitions. Several FCN Members expressed their willingness.

- 3-4 persons from each of 7 grassroots NGOs met at Bagepalli for 2 days for an introduction to the FCN's take on climate change, carbon offsetting and low carbon farming.
- The NGO Dynamics team of the FCN visited all of them to assess seriousness, intimacy with communities, staying capacity, physical and social infrastructure.
- After this initial screening, 6 NGOs were short listed to take the coalition formation exercise forward.
- 23 participants from 6 grassroots NGOs attended a 4 days workshop facilitated by Interventions (India) Pvt. Ltd. to draw up this Strategic Plan for this Coalition. The Output of this workshop, along with additional information provided by the NGOs, is the basis for this Strategic Plan document.
- The 2nd FCN-LCF Coalition was finally formed by 4 grassroots NGOs. They had a solid base in Sustainable Agriculture, having propagated various practices for several years. One amongst them also provides technical knowledge and skills to a Network of about 42 NGOs.
 1. Timbaktu Collective, Anantapur district, AP
 2. GRAM, Nizamabad district, AP
 3. IIMF, Adilabad district, AP
 4. WASSAN, Ranga Reddy district, AP

Together, these 4 NGOs will cover 6,000 farmer families in 121 villages in this 1½ year long Pilot Phase. These families will undertake LCF (i.e. Sustainable Agriculture practices + Carbon Revenues) on 13,400 acres of rain fed dry land.

With the capabilities built up, the 4 NGOs will expand operations every year, to finally take up LCF on 48,500 acres belonging to 23,000 families in 277 villages by the end of 5 years.

		TC	GRAM	IIMF	WASSAN	Cumulative Total
Year 1	Farmers	1,300	2,000	2,000	650	6,000
	Acres	4,000	4,000	4,000	1,400	13,400
	Villages	35	35	35	16	121
Year 2	Farmers	1,300	4,000	4,000	1,600	10,900
	Acres	4,000	8,000	8,000	2,700	22,700
	Villages	35	55	55	20	165
Year 3	Farmers	2,500	6,000	6,000	2,100	16,600
	Acres	7,500	12,000	12,000	3,500	35,000
	Villages	65	75	75	23	238
Year 4	Farmers	2,500	6,000	6,000	2,500	17,000
	Acres	7,500	12,000	12,000	4,800	36,300
	Villages	65	75	75	25	240
Year 5	Farmers	3,500	8,000	8,000	3,500	23,000
	Acres	10,000	16,000	16,000	6,500	48,500
	Villages	85	80	80	32	277

The total cost for this 18 month Pilot Project will be € 260,463 (Rs 16.4 million). EED will contribute € 232,924 for the first 12 month period from 1 July 2011 to 30 June 2012. The Coalition will have to find the remaining € 27,540 from other sources for the 6 month period July to December 2012, when actual GHG measurements are taken up

The Fair Climate Network will lead this 2nd FCN-LCF Coalition and provide technical support. Environmental Defense Fund, New York, will provide the Science. Timbaktu Collective will be the coordinating organisation.

6. PARTICIPANT NGOS

6.1. Timbaktu Collective (TC)

Contact Person: Bablu Ganguly, bablu@timbaktu.org +91 (94406) 86837

Aji Augustine, ajiapsel@gmail.com +91 (99669) 39598

6.1.1. Organisational Profile

The Timbaktu Collective is a registered Voluntary Organization initiated in 1990 to work for sustainable development of drought prone and ecologically challenged Anantapur District, Andhra Pradesh. The Collective works in 134 villages serving about 13,000 marginalized families with particular focus on women, children, youth and disabled from among the landless labour and small/marginal farmer families. The current programmes of the Collective include empowerment of women, natural resource management, organic farming and marketing, alternative education and child rights, youth and development of persons with disabilities. The collective has a well-trained team of 107 full timers as well as essential assets to carry out the projects currently implemented. The most important strength of the Collective is that it is deeply rooted at the grass roots while keeping its awareness in the global, thus having a good balance of social mobilization and technological innovations suited to the rural poor.

The Collective's vision is that 'Rural communities take control of their own lives, govern themselves and live in social and gender harmony while maintaining a sustainable lifestyle'; while The mission of the Collective is 'To enable marginalised rural people (landless labourers, small & marginal farmers), with more emphasis on women, children, Dalits and the disabled, to enhance their livelihood resources, get organised and work towards social justice and gender equity and to lead the life in a meaningful and joyous manner'.

The Objectives of the Collective is to rejuvenate village communities by means of organising the common people to take responsibility of village development by Local self governance; regenerate the natural resources by organising the common people to manage their own natural resources; revitalise local cultures and lifestyles by encouraging people to talk about their old stories and enact their cultural art forms; organise and empower women by means of setting up alternative banking systems, learning to read and write, taking up issues that pertain to women and their problems particularly youth and Dalits through training and meetings; facilitate community based organizations of persons with disability to promote and protect their rights and also to provide services; create spaces and learning centres for children so that they may experience a childhood by means of alternative learning systems; and participate in and create networks of voluntary, civil society, community based and mass organisations.

6.1.2. SA & Mainstream Practices

S. No.	Crop(s)	Package of practices (SA)	Recommended mainstream Practices
1	Groundnut <i>(As inter and boarder crop- Jowar/Bajra, Red gram, Green gram, Cow pea, Sesame, Castor, Horse gram, Foxtail millet)</i>	<ul style="list-style-type: none"> ▪ Apply FYM @ 5 cartloads ▪ Shallow ploughing using desi plough and cattle ▪ Apply Jeevamrutham @ 2 quintal/acre ▪ Seed treatment with Beejamrutham ▪ Sowing ▪ Weeding after 35 days of sowing ▪ Apply Jeevamrutha @ 1 quintal/acres ▪ For pest and disease management, apply any of these: Neem kernel extract, Pancha pathra kashayam, chilly-garlic extract, dung –urine extract ▪ Apply Panchagavya @ 500 ml/ acres at flowering stage ▪ Harvesting 	<p>Tillage: One deep ploughing by mould board plough followed by two shallow ploughing by harrow, cultivator or desi plough along with planking to level the land.</p> <p>Soil treatment: Treat the areas affected by termites with BHC or Aldrin dust.</p> <p>Seed Treatment <i>Fungicide treatment:</i> Treat 2 kg seed with the mixture of 20 gm. of Thiram and 1.0 gm. of Carbendazim 50%WP OR 1 kg of seed with 1.5 gm. of Thiofenate. <i>Insecticide treatment:</i> Treat 1 kg of seed 3-4 hours before sowing with 25 ml of Chlorpyrifos 20 EC or Quinalphos 25 EC. Apply 20 kgs Nitrogen+30 kgs Phosphate + 45 kgs Potash 2 – 3 cm below the seed during sowing.</p> <p>Weed management: Pendimethalin 30 EC 3.3 lit/ha Oxyphlorphen 23.5 EC 420 ml/ha Alachlor 50 EC 4 lit/ha. Mix any of the above in 600-800 litres of water and apply before germination about 3-4 days after sowing. Weeding once in every 20 days after sowing</p>
2	Red gram <i>(As inter and boarder crop- Jowar/Bajra, Green gram, Cow pea, Sesame, Castor, Horse gram, Foxtail millet)</i>	<ul style="list-style-type: none"> ▪ Apply FYM @ 5 cartloads ▪ Shallow ploughing using cattle ▪ Apply Jeevamrutha @ 2 quintal/acre ▪ Seed treatment with Beejamrutham ▪ Sowing ▪ Weeding after 35 days of sowing ▪ Apply Jeevamrutha @ 1 quintal/acres ▪ For pest and disease management, apply any of these: Neem kernel extract, Pancha pathra kashayam, chilly-garlic extract, dung –urine extract ▪ Apply Panchagavya @ 500 ml/ acres at flowering stage ▪ Harvesting 	<p>Tillage: One deep ploughing by mould board plough followed by two shallow ploughing by harrow, cultivator or desi plough along with planking to level the land.</p> <p>Seed Treatment Treat 2 kgs seed with the mixture of 20 gm. of Thiram and 1.0 gm. of Carbendazim 50%WP or 25 ml of Chlorpyrifos 20 EC or Quinalphos 25 EC.</p> <p>Manuring Lime 500 kg/ha Cattle manure 3000 kg/ha N 40 kg/ha P2O5 80 kg/ha</p>

			<p>Weed management: Mix Pendimethlin 30 EC 3.3 lit/ha or Alachlor 50 EC 4 lit/ha in 700 litres of water and apply before germination about 3-4 days after sowing. Weeding and inter-cultivation once in three weeks.</p> <p>Pest and disease management: Pod borer is the main pest. For controlling this, spray the crop with 0.1% quinalphos suspension at the time of flowering. The blister beetle, Zonabris, gregariously feeds on the flowers. Against this, malathion 10% DP may be applied at the flowering stage</p>
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6.1.3. Terrain, Rainfall, Crops, Market and Uncertainties faced by Small & Marginal Farmers

Located geographically that it is not adequately benefited from either of the two monsoons and is subjected to frequent droughts. The normal rainfall in the region ranges from 330 mm to 550 mm from both the monsoons. The normal daily temperature ranges from 29^o C to 40^o C in other months and in winter the temperature falls to about 15^o C. Dry land / rain fed farming is the primary livelihood option of the rural poor of this dry, arid region.

The important crops of the region are Groundnut, (about 75% of the total cultivated area) Bengal gram, Sunflower, Rice, Red gram and Jowar. The coarse cereals and minor millets, which were the staple foods, have almost disappeared. Chemical pesticide and fertilizer use is high in the region and the net return for farmers is marginal or negative.

An entire district of farmers specializing in one crop has significantly increased market risk for farmers. Private traders and groundnut processing mill owners, whose pricing and weighing methods are at unfair terms, control much of the local market. These traders and mill owners often also couple as suppliers for farm inputs such as for seed, chemicals and credit to farmers. The relationship as a whole is exploitative and often leaves the farmer at the mercy of the trader/mill owner. With the entire local system tuned and built to support only groundnut, in terms of marketing, credit, inputs, production know-how, the farmer is forced to go back and continue growing groundnut, but only to further sink in the mire.

6.1.4. Extent of Farmers' Dependence on Subsistence Farming

Although, with Dharani supporting the farmers for crop loans, procurement and a premium price for the organic produce coupled with the support of the women co-operatives, the situation of the families improved to a great extent in the form of infrastructure and a downward trend in the input cost, most of the people in the region are subsistence farmers who have little or no access to new technology and markets for their produce. Small-holder farmers in the region had no direct access to market and neither do they benefit from its added margins for lack of proper infrastructure and the requisite technical and marketing ability. Unpredictable rainfall patterns, deteriorating farmlands, mounting production costs and unpredictable market situations leave many unable to grow enough produce even to feed themselves and their families.

6.2. Gram Abhyudaya Mandali (GRAM)

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6.2.1. Organisational Profile

The goal and mandate of GRAM is empowerment of disadvantaged men and women including disabled persons in rural areas, through CBOs, to maximize their income resource base including

land, livestock and other natural resources. GRAM's roots in Nizamabad and Adilabad districts can be traced to the forming of a cycle rickshaw puller cooperative society in 1980. GRAM has successfully organized 3800 SHGs and received the best performance award for SHG-Bank Linkage in 2001 from NABARD. The SHGs were networked into 20 MACS and further federated into "Indur Intideepam MACS Federation Ltd" (IIMF) with a combined membership of 50000 women and 800 persons with disabilities (PWDs). These CBMFIs are self managed, regulated and governed professional organizations drawing financial support from Banks for on lending to support members livelihoods.

GRAM along with the IIMF has promoted an all-women dairy producer company which is procuring and marketing 17000 liters milk/day with good transparent systems, using latest technology of smart card based electronic milk- testers, bulk milk coolers etc. The dairy company has 15000 women milk producers in 250 villages. The initiative has created value addition and market to milk producers in the remote villages. The producer company has availed Rs 8.5 Crores loan from Manaveeya to expand the project to 500 villages with 22 new Bulk Milk coolers. Agriterra and Rabobank Foundation, Netherlands, and Ford Foundation presently provide grant support for capacity building and institution building. As part of this venture, already 10 bulk milk coolers have been installed.

Further GRAM has organized Adarsha Differently Abled Entrepreneurs MACS with 800 members. This has now transformed from SHG promotion to promotion of livelihood enterprises and has become a federation of PWDs. GRAM is also providing services to children affected by HIV/AIDS in Nizamabad district covering 400 children with medical, education, nutrition and economic services.

6.2.2. SA & Mainstream Practices

Crop	SA Practices proposed	Mainstream practices
Paddy	FYM application & Green Manure incorporation water management – technical levels at different stages Adopting Blue green, Azolla, Azo-bacteria cultures in paddy Adopting of fertilizers based on soil test analysis On time application of recommended Practices Integrated Pest Management (IPM) practices	Green Manure incorporation Uneven and excess water than required Fertilizers application based on their availability- urea and not on Time application. Chemical sprayings only
Pulses- Green Gram, Black Gram, Soya Bean	Seed treatment with rhizobium culture and Phosphor Bacteria culture Recommendation of fertilizers based on soil test analysis On time application of recommended Practices Integrated Pest Management (IPM) practices	Seed treat with chemicals (Mancozeb) Bacterial culture not practiced Fertilizers application based on their availability- urea, Due to uneven rainfall , Late application Chemical sprayings only
3 Maize Rain fed	Calculation of fertilizers based on soil test analysis On time application of recommended Practices Integrated Pest Management (IPM) practices	Following the traditional system without any soil test analysis Application of fertilizers need based not in time & availability Chemical sprayings only practicing

6.2.3. Terrain, Rainfall, Crops, Market and Uncertainties faced by Small & Marginal Farmers

Particulars	
District	Nizamabad
Rainfall	1036 mm
Soil Types	Black loam , black clay, partly loam, light red soils
Forest Coverage	21%
Net sown area	45%
% of irrigated area	32.2%
% of small & Marginal farmers	89% (60% of land sown area)
Crops	Paddy, Sugarcane, Maize, Jowar, Bajra , Pulses (Soya, Black gram, Green gram), some parts Cotton, Turmeric
Market	AMC at district & constituency level Money Lenders Agents
Uncertainties	<ul style="list-style-type: none"> ▪ Uneven distribution of rainfall ▪ Fluctuation in market prices ▪ Lack of storage facilities ▪ Minimum support price to produce ▪ Non availability of inputs like Seeds, fertilizers on time ▪ Non availability of crop loans in time
Dependence on subsistence (not Sustainable Agriculture) farming	<ol style="list-style-type: none"> 1. Dealers, Agents, money lenders – in case of inputs 2. Partly from the Banks if they have good repaying capacity 3. Depends on Govt. Subsidies 4. Climate condition – rainfall, temperature 5. Market rates at the time of harvestings

6.3. Indur Intideepam MACS Federation Ltd. (IIMF)

Contact Person: Bhoja Raju, K., kbhojrajumanasa@gmail.com +91 (99129) 89949

6.3.1. Organisational Profile

IIMF is an apex federation of 20 community based organizations registered under AP MACS Act, 1995. The MACS has their membership rural women from socially and economically backward classes. These institutions are promoted by GRAM. Women SHGs are members of Mandal level Mutually Aided Cooperatives (MACS). The MACS are governed by elected board members and managed by professional staff.

The members are engaged in primary production activities including agriculture, dairy, rearing of meat animals etc. and running micro enterprises like trading. This is done in 550 villages of Nizamabad and Adilabad Districts of Andhra Pradesh with a membership close to 50,000. IIMF has raised rupees six hundred million from different banks and financial institutions and has been repaying to all its lenders on time.

The main livelihood activities include a women's Dairy producer company where bulk Milk Cooling Units are established at 10 locations covering all MACS operational area. Extensive support services are also provided in the areas of supply of feed, fodder development, veterinary services etc. Similar services are being planned in the area of agriculture from an Agricultural producers company. Recently IIMF in collaboration with NGO GRAM has promoted Telangana Agri producer Company (TaPC) for aggregation and value addition to commodities produced by small holder producers. Through this interface IIMF has strategized to engage primary producers in CDM – biogas, low carbon farming and energy efficient cookstoves.

Further all the loan client members are provided with life insurance coverage for life including their spouses. IIMF has tied up with Bajaj Life Insurance and with Royal Sundaram Alliance Insurance for

this. Cattle insurance is also provided for the loan clients. IIMF and its constituents are self managed sustainable organizations with good track record of 100% loan recoveries. IIMF has been rated by external agencies.

6.3.2. SA & Mainstream Practices

Crop	SA Practices proposed	Mainstream practices
Paddy	FYM application & Green Manure incorporation water management – technical levels at different stages Adopting Blue green, Azolla, Azo-bacteria cultures in paddy Adopting of fertilizers based on soil test analysis On time application of recommended Practices Integrated Pest Management (IPM) practices	Green Manure incorporation Uneven and excess water than required Fertilizers application based on their availability- urea and not on Time application. Chemical sprayings only
Pulses- Green Gram, Black Gram, Soya bean	Seed treatment with rhizobium culture and Phosphor Bacteria culture Recommendation of fertilizers based on soil test analysis On time application of recommended Practices Integrated Pest Management (IPM) practices	Seed treat with chemicals (Mancozeb) Bacterial culture not practiced Fertilizers application based on their availability- urea, Due to uneven rainfall , Late application Chemical sprayings only
3 Maize Rain fed	Calculation of fertilizers based on soil test analysis On time application of recommended Practices Integrated Pest Management (IPM) practices	Following the traditional system without any soil test analysis Application of fertilizers need based not in time & availability Chemical sprayings only practicing

6.3.3. Terrain, Rainfall, Crops, Market and Uncertainties faced by Small & Marginal Farmers

District	Adilabad
Rainfall	1044.5 mm
Soil Types	Black Clay, black loam, partly red loam soils
Forest Coverage	42.8%
Net sown area	35.4%
% of irrigated area In	23%
% of small & Marginal farmers	90% (65% of land sown area)
Crops	Cotton, Maize, Jowar, Bajra, part area Paddy, Pulses (Soya, Grams)
Market	AMC at district & constituency level Money Lenders Agents
Uncertainties	<ul style="list-style-type: none"> ▪ Uneven distribution of rainfall ▪ Fluctuation in market prices ▪ Lack of storage facilities ▪ Minimum support price to their produces ▪ Non availability of inputs like Seeds , fertilizers on time ▪ Non availability of crop loans in time
Dependence on subsistence (not Sustainable Agriculture) farming	<ol style="list-style-type: none"> 1. Dealers , Agents , money lenders – in case of inputs 2. Partly from the Banks if they have good repaying capacity 3. Depends on Govt. Subsidies

	<ol style="list-style-type: none"> 4. Climate condition – rainfall, temperature 5. Market rates at the time of harvestings
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6.4. WASSAN

<p>Contact Person: Ramachandrudu, M.V., duram123@gmail.com +91 (99406) 21860 Surendra Nath, G.</p>
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6.4.1. Organisational Profile

Watershed Support Services and Activities Network (WASSAN) is network-based organization specializing in natural resources management and livelihoods development programs based on watershed approach. WASSAN is 11 years old focussing on the objective of improving quality of mainstream NRM programs with respect to participatory processes, equity, gender, poverty eradication, community control leading to sustainable livelihoods enhancement in rain fed areas.

WASSAN has been involved in the areas of water resources management carried out community managed fisheries pilots that demonstrated the process of breaking control of vested interests (middle men) who dominate the fisheries sector; the Promotion of System of Rice Intensification in Command areas of rain fed tanks; improving Soil Fertility and Humus in Soils in Rain fed Areas by diversified cropping systems, application of biomass based composts; tree-based farming systems on farm which was being implemented in 100 villages with the support of Government of Andhra Pradesh, under National Rural Employment Guarantee Scheme. WASSAN is functioning as Resource Support Organization for Karimnagar; Adilabad; Mehabubnagar; Khammam districts for NABARD supported watershed development projects in the state (Watershed Development Fund and Indo German Watershed Development Projects).

Based on the above experiences (particularly on collectivization of groundwater through pipe line network), WASSAN has established a in 2011 Groundwater Resource Centre for promoting participatory groundwater management in drought-prone/rain fed regions of South India. National Agriculture Innovation Project started in 2009 is a collaborative project with Central Research Institute for Dry land Agriculture (CRIDA), an ICAR institution. The main focus of this project is to improve systems and sub systems of agriculture with a focus on rain fed agriculture. WASSAN has also been involved in developing multi-scale climate change adaptation strategies for farming communities in Cambodia, Laos, Bangladesh and India (2010 to 2014). The action research focuses on the information requirements for rain fed agriculture in the context of climate variability and response from farmers to newer ways of communication/ extension/ information sharing. WASSAN is implementing Integrated Watershed Management Project since 2010 as Project Implementing Agency (PIA) in Mehabubnagar and Ranga Reddy districts covering about 14000 hectares funded by Government of Andhra Pradesh/Government of India.

6.4.2. SA & Mainstream Practices

S.No.	Practices/Operations	Cropping pattern in practice					
		Red gram + Maize		Red gram + Jowar		Paddy	
		SA practices	Main stream practices	SA practices	Main stream practices	SA practices (SRI)	Main stream practices
1.	Summer ploughing	Bullocks driven plough	Deep ploughing with Tractor	Bullock drawn ploughs	Deep ploughing with Tractor	Bullock drawn ploughs	Deep ploughing with Tractor
2.	Breaking clods	Nil	With cultivator fitted to tractor	Nil	tractor mounted cultivator	Nil	Tractor mounted cultivator
3.	Harrowing	with Bullock drawn harrows	With tractor	with Bullock drawn harrows	With tractor	with Bullock drawn harrows	Blade harrows to tractor
4.	seed rate(kg/acre)	2+20	4+30	2+20	4+30	2	30-35
5.	Seed treatment	with beejamruth	with 100 grams carbendazim	With 10 grams Rhizobium culture	Nil	with beejamruth/ps eudomonas	with Carbendazim 100 g per acre
6.	Seed Sowing	with bullock drawn seed drill	with tractor drawn seed drill	with bullock drawn seed drill	with tractor drawn seed drill	with bullock drawn seed drill	with tractor drawn seed drill
7.	Application of FYM in tons	3 to 4	2 to 3	6 to 8	2 to 3	6 to 8	2 to 3
8.	Usage of chemical fertilisers as basal						
8.a.	Nitrogen in (Kgs per acre)	Application of 20kgs Rhizobium Urea 50 kgs	100 kgs of urea	Application of 20kgsRhizobium Urea 50 kgs	100 kgs of urea	Green manuring with dhaincha, jute, pillipesara etc. Urea 50 kgs	200 kgs of urea
8.b.	Phosphorus	10 kgs of Phosphobacteria, 50kgs of DAP	100 kgs of DAP	10 kgs of Phosphobacteria, 50kgs of DAP	100 kgs of DAP	10 kgs of Phosphobacteria, 50kgs of DAP	150 kgs of DAP
8.c.	Potassium		0				16
8.d.	Top dressing with chemical fertiliser (kg/ac)	25 NPK	50 NPK	0	0	0	50 NPK
9.	Weeding	manual	Application of Weedicides	manual	Application of Weedicides	manual	Application of Weedicides
10.	Pest control	Use of bio pesticides	Use of 4 to 5 rounds of chemical pesticides	Use of bio pesticides	Use of 4 to 5 rounds of chemical pesticides		
10.a	Trap crops	Yes	no	Yes	no	No	No

10.b	1st round	Neem cake powder, neem seed concoction	Monocrotophos 1 litre per acre	Neem cake powder, neem seed concoction	Monocrotophos 1 litre per acre	Neem cake powder, neem seed concoction	Phorate or Carbofuran granules @5 kg/ac
10.c	2nd round	Amruth jalam/Panchagavya	Avant 1 litre per acre	Amruth jalam/Panchagavya	Avant 1 litre per acre	Amruth jalam/Panchagavya/vermiwash	Chloripyriphos or acephate
10.d	3rd round	5 leaf concoction, top ten (10 leaf concoction)	Tracer 1 litre per acre	5 leaf concoction, top ten	Tracer 1 litre per acre	5 leaf concoction, top ten	Beam, Cantap
10.e	4th round	Shaking manually	Tracer 1 litre per acre	Shaking manually	Tracer 1 litre per acre		
11.	Harvesting	Manual	Combine harvester on tractor	Manual	Combine harvester on tractor	Manual	With tractor mounted reaper & combined harvesters
12.	Threshing	Manually	Power operated Multi crop thresher	Manually	Power operated Multi crop thresher	Manually on threshing floor	With tractor
13.	Winnowing					Manually	With tractor

6.4.3. Terrain, Rainfall, Crops, Market and Uncertainties faced by Small & Marginal Farmers

The land is highly undulating and degraded. The lands are plateau with step like topography and the drainage pattern is of dendritic type. Soil erosion is high due to erratic rainfall. The area receives an average rainfall of 938 mm. Exploitation of ground water is very high. The cropping season in rain fed lands is limited to kharif only. Paddy, Green gram, Cowpea and combination of Red gram + Jowar, red gram + maize are the major crops grown in Kharif while groundnut, cowpea, paddy and vegetables are grown in rabi season under bore well and tank irrigation. Market facilities are available at Mandal head quarters. The community has to sell its produce weekly once in the local market. There are no storage facilities either at home or at any government godowns. Hence, small and marginal farmers need to sell off their produce immediately after harvesting without waiting for any better market price. Even they have to wait for a long time in the market for selling their commodities.

6.4.4. Extent of Farmers' Dependence on Subsistence Farming

The primary source of income is agriculture. Their subsistence is through some other allied sources such as buffalo rearing, goat and sheep rearing. Since there are several hillocks in the area, they rear goats and sheep, letting them for grazing.

6.5. Environment Defense Fund (EDF)

Contact Person: Richie Ahuja, rahuja@edf.org, +91 (98716) 10550

Environmental Defense Fund is a leading U.S. headquartered non-profit, representing more than 700,000 members, with offices in China and Mexico and partnerships in Brazil, India, Russia and other countries. Since 1967, they have linked science, economics and law to create innovative, equitable and cost-effective solutions to society's most urgent environmental problems.

EDF is dedicated to protecting the environmental rights of all people, including future generations. Among these rights are access to clean air and water, healthy and nourishing food, and flourishing ecosystems.

Guided by science, EDF evaluates environmental problems and works to create and advocate solutions that win lasting political, economic and social support because they are nonpartisan, cost-efficient and fair. We have more than 30 years experience in the development of innovative, equitable, scientifically sound, economically sensible solutions to local, regional, and global environmental problems.

In India, EDF has specifically focused on the issues of climate change. From the outset, the organization recognizes that:

1. As the world's largest democracy and a fast emerging economy, India will play a critical role in solving the global climate crisis. Policies adopted in India to tackle climate change will have international implications.
2. Many in India are extremely vulnerable to climate change and there is a need to widen the dialogue.
3. The poor remain the most vulnerable to climate change, and methods must be identified for this population to adapt to and leverage climate change as an opportunity.
4. As a nation of entrepreneurs, world class engineers, and a growing educated middle class, the country has the potential to leverage climate change as an opportunity and become an exporter of climate change solutions.

For India, a decentralized nation of 1.2 billion people, action to control rapidly rising global warming pollution must begin at the local level. To add to the growing dialogue, and recognizing that India is a very young nation with over 50% of the population below 25 years of age, in 2008 we helped seed the Indian Youth Climate network. In 2009, this network grew to 300,000 members advocating climate action. We also teamed up with The Hunger Project to produce a popular film called *"Aarohan – A New Beginning"*, dramatizing the link between global warming and rural poverty. The film is now being rolled out to various villages in India and being screened for elected women Panchayat leaders and other interested parties.

The Fair Climate Network, a network of NGOs in India working with rural communities, understands the role of carbon markets as an opportunity to be leveraged for improving the lives and livelihoods of their constituents. EDF will work with FCN Members to help develop a local protocol for Low Carbon Farming that will create VERs to be sold in the carbon market. To define the protocols, establish baselines for current emissions, and work with Participant NGOs as they develop carbon contracts, EDF will hire and place a full time Expert on agro-ecology with the FCN Tech Team in Bangalore. This Expert will be able to draw upon the expertise of Dr Zach Willey, who has helped develop large-scale LCF projects in the United States, China and recently Vietnam. Dr Willey has already been to India and visited the farmer fields of the NGOs participating in the Pilot. During the short visit, we identified a number of opportunities that have the potential to support generation of VERs as the farmers look to shift to new practices promoting sustainable agriculture.

A well-designed project at scale for LCF will demonstrate the potential for leveraging carbon markets as a strong driver of adoption of new sustainable agriculture practices. This has the potential to be a game changer for India, a country where a majority of the population remains centred around agriculture.

7. STAKEHOLDER ANALYSIS

7.1. Stakeholder Table

STAKEHOLDER	INTEREST IN THE PROJECT	IMPACT ON PROGRAMME
PRIMARY STAKEHOLDERS		
Small and Marginal Farmers	<input type="checkbox"/> Sustained income increase and quality of life (9,9)	<input type="checkbox"/> +
Women	<input type="checkbox"/> Empowerment (9,7)	<input type="checkbox"/> +
Youth	<input type="checkbox"/> Exciting opportunity to participate in Family Cultivation (9,6)	<input type="checkbox"/> +
Farmer Organisations	<input type="checkbox"/> Up-scaling eco-friendly agriculture (6/8)	<input type="checkbox"/> +
B. SECONDARY STAKEHOLDERS		
4 Participant NGOs	<input type="checkbox"/> Opportunity to scale up many years of proven SA efforts from pilot demonstrations (9,8)	<input type="checkbox"/> +
LCF Staff at each NGO	<input type="checkbox"/> Capability Building; Job Satisfaction; International Recognition (8,7)	<input type="checkbox"/> +/-
Fair Climate Network	<input type="checkbox"/> Institutional Objectives (8,6)	<input type="checkbox"/> +/-
Environmental Defense Fund	<input type="checkbox"/> Institutional Objectives; Model Expansion (8,5)	<input type="checkbox"/> +
C. EXTERNAL STAKEHOLDERS		
Scientific Institutions	<input type="checkbox"/> Learn new skills, share knowledge, earn credit for new Methodology (7,4)	<input type="checkbox"/> +/-
Government Forestry, Agriculture & Horticulture Departments	<input type="checkbox"/> Support and information (5/2)	<input type="checkbox"/> +/-
Funding NGOs	<input type="checkbox"/> Institutional Objectives; Support to an Innovative Model (8,3)	<input type="checkbox"/> +/-
Carbon Investors	<input type="checkbox"/> Value Added Emission Reductions with powerful stories behind them (8,2)	<input type="checkbox"/> +/-
Crop Loan Providers – Banks & Cooperatives	<input type="checkbox"/> Meet Reserve Bank & Govt. Targets (6,3)	<input type="checkbox"/> +
Buyers of Organic & NPM Products	<input type="checkbox"/> Cater to a Niche Market that demands healthy food (6/4)	<input type="checkbox"/> +
Suppliers of Biological Inputs	<input type="checkbox"/> Market for Produce (5,1)	<input type="checkbox"/> +
Fertilizer & Pesticide Shopkeepers	<input type="checkbox"/> Serious Challenge to the rationale behind their business (1,1)	<input type="checkbox"/> -
Media	<input type="checkbox"/> News (3,3)	<input type="checkbox"/> +

7.2. Importance-Influence Matrix

<i>High</i>	9									Participating Farmers
INFLUENCE	8						Farmer Organisation			Participant NGOs
	7								LCF Staff	Women
	6								FCN	Youth
	5								EDF	
	4						Buyers of Organic/NPM Products	Scientific Institutions		
	3						Crop Loan Providers – Banks & Cooperatives		Funding NGOs	
	2					Govt. Forestry, Agr. & Horticulture Departments			Carbon Investors	
<i>Low</i>	1	Fertilizer & Pesticide Shopkeepers		Media		Suppliers of Biological Inputs				
		1	2	3	4	5	6	7	8	9
		<i>Low</i>	IMPORTANCE							<i>High</i>

8. SWOT ANALYSIS

8.1. Strengths, Weaknesses, Opportunities & Threats

STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> ○ Expertise in Sustainable Agriculture and water conservation ○ Trained experienced and committed SA Staff, NGOs have an understanding of and experience with SA practices ○ Resources for supporting SA like training manual on SA practices exists with some NGOs ○ Experience on Natural Resource Management & Agriculture Extension and CDM experience ○ NGOs who have demonstrated staying capacity with the community and currently have institutional infrastructure ○ Willing and able to collaborate with scientist and experts ○ Established Farmer Groups in the villages ○ NGOs have strong community base and enjoys credibility and good relations with communities, donors and government ○ Availability of methodology and experience to measure Carbon emissions from 1st FCN-LCF Coalitions' work ○ Shared Strategic Plan and synergy of a Coalition Programme leading to collective strength 	<ul style="list-style-type: none"> ○ Field Staff lack adequate exposure and appropriate skills ○ Inadequate documentation and reporting skills ○ Inadequate funding to scale up SA practices ○ Experienced and trained staff turn over ○ Lack of focus on youth women (agricultural extension process) ○ Multiple crops need different methodologies ○ LCF methodology and technology not yet proven or under trial 	<ul style="list-style-type: none"> ○ Crisis in mainstream HEIDA farming practices increases receptivity for SA ○ Livelihood promotion through SA & carbon revenues – LCF ○ Environment promotion through SA & carbon revenues – LCF ○ Using Carbon Resources to incentive farmers to adopt SA practices ○ Absence of competitors who can supply “good” emission reductions in the non-compliance market ○ NGOs becoming institutes of knowledge ○ Possibility of scaling up SA practices ○ Strengthening existing CBOs and promoting new CBOs ○ Empowering S and M farmers, women, agriculture and youth ○ Knowledge building of both farmers and NGOs on LCF and business models 	<ul style="list-style-type: none"> ○ Government's HEIDA schemes that aggressively promote mainstream agriculture ○ Difficult climatic conditions – lack of soil moisture and manure ○ Sudden increase in wages and demand for labour ○ Acute Farmer distress leading to distress sales of land and cattle ○ Unpredictable agricultural market Carbon market unpredictable ○ Drought and crop failure ○ Banks have no lending policy for SA ○ Uncertainty in return from SA ○ Obstruction from Seed, Fertilizer & Pesticide Dealers

8.2. SWOT (4 x 4 Matrix)

		Internal Environment	
		STRENGTHS	WEAKNESSES
External Environment	OPPORTUNITIES	<p>INVEST</p> <ol style="list-style-type: none"> 1. Pooling of expertise (technical and organisational) and resources 2. Methodologies to calculate Emission Reduction values for every Crop 3. Investing on science for referencing 4. Strengthen women to participate in agriculture 5. Excite youth to participate in SA 6. Develop systems to cope with staff turn over 7. Access carbon resources by interpreting SA on ERs 8. Significantly scale up SA coverage in NGO skills 9. Cost of HEIDA shooting up that attracts farmers to SA 10. Developing and maintaining database 11. Using Proven SA practices and dissemination procedures Joining the trail blazers (taking advantage of the 1st coalition) 12. Taking advantage of 2 years experience of 1st coalition 	<p>DECIDE</p> <ol style="list-style-type: none"> 1. Encouraging active participation in FCN 2. Absorbing business practices and business sense 3. Disseminating carbon market knowledge 4. Developing unity, organisation, discipline, knowledge and business sense in the participating farmers. 5. Empower CBOs to oversee all LCF operations 6. NGO commitment to the rigour of data management
	THREATS	<p>DEFEND</p> <ol style="list-style-type: none"> 1. Multiple cropping and drought proofing 2. Value addition, certification and marketing 3. Leverage sufficient crop loan for the poor 4. Institutional resistance to aggressive marketing of HEIDA supplies and corporate farming 	<p>DAMAGE CONTROL/DIVEST</p>

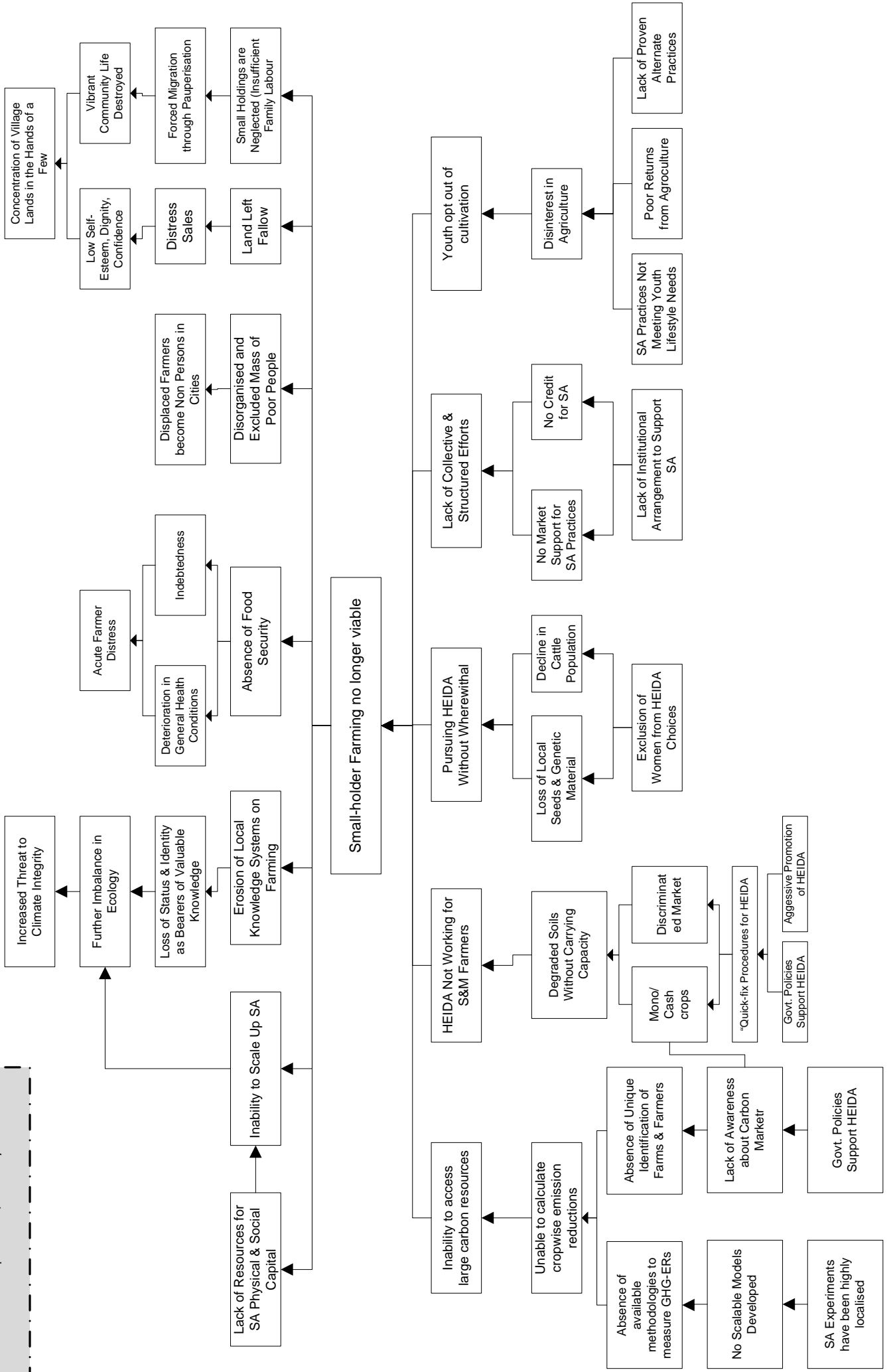
8.3. Strategic Priorities

1. Pooling of expertise (technical and organisational) and resources:
All Participant NGOs do not have same level of capabilities. Everyone in the 2nd FCN-LCF Coalition should be ready to assist each other develop technical, CBO development, organizational development, and instil a business sense.
2. Methodologies for every crop:
Develop in house competencies to do rigorous gas analysis, measure GHG emission for each major crop(s); we will not outsource it to a laboratories and expert institutions since they may not share the same sense of purpose. The LCF members will share such work between them based on Agro Ecological Zones (AEZ), relative agriculture etc.

3. Strengthen women to participate in family agriculture:
Recognise women as farmers, impart all LCF knowledge to women and enable decision making in crop choice and practice; women become part of the LCF implementing groups which have equal number of women and men
4. Excite youth to participate in SA:
Implement LCF preparatory work through school-finished girls and boys. Impart knowledge on Climate science, LCF and carbon trading to village level youth groups. Develop them as trainers
5. Significantly scale up SA coverage using newly acquired skills:
Using Proven SA practices, accessing carbon resources to incentivise, up-scaling SA practices
6. Developing and maintaining database:
Acquire IT infrastructure and train the youth/farmers in meticulous collection of demographic and land holding details of every farmers. Staff overseas and ensures accuracy and quality controls. Data shared and analysed by the people to come to a different understanding.
7. Taking advantage of 2 years experience of 1st FCN-LCF Coalition:
Taking the risk joining the trailblazers and setting the path for small and marginal farmers to prove that SA is indeed possible.

PROBLEM TREE

FCN-LCF Workshop : ADATS, 9-12 July 2011



10. NARRATIVE EXPANSION OF THE PROBLEM TREE

10.1. Focal Problem

The focal problem that this Coalition Pilot Project aims to address is:

“Small Holder Farming is no longer Viable”

Small and marginal farmers are unable to meet rising input costs that do not have a proportionate rise in output. The ratio on increased investments is never in their favour. Moreover, they are not able to face the risk of crop failure during bad years when timely rains fail. Farm incomes drastically drop when cost of cultivation steeply increases.

Heavy indebtedness, distress sale of lands and forced migration quickly follow. A pauperisation of the peasantry, with the polarisation of their lands in the hands of a few who usurp them at distress prices, begins to occur, forcing the sellers to give up agriculture and become landless labourers. Small and marginal farmers are in the grip of acute distress due to the propagation of mainstream cultivation.

The vast majority of the rural population are an integral part of their ecosystems, with fates deeply intertwined in their immediate environment. When some among them get lured by mainstream paradigms, it is not due to conscious choice, but rather as victims of a wider market design. Some would call them greedy. We prefer to term them economic players.

The only *lasting* successes we witness in the villages do not stem from cultivation at all. They are stories of small peasant families who have got out of dire straits due to a son or daughter getting a city job and remitting home every month to enable parents maintain a peasant-like lifestyle, more out of habit, custom and a fond remembrance of quaint memories, than because it makes economic sense. Even these stories are few and far between. The vast majority cannot complete the schooling of their children, and youth from their families are unable to get much coveted jobs as security guards, parking attendants, salespersons and garment factory workers. Their families are caught in a pathetic quandary and cannot maintain even a pretence of being contented farmers.

Pauperisation, polarisation and the abandonment of cultivation by small and marginal farmers is a study in itself. It is not an aberration with quick fix solutions. It is the consequence of a non-inclusive and eliminative growth path that High External Input Destructive Agriculture (HEIDA) pursues. Abandonment occurs not just in a series of preventable steps that families tumble down. But as the result of a damning realisation that agriculture is no longer for them. It is a defeatist state of mind.

This is the reason why many NGO “agriculture extension programmes” of yore no longer work. Training on techniques, supply of certified seeds, timely credit, demonstration plots, marketing support, *et al* last only as long as the effort of the secondary stakeholder prevails.³

Short-sighted government schemes and measures also have dangerous environmental consequences. The heavy use of agro-chemicals pollute the soil, surface water, ground water, crops, food, fodder, drinking water and, consequently, humans, animals, and the entire flora and fauna in the immediate environment. They result in an excessive and inefficient use of irrigation that leads to an irreparable depletion of the groundwater table. They deepen failed policies that contribute to the (*non*) preservation of biodiversity and biomass. This last acts as a catalyst to aggravate the problem even further, since it is a critical shortage of biomass and cattle that leads to a drop in soil productivity in the first place. It’s a chicken and egg issue that spirals the problem.

There isn’t any concerted effort, backed with good science, to support small and marginal farmers re-establish integrated farming systems and sustainable livelihoods – efforts to show that an

³ Sustainable Agriculture is not a repackaging of old wine in new bottles. It is conceived in the boundaries of a totally different paradigm. It’s starting point is an outright rejection of HEIDA. It attempts the introduction of Integrated Farming Systems with Self Sufficient Farmers & Sustainable Livelihoods – an integration of trees, crops and animals at the household level.

alternate paradigm can indeed increase productivity in a sustainable manner and, at the same time, enrich the environment.⁴ When such concerted efforts, at scale, are conspicuously absent, there is no informed intelligentsia who can use experiential learning to garner public support for green products, efforts and movements.

The just described focal problem leads to several negative effects that culminate in an increased threat to climate integrity. Ecological imbalance that leads to increased GHG emissions and threatens an already fragile global climate system.

The human cost of this transformation from an environmentally sensible and sustainable treatment of natural resources to a destructive venture is very high. An absence of food security occurs due to two well established reasons:

1. When people do not grow their own food, they starve
2. Mainstream agriculture makes a sardonic reversal of the population's diet intake:
 - The healthy and wholesome "poor man's food" of yesteryears, millets, pulses, grams and "marginalized" grains, are produced wholesale by large corporate farms and "value added" to make up the healthy diet of today's rich man.
 - The "rich man's food" of yesteryears, rice and wheat, which are nothing but sugar and body mass, is dumped through the public distribution system on a hapless population at heavily subsidized prices.

Little wonder at the deterioration in general health conditions even in those pockets where the public distribution system, miraculously, functions; and death due to starvation in large tracts where it doesn't.

In either case, dependence on any market mechanism by a people who have zero risk taking capacity leads to indebtedness. Cumulatively, they lead to acute farmer distress, the most tolerable of them all a quick death due to hanging without even the basic human luxury of pondering on the plight this would leave the widow and children in...

10.2. Main Problems

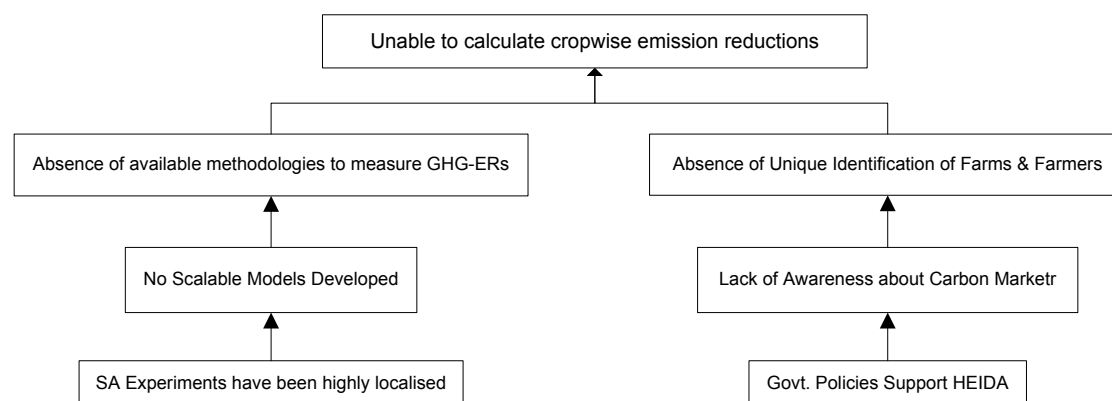
There are five causative factors that result in this situation. These Main Problems are:

1. Inability to Access large Carbon Resources
2. High External Input Destructive Agriculture not working for Small & Marginal Farmers
3. Pursuing HEIDA without Wherewithal
4. Lack of Collective & Structured Efforts
5. Youth Opt Out of Cultivation

⁴ That is why this Coalition has consistently used the term "contented farmers" and consciously avoided "self-sufficient farmers". We operate within the paradigm of modernity, without at the same time accepting everything that the market economy has to offer as givens. While we entertain no unrealistic dreams of utopia, we also know that a conscientised peasantry, accompanied by a sympathetic intelligentsia, can mould the shape and substance of capitalisation of agriculture.

We are more than convinced that Contented Farmers will not just be capable of meeting the ever rising demand for good and healthy food, but will do so with joy, pride and profit!

10.2.1. Inability to Access Large Carbon Resources



SA Experiments have been Highly Localised

Many grassroots NGOs, including the 4 Participants of this 2nd FCN-LCF Coalition, have been involved in promoting Sustainable Agriculture practices for several years. For many, this has been a natural continuum of mini and micro watershed work they have done for years on fields belonging to their clientele – small and marginal farmers in drought prone regions.

No Scalable Models Developed

However, these SA practices of grassroots NGOs could never be scaled up to be offered as an effective alternative to mainstream cultivation. They stayed as pilot demonstrations on a few fields. As a result, their work could not be presented as a quantum alternative to mainstream practices. They did not become Models.

Absence of Available Methodologies to Measure GHG Emission Reductions

Sustainable Agriculture did not capture the imagination of climate activists and climate change scientists. No methodologies were developed to calculate the GHG emission reduction potential inherent in their work.

In part, this was because a *Shudra* science, to simplify what is essentially an application of common sense, never developed. Climate activists and scientists were too busy debating hair-splitters amongst themselves. The need to involve populations negatively effected by climate change never entered their consciousness. Adaptation was not in their vocabulary and Mitigation translated into cerebral policy choices, subtly steered by the industrial powers that be.

Government Policies Support HEIDA

There is no effective challenge to the artificial disintegration, at a policy level, of a farming system into unnatural compartments like horticulture, floriculture, sericulture, dairy, livestock, *et al*. While this commoditised agricultural production and facilitated entry into the market economy, cultivation ceased to be a sustainable livelihood pattern for the peasantry. A compartmentalised approach to agriculture, by definition, promotes mono-cropping. Even on rain fed fields, multiple cropping is discouraged.⁵

The Fair Climate Network has already clarified that we are not opposed to hair-splitting specialisation and miniscule examinations that pure science demands. We do not advocate a talibanisation of knowledge. Our critique is of the disintegration at the policy level. An inability to put all the sciences together when making a composite and holistic policy choice; of a corruption of ecological sciences that were supposed to perform this synthesising role.

There are a flurry of short-sighted government schemes and measures that promoted each of these compartments as if they were stand alone enterprises that could survive without an inter-

⁵ The Fair Climate Network has already clarified that we are not opposed to hair-splitting specialisation and miniscule examinations that pure science demands. We do not advocate a talibanisation of knowledge. Our critique is of the disintegration at the policy level. An inability to put all the sciences together when making a composite and holistic policy choice; of a corruption of ecological sciences that were supposed to perform this synthesising role.

dependency on the other. Strategies adopted for so-called increase in productivity are all based on a narrow, technical and sectoral detailing of each piece, with not just a non-understanding of the whole, but even a pretended expertise that showed blatant disdain to holistic appreciation. All this in the name of science, making a mockery of that body and discipline of knowledge, so vital for a sensible human intervention with nature. Willy-nilly, they promoted a High External Input Destructive Agriculture (HEIDA) paradigm.

Lack of Awareness about Carbon Market

Government policies unashamedly support HEIDA, as much due to mistaken economic policies as an inherent tendency to support the agro-industrial class. This led to a general lack of awareness of the carbon market in general, and land based mitigation activities/calculations in particular.

Absence of Unique Identification of Farms & Farmers

Grassroots NGOs haven't developed a results oriented management culture, along with the rigour to measure and monitor. In this donor-recipient world a few success stories, presented as shining examples, passed off as achievements. Tall claims and aggregated figures were not supported with cumulated totals. As a result, basic organisational efficiencies stayed undeveloped. Staff skills were poor, computer usage primitive, and email discipline absent. As a result of this, farmers were treated as groups of beneficiaries and data was most often approximated to rounded values. NGOs did not even have unique and irrefutable Identification of villages, farms and farmers they worked with.

Low Carbon Farming, is not putting old wine into new bottles. It requires a rigour and discipline to verifiably prove that SA activities are actually reducing emissions when compared to the baseline derived from mainstream cultivation. This requires a heavy initial investment at the Participant NGO level (which will be defrayed, over time, when more and more lands are brought under LCF) and also in terms of expertise and scientific backup. The former, in itself, is difficult for many grassroots NGOs to bear. The latter is well nigh impossible to meet individually, in term of cost as well as resource availability. This is a sound argument for forming Coalitions.

Unable to Calculate Crop-wise Emission Reductions

The generalist manner in which NGOs tend to work was also a serious contributor. Grassroots NGOs applied a scientific temper to alternate technologies derived from native wisdom that withstood the test of time of thousands of years and developed SA practices. Yet they were unable to grasp the science and math needed to come to grip with concepts of climate change, adaptation, mitigation, emission reduction and carbon trading. Though they used SA practices in small scales, there were no attempts made towards scalability of such efforts.

It is a real fact that calculating emissions is meticulous work that needs to be backed with faultless science. Each SA practice has a different emission reduction potential. The impact of these practices differ greatly from place to place due to several factors. Variations need to be precisely documented and mathematically factored. Every discrete plot has to be mapped using GPS and GIS. All of this involves heavy math and science that perplexes the average development worker. Though there have been attempts to create models of SA practices, the complexity of crop-wise calculation of emission reduction and absence of available methodologies to measure GHG and Emission Reduction has kept the development organisations from accessing the carbon market.

Inability to Access Large Carbon Resources

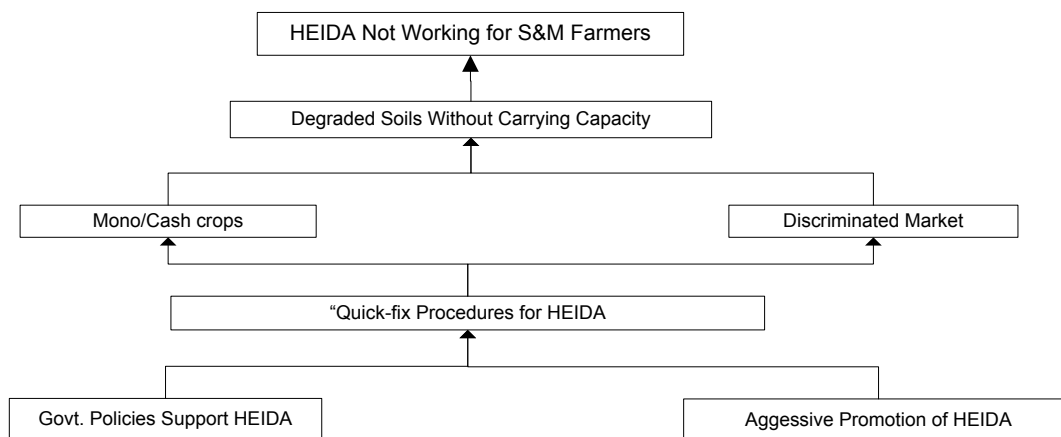
Lack of capacity to access carbon resources is taken as a given. But is this true? Or are NGOs and CBOs, like sundials in the shade, sitting on latent and unexplored potential? CBOs they have built possess the organisational structure, but not the institutional arrangement to pool the emission reductions they individually generate at the farm level, and aggregate them into a single unit of sum and substance for the market. This requires some education and external support. But when communities have grasped the complexities of village level socio-political dynamics to alter power relations in their favour, how is this a challenge?

Since the emission reduction factor is so low in agriculture, hovering around 2 tCO_{2-e} per acre per crop, and also due to a low price of less than € 6 per VER, even such aggregation doesn't add up to the volume needed for trade in the voluntary carbon market. A super aggregation of sorts, across several grassroots NGOs, is needed if we have to play from a position of strength. This is another compelling argument for getting together in Coalitions.

Reorienting long established NGOs with presence and proven staying capacity to develop business acumen and deal with the market is not easy. It needs a total reengineering, shedding all established comfort zones and venturing into the unknown. Mutual support, learning, handholding and morale boosting to deal with self doubts and organisational panic are essential. Only a focused coalition, business like and professional, can buoy up this novel adventure.

The tragedy is that even today, there is a lack of real awareness about Carbon Markets; it is a real and perceived paucity of funds that is driving northern and southern NGOs to look at market resources and commercial moneys. Not a self realisation of deficiencies they cannot live with in this day and age.

10.2.2. HEIDA not working for Small & Marginal Farmers



Aggressive Promotion of HEIDA

When the government aggressively pushes HEIDA, mainstream prescriptions come to dominate in every sphere. Be this in access to information, technologies, facilities, credit, markets, as also a general acceptance of standard practice. Direct and indirect support and subsidies are provided to follow these prescriptions. They range from the provision of extension services for particular crops, fertilizer subsidies, fixing procurement prices for chosen cereals, insurance cover for certain cash crops, to selective R&D, media propaganda and compelling advertisements that pass off as knowledge dissemination.

When SA practices are successfully demonstrated to a handful of farmers on small portions of their holdings, it rings a bell. But... The mainstream paradigm portrays them as aberrations that were somehow pulled off; one time exceptions that happened to work...

An open acknowledgment that Sustainable Agriculture practices are labour intensive and demand attention to detail, contrasts unfavourably with the deliberately falsified claims of mainstream agriculture where outcomes are projected as being predictable, uniform, and almost automatic. All this translates into insufficient incentives to shift to Sustainable Agriculture and face inherent and natural, cyclical and weather uncertainties that any cultivation entails.

"Quick-fix" Procedures for HEIDA

When a capitalisation of agriculture started occurring, traditional wisdom in farming systems is gradually given a go by. Rejuvenating it will required a concerted effort on the part of an enlightened intelligentsia who accompany small and marginal farmers. This did not happen. It is vital to note that the loss was of an entire paradigm of knowledge and reasoning; an explanation of cause and effect;

the *raison d'être* that supported a holistic system of farming. A wisdom that we now suspect has the tenacity to withstand the onslaught of climate vagaries and other externalities. When such a major lapse was allowed to happen, almost silently, it is no big surprise that alternate technology based on science was not developed.

Economic activities are driven by returns on investments, and herein lies the paradox. On the one hand are claims of profitability and high returns, backed by success stories of big landholders. On the other, constant losses, year after year, always attributed to supposed externalities like laziness, disinterest, failure of rains, *et al.* The law of diminishing returns is not mentioned, and the fact that the carrying capacity of the land has peaked due to over exploitation is glossed over.

Small and marginal farmers are not a monolithic lot, all moulded in the same caste-class characteristics. Among them are the lazy and the enterprising, the hapless and the lucky few. Some manage to get good results when they adopt SA practices. Others don't. More often than not, the latter become the beacon bearers of the effort. The very same externalities that are used to explain away pauperisation and acute farmer distress, are ignored when it comes to failed SA experiments. Such is the prerogative of the mainstream. The net result is that farmers are confused into believing that they have no real alternatives to choose from. They are caught between a rock and very hard place, damned if they do and damned if they don't.

Mono crops & Cash Crops

Time tested practices like *Navadanya* (the planting of nine varieties, alternating rows on every field) had evolved, over centuries, had a judicious mix of deep rooted and shallow rooted, tallers, dwarfs, creepers and bushes, to suit to different soils, like shallow, deep or sandy; to meet varied family needs in the pre-market epoch. Each crop had a different stand and was harvested at a different time, though sown around the same time. They were native strains that could be reused through the practice of domestic seed banks. These practices acted as an insurance against total failure of a single crop. They were symbiotic and a deterrent against certain pests and diseases. Crop residues enriched the soils with organic matter. Just as with the destruction of local crafts to create a proletariat class, practices that offered even a semblance of independence to the peasantry were deliberately targeted by HEIDA.

Mono crops are vulnerable to pests and diseases and demand an increased use of agro chemicals. Soil productivity visibly drops. Protagonists of HEIDA were quick to cover up a catastrophe in the making. They confused soil fertility with soil productivity and began to use the terms interchangeably.

Degraded Soils without Carrying Capacity

Soil fertility refers to the chief nutrients that crops (plants with an extremely short stand) need for their growth. These are chiefly Nitrogen, Phosphorus and Potassium, along with micro nutrients. Narrow and sectoral scientists claimed that these could be infused through the use of chemical fertilizers.

Soil productivity, on the other hand, is a function of moisture retention, healthy microbial activity, various micro nutrients and organic matter that comprise of and, *inter alia*, contribute to the creation of productive soil. It is this holistic quality of soil productivity that supports sustained plant growth and survivability.

The nomenclature "soil" can quite conveniently be removed from "fertility" and even an inert media can be made to temporarily support short stand crops that have a limited lifespan of only a few months. But for a sustained (here meaning repeated) use of soil for cropping, year after year, it is soil productivity that is needed. More so in low rainfall, high evapotranspiration, shallow soil regions with a fragile ecosystem.

Mainstream cultivation produces hardly any biomass since the land is regarded as a medium to exploit, rather than preserve and nurture; an input that factors in a narrow arithmetic that passes as economics. Such is the outcome when a people who are distant and removed from the ecosystem

plan and implement models of development; a colonisation of alien terrains that they don't appreciate as being part of a whole.

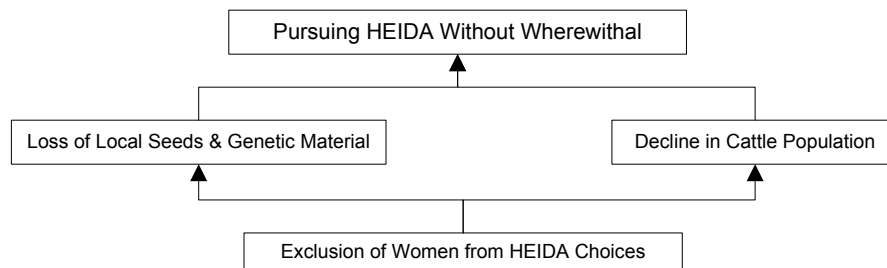
The productivity of the soil, this supposed alien terrain, falls to critical levels with an absence of humus, manures and moisture. In an integrated farming system, factors causing and sustaining soil productivity go beyond farm boundaries into common lands, pastures, forests, cattle, birds and scores of other living and non-living organisms. There would be an effective interplay between all these elements with the natural principles of recycling, symbiosis, antibiosis and diversity. The range of Sustainable Agriculture practices that grassroots NGOs could propagate decreased to just a handful that could still be advocated in close to sterile landscapes.

HEIDA not working for Small & Marginal Farmers

Many small and marginal farmers continued to imitate mainstream cultivators and burnt their fingers.

Grassroots NGOs knew, from first hand contact with acute farmer distress, that small and marginal farmers had neither the financial wherewithal nor risk taking capacity to enter mainstream agriculture practices that bank on high external inputs like agro chemicals and costly irrigation. More importantly, they intuitively questioned the environmental sanity of such practices.

10.2.3. Pursuing HEIDA without Wherewithal



Exclusion of Women from Cropping Choices

Women in mainstream cultivation are treated as free and unpaid helping hands available for family cultivation. They are rewarded with far less than what a farm labourer gets. Not being exposed to the agriculture market economy, not having school/college education, helps maintain the myth that they are incapable of decision making. Even outside their families, women are not considered farmers and never given a say in crop choice and cropping practices.

But where organised into CBOs through gender sensitive efforts of grassroots NGOs, Women have broken every single one of these stereotype myths. They make sound and sensible crop choices, keeping family sustenance in mind. They do not abandon food crops for cash crops. A judicious mix of crops and *Navadanya* is their preferred choice. They keep native cattle alive. They refuse to invest beyond their means, even when temptation lures their men folk into credit they cannot clear. Mutual cooperation, with an exchange of family labour, is the natural practice.

Loss of Local Seeds & Genetic Material

HEIDA has successfully brought about the destruction of traditional seeds and wild gene pool through the introduction of hybrid and genetically modified variety of seeds. Farmers wanted best return on their inputs and were lured into using these seeds that brought along with it the accompanied need of chemical fertilizers and pesticides. The use of traditional manure/pest management like cow dung and urine, bio compost, neem cakes diminished from the scene as more and more chemicals options emerged in the market; not only that these chemicals were subsidised and made creditable through government policies.

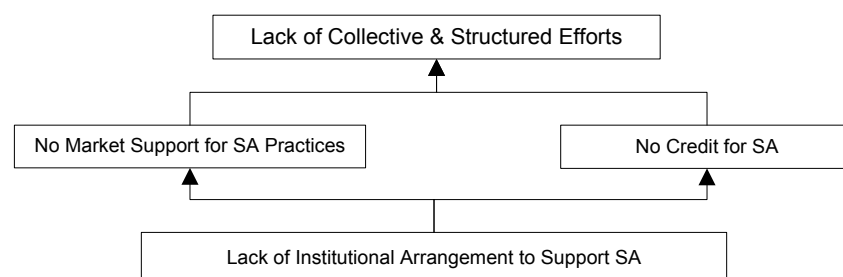
Finding high initial return on investments (due to subsidies and original soil fertility) farmers adopted HEIDA practice not realising the destruction it caused to humans and nature alike. Millets, local pulses, gram seeds disappeared and rice and other mono/cash crops like sunflower, groundnuts

started appearing in the scene. The practice of mixed cropping disappeared as these were never subsidised or provided credit for.

Decline in Cattle Population

These crops also brought about diminishing fodder as traditional crops were discontinued and animals were not used to bio waste produced by some of the new mono crops. On the other hand if the crop failed on small holdings, farmers had nothing to survive on since, unlike with mixed cropping when one crop fails there are others to fall back upon. Both factors contributed to the loss of cattle, either by death or distress sales for families to tide a moment with the paltry sums these sales fetched.

10.2.4. Lack of Collective & Structured Efforts



Lack of Institutional Arrangements to support SA

The single institution that Sustainable Agriculture banks upon for its success is a strong and functioning CBO with structure and discipline, genuine bottom-up planning, openness, transparency and answerability. For such a Farmer Organisation to instil a sense of Purpose, it needs to encompass every single facet of family life. It cannot be a watershed committee or beneficiary organisation or functional group designed to foster participation in predetermined plans and budgets.

This is the single biggest challenge that grassroots NGOs face. The will and ability to bring about a radical shift in NGO-CBO relationship. Most NGOs have shaped “their” CBOs along lines that meet their programme requirements – women’s groups, health groups, farmer groups, *et al.* These have distinctive functions and are tailor-made for roles they play. At one level, it may appear that a similar village grouping can take on a role suited to LCF. When the role is broken into managerial subsets of activity processes, tasks and jobs, it gives the impression that yet another functional grouping is all that is needed.

This won't do when it comes to Sustainable Agriculture. Because SA is not just about farming. It is not just the cultivation of crops. It is not only about making profits from land as capital. It is a holistic way of living. It is a healthy balance between crops, animals, trees and human beings. The Farmer Organisation that crucibles the promotion of SA has to be involved in every facet of the farmer families’ lives.

Unlike the charity model, even run-of-the-mill business carried out with commercial moneys requires a far higher standard of verified deliverables. New age business, which is what the aggregation of carbon credits and selling them in an emerging market is all about, demands far more. Low Carbon Farming, like any other CDM Project, needs a passionate sense of ownership and genuine control by primary stakeholders to steer thousands of individual actions to fruition. Dependence on farm level interventions is absolute, and has to stay uncompromised. The business will succeed or fail depending on farmer families’ effort and contribution. Participant NGOs who accompany them can steer these processes thus far and no farther.

No Credit Available for SA

SA needs a judicious mix of social, physical and monetary capital that only a people who are deeply immersed in holistic farming can recognise; inputs that are not even interpreted as agricultural by the experts.

Many NGOs have become free or underpaid social contractors who implement government programmes in a selfless and efficient manner. The vast majority of them have no say in the formulation of policy and very little, if any, in actual implementation detail.

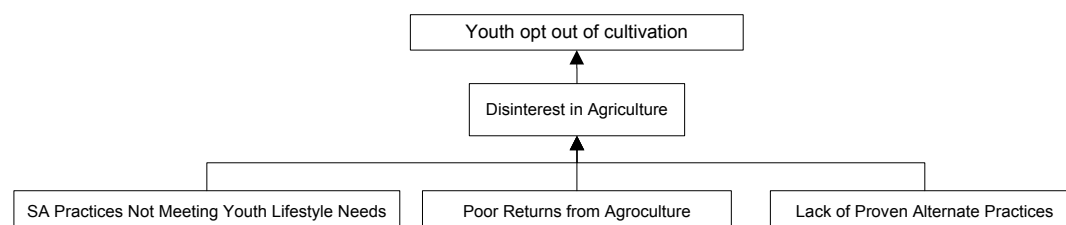
This is particularly true in large land based interventions and also in the delivery of rural credit. Quite apart from these being narrowly sectarian, *they promote the mainstream paradigm of development.*

No Market Support for SA Practices

A weak social consciousness in a burgeoning middle class that is being created for the past decade and a half is only to be expected. The *nouveau rich* in any emerging economy behaves the same – with a greedy self interest to stay where they have clambered onto by a fortuitous combination of education, contacts, business acumen and, above all, good fortune. Therefore, the application of the same principles of environmental philanthropy that works in the West may not work.

A new generation of urban elite is developing in the managerial classes in India. One that is exposed to the rationale of international business acumen; they are quick to realise that it makes sound *business sense* to go green. Be it to create a politically acceptable facade, or driven by an environmental consciousness, or merely to satisfy global marketing requirements, it doesn't matter a fig to our strategic planning. They have vague notions of footprints and offsets, but all knowledge stops there. They don't have a clue as to how to proceed further. They are intelligent enough to recognise that slogans at the level of switching off lights in unoccupied rooms and switching off the engine at traffic lights go so far and no further. They are hungry for emission reductions that are certified and, at the same time, have a good mitigation story behind them.

10.2.5. Youth Opt Out of Cultivation



An issue with subsistence cultivation carried out more as a custom or tradition, is that it offers very little excitement to the participants. On the other hand, when small and marginal farmers attempt to imitate mainstream capital intensive practices of the *Ryots*, they land themselves in a soup due to insufficient knowledge, inadequate capital, and an extremely low risk taking capacity.

The younger generation of farmers' sons and daughters get increasingly alienated and look to other, often non-existent, economic opportunities which are also way beyond their reach. Unmet expectations and unsated dreams lead to a general frustration and discontent in the countryside.

The possibility of being agriculturist, as a career option does not excite the youth as they see it has no dignity attached to this entire livelihood option. Large corporate farming might look lucrative but is not accessible to the younger generation of farmers' children. Acquiring higher education means moving away from agriculture amongst the youth today, this is because subsistence agriculture does not provide enough for a comfortable life as perceived by the youth. The issue of dignity further dampens the spirit of young women and men as farmer is considered to be in the lower rungs of the class ladder.

Through Low Carbon Farming, we can try to bring an excitement into agriculture, using environmentally sound, state of the art technologies that are not mainstream. This will absorb schooled and educated peasant youth in productive activities in an expanded rural economy. Skilled

and motivated labour force will be engaged in profitable cultivation, with regular and reliable income. Field crops will be grown mainly for food security. Non-Farm jobs and economic activities will be created through an increase in biomass.

12. PROJECT PLANNING MATRIX

INTERVENTION LOGIC	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
DEVELOPMENT GOAL			
<ul style="list-style-type: none"> □ Small Holder Farming Establishes Viable Climate Mitigation Strategies through LCF 	<ul style="list-style-type: none"> • Methodology Accepted by International Community 	<ul style="list-style-type: none"> ⇒ DNDC Model Calibrated for all main Crop(s) grown by Small & Marginal Farmers in different AEZ's ⇒ Voluntary Carbon Markets recognise Offsets Generated by LCF as Pro-Poor Fungible Instruments 	<ul style="list-style-type: none"> • LCF will prove GHG Reductions in Marginalised Crops grown by Poor Farmers
PROJECT PURPOSE			
<ul style="list-style-type: none"> ○ NGO Capabilities Enhanced and LCF Model Established for Viable Small Holder Farming 	<ul style="list-style-type: none"> • Increased Returns to Small, Marginal & Rain fed Farmers 	<ul style="list-style-type: none"> ⇒ Monitoring Against Baselines by Village Communities 	<ul style="list-style-type: none"> • Participating Farmers do not Succumb to State Supported Corporate Invasion by: <ul style="list-style-type: none"> ⇒ Adopting Mainstream Practices ⇒ Selling off their Lands
	<ul style="list-style-type: none"> • Annual Increase in Number of Participating Farmers in each NGO Area of Coverage 	<ul style="list-style-type: none"> ⇒ Online Reports generated by Monitoring Software 	
	<ul style="list-style-type: none"> • Annual Increase in Proportionate Area under Sustainable Agriculture vis-à-vis Total Landholding 	<ul style="list-style-type: none"> ⇒ Online Reports generated by Monitoring Software 	
	<ul style="list-style-type: none"> • No. of 3rd Party Verifications Cleared 	<ul style="list-style-type: none"> ⇒ tCO₂-e of Verified Emission Reductions issued 	
PROJECT OUTPUTS			
<p>A. 4 PARTICIPANT NGOS LEARN TO ACCESS LARGE CARBON RESOURCE</p>	<p>A.1. LCF Teams Up and Functioning at each NGO</p>	<ul style="list-style-type: none"> ⇒ Progress in Preparatory Work as indicated by Online Reports generated by Monitoring Software ⇒ Quarterly Coalition Meetings 	
	<p>A.2. Package of Sustainable Agriculture Practices and Fact Sheets for Scaling Up</p>	<ul style="list-style-type: none"> ⇒ Quarterly Coalition Meetings 	
	<p>A.3. 13,400 acres Identified & Plotted by 4 Participant NGOs by June 2012</p>	<ul style="list-style-type: none"> ⇒ Area of Discrete Plots Delineated ⇒ No. of Title Deeds Recorded ⇒ No. of Carbon Contracts Executed 	

B. 4 FARMER ORGANISATIONS FORMED AS INSTRUMENTALITY TO AGGREGATE CARBON CREDITS & TAKE LCF FORWARD	B.1. Legal Incorporation	⇒ Registration Documents ⇒ Audited Finance Statements ⇒ Internal Assessment Report against FCN Standards	
	B.2. Caste & Sex Parity in the Membership & Elected Leadership	⇒ Gender Analysis of Membership ⇒ Quality of Participation in Decision Making	
	B.3. 6,000 Participating Farmers Aggregate Carbon Credits with their respective Farmer Organisations by December 2012	⇒ 6,000 Signed Carbon Contracts	
C. PARTICIPATING FARMERS ADOPT SUSTAINABLE AGRICULTURE PRACTICES	C.1. 6,000 Participating Farmers adopt listed SA Practices by the 2012 crop season... ...23,000 Farmers by the 2017 crop season	⇒ Online Reports generated by Monitoring Software	<ul style="list-style-type: none"> • Empowered Women fully involved in Family Cultivation • Youth find Meaning and Excitement in SA Farming • Participant NGOs have Resources & Wherewithal to undertake SA Extension Services
	C.2. 13,400 Acres of Land Holdings Irrefutably Identified & Delineated by 2012... ...48,500 Acres by 2017	⇒ Online Reports generated by Monitoring Software	
	C.3. Level of Knowledge on Climate Change, Carbon Offsetting and LCF among Participating Farmers	⇒ Test Score and Assessment against Fact Sheet	
	C.4. Additional SA Practices Brought into the Basket of Interventions	⇒ Record of Identified SA (package of) Practices	
	C.5. Annual Increase in Volume of Carbon Resources Accessed by Participant NGOs	⇒ Audited Accounts; Cumulative Bank Receipts	
D. 2 FIELD LABORATORIES SET UP TO MEASURE GHG EMISSIONS	D.1. Field Laboratories Functional at 2 NGOs by June 2012	⇒ Procurement of Lab Equipment ⇒ Inspection by FCN Tech Team	
E. EMISSION REDUCTIONS CALCULATED	E.1. DNDC Model Calibrated by end of 2014 crop season	⇒ Crop(s) & Practices Listing by DNDC Authority for each AEZ	

ACTIVITY PROCESSES	PROJECT COST : DETAILS	AMOUNT	SOURCE	ASSUMPTIONS
A. 4 PARTICIPANT NGOS LEARN TO ACCESS LARGE CARBON RESOURCES				
A.1. Attending Coalition Meetings	Food and accommodation to hold 8 FCN-LCF Coalition Meetings at Bagepalli @ ₹ 20,000 per meeting	160,000	67% EED 33% FCN	
	NGO Dynamics Team of the FCN Tech Team visit all 4 NGOs and do a Due Diligence			
	4 day Logical Framework Analysis workshop			
	Preparing Strategic Plan & Project Application			
	Salary of 1 LCF Facilitator @ ₹ 40,000 x 18 months	720,000	67% EED 33% FCN	
	Salary of 1 Coalition Accountant @ ₹ 25,000 x 18 months	450,000	67% EED 33% FCN	
	Staff Fund to cover Mediclaim Insurance, other health benefits for staff and their immediate families, reasonable schooling expenses of staff children, house rent, provident fund, gratuity, etc.	117,000	67% EED 33% FCN	
	Travel, telephone and other overheads @ ₹ 10,000 p.m. per NGO x 18 months	720,000	67% EED 33% FCN	
A.2. Appointing LCF Team at each Participant NGO	Identification of existing Staff and/or recruiting new Staff			
	Revisiting systems and structures of within each NGO to see adequacy and appropriateness			
	Salary of 4 LCF Coordinators with technical/computer skills to implement the LCF Pilot Project at each Participant NGO @ ₹ 20,000 p.m. x 18 months	1,440,000	67% EED 33% FCN	
	Staff Fund to cover Mediclaim Insurance, other health benefits for staff and their immediate families, reasonable schooling expenses of staff children, house rent, provident fund, gratuity, etc.	144,000	67% EED 33% FCN	
A.3. Identifying Village Volunteers	Identification of village Youth (men and women) as LCF Promoters in each village			
A.4. Training & Orienting of LCF Teams	Conducting sessions on Climate Change, Carbon Offsetting and Low Carbon Farming to LCF Staff and Village Volunteers			
	Travel & incidental cost for Field Staff & Village Volunteers to attend GPS training at Bagepalli in 4 batches of 10 per NGO @ ₹ 500	20,000	EED	
	Food and accommodation for 40 Field Staff & Village Volunteers @ ₹ 500 p.d. x 8 days	160,000	EED	
	Local Transport to visit villages and take readings for 3 days per batch @ ₹ 2,000	24,000	EED	
	Trainer Fee @ ₹ 40,000 per batch	160,000	EED	

A.5. Procuring Hardware & Software	License fee for 4 LCF Monitoring solutions, with 5 modules, customized by Tristle @ ₹ 850,000 + 10.3% Service Tax = ₹ 937,550 each	3,750,200	EED	
	4 Computer Servers to load the intranet monitoring solution @ ₹ 135,000	460,000	EED	
	5 VXL TC 3241 Thin Client (Windows XE) Terminals with monitor and keyboard/mouse per NGO @ ₹ 22,000	440,000	EED	
	Switch & Network and cabling @ ₹ 10,000 per NGO	40,000	EED	
	4 Two KV UPS @ ₹ 40,000	160,000	EED	
	2 1.5 tonne Air Conditioners @ ₹ 28,000	56,000	EED	
	40 Digital Cameras @ ₹ 7,500	300,000	EED	
	40 Handheld E-Trek Instruments to take GPS readings @ ₹ 7,500	300,000	EED	
A.6. Conducting Demographic & Land holding Surveys	Cost of printing 6,000 formats and stationery @ ₹ 2.50 per format	15,000	EED	
	Cost of planting an average of 7 bond stones on the corners of 6,000 land holding @ ₹ 20 per stone	840,000	EED	
	Stipend for 40 Village Volunteers to conduct demographic surveys and take GPS readings @ ₹ 1,500 p.m. x 4 months	240,000	EED	
	Legal costs to execute individual Carbon Contracts with Participating Farmers	180,000	EED	
B. FARMER ORGANISATIONS FORMED AS INSTRUMENTALITY TO AGGREGATE CARBON CREDITS AND TAKE LCF FORWARD				
Formalizing user groups into village/ Mandal level federation of CBOs				
Training on institutionalisation				
LCF team and village youth to develop community based monitoring systems				
Agreements between Participant NGOs and CBO (user groups/ federation/ farmers)				
Training for business principles, climate change and business aspects of LCF				

C. ALL PARTICIPATING FARMERS CHANGE TO SUSTAINABLE AGRICULTURE				
C.1. Incentivising Adoption of LCF with Carbon Resources	List Participating Farmers & Villages for scaling up SA Practices			
	Cost of preparing LCF awareness building material and modules; translating into colloquial languages @ ₹ 10,000 per NGO	40,000	EED	
	Food costs & logistics to conduct Gram Panchayat level meetings to explain LCF to 6,000 Participating Farmers @ ₹ 30	180,000	EED	
	Set up Farmer Field Schools			
C.2. Identification of major Crop(s) to concentrate on Low Carbon Farming	Identify major Crop(s) to concentrate on			Participant NGOs support each other by sharing resources and expertise
	Identify Sustainable Agriculture (package of) practices			
	Developing Training Modules for this purpose			
C.2. Providing Technical Support				
D. 2 FIELD LABORATORIES SET UP TO MEASURE GHG EMISSIONS				
D.1. Carrying out Scenario Development for each Participant NGO area of operation				
D.2. Undertaking Soil & Manure Sampling/Analysis				
D.3. Studying current Sustainable Agriculture (package of) Practices				
D.4. Orienting key Participant NGO/CBO staff/functionaries on Emission Reduction Science				
D.5. Procuring Equipment to set up 2 GHG Laboratories in as many NGOs	2 Gas Analysers @ ₹ 990,000	1,980,000	EED	
	Gas Panels & Purifiers @ ₹ 80,000	160,000	EED	
	Six KVA Online UPS with 16 batteries per NGO @ ₹ 165,000	330,000	EED	
	2 sets of Soil Augers @ ₹ 30,000	60,000	EED	
	54 Perspex Boxes @ ₹ 2,500 per NGO x 2	270,000	EED	
	Lab furnishing - tables, dividers, doors, etc. @ ₹ 50,000 per NGO	100,000	EED	
	Thermometers, Rain gauge and others	6,000	EED	
	Thermometer probe for Perspex box inner temperature	2,000	EED	
D.6. Selecting & Training Laboratory In-charge Personnel	Exposure trips to suppliers of Laboratory Equipment			
	Salary of 2 GHG Lab In-charge to collect Gas Samples @ ₹ 15,000 p.m. x 6 months	180,000	FCN	

	Salary of 2 Asst. GHG Lab In-charge to analyse and record Gas Samples @ ₹ 10,000 p.m. x 6 months	120,000	FCN	
	Staff Fund to cover Mediclaim Insurance, other health benefits for staff and their immediate families, reasonable schooling expenses of staff children, house rent, provident fund, gratuity, etc.	30,000	FCN	
E. GHG EMISSION REDUCTIONS CALCULATED				
E.1. Selecting 18 Reference Plots at each Participant NGO area of operation for Mainstream & SA Agricultural Practice	Land Preparation (Levelling and fencing 1 acre land, splitting into plots, bunding and other maintenance @ 3 plots per SA Practice plus 3 plots per Mainstream Practice x 2 Crop(s) at each NGO where Referencing will be carried out	72,000	FCN	
	Subsidy to partially cover Farmer's input cost - seeds and fertilizers @ 3 plots per SA Practice plus 3 plots per Mainstream Practice x 2 Crop(s) at each NGO where Referencing will be carried out	48,000	FCN	
E.2. Developing Farmer Diaries				
E.3. Training Reference Plot Farmers on rigour and procedures				
E.4. Procuring GHG Sampling Equipment	54 Mild steel metal base frames @ ₹ 1,500 per NGO	162,000	EED	
	250 Autoclavable rubbers (sampling port or septum) @ ₹ 50 per NGO	25,000	EED	
	150 Syringes with three-way stoppers and Vacutainers @ ₹ 200 per NGO	60,000	EED	
	Minor tools or - mini fan, fixtures, wires, corks, adhesive etc. @ ₹ 10,000 per NGO	20,000	EED	
	Bus Fares & Transport to collect daily GHG Samples from the Reference Plots @ ₹ 4,000 per NGO	48,000	EED	
E.5. GHG Certification costs	10% Project Cost as Professional Fee to FCN towards salary of LCF Expert, travel, overheads, sourcing satellite imageries, studies and secondary data, methodology certification costs, etc.	1,500,000	EED	
TOTAL		16,409,200		