



Reversing desertification through a Climate Resilient Exemplar Landscape (CREL) in Andhra Pradesh, India

Workshop Report



Climate and
Land Use Alliance



Acknowledgments

We would like to acknowledge Mr Vijay Kumar and the RySS team, Government of Andhra Pradesh, Dr Malla Reddy and his team at the Accion Fraterna Ecology Centre and his team and, above all, the Climate and Land Use Alliance (CLUA).

Report compiled by the ICRAF-RySS
Exemplar Landscape Team

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Contents

5

Summary

Developing an action research plan for a climate resilient exemplar landscape in Andhra Pradesh

8

Developing an Action Research Project Based in the Climate Resilient Exemplar Landscape

10

International Workshop on Reversal of Desertification "Exemplar Landscapes – Andhra Pradesh

18

Background and theoretical basis for establishing a Climate Resilient Exemplar Landscape in Andhra Pradesh, India

28

Case studies of landscape level interventions

41

Description of the candidate exemplar landscape and participatory review of available data and information

47

Description of Candidate Landscape focus - Yerraborepalli Village

53

Biophysical data on the candidate landscape

57

Conducting a soil and land health baseline using the Land Degradation Surveillance Framework (LDSF)

62

Landscape management - reflections from field visits on key thematic areas

76

Participatory social network analysis to explore parameters of landscape democracy

79

Developing an action research project, based in the climate resilient exemplar landscape

90

Monitoring and inclusion of evidence in an action research program

94

Appendices

Acronyms and abbreviations

AF	Agroforestry
AP	Andhra Pradesh
APDMP	Andhra Pradesh Drought Mitigation Project
APPI	Azim Premji Philanthropic Initiatives
APZBNF	Andhra Pradesh 'Zero-Budget' Natural Farming
BC	Backward Class
CAFRI	Central Agroforestry Research Institute
CLUA	Climate and Land Use Alliance
CREL	Climate Resilient Exemplar Landscape
CRZBNF	Climate Resilient Zero Budget Natural Farming
CSA	Climate Smart Agriculture
CSO	Civil Society Organizations
DoA	Department of Agriculture
FES	Foundation for Ecological Security
FGD	Focus Group Discussion
FPO	Farmer Producer Organisations
GoAP	Government of Andhra Pradesh
HLPE	The High Level Panel of Experts on Food Security and Nutrition
ICRAF	World Agroforestry
IT	Information Technology
IWD	Integrated Watershed Development
IWMI	International Water Management Institute
KG	Kilogram
LDSF	Land Degradation Surveillance Framework
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
MOA	Ministry of Agriculture
NGO	Non-Governmental Organization
NF	Natural Farming
NFF	Natural Farming Fellow
NREG	Natural Resource and Environmental Governance
PDS	Public Distribution System
PES	Payment for Ecosystem Services
RA	Rainforest Alliance
RWH	Rain Water Harvesting
RySS	Rythu Sadhikara Samstha
SC	Scheduled Class
SHARED	Stakeholder Approach to Risk Informed and Evidence Based Decision Making
SHG	Self Help Group
SOC	Soil Organic Carbon
SROI	Social Return on Investment
ZBNF	Zero Budget Natural Farming

Summary

Developing an action research plan for a climate resilient exemplar landscape in Andhra Pradesh

Key Reflections and Insights from Stakeholder Workshop



Workshop Achievements

- » Developed a shared understanding of land degradation and exemplar landscapes
- » Shared case studies outlining practices and approaches to address land degradation and reverse desertification
- » Explored data, both biophysical and socio-economic, on the candidate landscape
- » Completed a participatory field exercise under seven thematic areas to understand the candidate landscape in Anantapuramu district
- » Supported the concept of a climate resilient exemplar landscape and selected an area covering three villages
- » Identified landscape management options that may be appropriate and transformative for livelihoods
- » Developed an outline operational plan for developing an 'engagement landscape' in Anantapuramu district
- » Secured agreement in principle to scale up the use of such engagement landscapes across Andhra Pradesh in order to promote innovation and adoption of alternative, climate resilient farming and landscape practices that are carbon positive





Next Steps

- » Refine the methodology for visiting communities in the landscape. This will include Participatory Rural Appraisal, social network and migration tools as well as proposed areas for discussion
- » Visit the two remaining villages in the exemplar landscape and apply the refined community interaction tools
- » Review the data from the village visits and the biophysical data available with relevant stakeholders to discuss key opportunities, challenges and transformation areas, building on the workshop planning
- » Prepare a refined action plan for the exemplar landscape with key stakeholders
- » Present the proposed action plan and diverse evidence sources to the community (individual villages) and agree with them on priorities for each village
- » Finalise the action plan, agree on lead organisations for different actions and identify resources for implementation



Developing an Action Research Project Based in the Climate Resilient Exemplar Landscape

Timeline 2020 - 2025



Elements of the Action Plan

- » Continuing to push forward with climate resilient Zero Based Natural Farming across Andhra Pradesh, and to add landscape approaches to the mix of approaches already identified.
- » Add a number of such engagement landscapes (two per district)
- » Support these engagement landscapes to become learning, scaling and transformational landscapes, with ICRAF's role supporting monitoring, evidence building and transformation with RySS and NGOs

Intended Impacts







- » Deliver evidence to bring about large-scale policy change in AP and beyond
- » Transform participating farmer/SHG livelihoods and their farms and landscapes
- » Quantify impacts of interventions on sequestration of CO₂ and adaptation to climate variability, especially changes to precipitation and temperature regimes
- » Quantify impacts on household social and economic resilience
- » Incubate novel policies and institutional arrangements that support climate resilient outcomes and appropriate adaptation and scaling of Natural Farming

Evolution of Definitions - Exemplar Landscape to Engagement Landscape

An **engagement landscape** is a discrete and recognizable geographic unit of sufficient scale (more than one village certainly) to allow problems or opportunities to be addressed without artificial reduction of complexity. It will typically have multiple layers of governance, different types of stakeholders, farmers and value chain actors. It will have also typically have different types of land-uses, although this can vary according to what is pursued. It will always have partners who are interested in collaboration and engagement, who see themselves as 'owners' of the opportunities that can be further developed, or at least aspire to do so.

Throughout the following report, we refer and use the terminology **exemplar landscapes**, however during the workshop process, subsequent consultations it was felt more appropriate to define these as engagement landscapes for the future development of the action plan.

Engagement Landscapes will have the Following Characteristics

-  They must be 'investable landscapes': partners to see a benefit in investing time and effort in delivering the products and services that frame the mission of the landscape and investors must be willing to provide financial resources
-  They must add value to and derive from projects - both financial and intellectual
-  They must have a clear opportunity, problem or policy focus and be time bound with a clear exit strategy
-  They will typically draw on the interdisciplinarity and multifunctionality
-  They are catalysts for alignment, renewal and impact and pooling resources more effectively
-  Must be focused on solving the particular problems of their context, which will be the departure point for innovation, rather than beginning by applying a more general technology and expecting local stakeholders to adapt. The focus will be on looking for solutions, insights and transformations that are valued by the partners and stakeholders in that particular landscape. We recognize that this may require trade-offs and result in solutions that aim to 'win-less and lose-less', rather than always seeking win-win situations

International Workshop on Reversal of Desertification “Exemplar Landscapes – Andhra Pradesh”

Stakeholder Engagement Methodology to Design and Facilitate Workshop

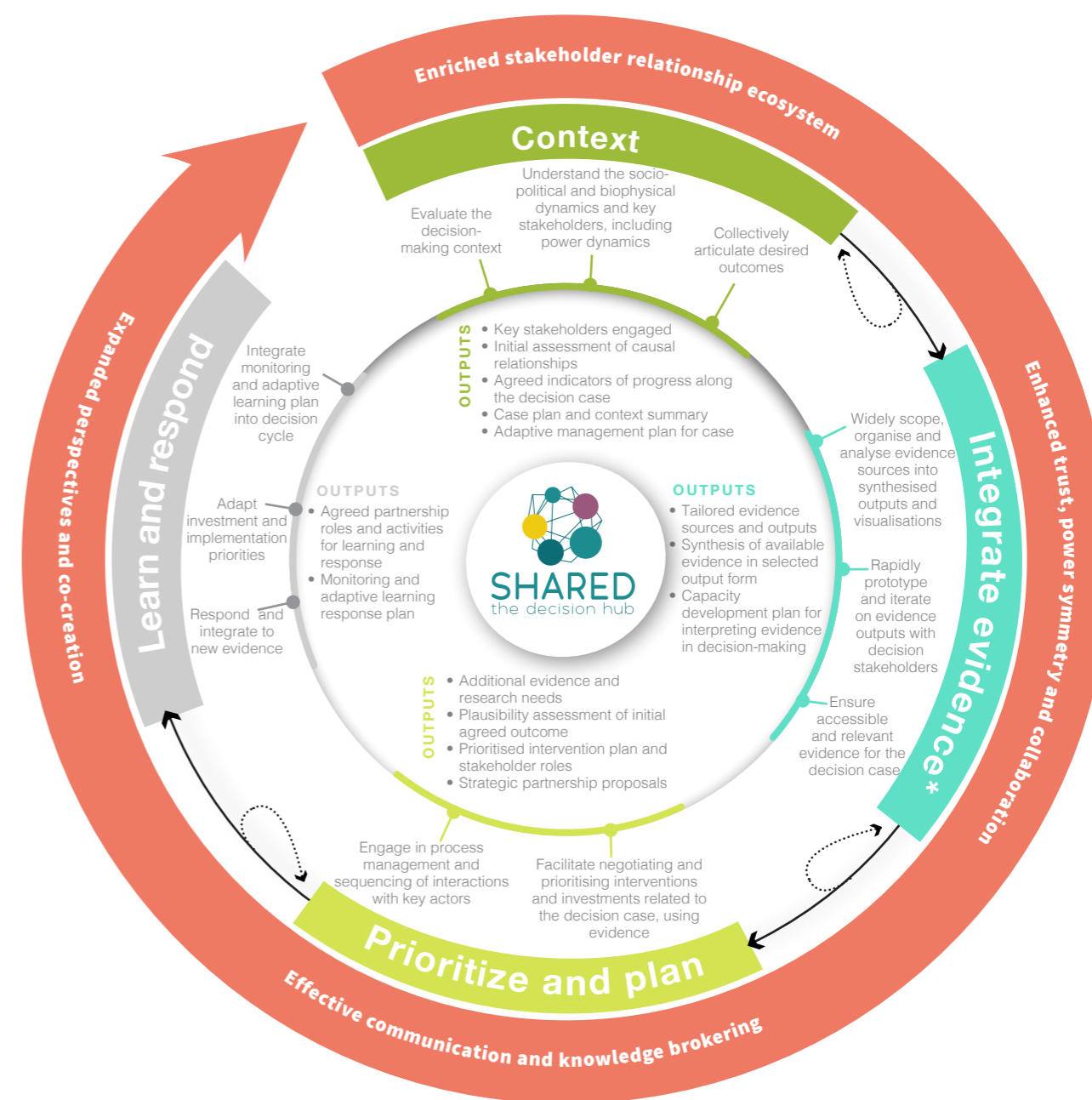
In order to establish the viability of a Climate Resilient Exemplar Landscape (CREL) in Andhra Pradesh World Agroforestry (ICRAF) specialised stakeholder engagement unit, the SHARED Decision Hub, and its methodology for evidence-based decision-making engagement, was utilised. The SHARED (Stakeholder Approach to Risk Informed and Evidence-based Decision-making) methodology provides a comprehensive framework, tailored to specific decision contexts, to bring together processes, evidence, and tools, and shift the decision paradigm towards more inclusive, inter-sectoral and inter-institutional integration to tackle complex decisions and to achieve desired outcomes.

The SHARED approach includes four inter-related phases using comprehensive facilitation to support interaction with evidence, enhance co-learning, building long-term relationships and ensure that evidence can be critically interpreted, queried, and evaluated. This approach ensures cohesive communication across multiple institutions, political levels and knowledge systems to build capacity and the evidence base as a continuously linked process, within the same development outcome pathway.

Key factors, steps and principles in the SHARED framework include:



- a **people centred and demand driven process**;
- tailored and rigorous **cross-sectoral and multi-stakeholder engagement** structure and space for addressing power asymmetries, building trust and collaboration;
- **deliberative dialogue and communication**, co-learning, and negotiation;
- **brokered knowledge exchange**, recognising different knowledge sources;
- a **systems approach** that appreciates complexity and inter-relationship;
- addressing **root causes and behavioural drivers**;
- and enhanced **decision making capacities** for transformative change.



* SHARED defines evidence as the integration of raw data constituting numbers, words, images and insights emerging from diverse knowledge sources. These can then be analysed into visualisations and synthesised information relevant to the decision case.



Background to the Workshop

To establish the viability of a Climate Resilient Exemplar Landscape (CREL) in Andhra Pradesh, India, a workshop took place supported by RySS, APPI, CLUA and the State Government of AP. To prepare for the workshop a candidate landscape was identified in Anantapuramu District. A team from RySS visited the area to better understand the socio-economic conditions, while existing biophysical information was brought together and a stakeholder mapping conducted to ensure the right organisations and individuals could be represented at the workshop.



The workshop was held on 2nd - 6th November at Accion Fraterna Ecology Centre, Anantapuramu, Andhra Pradesh with **77 participants** (Annex 1) contributing to a four and a half day workshop (see Agenda Annex 2).

Setting the scene and aims of the workshop was lead by

Mr Vijay Kumar - Vice Chairman Rythu Saadhikara Samstha (RySS), Adviser, Government. of A.P

Dr Malla Reddy - Director, Accion Fraterna Ecology Centre

Dr Ravi Prabhu - Deputy Director General, World Agroforestry (ICRAF)



Workshop Objectives



To understand the phenomenon of desertification and land degradation and identify sustainable options that exist to reverse them



Share knowledge on practices and ambitions of various approaches that are aimed at reversal of desertification, and discuss their efficacies



Explore the possibilities of setting up a large (1000 ha) candidate landscape in Anantapuramu district supported by extensive consultations with local communities and stakeholders



Develop an operational plan for developing an exemplar landscape by drawing an initial set of hypothesis, building on best practices and local successes and including modalities for implementation by the District administration with technical support from partners for monitoring and scaling out



Workshop Process

2nd to 6th November, 2019 Accion Fraterna Ecology Centre, Anantapuramu, A.P

- » Introductions
- » Scope and purpose of the workshop
- » Situation in Anantapur - transition over the past 60 years
- » Workshop expectations
- » Defining exemplar landscapes
- » Sharing knowledge - interactive presentations and case studies on approaches to address land degradation



DAY 1
2nd November

DAY 2
3rd November



- » Introducing the candidate landscape
- » Participants interacting with data about the prospective area(s) using 'data walls' to generate a shared understanding of key characteristics and issues and to begin to define appropriate boundaries
- » Review, discuss and internalise data on the candidate climate resilient natural farming exemplar landscape
- » Facilitated summary on state of knowledge and data, gaps and linkages between data and information sources
- » Participatory design on what would work in the landscape and group expectations on an exemplar landscape

- » Field work to Yerrabolapalli, Kalyandurg cluster to discuss with stakeholders in the field to get an understanding of aspirations, challenges and realities

- » Seven thematic teams
 1. Women
 2. Social Connections
 3. Marketing
 4. Youth
 5. Water
 6. Migration
 7. Livestock



DAY 3
4th November

DAY 4
5th November



- » Analysis of the fieldwork
- » Group activity on what are the areas of intervention required for the villages
- » Facilitated discussion on farm level, landscape level and policy level intervention required to take the work further
- » Participatory agreement on what is the vision, who are the stakeholders, what the candidate practices could be and how would the intervention take place
- » Reflections from the workshop and contributions to take the work forward
- » Development of an operational plan for the exemplar landscape

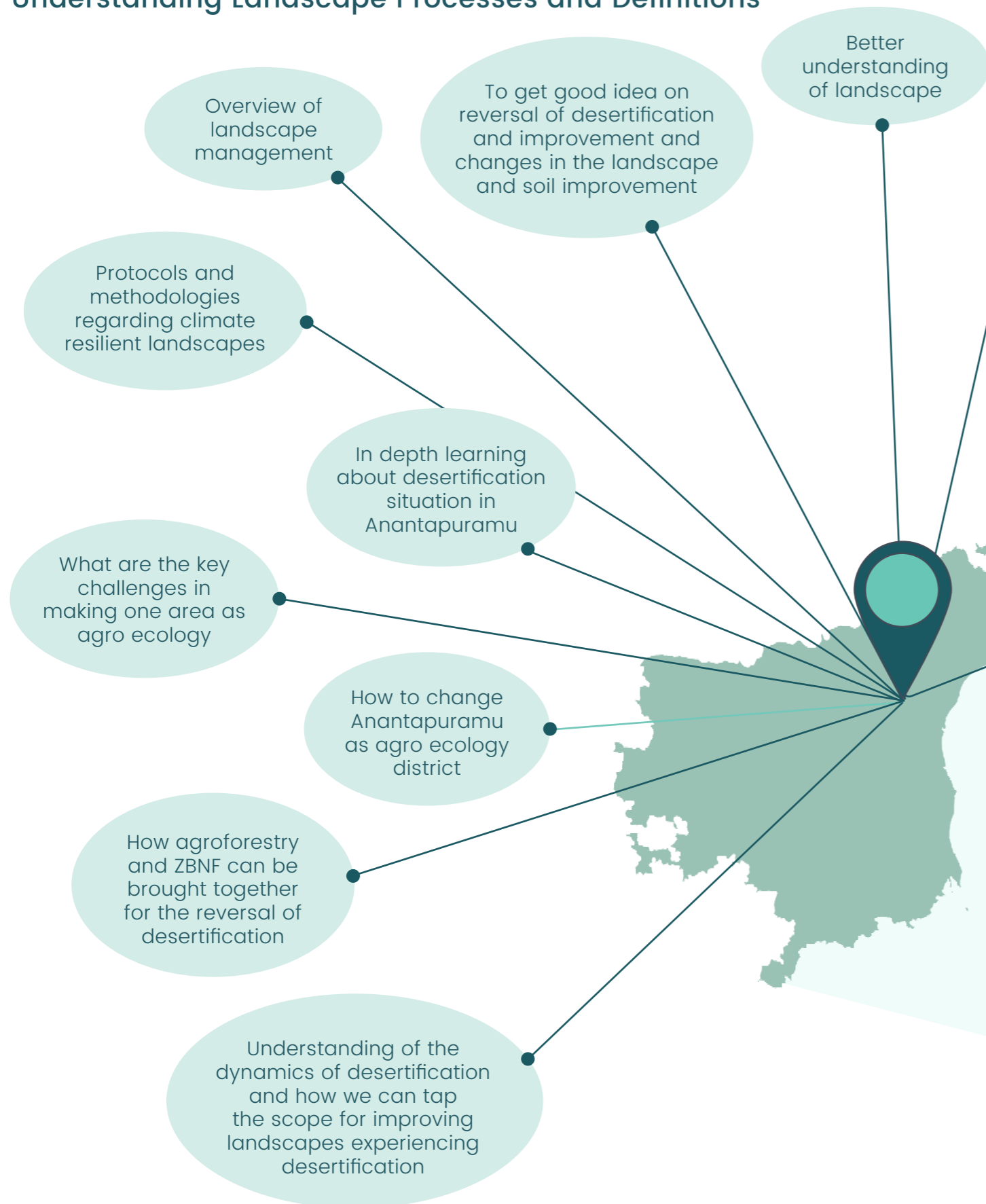
- » ICRAF and RySS team consolidating workshop process and next steps
- » Preliminary exploration of the kinds of protocols to be used in monitoring and adapting to observed and induced changes



DAY 5
6th November

An Interactive Exercise Allowed Participants to state their Expectations for the Workshop

Understanding Landscape Processes and Definitions



Candidate Practices and Designing an Exemplar Landscape

- » How to create an artificial agro-forest in the worst situation - drought ridden Anantapuramu district and ways to implement at large scale
- » An actionable agenda for reversing desertification focusing on its management perspective
- » An understanding on what exemplary landscape means and how to implement at landscape level
- » Find long term and short term programmatic approaches to reversing desertification
- » Practical technology or practices to be practiced by farmers or NGOs
- » Sustainable landscape models for Andhra Pradesh region
- » A perfect idea of working for adoption which suits for Andhra Pradesh so that farmers get sustainable income and have positive impacts on the environment
- » Measures to improve drought affected areas like Anantapur district
- » Come up with plans to improve soils in cost-effective ways that are easily replicable
- » At least one solution to the problems of Anantapur farmers
- » Complete action plan for a pilot site to combat desertification in Anantapur district
- » What I can do and how I can be a part of the effort

Technical Learning

- » How to become more climate resilient and improve existing situation of mono crop to tree based farming
- » Robust sustainable models for dryland conditions
- » A better understanding of APs ZBNF programme and how it is going to move beyond ZBNF
- » How to increase rainfall by changing cropping pattern and plantations
- » How to stop soil erosion with landscape and income generating opportunities for the farmer
- » Groundwater improvement strategies and farming situation wise ecological and economic approaches
- » Crops and plant species recommended for desertification areas
- » Lessons to support diversity and sovereignty
- » To learn more about agroecological biological convergence of degraded lands to climate resilient landscape (5-layer-mini food forest)
- » Carbon sequestration to improve livelihood through diversification of resource streams to farmers

Background and theoretical basis for establishing a Climate Resilient Exemplar Landscape in Andhra Pradesh, India

Zero Budget Natural Farming (ZBNF) is an interrelated set of agroecological principles and practices developed by the Indian agriculturalist, Subhash Palekar.

In addition to smaller initiatives in other areas of the country, concentrated efforts are currently underway in Andhra Pradesh (AP) to promote ZBNF across the entire state, with an ultimate target of six million adopters by 2024. The Climate Resilient Zero Budget Natural Farming (CRZBNF) programme, supported by the Azim Premji Philanthropic Initiatives (APPI) is leading the current effort in promoting ZBNF among farmers throughout all of AP's 13 districts.

ZBNF focuses on weaning farmers away from 'chemical intensive agriculture' towards agroecological approaches that focus on revitalising organic pathways to soil fertility regeneration, reduction of water use and increase in on-farm species diversity. First, largely anecdotal, results are encouraging. World Agroforestry (ICRAF) has launched a

number of studies of socio-economic and biophysical impacts of ZBNF to deliver more rigorous, scientifically robust data on the impacts of ZBNF. For example, ICRAF and other partners, such as the University of Reading, are studying biocarbon cycles to determine whether claims of improvements to Soil Organic Carbon sequestration as a result of stimulation of soil biota are credible. ZBNF in its conceptualization is a 'farmer/farm/field' set of principles and practices. It does not explicitly consider the landscape scale and consequently ignores the ecological, social and economic matrices within which these principles are applied.

The effort therefore misses key opportunities to leverage and impact processes emerging and aggregating at scales beyond the farm and the farming household. ZBNF in Andhra Pradesh is also a social process. Because of the scaling and adoption strategy being deployed by Rythu Sadhikara Samstha (RySS), social capital residing in women's self-help groups (SHG) is being leveraged. There is also a partial

leveraging of the Department of Agriculture's cadres. To date there is little attention being paid to value chains and decision makers at district and sub-district level. In sum, the landscape and social/economic units larger than a farm household or a self-help group present a little explored opportunity for change. If ZBNF is to be applied and adapted at the scale of the entire state there has to be a better understating of how ecosystem services, socio-political structures and value chains are impacted at multiple, nested scales from a field through to a landscape, from a farming household through to aggregated clusters of communities. This, we propose, could be studied using the lens of an 'Engagement Landscape', allowing us to understand scaling processes and property changes of a system under transition.

The extension of current forms of 'natural farming' to encompass a landscape approach that can be explicit about nested scale objectives and impacts is novel in Andhra Pradesh. There is great interest on the part of our partners in RySS and their collaborators in Anantapuramu to explore this concept further with a view to creating an exemplar landscape at the scale of about 1,000 ha to meaningfully encompass ZBNF and non-ZBNF farmers and the intention then of transforming this landscape sustainably to 'Climate Resilient Natural Farming', embracing what emerges from current ZBNF practices as they evolve.

within a landscape, rather than supporting local innovation through which locally-adapted solutions can be identified and refined [2]. The emergent properties of each nested scale are such that they cannot be easily predicted from the components of that scale.

In **Anantapuramu**, landscapes go from fields, through farms, to aggregations of farms (of different kinds) as well as the non-farmed matrix in between them. They go from households, through villages, to clusters of villages that are able to leverage markets, local government decisions and infrastructural improvement. Management of landscape scale processes is complicated by non-congruent system boundaries for different social and natural elements that interact strongly, so that watersheds, habitat networks, markets and administrative jurisdictions rarely completely coincide, and generating social capital at appropriate scales is a prerequisite for coherent landscape management.

An exemplar landscape is a space for participatory action research that seeks a positive transformation towards negotiated outcomes that are demonstrably sustainable and hence a beacon for policy makers and people living beyond its boundaries. A climate resilient exemplar landscape pays special attention to the role of mitigating and adapting to climate change, ecosystem services and elements of the social and economic components that, in the opinion of the participating communities and actors, contribute towards sustainable outcomes they can aspire to. In ICRAF's use of the term it is characterized also by approaches, protocols and 'tools' that are designed to deliver replicable results in a transparent and accountable manner. There is a focus on adaptive learning, the 'paternoster principle' of reconciling bottom-up and top-down processes to foster iterative improvement using participatory self-monitoring.

Defining Exemplar Landscapes

ICRAF presented on the Exemplar Landscape Concept in the Context of Agroecology

Fergus Sinclair, Ravi Prabhu, Zakir Hussein, Leigh Winowiecki, Tor Vagen, Mieke Bourne, Chris Collins, Tim Pagella, Susan Chomba and the ICRAF Systems Theme

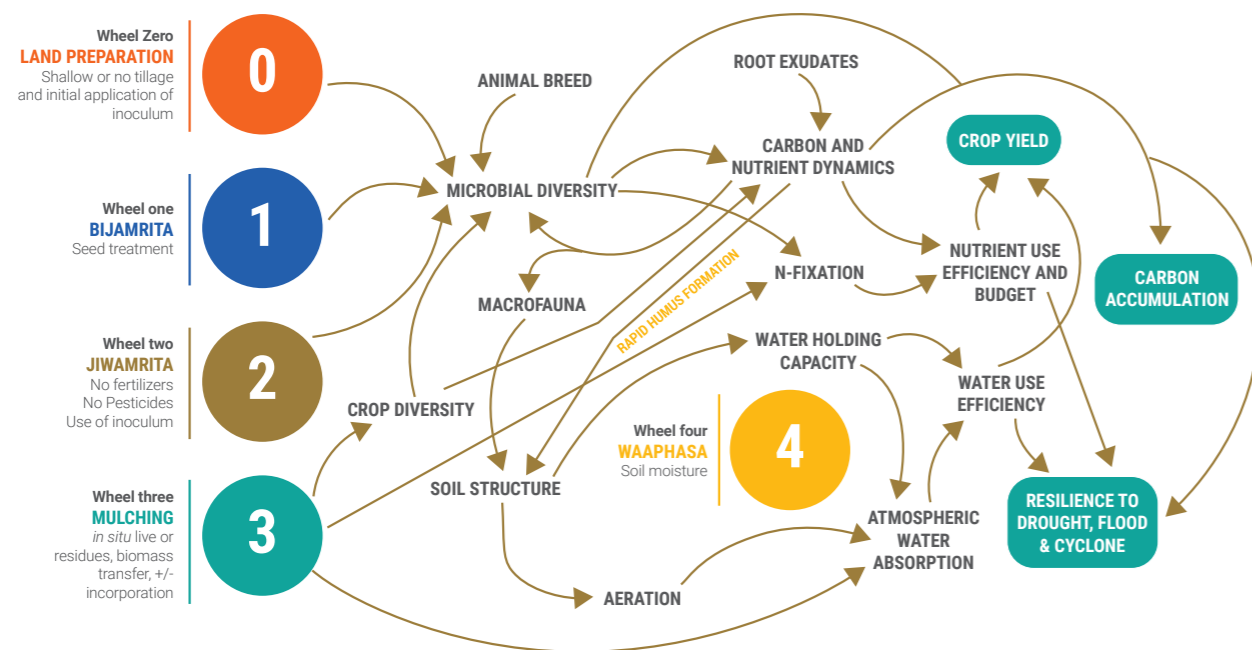
Landscapes are socially and ecologically defined geographic units [1]. They are complex spaces within which it is possible to ask questions about conflicts, synergies and trade-offs among multiple (development) objectives under real world conditions. They are characterized by fine-scale variability in context requiring development of diverse and inclusive innovation options to address development challenges. Introducing simple, single-focused 'technological fixes' often fail because they only suit a small proportion of the people and places

[1] Landscapes can be defined at different scales, but there is a critical local landscape scale of 10-1000 km² at which many key ecosystem service flows first manifest and so can be managed.

[2] Agroecology is characterized by local application of generic principles supported by transdisciplinary science, resulting in diverse agroecological practice that suits local circumstances rather than a centrally prescribed set of practices (HLPE, 2019 - Agroecological and other innovative approaches for sustainable agriculture and food systems that enhance food security and nutrition).

ZBNF AGROECOLOGICAL PRACTICES

AGROECOLOGICAL MECHANISMS



Proposed Mechanisms by Which Zero Budget Natural Farming Agroecological Practices (the wheels on the left) Impact Soil Health and Hence Crop Yield, Resilience to Climate Extremes, and Carbon Accumulation (Sinclair et al. 2019)



Research for Development

Learning Landscapes

Emphasis on

- Effect of interventions
- Within landscape

Sentinel Landscapes

Emphasis on

- Observation (common protocols)
- Comparison across landscapes

Paradigm shift

Research in Development

Innovation approach towards desired transformation

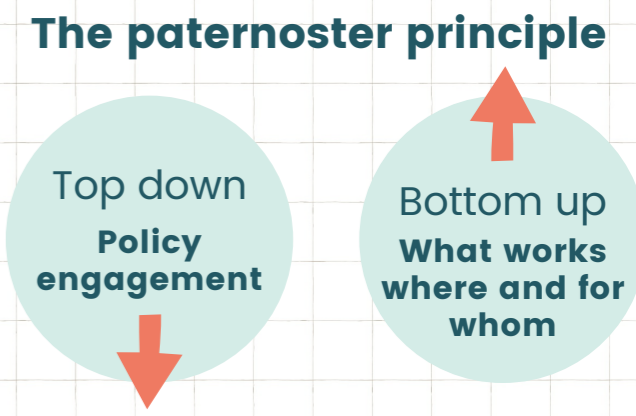
Exemplar Landscapes

Emphasis on

- Transformation
- Stakeholder engagement (negotiation)
- With evidence and amongst groups
- Demonstration (policy)
- Scaling up and out (spread of approach)

Learning from experience

- Teasing out ingredients of success and the contexts they are appropriate for
- Scaling domains for ingredients and their combination



Network of projects focused at landscape scale



Agroecological Principles in the Context of Transitions and Transformation

In the context of Anantapuramu, the exemplar landscape could become the basis for developing 'participatory guarantee systems' that secure price premiums as well as strengthening the building blocks of landscape democracy, voice and agency on a sound agroecological basis.

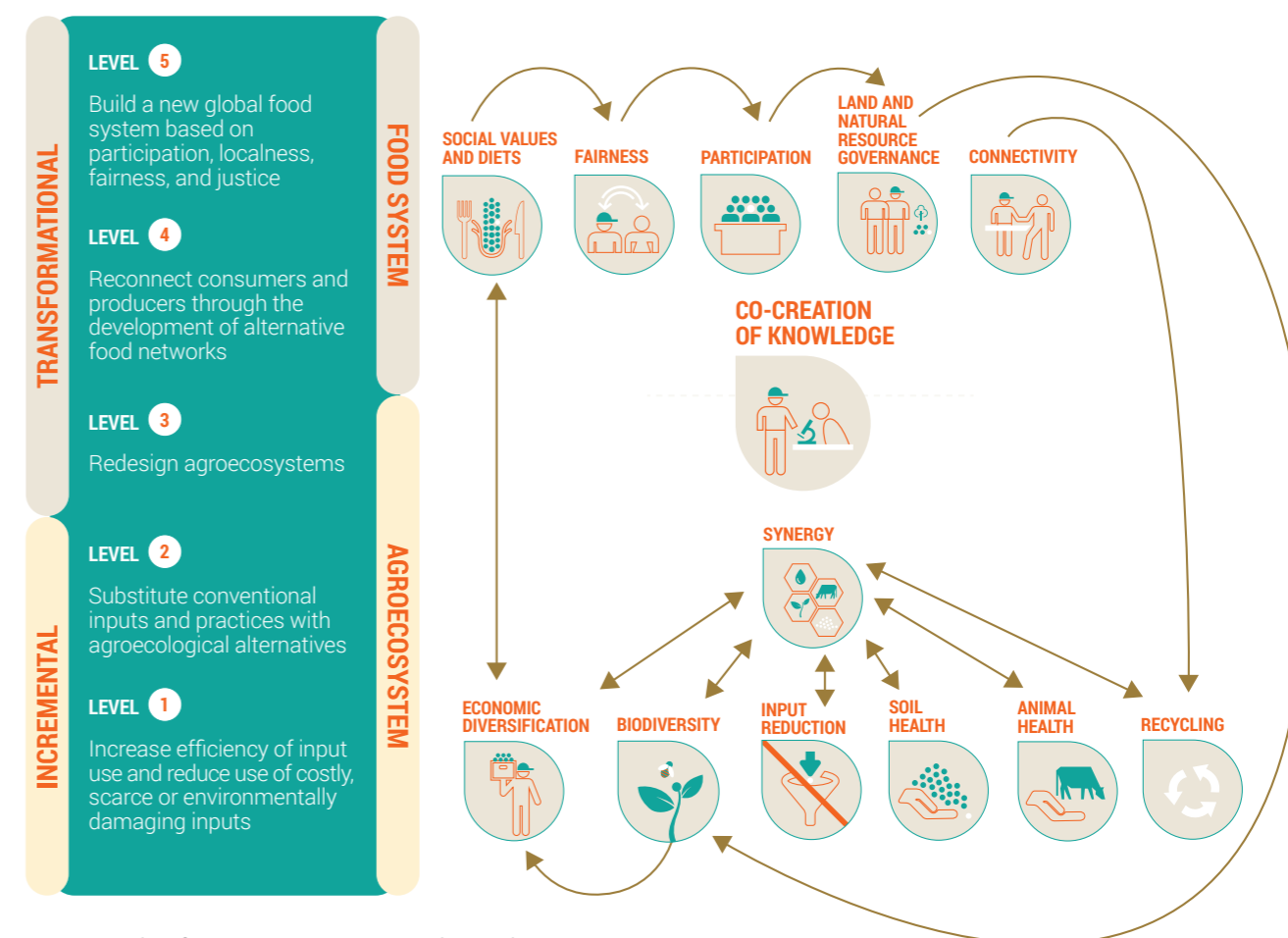
These principles cover agricultural and ecological management of agri-food systems, as well as some wider ranging socio-economic, cultural and political principles that have eClearly there are linkages among these principles. For example, the greater functional biodiversity there is (Principle 5), the more scope there is for both enhancing positive ecological interactions through synergy (Principle 6) and promoting economic diversification (Principle 7) (Sinclair et al. 2019).

13 Principles of Agroecology (Sinclair et al. 2019)



Co-creation of knowledge is a central principle that underpins all the others, because it defines the legitimacy of agroecology developing in different ways in different localities as a result of local knowledge and experiential learning, in line with cultural and ecological specificities associated with different people and places. It is a notion that recent shifts in global scientific thinking are also trying to grapple with, through adopting an options by context paradigm in agricultural research that aims to achieve development outcomes.

This explains the absence of a prescriptive set of agroecological practices, with agroecology instead being defined by a generic set of principles that may be applied variously in different locations by different people, resulting in a rich variety of locally adapted practices (Sinclair et al. 2019).



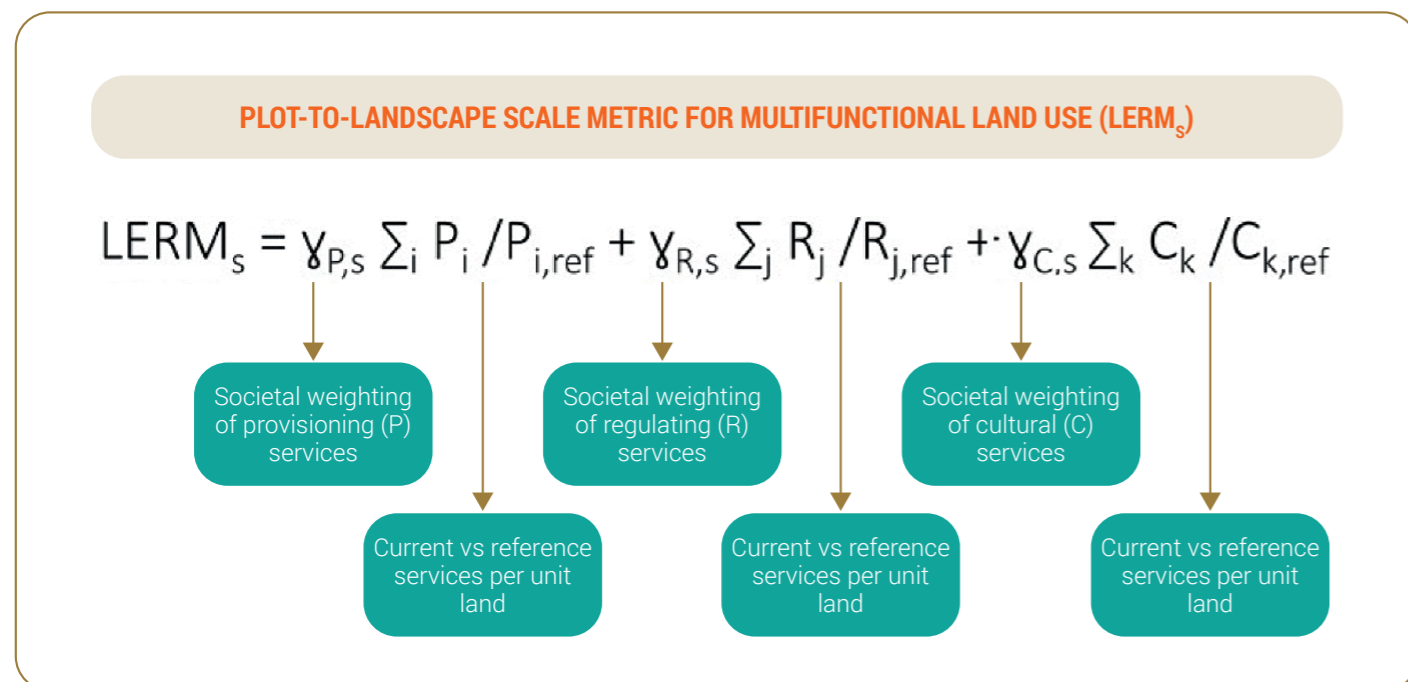
Five Levels of Transition to Agroecological Function at Agroecosystem and Food System Scales (Sinclair et al. 2019)



As a key objective is to generate evidence of what works at scale, there needs to be transparency, rigour and replicability in how the exemplar landscape develops.

Measure Landscape Scale Processes

There is a need to define the 'desired transformation' for your landscape and how to measure the extent to which it is being achieved.

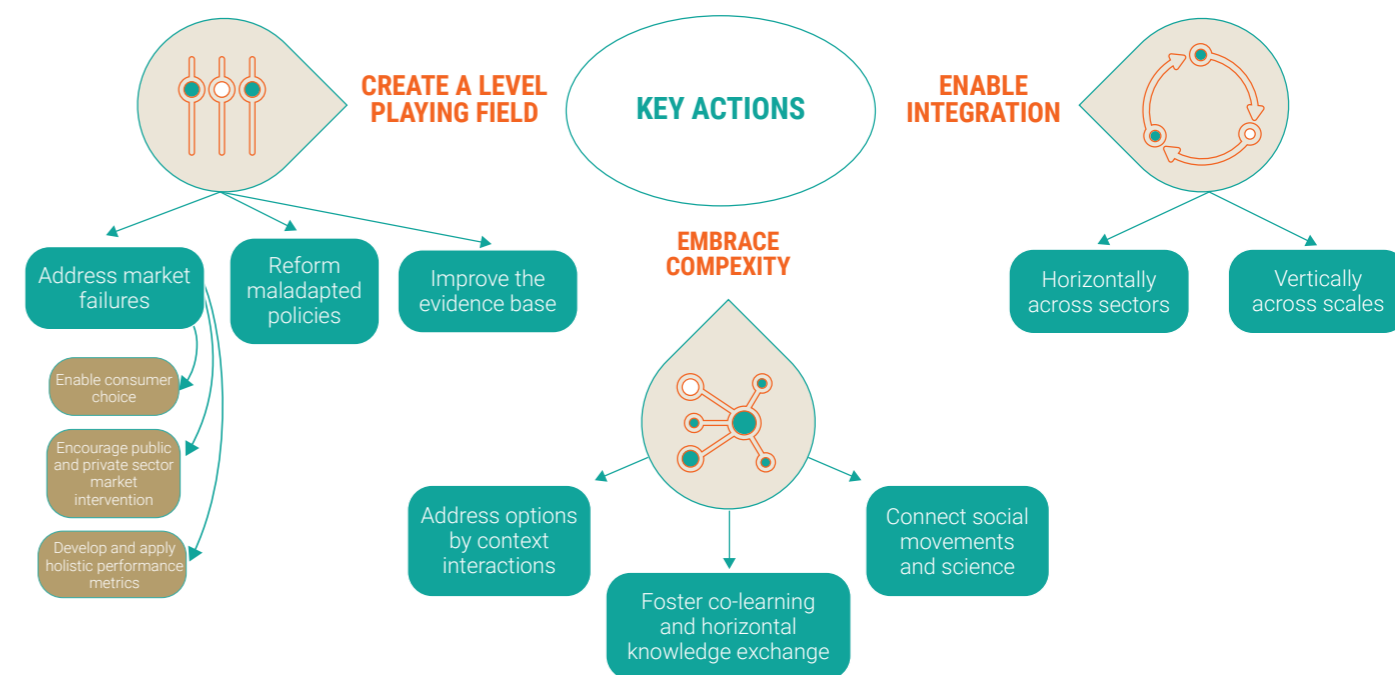


An example of landscape measurement (van Noordwijk, personal communication)

Locally appropriate agroecological practices clearly have potential to increase the resilience of livelihoods and enhance adaptation to climate change at field and farm levels across a wide range of contexts, often with significant mitigation co-benefits that might help to finance their establishment.

Their potential will only be realized, however, if action is taken across hierarchical levels to remove barriers to their adoption (see figure on page 23). These need to address market failures and reform policies that create perverse incentives, at the same time as

adopting comprehensive performance metrics for agricultural systems that factor in social and environmental externalities. A reconfiguration of the relationship between formal science and local knowledge, including bridging differences in outlook and emphasis between social movements and the scientific establishment, is required to foster co-learning among the diverse range of stakeholders involved in development and promotion of agroecological practice. Finally, integration of policy processes across sectors and scales is required to create an enabling environment that encourages adoption of agroecological practices (Sinclair et al. 2019).



Key Actions Required to Enable Adoption of Agroecological Practices at Scale to Build Resilience of Farming and Food Systems (Sinclair et al. 2019)



For Further Information:

Jackson, B., Pagella, T., Sinclair, F., Orellana, B., Henshaw, A., Reynolds, B., McIntyre, N., Wheeler, H. and Eycott, A. (2013). Polyscape: a GIS mapping toolbox providing efficient and spatially explicit landscape-scale evaluation of multiple ecosystem services. *Landscape and Urban Planning* 112: 74-88.

<https://www.sciencedirect.com/science/article/pii/S0169204612003532>

Pagella TF and Sinclair FL (2014). Development and use of a new typology of mapping tools to assess their fitness for supporting management of ecosystem service provision. *Landscape Ecology* 29(3): 383-399

<https://link.springer.com/article/10.1007%2Fs10980-013-9983-9>

Sinclair, F and Coe R, 2019. The options by context approach: a paradigm shift in agronomy. *Experimental Agriculture* 55 (S1): 1-13.

<https://www.cambridge.org/core/journals/experimental-agriculture/article/options-by-context-approach-a-paradigm-shift-in-agronomy/EE2BBFAA28E34D4C64C35B2CE29CA7A5>

Sinclair, F., Wezel, A., Mbow, C., Chomba, C., Robiglio, V., and Harrison, R. (2019). The contribution of agroecological approaches to realizing climate-resilient agriculture. Background Paper. Global Commission on Adaptation. Rotterdam.

<https://cdn.gca.org/assets/2019-09/TheContributionsOfAgroecologicalApproaches.pdf>



Feedback from workshop participants on what elements there are within a landscape





Case studies of landscape level interventions

A set of presentations on approaches to address land degradation, including interactive question and answers sessions to allow for a detailed baseline understanding of existing approaches. The proposed action research project can leverage and build off in the design and future implementation of climate resilient approaches.

History of Landscape Programs in India

- Ravindra, WASSAN

In 1994 Introduction of Inter-connected (Conservation, Production and Livelihoods) Watershed Programs

- Dispersed soil conservation to a landscape / watershed approach
- From mechanical structures to livelihoods
- From government department centred to community managed

In the implementation:

- » Engineering structures dominated
- » Biomass regeneration centred approaches did not get mainstreamed
- » Groundwater 'recharge' dominated rather than 'management'
- » Natural Resources 'development' but no governance and it was assumed that communities would manage resources
- » Maintenance of public assets is a serious issue
- » Poor livestock integration in the landscape approach

Landscape Level Initiative Examples

Navadhanya Crop System



Challenges

Seed availability, including phenotypes and duration

- » Inter-cultivation
- » Labour organisation
- » Harvesting practices
- » Aggregation and markets



Living Soils

- » Introduced living soil concept and creating awareness on soil health
- » A comprehensive approach integrating various sub-components under 'soil-fertility management'
- » Instead of dispersed activities, made them into an integrated action in a block of contiguous area of 10 to 25 ha
- » Unifying all the component budgets arrived at Rs.6000 per acre (Rs.15000 per ha) as admissible cost from APDMP with minimum 15% farmers' contribution
- » Convergence with MGNREGS for rest of the components
- » A basket of options in an integrated framework were presented to farmers; participatory plans being developed with farmers' choice

Conservation, production and livelihoods implications

- » Acceptance of the idea of 'diversification' in Agriculture Department
- » Decentralised planning
- » Mobilising farmers to accept allocation of land for trees
- » The operative environment of exploitative production systems overlaid on conservation
- » Issue of perverse incentives and price structures
- » Public and private extension systems are not in sync
- » Impact is to nullify conservation efforts
- » Mobilisation and gaining farmers consent is difficult
- » Sourcing investments is an issue
- » Larger political environment sees it 'politically unremunerative' / long-term
- » Grazing is major problem in survival of the trees - need a clear breakthrough as fencing is a temporary solution - community level grazing is one options. Tree-based fodder

Farmer level challenges

- » Tenancy and land holding and allocation of land and labour on diversified systems
- » No surplus at farmer level and farmers unable to invest
- » Labour availability, organisation and payment issues
- » Management load at farmer level
- » Technology in diversified systems (for example inter-cultivation)
- » Seed systems
- » Harvesting system and dealing with small amounts of multiple crops, which leads to storage and aggregation problems
- » Value chains are not developed for diversity



Discussion Insights

These approaches requires the sync of conservation, production and livelihood at farm, landscape and policy level. It also requires support system in term of implements, machinery, seeds, credits, labour, market value chains etc. Discussions highlighted how farmers always look for immediate returns, but economic models are so sound that they are ready to invest. It was highlighted there is a need to scale up these models at larger scale for helping farmers.

The key need is for economic incentive models for natural resource management.

“ It's better to link adaptation with incentives rather than penalties ”

“ We cannot go from farm to farm but need to look at incentives, initiatives and target landscapes. Need to help labourers be more productive and link with technology ”



Andhra Pradesh Zero-Budget Natural Farming – A Transformational Regenerative Agriculture System

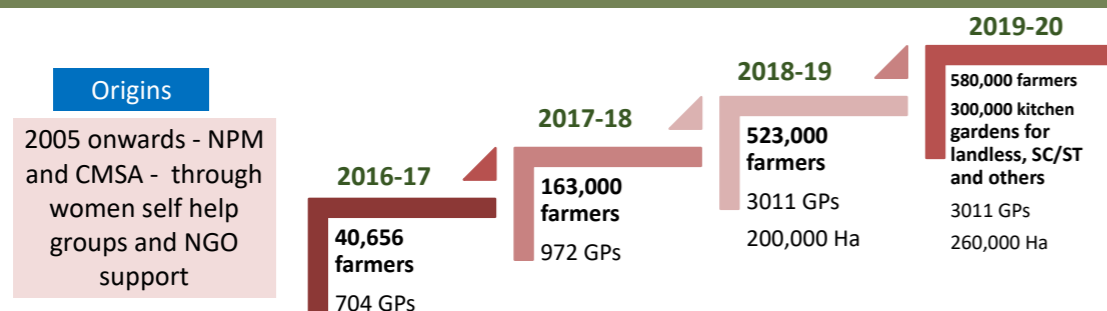
- T. Vijay Kumar RySS

Government of Andhra Pradesh (GoAP), Department of Agriculture (DoA) is implementing Andhra Pradesh 'Zero-Budget' Natural Farming (APZBNF) Programme, through Rythu Sadhikara Samstha (RySS) (corporation for farmers' empowerment). RySS is a not-for-profit organization established by GoAP. Zero-Budget Natural Farming (ZBNF) is a holistic alternative to the present paradigm of high-cost chemical inputs-based agriculture. It is very effective in addressing the uncertainties of climate change. ZBNF principles are in harmony with the principles of Agroecology. Its uniqueness is that it is based on the latest scientific discoveries in Agriculture, and, at the same time it is rooted in Indian tradition.



Mr Kumar presenting on the ZBNF

AP ZBNF Programme at a glance



Particulars	2019-20	Coverage
Number of Mandals covered	664	100%
Number of Gram Panchayats	3011	23%
Number of Women SHGs	1,61,296	22%
Number of Farmers enrolled	5,80,000	9%
Number of landless farm workers	3,00,000	
Total	8,80,000	

Coverage of farmers

- SC 17%
- ST 11%
- OBC 46%
- OC 24%
- Minority 2%

2019-20 Physical Progress at a Glance

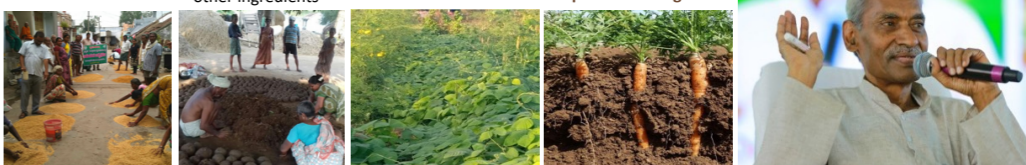
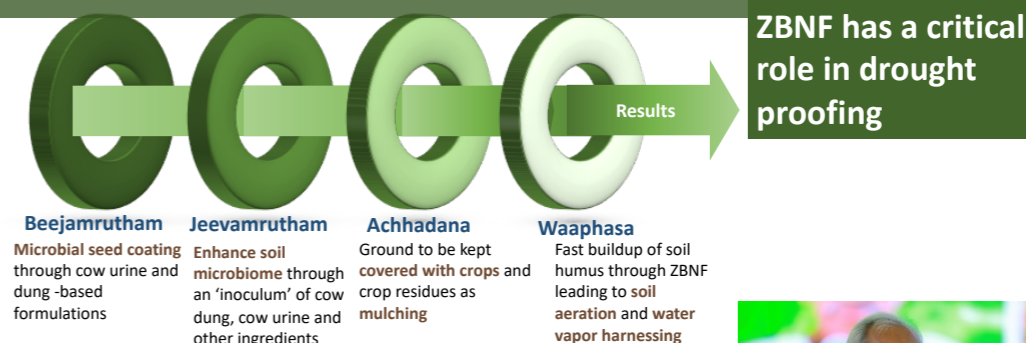
#	Details	Target	Achievement (Sept, 30 th)
1	Number of ZBNF Farmers	580,000	306,878
2	Landless Farmers growing Kitchen Garden	300,000	168,039
	Total farmers	880,000	474,917
3	Land Extent under ZBNF Ha	260,000	109,071

Amount in Crores

Scheme	2019-20 Allocation	Balance from previous years	Total Allocation	Received as on date
RKVY	75.00	40.03	115.03	- *
PKVY	138.72	56.66	195.38	33.00
APPI	28.30	-	28.30	13.40
Total	213.72	96.69	310.41	46.40

* Fund received to treasury, but not credited to Project account till Sept 30th.

ZBNF incorporates all the recommended best Practices for Climate Change Adaptation - Four Wheels of ZBNF



The 4 pillars of A.P Z.B.N.F

Government Commitment	Women SHGs Our strength – 90% rural households covered	Champion Farmers 1 per 100 farmers	ZBNF Knowledge Training and Capacity Building of farmer trainers
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Human-Mediated Digital Videos as Extension, ICT-enabled Tracking, Collective Action for Input preparation, Saturation

Independent Assessment by Center for Economics and Social Studies (CESS) Kharif 2018-19

1. Cost of cultivation has shown significant differences with ZBNF costs being lower than non-ZBNF costs across all crops
2. Yield differences are not significant between ZBNF and Non-ZBNF farms
3. Significant increase in net income for ZBNF farmers as a result of reduction in cost of cultivation
 - » ZBNF farms reported better soil health, crop health, resilience, economic empowerment of farmers and dignity of labour
 - » The report also mentioned that ZBNF has higher potential for expansion of extension services by way of increasing Community Resource Person's (CRP's) at the village level

The ZBNF Promise

- » Dryland crops can become assured crops, and even 2 crops can be taken
- » Cropping intensity to increase to 2
- » Fallows minimized



Vision

To double the cropped area



Participant insight

- » A key result has been addressing migration, 90% of farmers used to migrate and ZBNF has been creating opportunities in the village
- » The farmer who are inspiring others are the youth
- » Need more clarity on where the required water would come from?
- » Champion farmers are key to scaling up efforts

Natural Farming Fellow (NFF) Experiments

- Zakir Hussain RySS

Natural Farming Fellows (NFF) experiments have been implemented by RySS. A consolidated report of initial results from the NFF experiments for all districts was presented, this included an overview of the 10 experiments detailed below, results from the experiments and explaining deviations in experimental data.



Experiment 1

Sowing dates with broadcasting method

Experiment 2

Sowing dates with the line sowing method

Experiment 3

Optimum Seed rate

Experiment 4

Drava Jeevamruta foliar sprays versus Water sprays and their frequencies

Experiment 5

Minimum moisture required for germination and establishment (for Scare-Rainfall districts)

Experiment 6

Effect of Ghana Jiwamrut and mulch on germination, establishment and yield of crop

Experiment 7

Mulch Types and Quantities

Experiment 8

Ghana Jeevamruthum quantities and mulch proportions (Line Sowing)

Experiment 9

Ghana Jeevamruthum quantities and mulch proportions (Broadcasting)

Experiment 10

To study effect of tillage on soil health



Developing ZBNF 5-layered food forest under rainfed conditions in small landscapes in semi-arid regions of A.P

- Sharat RySS

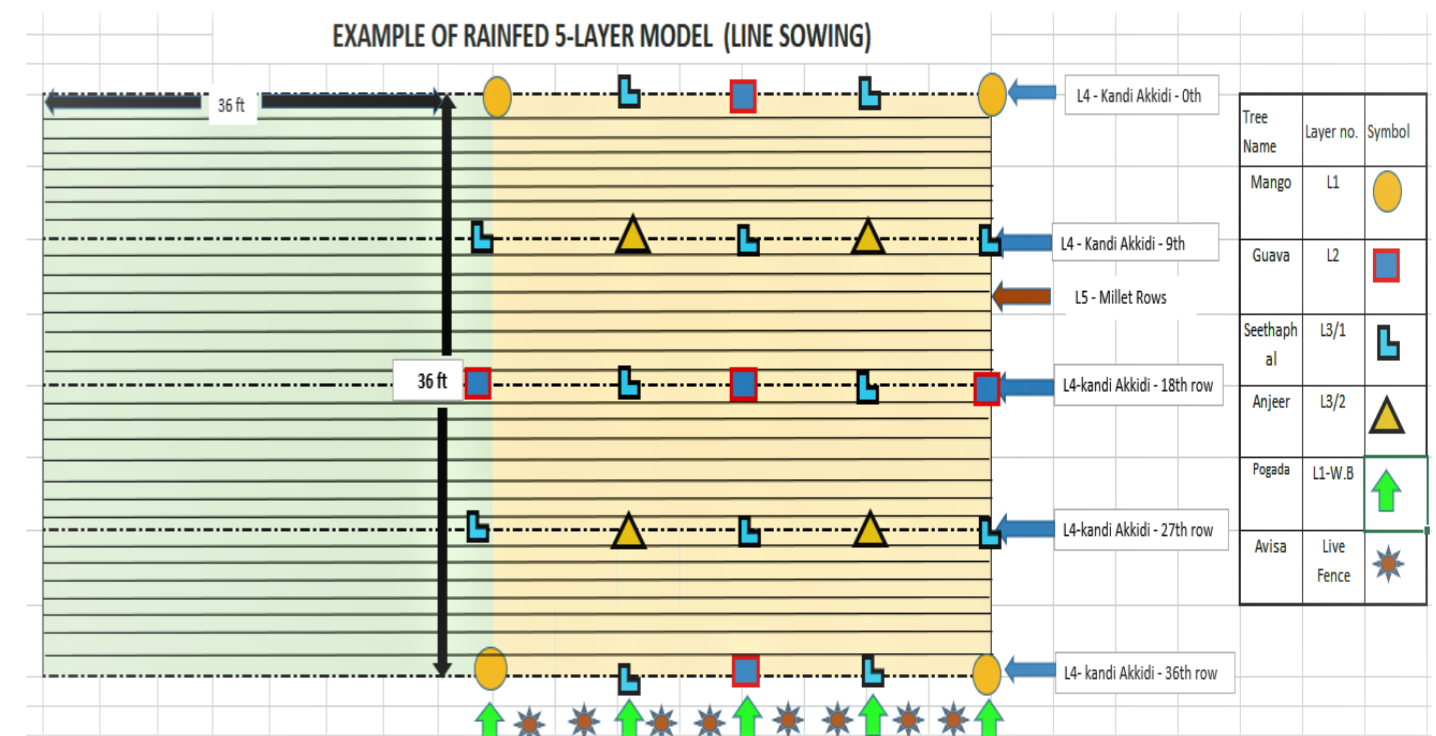
Work Underway to Test the 5-layered Approach were Presented

Explaining the Rainfed 5 - Layer Model

Mimics a forest ecosystem

- » Layer 1 - big tree
- » Layer 2 - tree
- » Layer 3 - bush / shrub
- » Layer 4 - small plant
- » Layer 5 - creeper

Example of Rainfed 5-layer Model (Line Sowing)



Benefits of 5 layer plants in dry sewing

- » Afforestation is done with minimum investment
- » Annuals and Perennials can grow together
- » Sustainable income for the farmer
- » Permanent drought proofing in areas like Rayalaseema Districts
- » More rains as the trees grows
- » Zero maintenance after a few years
- » Huge amounts of carbon is sequestered
- » More wealth is created in the villages with less capital investment
- » Biodiversity at farm level induces soil health



Average cost per acre

- » Land preparation and input - Rs.25,000/-
- » RFSA works Rs.20,000/-
- » Plant costs Rs.25,000/-
- » Total cost per acre Rs.70,000/-



Key Insights

On the 5 layers system from the presentation

- » The trees can also produce mulch
- » 5 layer system can add biomass
- » Need to have crops that are adapted to low light niches - under trees
- » The distance is 30m to allow the cereals and pulses and vegetables to be grown underneath
- » Investment access 70,000 Rs needed per acre
- » Contours are a challenge to make in some situations

Research into Zero Budget Natural Farming (ZBNF) in Andhra Pradesh, India

Research engagements underway by the University of Reading were presented at the workshop via a remote presentation.
- Chris Collins University of Reading



Key objectives of the research include:

1. Understanding whether ZBNF works, how and why it is adapted to suit different contexts, leading to knowledge that can accelerate scaling up and out
2. Demonstrating the dynamics and outcomes of ZBNF of a) the innovation system b) the socio-economic outcomes and c) the environmental outcomes
3. Understanding how and why the extension process promoting ZBNF works (and hence leads to adoption) leading to knowledge that can inform the scaling up of the approach
4. Predicting and adjusting to possible changes in performance as ZBNF is adopted for longer periods of time and at larger spatial scales

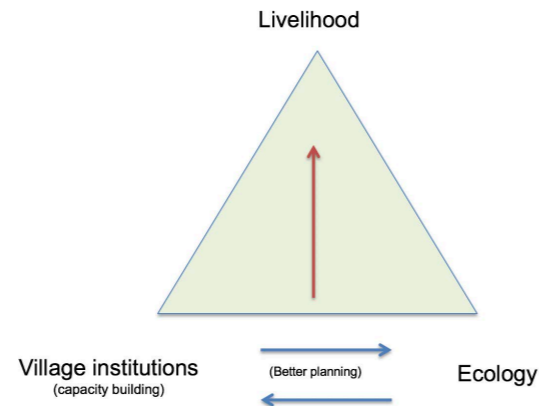


Key learning from FES (Foundation for Ecological Security) working in N P Kunta, Ananthapuramu

- Saneesh FES

Approach

- » Management and governance at the local level (institutions, capacity building)
- » Secure tenure over commons
- » Ecological restoration of commons
 - Afforestation
 - Harvesting and re-charge of aquifers to improve biomass and water



Key insights from presentation

- » Reduced use of fertilisers and pesticides resulted in high density of butterflies and birds
- » Protected area resulted in good management of biomass, carbon stock, fodder and fuelwood biomass
- » 30 species of trees in the watershed - 15 families
- » From 2009 to 2018 the species composition has really been changing/shifting - number of invasive has increased and species richness has decreased
- » The forest classification is not relevant for Anantapur

Valuation of the ecosystem – social return on investment (SROI)

The highest change perceived by the communities subsequent to the initiatives included

- » Higher agricultural productivity, improved water availability, improved fodder and fuelwood availability, improved resource governance and better access to programmes and schemes
- » Strong institutions and restoration efforts (by leveraging MGNREGA) contributed to improved biomass (fodder and fuelwood) and carbon stock, the value of which can be estimated to be at least 8.9 lakh rupees per village (over a period of five years)
- » Higher participation of women and youth in planning and decision making processes in most of the locations
- » Restoration measures coupled with promotion of sustainable agricultural practices has led to higher agricultural production and enhanced food security of households for additional 3 months
- » 1.01 TCM water saved per farmer annually due to adoption of water efficient agricultural practices
- » Agricultural practices such as seed treatment, seed varietal replacement, line sowing, gypsum application, bund cropping and mixed cropping have been replicated by 1.5 to 2.3 times the number of farmers with whom such practices were demonstrated
- » Based on social return on investment method it indicates that we did not have good control on natural resources

Areas for improvement

- » Commoning water - More than 60% of the village communities during the FGD shared that there has not been much efforts towards commoning water
- » Need for more efforts to improve the overall functioning of MGNREGA (in terms of wage days, wage rate, on-site facilities, securing community's rights over the assets created and rules and regulations for better management of assets created)
- » While there is an increasing realization amongst the farmers regarding the impacts of use of chemical fertilisers and pesticides on soil health, water quality and human health, 62% of the villages perceived that the use of chemical fertilisers and pesticides has increased
- » Due to conversion of land to other land use there is problem of grazing
- » Commonlands are managed by farmers/communities



Key conservation concerns in the study area identified

1. Soil erosion
2. Diversion of land use
3. Decreasing diversity which impacts biodiversity
4. Increased forest fire
5. Grassland degradation
6. Depleting surface and ground water



Agroforestry based watershed management and enhancing the water availability in dry areas

Dr. Ramesh Singh, Principal Scientist (Soil & Water Cons. Engg.), ICAR-Central Agroforestry Research Institute, Jhaansi, UP

Aim of agroforestry based watershed management

- » To enhance water availability through rain water harvesting (RWH) and optimize productivity and biomass production
- » To restore ecological balance in degraded and fragile eco-system through integrated watershed development (IWD) interventions and agroforestry
- » To create sustained employment opportunities
- » To establish a site for learning

Soil and water conservation measures examined

- » Checkdam
- » Low cost checkdam
- » Khadin
- » Gabion
- » Spillways
- » Bunding
- » Bund Stabilization with Perennial Grass
- » Rainwater harvesting



Agroforestry and crop trials

- » Boundary plantation, Guava Based Agroforestry (AF), Aonla Based AF, Citrus Based AF, Live fence, crop demonstration, SHGs
- » 15-20 different tree species being trialled but only 2 species did well (teak and Acacia senegal)

Impacts

- » Improved provisioning services through cultivation of permanent Rabi Fallow
- » Improvements in household income
- » Provisioning services through improved regulating services-bund stabilization and fodder production
- » Advocating for 30% tree cover after seeing improvement of the crops/water balance

Recommendations

- » Series of scientifically and technically sound RWH structures across the drains in conjunction with agroforestry systems in a watershed results in drought proofing with enhanced and sustained rural livelihoods
- » Even with deficit rainfall by about 32%, water crisis in drought prone Bundelkhand region can be averted and can be adopted in other watershed areas



Scaling up of AF & NRM Activities to Combat Desertification



District	Block	Villages
Central India		
Lalitpur	Talbehat	Pura-Khurdh, Birdha, Jhawar
Jhansi	Babina	Imiliya, Rajapur, Amarpur
Jalaun	Maheva	Noorpur, Naserpur, Sadhara
Hamirpur	Sumerpur	Saukhar, Nazarpur, Karimati
Mahoba	Kabarai	Chandpura, Nathupura, Baniyatata
Banda	Thindwari	Benda, Amlikaur, Jauharpur
Chitrakoot	Karwi	Rowli-Kalyanpur, Rasin
Eastern Odisha		
Bolangir	Belpada	10 Panchayat
Nuapada	Nuapada	20 Panchayat



Key Insights and Discussion during the Presentation

- » Experience on managing the water and crops in various landscapes means many useful techniques that can be applied in Anantapuramu
- » Enhancement of evapotranspiration related to higher productivity
- » In Anantapuram, since land is mostly private, there was a positive response on the potential to increase tree cover on cropland?
- » Why haven't these techniques been scaled
- » To get economic investments - some initial investment is required
- » Optimal tree density hypothesis- that drives water into the base flow
- » Technical capacity is missing to implement the innovations
- » Combination of relevant technology and appropriate social adaptations is important - a reason why we have not scaled
- » Water monitoring and water demands - 1990s
- » Many of the innovations depend on biophysical conditions



Reclamation and Rehabilitation of degraded lands through Agroforestry

- Dr. Shiv Dhyani ICRAF

A presentation was given to describe agroforestry, laying out key definitions of agroforestry as 'agriculture with trees' and the practice and science of the interface and interactions between agriculture and forestry, involving farmers, livestock, trees and forests at multiple scales.

Land Use Category	Area (Sq.Km)	%
Compact (Continuous)	55.51	0.29
Sparse (Discontinuous)	32.18	0.17
Vegetated / Open Area	19.88	0.10
Rural	244.76	1.28
Built Up	426.18	2.23
Kharif Crop	7934.17	41.47
Rabi Crop	1769.29	9.25
Zaid Crop	0.49	0.00
Cropped in 2 seasons	2362.74	12.35
Cropped in more 2 seasons	3.95	0.02
Fallow	1285.45	6.72
Plantation	76.24	0.40
Agricultural Land	13432.34	70.21
Forest	1802.42	9.42
Waterbodies/other	505.21	2.65

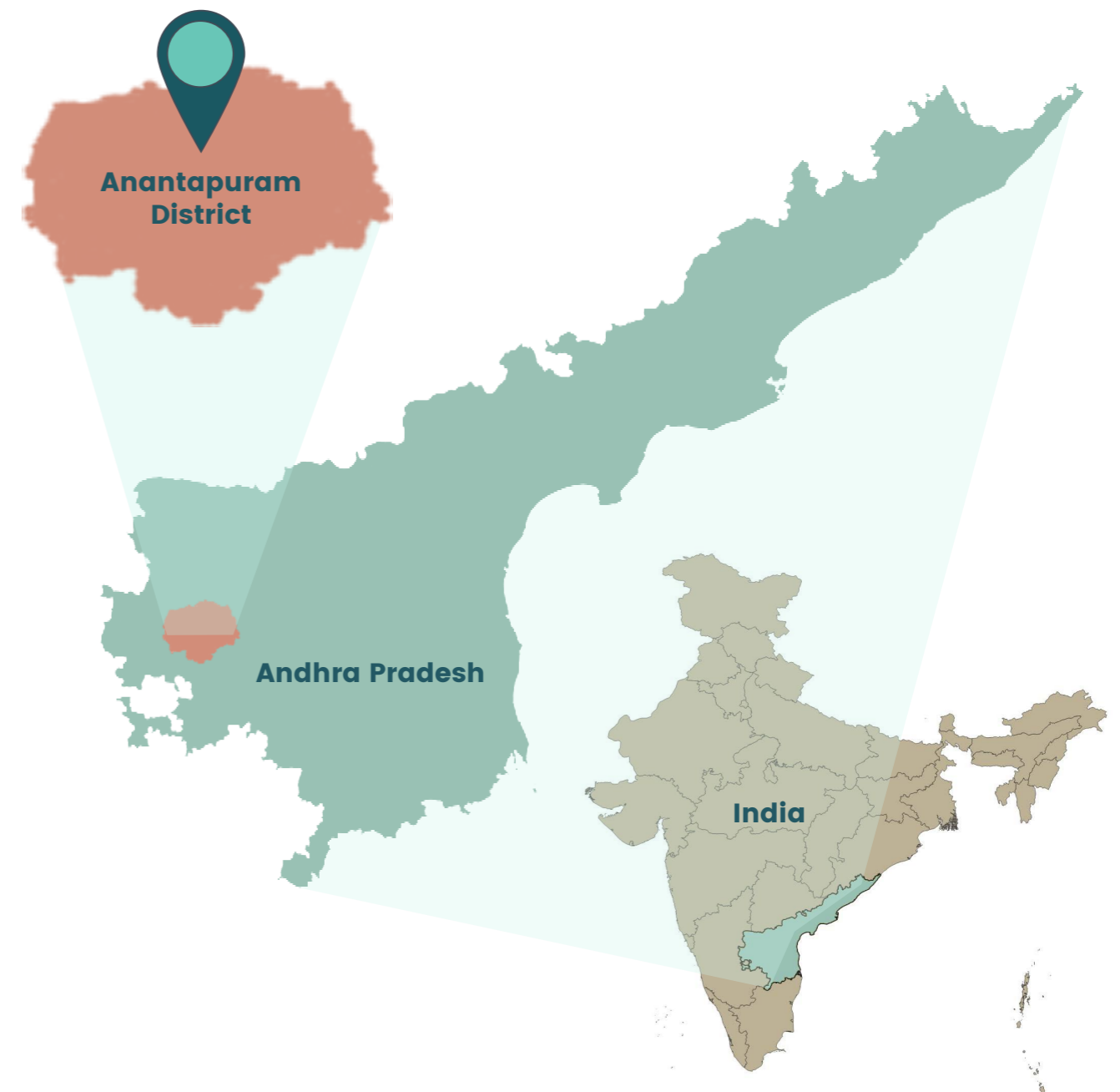
Land Use Category	Area (Sq.Km)	%
Industrial	34.84	0.18
Mining - Active	0.32	0.00
Mining Abandoned	0.07	0.00
Quarry	38.61	0.20
Salt affected land	264.97	1.39
Ravinous land	0.28	0.00
Dense	622.42	3.25
Open scrub	1032.21	5.40
Riverine	4.47	0.02
Barren Rocky/Stony waste	518.14	2.71
Wastelands	2442.48	12.77

Agroforestry intervention potential

- » Restoring soil fertility with trees
- » Nitrogen fixation by many leguminous trees and in few non-leguminous species (e.g. Alder and Casuarinas)
- » ICRAF research has identified suitable indigenous trees, without risk of promoting invasive exotics
- » Improved nutrient retrieval by tree roots, including through mycorrhiza and from lower horizons
- » Providing favourable conditions for the input of nutrients from rainfall and dust
- » Control of erosion by combination of cover and barrier effect especially the former
- » Fodder trees with legume crops nutritious fodder

Description of the candidate exemplar landscape and participatory review of available data and information

Location of Candidate Landscape



Anantapuram District, Andhra Pradesh

Anantapuramu District Agro-ecological Changes in Anantapuramu District Over the Last 60 Years (1960 - 2019)

- Dr. Malla Reddy

1960

- » Two types of droughts occurred generally;
 1. Agriculture drought was partial, crops were under rainfed agriculture but crop failure was rare due to high crop diversity
 2. Hydrological droughts; 3 droughts every 10 years was the average
- » Hydrological droughts affected water in the wells and tanks and consequently the area under irrigation

- » One good crop year produced food sufficient food for two years
- » Consecutive droughts cause food shortages, referred to as famine
- » Small ruminants - sheep and goat in small numbers like 10 to 30 by most farmers, added to farmers income
- » Mango and tamarind trees added to income
- » Forest based livelihoods like honey, beedi leaf, leaf plates, brooms timber etc., added to farmers income
- » In famine years gruel centres subsidized food and road works, well deepening works were taken up to create employment
- » PL 480 - supply of wheat oil, milk powder for children and mothers was implemented

- » Purpose of farming is subsistence and survival. It is rural culture where traditional rural culture predominates
- » Production of food is primarily for home consumption
- » Wage payment was done by grain
- » Services like dhobi, barbers, tanners etc., were paid by grain
- » Bartering was also practiced
- » Cash needs and transactions are at very low level!

- » Natural Farming paradigm both under rainfed and under irrigation
- » Farm yard manure, green manure, cattle penning and deep ploughing
- » Low incidence of pest and disease occurrence of pests and diseases, biological control of pests and diseases
- » Labour intensive agriculture
- » Farming system included small ruminants, cows and buffaloes and also tree crops like tamarind and mango, date palm and custard apple

2019

Drought & coping mechanisms

- » Agriculture droughts are common and large impact due to mono-cropping practices
- » 17 agriculture droughts in past 2 years
- » 17 agricultural droughts in the past 20 years resulting in borewell depletion
- » The monsoon is erratic and unpredictable and there is a culture of 'gambling' with the rains both under rainfed and irrigation

- » There is no buffer and one severe drought has implications
- » Most families have no livestock or trees and depend completely on annual crops
- » There is a change in livestock management and less than 100 people, have small ruminants
- » Dairy production is carried out by some families
- » Mango and Tamarind trees are owned by a few families
- » A common trend is for rainfed farmers and farm labours to migrate to cities to seek employment in construction or domestic work - termed 'distress migration'
- » MGNREGS and farm employment helped to cope with this trend
- Irrigation under borewells and GR paradigm is a revolution in coping with droughts. This is unsustainable as some farmers prospered but many were bankrupted and some committed suicide
- Ground water depletion and GR paradigm and heading to a disaster in the district

Farming & Agriculture

- » Purpose of farming is earning money and quickly
- » Market economy and market driven
- » Payment for wages and services is normally in cash
- » Receipts of payments are in cash only

- » Mostly Green Revolution paradigm
 - » ZBNF is in the beginning stage
- Under irrigation:**
- » Use of chemical pesticides and fertilisers is normally higher than required
 - » Some application of farm yard manure done
 - » High incidence of pests and diseases
 - » Intensive farming (2 or 3 crops in a year)
- Under rainfed conditions:**
- » Use of organic or chemical fertilisers is low
 - » Use of chemical fertilisers and pesticides is low
 - » Mechanised farming both under irrigation and rainfed

1960

- » Food, shelter and clothes were the basic needs, pursued by most farmers
- » The need for cash was minimal, it was only required for utensils, spices, coffee, tea, sugar / jaggery and functions
- » Minimum needs focused on health and education

- » 90% of 10 lakh ha cropped area was under rainfed conditions
- » 15-20 types of crops were grown: consisting millets, pulses, oil seeds, flowers, vegetables, spices. (Coriander, Sesame)
- » No mono crop, only inter crops / mixed crops at landscape level and at each holding level also
- » Vegetation in the cropped areas like field borders existed - pongamia, custard apple, tamarind, mango etc

- » Rainfall at 550 mm
- » Ground Water Levels: Sub-surface from 10 feet to 35 feet below the ground levels
- » Area under irrigation was approximately 1,34,000 ha.

- » 5 lakh ac of RF with thick to moderate vegetation
- » 5 lakh ac non-RF hillocks with sparse vegetation and grass cover
- » Farm boundaries with trees, like tamarind, pongamia, custard apple etc
- » Tree diversity with fruit, timber, fiber, fodder, medicinal, leaf plate, beedi leaf, grasses etc
- » Wild life existed and lived in forest areas
- » Honey bees, birds of different kind existed

Basic needs

Agro-biodiversity

Water & Biodiversity

- » Driven by consumerism
- » Driven by the greed for cash
- » Health and education are top priority as basic needs
- » Motor cycles, TVs, watches, cell phones, cooking gas etc have all become essentials
- » Status plays a strong role, with events like marriages and festivals

- » 85% of 10 lakh ha cropped area is under rainfed conditions
- » Limited to 4 or 5 varieties of crops are grown: groundnut, red gram, castor, jowar, Bengal gram and cotton
- » 95% of the cropped area is mono-crops
- » Mono-crop of groundnut, inter-cropped scantily with red gram occupies 80% of the cropped area
- » Red gram and castor are emerging as second and third most prominent main crops after groundnut in recent years

Rainfall remains same at 550mm but pattern changed (< rainy days, more dispersed to summer and winter)

Ground water:

- » Open wells dried up completely
- » Tanks are getting filled once in 10 years!
- » Seasonal springs have dried up completely
- » Declared as over exploited and dark zone
- » Borewells are drilled up to 500-1000 feet but no water is found
- » Estimated 260,000 borewells functioning (carrying capacity is only 70000)

Area under Irrigation:

- » **Borewells** - Fluctuating area of approximately 160,000 ha.
- » TBHLC -Approx 25,000 ha fluctuating areas of 185,000 ha

- » 2 lakh acres of RF with moderate and poor vegetation
- » 3 lakh acres with scanty thorny bushes
- » 5 lakh acres with no vegetation, eroded hillocks & sheet rocks
- » Tree diversity is very minimum
- » Wildlife habitat is being destroyed and wildlife are moving onto croplands in search of habitat. Increased extinction such as the Great Indian Bustard

2019

Anantapuramu District is severely affected by **climate variability** and the climate crisis and representative of both the historical and future trajectory of Indian agriculture and development. The average **annual rainfall is less than 600 mm and vegetation cover has markedly** reduced over the last several decades exacerbating progressive land degradation, negatively impacting erosion, livelihoods and biocarbon in the soil. To exacerbate matters further, the district is now peppered with tube wells pumping water at non-replenishable levels from the deep.

Although ground water levels have not yet dropped as low as those in the Northern Gangetic plain, they are approaching critical levels. The district is characterized by nomadic livestock holding. The state of Andhra Pradesh is making an effort to industrialize this largely rural district, for instance Kia Motors has recently set up an automotive manufacturing/assembly facility in the district, only increasing pressure and threats on ecosystem services in the local area.

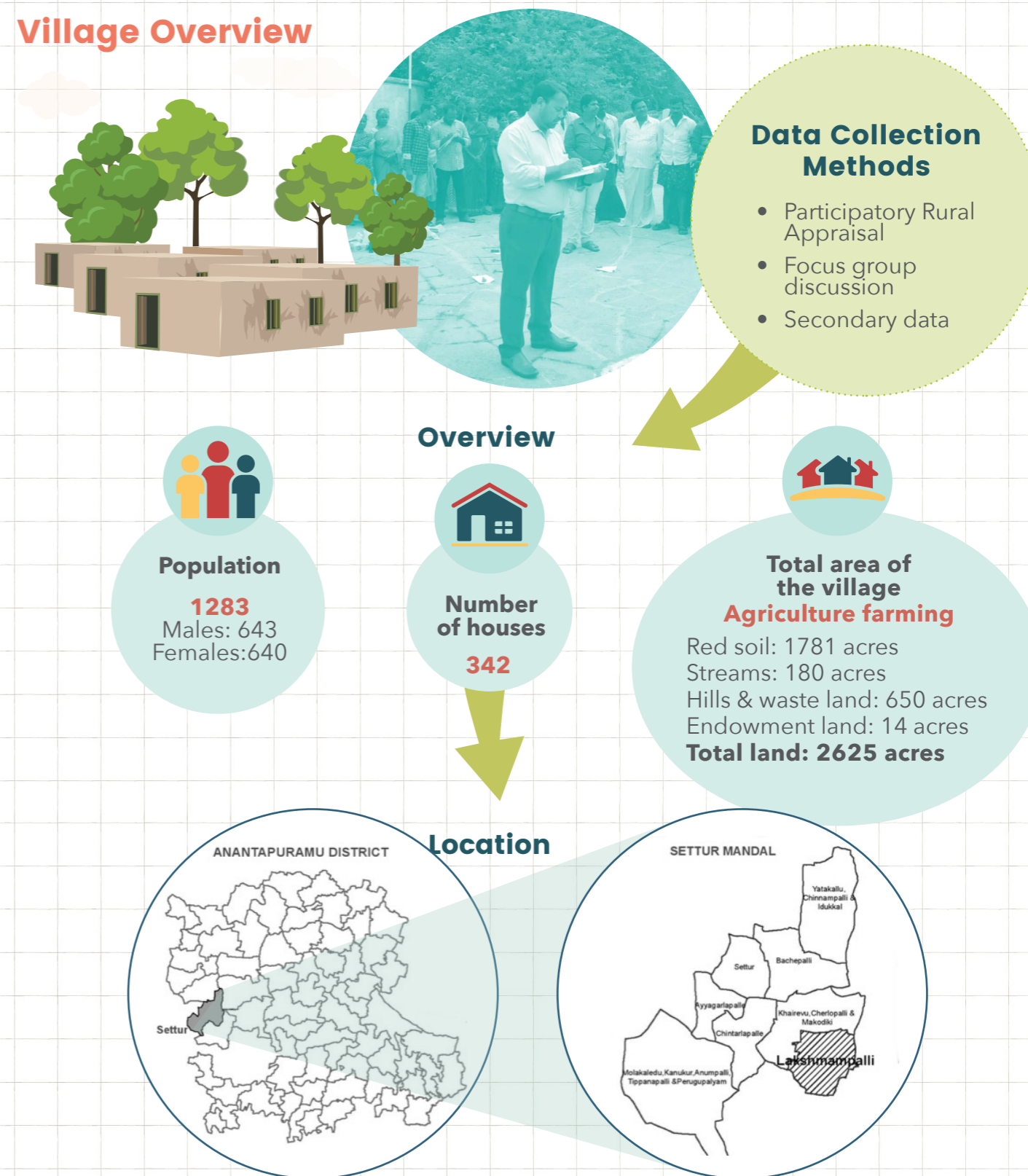


Description of Candidate Landscape focus - Yerraborepalli Village

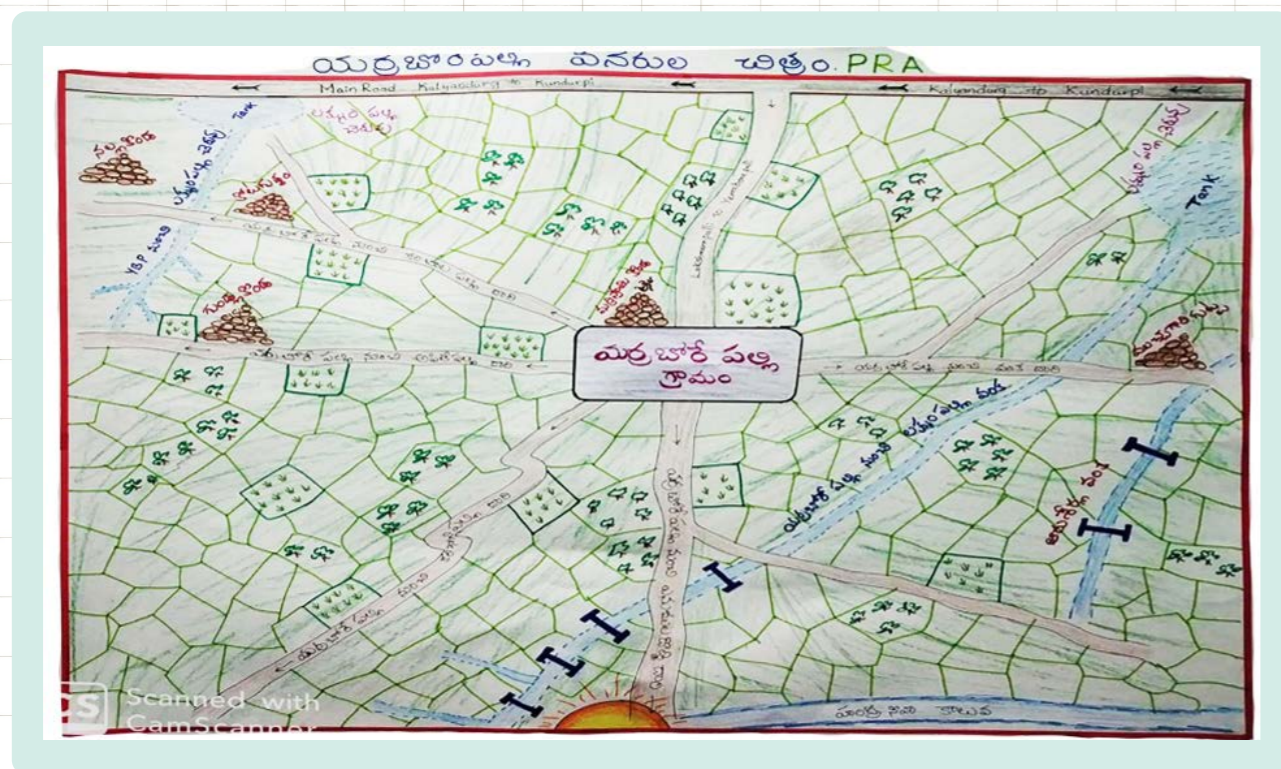
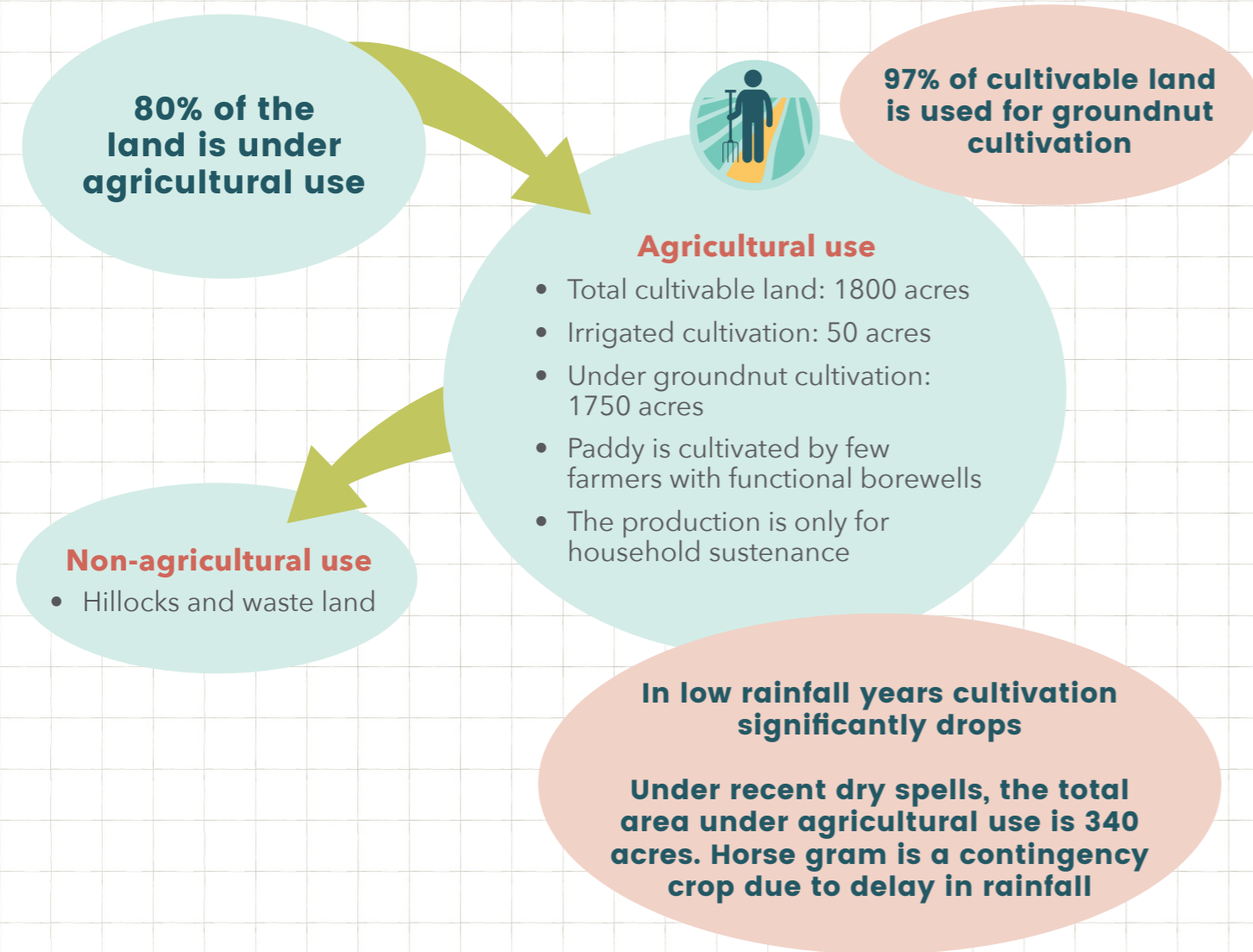
Landscape Analysis of Yerraborepalli

Prior to the workshop, a detailed landscape analysis and research visit to Yerraborepalli was carried out. This infographic highlights the key findings of the analysis that formed the foundation of the workshop discussions.

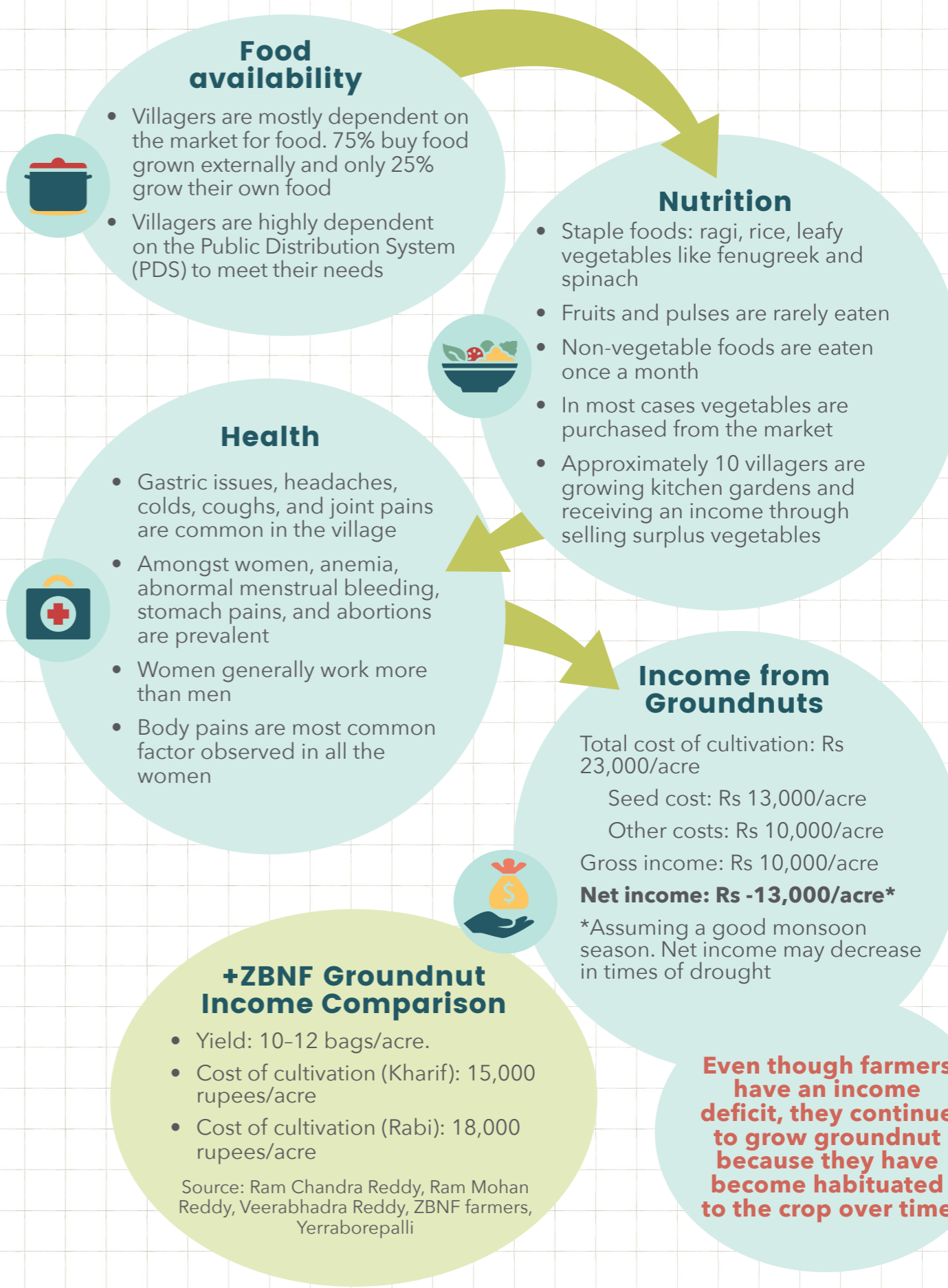
Village Overview



Land Use Overview



Socio-economic Status



Agriculture and Livestock Production

Tenure

- For rainfed fields, the lease is approximately 2,500-5,000 rupees/acre/year
- For a field with a functional borewell, the lease is approximately 15,000-20,000 rupees/acre/year
- Land tenancy is not very popular due to severe drought



Social capital & Social Map

- There are only three farmers groups and all are non-functional
- Farmers have not incorporated any new practices and there is no communication with the farmers of the other villages
- 24 SHGs are in the village
- Women groups are strong, with regular thrift activity



Livelihood status

Profession	Within Village
Cement work	10
Auto	3
Tractor work	6
Tailors	4
Tea stall	1
Kirana shop	6
Other jobs	3BDS, 1 person Lot mobiles, 1 Private teacher, 1 person
Business	1 Chemist



Agriculture & Crops



Groundnut Yields

- On average farmers yield 5 bags/acre (1 bag weighs up to 40kg)
- Pre-drought yield used to reach up to 6 bags
- In the last 10 years, only twice has the village received normal rainfall and good yields
- During droughts, yields have dropped to 2-4 bags/acre and, in worst case scenarios, a half bag/acre
- The yield of latest season was around 1-2 bags/acre

Historical - 20 years ago	The last 10 years
Fox tail millet Pearl millet Little millet	Groundnut, Inter crop: Pigeon pea Horse gram Paddy in fields with functional borewells Orchards

Livestock

- Total of number of livestock in the village is 100, out of which 18 are buffaloes
- There are about 500 ruminants (goats and sheep) in the village
- All livestock products are used for household consumption. There is no surplus for income generation. (Source: Group Discussion with farmers, Dated: October 30, 2019)



Type of livestock	Total number	Families
Ox / bull	22	11
Cows	74	10
Sheeps / goats	500	20
Chicks / poultry	520	160
Buffaloes	12	6

Input use

- Farmers shared that over the years farm fertility has decreased
- For each acre of groundnut, farmers use 3 bags of fertilisers and 2-3 sprays of pesticides
- Farmers use only 1 tractor load of FYM per acre of land, per year



Bio-physical Status

Water resources

- There are about 70-80 open wells in the village. All are silted up.
- 150 borewells are present, out of which only 10 are functional
- 3 seasonal streams pass through the village. Water is available in the rainy season
- Villagers depend on water from tankers for drinking water.



Source	Number
Bores	150 (10 working)
Open wells	44 (dried)
Working wells	0
Tanks & canals	3 water tanks 2 streams
Farm ponds	85, lined-3 AF Ecology
Mineral water plant	There is no purified drinking water



Drought vulnerability

- Anantapur district is in a scarce rainfall zone that receives less than 600 mm annual rainfall
 - For every 10 years of drought there is one year of normal rainfall
 - In the last month the district experienced a 46% deficit in rainfall
 - This month the district received good rainfall, now +15% average rainfall
 - The village does not have good coping mechanisms in terms of moisture management
 - They do not follow contingency planning (except growing Horse gram)
 - Out of 9 small check dams built on three streams, one is not functional
 - There are about 35 farm ponds of which only 2% are lined with cement. All ponds are filled with silt and thus not functional
 - There is some water conservation through the construction of bunds across the slope
-
- Drought conditions have led to migration in the village. About 40 families moved to Bangalore. Seasonal migration for labour work is also common.
 - Both male and female household members perform 6-7 days of labour a month in order to meet their day-to-day expenses
 - Families share labour in order to cope with the growing cost of production
 - MGNREGA is the major income source in the village
 - Every household has MGNREGA cards that allow them to work as labourers in village-level works



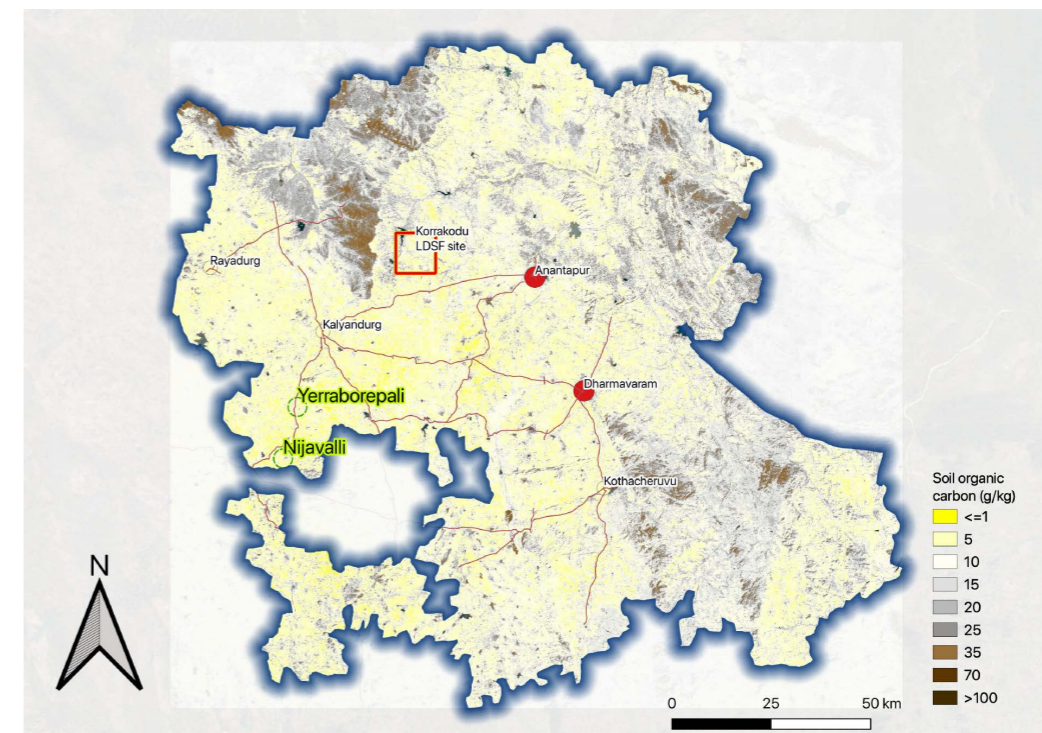
Gaps that were Identified from Participant Feedback of Presentations

- » Where is the water coming from and water budgets
- » Public distribution (PDS)
- » Law and order
- » Small children and schools
- » Understand the willingness for the community to take up new practices
- » Barriers to adoption (ZBNF/agroforestry)
- » Reasons for low yields (beyond water)
- » Watershed boundaries and hydrology
- » Seed supply system
- » Young women perspective
- » Willingness to engage
- » Food habits

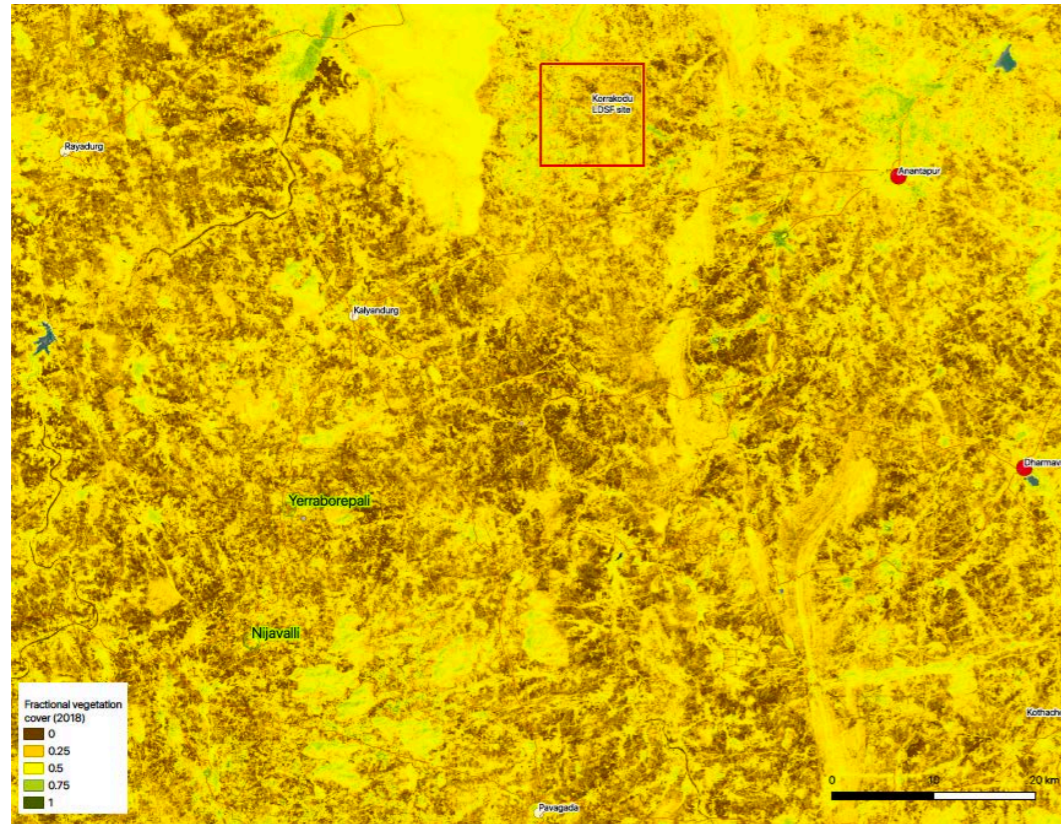
Biophysical data on the candidate landscape

Mapping Biophysical Traits of the Landscape

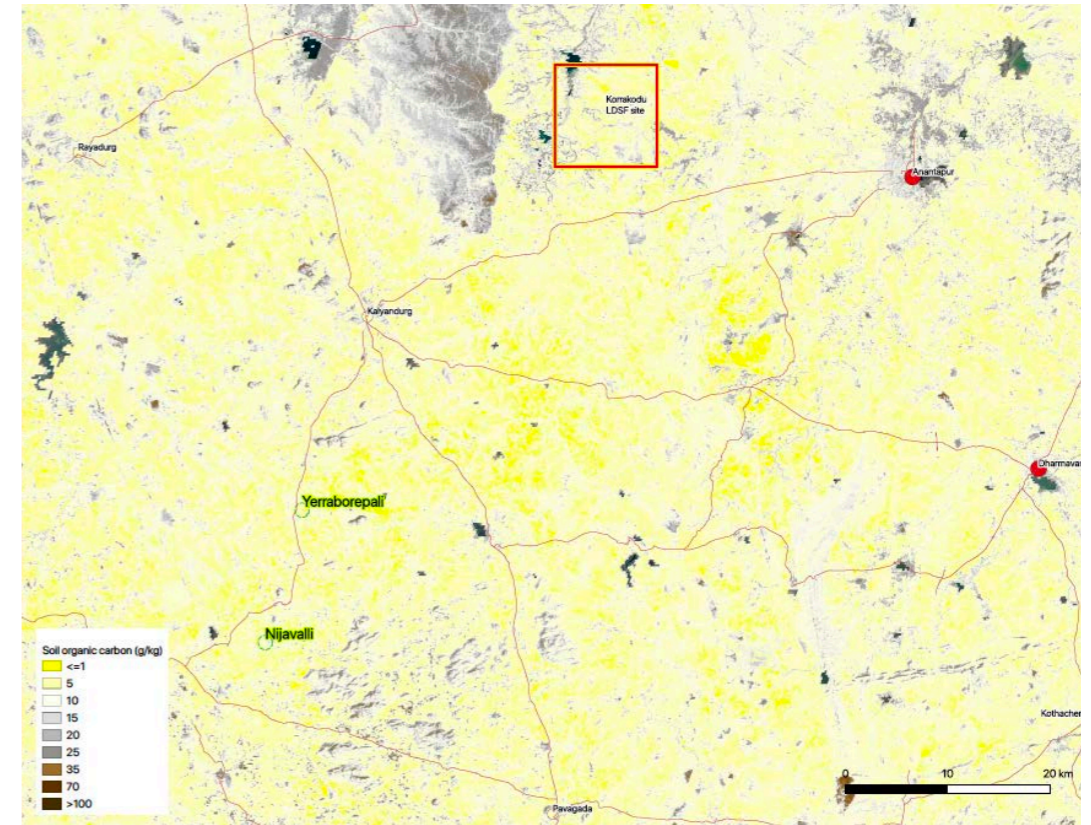
In preparation for the workshop the ICRAF geo-science lab carried out analysis and produced maps on soil organic carbon, soil pH, soil erosion and vegetation cover for the proposed exemplar landscapes. During a facilitated session on the data and evidence wall, participants were able to interact with the maps and discuss implications related to the design of the candidate practices. This spatial analysis done prior to the workshop allowed for grounded reflective discussions during the workshop amongst the participants.



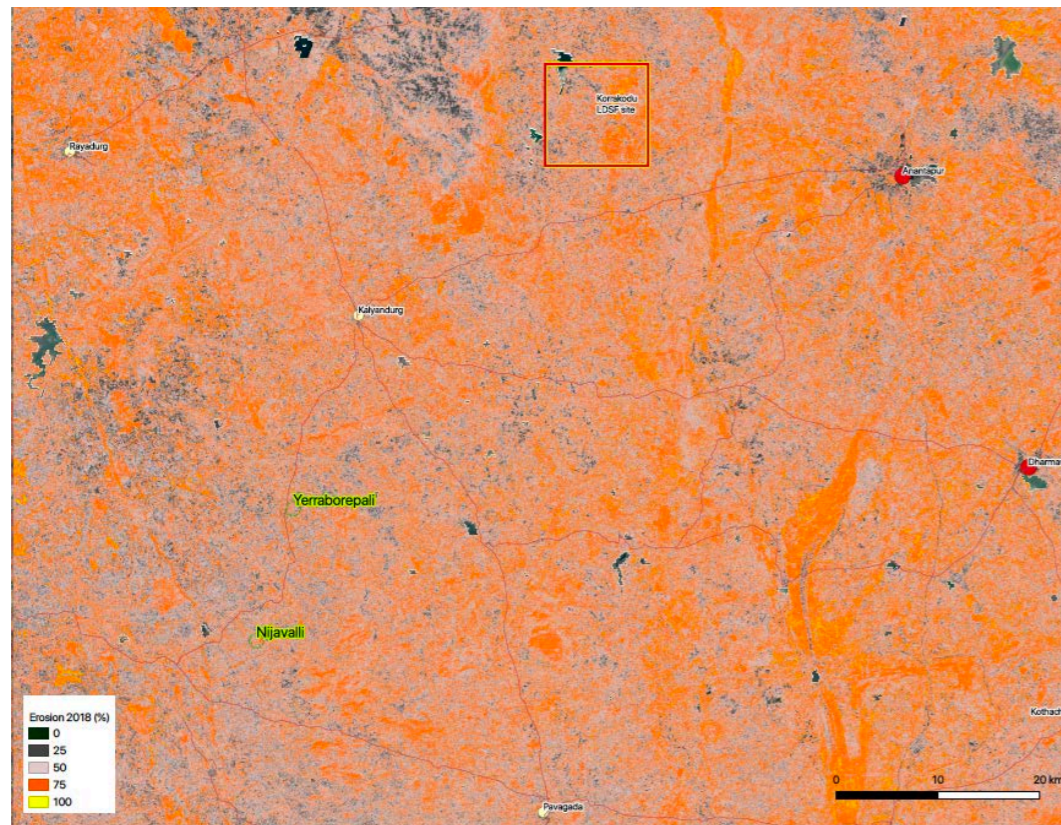
Soil organic carbon in the district



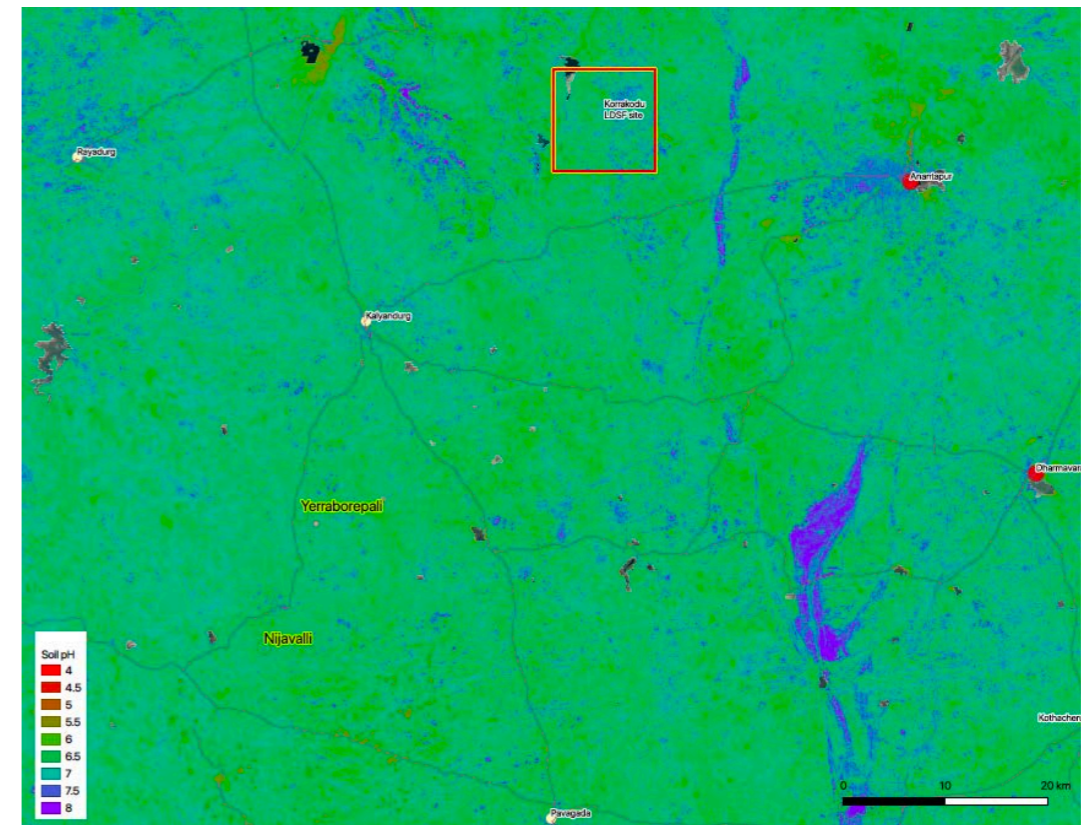
Fractional Vegetation Cover



Soil Organic Carbon

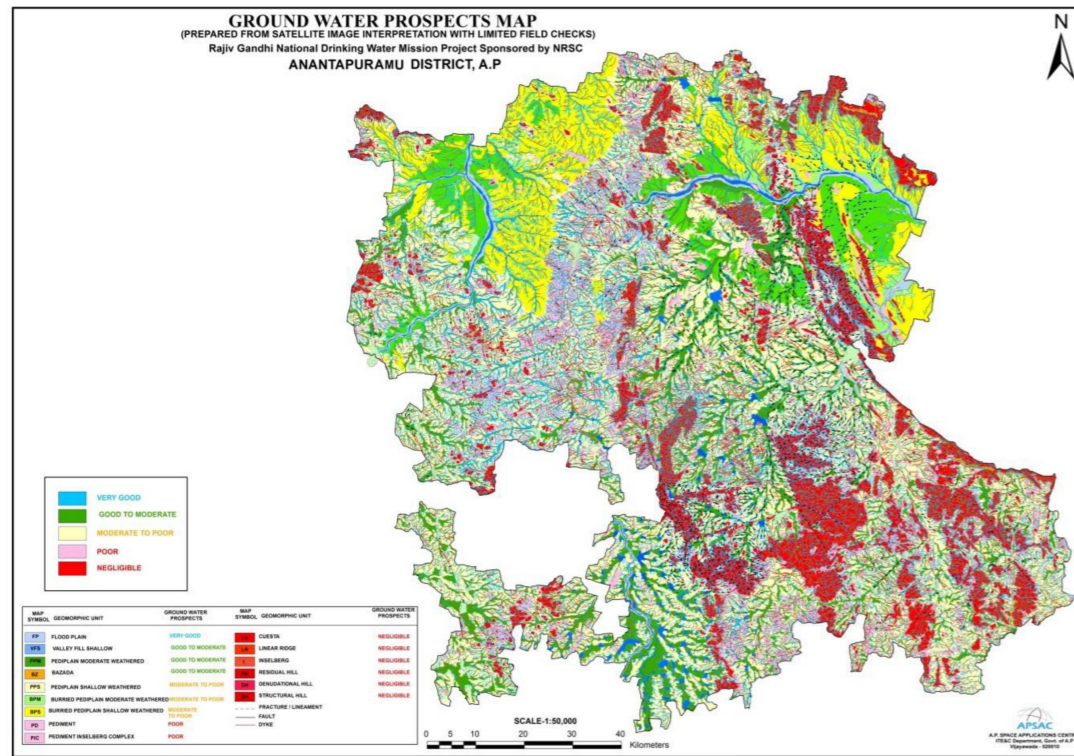


Erosion Prevalence

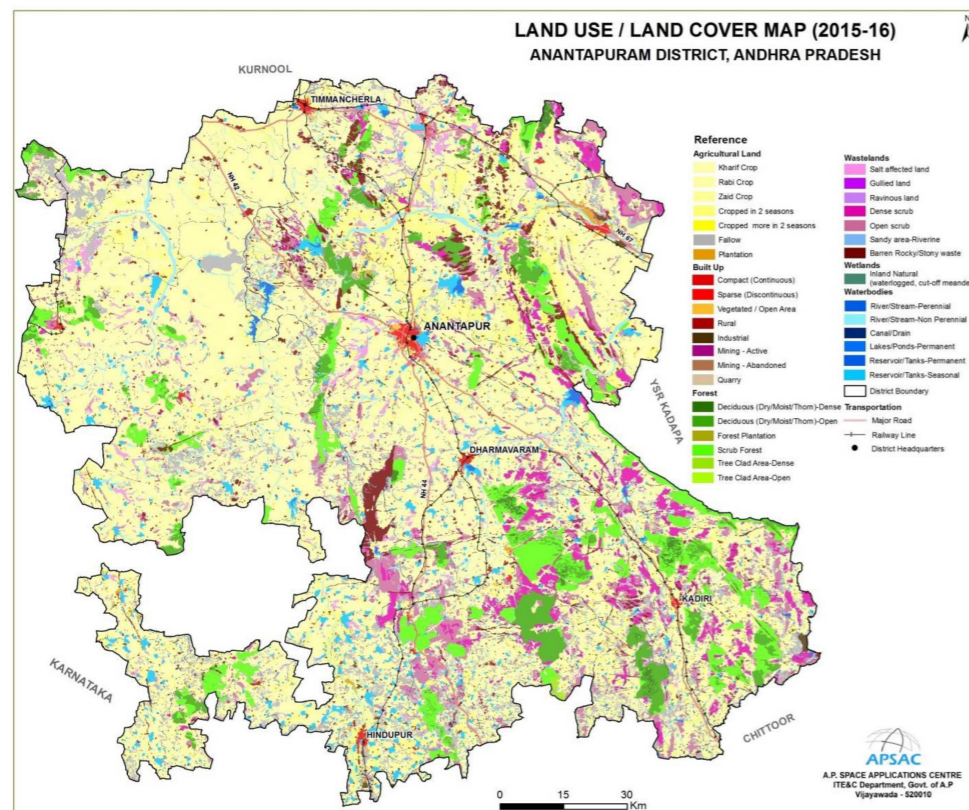


Soil pH

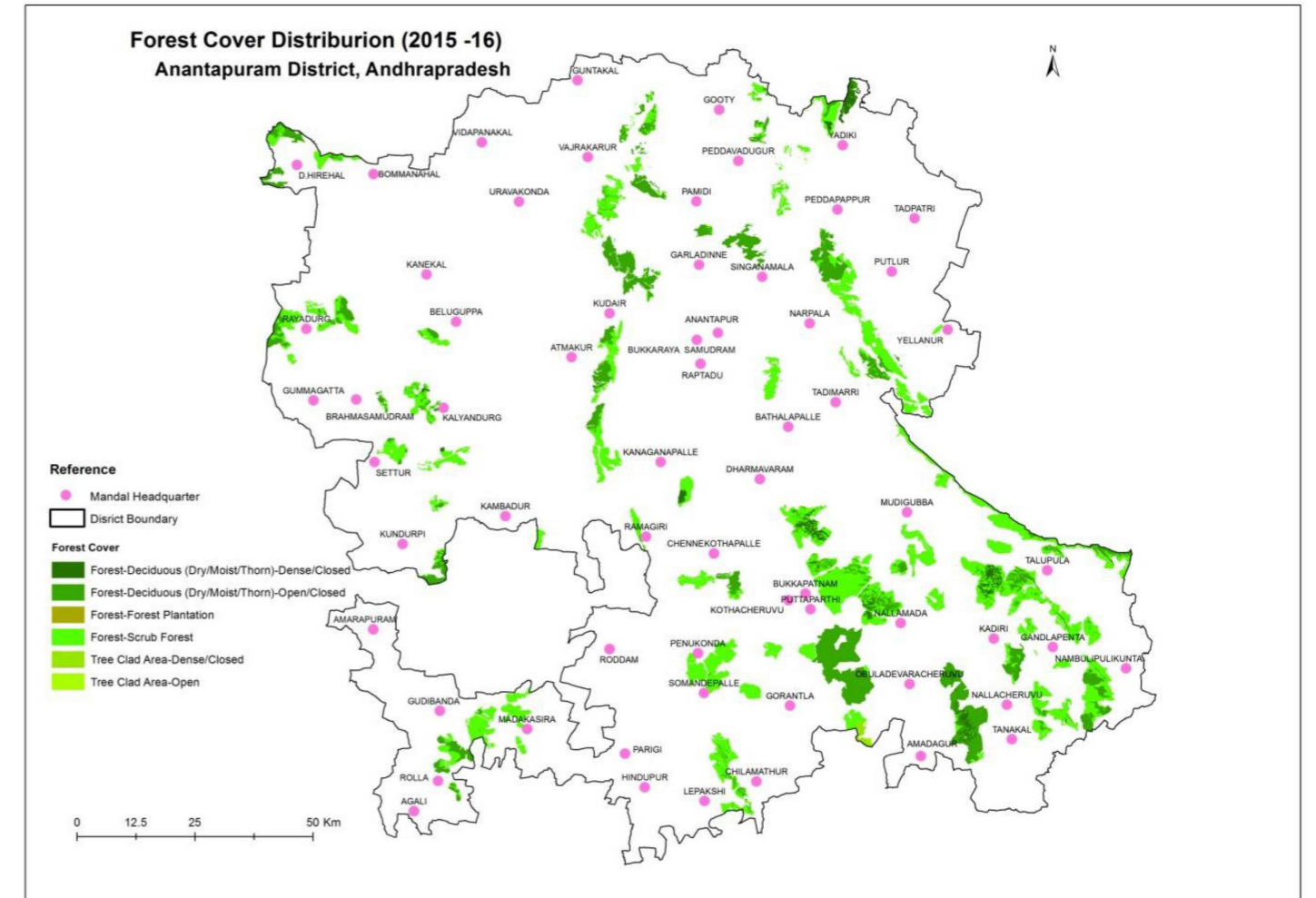
In addition to the maps produced by the ICRAF geo-science laboratory on key bio-physical indicators, the ICRAF South-Asia office acquired maps from the AP Space application centre for the Anantapuramu district, illustrating key land cover trends from 2015 - 2016, ground water prospects and forest cover distribution.



Map of groundwater



Land use map



Forest cover map

Conducting a soil and land health baseline using the Land Degradation Surveillance Framework (LDSF)

The Land Degradation Surveillance Framework (LDSF)

- » A systematic field-based assessment of multiple variables at the same geo-referenced location
- » Rapid assessments of indicators of land and soil health
- » Production of high-quality maps of key indicators
- » Robust statistical analysis on drivers of degradation
- » Monitor changes over time
- » Field guide available online here:

<http://landscapeportal.org/blog/2015/03/25/the-land-degradation-surveillance-framework-ldsf/>

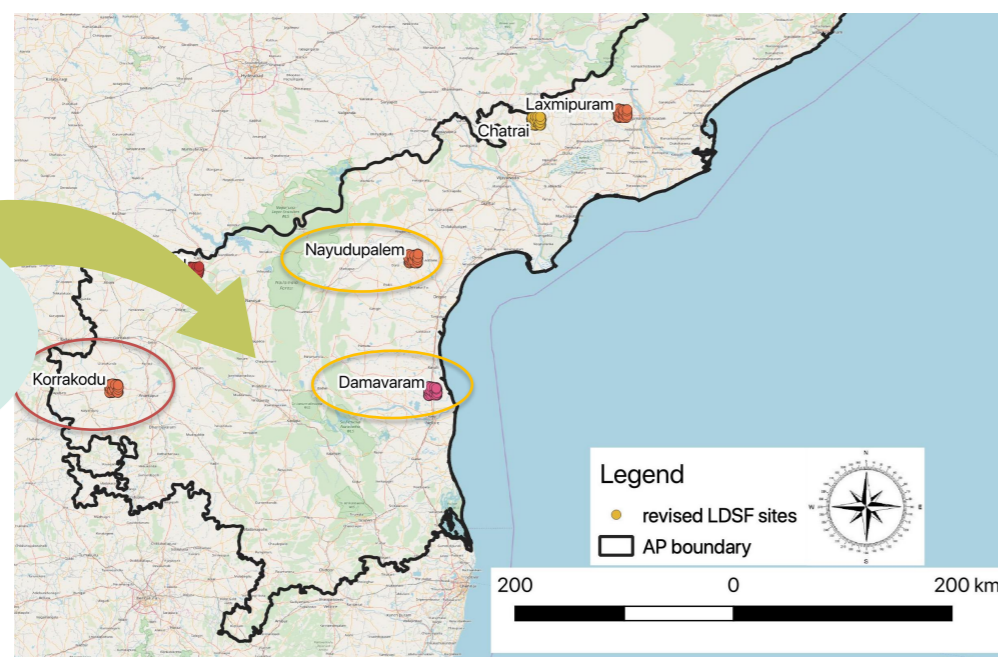


Progress on Field Sampling

Activity	Site Name	Date
Initial Field Training	Guntur, Nellore	December 2018
Refresher Field Training	Nayudupalem, Damavaram, Korrakodu	June 2019
LDSF Field Sampling	Nayudupalem	June -July 2019
LDSF Field Sampling	Damavaram	Aug- Sept 2019
LDSF Field Sampling	Korrakodu	Aug-Oct 2019
LDSF Field Sampling	Laxmipuram	To begin in Nov 2019
LDSF Field Sampling	Mettavalasa	Started 18 October 2019



Eight LDSF sites planned in AP



Evidence wall at the workshop showcasing bio-physical data



Next Steps

1. Continue field sampling
2. Soil Processing and subsequent Analysis
3. Production of maps of soil properties and vegetation
4. Data analysis workshop in April 2020



Research Co-ordinators explaining preliminary results from the LDSF surveys



Interactive Participant Feedback and Insight

“ This is not a sprint but a marathon ”

“ Our great grandfathers lived much better than we are and lived peacefully ”

- » Agricultural advice was at the cost of ecology
- » Farmers are the victims of the policy or government and left with no option but to make the land come back to life
- » Landscape approach is linking both the commons and the private land and requires social capital and governance

Rainfall and water

- » Rainfall over time is the same but the distribution has changed to June-November
- » During the rainy season the rainfall is less and outside the rainy season the rainfall has increased, however the intensity has increased but number of rainy days decreased
- » The government is bringing a canal which may improve groundwater allowing for planting tree crops
- » For the past 15 years there has been terrible rains so farmers have not invested in crops

Trees crops

- » Need to think about the positive list and negative list of the trees with the farmers (ecologically and economically)
- » Eucalyptus is planted by absentee land owners to sell for mulching but the price has fallen in Prakasam and Nellore and negatively impacting the farmers
- » Once you bring the trees the temperatures will go down
- » Need to be clear what do we want from the trees? Species selection? Windbreak? Food? Fodder? Nitrogen fixation?

Soil organic carbon and erosion

“You cannot manage what you cannot measure”

- » Need to increase SOC to address farmer livelihoods
- » When farmers plant groundnut they cut down the trees and this has left a denuded landscapes with high erosion and low carbon
- » Vegetation not just for sake of vegetation we need to reduce erosion
- » Farmers used to put cow manure but now they have lost the cows and are putting chemicals which is making the soil hard
- » If the rains come the vegetation returns and it provides mulch and improves the SOC
- » TATA engaged in looking at SOC in the past 10 - 15 years and approach to maintain and enhancing SOC with government and private sector
- » Should that be a policy goal for the government to consistently measure SOC

“ Political system- is different than the way scientists think but we need to make the point about SOC as it is so important ”

- » Wind speeds are very high and causing high levels of erosion

Crops

- » Need to question why is groundnut a promoted crop - the policy incentives and groundnut crop insurance, seed and subsidies for groundnut despite it failing for the past 17 years
- » Need to ask the government to restructure the subsidies for the other crops pulses, like millet
- » Annual crops cannot survive 25 days to 30 days water stress with no rain but tree crops can tolerate dry spells
- » Should not see trees as competition with the crops

Landscape management - reflections from field visits on key thematic areas

Groups identified a vision for the landscape and areas that must be considered for the field trip. Seven key areas emerged and formed the key groupings for immersive field work including observation and focus groups in Yerraborepalli Village



- » The workshop participants broke into these seven groups and one person who knew the area and could speak the local language led the group discussion
- » Each group asked about how things used to be, how they were now and how they would like them to be, specifically around the topic of their group
- » Each group shared back their field discussions and a causality map was made from the feedback and the connections between these different pieces of information captured



Women



Key Issues from Discussions

Literacy

- » Out of 32 women in focus group discussions 3 were educated
- » Key barriers to education include a lack of transport facilities to go to schools and colleges, poverty and early marriages - with average age of marriage 16 - 17 years old



Health issues

- » Infertility
- » Anaemic
- » Joint pains & back pains
- » Gastric problems
- » Calcium deficiency
- » Frequent fevers
- » Lack of proper knowledge on health



Nutrition

- » Rice, Vegetables - Regular consumption
- » Millets, Pulses, Fruits - Rare consumption
- » Milk - Daily consumption but in little amounts
- » Lack of proper knowledge on nutrition

Farming status

- » Cultivation was done only during Kharif and major crop was historically groundnut
- » Those who were having bore facilities they were cultivating tomatoes also
- » Land availability was on average 2-4 acres per person but sometimes entire land was left barren due to drought situations

ZBNF Status

- » Three farmers were practicing fox tail millet and two Suryamandal models
- » 45 kitchen gardens were promoted - happy to extend kitchen garden but key constraint was water availability

Family status

- » Most of the families were having less support from men as they were habituated to liquor consumption
- » Women were leading the family by working as daily labour at farms

Water sources

- » Facing major problem for drinking water and for daily usage at home
- » Bore pumps arranged @3-4 per street but were not functioning in drought situation therefore they have to adjust from one pump only
- » Sri rama reddy water tank was being provided at every 3-4 days interval

Transportation

- » Transport facilities not available and currently walk 3km to lakshampalli mandal for transport facilities or take a private vehicle

Sanitation

- » No proper drainage channels
- » Very few houses were having toilets, though there is support from government they were reporting that space was not available at house for construction



Future Vision

- » Ground water recharge and improvement in irrigation source
- » Two crops should be harvested in a year
- » There should be no migration from village and many small entrepreneurs should be developed in the village
- » Improvement of orchards

Future Expectations and Needs

1. Knowledge based trainings on health and Nutrition
2. Check dams and farm ponds available for few fields only, some more need to be added
3. Skill development training programmes for income generation (Tailoring, Small scale cottage industries, processing industries etc.,)
4. Minimal provision of water so that they can take up the cultivation of drought tolerant crops
5. Even though rainfall received, water was flowing from the hillocks to other nearby villages like lakshmipuram, some steps need to be initiated to conserve that water
6. Understanding on trees to be planted on bunds and waste lands and their management methods



Migration

Current situation in Yerraborepalli Village

- » 45 out of 95 households migrate from March - July
- » After returning, **if crops fail due to drought they will migrate again**
- » Old people and children are left in the village
- » **Key driver over migration is debts in agriculture** which they have to repay
- » The 10 families who **do not migrate is due to having a functional borewell and access to water**

Key Insights

- » **Middlemen in migration patterns are causing major negative impacts, they search for work and request an advance and then disappear leaving migrated families having to look for work, with increased incidences of cheating behaviour and working hours for migration labour.**
- » There were mentions of deaths due to conditions in transport and housing for migrants, with many living in temporary plastic shelter near roadsides in the city

Wage rates and spending behaviour from migrant labour work in cities

- » Average daily wages are RS 300 for men and RS 250 for women
- » Women use their earnings to pay for food expenses and men usually save wages - all savings are invested back into crops or borewells after returning
- » Average is securing 15 days work with men earning RS 4500 a month and women RS 3250 per month
- » Youth workers can get RS12 - 13,000 per month for factory work

Trends and drivers of migration

- » The number of migrants has significantly increased, with many moving for wage labour and some educated migrants securing work in factories
- » Women above the age of 18 are also migrating with families but they face social risks





Marketing

Trends

30 years ago

- » Production focused on millets & pulses and bartering was within the village with one shop in operation for other needs

Present - in the past 20 years

- » Dalari (Middleman) system in practice
- » Monocrop practices in place (predominance of groundnut)
- » Nearest market for groundnut is 65km away at Challakere
- » Very recently tomato cultivation with functional borewell was introduced in a limited area
- » Markets established in Anantapuramu and recently Kalyandurg



Issues Identified

- » Dependent on private buyers as government buyback system payments are delayed up to a month. Immediate cash payments driving farmers to private buyers
- » Government grading system is accommodative which is not so in the case of private buyers
- » Private buyers happen to be seed and fertilizer suppliers with agreement for buy back against initial credit for seeds, fertilisers and pesticides
- » Transaction costs vary from 10-30% (Includes commission, interest, transport, labour, etc.,)
- » Hidden cost on groundnut when selling to private buyers (3kgs per 40kg bag as wastage)



Future Expectations

1. Groundnut processing facilities
2. Millet processing units
3. Dairy processing
4. Introduction of Horticulture
5. Sustainable Agriculture
6. Cottage Industry, Stitching machine, poultry farming, Small ruminants
7. Pickle manufacturing (mango, tamarind, Lemon and Amla)
8. Zero Budget Natural Farming
9. Tomato processing facilities



Livestock

Historical situation in Yerraborepalli Village

- » Each family had 10-20 cows
- » Buffaloes were also possessed by families. Some households had around 10
- » Rains were regular and so were crops
- » Didn't purchase fodder from outside
- » All the 50 open wells were functional
- » 64 acres of common grazing lands were available

Current situation in Yerraborepalli Village



Large Ruminants

- » 200 local cattle - 100 families
- » 10 Buffaloes - 1 or 2 per family
- » Buffaloes are low in number as they require more water
- » Milk from all the animals is for self-consumption. HHs that don't have cattle, purchases milk packets
- » Fodder purchased from outside
- » Groundnut residue (60 km) - Rs 10000/ cartload (sufficient for a month)
- » Paddy straw (20 Km) - Rs 8000/tractor load (sufficient for a month)
- » Maize residue (20 km) - Rs 4000/tractor load
- » Finger millet residue (20 km) - Rs 5000/ cartload
- » Horse gram residue (20 km)
- » Selling of animals happen at a point when they cannot afford to maintain them further. Mostly during driest months when the demand is very low



Needs

1. Immediately need drinking water facility and the school to be running properly
2. Aspire to have more cattle



Goats

- » 150 Goats - 10 families
- » They feed on almost everything in the village (including cacti - Euphorbia trigona, neem leaves, Prosopis pods, etc.).
- » 23 fodder species are available
- » More adaptable to this situation - however they feed on mango and tamarind plants in the orchards and are therefore not allowed that is why the numbers are low



Goats

- » 500 Sheep - 10 families
- » 50 sheep per herd is the normal size
- » Need to purchase fodder from outside, if crop has not grown in their fields
- » Selling of Ram lambs at 3 month for around 3-4k
- » Buying price is 8k per animal but during dry months, they might sell for 5-6k



Key Insights from Discussion

“Our children wont be engaging in agriculture” - male responded

“But if agriculture is viable, they will” - woman responded

- » No common plain lands and no community action
- » No road connectivity
- » Open grazing during the day
- » Fodder availability at household level is contingent upon a successful crop
- » Drinking water for cattle is limited
- » Crop sown every year but were rarely harvested (only 30% of farms are harvested in the last 4-5 years)
- » MGNREGA is not implemented



Social connections

Historical situation in Yerraborepalli Village

- » Rains
- » Water
- » Agriculture viability
- » Zamindaari
- » Credit deficit

Current situation in Yerraborepalli Village

- » **Agriculture Distress** - farmer suicide and rising indebttness
- » 90% men have the habit of taking liquor

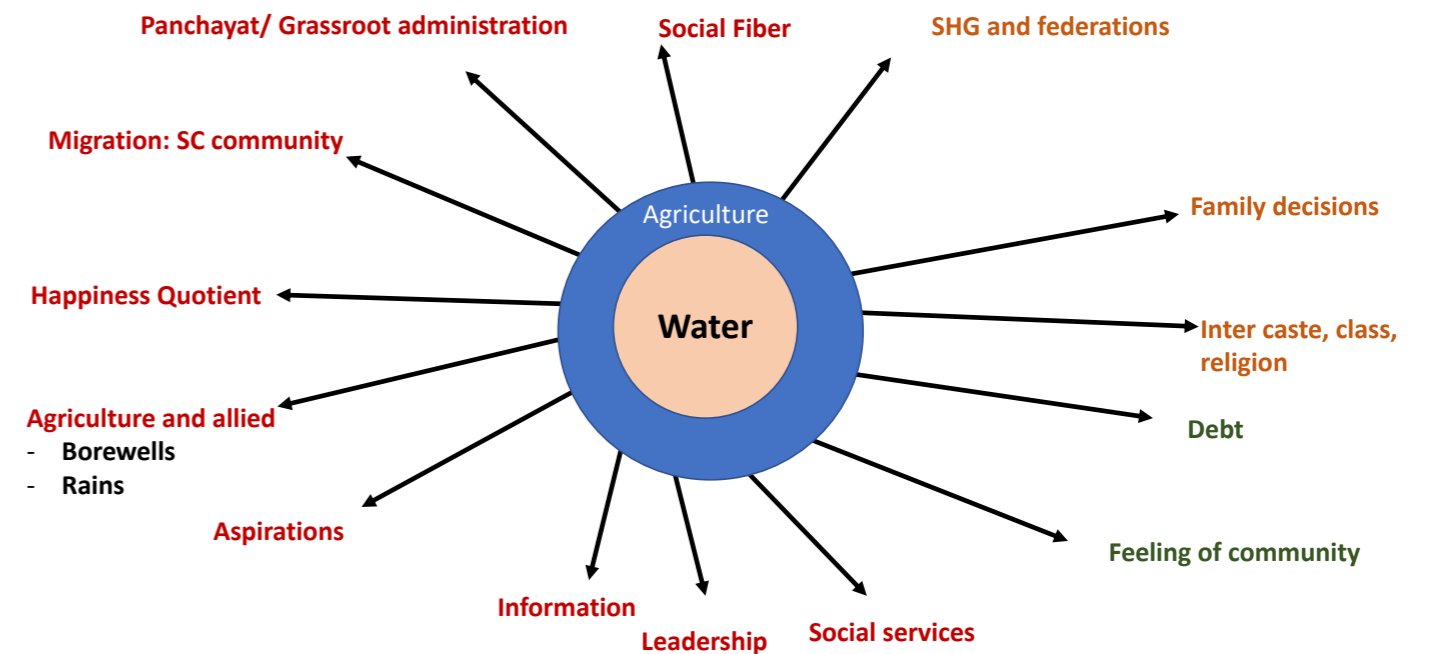
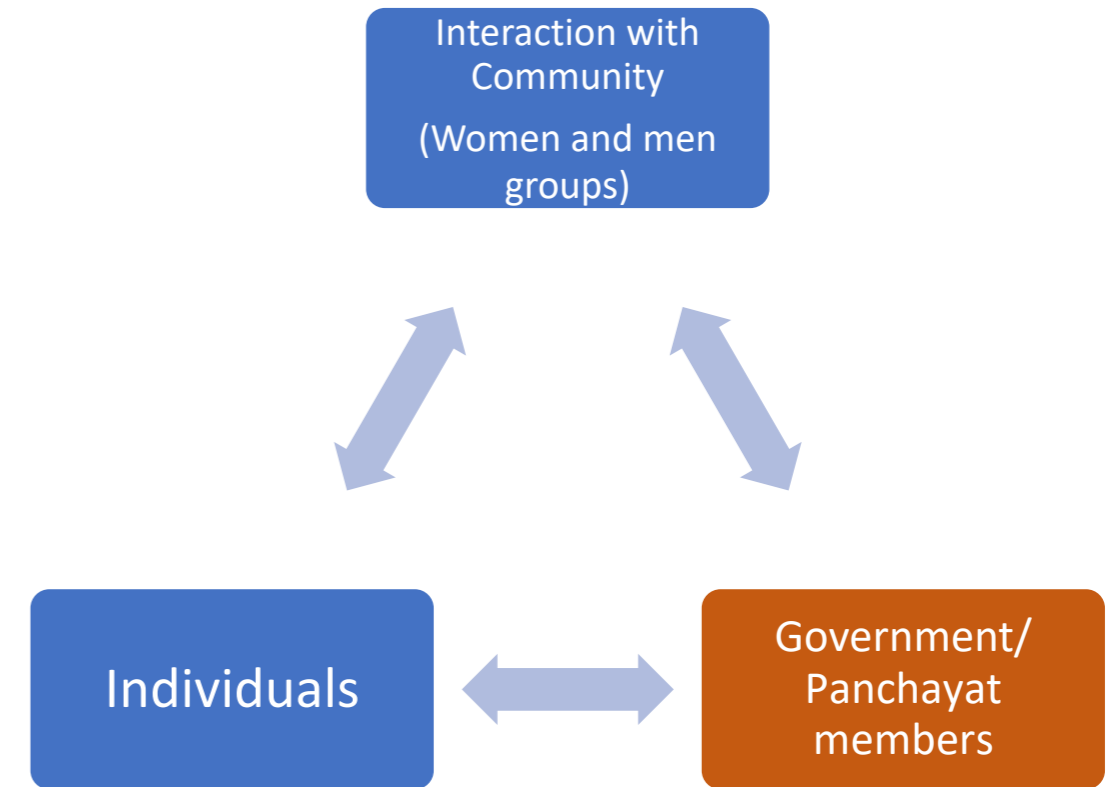


Future Needs and Expectations

1. Primary health centre
2. Transport, no RTC buses from the village, autos are main transport



Insights on Social Connections in Yerraborapalle





Water

Current situation in Yerraborepalli Village

- » Small checkdams: 44
- » Big checkdam: 1
- » Farm ponds: 50
- » Big check fans: 4
- » 1 water tank of 20,000 lit capacity
- » Overall 10-15 water taps in the village
- » Nearly 200 borewells - only 10-20 functional for a limited time per day
- » Total land : 1780 acres

Water for domestic use and drinking

- » Domestic water is supplied from a water tank in the village, there is no drainage channels in the village and only pits dug near houses
- » The impact of recent good rain has been very limited as there is no water harvesting structures and those that exist are weak
- » Previously villagers used the open wells for drinking purpose and as they depleted, now they drink borewell water. There is also a drinking water facility provided by a charity. For that, they get water from a canal and pumped into a tank and distributed for the part of a village through a pipeline fixed with taps
- » Tests for Fluoride have to be done as some symptoms such as brownish plaque on the teeth and women having body pains and kidney disease has been reported
- » Tap water flows for about 3 hours a day and households store water in the plastic pots
- » The RO water plant is located 2 km away from the village and also some villagers with transport will get the water from here at a price of Rs.5/can (20 lit)



Key Insights from Discussion - Water for Agriculture use

- » Before 2000 farmers used to cultivate groundnut, redgram, horsegram, greengram, sorghum, sesame, korra and practices inter cropping and almost all households used to rear cattle
- » The rainy season usually starts from June and continues until October
- » There has been erratic, scarce rainfall since the year 2000
- » Traditionally water storage structures were open wells but now there are no open wells with water
- » Only mango orchards and tamarind trees are found in the village covering 200 acres (approximately 12% of 1780 acres)
- » From 2005 onwards digging of borewells started in the village and total of 100 borewells are in the village, of which only 50 recharged this year due to the rains. The deepest borewell is 600 foot deep.
- » All the farm ponds are not functioning properly because they are filled with silt, not lined with cement and unable to store water
- » Out of 4 canals in the village only 1 canal is flowing with water
- » Only 15% (300 acres) of land is under drip irrigation, farmers receive a 90% subsidy for drip irrigation



Future Needs and Expectations

1. Drinking water plant in the village
2. Tests for Fluoride in drinking water
3. Checkdams, small reservoir, farmlands etc
4. Tree saplings
5. Limited mud roads internal to fields
6. Many of the charity works like constructing small checkdams, houses and help in agriculture inputs have been done by Accion Fraterna Ecology Centre



Youth in agriculture

Current situation in Yerraborepalli Village

- » Youth are not aware about village profile
- » Lack of awareness with relation to schemes development activities working bodies, politics, etc and low knowledge, skills and attitude for learning
- » There are no trainings on development activities and no awareness on employment opportunities
- » Role and mindset of parents is key factor in impacting youth development
- » Politically there are disputes among the villagers in accessing any benefits of the schemes
- » Farming is seen as only livelihood opportunity but some youth may end up in construction activities or casual work in local markets



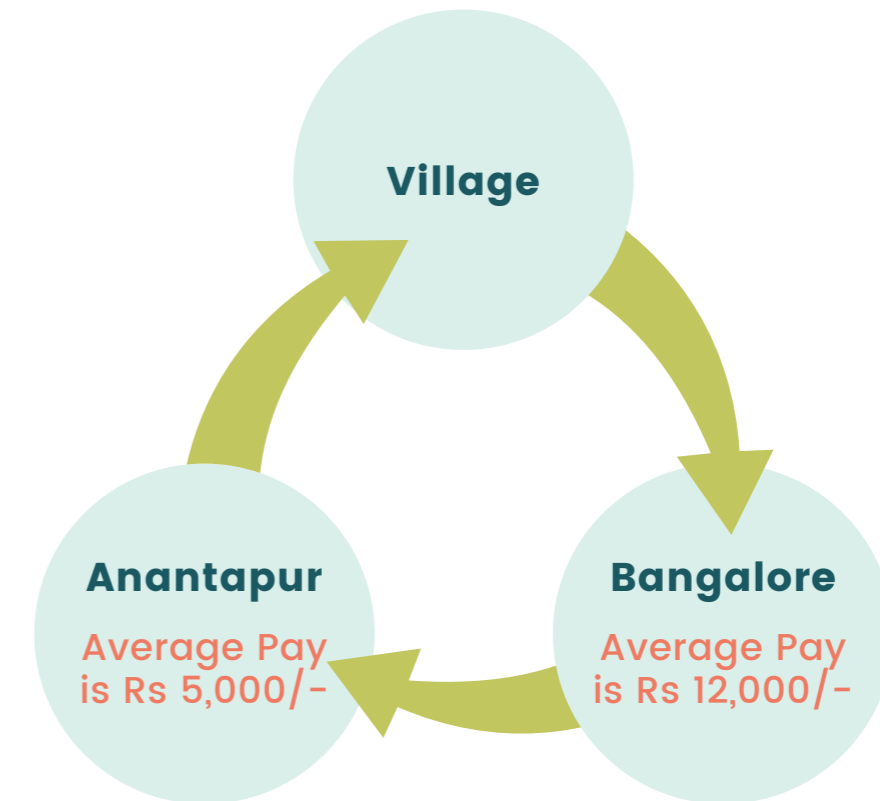
Key Insights

- » Agriculture perceived as very risky and low profitability, youth highlighted lack of rains over the past 12 years
- » Limited knowledge on agriculture practices (including dairy and livestock management) and innovations that have taken place and on marketing activities such as value addition and storage of produce
- » The purchasing capability through online markets (Amazon, Flipkart) is popular as an enterprise idea
- » Lack of transport facilities and request for government buses than cars
- » Youth are unaware of malnutrition and health issues and mentioned a lack of hospital facilities in the village
- » Cultural activities, including Ganesh Mahotsav (5 day collection of money) provide a means for common understanding

Reflections on agriculture based livelihoods

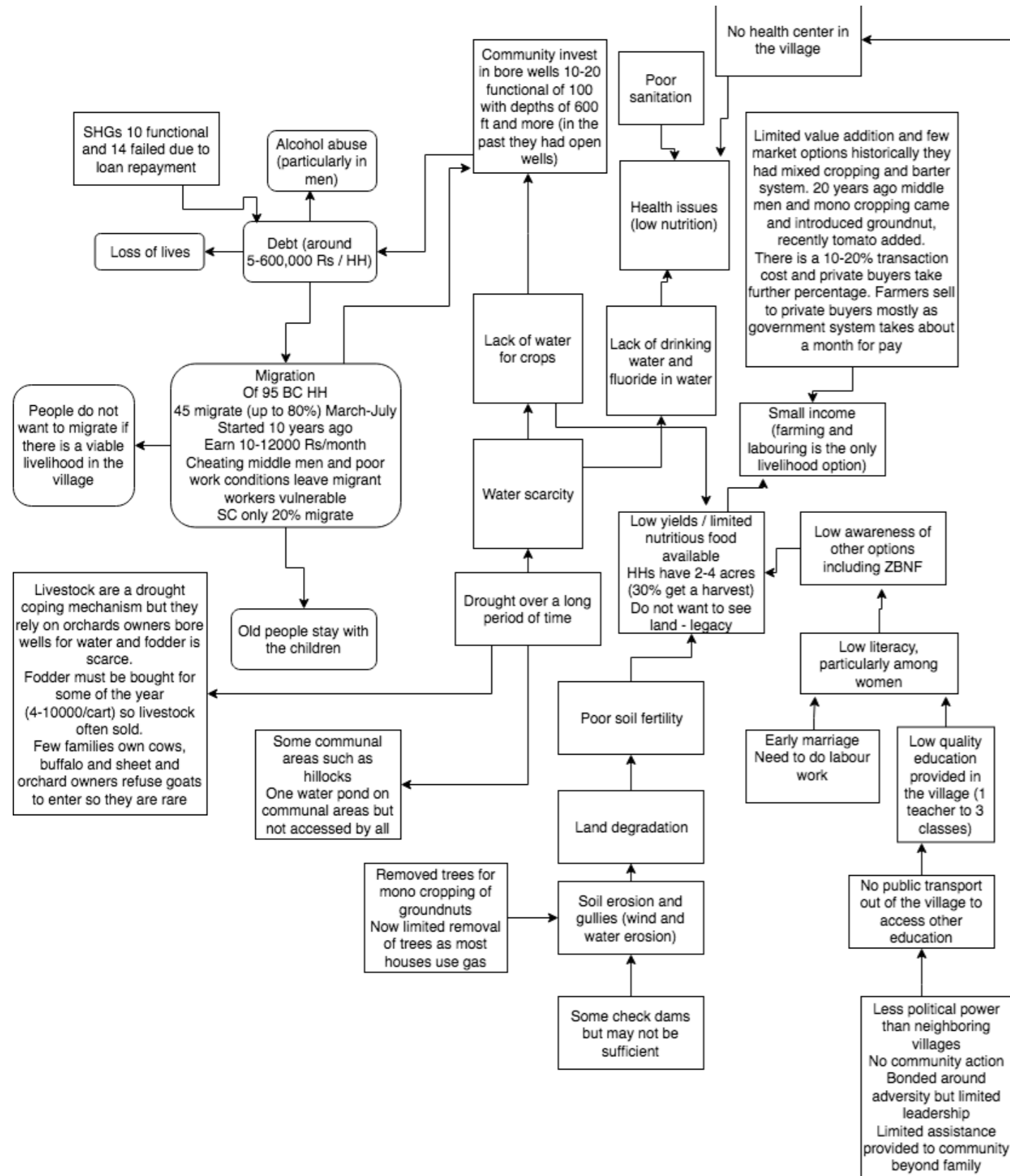
- » Requirement for seeds
- » No credit facilities available and lending money at 3% interest rates, the family are in SHG groups but they are not aware about credit facilities
- » Accessed by them
- » Expenditure is high and no finance available to purchase machinery
- » Even if good rains are received then there are no good marketing opportunities
- » Income earned from other activities is invested in agriculture resulting in incurring losses
- » Reverse migration

Reverse migration

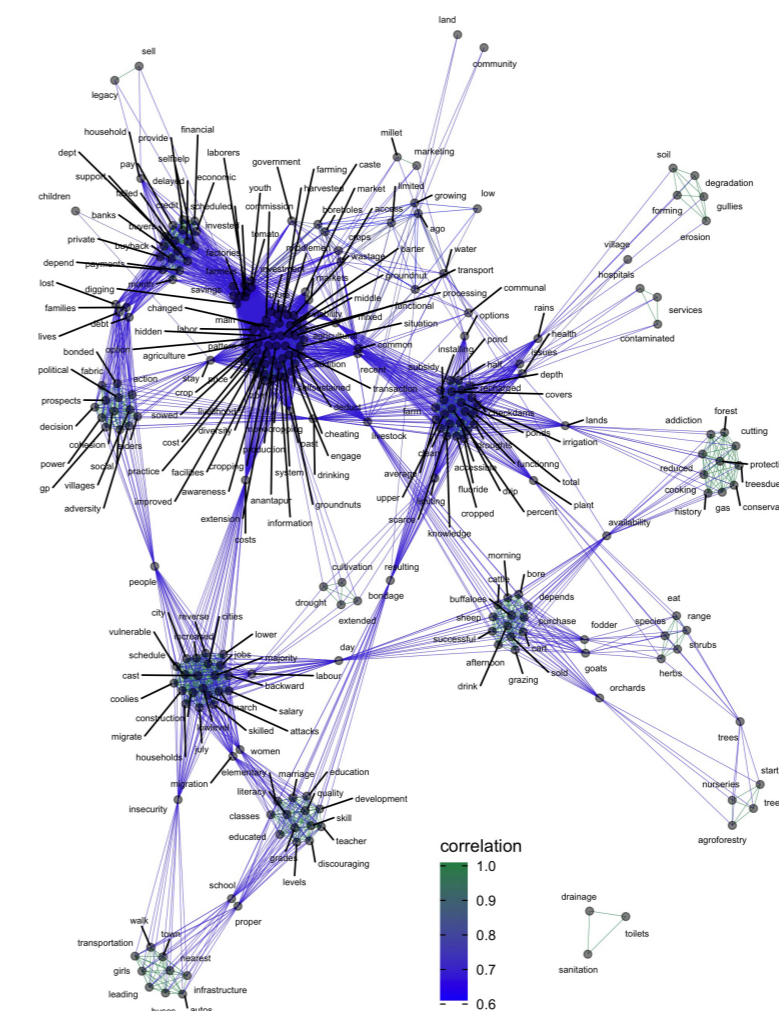


Causal linkages

A causal map was created, synthesising feedback from the fieldwork to show challenges that emerged and key insights from the discussions and how issues related to each other



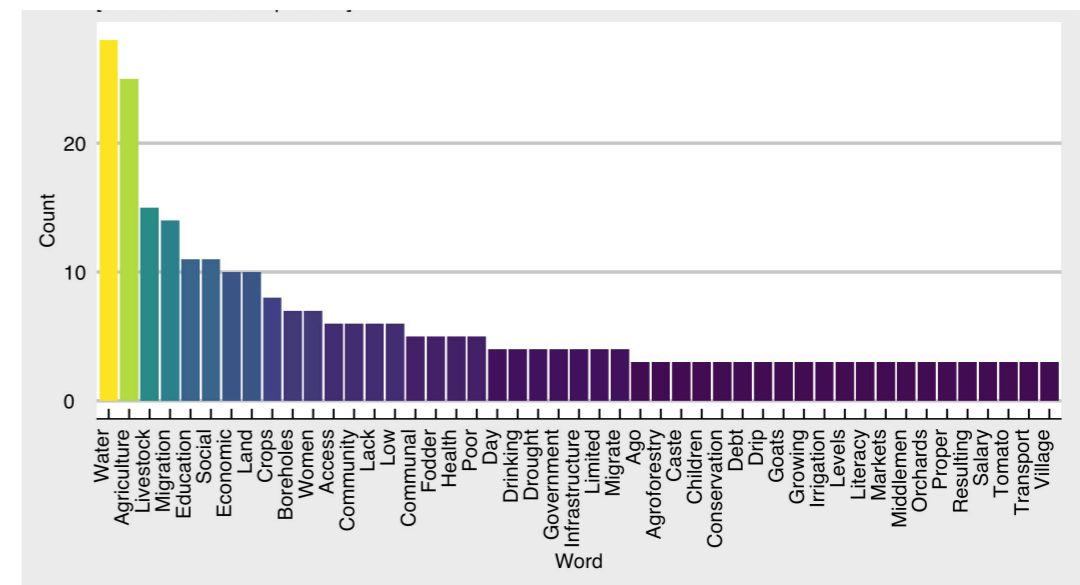
Correlation map showing the connections between the information shared back from the field visits and the most common words are shown to the right



Groupings seen around:

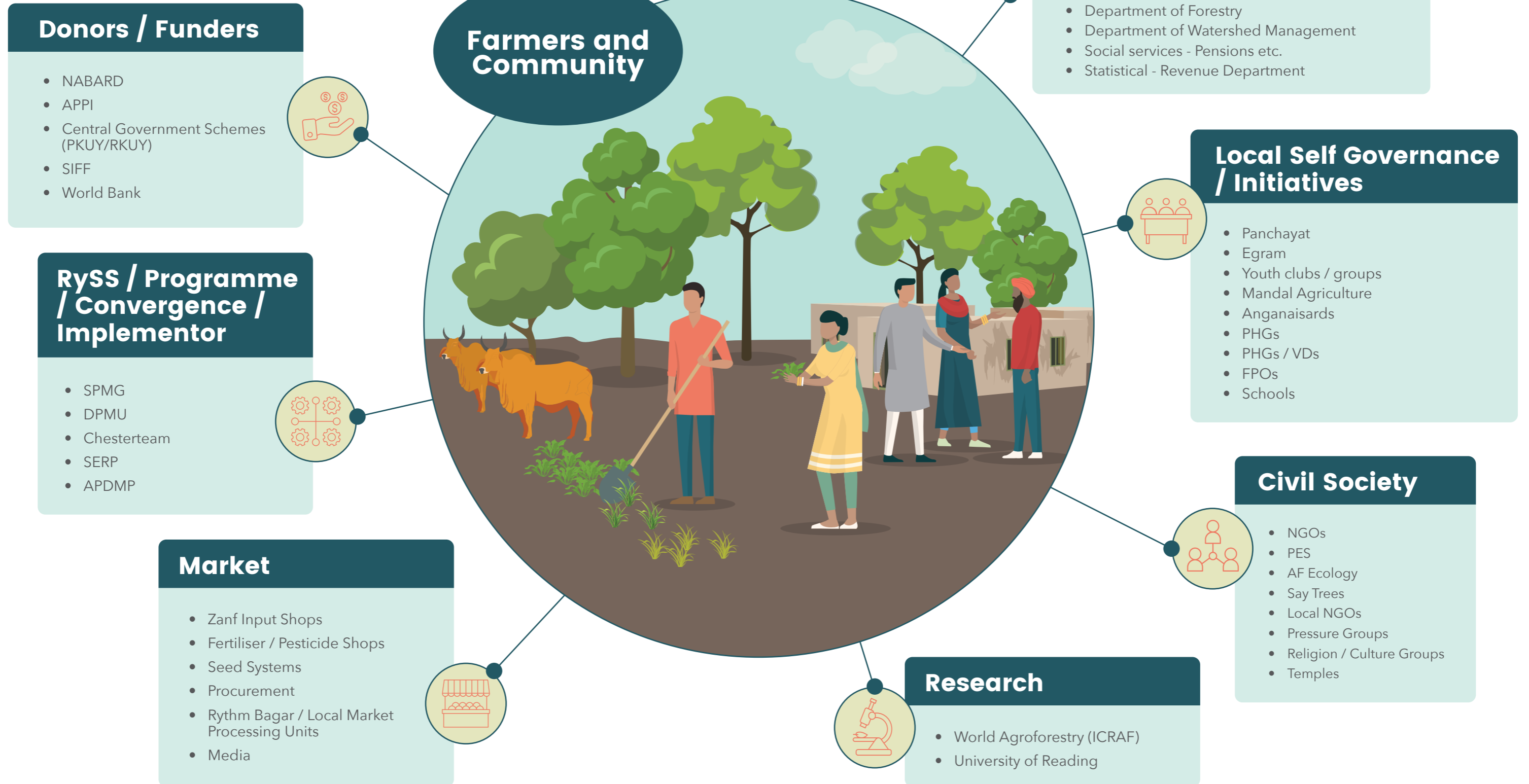
- » Erosion and degradation
- » Trees, conservation and energy for cooking
- » Drought, water, subsidies
- » Grazing, fodder and livestock
- » Economic, credit
- » Migration, cities, construction, caste
- » Cohesion, political, adversity, social
- » Marriage, education, literacy, development
- » Transportation, walk, nearest town
- » Production, cropping, markets, price

These align with the key themes in the root cause and show the relationships and key issues



Participatory social network analysis to explore parameters of landscape democracy

Within the workshop a participatory stakeholder mapping exercise was implemented to understand the actors that are operating in the candidate landscape, these are grouped and outlined below in the figure



In the Yerraborepalli village a focus group discussion was held with members of self-help groups (SHGs) to understand the social connections within the village and beyond to the neighboring villages, particularly Kamallapally and Lakshmanpally which make up the Panchayat (local level from governance structure). It became clear that in the perspective of the focus group discussion (FGD) participants, their village (Yerraborepalli) was the least powerful of the three in the Panchayat as they had not held the office of Gran Panchayat, which they attributed to a lack of resources to support the election process.

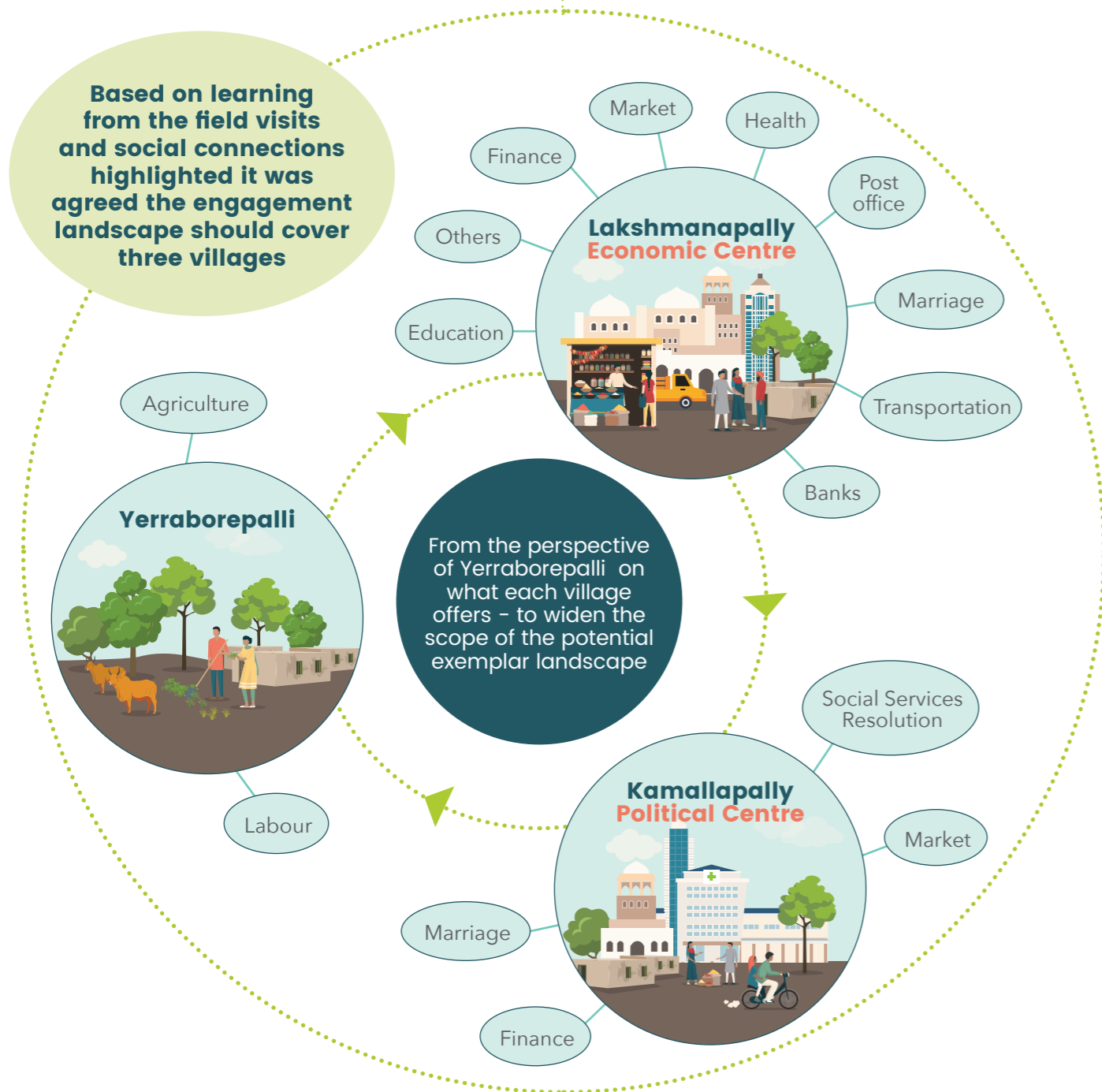
They shared that the only reason members of the neighboring villages came to their village was for an annual religious festival and a shrine on one of the hillocks in the village. The FGD participants said they provide agricultural labour and votes to the neighboring villages but that for all important services, including public transportation, they had to travel to the other villages (demonstrated below). Marriages were another reason for social connections outside of the village but wives coming into the village often came from a wider area, extending to Karnataka.

It will be important to hear the perspective of more people in the village and the neighboring villages. The FGD painted a picture of relative disadvantage compared to the other villages in the Panchayat.

When discussing the within village networks, the FGD participants reported that of the 24 Self Help Groups in the village only 10 were operational and 14 had become defunct due to inability to repay loans. No other social structures or local leadership was reportedly in place and sharing labour between households that were not family was rare. The initial

reflection was that limited social capital was in place and it was suggested that social capital had diminished due to successive droughts.

As a coping mechanism, many people were reportedly migrating to work as labourers in big cities for large parts of the year. This was reported to be at a higher frequency for BC (backward class) households than SC (scheduled class) households and the few more established households stayed in the village. These households had businesses and also often had control of communal ponds and areas for grazing.



From the perspective of Yerraborepalli on what each village offers and motivation for a wider extent of the target exemplar landscape

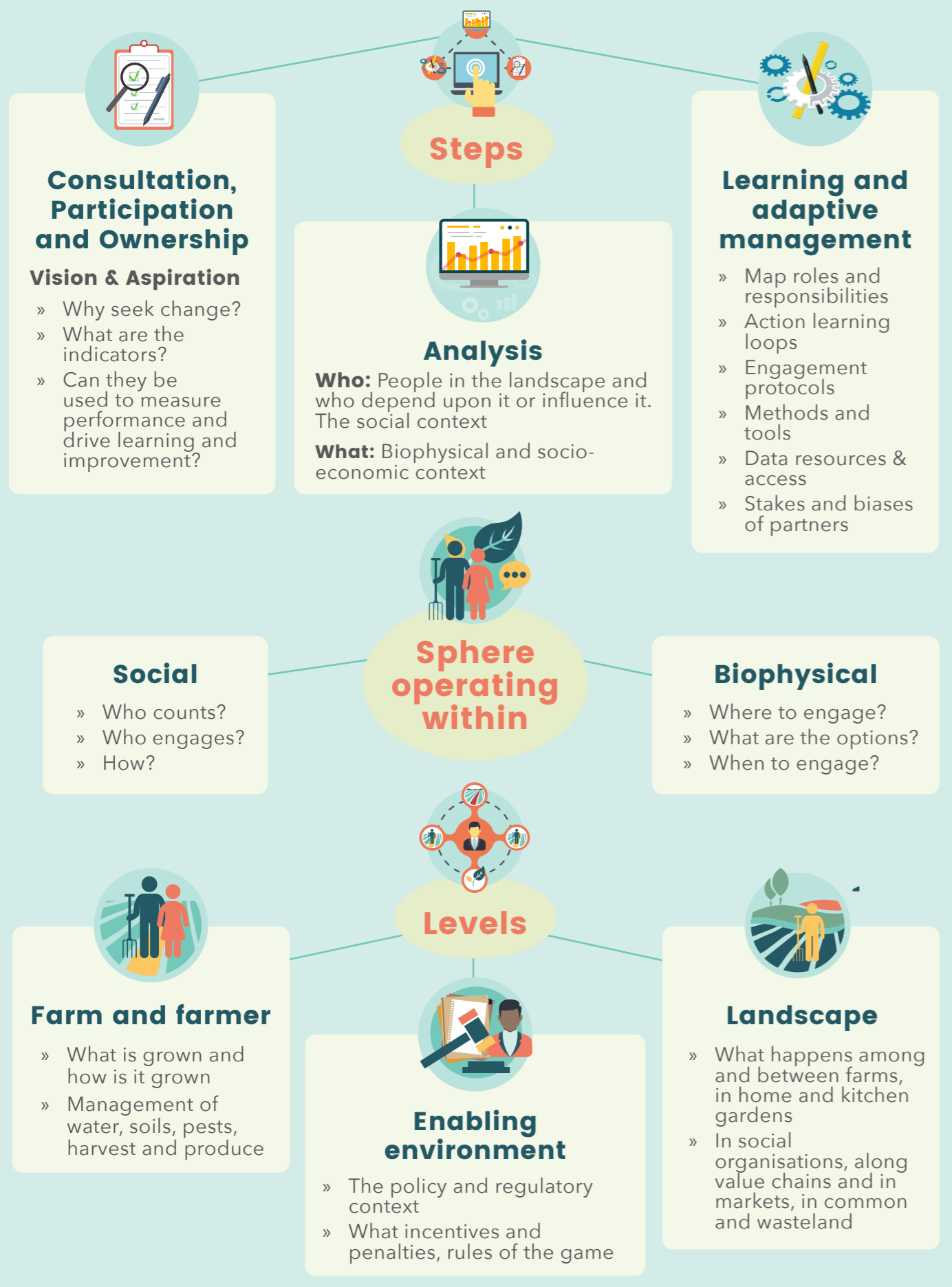


Mr Vijay Kumar from RySS reflecting on field work learning

Developing an action research project, based in the climate resilient engagement landscape

The action research project aims to study and influence the development of low ecological impact, agroecological approaches to agriculture that are climate resilient and have a high transformational potential with respect to livelihoods and value chains in the target location

A framework for engagement in landscapes



Intervention option areas and candidate practices identified by participants at different scales

Potential Intervention Areas

Using the two days of workshop process to understand existing efforts to address land degradation and desertification in the region, as well as immersive field work, participants, through facilitated group work brainstormed feasible intervention areas. The group exercises included a vision for a future climate resilient engagement landscape and a rationale for achieving this vision. Each group proposed and discussed transformational activity areas at three different levels of intervention—**farm, landscape, and broader enabling and policy environment**. The results of the proposed candidate practices at each scale are presented in this section.



Farm

Vision

An agroecological farming system that provides stable and resilient livelihoods, increased incomes, and improved nutrition and food security to households, with a specific focus on supporting women and youth participation within that system.

A local economy that promotes and supports non-farm activities as a viable alternative or supplement to smallholder agriculture.

Rationale

Adopting agroecological approaches, such as through Zero-Budget Natural Farming (ZBNF), will reduce land degradation, rebuild soil health, enhance ecosystem services, and restore soil biodiversity, resulting in the improvement of yields, incomes and food security for households. The adoption of regenerative practices is an effective way for farmers to adapt to the impacts of climate change (e.g. through improving water retention, integrating agroforestry and reforestation) and build resilience against extreme weather events (e.g. through pre-monsoon sowing, mulching). As one of the key features of regenerative agricultural production, introducing greater crop diversity will improve yield stability, resilience to climate change, and nutritional diversity for households.

Diversifying livelihoods away from crop and livestock production will create income sources, expanding employment opportunities and improving household resilience to shocks (e.g. extreme weather events). Non-farm activities reduce pressure on degraded land and limited water resources. 'Green jobs', in particular, achieve multiple objectives by linking job creation to effective natural resource management and climate change responses.

Empowering households through improved livelihoods security, both through improving agricultural production practices and providing alternative income-generating activities, will decrease household dependency on domestic and foreign aid. It will also reduce out migration by increasing agricultural productivity and creating new employment opportunities in communities.

Proposed Activities

1. Conduct a series of **awareness raising campaigns and workshops** that:
 - » Introduce the community to possible future scenarios (taking into account climate change, climate variability, levels of government support, etc.) and actions for improving the sustainability and productivity of the agricultural system, restoring ecosystem functioning, and rehabilitating degraded land
 - » Prioritise actions based on holistic and participatory decision-making approach that takes into account environmental, socio-economic, and political constraints
 - » Communicates family nutrition and health principles to community members. Introduce the idea of nutri-gardens or kitchen gardens to encourage cultivation of healthy, inexpensive crops at home
 - » **Promote integrated farming systems** that include crops, horticulture, dairy, poultry, etc. as well as **ancillary activities**, including apiculture, sericulture, poultry, and fisheries. Promote behaviour change in production and consumption patterns that support an integrated, diverse food system
2. **Develop capacity** of smallholder farmers in adopting sustainable production practices and technologies, understanding agro-ecosystems, and enhancing ecosystem services. Utilise hands-on learning approaches, knowledge exchange, direct observation and demonstrations that are field-based in order to reflect local contexts and allow for experimentation and collaboration
3. Build a set of **best practice examples** from the community, showcasing farmers and interventions that have shown positive results with ZBNF, agroforestry, on-farm water management, etc., and **scale successful practices** through capacity development, incentivisation, and behaviour change. Best practices are likely to include:

- » **Diversifying crops**, e.g. growing fodder, high value crops, food for consumption, etc., and adopting multi-cropping or poly-cropping approaches will build resilience to climate change and extreme weather events, enhance biodiversity, provide new streams of income within different food value chains, and improve nutritional value for families
- » Supporting **continued ground cover** through use of mulches, cover crops and mixed cropping systems to enhance moisture retention in the soil and reduce water erosion
- » **Promoting integrated livestock and crop systems or livestock-based farming system** reduces the amount of external inputs needed, improves productivity and profitability, improves soil health, and provides additional nutritional value. Further development of livestock should include health control, **feed and fodder production**, rotational grazing, and creating linkages with formal markets
- » **Encourage poultry and small ruminant (sheep and goats) rearing** and develop value chains or expand existing value chains to incorporate new participants. Facilitate linkages with formal markets. Encourage contract farming and buy back guarantees with vendors
- » **Introducing agroforestry approaches**—including multi-storied agroforestry cropping systems, contour planting, and alley-cropping—for food, timber, and energy production; restoring ecosystem services and soil fertility; reducing soil erosion; and income and food security. Reforestation, including the development of **biofuel plantations**, will provide alternative fuel sources, food sources, and livelihood opportunities for communities
- » **Improve agrobiodiversity** through seed saving, maintaining crop genetic diversity, and seed banking

Candidate Practices	Where could this work	For whom	What stakeholders must be engaged?
CROP DIVERSITY			
Polycropping (Minor millets)	Farmers' fields	Monocropping or Traditional cropping farmers	Direct - Farmers Indirect - KVK's, Researchers, Agri.Dept, NGO's, RySS
365 Days Green cover (More than nine varieties of crops were sown which includes millets, pulses, oil seeds, cereals, vegetables etc.,)	Farmers' fields	Rain fed farmers	Direct - Farmers Indirect - KVK's, Researchers, Agri.Dept, NGO's, RySS
TREES			
Multipurpose trees	Common lands Ridges Slopes Bund Plantations In between field crops	All farmers and community	Direct - Farmers Indirect - KVK's, Researchers, Agri.Dept, NGO's, RySS Village institutions
FODDER			
HORTICULTURE/ORCHARDS			
Multi storeyed cropping system	Farmers' fields	All farmers	Farmers Drip vendors Researchers, Agri.Dept, NGO's, RySS
LIVESTOCK			
Small ruminants	Household	Landless, Migratory Interested women SHG	SHG's, NABARD
Back yard poultry	Household	Landless, Migratory Interested women SHG	Buy back guarantee poultry vendors

Group work template compiled for proposed farm level candidate practices showing the matching of candidate practices to different groups in the community and outlining the stakeholder that must be engaged to support the practice



Landscape

Vision

- » A healthy landscape that supports thriving and sustainable livelihoods, food and nutrition security, 100% recovery of vegetation cover, sustainable water use, fully functioning ecosystem services, and sustainable and resilient agricultural production.
- » One third of the village utilising agroforestry approaches, effective water harvesting techniques, and integrated landscape management.

Rationale

As the primary actors of transformational change, all landscape interventions should be built upon a foundation of engagement with the community. Community-led planning and action ensures ownership and sustainability of intervention design and implementation. It also creates conditions for community empowerment and ensures decision-making and prioritisation reflects local contexts.

Because landscapes involve the coordinated effort of multiple sectors and land users across the entire ecosystem, collaborative planning and action is essential. Successful interventions will require platforms for collective planning and strategy development; linking various land users; engagement and dialogue; and sharing information, experiences, and best practices.

These platforms are also necessary to raise awareness and develop capacity within communities. Integrated landscape management requires a holistic understanding of ecosystem functioning, as well as of the current and projected impact of various dynamics on that functioning. Community workshops and

awareness raising campaigns are necessary for broad-based behaviour change and collective involvement in integrated natural resource management.

Because the challenges facing the Anantapuramu ecosystem are complex, e.g. desertification, land degradation, rapidly dropping water table, pollution, climate change, etc., interventions at landscape scale are necessary to address the various drivers behind these dynamics. Integrated landscape management approaches have the benefit of achieving multiple, interconnected objectives at once, e.g. installing water harvesting technologies will contribute towards the objectives of water security, groundwater recharge, improved agricultural productivity, salinity control, food security and climate change adaptation.

The promotion of integrated watershed management is another example of an intervention that contributes towards ecological, economic, and social objectives. It can be a useful entry point for community engagement and collective planning.

Proposed Activities

1. Conduct a series of **community mobilisation and awareness raising campaigns** that build a holistic awareness of landscape functioning. This should include:

- » Introduce the community to possible a. Sensitizing communities to climate change, natural resource management, soil and water conservation, soil erosion and land degradation, agricultural interventions, amongst others

- » Building awareness of the importance of ecosystem functioning to daily life; defining landscape management and governance
- » Explaining a watershed-based approach to water conservation and the linkage to agricultural production systems, household wellbeing, ecosystem functioning, and economic opportunities
- » Highlighting the linkages between forests and production systems within the landscape, outlining the role of forests within ecological, social, and economic contexts

2. In line with a community-managed landscape model, conduct a **participatory landscape assessment and planning** process with the community that involves:

- » Formulating the vision and goals of the community with regard to landscape functioning—a “community visioning” process;
- » Discussing the current strengths and weaknesses of the landscape; Identifying the greatest threats to and vulnerabilities of the landscape, with a mapping exercise that identifies areas for targeted intervention;
- » Outlining possible interventions within those targeted areas;
- » Prioritising those interventions with consideration for capacity levels, resources, levels of vulnerability and potential impact

3. Implement a portfolio of landscape-scale, community-led projects. Interventions should specifically target common land for interventions such as **restoration of common lands** and restoration will boost agricultural and livestock productivity, addressing ecological restoration as well as poverty alleviation. Landscape interventions should include:

- » Restoration of degraded land through replanting and development of vegetative buffers;

- » Restoration of forests and/or reforestation;
- » Establishment of a decentralised, low-cost system for **bioremediation** to address contamination and pollution;
- » Increase biodiversity through community-based conservation, forest management, and promoting alternative livelihoods;
- » Restoring and protecting watersheds (see below);
- » Developing community-owned and -managed farms on common land;
- » **Improving soil health** through agroforestry, agri-horticulture, silvo-pastoral systems, minimum tillage, cover cropping, and other on-farm interventions

4. Utilise integrated watershed management with a **ridge to valley approach**, as an entry point for awareness raising, followed by collective planning and implementation. Projects should include:

- » Capacity development for community-based, **participatory watershed management**, as well as action plan development;
- » Rejuvenation of existing community water conservation structures, with a specific focus on water recharge and rainwater harvesting;
- » Construction of additional water conservation structures and technologies, including check dams, farm ponds, farm bunding, percolation tanks, and dugwell recharge.
- » Install physical and biological filters and purifiers within conservation structures.

5. Assist communities in a participatory process for setting rules, regulations, and mechanisms for **regulating the demand and provision of water and biomass**. Equip community institutions with the skills and processes required to support village-level monitoring and enforcement

Candidate Practices	Where could this work	For whom	What stakeholders must be engaged?
ECONOMIC/ENVIRONMENTAL THEME			
Increase crop yields through improved soil health	Hundreds of farmers across landscapes on their agricultural fields	Farmers, consumers	Farmers, researchers/scientist, government officials, NGOs (AF Ecology, HANDS, cards, RED, RSDS, CSA, JSDA, StarYouth, CCD, Timbuktu, WASSAN, RySS, ICRAF etc
ENVIRONMENTAL			
Increase biodiversity and agrobiodiversity (reduce pollution and emissions)	Across landscape, agricultural fields, common lands, forest, mosaic, wastelands	Communities, Neighboring communities, farmers, livestock	All of the above and FES, Forestry and Livestock department
Natural Resource Management with focus on increased water recharge - for example, bore holes, check dams, bunding, farm pond, rainwater harvesting	Farm, forest land, roadsides, hillocks, common lands/wastelands, revenue lands, water bodies	Local communities Villages Livestock	APDMP, APIIST, DWAMA, NREGS
SOCIAL			
Community mobilization/awareness on sustainable then capacity building (also on literacy and health). Holistic awareness of whole environment	communities	Focus on landless, including women and youth	All of the above including community leaders and the health and education departments
Reducing out migration by addressing farm distress - increasing ag productivity and creating business opportunities in the village	Rural areas	Youth, landless poor, small businesses, agricultural laborers, people who are migration	All of the above - employment department of government, NREG, MG

Group work template compiled for proposed landscape level showing the matching of candidate practices to different groups in the community and outlining the stakeholder that must be engaged to support the practice



Enabling Environment

Vision

An enabling economic environment that encourages the development of new, inclusive agro-value chains and the upgrading of existing value chains in order to encourage greater participation of smallholder farmers, create new employment opportunities and diversify household livelihoods.

A civil society that is empowered with the knowledge, resources, and networks necessary to assume leadership roles within the community with regard to design, implementation, and monitoring of community interventions.

Local and regional government structures and support institutions that enforce existing conservation policies, facilitate productive dialogue between various actors, and proactively initiate and support interventions on a regional and local scale.

Rationale

By fostering an environment of collaboration, communities will be empowered to work together collectively to solve complex problems. The proper enabling environment will also ensure communities feel ownership over interventions and are committed to the sustainability of project outcomes.

Civil society groups are key actors within these collaborative environments, both as participants and as leaders driving collective action. **A strong and empowered civil society** ensures that community-based natural resource management incorporates meaningful participation and feedback during design, implementation, and monitoring phases. Building the capacity of civil society groups, such as SHGs, women and youth groups, is a

key component of empowering communities to implement local projects and advocate for community needs.

Building capacity within local government institutions and developing governance processes to better tackle the key drivers of land degradation, economic stagnation, and low yields will empower government to proactively react to the complex problems facing the community. By drawing from holistic approaches, such as **value chain approaches**, to design and implement policies and interventions, local and regional institutions will achieve multiple interlocking objectives within the landscape and secure the buy-in of the diverse array of land users.

Proposed Activities

- 1. Create supporting infrastructure**—village committees, working groups, institutions, organisations—to facilitate the adoption of new initiatives. This infrastructure should include:
 - » A platform for linking farmers and entrepreneurs to the various institutions currently working to rehabilitate degraded land, promote sustainable agricultural practices, and develop and expand alternative value chains in Anantapuramu;

- » A platform for collaboration, knowledge exchange, and exchange visits between the three villages;
- » A secondary leadership structure that is equipped and capacitated for delegation of intervention actions;
- » Ensure government work programmes are aligned to landscape restoration priorities;
- » Integrated village-level institutions involved in INRM under the Panchayat to increase accountability, coordination, and oversight

2. Develop the capacity of new supporting infrastructure and existing institutions to address complex problems amidst changing context. Capacity development and empowerment should specifically utilise the **Grama Sabha** aspect of the **Panchayat** local governing system
3. Develop the capacity of civil society groups, including **SHGs, women’s groups, and youth groups**, to build the knowledge and skills necessary to implement community-led interventions and develop emerging leaders for the sustainability of existing initiatives and future work
4. Work with the Panchayat to facilitate **access and benefit sharing agreements** between the private sector and communities in order to ensure fair and equitable sharing of the benefits derived from biodiversity and incentivise the conservation of local biodiversity
5. Work within target government structures to implement existing policy and **influence policy-making** at the state, landscape and village level. Build awareness and develop capacity within local and regional governance on current threats facing the landscape and promote dialogues on possible policy interventions to address those threats. Possible policy interventions include:
 - » Agricultural subsidies to boost agricultural production and encourage crop diversification;
 - » Support for basic storage and processing infrastructure to encourage value chain development and diversification;
 - » WALTA Act
 - » MGNREGS Act
 - » Biodiversity Act
 - » Empowering Grama Sabha & Local governing bodies
6. Facilitate **access to finance** (credit, small grants, insurance) for smallholder farmers and for micro-enterprises that will contribute to the growth of agricultural

food value chains (processing units, storage facilities, marketing, etc.). Consolidate access to existing subsidy and credit schemes to allow alignment, access and utilisation for community priorities. Facilitate linkages with financial institutions to improve access to financing, set up cost-sharing financing mechanisms, and support financial institutions through capacity building on smallholder agricultural credit risk management

7. Adopt a **value chain approach** when designing interventions within the agriculture sector in order to comprehensively address the constraints that are preventing agricultural development and diversification as well as smallholder participation and skills upgrading within existing value chains. Potential agro value chain interventions include:
 - » Identify new value chains for targeted development, e.g. poultry, small ruminants, and high value crops, custard apple;
 - » Improve linkages within existing value chains by bringing actors together, including those working both horizontally and vertically within a value chain, through interest groups, dialogues, workshops, associations, or legal contracts or service agreements;
 - » Develop capacity and facilitate farmer engagement with certification schemes, contract management, quality control, post-harvest handling, and technology transfer;
 - » Connect producers to existing markets. Promote **community self-marketing**. Develop branding and promote products in local and regional markets;
 - » Invest in the development of **warehouses, processing units, and storage facilities** in order to support product upgrading;
 - » Establish **Farmer Producer Organisations (FPOs)** with support from NABARD to facilitate smallholder linkages with markets, increase access to credit, decrease transaction costs, and lower risk for farmers

Suggested Transformation areas	Where could this work	Who this is targeting?	What stakeholders must be engaged?
Water Act	State level	Regulating borewell digging	Farmers, borewell diggers
MGNREGS	At Village Level	Landscape	Community / state govt
Subsidies	At landscape level	Farmers - seeds, water	Farmers
Biodiversity Act	At landscape level	Community empowerment	Farmers / state govt
Benefit Sharing	At landscape level	Panchayat empowerment	Labour upstream
Portability of benefits	At state level	Landscape development	Downstream/state team
Price Regulator	At national level	Resource management	Farmers
Incentivising farmers for crop diversification	At landscape level	Reducing distress of farmers	Farmers, landless poor
Information disseminators	At landscape level	Farmers empowerment	NGO’s, research
Empowering Grama Sabha & Local governing bodies	At landscape level	Community development	Habitations

Group work template compiled for proposed transformation areas addressing policy and the enabling environment. Table outlines the policy areas that are likely to impact the landscape and should be reviewed and aligned to support transformation

Monitoring and inclusion of evidence in an action research program

A number of critical areas for monitoring were identified through the initial planning process and will need to be refined in order to track and report on achievement of key areas towards the landscape vision. These include indicators for enhanced livelihoods, empowerment, social capital at the village level, agricultural productivity (crop and livestock), nutrition, land degradation, soil quality and water availability. It is envisioned that both biophysical and socio-economic data will be collected using qualitative and quantitative methods.

The exemplar landscape program will use a reflective learning process to bring different data sets together and present them in visually acceptable forms to the community and project teams to understand and shift, where needed, their perceptions and actions. By integrating multiple data sources into a reflective learning process, managers, project staff, field officers and the community can reflect on the progress, challenges and possible solutions, to adaptively learn and respond. The SHARED approach can be used to conduct the reflective learning process.

Outreach communications on the workshop



Closing Reflections from Workshop Participants

- » I was not clear on day one on what a landscape was and the workshop has allowed me to develop a greater understanding and clarity and the key issues around landscapes
- » We now appreciate the scope of a landscape - the action plan will now come
- » The boundary we thought we had widened over time after reflections and insight from the field work
- » This workshop involved so much knowledge sharing
- » The title of the workshop was relevant given the situation in the district, eminent personalities attended and addressed environmental issues - recurring drought is a common phenomenon in the area. This workshop is just the starting point. This effort should be expanded to other districts
- » Participatory process to share ideas and the approach and facilitation of the workshop changed to fit the needs - we really appreciated this flexibility
- » We started the discussion around the concept that one plot here and another there was not enough and we needed to think in a landscape which also arose from the 365-green cover/dry sowing experience
- » Good workshop with lots of thinking - thanks to RySS (whole team) DC, Malla Reddy, ICRAF, DPMs, local team and NFFs, RCs, SIFF team, rainforest alliance, MOA
- » We have dreams - now we need to make them a reality

నిస్సారమైన భూములతోనే కరువు కాటు

ప్రకృతి సేద్యమే ప్రత్యామ్నాయం

అనంతపురం సప్తగిరి సమితి : ప్రకృతి సేద్యమే ప్రత్యామ్నాయమని కలెక్టర్ సత్యనారాయణ పెర్మానూరు. శనివారం ఏఎఫ్ ఏకాలజీ సెంటర్ లో 'ఎడారికరణ తిరోగతి, తిరోగమనం' అంతర్జాతీయ స్థాయిలో నేటి నుంచి 6 వరకు జరగనున్న వర్క్ షాపును జ్యోతి ప్రజ్వలన చేసి కార్యక్రమాన్ని ప్రారంభించారు. ప్రభుత్వ ముఖ్య సలహాదారు విజయకుమార్, డాక్టర్ రవిప్రభు, రాష్ట్ర వ్యవసాయ మిషన్ సభ్యులు మల్లారెడ్డి, డాక్టర్ మైక్ బ్రో, డాక్టర్ పెర్మాన్ సింగ్, డాక్టర్ లైవిన్ విక్టి, శాస్త్రవేత్త డివీ రాయుడు, డాక్టర్ జాకీర్, శరత్ పెండేకంటి ముఖ్యఅతిథులుగా హాజరయ్యారు. కలెక్టర్ మా టూటూ ప్రకృతి బోర్డు' ఏర్పాటు చేసి, మద్దతు ధరలు ప్రకటించి, రాయలసీమ రైతులను ఆదుకుంటారని, వ్యవసాయాన్ని లాభదాయకంగా మారడంలో శాసన

Individual contributions and commitments to the exemplar landscape

Collaborate and engage

- Help to develop a plan for the landscape program and mechanisms for ICRAF to contribute to the partnership
- Soil and moisture conservation capacity building and construction or repair the old structures
- Technical assistance required through the programme
- Project management
- Help document biodiversity- "people biodiversity registers" and facilitate ecological restoration
- Working together to provide and improve soil and human health
- Soil conservation, biodiversity and water conservation
- Talking to the people to find the exact problems and their expectation to make their lives better
- Identification of ground challenges (social and agriculture related)
- Support technically and organizing the field level activity
- Strengthening of existing SHG towards income generating activity
- Develop leaders to lead a group of champions

Capacity building and skills

- Skill development to youth in employment generation and put enterprises
- Give capacity building in separate thematic areas
- To change the mindset of people to bring on a sustainable life
- Capacity building regarding best management practices
- Cultural restoration
- Community planning on participatory approaches
- Give more knowledge on soil health
- Empower farmers about land degradation work and soil carbon restoration through agroforestry specifically by promoting quick growing plants and carbon sequestering and economically and ecologically helpful to farmers
- Knowledge sharing working with community on agroforestry
- Promote tree plantation in the villages and community plantations
- Training which can generate income regularly on 5 layer models estimation

Data and evidence

- Generating scientific evidence
- Rapid cost effective reliable assessment of soil health
- Use the IOT-Ag and big data in accelerating landscaping process and marketing
- Collect and provide data (FES has rich IT tools)
- Soil and resource mapping
- Research on payment for ecosystem services
- Knowledge assessment on models (multi crops like five layer)

Networks and organisations

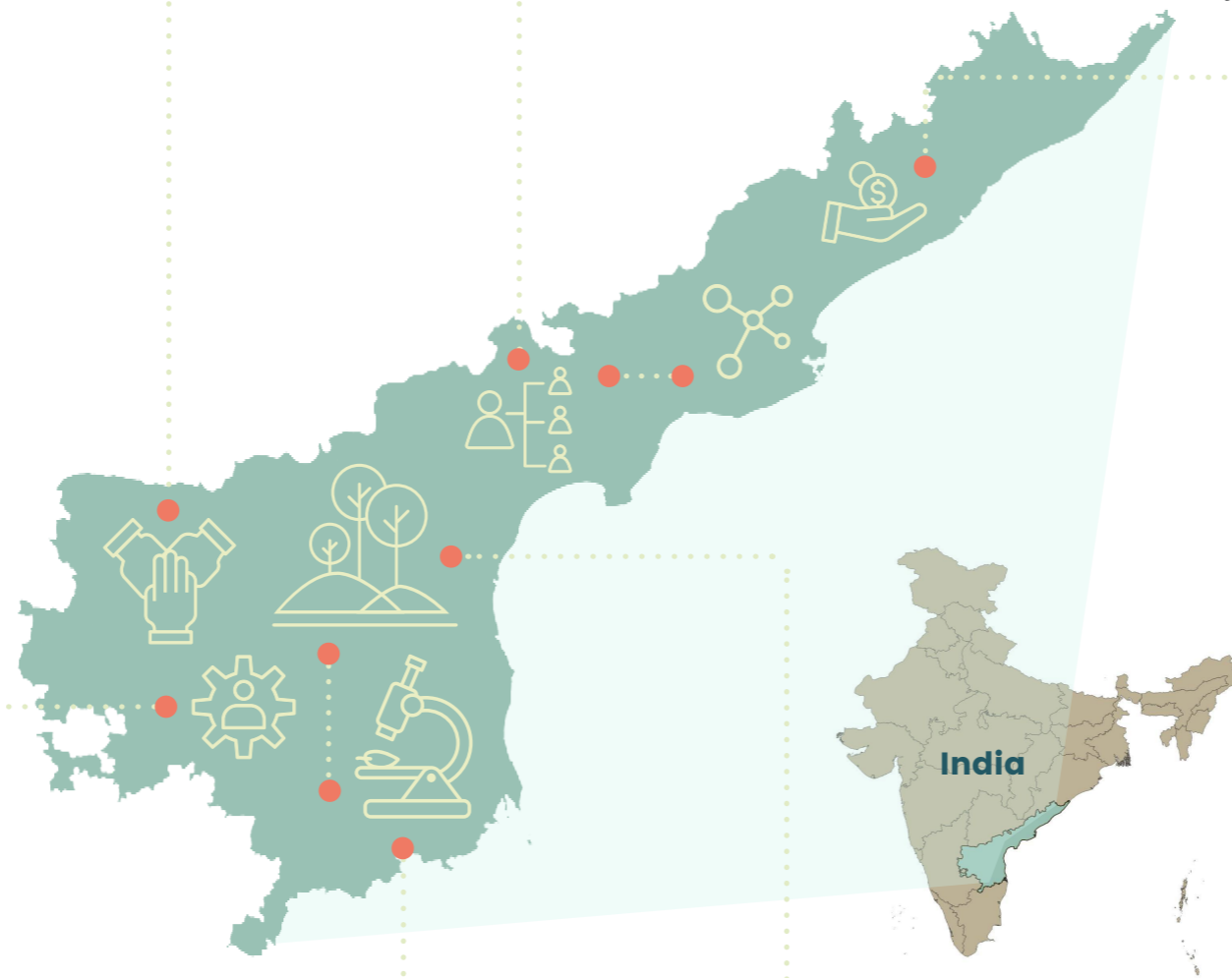
- Gramasabha or village organizations and community based approaches, based on gramsabha resolution
- Promotion of SHG,VO and FPO and youth clubs to promote community mobilization
- Coordinating with various institution with capacity and integrating in the programme
- Advise synergies from all stakeholders who will work together
- Identify relevant NGOs ,CSOs to implement the exemplar landscape approaches
- Mobilization of community

Farm interventions and promoting approaches

- As an agronomist I will train the farmers on land utilization and get them more income from the each piece of land
- Farm scale models
- Capacity building on: judicious usage of natural resources, soil and water conservation, integrated farming system
- ZBNF: practicing, sustainable farming, marketing, soil health management, better environment to living organisms, reduction in cost of cost cultivation
- Promotion of green manure and ZBNF to maintain soil fertility
- Sustainable crop models; 36*36 models and polycrops
- Educate farmers to farm based on ZBNF practicing sustainable farming to reduce the cost of cultivation
- Make farmer /gram panchayat aware of all policies of services available for them show them how they can make best use of them in different contexts
- 365 day green cover five layer model and RFSA methods
- Encouraging farmers to grow drought resistant crops and low water use practices
- Motivate farmers to explore markets directly
- Introducing drought resistant crops and big water conservative structures
- Train farmers and households to plant and promote consumption from kitchen gardens

Landscape planning

- Exposure visit: case studies or successful examples
- Plan and demonstrate farm and landscape conservation
- Assessment of landscapes biophysical features for much suited customized designing
- Nesting the landscape
- Create model on landscape conservation
- Water and soil conservation
- Create resource persons of landscaping at village level
- Educate policymakers on the importance of landscapes
- Bottom up planning for landscape
- Set up landscape models with best practices
- Create awareness about the present situation and importance of landscape models at this situation and how to restore the natural resources



Annex

Annex 1 - Participants List

Num	Name of the Participant	Organization
1	T.Vijay Kumar, IAS (Rtd)	Advisor to Govt.(A&C) and Co-Vice Chairman, RySS, AP
2	Dr. D.V.Raidu, IAS (Rtd)	Sr. Consultant, RySS
3	Dr. Ravi Prabhu	ICRAF
4	Mieke Bourne	ICRAF
5	Dr. Fergus Sinclair	ICRAF
6	Dr. Tor-G Vågen	ICRAF
7	Dr. Leigh Winowiecki	ICRAF
8	Atul Dogra	ICRAF
9	Sunil Londhe	ICRAF
10	Y.V.Malla Reddy	AF ecology
11	Meghana Palepu	Tata Trust
12	Dr.Ramesh Singh	CAFRI
13	Raghu	APPI
14	Saneesh	FES South India Office
15	Zakir Hussain	RySS
16	Dharmendar	RySS
17	Venkat	RySS
18	M.Humayun	RySS
19	Sai	RySS
20	DPM Kurnool	RySS
21	DPM Chittoor	RySS
22	DPM/AO Kadapa	RYSS
23	DPM/AO Prakasam	RySS
24	Padma/Narasanna	Aranya
25	Sarat	RySS

Num	Name of the Participant	Organization
26	Sonia	SIFF
27	Rujutha	SIFF
28	Narayanaswamy	HANDS
29	Nirmala	CARD
30	Ravindra	WASSAN
31	Md.Sohail	RySS
32	Mounica-RC Chittoor	RySS
33	Hamika-RC Nellore	RySS
34	Haripriya-RC Anantapuram	RySS
35	Kiranmai-RC Prakasam	RySS
36	Srinija -RC	RySS
37	Chinni-RC	RySS
38	NFF Kurnool	RySS
39	NFF Sandeep-Chittoor	RySS
40	NFF Sunanda -Kadapa	RySS
41	NFF Anantapur -Bhairav	RySS
42	Bhaktavar Vali	FES
43	P.Nagabushana	ATP, ZBNF
44	G.Saleeshwaraiah	ATP, ZBNF
45	P.Praveen kumar	RySS
46	Adinarayana	CSA
47	C.Devanand rao	CARD
48	M.Satish	CARD
49	B.Ramanjineyulu	CARD
50	K.Amarnath reddy	CARD
51	N.P Yellappa	APDMP
52	M.C Madduleti	ATMA

Num	Name of the Participant	Organization
53	Krishna chaitanya	WASSAN
54	S.M.Salim	RySS
55	C.Manohar	RySS
56	Latha	FAO
57	SK.Dhyani	ICRAF
58	B.Sreeram praveen	RySS
59	Hari krishnan	IWMI, Anand
60	Lakshma naik	RySS
61	N.Vlawudham	IPPI
62	Thulasi bai	HANDS
63	Narendra kumar	AF Ecology
64	S.M.Bhama	AF Ecology
65	Swathi	RySS
66	T.Y.Reddy	AF Ecology
67	Anwar	APPI
68	R.Sairam	RySS
69	S.V.Praveen kumar	RySS
70	Y.V.V.N Prasad	Rural Development Department
71	B.Vamsi krishn	RySS
72	Neelkant	RA
73	Mohith Sharma	Rainfed Authority Ministry of Agriculture
74	Shasank	Say Trees
75	KM.Narayaaniah	DROA
76	G.Venkateshwar reddy	APDMP
77	Dr. Shiv Dhanyi	ICRAF

Annex 2 – Workshop Agenda

DAY 1: NOVEMBER 2 ND SATURDAY		
Time	Activity/Session	Presenter/Facilitator
10.00-10.30	Registration and tea	
10.30-11.00	Session 1: Introductions, expectations	Mieke Bourne and Zakir Hussain (facilitators)
11.00-12.30	Session 1: Setting the scene and aims of the workshop	Mr Vijay Kumar - RySS Dr Malla Reddy - AF Ecology Ravi Prabhu - ICRAF
12.30-13.00	Session 2: Exemplar Landscapes an introduction to the concept	Fergus Sinclair -ICRAF
13.00-14.00	Lunch	
14.00-16.00	Session 3: Sharing knowledge	Presentations on approaches to address land degradation Presentations 20 minutes (with a poster where possible) Presentations (To be updated): <ul style="list-style-type: none"> • CAFRI • FES • RySS • Reading University (online)
16.00-16.30	Break	
16.30-17.45	Session 3: Sharing knowledge continued	<ul style="list-style-type: none"> • APPI • ICRAF (mine and desert rehabilitation, ICRAF and global experience on restoration)
17.45-18.00	Closing remarks	

DAY 2: NOVEMBER 3RD SUNDAY

Time	Activity/Session	Presenter/Facilitator
9.00–9.30	Recap of the previous day	Facilitators
9.30–10.30	Session 4: Introducing the candidate landscape Participants interacting with data about the prospective area(s) using 'data walls' to generate a shared understanding of key characteristics and issues and to begin to define appropriate boundaries	Data wall presentation by: <ul style="list-style-type: none"> • RySS team • Leigh Winowiecki -ICRAF • Tor-G Vågen - ICRAF • Others
10.30–11.00	Break	
11.00–13.00	Session 4: Introducing the candidate landscape continued	More presentations as needed and initial discussion on the data
13.00–14.00	Lunch break	
14.00–16.30	Session 5: Discussion on the data and the approaches	Presentations on approaches to address land degradation Presentations 20 minutes (with a poster where possible) Presentations (To be updated): <ul style="list-style-type: none"> • CAFRI • FES • RySS • Reading University (online) Discuss first thoughts on what we think would work in the landscape and our expectations
16.30–17.00	Closing tea	

DAY 3: NOVEMBER 4TH MONDAY

Time	Activity/Session	Presenter/Facilitator
9.00–9.30	Welcome and recap	Facilitators
9.30–10.00	Session 6: Introducing the exemplar landscape concept, the candidate landscape and the data available on it	Review of the data wall, specifically focused on the landscape and review expectations
10.00–10.30	Tea break	
10.30–18.00	Session 7: Field trip	Visit the candidate area(s) and discuss with stakeholders in the field to get an understanding of aspirations, challenges and realities

DAY 4: NOVEMBER 5TH TUESDAY

Time	Activity/Session	Presenter/Facilitator
9.00–9.30	Session 7 continued: Reflections from the field visit	Feedback from the field trip
9.30–10.30	Session 8: Expectations for an exemplar landscape and approaches that can help us reach these. Discussion and reflection <ul style="list-style-type: none"> • What we want to achieve and approaches • What do we want to reverse in terms of inputs and degradation. • What we think will work 	Facilitated discussion
10.30–11.00	Break	
11.00–13.00	Session 9: Discussion of what could work and the area of focus (Based on the data and experience explore practices proposed in the landscape)	Discussion together with stakeholders from the landscape and using spatial planning tools
13.00–14.00	Lunch break	
14.00–16.00	Session 10: Developing the plan Session output: develop an operational plan for the exemplar landscape that could be funded	Start developing the plan in groups
16.00–16.30	Break	
16.30–17.30	Closing remarks and next steps	TBC

DAY 5: NOVEMBER 6TH WEDNESDAY – CORE FACILITATION TEAM

Time	Activity/Session	Presenter/Facilitator
8.30–11.00	Finalise plan and report	Small group fine-tuning the report and working on the plan with local community, district and state level authorities. This will include preliminary exploration of the kinds of protocols to be used in monitoring and adapting to observed and induced changes. [Plan finalization by mid-December]
11.00	Close	



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