# Agro-Biodiversity for Food, Nutrition and Ecological Security:

A Case Study on Jhum Agriculture, Nagaland





Ministry of Environment, Forest and Climate Change Government of India







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## Background:

Lives and livelihoods of the mountain people in the Himalayan region are highly dependent on climate sensitive resources like agriculture, forest biodiversity and water for sustenance (INCCA, 2010), (Niti Aayog Report, 2018). Agriculture and allied sector is the largest contributor to the economy of Nagaland and is the development priority to achieve 'Food for All" by 2025, and also envisioned as an important component in Nagaland's 'Vision 2030'. Predominantly agrarian, Jhum cultivation (rainfed) is the most common form of traditional agricultural system practiced across the State (Economic Survey 2016-2017, Government of Nagaland), (Nagaland State Human Development Report, 2016). Nagaland's topography and terrain is mountainous in nature with high hills, deep gorges and sharp crest ridges. Despite the inaccessible terrain feature, socio-economic instability or impediments, geoecological fragility and seismic ecosystem exposing the community to climate variability, its people have built resilience by balancing the present needs through their traditional Jhum agriculture. Jhum is widely practiced across the Himalayan mountain states of Northeast and tropical regions in South East Asia. As per the Task Force on Shifting Cultivation set up by the Government of India, an estimated 6.2 lakh families are engaged in Shifting cultivation (Report 1983) and a cumulative area of 1.73 million hectares under the practice in NE India during the period 1987-97 (Report 2003). More recent figures provided by the Indian Council of Forestry



Some agricultural produce harvested from Jhum field.

Research and Education, published in the Statistical Year Book 2014 by the Ministry of Statistics and Programme Implementation (MoSPI), suggest significant reduction in the area under shifting cultivation over the last decade (2000-2010).

The UN Climate Change Annual Report 2017 strongly streamlines the magnitude of indigenous people and local communities' traditional knowledge and perspectives, their role and contribution to climate change adaptation and traditional coping mechanisms.

The bio-diverse traditional Jhum or swidden agricultural sustainable farming system is embedded in Naga's socio-economic, ecological and cultural way of life. It is a coping and adaptation mechanism to combat climate variability in rural communities. It also enhances seed sovereignty and alleviates poverty and hunger. In a Jhum field, 15-40 diverse crops are grown together and harvested on a rotational basis. Maintaining genetic diversity serve as an insurance for the farmers in the context of climate variability, because even when one crop fails, other crops thrive. It sustains their family, contributes to community's local food production and food chain. The practitioners of this system are known as swidden cultivators/ agriculturalists or Jhumia. Jhumias are typically small land holders or marginal farmers, who cultivate in privately owned and clan-owned plots of land, or community owned forests within and in adjoining village boundary. They are the custodians of agro-biodiversity in their community.

The in-depth study was undertaken in Chizami village. However, field visits to other villages like, Tsupfume, K.Basa. K.Bawe of Phek district, Salomi and Pungro village of Kiphire district and Old Pangsha, Hakchang of Tuensang and Wokha village of Wokha district were included in the study as these communities widely practice Jhum agriculture. The other stakeholders including Governmental and Non-Governmental agencies involved in the study are:

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1	Government of Nagaland
2	Nagaland Science and Technology Council (NASTEC)
3	The Energy & Resources Institute (TERI)
4	Integrated Mountain Initiative (IMI)
5	Sustainable Development Forum, Nagaland
6	Department of Forests, Environment and Climate Change, Government of Nagaland
7	Youthnet, Nagaland
8	Chakhesang Public Organisation (CPO)
9	North-east Initiative Development Agency - Tata Trusts
10	North-east Network, Nagaland
11	NEPED
12	CCA-NER, GIZ
13	Land Resources Department, Govt. of Nagaland
14	Agriculture Dept., Govt. of Nagaland
15	Horticulture Dept., Govt. of Nagaland
16	Nagaland Beekeeping & Honey Mission
17	State Agriculture Research Station (SARS), Agriculture Dept. , Govt. of Nagaland
18	IFAD - FOCUS
19	Eleutherous Christian Society (NGO), Tuensang district

### Community's Approach/ Findings:

Jhum agriculture is an ecosystem based adaptation with tacit indigenous knowledge. For centuries, it has been a vastly productive form of ecological farming. Some of the major findings are:

- Traditional Jhum practice is participatory, effective, ecological and sustainable.
- The Jhum technique is local and cost-effective. Low agricultural inputs is applied through efficient use of natural resources like decomposition of biomass from fell trees, wood chips, branches, twigs, leaves, shrubs/plants, residue crop mulching to improve the process of soil macro fauna (earthworms, termites) to enhance the soil nutrients and soil structure through natural process.
- Traditional Jhum adopts good fire management, soil and water conservation measures. Mountain tops where the natural forests are, is protected by the community as it is their water resource catchment area.
- Intercropping, rotational crops and fallowing for regeneration of forest practiced in the traditional Jhum agriculture ensures year round food, nutrition and livelihood security. Thus, it generates social, economic and cultural benefits and also help maintain resilient ecosystems in the process.
- The practice is based on the community's specific adapted agro-diverse cropping patterns and use locally available natural resources. It sustains the



Jhumia's voice: It is our indigenous community's social identity, heritage, wisdom and wealth, cultural values and food and nutritional security. It is our right and collective responsibility to maintain, upholds, protect and preserve the traditional knowledge and skills and our environment' indigenous community's wealth of knowledge, skill and innovation. Community resilience is embedded in their traditional knowledge.

- The decision-making mechanism on selection, resource management, land use and ownership practices are historically managed and governed by the social institutions through community norms, customary laws and cultural values which is tribe/ village specific. Traditional institutions play a significant role in influencing the decisions of local communities.
- Jhum agriculture is women driven as they play a significant role in selection of seeds to post-harvest management. However Women are excluded in land-holding and therefore this impacts their decisionmaking in management and protection of the resources at the community level.
- Poor infrastructure and market inaccessibility for their agricultural produce and therefore limiting livelihood opportunity
- Heat stress, water stress and climate variability is posing a challenge to the community's health and food security.

### **Recommendations:**

Below are lessons learnt from Community's coping and adaptation strategies. These also provide an opportunity for other States to replicate the bio-diverse Jhum agriculture practice of Nagaland:

- Recognize traditional agricultural contribution and incorporate to State climate change policies.
- Recognize Indigenous communities' contribution to ecological food and farming systems.
- Safeguard the traditional agro biodiversity conservation and retain farmers' right to their biodiversity and traditional knowledge systems.
- Recognize and acknowledge women farmers' contribution to sustainable agriculture through conservation of genetic diversity.
- Integration of agro-forestry and improved fallow management: Improve or better land use management and longer fallow cycle, cropping and agro-forestry system based on local context-based solutions.
- Enhancement of livelihood opportunity: Facilitate marketing opportunities for Jhumias by supporting with market infrastructure, inputs and capital to enhance their livelihood opportunities.
- Identify existing traditional agriculture practices that are climate-resilient and focus on building/ improving these practices and integrate with appropriate technology.
- Ensure community's access to appropriate technology for improved production and to decrease drudgery of work, especially for women.
- Research and Documentation: Documentation of Indigenous Technical Knowledge (ITK) and practices. Traditional knowledge of the agricultural system can be a good source of information at the local groundand may provide simple and effective solutions for climate change adaptation. Use of traditional knowledge as a strategy for decision-making on climate change.
- Recognize traditional knowledge holders and acknowledge their significant role and contribution to climate resilience across the States in the Himalayan region. Their knowledge will be their contribution to climate change adaptation and mitigation.
- Develop data repository of traditional knowledge system and practices of community-based climate change adaptation and coping practices.
- Introduction and promotion of the documented traditional knowledge/repository in formal education and through public education to reach out to diverse stakeholders.
- Strengthening the existing local institutions and support them with effective and context specific policies towards a diversified and climate resilient agriculture.
- Develop an operational guideline framework based on the traditional techniques and inputs, available climate change adaptation practices from other Himalayan States and other Regions.
- The need for Shift in State policy to categorize shifting cultivation fallows as 'arable, regeneration fallows' from 'abandoned wastelands' and as 'unclassed state forests' (Report of Working Group III, NITI AYOG, 2018).



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