

Report on the “Round Table on Sustainable Management of *Jhum* in North East India”

21-22 November, 2017

Dimapur, Nagaland

*Organised by Government of Nagaland and the
International Fund for Agricultural Development*

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ACKNOWLEDGEMENTS

This report captures the proceedings of a two-day consultation held in Dimapur, Nagaland on 21st and 22nd November, 2017 which discussed the importance and relevance of jhum cultivation in North East India in the present and future, retaining its traditional value and yet modernizing it in ways that could make it economically attractive for the farming community. The meeting saw vibrant discussions from a wide ranging group of participants that included the Minister for Health and Family Welfare, Govt of Nagaland, senior government officials from the different North East states from Agriculture as well as Forestry Departments, academicians, researchers, members from the international donor community, NGOs, CBOs, private entrepreneurs and local farmers. They addressed specific concerns that jhum was facing in the present context not only in the North East of India but also in other countries such as the growing disenchantment of the youth with agriculture in general, environmental concerns related to jhum and the associated drudgery .

The Roundtable was conceptualised as a knowledge event during the design of the Fostering Climate Resilient Upland Farming Systems in the North East, a Project financed by the International Fund for Agricultural Development (IFAD) in Nagaland and Mizoram with a focus on shifting cultivation. IFAD helped in planning the workshop sessions, identifying the speakers and in organising and documenting the event. The Ministry of Development of North Eastern Region (MoDONER) also actively supported the event, providing funding support.

The success of a knowledge event depends on the quality of speakers and participants. It is a matter of pride for the state of Nagaland that despite a short notice the event witnessed participation from very high level of local, national and international speakers representing communities, civil society, academia, donor community, UN organisations, Research Institutes, private sector and the Government. The report attempts to capture key messages and voices from the consultation but may not be able to fully represent the rich discussions that took place during the roundtable and on the margins of the event. There is also a brief account of the field visit that was organised by the District Agricultural Officer, Kohima to Khonoma, to the pineapple farms at Molvom by the District Horticultural officer, Dimapur and ICAR, National Research Centre for Mithun at Jharnapani by Director NRC. A description of an exhibition showcasing the range of jhum products that was held at the meeting venue which was put together jointly by the Department of Agriculture, Department of Horticulture, Land Resource Department, Nagaland Bamboo Development Agency, Nagaland Bio-Resource Mission and Nagaland Beekeeping & Honey Mission.

This is the first of, what is expected to become, an annual knowledge sharing event on the theme of climate resilient upland farming systems in the North East and I wish to thank all Speakers and participants and the entire team that worked behind the team to make this happen .

LIST OF ABBREVIATIONS

BCC	Behaviour Change Communication
CA	Conservation Agriculture
CAPST	Conservation Agriculture Production Systems with Trees
CAT	Conservation Agriculture with Trees
CAwT	Conservation Agriculture with Trees
CBO	Community Based Organisation
CGIAR	Consultative Group on International Agricultural Research
CINRAM	Centre for Integrated Natural Resources and Agricultural Management
CRMP	Community Resource Management Plan
MoDoNER	Ministry of Development of North East Region
EAS	Employing CAwT on Slopes
FAO	The Food and Agriculture Organization of the United Nations
FBO	Faith Based Organisation
GARD	Get Airports Ready for Disaster
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GoN	Government of Nagaland
GOALS	Governance and Accelerated Livelihoods Scheme
ICRAF	International Council for Research in Agroforestry
ICAR	Indian Council for Agricultural Research
IEC	Information, Education, Communication
IETC	Integrated Extension Training Centre
IFAD	International Fund for Agriculture Development
MAP	Protection of Medicinal & Aromatic plants
NEN	North East Network

NEPED	Nagaland Empowerment of People through Economic Development
NER	North Eastern Region
NEPED	Nagaland Empowerment of People through Economic Development
NERCRMP	North Eastern Regional Community Resource Management Project
NGO	Non Government Organisation
NTFP	Non-Timber Forest Products
PPP	Public Private Partnership
SAP	Sustainable Agricultural Practice
SAPCC	State-level Climate Change Action Plan
SLEM	Sustainable Land and Ecosystem Management
UNDP	United Nations Development Programme

EXECUTIVE SUMMARY

Agriculture has been the mainstay of people in North East India, with shifting or slash and burn or *Jhum* farming being a widespread agriculture practice. For generations, people living in the difficult and hard-to-reach areas of the hilly North Eastern Region (NER) have subsisted on this form of cultivation that has traditionally taken care of their basic needs, such as firewood and food. For the tribal people of the region, *jhum* agriculture is not only a crop production system, but in many senses, a way of life.

In recent years, *jhum* has come under stress owing to a number of factors such as impact of climate change, increased pressure on land, altered land use patterns and a growing disengagement of youth, who are moving to alternate professions. Earlier *jhum* cultivation reflected a sense of balance that was proportionate to needs, having long fallow period with crops grown in thick humus in ways that were natural and which resonated with traditional native wisdom and mostly aligned to the natural regeneration cycle of the forest. Cut to the present and *jhum* is mostly done in large blocks of land where diversification is accompanied by a switch to growing more commercial cash crops, leading to degradation of soil with loss of nutrients. Further, in the absence of effective market linkages and infrastructure, economic condition of *jhum* farmers is deteriorating. These are all causes of immense concern and if remedial steps are not taken, not only will the region's rich biodiversity be under threat but livelihood opportunities will also shrink, hurtling a large part of the population of NER towards poverty and deprivation.

A two-day Round Table Consultation on "Sustainable Management of *Jhum* in North East India" was organised by the Government of Nagaland (GoN) and the Ministry of Development of North Eastern Region (MoDoNER) with support from the International Fund for Agricultural Development (IFAD) in Dimapur from November 20-22, 2017 with the objective of sharing the technical and institutional options that the state governments and farming communities must consider for sustainable management, intensification and transformation of *jhum* cultivation in North East India. The workshop brought together over 100 participants including key government functionaries from all North East states of India with significant experience in *jhum*/shifting agriculture, as well as representatives from the forest department and policy making bodies such as Indian Council for Agricultural Research (ICAR), Ministry of Agriculture and Farmers' Welfare and representatives from research centres and farming communities. Speakers and participants included experts in the domain of *jhum*/shifting cultivation and climate resilient agriculture from Consultative Group on International Agricultural Research (CGIAR) such as International Council for Research in Agroforestry (ICRAF) and other technical institutions such as Food and Agriculture Organization of United Nations (FAO), United Nations Development Programme (UNDP), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), University of Minnesota, Tata Trusts, IFAD and IFAD supported projects in India and Nepal.

The approaches discussed during the consultation included how to extend the *jhum* cycle and find alternatives to *jhum*, including permanent agriculture. Many areas recording more than 50% drop in *jhum* cultivation, and farmers opting to go for commercial crops presented a picture of the changing reality on the ground. There was agreement that policy makers and farmers must acknowledge that

change with respect to agriculture in general and *jhum* cultivation in particular is a continuous phenomenon. It is, therefore, important to consider the entire continuum from *jhum* to settled agriculture/options. There is no single solution and unless there is good quality data, decisions cannot be made in favour of farmers, because evidence is important for decision making and only that can be managed which can be measured. Finally, the decision of what needs to be done must come from the farmers as they decide what to adopt and how to adapt. Market and value chain assessment must be ongoing and the key to identifying markets and value added options that can drive sustainable land use change. Similarly, livelihood improvements should be taken into account while planning any initiative related to agriculture development. *Jhum* has been successful in the region because it directly linked with livelihoods of a population that is economically challenged and has limited access to resources.

The Roundtable brought together international experiences from the University of Minnesota, Adaptation for Smallholders in Hilly Areas (ASHA) Project in Nepal and ICRAF Philippines, as well as, lessons learned from externally aided projects of UNDP, GIZ, FAO, IFAD etc. The Philippines model of Conservation Agriculture with Trees (CAT) presented an option to *jhum* intensification providing better economic, social and environmental benefits. It also demonstrated how crop diversification and intensification can anchor efficient and effective use of both above and below ground growth resources while ensuring employment, income and food security to upland dwellers. Nepal's agro forestry model showed how soil erosion was controlled and stream water sources recharged and restored alongside improvement in quality of livestock and a concurrent rise in level of income. They helped establish partnerships in infrastructure development, leading to increase in women participation and school enrolments.

Interesting inputs came from *jhum* farmers who explained why *jhum* was losing popularity and their villages were recording a large drop in the area devoted to *jhum* farming. Conversely, there were villages with areas under *jhum* that had increased owing to innovations. The discussions along with case study presentations from Meghalaya, Nagaland, Nepal and Philippines conveyed a sense of urgency to revive *jhum* and increase productivity of *jhum* land within the socio-cultural ambit of *jhum* farmers. From wanting to lengthen cultivability of lands by at least 1 to 2 years, to ensuring faster rehabilitation of *jhum* lands and restoration of its productive capacity, stakeholders discussed how loss of natural resources could be reduced and soil fertility improved by adopting soil and water conservation measures and soil fertility management. Use of good crop varieties suitable for *jhum* land, increasing cropping intensity, crop rotation, and soil and moisture conservation measures were suggested.

Marketing was a major concern, especially given the recent surpluses in agricultural produce with the adoption of new practices and technologies. More private sector engagement, public private partnerships (PPP) and farmers' collectives need to be brought into the mainstream so that larger communities are benefited. There was sharing of ideas by *techpreneurs* who were tapping into market systems by creating innovative technology based linkages between farmers and markets using platforms like e-auctions, internet and other aggregator models. They not only provided options to *jhum* farmers but also helped in preserving traditional systems and practices.

CHAPTER 1

Background & Introduction

The North Eastern Region (NER) of the country is one of the 12 biodiversity hotspots, with more than one-third of the country's total biodiversity. Climate change adaptation for NER is critical, as more than 81% of its population lives in the rural hinterland (Census 2011) and is dependent on climate sensitive production systems and natural resources such as agriculture, forests and water availability. Agriculture is the mainstay here with different cropping patterns that are followed. In Sikkim and Arunachal, which are dominated by alpine areas where altitude hovers around 2500m, soil quality is Himalayan rock and acidic. In Nagaland, Arunachal, Meghalaya, Manipur, Sikkim and Mizoram that have more of temperate sub-alpine areas and altitude ranges between 1500-3000m, soil characteristics are typical of the mountainous region. Mostly, the region is characterised by hilly and mountainous terrain and relatively low population density which is now changing as population pressure increases and there is soil erosion with depletion of nutrients. This is largely due to high and unevenly distributed rainfall and physical isolation from the mainland Indian plains.

The timing of the Round Table was pertinent because it built upon the work initiated through the Fostering Climate Resilient Highland Farming Systems in the North East (FOCUS) Project financed by the International Fund for Agricultural Development (IFAD). With a commitment to make the Round Table an annual feature and plans of hosting a follow-up consultation next year in another sister state of the North East, the stage was set to revisit, revitalise and rejuvenate traditional farming practices, aligning them with present-day demands, creating market linkages, making it attractive and economically viable for young people and fair and equitable for women.

Jhum today is not just a production system but an ethos of life that generates passionate discussion about its conservation and replacement. The debate becomes all the more lively in view of promoting sustainable farming in upland areas in ways that help address the negative fall-out of increasing population, commercialisation of agriculture and changing aspirations of the youth



1.1 The relevance of *jhum* cultivation and reasons for its decline

The natural resource management practices, livelihood systems and food habits of people in the hill States of NER have evolved around a farming system known as *jhum* (shifting agriculture), providing food and energy security to communities. This largely self-sufficient system has met different needs, including food, fibre and energy of the mostly rural highland communities for generations. *Jhum* has been successful because it provided livelihood opportunity sustaining some of the poorest sections of society. It was sustainable in the past because pressure on land was less and *jhum* cycle was aligned to the natural regeneration cycle of the forest.

However, the legacy of *jhum* cultivation which passed on from generation to generation is now under threat and is getting disrupted due to several factors. These include the natural shortening of *jhum* cycles as a result of increasing population, high levels of drudgery associated with the practice of *jhum* and changing aspirations of local communities, especially the youth. Changing climate patterns is further exacerbating these trends and as a result, over the years there has been a steady drop in the area devoted to *jhum* cultivation.

North Eastern States are developing differentiated strategies to manage *jhum* cultivation in a sustainable manner, both economically and environmentally. Two approaches presently being adopted in the region relate to

- Extension of *jhum* cycle to reduce the area deforested annually; and
- Transition to sedentary and permanent agriculture.

These options entail putting in place enabling and supportive measures which include land use planning, land tenure and land holdings, enhancing soil fertility, improving agronomic practices to enhance productivity, appropriate financial investment and markets while addressing issues of food security and income enhancement in a sustainable way.

NER Fact file: Socio-economic conditions and the *jhum* connect

Geographical spread: 26.22 million ha; 8% of the country's total area

Total population: 49.4 million (3.76% of India's population)

Farming activity: Cultivators (41.61%) + agricultural labourers (13.07%)

Marginal/small farmers: 78.92%

Those below poverty line (2011-12): 25.74%

Shifting cultivation: In India, 0.94 m ha under shifting cultivation; NER accounts for 80% (0.76 mn ha).

Shrinking land holding with per capita availability of land: 0.34 ha in 1950-51 to 0.17 ha in 1999-2000 and 0.12 ha in 2010-11

Source: Census 2011

1.2 The need to reposition *jhum* cultivation

Jhum cultivation is a traditional system that helps in generating livelihoods. With shortened cycles of *jhum* cultivation there have been increasing levels of degradation. Research carried out by ICAR in 1996 showed farmers abandoning *jhum* and transitioning to more settled forms of agriculture. In spite of an absence of exact data and evidence, it was becoming clear that farmers were switching to more lucrative cash crops, abandoning *jhum*, with many members of the younger generation losing interest in *jhum*. They were abandoning it and migrating to cities and other states in search of more lucrative opportunities. Changing climate patterns with projected increase in temperatures and increase in rainfall by 10-20% combined with higher intensity rainfall and longer dry spells is likely to increase vulnerability of those engaged in agriculture. Moreover, forests too are at risk of losing their productive value and rich biodiversity.

Schemes and Policies related to *Jhum* rehabilitation

- Watershed Development Projects in Shifting Cultivation Areas (MoA, since 1976-77)
- Soil conservation schemes of the government of India
- Tripura Jhumia Rehabilitation Scheme, Government of Tripura; Rubber plantation in SC areas
- New Land Use Policy (NLUP) of Government of Mizoram
- 1985-1991: Rs. 1131 lakh; 1991-1992: Rs984 lakh
- 2009-10 to 2013-14:19640 families to be covered (1,26,982 lakh)
- Integrated Wastelands Development Scheme (MoRD, since 1989)
- Nagaland Empowerment of People through Economic Development (NEPED)
- North Eastern Regional Community Resource Management Project (NERCRMP) (IFAD)
- Meghalaya Rural Development Society

Against this backdrop, the two approaches that have been adopted in the NER revolve essentially around the extension of the *jhum* cycle to reduce the area deforested annually and the transition to a sedentary and permanent form of agriculture. In recent years there has been a lot of debate around the relevance of improving *jhum* and ensuring its sustainable development so that livelihoods can be preserved.

1.3 Bringing relevant stakeholders together to discuss the future of *jhum*

Ms. Rasha Omar, Country Representative, IFAD set the context for the Round Table, highlighting the importance of *jhum* for local communities. She pointed out that so far, *jhum* cultivation has been community driven wherein grassroots organisations have mobilised upland areas. To understand this form of cultivation, its unique aspects and the challenges it is currently facing, it is important to view it in the context of the entire NER.

With a long association with the NER, especially with the two phases of NERCORMP, focusing on community driven NRM in the states of Assam, Manipur and Meghalaya, the completed Meghalaya Livelihood Improvement Project for the Himalayas (MLIPH) and the Meghalaya Livelihood and Access to Markets Project (Megha- LAMP) currently under implementation in the state of Meghalaya, IFAD is now starting the Fostering Climate Resilient Highland Farming Systems in the North East (FOCUS) project. This is the first project financed by IFAD which is exclusively on *Jhum*. She recalled how the idea of the roundtable germinated earlier in 2017 while IFAD was working with the states of Nagaland and Mizoram, on the design of FOCUS. She thanked the Government of Nagaland for hosting the event and successfully bringing together multi stakeholder and high level participation from government, development practitioners, researchers, scientists, farming communities, youth and market players both from the region as well as outside. Overall 100 participants participated in the discussions.

Objectives of the roundtable

- To discuss differentiated strategies to manage *jhum* cultivation in a sustainable manner, both economically and environmentally;
- To exchange knowledge and learn from examples of other states and countries
- To identify the technical and institutional options that the state governments and farming communities can consider for the sustainable management, intensification and transformation of *jhum* cultivation in the North East of India.

CHAPTER 2

Climate Change and Agriculture: Importance of *Jhum* Improvement

Dr. Randhir Singh Poswal, Assistant Director General, ICAR, in his presentation gave an overview of the last three decades of *jhum* agriculture and stressed the need to address the issue of slash and burn through appropriate policies and technologies since it is not beneficial and has impact not just at the point where the burning is taking place but for many kilometres around it.

As far as climate change is concerned, the problem is not restricted to Nagaland alone but is spread across the world. Over 80% of soil is found to be deficient and erosion is emerging as a big problem. Farmers experiencing climate change see a decline in rainfall and change in seasons, which affect their cropping pattern adversely. In order to double farmers' income, there is need to decrease inputs and opt for value addition, which is a challenge in the context of *Jhum*. It is advisable that different slope areas must opt for different cropping patterns and water harvesting structures as also practices such as fisheries and linings to reduce the evaporation of water. However, in the absence of proper training and scientific knowledge *Jhum* farmers may not be adopting these practices and suffering on account of unintended erosion and losses. It is important that farmers are realising that their crop patterns need to change and that if they have to pursue *jhum* cultivation it cannot be in its present form. They will need more varieties, different crops and harvest structures. This necessitates greater levels of awareness amongst farmers.

An ecological approach that allows for investment in upland areas is the need of the hour. This will ensure development in mainland areas too.

2.1. Upland farming systems and food security: Global perspectives

Dr. Shyam Khadka, Country Representative, FAO shared information about how traditionally upland areas were the centre of human activities and farming and they were not marginalised as they currently are. Historically, two technological innovations, namely the invention of gun powder and the industrial revolution paved the way for communities to migrate to the plains. Thus, the upland areas became abandoned, ignored and vulnerable to the impact of climate change. In India, the NER, over a period of time also became vulnerable to social and political unrest and insurgency in some parts. There is high outmigration of the workforce from the hills in NER and what is worrying is that the region is losing its human resources, especially the skilled youth who are not returning to their homes.

But the good news is that this scenario is now changing; in spite of upland areas being marginalised for over 600-700 years, there is now greater recognition of the fact that the plains cannot develop if the highlands and mountains are neglected. The realisation of the growing interdependence of human society, with rising river basins and erosion of bed levels has led to increasing attention being paid to upland areas. There is steady increase in the investments being made in upland areas to preserve the health of the plains where ecological and landscape/ basin approach is required. It is now a well established fact that without investing in upland areas, development in mainland areas is not possible and what is needed is an ecological approach.

Overall, geographical remoteness, isolation and barriers have made hill people develop their own cultural practices and identity and *Jhum* is very much a part of that. It is therefore important to understand their perspective when designing any initiatives in the NER as ignoring this aspect will lead to huge losses. The practice of *Jhum* has its pros and cons. On the positive side it is known to provide nutrients to the soil and this is important as the issue of soil health in the upland areas needs attention as it faces severe soil erosion. However, as there is hardly any soil data that can help quantify soil loss; the full impact of *jhum* on overall soil quality would be difficult to estimate. A new beginning has to be made where there is increased awareness on pursuing upland agriculture.

2.2 Restoring natural resources a priority

Hon'ble Minister of Health & Family Welfare, Mr Imkong L Imchen while speaking in the context of Nagaland said that for the last 70 years the state had struggled due to loss of natural resources and social and political unrest. The IFAD programme wherein Rs 275 crore funding had been sanctioned to cover 650 villages over a six-year period, covering the Eastern and Northern parts of Nagaland was a welcome move which called for empirical discussion. More workshops and seminars were needed to make people understand and take ownership of the project. He complimented the way in which upcoming large projects were being planned, such as the Japan International Cooperation Agency (JICA) funded project and collaboration with Department of Forests and Climate Change as also the FOCUS project supported by IFAD which will start in 2018. He emphasised that while they must not duplicate efforts they must complement each other and at all times ensure strong implementation and generation of benefits for the hill communities.

2.3 Working together to make *jhum* viable for coming years

Mr T. Imkonglemba Ao, IAS, Principal Secretary & APC, GoN thanked all delegates, speakers and participants for their presence. Referring to the recently designed IFAD supported project FOCUS, he reiterated that the IFAD supported project drew lessons from several successful initiatives in the state and aimed at scaling up the proven good practices related to *jhum* intensification. Going forward, this would strengthen involvement of research institutions like ICAR giving a strong boost to the upliftment of agriculture for the benefit of the farming community, not just in Nagaland but in all the seven sister states of the North East.

CHAPTER 3

Multidimensional Aspects of *Jhum* Cultivation

Jhum draws divergent and often strong views and a key purpose of the workshop was to bring a 360 degree perspective on *jhum* drawing from both national and international experiences.

Prof. V.P. Singh, Advisor, ICRAF, India moderated a panel discussion that had presentations on understanding different- often opposing- narratives with respect to *jhum*. He set the context by saying that it was pertinent to review *jhum* in its spatial and temporal context and seeing how it could be done differently. Referring to *jhum* in the context of North East India, he elaborated that while *jhum* in the past had allowed for balanced growth that was proportionate to needs and was economical due to low labour inputs and long fallow period of over 15 years with crops grown in thick humus, in recent years most of this had drastically changed leading to fundamental questions on whether there was even need to continue this form of cultivation. In the present situation, *jhuming* in Nagaland is increasingly becoming less of a choice and more of a compulsion.

3.1 Understanding conflicting narratives with respect to *jhum* cultivation

Dr. Dean Current, Centre for Integrated Natural Resources and Agricultural Management (CINRAM), University of Minnesota, USA¹ presented experiences and lessons from research activities undertaken in partnership with the Mizoram University with respect to farming and food systems research. He presented an analysis of its impact especially when the fallow period was decreasing and farmers started making a transition towards settled agriculture. While climate change was noted along with changes in the aspirations of youth as also in patterns of land use there was on the other hand, improved market infrastructure creating new opportunities with expanding markets and value added processing.

Research carried out in 1996 had shown that farmers responded to shortened cycles of *jhum* that led to degradation, smoke and release of CO₂ into the environment by transitioning to more settled forms of agriculture, abandoning *jhum* in the process. According to Dr. Current, today, with regard to *jhum* cultivation, there are several conflicting narratives, namely:

Jhum is a mainstay for people but increasingly becoming unsustainable: With increase in population and reduced land area, the fallow periods are getting shorter and there is faster degradation.

¹ University of Minnesota organises regular conference and symposia on land use management in NER/ Himalayas covering farming systems research. Specifically looking at the changes in *jhum* practice, exploring gender issues in farming systems, studying value chain of promising options, quality of water resources monitoring and research, undertaking DNA analysis of mushrooms and contributing to capacity building, amongst others.

Inspite of farmers being slow to change, holding on to their traditional mindsets, they are beginning to abandon jhum: Responding to social, economic and environmental changes, farmers are questioning the wisdom and economic sense of not making a switch from extensive *jhum* cultivation to settled agriculture or to growing cash and commercial crops. Increase in population and pressure on the land and environment combined with the growing reality of climate change is forcing farmers to become part of the market economy by taking decisions that may not be aligned to their traditional farming practices but are essential to survive in the immediate to medium-term.

Youth have, for generations, inherited the mantle from forefathers but now are unwilling to do so: *Jhum* is no longer attractive enough to engage the youth, many of whom are migrating to cities and taking to completely different professions. The changing aspirations of the youth and the altered status of land use and land tenure is not being given serious attention.

Opinions are being formed in the absence of data and evidence: Lack of good accessible data on *jhuming*, hydrology and meteorology is forcing farmers to innovate and look for new options and change.

Converting challenges into opportunities

With improved infrastructure and market access new opportunities/challenges are emerging. There are new, expanding markets and a thought process that is more accepting of alternatives. Abandoned *jhums* can be managed and/or planted as productive forests while, at all times, keeping farmers' interests in mind. Opportunities are emerging for value added processing as follows:

- Linking *jhum* improvement to livelihood and ecosystem enhancement especially with research and data to see the kind of rewards, risks and trade-offs that exist while guiding farmers to make a switch and making them realise the pitfalls of pursuing short term gains; and
- Using the power of IEC, BCC and policy related advocacy by making farmers better informed on government assistance that exists for more settled cropping systems.

Going forward it will be important to work with farmers and to help them adjust to change while enabling them to take advantage of opportunities these changes present and mitigating the social, economic and environmental problems associated with the change.

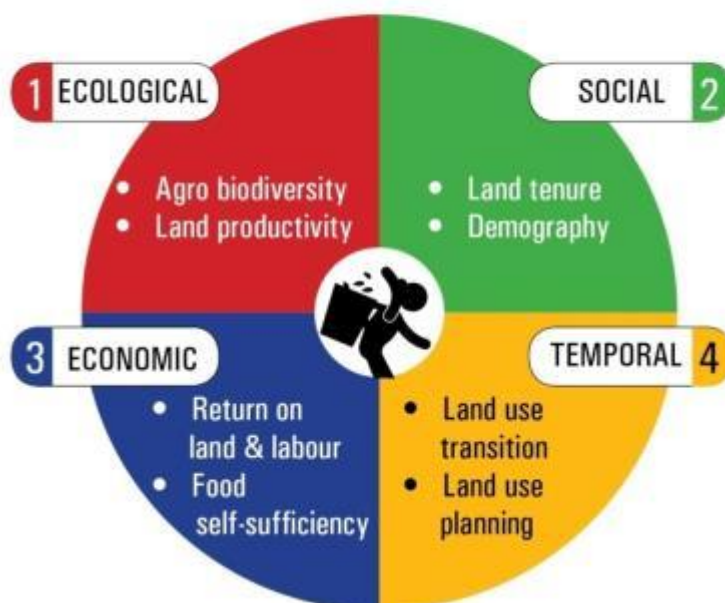


3.2 Case study: A pilot carried out in Mokokchung, Nagaland

Dr. Andras Darabant, Forest Engineer and NRM Specialist, discussed the socio, ecological, economic and temporal dimensions of *jhum*. According to him, *jhum* cultivation posed a threat for biodiversity, given the soil loss in current *jhum* of approx. 40-80 tonnes/Ha/yr exceeding enrichment ratio of all nutrients which is not sustainable. By considering a different trajectory *jhum* could be improved and sustained. This approach entailed taking into account the four dimensions of ecological, social, economic and temporal aspects.

Outlining findings from an experiment carried out in Mokokchung district of Nagaland, the UNDP experience showed that *jhum* in its current form required a more intense influx of funds, making it increasingly unviable for farmers to pursue. This was pushing them towards growing cash crops which were by far more profitable in the immediate to short-term but which were leading to *jhum* fallow which are an increasing threat to biodiversity.

The 4 dimensions of Jhum cultivation



In the case of Mokokchung, the Village Council took a decision on the management of land owned by clans and individuals. A total of 120 crops and varieties (Martemjen 2015) were taken up as part of the project and a mix cropping pattern followed for up to 20-30 crops and varieties in a small spatial mosaic. Several Non-timber Forest Produce (NTFP) species from fallow land were taken up with organic farming, following high nutritional diversity and resilience. Where land productivity was concerned there was soil loss in current *jhum* fields of 40-80 t/ha/year with loss exceeding enrichment ratio for all nutrients but severe nutrient loss as reported by Gafur *et al.* 2003 and Prokop & Poręba 2012. Locals who benefitted from the project found their rice production going up by as much as 10% with improved soil conservation as compared to the earlier cropping pattern.

To get better understanding of the economics of *jhum* with respect to both input and output, it is important to improve *jhum* on a sustainable basis, adopt a holistic planning approach and use tested technological interventions which are socially relevant. By making the entire process participatory, land use planning must be based on a good land use approach, resulting in better equity outcomes while also contributing to gender empowerment.

Input in *jhum* plantations saw high labour requirement leading to high income. In the case of fallow land, there was lower return on land. In case of horticulture plantations, requirement of labour was low with high income and high return on land. Social dimension with respect to land tenure was seen in the context of Naga society which is organised into tribes and clans. *Jhum* requires community effort for slashing and burning. Common property regimes survive and dominate land tenure but these are not so commonplace today due to change in land use patterns.

Pattern of demography in typical *jhum* cultivation is that it is dominated by a young population in the face of changing socio-cultural norms that are forcing a high level of rural urban migration. There is increasing pressure on people who are staying back since there is a shortage of labour force. The temporal dimension of *jhum* throws light on both the drivers and threats of land use transition. The drivers of land use transition include globalisation, emerging social needs, demographic pressure, land degradation, climate change and government policy. On the other hand, threats of land use transition include a weakened land tenure system, continued land degradation, loss of culture and traditions, growing inequality and increased vulnerability. Need of the hour is to improve the *jhum* farm by going in for holistic planning that can ensure multi-dimensional sustainability helping farmers transition from *jhum* farming to sedentary agriculture and traditional *jhum* to improved *jhum* farming.

3.3 Case study: Shifting cultivation management for livelihood improvement of rural poor in Nepal

Dr. Bala Ram Kandel, Ex Project Coordinator, ASHA, Nepal shared the experience of an agro-forestry model that was adopted where the major thrust was on social mobilisation and how the right choice of agro-forestry transformed shifting cultivation areas into productive use that is sustainable in the long-term. In Nepal, legally all shifting cultivation areas are forest areas with mostly ethnic groups engaged in this form of agriculture.

Following the strategic approach of trust building using social mobilisation to convince people, the model helped them understand their role and also retain their traditional wisdom while diversifying their product base. Groups were formed and both men and women trained to cultivate perennial crops depending on the area while promoting natural vegetation, livestock is farming and group saving. A community-based leasehold forestry system was initiated with a lease of 40 years amongst groups of 5-15 households on registered land. Land management preparation and livelihood plans were drawn up and agreement entered into with district forest office. Investments were mostly made in the short-term so as to give immediate income. The project started small scale with promotion of perennial crops to reduce erosion and protect natural vegetation. The initiative helped control soil erosion and recharge downstream water.

Community-based leasehold forestry and livestock programme in Nepal.

Concept and objective: As part of an IFAD and FAO supported leasehold forestry and livestock programme, shifting cultivation areas were provided to a small group of shifting cultivators on lease for 40 years, with the added possibility of extending the same for another 40 years. The aim was to improve their livelihoods and simultaneously improve the ecological condition of the hills.

Beneficiary group: 5-15 households who were duly registered at the District Forest Office (DFO).

Approach: A land management plan was prepared and endorsed and an agreement signed between the chairperson of the group and the DFO. Each group member was handed a lease certificate. The uniqueness of the model was in its strategic approach which used social mobilisation to ensure active participation towards shifting agriculture. Utilising and promoting traditional knowledge it embarked on next steps that related to land use and livelihood planning. Initially short-term investments were made which later expanded to medium and long-term investments. An integrated approach that combined forestry, livestock, agriculture and finance domains was followed. Growing of perennial crops was encouraged and product diversification, if any, was guided by the philosophy of minimising risks whether it was by foraging or brooming of NTFPs. At every step, effort was made to strengthen coordination and collaboration among development agencies.

Winning features: The success of the model lay in its ability to conduct social mobilisation using a strategies that included trust building, networking and institutional strengthening for tasks as diverse as accounting/ bookkeeping, leadership, gender and social inclusion and land management training. To support these efforts, planting materials were produced and distributed. On-site coaching was done covering the themes of plantation management (plantation, weeding, harvesting) to both men and women of each household, plantation along contour using SALT, and cultivation of perennial crops (broom grass/Argeli/Cardamom/Forage spp.) From the 2nd year plantation of crops that were grown included *Cinnamomum tamala*, *Fraxinus floribunda*, *Ficus glaberrima*, *Alnus nepalensis*, *Zanthoxylum armatum*, *Leucaena leucocephala* and *Bauhinia purpuria*.

Results: Following the process of natural regeneration to protect crops, additional livestock support including animal health services was provided. Group saving/formation of cooperatives/linking with financial institutions was promoted. These efforts brought visible changes in the agro-forestry model. Soil erosion was controlled significantly with increase in green coverage, downstream water source was recharged/restored and quality of livestock feed improved and production of milk and meat more than doubled. Income level of users was raised (income from sale of inflorescence and stalk of broom grass was NRs 300,000 per HH per year) and free grazing was controlled.

Other development partners joined hands to support the infrastructure development process. Overall, benefits of progress were seen with women participation increasing by 55% and women in key positions by 40%. Number of school going children went up and those in adjoining villages began requesting for sharing technology. The biggest learning of the agro-forestry project was that by starting with small short-term intervention, a more secure medium and long-term plan could be developed.

3.4 The Meghalaya case study

Mr. C.P. Marak, IFS, Principal Chief Conservator of Forests & Head of Forestry Force, Meghalaya gave a brief introduction of the North Eastern states which occupy 3.7% of the country's overall population. NER has over 225 tribes representing a rich cultural diversity. While NER occupies 8% of the country's geographical area, it has 25% of the country's total forest area. The area has rich biodiversity but pressure on forests is mounting. As per 1974 data, the total *jhum* area in Meghalaya was 435,000 Ha. In Meghalaya alone more than 68,000 families were involved in *jhum* covering an area of 76,000 Ha covering 38.5% of its population. Over the years, however, there is a reduction of families engaged in shifting cultivation, moving to more settled forms of cultivation and other livelihoods.

Presently in Meghalaya, 51,000 families are dependent on *jhum* cultivation that is carried out in 442 sq kms area under *jhum* annually (1.2% of the geographical area of the state). There has been a marked drop in the number of families that are engaged in *jhum* cultivation. Land and forest holdings continue to be handled by the land revenue and forest department with a large chunk of forest comprising of community holdings. The Forest Policy 1894 (Pre independence) and 1954 (Post Independence) still holds good today though legal issues in pre-independence era regulated *jhum* in Garo hills and Khasi hills. While in rest of the country, land and forests are handled by the land & forest department, management of forests in NER is largely the preserve of the community since their holding of forests is very high. The onus of maintaining *jhum* land thus lies with the community itself.

Alongside the strengthening of economical and technical aspects related to *jhum* cultivation, policy and legal issues must also be taken up to regulate *jhum* cultivation. The 1894 Forest Policy and 1952 National Policy saw a revision in the 1980s where the issue of shifting cultivation was touched upon. With large tribal populations still dependent on *jhum* cultivation, the subject merits more serious thought with revisiting of regulations that have a bearing on their lives and survival. The negative effect of *jhuming* can be offset by regulation that protects and safeguards ecological and environmental concerns. Policy and legal issues need to be taken into account when dealing with a complex issue like *jhum* in the Northeast.



DISCUSSION

Impact of climate on soil conditions: Soil condition and soil fertility in NER is different from rest of the country. In most NE states, climate and soil quality varies and in many places, its nutrient value decreases. The impact of burning residue on soil and subsequent cropping output needs to be studied so that there is sufficient data to point towards any significant finding/conclusion on whether burning leads to virus control. Due to high precipitation, bed rocks are heavily eroded resulting in low fertility status. Tropical soils are usually not much better than temperate soils. High precipitation and low PH values lead to erosion. In many places, as much as 80% nutrients are found above the ground and 20% below which could be due to shifting.

Exploring the option of adopting a conversion model: Burning leads to loss of valuable nutrients making it worthwhile to look at developing an effective conversion model guided by a practical land-use policy. Many hill farmers have abandoned *jhum* and moved to growing cash crops like rubber.

Including rare livestock species in farming activity: The Mithun species that lives in the forests in NER need to be observed and integrated into the present form of *jhuming*. It is said that during cultivation they become homeless and move to other areas.

Controlling burning and learning from existing examples: Burning with respect to *jhuming* is done mostly in the first year. While burning, PH is added so that in second year perennial crops can easily be grown. While doing this, ICAR systems can be studied and used. Expert view is that burning should be controlled because even though it adds potassium to the soil it depletes many nutrients too. ICAR has recommended cropping system for high slope forestry and horticulture and low slope for agriculture.

Defining slope limits: The level and extent of soil erosion over time in *jhum* fields must be scientifically studied, tested and analysed. Getting highly skilled soil scientists to work closely with GIS units will help define max slope limits for different areas and evaluate input cost for terracing.

Allocating best land to agriculture: Traditionally, it is seen that the best land goes to forests while not-so-good land gets allocated to farming. This has to be reversed with more river valleys being included in purview of agriculture. There has to be greater dialogue between government officials, community and experts; also state and community must decide who can go in for *jhum* cultivation.

CHAPTER4

Settled Agriculture as an Alternative to *Jhum*

This session explored views and experiences on settled agriculture as an alternative to *jhum*. The session chair **Dr, Dipak .L. Chetri, Joint Director, State Agricultural Research Station (SARS)** introduced the subject and remarked that farmers in Nagaland are practicing *jhum* out of compulsion not choice and that the second generation of farmers are more inclined towards using information technology (IT) to gain greater access to market. With the introduction of common crops, the *jhum* cycle can be increased upto 15 years with more access to land resources and diversified crops. Farmers lack financial resources but with financial support they can opt for more settled agriculture.

4.1 The Philippines Experience: *Jhum* intensification through Conservation Agriculture with Trees (CAT)

Dr. Augustine Jun Mercado, representative of ICRAF, Philippines shared about CAT being an effective option for *jhum* intensification, providing better economic, social and environmental benefits. According to him, crop diversification and intensification should be anchored on efficient and effective use of above and below ground growth resources (light, water, air and nutrients) and provide employment, income and food security to upland dwellers. NGOs, government and private companies should address barriers to CAT research and development by providing funds and subsidies and supporting investigation on Conservation Agriculture machinery and equipment while strengthening linkages for research and development activities. The ICRAF, Philippines experience provides insights into how CAT technologies are ready for scale-up in the country and elsewhere.

CAT has many benefits as a climate change adaptation strategy followed in the uplands and is the dominant story of densely planted trees along the contour providing good soil anchorage. It can be scaled-up through the landscape approach that focuses on building strong partnerships, technical facilitation and strengthening of local government units.

Major challenge in the uplands in Philippines relate to soils being acidic and inherently poor in nutrients. Farm sizes are small and inappropriate farming practices are further compounded with high rainfall (2500 mm/yr) and high soil erosion (50-350 t/ha/yr). Declining farm productivity (200-500 kg/ha) results in land and soil degradation and reducing farm size is also due to population pressure and deforestation in upper watersheds which creates its own set of problems. There is poverty and malnutrition, with 70% farming households earning below poverty thresholds and 65% school children being underweight. This

is changing the social dynamics of the area with increasing reports of social disorder. Overall, upland areas are upper watersheds of coastal communities where farmers' practices are impacting lives and livelihoods of those living downstream

For making upland areas highly productive a simple and inexpensive attempt can be made by following CAT and Evergreen Agriculture on Slope by adopting the practice of Natural Vegetative Strips (NVS). Establishing natural vegetative filter strips along contour lines is an initial and simple low-cost conservation measure allowing natural vegetation to grow at 50-cm wide strips spaced at 8-10 meters apart to effectively protect the soil from erosion. NVS systems control soil erosion on sloping lands up to 95% and provide foundation for the setting up of cash perennials on the contour. These strip systems provide strong foundation for farmers to establish integrated agro forestry production systems.

Trash bunding (slashing with no burning) is an NVS technology that provides foundation for conservation agriculture with agro forestry (CA + AF). Some of its desirable qualities include low labour requirement for establishment and maintenance. NVS are simply laid out by leaving 50 cm strips along the contour unploughed. The method is effective in reducing soil loss. Research showed NVS reducing soil loss by more than 90% with another benefit being minimal competition effects on adjacent field crops. This finally enhances infiltration of water.

Conservation agriculture with trees (CAT)

CAT is a practice that combines principles of conservation agriculture with agro-forestry. It involves the integration of crop friendly trees into the crop lands with conservation agriculture practices. To address challenges in tropical uplands, there are important principles in employing CAwT on slopes.

- Minimal soil disturbance like tillage (tractor or animal ploughing and harrowing to reduce, if not eliminate, soil structural damages);
- Continuous ground cover that protects the soil from drying and soil erosion. In some places it was found that soil erosion by water or air is eliminated if soil cover is greater than 30%; and
- Diverse crop species for optimum use of above and ground resources as they are important components of integrated nutrient and pest management strategies.

CAT is an effective climate change adaptation strategy in the uplands: it is predominantly the story of densely planted trees along the contour providing good soil anchorage. Sub-dominant and underneath vegetation such as bananas, forage legumes and grasses provide good soil binding. Integrated/ diversified farming systems provide better climate and economic risks management, optimum use of growth resources, more food and livelihood security for rural households and improved environmental services like soil and water conservation, carbon sequestration and bio-diversity.

CAT can be implemented through multiple pathways: It includes annual-based systems (upland rice and cowpea) or the perennial-based multi-strata systems (muzizi, rubber, banana and gabi) or the annual (maize and vegetables) and perennial based transition systems (multi-storey and livestock).

Impact of CAT: findings from a research

As part of research on Conservation Agriculture Production Systems with Trees (CAPST) a Type 1, 2, & 3 on-farm experimentation was conducted. The research looked at tree species, crop varieties, soil management and crop nutrition. Inter-planting was done of herbaceous legume as mulch with maize in CAT along the following pattern: maize + stylo – fallow – maize. This included a single tree-line hedgerow system or agro-forestry system which helped maximize the complementarity effect with wider tree spacing from 24-36 meters between tree lines. Earlier studies indicated that for effective soil erosion control, grass strips or tree lines should not be wider than 12 metres apart, otherwise soil erosion is greater than tolerable soil loss of 12 tonnes per hectare per year. This means that in-between widely spaced tree lines, grass strips like NVS should be established at 8-12 meters apart.

Rain water harvesting: A CAT related innovation

Addressing water supply during rainfall variabilities makes water available to crops and livestock during dry spells. It increases water infiltration, providing sub-surface irrigation to perennial crops downstream and additional income to farmers through fish, frog and duck culture. Raising fish, frogs and ducks, will further improve nutrient load of pond water which will improve crop growth in case pond water is used for irrigation.

Vegetable agro-forestry is one of the good agricultural practices, where properly managed trees help improve vegetable yields up to 40%. This is largely due to desirable micro-climate such as low wind speed, increased relative humidity, high soil moisture, increased available nutrients due to fog drips and arboreal fauna and increased soil organic matter content due to litters and roots decay. Trees also provide environmental services such as habitat for wildlife, control for soil erosion and carbon sequestration for climate change apart from providing additional nutrients to crops through N₂ fixation

Without additional inputs, yields of vegetables have increased by an average of 29% during wet season and 16% during dry season with tomatoes, carrots and Chinese cabbage being the biggest gainers. By adding biodiversity to the monoculture vegetable system, the yields of vegetables increased up to 40% without additional inputs. The trees contribute to the total system productivity. The intact primary forests protected by government policy provide better environmental services but less goods and tradable products vis-a- vis land devoted to agriculture which can benefit local and/or surrounding communities. In agro-forestry, better complementarities between and among components (trees, crops, animals) provide better environmental services and tradable products as solution to expanding population needs, locally and externally.

Scaling-up CAT

Using the landscape approach that focuses on building strong partnerships, technical facilitation and strengthening of local government units, an enabling environment for adoption of CAT is possible. Disseminating information, especially with respect to its basic foundational principles and benefits would be useful. Once farmers (mostly smallholders and those with sloping lands) are convinced,

appropriate tools and equipment must be developed. Care must be taken to provide to them planting materials at the early stage of adoption. Also, initial capital- particularly for smallholders- should be provided along with adequate institutional support by backing suitable policies for inclusion of CAT by line agencies programmes and projects and provision of technical capacities at the local level (local government units) to promote and facilitate adoption of CAT.



CHAPTER 5

Experiences from the Field

In this interactive session, experiences from the field were shared by farmers who represented areas where *jhum* had declined over a period of time as well as areas where it was on the rise. This threw up important lessons and insights into the practice of *jhum*.

5.1 Alternatives to *jhum*

Mr. Nuklu Phom, Executive Secretary, Phom Baptist Church Association said that climatic change is affecting Nagaland as a result of which settled cultivation could be a viable alternative to *jhum*, especially to protect soil erosion. Sustainable initiatives have been introduced in the District of Longleng such as piggery and fishery. He further added that settled cultivation also helps in conservation of forests and rivers helping in the in-migration of many new animals and birds in the region.

Major problems are seen in the field due to application of common salt for weed control. Climate change is affecting directly on the cropping pattern and destruction to crops due to unpredictable natural calamities like hailstorms. Many farmers are giving up growing popular *jhum* crops like cabbage and instead opting to cultivate horticultural trees like peaches and plums as well as other cash crops like cardamom and rubber.

Alternative experiments to *jhum* cultivation

- An area of 1 Ha developed for horticulture activities initially experimenting with orange cultivation intercropped with banana where pits are built in half moon terrace shape;
- Drip irrigation method adopted and improvised with the use of bamboo and bottles in the dry season;
- Maize stumps used for growing kidney beans, besides undertaking multi-cropping of piggery and fishery through the women self- help group model;
- Educating people on credit discipline and importance of timely recovery of loans;
- Constructing a multipurpose shed for facilitating meetings and small activities while also allowing its roof to harvest rain water which is later sold @ Rs 2/ per bucket;

“With the initiation of the model village in Longleng focusing on conservation of biodiversity, villagers are witnessing migration of new species that had become virtually extinct. The efforts carried out in the community have proved that with proper management, jhum can be augmented.”

Mr. Nuklu Phom, Executive Secretary, Phom Baptist Church Association

- Getting farmers to adopt new technologies since they tend to cling to their traditional knowledge

It is important for Government to work closely with farmers groups who can help build trust and encourage them via awareness sessions and trainings.

5.2 Areas where *jhum* cultivation is decreasing (Khezhakeno village, Phek district)

Jhum cultivation saw a drop in Phek district which underwent drastic change in agriculture patterns in recent years due to the poor economic condition of its farmers. According to many small holding farmers, *Jhum* is socially and economically unviable, forcing them to adopt alternative sources of farming. In many places it ceased due to several reasons. While the most significant reason related to poor financial returns, a large part of the reason was also attributed to confusion in grasping the full import of Government programmes and policies, especially when it came to the frequent changes in promoting different crops. To create awareness about the benefits of *Jhum* and available government support, farmers in Khezhakeno village were sensitised by various NGOs and organisations such as the North East Network (NEN), Entrepreneurs Associates, Chakesang Women Society and Government departments. More such efforts are needed. Government needs to take steps that are progressive rather than those which hamper farmers in cultivating cash crops. Technical know-how must be shared with farmers from time-to-time with season-specific inputs.

5.3 Areas where *jhum* cultivation is increasing (Nokta Konyak , Mon district)

There are areas in Nagaland where the area dedicated to *jhum* cultivation is increasing. With one *jhum* cycle being of approximately 9-10 years, these farmers have planned their entire family's livelihood and sustenance from the income accruing from their *jhum* production as also fulfilling the family's food requirement. They feel that while other methods of cultivation may take longer, *jhum* has a more continuous cycle. The traditional knowledge gained from the time of the forefathers is a precious inheritance and competition, if any, with other *jhum* cultivators is of the healthy kind with most people sharing their produce with one another. In this scenario discontinuing *jhum* cultivation is never an option for them.

Most farmers have learnt indigenous ways of preserving soil conservation/erosion from their ancestors and do this by placing poles across the slopes that prevents soil erosion during the cropping period. In recent years, learnings from the UNDP supported Sustainable Land and Ecosystem Management (SLEM)project) included awareness on counter bunding/counter trenching that helped control soil loss and soil loosening activities. *Jhum* teaches life experience with all social activities revolving around *jhum*. Healthy competition and camaraderie amongst fellow *jhum* growers go hand in hand with celebration for their higher yields together.

5.4 Seeking options, including terrace farming (Chuchuyimlang village Mokokchung District)

In the year 2013, along with soil department, representatives from UNDP attended the Village Council meeting and explained to the farming community that preserving and reviving *jhum* cultivation was linked with not just their prosperity but also survival. More than 300 families were engaged in *jhuming* about 15 years ago. By 2016-17 these numbers dropped to less than half. Villagers who stayed with *jhum* cultivation were under pressure from the Village Councils who gave complete authority to the land use committee with regard to use of land. The village has 62 sq kms of land area in the village which few generations ago was basically one large piece of plot. Now, while the farmers are doing *jhum* cultivation here they continue to remain unhappy since their income has dropped and expenses have mounted and they are unable to make ends meet. With the intervention of UNDP supported SLEM project in 2013, farmers were trained for a week. Later 2 to 3 sittings were held with the Village Council where land use planning was undertaken. This is when the option of working with the government to do terrace farming was explored.

The Konyak Union in the district decided to continue with the *jhum* cycle. Earlier land use was random but with the timely intervention of UNDP, land use committees were introduced and proper planning undertaken, like contour bundings and trenching to help improve soil erosion significantly. Each land use committee has about 25 members comprising of women, elders, pensioners and others. With technological innovation by UNDP and Department of Soil, the top soil has been maintained and preserved. Water sources also have not been depleted. These simple efforts have helped increase terrace rice cultivation in the area.

"Till recently I thought I was just a cultivator belonging to a dwindling community of jhum cultivators. But now I feel energised and proud to say I am a jhum farmer who believes in integrated farming. I also feel that farming alone will not sustain livelihoods."

Farmer from Chuchuyimlang village Mokokchung District

DISCUSSION

More research needed: Research should be taken up to see why farmers only grow rice on terraces though in upland area there are other crops that are grown too. Also, what specifically are the reasons why farmers are moving away from *jhum* cultivation when all along their entire families have depended on it. Terrace cultivation productivity and sustainability needs to be studied in a more in-depth way. A long-term comparative report is yet to be published.

Understand all the reasons for *jhum* cultivation losing its popularity: A key reason for reduction of *jhum* families is because farmers are now increasingly taking to planting rubber, betel vine, arecanut and Xynthoxyllem with some of them earning as much as Rs 40,000 a month.

CHAPTER 6

Jhum in the Context of Changing Aspirations of the Youth

While much is said about the youth and their interest or lack of interest in *Jhum* as a farming system, this session, moderated by **Dr. I. Amenla, Principal, Integrated Extension Training Centre(IETC)**, provided an opportunity for direct interaction with the youth of NER to hear their views directly. As torchbearers of the future, their thought process on the issue was critical to the discussion on the practice of *jhum* as well as the alternatives to it.

6.1 Reorienting youth to turn to *jhum* cultivation

Ms. Seno Tsuha, North East Network shared her concerns regarding changing aspirations of the youth and how many were shunning *jhum* agriculture. The reasons according to her were many, such as existing policies of the government, availability of fewer farm hands in the house since many had moved to other professions and cities and overall lifestyle changes. The absence of education related to traditional farming practices in schools was also contributing to disillusionment with *jhum*.

Why some households were still holding on to *jhum* cultivation was because in some pockets the local Naga tribal communities like the Chakesang still felt a strong connection with the land. Nearly all their festivals, customs and traditions revolved around *jhum* cultivation. Her experience had shown that traditional knowledge was very important and it had to go hand -in -hand with modern science to enhance and boost the state's economy. She made two broad suggestions:

- ***Making jhum farming attractive to young people***: Orient the farming community so that they can engage more meaningfully with the youth. Link information and knowledge on farming with the existing educational system. Organise more special programmes for school students on the lines of what is being done successfully at Chizami village in Phek district for the last two years. Also reorient the youth to understand the significance of “field to plate” and encourage them to grow their own food.
- ***Building capacities of farmers, especially women farmers***: Help women exercise their rights more equally and organise different levels of learning circles for them so that their contribution can be more recognised and rewarded.

6.2 Overcoming challenges faced in marketing produce

Ms. Jean Metha, Member, Green Caravan, Nagaland, elaborated on the issues and constraints faced by young people in the state, seeking positive intervention from the state government and other institutions in order to establish a proper market channel and help build infrastructure for the local

agricultural products. Green Caravan offers a market linkage programme for products of Nagaland with value addition, identification of genuine buyers, capacity building, addressing marketing issues, promoting partners, processing, certification, following up on best practices etc.

The green logistic marketing programme in its initial stage faced certain challenges such as the absence of market approach, lack of human resource in agriculture and allied sectors, logistics related issues, policy mechanisms, climate change, the tilt of young people towards easy and quick money and the stability offered by government jobs. Her suggestions for dealing with these challenges include:

- Strengthening convergence with line departments;
- Building resilience of farmers to mitigate risk, especially related to climate change and its impact on crops and farming;
- Encouraging youth to be involved in different functions related to farming and finding novel markets (online, organic, agro tourism) so that they continue to be engaged;
- Seeking training on effective branding and marketing of products for higher sale and value;
- Working with the government to support production and refinement of certain indigenous products for domestic sale and export ; and
- Getting clarity on official demarcation of forest and *jhum* land.

DISCUSSION

Empowering women and giving them equal status: The role of women must be acknowledged in *jhum* farming. It is well acknowledged fact that their work begins with the selection of seeds and includes categorisation of the land that is allocated for *jhum*, bunding, assisting the men in sowing, tilling and harvesting. They are a very visible force in marketing and sale of produce. Yet, their representation in Village Councils and other administrative local bodies is almost non-existent and when there is conversation about farmers *per se*, it is men who are usually considered, not women.

Guidance on crop diversification and other market drivers: Advice on crop diversification must be with a focus on soil condition, strengths and limitations of the community and market conditions. There is no point in enhancing production and raising expectations of the community, if there is no ready market for the produce. The produce should yield higher return than what is being currently managed. Indigenous crops need effective planting and packaging – for example collard comes in different species and looks like *rajma* but is distinct from it. Investments in marketing and branding must be done and biodiversity of the region preserved. Studying conserved area, enhancing compost and organic production would be preferred activities, given the opening up of connection with Myanmar port and the emerging new opportunities for market linkages.

Better understanding of impact of climate change: More knowledge around the factors contributing to climate change and ways of protecting from its onslaught need to be understood better. While talk of climate change adaptation is promoted, safeguards should be put in place for protection against climate risks such as hailstorms, cyclones and floods.

CHAPTER 7

Land Tenure and Role of Traditional Institutions

Mr. T. Imkonglemba Ao, IAS, Principal Secretary & APC, Government of Nagaland moderated a panel discussion that discussed land tenure systems in the NER and the role of traditional institutions. Presentation on alternatives to shifting cultivation and ways in which jhum cultivation was impacted by traditional institutions were undertaken during this session. Mr. Ao informed that each village had its *ghum* cycle and way of shifting cultivation. Nagaland covers an area of 16,579 sq km out of which 88.3% land belongs to community, 6.7% land is controlled by forest Department, 3% of land by village community forest and 2% is revenue land covered by administration. Given this situation the role of traditional institutions becomes very important.

7.1 Key features of traditional institutions in Nagaland

On behalf of **Prof. Sapu Changkija of Nagaland University**, Mr Ao summarised some of the key features of traditional institutions in Nagaland. Village Council was codified by the Nagaland Council Act of 1978. In Nagaland, land was acquired through struggle and often bloodshed and therefore it remained very dear to the traditional republic communities. Additionally, due to the head hunting culture of the past, land and its acquisition became very precious. Each Republic was meant to be self-sustaining and in case of shortages it was not deemed appropriate to borrow from other villages. Developmental programmes are effectively implemented due to the strong presence of village level administration and also due to the element of social control that acts as a deterrent for non-compliance or defaulters. The village level administration in Naga village republics are based on tribal traditions; the Konyak community has the traditional kingship system, while the Sumi Nagas have the *Gaon Bura* system while the rest of the Naga communities abide by the clan or sector system of administration.

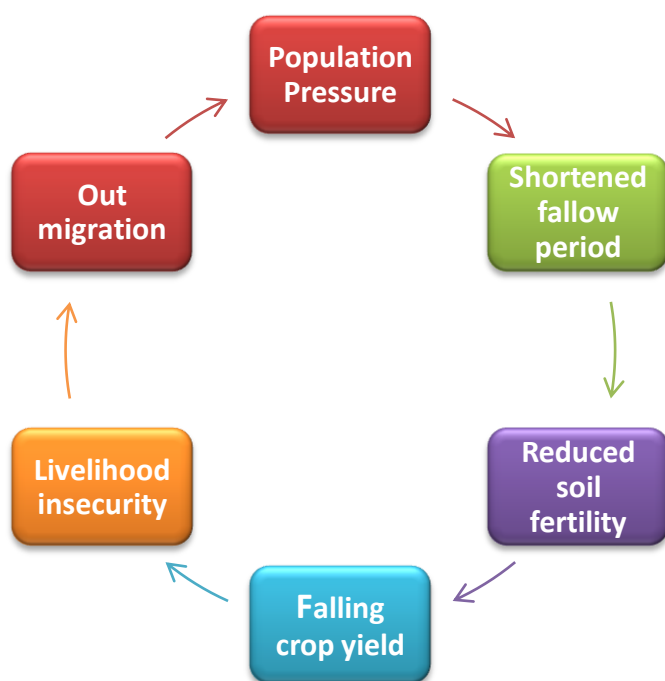
Jhum cycles in villages are managed by traditional institutions including decisions related to *ghum* cycle, how much area is to be assigned for *ghum* cultivation and how much for kitchen gardens and orchards etc. Such institutions hold budget sessions on agriculture and decide how much tax is to be collected and how much produce handed out as charity or aid in times of calamities. Good governance in a village is measured by the efficiency of the village council through budget sessions and often connecting roads are constructed between villages. Existence of other village level committees on education, health, power, nutrition, forest, water and land use function under the umbrella of the council.

In Nagaland, over 88% of the land belongs to the community. In such a scenario participatory land use planning committee is vital and important questions of whom are we planning for, what are we planning for needs to be addressed in such round table conference where new concepts and old concepts must come together at a meeting point.

7.2 Alternatives to shifting cultivation in North East India

Dr S.V.Ngachan, Director ICAR, for NEH Region, Umiam, Meghalaya described the trend of shifting cultivation in NER and the context in which *jhum* cultivation was taken up in the state.

Vicious cycle of shifting cultivation



“Land record systems must be updated and made more accessible to local communities. They should serve as guidance documents providing vital information on past history and current trends related to ownership, land quality and cropping patterns. New approaches like organic farming, agro-forestry and multi-storeyed orchard systems for different land masses must be encouraged and driven by evidence”

*Dr S.V. Ngachan,
Director ICAR, for NEH*

Citing available data that calculates the area under shifting cultivation in NE (various sources) there is a clear drop from 3.81 m ha in 1983 to 0.76 m ha in 2011. The reasons for decline in *jhum* cultivation are many. A key issue is that the local communities are heavily dependent on the forest for timber, fuel wood, bamboo, fruits and vegetables. Over time, with each passing year, soil health deteriorates leading to a situation where the annual average top soil and nutrient loss from *jhum* lands in NER is 181 million tonnes a year. Soil acidity and Al toxicity are the most dominant problems of *jhum* land with 80% soil being acidic (NBSS&LUP, 2008).

The agricultural scenario has also contributed to low crop intensity and reduced number of crops which is a matter of grave concern. Maximum area is under mono-cropping (73% of net sown area) owing to lack of suitable water conservation measures. Low productivity with low crop intensity and reduced number of crops and lack of capital, a limiting land tenure system, remoteness and lack of market chain

further compound the challenges in the cultivation of *jhum*. Taking into account all these issues, a set of fresh objectives have been outlined to revive *jhum* in the areas where it has been abandoned:

Plans for reviving *jhum*

- Increase productivity of *jhum* land within the socio-cultural ambit of *jhum* farmers;
- Lengthen cultivability of lands by at least 1 to 2 years;
- Ensure faster rehabilitation of *jhum* lands and restoration of its productive capacity to cope with reduction of fallow period;
- Reduce loss of natural resources in terms of soil and water loss, fertility decline and loss of biodiversity by adopting soil and water conservation measures and soil fertility management
- Label and certify produce from *jhum* as natural products or low chemical input agriculture for better marketing
- Promote low volume high value crops to generate marketable surplus and speciality agriculture produce;
- Improve income and purchasing capacity of *jhum* farmers and ensure their livelihood security;
- Use good crop varieties suitable for *jhum* land as well as *jhum* farmers;
- Increase cropping intensity by suitable crop rotation, cropping system and moisture conservation measures; and
- Undertake agro forestry and farming system.

There is lot of potential for organic farming in the region with need for low use of fertilisers besides making use of an integrated watershed approach and an integrated farming system. Few of the other options include (i) following agro forestry systems for sloping land such as alder + large cardamom based agro forestry that has been taken up in Sikkim and Nagaland; (ii) land use model for sloppy land for crop diversification and resource conservation which was undertaken in natural forest-top hills, catch pits in forests, fodder crops, cover crops, intercropping, hedge row (green leaf manure), residue management, conservation tillage, toe trenches, rain water harvesting or *jalkund*, agro forestry for food, energy, nutritional security, carbon sequestration, employment and bio-conservation; and (iii) a multi-storied orchard system for settled cultivation as carried out in Meghalaya, Tripura, Mizoram to grow alder + black pepper + pineapple system.

NER manifests two types of land tenure systems

Village level customary land tenure system operates in hilly states of Arunachal Pradesh, Meghalaya, Mizoram and Nagaland and in hilly parts of Assam, Manipur and Tripura. The land records system is outdated and farmers' access to it is time-consuming and expensive. It is only in the state of Assam that the land records system is being computerised. Institutional regulations for land use include the Autonomous District Councils (Meghalaya-3, Assam-3, Mizoram-3 and Tripura Tribal District Council) and the Village Development Board or Village Council in Nagaland, Arunachal Pradesh, Manipur, and Sikkim.

The community land/ clan, government reserve forest, private, tenant (no lease system) is usually land that has been abandoned or where forest exploitation exists. The DoNER Ministry² is playing a major role in initiating incubation, start-ups and entrepreneurship, especially for horticultural crops. Further, agro climatic zones have been classified for all the states with modified shifting cultivation. As the government intensifies its efforts to revive *jhum*, local village councils and other community based groups will have to join hands to provide inputs to the poor with respect to information, technical guidance and technology that helps them transition from shifting to settled cultivation and bring unplanned cultivation in land use. Also, there is need to conduct a cadastral survey for the region and streamline the complex land tenure system where there is a high landless population.

7.3 Land tenure and role of traditional institutions in *jhum* management

Dr. Vincent Darlong, Vice Chancellor, Martin Luther University, Shillong highlighted the three distinct inter-related domains that determined the land tenure system in the NER, namely, traditional institutions, land tenure and *jhum* management. This was often a complex scenario to comprehend given the uniqueness and differences that existed between tribes and villages. Following a 3-tiered system of traditional institutions at the village level comprising the tribes' council, clan council and family council, land tenure is usually governed by a customary law that includes land categories in typical tribal communities. Here, land maybe community owned or clan land or private/institutional land or 'morung' land while noting that *jhum* land is usually part of community land.

Jhum management however, is confined to two phases, namely the farming phase (1-2 years) and fallow phase (10 and more years). In the *jhum* farming phase a number of activities are carried out such as site selection and allocation (limited consideration on land slope suitability), community slash and burn including boundary setting, fire-line making and *jhum* fire management (setting common date for burning), seeds systems, collections of unburned logs for firewood, traditional soil conservation measures, good practices during weeding, common field guarding to minimise crop damage and harvesting completion dates to set 'community harvest festival'. During the fallow phase *jhum* blocks are maintained as also there is fire protection, access to NTFPs, prevention of misuse and encroachment including grazing, hunting, fishing, sand/stone collections etc, harvesting of small timber for household repairs and construction, and community firewood collections.

The basic principle of shifting cultivation should be seen in the context of the creation, protection and conservation of forests which have to be the collective responsibility of not just the government but also traditional institutions such as the Land and Village Republics.

²The Ministry of Development of North Eastern Region (MDoNER) is a Government of India ministry, established in September 2001, which functions as the nodal Department of the Central Government to deal with matters related to socioeconomic development of the 8 States of Northeast India, Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and Sikkim. It acts as facilitator between the Central Ministries/ Departments and State Governments of NER.

Identifying areas where traditional institutions can play a constructive role

Number of challenges exist and must be looked into by giving traditional institutions a more positive role. Overall, there is increasing privatisation of community land among tribal communities, although land ownership of individuals within the communities remains highly skewed. There is unequal access to 'common' land which continues to be a reason for continuing poverty. Moreover, poverty mapping and access to land based government programmes reveal unequal access by poorest households in the communities. In fact, there is increasing 'leasing' of private land for commercial plantations to non-local entities but this is happening without proper documentation. To top it, there is gender issues with women remaining traditionally excluded from land ownerships among many communities. Each of these issues can be taken up by traditional institutions who can adopt local practical solutions which do not clash with the cultural ethos of the community and yet are forward looking.

Opportunities for way forward

- Investing in capacity building of Traditional Village Institutions (TVIs) and enhancing awareness on INRM approach towards land-use, viewing the village on a landscape basis rather than as individual fields;
- Taking science to the doorstep of communities by forging stronger partnerships between TVI, academia and R&D institutions + NGOs;
- Improving nutrition and gender sensitive agriculture with enhanced land-crop-livestock-aquaculture-forest productivity;
- Adopting simple participatory tools and methodologies with practical indicators for community development monitoring and evaluation by TVIs;
- Identifying and promoting best/good practice models of TVI functioning and strengthening inter/intra-community learning and exchange visits; and
- Identifying 'change leaders' among men, women and youth of the communities and building their capacities for more rewarding and socially just transformative scenarios.

CHAPTER 8

Lessons from Investments in Sustainable Management of Upland Farming Systems in North East

The session was moderated by **Mr. Pankaj Kumar, Chief Secretary, Government of Nagaland** with presentations related to sustainable management of upland farming and other initiatives by donors/financiers like GIZ, UNDP, Tata Trust and IFAD who are either directly implementing or financing projects on agriculture or Natural Resource Management in the NER.

8.1 Investment in sustainable management of upland farming systems in NE

Dr. Klaus-Peter Gross, Programme Director, GIZ, Shillong, started by saying that GIZ was committed to making investment in people in ways that helped improve their livelihoods under fast changing conditions and how NER in this context needed smart investments and integrated solutions. Highlighting examples of successful pilot projects undertaken in Sikkim, Mizoram and Meghalaya, he said these could be replicated in Nagaland or vice versa (eg. NEPEDs successful 'RAM pump being replicated in Meghalaya).



Examples of pilots projects in the field

GIZ has promoted rice seed exchange amongst farmers which was an old tradition that had somewhere got lost. Stimulating different rice varieties depending on climatic conditions led to a large project on gene pool protection/ promotion of seeds. Working on water security, starting with Sikkim on lands, mountains and plains and inventing and implementing a geo-hydrological water recharge that is replicable, has emerged as an example which government institutions in Meghalaya and Mizoram have tried to learn from and implement in their own states. Another success story that was seen in Nagaland was that of NEPED where pumps were used to push up water from lower to upper locations. Here, tailor-made pumps were created, depending on the height difference and inflow of water, amongst others.

To converge with any project in the NER, including the IFAD project, it is crucial to understand landscape as a complex system of integrated management, leveraging points of

Landscape approach

GIZ's landscape approach, which was more holistic in nature, was adopted in the three states of Mizoram, Meghalaya and Nagaland in the NER. It is a social ecological system that is rooted in a particular place. It is built on networks by taking a holistic view of all land-based activities with multi-stakeholders. Key principles of landscape management include maintenance of biodiversity, intensification of agricultural activities in one particular land, enhancing quality of habitats and mimicking habitats with different crops. It did this by looking at ways in which to protect key areas, taking into account differences among farmers and the asymmetry of powers among stakeholders while expecting changes to occur. It was important to understand landscapes as part of a complex system that have an integrated approach to identify leverage points and shift from government to governance of all stakeholders. It tried to establish a connect with the economic value of these landscapes by monetising them. Here it was found that biodiversity of the area was much more feasible as opposed to that of individual plots of land. Similarly, biodiversity in *jhum* areas was likely to be quite high with intensive exchange and reliability in ecosystems services. The key message from this pilot was that communities must be encouraged to conserve while preparing themselves to adapt to change and to new circumstances.

8.2 Lessons from investment in sustainable development initiatives in NE India

Ms. Lianchawii, UNDP dwelt upon UNDP's engagement in North East India sharing some of the concerns and recommendations that emerged from UNDP supported projects that were implemented across many states. She emphasised that NE states are extremely unique, having their own characteristics, ecology, food, culture and lifestyle and that it was critical to preserve their identity and factor this in the design of every project. Sector specific projects have been taken up in the different states keeping in mind local and cultural sensitivities, urgent and pressing demands and future sustainability. The way in which projects are planned, they factor in local conditions, levels of poverty, knowledge, attitude and

practices of the local population, governance structures and available sources of energy and other infrastructure. UNDP supported projects in the NER include the following:

Energy, environment and resilience: This is an overriding theme that cuts across sectors and states of the NE. Access to clean energy for rural productive use has been scaled-up in Assam while sustainable land and ecosystem management has been undertaken in the shifting cultivation areas of Nagaland. A Joint UN Initiative for Ecosystem-based Livelihood Promotion has been implemented in Mizoram and state strategies on climate actions have been strengthened in Sikkim. In Manipur, market transformation and removal of barriers for effective implementation of state-level climate change action plans (SAPCCs) is being initiated. The issue of institutional and community resilience to disaster and climate change has been taken up in Assam, Sikkim and Tripura (DRR) and the Get Airports Ready for Disaster (GARD) Training has been completed in Guwahati Airport, Assam.

Poverty reduction: Several projects have been rolled out including the Governance and Accelerated Livelihoods Scheme (GOALS) that is being implemented in Assam, Meghalaya, Manipur, Sikkim and Tripura. The Improving Efficiency of Vaccination Systems in Multiple States (GAVI) has been initiated in the states of Assam, Arunachal Pradesh, Manipur and Nagaland. Additionally, the NYKS and NSS strengthening is taking place in all NE states

Democratic governance: Strengthening capacities of *Panchayati Raj* Institutions in Assam, Tripura, Arunachal Pradesh and Manipur and building human resources in Assam, Meghalaya, Nagaland, Tripura are ongoing efforts besides giving shape to the Human Development Portfolio.

Lessons on creating impact

- **Build a strong sense of ownership by government and stakeholders:** Projects must not be perceived as being donor driven. They must include other agencies for complementary and not operate in isolation. Working with one department alone can be very narrow and not holistic enough. On the other hand, working with allied departments can be very enriching. These are the guiding principles that are followed while designing and implementing projects at UNDP.
- **Promote integrated approaches and inter-sectoral coordination:** Use existing capacities, such as educational institutions and extension services to conduct studies. Connecting the dots is a vital thread that incorporates learning into the curriculum of state institutions (SARS, IETC, VFATI, Soil & water conservation research training & demonstration centre, Zubza).
- **Strengthen rapport and trust with communities:** Earning the trust of traditional institutions and building rapport with communities is the only way a long-term relationship can be forged and mutually beneficial results seen. Involving communities and local stakeholders in design, planning and implementation would ensure participation, 100% involvement and sustainability. Building on local adaptive capacities across levels must be another strategy.
- **Involve vulnerable groups and minorities:** Women and youth must be empowered so they can take decisions and contribute towards taking them to fruition. Getting their voices in and factoring in their concerns would add a holistic dimension to the projects.

- **Identify local champions at different levels and promote them:** Role of key influencers in the context of the NER cannot be emphasised enough. Faith leaders, local celebrities and even community achievers can hold sway with large population groups, influencing them to adopt desired behaviours.

Some areas of concern

- **Limited capacities of key stakeholders:** Often enough, the pace of response and progress gets delayed due to the large amount of paperwork and bureaucracy. Therefore, the need to strengthen monitoring and capturing of data for development planning remains a common concern across settings.
- **Not enough being done to build resilience of farmers:** Agricultural institutions are not contributing to the wellbeing and resilience of local farmers. If sufficient attention is paid to this aspect, there would be much greater ownership of local communities and farmer groups to battle challenges related to climate change, weather extremities and other issues.
- **Constraints on account of limited evidence:** There is limited information and data on climate change, impacts of *jhum* agriculture both for policymakers and farmers on the ground. Evidence must be generated to inform policy and this has to be a constant process.
- **Not taking into account unique feature of the region:** Both, strengths and challenges of the NER are not taken into account while designing and implementing projects and taking them to scale. While the success of a project in a particular area may be reason to celebrate but it cannot be the gateway to other locations without taking into account the customs, religious practices and other features of that area and its people.

8.3 Aspirational outreach: A North East initiative

Ms. Sentimongla Kichuchar from the North East Initiative Development Agency (NEIDA), Tata Trusts³ shared experience of their work in Arunachal Pradesh, Mizoram and Nagaland, focusing essentially on primary input, production and post-harvest and marketing. Their experience confirmed that the nature of farming in NER was mostly for subsistence. There was hardly any mechanisation with mostly family labour being engaged in the fields. Land ownership and distribution systems did not lend themselves to following a landscape approach. Further, the changing aspirations of farming households was quite evident, where there was hardly any incentive for farmers to feel motivated or for their children to follow in their footsteps.

If earlier they were blindly taking on the mantle from their parents and drawing from their wisdom as they learnt the ropes to do the same things in the same way, now they were openly questioning and doubting the wisdom of following the oft repeated path. In such a scenario, there was a dire need for

³NEIDA was launched in 2008 with the motto ‘from handful to basketful’. It aimed to improve quality of life, grant access to quality education, provide livelihood interventions and grasp the changing aspirations of the youth in the absence of role models and to identify and develop the right value chain.

progressive farmers as role models as well as high performing projects that could be emulated or acknowledged as successes. In many places what emerged was that agriculture was not seen as a means to a better quality life. The remoteness of villages, along with poor roads and transportation infrastructure contributed to an underdeveloped value chain starting from input to marketing. For any donor or partner agency that stepped in to do something the questions that loomed large were: where do we intervene – in *jhum* fields or terrace fields, settled fields or in mixed settings? Which crop value chain should we develop? Where do we start? Given this scenario, the TATA Trust adopted a 5-pronged intervention strategy.

5-pronged intervention strategy

Strategy 1: Enhancing productivity with input support, adopting recommended cultivation technologies, improving seeds and acquiring appropriate tools and implements.

Expected outcome: Higher productivity per unit area, more marketable surplus.

Strategy 2: Addressing the issue of low cropping intensity and rainfed agriculture by taking up double cropping for rabi/ winter vegetables, using micro irrigation system and spring rejuvenation.

Expected outcome: Double cropping- higher marketable surplus per year- more income.

Strategy 3: Controlling terrain/soil erosion by land shaping, making contour bunds, bench terraces, planting Nitrogen fixing trees/Plants, hedge cropping system.

Expected outcome: Soil and nutrient conservation, thereby increasing the fertility of soil and higher productivity.

Strategy 4: Improving extension services by training agriculture service providers, producing and disseminating IEC materials, training field functionaries, making available door-to-door/ field-to-field services.

Expected outcome: Provision of agricultural extension services in remote and hilly areas of North East.

Strategy 5: Ensuring sustainability by involving community level farmers/producers groups, undertaking collective marketing and procurement and ensuring sustainable use of natural resources.

Expected outcome: Farmers continue to receive services even after the project wraps up.

Findings from a baseline study

The study was carried out by NEIDA with funding support from Tata Trust in early 2017. A total of 306 respondents (86% male and 14% female) were interviewed from 28 project villages in the three districts of Phek, Kiphire and Tuensang. The three major types of cultivation prevalent here were *jhum*,

agroforestry and traditional wet terrace cultivation. In the project villages, the average area under *jhum* per household was about 3.39 acres, under agroforestry about 2.58 acres, under plantation/ orchard 1.73 acres and under wet terrace cultivation about 2.26 acres. In control villages, average area under *jhum* cultivation was 2.2 acres, under agroforestry 0.5 acres while under plantation/orchard area 2.44 acres. Average area under settled cultivation per household was reported to be 1.97 acres in project villages and 1.25 acres in control villages. Of the households who were practising settled cultivation in project villages of Phek and Tuensang, 57% and 20% felt they are able to earn higher income through settled cultivation while 26% in project villages of Kiphire felt settled cultivation was easier compared to *jhum*. The study also found that settled cultivation was becoming popular because of improved land management practises introduced by the government.

In Longra Village, Noksen block, Tuensang district, as many as 154 households were covered in a project that began in 2012 in an orange orchard. At the start of the project there were 154 households practicing *jhum* but by 2017 only 58 households remained. The community was actively engaged in following livelihood activities with sugarcane cultivation (jaggery) being predominant. In addition, other livelihood opportunities were tapped through wet rice cultivation, piggery, orange orchards, agriculture in *jhum*, fisheries and other interventions that looked at drinking water and sanitation and health coverage. Some of the lessons that were learnt from the marketing of maize and kholar in Pungro and Khonsa Block include the following:

- Since most farmers worked individually to produce and market, transport cost was higher. Moreover, they had lower bargaining power and limited sharing of market information;
- Traders and contractors from Pungro Town and Dimapur visit farmers to negotiate with them and buy the produce by giving advance cash for specified quantities. While this assures regular business, it reduces the farmers' control over deciding the price of their product;
- Millet which is mostly for family consumption is sold at Rs 15 a kilo at farm gate and in Kohima for Rs. 100 (1 litre container); and
- Group discussions with women revealed that out of 22 different types of farm work taken up during the cropping cycle, the decision to select the *jhum* plot was taken mostly by men while decision of how much produce to keep for family consumption and how much to sell, taken by women. Also, finalising which crops to grow in the *jhum* fields was largely taken by women.

Going forward, the single most important activity for improving the situation of farmers is to develop value chains. Additionally, what needs to be done is to build farmers' capacity with respect to production, post-harvest technology and handling, storage, processing and marketing and providing options such as setting up farmer centres; undertaking water resource management for irrigating every crop; conducting field-based training and advisory services especially related to financial literacy at all levels of the farming cycle; giving women farmers who are already an active part of the farming cycle, specific role as decision makers and drivers of change; and tapping into local markets and encouraging a democratic way of empowering community-based institutions which would also be a good way of creating sustainable systems.

8.4 Ensuring sustainability of assets that are created

Ms. Meera Mishra, Country Coordinator IFAD shared some of her experience of working with states in the NER. IFAD has been working in the NE since 1997 and has invested over USD 200 million in loans and grants in the region. Highlighting her interactions with CBOs, NGOs, state governments and donors, she outlined the immense receptivity to new ideas within the region which gave hope to address some of the issues that have been affecting the region. At the same time, externally aided projects also get very strong support at the highest level within the government which, combine with a high level of participation at the community level can have very encouraging impact.

The NE has a rich legacy of CBOs and engaging with them effectively is key to the success of any implementation. The focus of every project must be to work with and through them rather than strive to build alternate institutions which will not be sustainable in the long-term. It might be challenging to do so, given that their governance mechanisms can be varied, ranging from those that are elected to those that are selected or nominated. But the common thread is that they all demonstrate ownership and participation. There has been concern about lack of formal representation of women in some of these traditional institutions which is an issue that needs attention. However, it is encouraging to see that women are in the forefront of decision making in many spheres in real terms and efforts should be made to build their capacity and at the same time sensitize traditional leaders so that gradual transformation can be brought about.

Another common concern of most agencies and local bodies working in the region has been the growing disenchantment of the youth not only from agriculture but from rural areas in general as many seek better opportunities and living conditions. In IFAD's work with the NER, it is evident that if effort is made to engage with the youth by entering into a dialogue, they are open to embracing change. If they are made a part of the solution, they will respond favourably. Therefore focusing on training and building capacities of the youth must be part of the design of every project in the NER.

An area that needs a lot of attention is ensuring sustainability of the assets that are created during the implementation of various projects and schemes. For this it is important to have community involvement and ownership from the very beginning. NER has some very unique strengths, the most significant being the enthusiasm of the people in supporting new initiatives. Also, the ownership demonstrated at the highest political level and a strong CBO culture in the region which have created enormous potential for different agencies to work jointly to bring about change and positive impact.

8.5 Experience in *jhum* intensification from IFAD supported NERCORMP

Mr. Adrian Marbaniang, Director M&E, NERCORMPS⁴, Shillong shared the experience of the IFAD supported North Eastern region Community Resource Management Project (NERCORMP) in *jhum* cultivation against the backdrop of its work in the NER promoting naturally produced products such as honey and aloe vera under the banner of North East Agro Business Trade (NEAT). It is currently in Phase III of its operations working in the project areas with *jhum* cultivators, community institutions and women. In Phase I (1998-2008) and Phase II (2010-2017), it focused on improving livelihoods of vulnerable groups in a sustainable manner through improved management of their resource base in a way that contributed to preservation and restoration of the environment. As part of the process CBOs were formed, namely Natural resource management groups (NaRMGs) and Self-help Groups (SHGs) which prepared Community Resource Management Plan (CRMP) for identification and prioritisation of action areas and action plans, including *jhum* improvement

Diversities of *jhum* in NERCORMP with key crop systems was seen with the constitution of CBOs, improved community empowerment and women participation towards village level planning and decision making. A guided bottom-up approach of planning using CRMP tools helped empower communities to plan for relevant livelihood activities. It increased household income and food security, intensified and improved *jhum* and enhanced community participation in biodiversity conservation. Non-farm livelihoods played a significant role in enhancing conservation of natural resources.

NERCORMP's efforts have been recognised as an appropriate livelihood intervention and biodiversity conservation project which helped minimise natural resources degradation, thereby contributing to reducing the threat/impact of climate change. Community improvement has been seen in project areas with marked increase in household income, food security and improved shifting cultivation.

DISCUSSION

Increase profitability for farmer selling kidney beans (NEIDA): The reason for a large price difference in the buying and selling prices of kholar that comes from Kiphire district to the towns was largely due to the existence of an unorganised market and the presence of exploitative middle men. NEIDA resolved this through a small-scale pilot project in a village by organising farmers into small groups and later started selling directly. The dependence on middlemen is there mostly because small farmers lack the resources to absorb the cost of transportation and related logistics.

State government can help provide planting materials: Many farmers said that market was not a problem since the buyers usually come to them. Currently planting material comes at a huge cost. Where there is better convergence special focus can be given to provide planting materials across NER.

Resolve the issue of overlapping: Overlapping of villages/ project areas must be avoided as NER is, overall, an underserved area. Donors must learn from the good practices and help replicate/ scale up what is working rather than continue to do small pilots. For example, IFAD helped to scale up the lessons and model related to land use planning of the UNDP's SLEM project from 40 villages to nine districts. Good participatory land use planning helps in avoiding such overlaps at the ground level too. In some cases signing of a MoU helps to leverage the strengths of other organisations as done by GiZ which has signed a MoU with NERCORMP. Where donors are providing a grant to the state and involved in direct implementation steps should be taken to avoid such duplications and overlaps. In case of Loan financing where the state government is the borrower and hence responsible for implementation, the onus lies with the state government to ensure they do not borrow for common activities in overlapping areas to ensure maximum benefit to maximum number of communities.

CHAPTER9

Markets: Opportunities and Challenges

The session on ‘Marketing of agricultural products from *jhum* and upland farming areas’ discussed the opportunities and challenges that existed in the region for taking these products to scale through new and modern marketing methods. Moderated by **Mr. Ajay Rastogi, Director, and Foundation for Contemplation of Nature**, the session had presentations on an international spice initiative that was keen to work with the NER given the abundance of spices that exist here. In the session there were also presentations on innovative ways of preserving and promoting traditional ingredients, recipes and products that were unique to the region and value chain improvements for the *jhum* cultivators.

9.1 Opportunities for NER to produce spices for export market

Mr Bhavit Pant, Sustainable Spices Initiative, (IDH)⁵, shared what the company is doing in India and how NER can be a major supplier in the global market for spices. The Sustainable Spice Initiative’s goal is to make transparent, credible and traceable sustainable spices in India a mainstream commodity, serving domestic and international markets. It brings sustainable spices to scale by engaging with farmers and aims at capturing 25% share of Indian spice production by 2025.

The Netherlands based company has its presence in over 50 countries and its Sustainable Agricultural Practice (SAP) is currently working with 24,900 farmers in India, across Rajasthan, Telangana and Gujarat, covering 26,015 Ha of land. It conducts farmers’ registration, trainings, extension and evaluation with a view to strengthen food security and productive farming systems to enhance livelihoods. Currently the Initiative is working on chilli, turmeric, pepper and coriander. The challenges the company has faced with reference to the North East region is that the area has no large scale settled agriculture and spices are not grown as primary cash crops. Meanwhile some of the opportunities that exist in spice production in NER include:

- Niche segment of spices exclusive to NER with high export value (Lakadong turmeric, Bird eye chilli, Bhut Jolokia etc);
- Favourable agro-climatic conditions for spice production;
- Low pesticide impact and exposure helps to meet EU/global Maximum residue Limits (MRL) compliances with immense opportunities in organic labelling;
- Ample central/state government push to mainstream NER produce by improving infrastructure, skill development initiatives and policy interventions; and

⁵SSI-I was started in India in 2015. It is a not-for-profit Section 8 company that provides a multistakeholder platform to the private and public sector, civil society, implementing partners and international associations like the Sustainable Spice Initiative

- High potential to increase agricultural productivity with average yield being significantly lower than national average (turmeric (1.87/ha vs. 3.47/ha).

Lack of technical expertise for first-level processing, maintaining of export compliances and negligible agro-processing and post-harvest management facilities are some of the impediments that need to be overcome if marketing of spices has to be scaled up from the NER. Bottom line is that there is tremendous scope for expanding production and marketing of spices from NER.

9.2 Empowering farmers growing traditional crops

Ms. Ishira Mehta, Crop Connect Enterprise Pvt, Ltd. shared the experience of her company especially with respect to how they were helping traditional farmers and products find a market as they curated and created novel experience for the urban customer. The company began its work in Arunachal Pradesh with Kiwi fruit. Adopting a value chain intervention it succeeded in selling 10,000 MT of Kiwi in mainland markets. Bringing over 15,000 farmers under one umbrella, Crop Connect created demand for local crops where more than 110 products are marketed to various customers.

Their business model rests on identification of authentic traditional crops sourced directly from farmers across the country and then adopting multiple platforms and routes to reach out to a diverse customer base. They curate traditional and novel recipes which bring to life forgotten and neglected ingredients and/or regionally successful products and flavours. By creating partnerships with hotels and chefs, they broaden the demand base. Providing nutritional information and details they reach out to customers who value healthy food and are appreciative of the details that the company shares. All these efforts help in connecting and developing an ecosystem that is tilted towards a farmer-centric market-based demand model. So far, Crop Connect has forged win-win partnerships with over 20 farmers groups offering back-end support, market engagement and sample recipe cards along with products. They have for example, successfully marketed online, the Nagaland black rice.

Farmer groups have been formed using direct sourcing methods. Multiple platforms have been created to reach out to an urban audience. An innovative way of making a traditional product or recipe popular has been to curate traditional recipes by working with chefs to innovate and come up with new recipes. For example, black rice originally from NE has been used to create a black rice Risotto recipe. Similarly millet, which has for long been associated as a fasting food has now broken out of that mould and it has demonstrated some of its versatility as it is increasingly being used in different recipes. Tying up with five stars and restaurants has helped Crop Connect reach the large population group that tends to eat out. Using red rice to make *biryani* helped break the long-held notion that only good quality basmati rice could be used to make delicious *biryani*.

In the case of Nagaland and NER, Crop Connect would be keen to undertake research to identify the right products. These could then be taken up for a phased scalability plan through specially created networks, rapid prototyping and making investments in low-cost technologies that can ensure consistent quality products. Customer mindsets and behaviour change takes time. By working on

demand and supply side, Crop Connect is engaging with a broader community. Once this happens tangible long-lasting effect can be seen not just in agri production but at the level of innovations too.

9.3 Income enhancement of farmers through value chain improvement

Mr. Aneesh Jain, Gram Unnati Foundation presented a brief overview of the Foundation which was started in 2012 as a single stop solution that created a common platform for farmers to access and enhance their income through value chain improvement. Conceptualised as a pro-market private sector undertaking, the Foundation is presently operational in the four states of Rajasthan, Madhya Pradesh, Haryana and Jharkhand. Some of its partners include NABARD, Tata Trust, Godrej, HDFC and others.

Establishing direct contact between farm and institutional partners, the Foundation sets up service points in a 20-30 km radius. Their theory of change is based on economic sustainability leading to environmental sustainability. Strengthening the existing value chain and aiming for higher value crops, it looks at diverse income sources while conserving and managing natural resources. The company currently reaches out to over 25,000 farmers and is expected to touch 1,00,000 farmers by 2018.

Working closely with farmers and buyers they develop a one-stop agri value chain solution. A joint market based approach is used to assist farmers to double their income, taking into account factors that influence income of farmers through direct sale of products. The company helps buyers source better quality products as they trace their supplies through dedicated networks. By identifying different products required to reach out for larger cultivation and by elongating the harvest chain, the value chain is strengthened with supplies that are constant for at least eight months of the year. In case of NER there is immense potential for identifying location and opportunities for medicinal plants and spice crops and linking these with potential and emerging markets. It is important to identify and promote a range of customised products that are not commonly available in the market and create equilibrium between different players. Using farm traceability and inventory management of produce and preceding this with market surveys will help reach out to a larger area of cultivation, create niche markets and find out what the outside world wants.

DISCUSSION

Building market linkages that are relevant to the local setting: Market success of Naga King Chilli and Birds' Eye Chilli can be explored and tapped into. These have enormous potential on the national and international turfs and must be tapped into. Pungent extracts from the chilli, oleo resin, and other similar by-products must also be extracted.

Poor logistics and infrastructure, impediments in taking popular crops to scale: Crop Connect had initiated the marketing of kiwi fruit from Arunachal Pradesh in 2013 but had to abandon the effort given the high cost of transportation, low volume of production and other logistic problems which pushed up the price of the kiwi to levels that were almost similar to those that were coming in from New Zealand making the project unviable.

Technology handicap: Poor internet connectivity linked with overall inadequate infrastructure are other impediments that make it difficult for products to find ready markets, more so through the online route.

CHAPTER10

Key Messages

Key messages that emerged during the discussions have been presented in this section, summarized under different themes.

10.1 Jhum: changing practices and perceptions

Learning from good practices: Agriculture departments in the NER must learn from experiences that have been documented from other states in the region like Meghalaya, Mizoram and Assam and other countries like the Philippines which have similar terrain and agro climactic conditions.

Understanding that jhum is not sustainable in its present form: Farmers must know that while fallow is increasing and *jhum* is being abandoned, they face the risk of losing their natural traditions. While making the shift from subsistence to commercial market driven farming they must know exactly what they stand to gain and lose so that informed decisions can be made.

Emphasising the need to preserve local biodiversity: Farmers must know that *jhum* improvement is linked to livelihood and ecosystem enhancement. *Jhuming* in the context of Nagaland is not a matter of choice but almost a compulsion. The current scenario where the farmer has to trudge long distance to *jhum* fields and deal with low productivity as well as low production is not sustainable. Unless concrete steps are taken like, reducing burning, introducing high value tree based farming along with high yielding crop varieties, introducing proper management of *jhum* fallows, creating strong market linkages, the pace at which *jhum* is being discarded and abandoned, will continue.

Encourage democratic community based institutions: These networks have tremendous potential. Their native wisdom combined with the influence they have within the local community gives them enormous leeway to demonstrate impact on the ground forging win-win relationships between farmers, governments, legislators, faith leaders and village resource persons. They can also play a vital role in reaching out to the youth.

10.2 Engaging youth and women

Making jhum farming attractive to young people: Orient the farming community so that they can engage more meaningfully with the youth. Link information and knowledge on farming with the existing

“It is important to look into the gender aspect not superficially but by peeling off the layers of conventional patriarchal thinking. Asking questions like what is the role of women? Who is participating in decision-making? Who is represented in village council? Do women have land rights? Are their financial interests safeguarded given the fact that they shoulder bulk of the agricultural workload?”

Reetu Sogani, Gender Consultant

educational system. Organise more special summer programmes for school students on the lines of what is being done successfully at Chizami village in Phek district for the last two years. Reorient the youth to understand the significance of “field to plate” and encourage them to grow their own food.

Gender mainstreaming: Recognising the role of women and empowering them economically by compensating them financially and including them in critical decision making will be a sign of true progress.

10.3 Research, training and capacity building

Need for good data for policy makers and farmers: Lack of data on *jhuming*, hydrology and meteorology is a major impediment in strategic planning and policy formulation. The entire continuum from *jhum* to settled agriculture must be considered and reliable data collated and analysed.

Building capacities of farmers: Trainings on new technologies, financial literacy, different forms of agro-forestry, organic farming and other cropping patterns must be an ongoing exercise.

Adopt new technologies: Farmers need to be introduced to new technologies and shown how to use them to advantage. IT services to be strengthened and connectivity improved so that the farming community can take advantage of accessing information and selling online. This will help curtail the manipulation of middlemen and also give greater control to the farmer to negotiate prices, interact with other farmers online and seek information on projects conducted in the country and globally.

10.4 Market linkages

Finding ways of reducing workload of farmers: Both in farming as well as in post-production activities the farmers in the NER, especially the women, do a lot of backbreaking labour. This not only makes agriculture an unattractive option for the youth but also severely reduces efficiency and increases cost of production. Efforts must be made to promote mechanisation in the field and for farm-gate level processing, where possible, providing farmers access to credit and training so that they may be able to adopt new technologies.

Village institutions must be synchronised with proper land use planning. Post production management must be made part of all agri systems and the foundation of agriculture projects must be conservation of biodiversity. Systematic Production and planned marketing of Medicinal & Aromatic plants (MAP) available in the area has much scope.

Build market linkage between government and farmers: Using trainings, awareness sessions, seed distribution camps and other exchange forums, the government needs to work closely with farmers groups, building trust and confidence. Farmer centres and *haats* must be developed so that there are more direct avenues for marketing wares and less reliance on exploitative middlemen.

CHAPTER 11

Conclusion & Next Steps

The two days of discussions provided many insights and sharing related to the significance of *jhum* cultivation in the NER. What made the Consultation unique was the coming together of different stakeholders and states in the region and their commitment to preserve their traditional agricultural practice of *jhum*, while factoring in the present challenges and redesigning some aspects so that it could continue to be the mainstay for their survival and prosperity as also be an attractive vocation for young people. With three new projects from IFAD, JICA and KFW ready to roll, the state was on the cusp of gaining significant agricultural advantage that holds promise of improving the lives of people not just in the state of Nagaland but in the entire NER.

In Nagaland, 934 sq km area is slashed every year primarily for *jhum*. Experts agreed that for any meaningful intervention it is important to understand and address the concerns of the villagers as most of them depend on farming as their only source of income. Therefore, unless their concerns are understood their support will be hard to achieve in preserving their own environment. Sometimes villagers are conscious of what needs to be done, but a helping hand or direction is needed or a dialogue with the community must be initiated to make progress in better management of *jhum*.

It was acknowledged that there is good work happening on the ground, but much of that is in silos. Scaling these up with the support of government, CBOs and international organisations will have large-scale impact on the morale of people as also giving a boost to the agriculture economy. In recent months a few initiatives have been taken, like the e-auction of ginger which was grown in a village in abundance and faced the threat of getting spoilt in the absence of finding a market. Similarly the state produces multiple varieties of honey which can be marketed at the national and international level. There are opportunities in the realm of spices, *Naga* chillies and other niche products which can be taken to scale through the combined efforts of private sector, farmers and the government. In case of niche markets abroad, it would be important to adhere to regulatory requirements and quality standards.

Marketing remains a major concern especially given the recent surpluses in agricultural produce with the adoption of certain technologies and practices. There was uniform agreement that more private sector engagement, PPP initiatives and farmers collectives needed to be brought into the mainstream to facilitate better market linkages.

A unanimous concern was that while development was the need of the hour, it must not be at the cost of the biodiversity and natural habitat of the region. Nagaland is no stranger to community based planning. Rather, it has pioneered the concept in many ways. With Village Republics in olden times serving as

platforms for local administration, they later evolved into the Communitisation 2.0 Initiative in the 80's. It is time to strengthen this and bring all stakeholders together to share a common vision that can improve linkages of farmers with knowledge, opportunities and skills, paving the way for Communitisation 3.0. The Consultation could be a step in paving the way for this transition.

Finally, it must be understood that while change is constant, there is need to consider the entire continuum from *jhum* to settled agriculture and within that entire cycle the farmer has to be in the centre of the discourse. Their interests must be borne in mind and the final decision based on information and knowledge must be theirs to make, on what agriculture system to adopt, who to partner with and on what terms.

Back flap/cover

Voices from the consultation

“Jhumming is a way of life in the Northeast Region. Nagaland has been particularly waiting for decades to make this process more efficient. With each step and connectivity that is provided through various projects and initiatives, there is hope for preserving and maintaining the region’s biodiversity and natural habitat while keeping people’s economic interests in mind too.”

Pankaj Kumar, Chief Secretary, Government of Nagaland

Jhum is not at the cost of our heritage but because of it. The Consultation has given us confidence that we are in this together and that we have the ability to look at Jhum in the modern context. Armed with information, technology and know-how we most certainly can revive jhum in ways that are relevant to present-day needs as we look at all aspects of jhum cultivation - from processing, marketing and managing agri produce.”

Imkonglemba Ao, Agriculture Production Commissioner & Principal Secretary, Government of Nagaland

“There are advantages in NER especially in demonstrating ownership towards externally aided projects at highest level in addition to ensuring participation at community level. There is a rich legacy of CBOs which contribute to effective design and implementation. However, the gap lies in sustaining assets and structures that get created through projects. Despite this, there is hope and optimism as governments, NGOs, CBOs, faith leaders and activists join hands to find solutions relevant to their setting.”

Meera Mishra, Country Coordinator, IFAD

“Jhum in the current context is basically large blocks of land where crop diversification is steep with reliance on a more commercialised set of crops leading to severe degradation, loss of nutrients, creation of thick ordinary ash, short fallow, continuous erosion of biodiversity, high degradation of Co2 and indulging in the simplest way of handling i.e. slash and burn, leading to environmental degradation. The big question is not whether to jhum or not, it is to see how, going forward can jhum be done differently.”

Professor VP Singh, Advisor, ICRAF, India

“To get better understanding of the economics of jhum with respect to both input and output, it is important to improve jhum on a sustainable basis, adopt a holistic planning approach and use tested technological interventions which are socially important. By making the entire process participatory, land use planning must be based on an approach that uses good land use, resulting in better equity outcomes while also contributing to gender empowerment.”

Andras Darabant, UNDP Consultant

ANNEXURES

Annex 1 : Agenda

Day 1: 20th November, 2017

9.00- 9.30	Registration and coffee
9.30-10.45	<p>Welcome and opening remarks by Ms. Rasha Omar, Country Director IFAD, India</p> <p>Climate change and agriculture: Importance of <i>jhum</i> improvement by Dr. Randhir Singh Poswal, ADG Extn., ICAR , Govt of India</p> <p>Upland farming systems and food security: Global perspectives by Mr Shyam Khadka, Country Representative, FAO</p> <p>Inaugural speech by Mr Imkong L Imchen, Hon'ble Minister of Health & Family Welfare, Govt of Nagaland</p> <p>Vote of thanks by APC, Nagaland</p>
10.45- 11.00	Tea/coffee
11.00-13.00	<p>A multidimensional view of <i>jhum</i>: Panel discussion</p> <p>Setting the context by Dr. Dean Current, Center for Integrated Natural Resources and Agricultural Management (CINRAM), University of Minnesota</p> <p>Presentation by Dr. Andras Darabant, Forest Engineer& NRM Specialist, Vienna</p> <p>Panelists</p> <p>Dr V.P. Singh, Advisor, ICRAF, India</p> <p>Mr. G.S Raju, Additional PCCF Tripura & CEO JICA Project</p> <p>Dr. Bala Ram Kandel, Ex-Project Coordinator, ASHA, Nepal</p> <p>Q& A</p>
13.00- 14.00	Lunch

14.00- 16.00 hrs	<p>Settled agriculture as an alternative to <i>jhum</i>: Experiences from the field</p> <p>Experience in <i>jhum</i> intensification:</p> <p>Dr. Augustine Mercado, ICRAF Philippines</p> <p>Mr. S. Chaudhari, MD NERCORMP (TBC)</p> <p>Farmer's views from villages where <i>jhum</i> has stopped</p> <p>Farmer's views from villages where <i>jhum</i> is increasing</p> <p>Q& A</p>
16.00- 16.15 hrs	Tea/coffee
16.15-17.00 hrs	<p><i>Jhum</i> in the context of changing aspirations of the youth</p> <p>Ms. Seno Tsuha, North East Network</p> <p>Mr. Neichute Doulo, Entrepreneurs Associates, Nagaland</p> <p>Ms. Jean Metha, Green Caravan, Nagaland</p> <p>Q&A</p>
17.00 hrs	Close of Day 1

Day 2

9.30-10.00	Recap of Day 1 and discussions by Dr. V.P. Singh, ICRAF
10.00-11.30	<p>Land tenure and role of traditional institutions in <i>jhum</i> management: Panel discussion</p> <p>Session moderator:</p> <p>Prof. Sapu Changkija, Nagaland University</p> <p>Dr. Ngachan, Director ICAR</p> <p>Dr. Vincent Darlong, Vice Chancellor, Martin Luther University, Shillong</p> <p>Q &A</p>
11.30-11.45	Tea/coffee

11.45-13.15	<p>Lessons from investment in Sustainable Management of Upland farming systems in NE</p> <p>Session moderator: Mr. Pankaj Kumar, Chief Secretary, Govt of Nagaland</p> <p>Dr. Klaus-Peter Gross, GiZ</p> <p>Ms. Lianchawii, UNDP</p> <p>Mr. Dharani Ratno, Tata Trusts</p> <p>Ms. Meera Mishra, IFAD and Mr Adrian Marbianlong, NERCORMP</p> <p>Q&A</p>
13.15- 14.15	Lunch
14.15-15.15	<p>Marketing of agri products from <i>jhum</i> and upland farming areas: Opportunities and challenges</p> <p>Presentations by:</p> <p>Mr. Bhavit Pant, Sustainable Spices Initiative, IDH India</p> <p>Ms. Ishira Mehta, Crop Connect Enterprises Pvt Ltd</p> <p>Mr. Aneesh Jain, Gram Unnati Foundation</p> <p>Q&A</p>
15.15-15.30	Tea/ Coffee
15.30-16.00	<p>Concluding remarks by Mr. Pankaj Kumar, Chief Secretary, Govt of Nagaland</p> <p>Vote of thanks by Mr. Imkonglemba, Agriculture Production Commissioner, Nagaland</p> <p>Overview of the field visit</p>
16.00 hrs	Close of Day 2

Day 3: Field Visit

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Annex 3: Field Visit

A day-long field visit was arranged to Khonoma, Molvom and Mithun Research centre, Jharnapani and Molvom Pineapple Farm.



Officials from the horticulture and agriculture department and allied sectors accompanied the delegates. Visitors interacted with pineapple growers.



A visit was also arranged to the Indian Council of Agricultural Research (ICAR), National Research Centre (NRC) for Mithun at Jharnapani where the Director NRC, explained the advantages of rearing Mithun. Visitors saw Mithun ploughing the fields which was an experiment being carried out on a trial basis – a first of its kind anywhere in the world.



A visit to the Alder based *jhum* farming at Khonoma demonstrated a successful agro forestry system of integrated cropping which had economic and environmental benefits. The indigenous system of Alder plantation which farmers had tested over the centuries based on their traditional knowledge was a good way to see and understand soil chemistry, plant nutrition and nitrogen fixation.



Annex 4: Exhibition and display of products from *jhum* cultivation

A well organised display of products at the Round Table venue showcased the entire range of fruits, vegetables, cereals, pulses and medicinal plants that are currently under cultivation across the state of Nagaland both in *Jhum* and settled agriculture areas. The luscious display cum exhibition included a variety of upland paddy in as many as 111 indigenous cultivations for which the prototyping has been completed and which are about to be released and notified soon. Amongst cereals the brown and black rice, white and pinkish coloured glutinous varieties generated a lot of interest. Sticky and non-sticky millets, especially jowar that is locally cultivated looked tempting as did pulses that included kidney beans that are locally called Kholar and grown popularly in Tuensang and Kiphire districts of Nagaland. Rice bean with approximately 16 varieties and five types of cowpeas, oilseeds and soyabean added to the range of products.



A number of root crops were also on display. There was Colocasia, many varieties of which are grown in the upland farming system. There were also two types of ginger on display which included the small and very pungent variant and the larger and fibrous one which grows well in the *jhum* fields. Also on display were sweet potatoes, tapioca and arrowroot.

Among vegetables there was winged bean, luffa/sponge gourds, Solanum, local chilly, bird eye chilli, pumpkins of many types, ash gourds. Nagaland is known for a number of spices which include the popular chives, local garlic, Chinese leek, basil, mint, turmeric.



Rubber sheet of RRII had 600 varieties while coffee beans, berries, parchment coffee from the State Land Resource Department, bamboo products from the Nagaland Mission, honey from the Honey Mission in varieties that included the Stingless bee honey, rocky bee honey, cerana honey showed the diversity and richness of the region in terms of agricultural produce. From the Nagaland Bio-resource Mission there were Macuna, Rhus, Samialata etc. Some of the horticulture products that were showcased included Naga mandarin, sweet orange, pineapple, dragon fruit, papaya, passion fruit, kiwis, tree tomatoes, and the world's hottest King chilli (Naga King Chilli).

