

## INSTITUTIONAL ROLE IN LIVELIHOOD GENERATION: A CASE OF MUNISING, ODISHA

Dwity Sundar Rout <sup>1</sup>, Asha Parvin <sup>2</sup>, Swati Suman <sup>3</sup>, Ajay Kumar Prusty <sup>4</sup>, Vishal Kumar Gupta <sup>5</sup>, Atanu Deb <sup>6\*</sup>, Preetha Bhadra <sup>7</sup> and Avisweta Nandy <sup>8</sup>

<sup>1,3</sup> PhD Scholar, Department of Agricultural Extension Education, M. S. Swaminathan School of Agriculture, CUTM, Paralakhemundi, Odisha.

<sup>2</sup> PG Scholar, Department of Agricultural Extension Education, M. S. Swaminathan School of Agriculture, CUTM, Paralakhemundi, Odisha.

<sup>4</sup> Assistant Professor, Department of Agricultural Extension Education, M. S. Swaminathan School of Agriculture, CUTM, Paralakhemundi, Odisha.

<sup>5</sup> Assistant Professor, Department of Genetics and Plant Breeding, M. S. Swaminathan School of Agriculture, CUTM, Paralakhemundi, Odisha.

<sup>6</sup> Associate Professor, Department of Agricultural Extension Education, M. S. Swaminathan School of Agriculture, CUTM, Paralakhemundi, Odisha.

\*Corresponding Author Email: [atanudeb@cutm.ac.in](mailto:atanudeb@cutm.ac.in)

<sup>7</sup> Assistant Professor, Department of Biotechnology, M.S. Swaminathan School of Agriculture, CUTM, Paralakhemundi, Odisha.

<sup>8</sup> PhD Scholar, Department of Agricultural Economics, College of Agriculture, Odisha University of Agriculture and Technology, Bhubaneswar, Odisha.

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### Abstract

This research paper examines the complex dynamics of livelihood transition in Gumma, a forested area of Odisha, India. The study specifically focuses on the Munising village. Over time, the indigenous communities of Gumma have experienced a substantial transition from conventional farming methods to the cultivation of rubber, driven by both governmental and non-governmental efforts. This shift not only modifies economic activity but also reconfigures the relationship between indigenous communities and their natural surroundings. Objectives of the study are: 1. Participatory Livelihood Analysis at Munising, 2. To understand the livelihood network and institutional role at Munising and 3. To trace out the problems, related to livelihoods at Munising. The study utilises a combination of Ex-post facto and Participatory Research methodologies, together with Social Network Analysis (SNA), to thoroughly investigate the livelihood networks in Munising. The research seeks to comprehend the historical progression of livelihood patterns and the current desires of community members. The indicated key livelihood options encompass Traditional Agriculture, Rubber Cultivation, Business, Livestock and Poultry, Incense Stick Making, Bamboo Crafting, MGNREGA, and Migrated Labours. The analysis demonstrates a chronological evolution from the gathering of food and hunting to the practice of agriculture, with rubber cultivation becoming as the prevailing choice of livelihood. The Rubber Board and Integrated Tribal Development Agency (ITDA) activities are crucial in promoting rubber farming and have proven to be beneficial in generating sustainable livelihoods. The study additionally introduces a Network Cloud of Livelihood Trends, which demonstrates the impact of social connections on the adoption of rubber cultivation. In addition, the research investigates the correlations between the size of farms, relationships with non-governmental organisations and government organisations, and the security of people's livelihoods. There is a favourable relationship between larger farm sizes and livelihood security. Additionally, involvement with non-governmental organisations (NGOs) and government organisations improves access to information, which in turn leads to enhanced food security. Moreover, the study assesses the influence of organisations such as Krishi Vigyan Kendra, Christian Missionaries, NGOs, Integrated Tribal Development Agency (ITDA), District Administration (DA), and Centurion University of Technology and Management (CUTM) on the livelihood network. ITDA and DA have become prominent influencers, thanks to government-backed efforts and intensive development programmes. This study offers significant insights into the development of livelihood patterns and the influence of social networks on the economic environment of Gumma. It contributes to the wider discussion on sustainable development and the overall welfare of the community.

**Keywords:** Integrated Tribal Development Agency (ITDA), Social Network Analysis (SNA), Participatory Rural Appraisal (Pra), Livelihood Analysis, Rubber.

## 1. INTRODUCTION

A livelihood comprises a combination of skills, resources, and activities that are essential for maintaining a certain way of life. A sustainable livelihood encompasses the capacity to effectively handle challenges, recover from setbacks, and maintain or improve resources and capabilities, hence creating favourable conditions for sustainable livelihoods for future generations (Chambers 1989; Chambers & Conway 1992; Davies 1996; Yaro 2004; FAO 2005). Instances of human capital include factors such as age, level of education, and family composition. Natural capital includes essential resources such as climate, water, and land. Physical capital encompasses tangible assets such as machinery, cattle, and electricity supply. Financial assets encompass components such as credit, whereas location-specific aspects encompass access to infrastructure and social services. In addition, social, political, and institutional assets refer to networks, social inclusion, and political affiliations (Moser 1998, Siegel & Alwang 1999, Rakodi 1999). An analytical approach focused on understanding household livelihoods can provide valuable insights. The utilisation of the triangle consisting of assets, capacities, and activities within the household offers a direct method for conceptualising the fundamental nature of livelihoods. In order to thoroughly examine the workings of livelihood systems, it is crucial to adopt a systemic approach. Utilising a structured approach as a conceptual basis enables the analysis of interactions that encompass institutions, patterns, the scope of these interactions, and the pertinent limiting variables.

Drawing inspiration from the research tradition in Social Learning (Bandura, 1977; Ellison and Fudenberg, 1995), the focus of investigation lies in the adoption behaviour of farmers within these networks. Research has explored areas like health and drug use, with empirical examinations often at the forefront (Valente, 2003). A substantial body of work, particularly in the domain of agricultural technology adoption, underscores the significance of agricultural social networks in the uptake and adaptation of innovative farming practices (Foster and Rosenzweig, 1995; Bandiera and Rasul, 2003; Udry and Conley, 2004; Mazur and Onzere, 2009). However, the direct application of social network analysis to study the diffusion of agricultural innovations remains relatively constrained (Monge *et al.*, 2008). This parallel research tradition is notably sparse in India, especially within the community of extension researchers. In many third-world contexts, these networks serve as formal embodiments of longstanding social ties, the analysis of which can offer invaluable insights for formal extension agencies (Valente, 2006). Additionally, exploring the network dynamics within social and farming system niches can provide a deeper understanding of the introduction and acceptance of new crops (Monge *et al.*, 2008).

Gumma, located in the lush sceneries of Odisha, is a prime example of a forest fringe block where indigenous populations have flourished for many years. The complex interaction between environment and human settlement has formed a fabric of traditional agricultural livelihoods, establishing a distinct ecosystem that has supported these communities for hundreds of years. Nevertheless, as a result of recent developing efforts, Gumma has experienced a significant change in the way its native residents make a living.

Over time, both governmental and non-governmental organisations have actively collaborated with the communities of Gumma, aiming to improve and enhance their socio-economic circumstances. The result of these measures has been a noticeable

shift from traditional agricultural practices to the development of rubber. This transformation represents not only a change in economic activities but also a significant rethinking of the connection between the tribal populations and their natural environment.

This study piece undertakes a thorough investigation into the effects of transitioning from traditional agriculture to rubber plantation in Gumma, Odisha. The study seeks to explore the various aspects of this change, including its effects on the social and economic structure of the indigenous communities, the ecological dynamics of the region, and the overall welfare of the population. This study aims to analyse the trajectory of this transformation in order to provide insight into the complex dynamics of the Gumma community's changing connection with the land. It also seeks to examine the problems encountered throughout this transition and explore potential opportunities for sustainable development. This study aims to provide useful insights into the debate on sustainable livelihoods in forest fringe areas and the difficult balance between development and preservation of traditional ways of life. It achieves this by utilising empirical evidence, community narratives, and a nuanced analysis.

Assessing the information requirements of farmers encompasses various approaches, including meetings, field visits, maintaining diaries to record farmers' problems, discussing ideas with fellow extension workers, and undertaking Participatory Rural Appraisal (PRA). The Participatory Rural Appraisal methodology consists of a wide range of procedures that are tailored to individual contexts. This adaptable toolkit comprises a range of methods, such as physical and social mapping, transect walks, wealth ranking, Venn diagramming, constructing seasonal calendars, matrix ranking, matrix scoring, and problem tree analysis. Certain modifications within this collection of PRA tools prioritise the inclusion of beneficiaries in the decision-making process as a component of needs assessment.

Social Network Analysis (SNA) has been utilised in the fields of sociology and anthropology to tackle a wide array of problems (Kossinets and Watts, 2006). Economists have conducted study on subjects such as the influence of networks on the adoption of innovations (Bandiera & Rasul 2006; Temel *et al.*, 2003). In recent times, Social Network Analysis (SNA) has been incorporated into the framework of Agricultural Knowledge and Information Systems. This conceptualises the development of agricultural knowledge as a product of interactions among several stakeholders. This methodology has been utilised to understand Agricultural Innovation Systems (AIS) in underdeveloped nations (Spielman *et al.*, 2011, Asres *et al.*, 2012).

These investigations help us understand the social and institutional networks that support rural livelihoods, which in turn form the basis for effective development and communication interventions. The first step in promoting networking capabilities in rural regions is to assist rural inhabitants and service providers in visualising and comprehending their current networks (Cinner & Bodin, 2010). The United Nations Development Programme introduced the notion of sustainable livelihoods, commonly referred to as "people-centered" development, in 2007. This viewpoint prioritised comprehensive livelihoods, adapted to the dynamics of community livelihoods, and aimed to optimise the capabilities of communities. Life sustainability was acknowledged when there was alignment between both macro and micro policy. The sustainable livelihoods framework illustrates the interdependence of livelihood

components and functions as a tool for promoting sustainable livelihoods, offering guidance and aiding in planning.

### 1.1 Objectives of the study:

- Participatory Livelihood Analysis at Munising
- To understand the livelihood network and institutional role at Munising
- To trace out the problems, related to livelihoods at Munising

## 2.1 REVIEW OF LITERATURE

Rogers and Kincaid (1981) and Rogers (1995) established that a communication network is a complex system of persons connected through the flow of information within a social framework. Rogers (1995) recognised that technology progress consolidates information, hence diminishing uncertainty regarding cause-and-effect correlations when dealing with problems. Lasseter (2008) utilised Social Network Analysis as a method to comprehend the adaptive tactics employed by small-scale fishermen in the context of lobster fishing. He discovered that these producers adjusted their strategies in response to changes in resource availability, and emphasised the influence of social networks among fishers on decision-making, as these networks enable the exchange of knowledge and information.

Röling and Engel (1991) provided a precise definition of an "Agricultural Knowledge and Information System" (AKIS) as a compilation of agricultural entities or individuals, encompassing their interconnections and interactions. This system is specifically designed for the purpose of generating, altering, transmitting, storing, retrieving, distributing, and using knowledge and information to improve decision-making, problem-solving, and innovation in the field of agriculture.

Rivera *et al.* (2006) investigated the differentiation between Agricultural Innovation Systems (AIS) and AKIS. AIS is based on academic research, whereas AKIS is based on extension activities, with a focus on practical implementation.

In their study, Hoang *et al.* (2006) examined the role of social networks in rural areas of developing countries. They focused on how these networks serve as valuable resources for individuals and households, affecting their access to information and the advantages they gain from research and development initiatives.

Demiryurek (2000) utilised the theory of agricultural information systems to examine the information systems employed by hazelnut growers, both organic and non-organic. The investigation unveiled that the information systems for these two categories of farmers were predominantly distinct.

In their study, Goswami and Basu (2010) investigated the impact of information networks on the spread of agricultural technology. Their research specifically targeted farmers engaged in banana and guava farming in the Nadia District of West Bengal, India. The findings demonstrated a positive correlation between farmers' adoption decisions and their social network positions, as farmers with higher network scores were more likely to be early adopters of novel crop practices.

A social network is a group of individuals or organisations, called "nodes," who are connected by specific types of relationships, known as "ties." These ties can involve different forms of interdependence, such as friendship, kinship, shared interests,

financial transactions, collaborative efforts, communication patterns, and knowledge or prestige relationships (Bodin & Crona, 2008). The interactions between nodes in this arrangement give rise to a social system that influences the properties of the network.

Social Network Analysis (SNA) is a methodology that is rooted in mathematical graph theory and has been subsequently utilised in the field of social sciences (Newman, 2010; Scott, 2000). Social Network Analysis (SNA) primarily focuses on quantifying the patterns of social relationships between nodes, rather than just considering their individual characteristics (Burt, 1978; Freeman, 2004; Jamali & Abolhassani, 2006). It utilises both visual and quantitative techniques to assess relationship patterns among various social components. At its core, social network analysis (SNA) focuses on evaluating the scope and characteristics of links among individuals inside a network, including communication, knowledge sharing, and resource exchange (DeLeon & Varda, 2009).

Social Network Analysis (SNA) is highly relevant for systems that have numerous actors with varied information and service-sharing patterns. The usefulness of this concept extends across various academic disciplines, such as sociology, anthropology, economics, politics, psychology, business, mathematics, and physics (Scott & Carrington, 2011; Freeman, 2004). SNA research encompasses various levels, ranging from the small-scale dynamics of families to the large-scale dynamics of nations. It is essential in addressing problems through its problem-solving methodology. Social Network Analysis (SNA) helps reveal the influence of relationships on behaviour, decision-making, and the exchange of resources and information in many contexts by examining the complex linkages and dynamics within networks.

Ramkumar (1995) did a network analysis in two Indian villages to understand the information systems utilised by dairy producers. The analysis disclosed that every farmer's information system included unique attributes. Although there was minimal interaction between farmers and non-farmers both within and outside the villages, the results revealed that printed media and dairy extension workers were rarely utilised as sources of information. Consultation with private veterinarians and secretaries of milk cooperatives was a widespread practice. Observations revealed that farmers served as both disseminators and recipients of information. The study also observed that insufficient and ineffective dissemination of information from research and extension agencies hindered decision-making at the household level for farmers, compelling them to depend on their practical knowledge for appropriate answers.

Garforth and Usher (1996) examined different models of information system processes, encompassing both development and transfer. They stressed the fact that information does not follow a linear path, but rather is spread and modified through communication processes. Their research indicated that systems models are more effective in facilitating information and technology development when potential users have access to information sources.

Ortiz (1997) examined the agricultural knowledge and information system by studying how information is shared among researchers, extension workers, and potato farmers in Peru, notably focusing on integrated pest control. The study highlighted the importance of potato-related pest management technology for farmers and underscored the need for farmers to grasp the technological concepts of integrated

pest management. The researcher highlighted the necessity of a comprehensive learning system that includes the distribution of information, enabling farmers to obtain appropriate knowledge for making well-informed decisions in a flexible manner. The study emphasised the influence of personal and organisational factors, both from within and without, in defining the information system and the interaction between the need for, and provision of, integrated pest management information.

Das (2012) conducted a study on the origins of agricultural information among women living in rural areas of Assam. The research emphasised that women farmers play a vital role in society and make substantial contributions to agricultural progress. However, they frequently encounter socio-economic and cultural limitations that lead to their more limited access to knowledge compared to their male counterparts. The study centred on the village of Bhumka and revealed that the majority of agricultural knowledge was obtained through personal interactions rather than mass media channels. Age, caste, income, and land size were identified as socio-structural elements that exerted an influence on agricultural development.

Naveed and Anwar (2013) examined the information requirements of farmers in Pakistan pertaining to agriculture. Their research entailed conducting organised in-person interviews with men farmers, aged 25 to 65, who were actively participating in agricultural activities. The study found crucial information requirements pertaining to soil preparation, seed selection, crop maintenance, harvesting, and animal breeding.

Cadger *et al.* (2016) employed social network analysis (SNA) tools to examine the networks via which knowledge relevant to farming is shared in Ghana. Their research revealed that the knowledge network was distinct for each crop, and the size of the network fluctuated depending on the chosen crop for cultivation. Additionally, they emphasised that the factors that govern the spread of agroecological knowledge have a crucial impact on the success of land management techniques and the long-term viability of agricultural development initiatives.

Abizaid *et al.* (2015) investigated the function of social networks in the exchange of seeds among three Achuar Villages located in the Indigenous Rain Forest of Peru in the Amazon region. They utilised multivariate methodologies within social network analysis (SNA) to comprehend the configuration and arrangement of seed-sharing networks, pinpointing pivotal persons within these networks. The study emphasised that aspects such as kinship links, community size, and the exchange of knowledge and plants are crucial elements of seed networks. The concept of livelihood is comprehensive and includes individuals' capacities, resources (both tangible and intangible), and the actions required to maintain a means of supporting oneself. Multiple studies (Chambers, 1989; Chambers & Conway, 1992; Davies, 1996; Yaro, 2004; Sunderlin, 2006) have emphasised that a sustainable livelihood is one that can successfully cope with unexpected events and pressures, preserve or improve its resources, and safeguard the welfare of individuals without exhausting natural resources.

Researchers have recently acknowledged the growing significance of comprehending the intricate social networks that facilitate the exchange of information, services, and resources in rural areas, hence enhancing livelihoods. While there is a limited number of studies that employ social network analysis (SNA) to thoroughly examine the information requirements of individuals and the complex networking structures, a few studies have recognised the importance of analysing livelihood information needs and

the role of social networks in supporting rural livelihoods. Below are many instances of such research:

Buchenrieder and Dufhues (2006) utilised network analysis to investigate the impact of social capital and social networks on strengthening the resilience of rural households' livelihoods. Their emphasis lies in the role of social networks as a tool for individuals to manage uncertainty, obtain personal advantages, and accomplish goals that may be difficult to achieve on their own.

Cinner and Bodin (2010) employed a network-based methodology to comprehend the phenomenon of livelihood diversification in tropical coastal communities. Their work elucidated the correlation between different professions and socioeconomic progress, providing insight into the reliance on and governance of natural resources by communities.

### **3.1 METHODOLOGY**

This study seeks to examine livelihood networks by combining Ex-post facto and Participatory Research techniques, together with the use of Social Network Analysis (SNA). The study commences by providing a thorough and precise explanation of relevant matters, which is then followed by the formulation of clear and specific objectives. The study framework is informed by a comprehensive evaluation of relevant literature in the field, which establishes the basis for the subsequent analysis. The major objective of the study is to utilise Social Network Analysis (SNA) to analyse livelihood networks, providing a detailed comprehension of social structures and relationships within the selected research area. The study was carried out in the Munising village of Gumma Block, located in the Gajapati District of Odisha, India. More precisely, the study deliberately chose four small settlements located within Munising Village.

## **4.1 RESULTS AND DISCUSSION**

### **4.1.1 Participatory Livelihood Analysis at Munising**

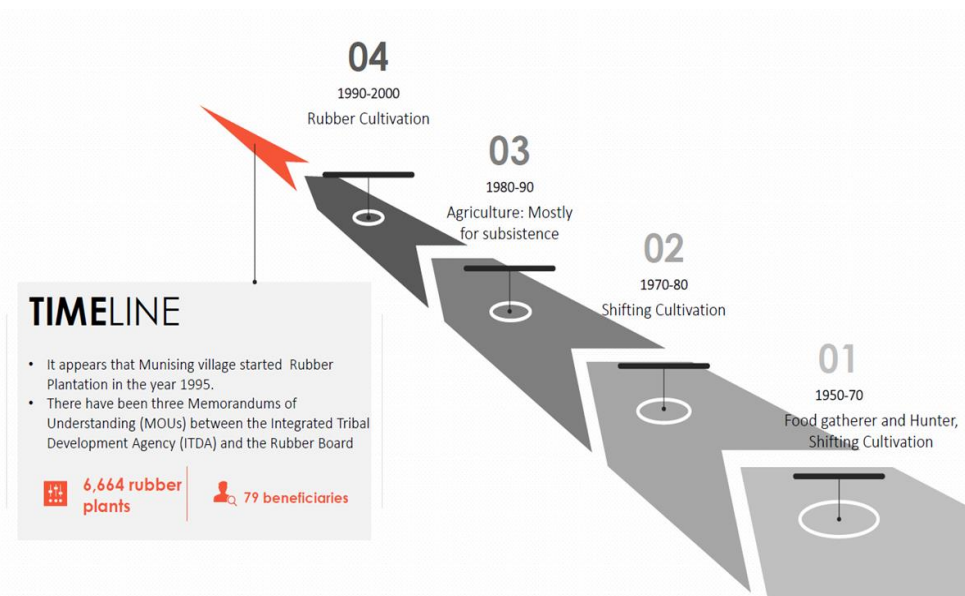
The investigation sought to comprehend the progression of livelihood patterns across time and the present inclinations of community members towards various livelihood alternatives.

The primary means of earning a living that have been recognised include Traditional Agriculture, Rubber Cultivation, Business, Livestock and Poultry, Incense Stick Making, Bamboo Crafting, MGNREGA, and Migrated Labours. The interactive livelihood analysis utilised a blend of qualitative and quantitative methodologies.

Data collection methods such as focus group talks, key informant interviews, and structured surveys were employed to obtain information from individuals within the community, encompassing different age groups and social backgrounds. The gathered data was subsequently consolidated and examined to discern recurring patterns and emerging trends in the selection of livelihoods.

### **4.1.2 Livelihood Trends:**

The evolution of livelihood patterns in Munising can be succinctly summarised based on the information collected from the PRA:



**Figure 4.1.2: Time Trend analysis of Livelihood**

1950-70: In this timeframe, a considerable segment of the populace depended on conventional techniques of food collection and hunting to sustain themselves.

During the 1970s and 1980s, the community's approach to sustaining their livelihoods changed to prioritise shifting cultivation, placing a stronger focus on agriculture to fulfil their food and other requirements.

During the 1980s and 1990s, government interventions and schemes were essential in fostering agriculture as a subsistence economy. Diverse support systems were implemented to boost agricultural output, resulting in heightened participation in farming endeavours.

From 1990 to 2000, there was a significant increase in the progress of the Rubber Board and ITDA (Integrated Tribal Development Agency) efforts. These organisations actively encouraged and assisted individuals in adopting rubber farming as a feasible means of earning a livelihood, recognising its significant economic advantages.

Current situation: The analysis reveals that rubber farming has emerged as the most preferred means of livelihood among the respondents. The preference for rubber cultivation can be ascribed to the successful outcomes, aided by the Rubber Board and ITDA, as well as the economic advantages it offers.

**Present choices for means of subsistence:**

The findings suggest a change in the preferences for livelihoods, with a growing inclination towards rubber cultivation. The respondents indicated their interest in this activity based on their perception of its profitability and the presence of an established support infrastructure. The popularity of rubber farming can be ascribed to its consistent market demand and the provision of technical support to farmers in terms of cultivation practices, marketing, and processing.

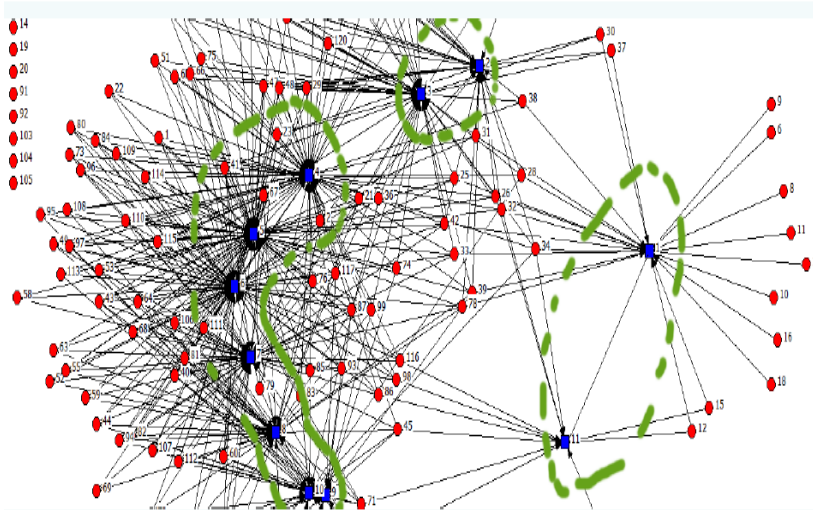
The participatory livelihood study carried out in Munising provides insight into the evolution of livelihood patterns throughout time. The community has seen substantial transformations, transitioning from a lifestyle of gathering and hunting for food to embracing agriculture as their primary means of livelihood.



The Rubber Board and ITDA, along with government initiatives, have been instrumental in influencing these changes. The prevailing inclination towards rubber farming underscores the effectiveness of these endeavours in establishing viable and enduring means of supporting livelihoods.

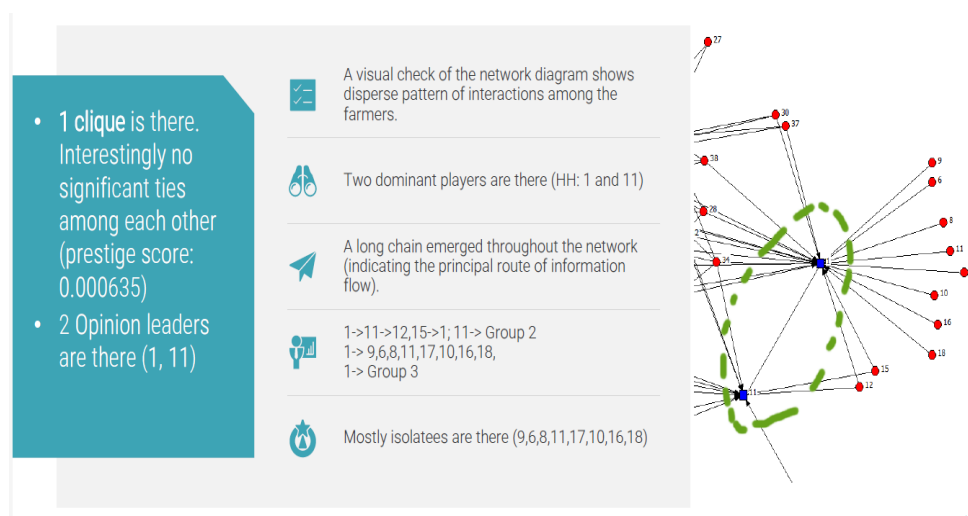
The community's enthusiasm for rubber cultivation highlights the significance of customised interventions, support structures, and awareness initiatives in shaping livelihood decisions. Policymakers and development organisations must maintain a comprehensive awareness of local dynamics and preferences in order to create efficient programmes that address the changing requirements of the community.

#### 4.1.3 Livelihood Network: Group Liaisons



**Figure 4.1.3: Livelihood Network: Group Liaisons- Analysed through UCINET**

Figure 4.1.3 depicts a visual examination of the social network diagram, unveiling a strong collection of interaction patterns among the farmers. The network exhibits three major clusters. Distinct divides are apparent, demonstrating the segregation of groups based on their substantial dependence on primary and secondary linkages.



**Figure 4.1.3.1: Livelihood Network: Principal Route of Information Flow - Analysed through UCINET**

Main pathway for the transmission of information: There is only one clique, which is interestingly devoid of any significant ties among its members (prestige score: 0.000635). The network also includes two influential individuals, designated as nodes 1 and 11.

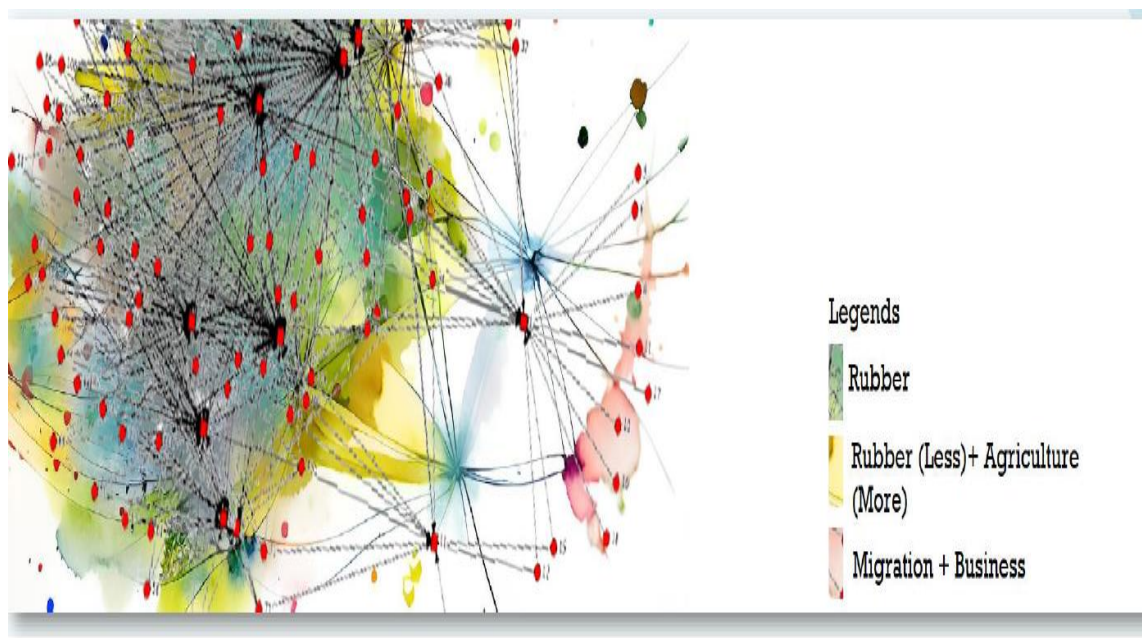
Main pathway for the transmission of information: There is only one clique, which is interestingly devoid of any significant ties among its members (prestige score: 0.000635). The network also includes two influential individuals, designated as nodes 1 and 11.

Influential individuals: The opinion leaders in Group 2 are nodes 4, 5, 6, 7, 8, 9, and 10. Meanwhile, in Group 3, nodes 2 and 3 took on the role of opinion leaders.

The reason for the strong links in the network is due to the high level of cohesion within the group, which is measured at 0.1749. In addition, the social compatibility index recorded a value of 0.3741, highlighting the degree of social compatibility within the network.

The Network Cloud of Livelihood Trends, depicted in Figure 4.1.3.2, is a visualisation created using Atlas-Ti and UCINET. This visual depiction depicts multiple patterns, with varied hues representing the intensity of these separate patterns.

The figure's observations are clear: those who have strong ties with influential individuals have shifted towards engaging in Rubber Cultivation. On the other hand, individuals who have less strong connections to influential figures have not completely adopted Rubber Cultivation. Significantly, those categorised as migrants, labourers, and business persons have not transitioned to Rubber Cultivation.



**Figure 4.1.3.2: Network Cloud of Livelihood Trends - Analysed through UCINET and Atlas-Ti**

**Table 4.1.1: Co-efficient of Correlation: predictor variables and livelihood security**

Variables	R value	Remarks
Age	0.123	
Family Size	-0.054	
Education	0.044	
Occupation	-0.045	
Size of the farm	0.153	*
Farming Experience	0.059	
Outside Contact	0.167	
Localite Contact	0.121	
Community Cohesiveness	-0.028	
Interpersonal Source	0.021	
Leadership	-0.050	
Contact with NGOs and GOs	0.260	**
Good behavior with naibours	0.158	
Social Interaction	0.288	*
Good liaison with Government Organizations	0.149	**

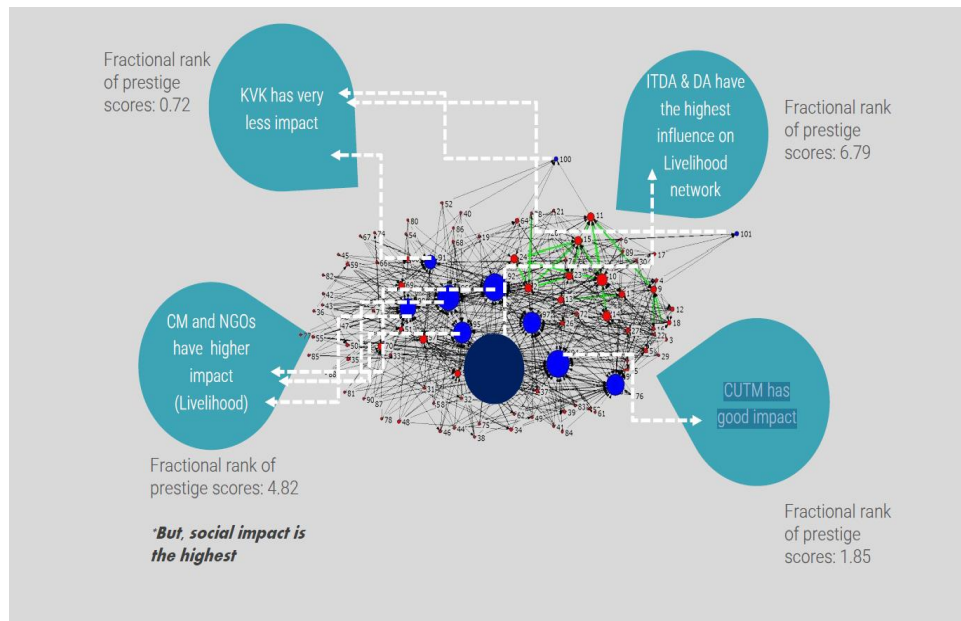
\* Significant at 5 % level of significance

\*\* Significant at 1 % level of significance

Table 4.1.1 demonstrates the connections between food security and several independent factors. The study uncovers substantial connections between the farm's Size and its involvement with NGOs and GOs in regard to the dependent variable of food security. Furthermore, the variables Social Interaction and Positive Engagement with Government Organisations demonstrate significant relationships with food security. There is a significant positive association between farm size and livelihood security. This phenomenon can be ascribed to the correlation between larger farm sizes and increased family resources, which in turn enhances the overall sustainability and consequently results in improved food security. The association between interactions with non-governmental organisations (NGOs) and governmental organisations (GOs) and food security is also notably beneficial. This indicates that partnering with these organisations enhances capacity development by means of training, dissemination of information, and attempts to raise awareness. The reason for this positive link can be related to the fact that persons affiliated with non-governmental organisations (NGOs) and government organisations (GOs) typically have enhanced access to information, such as new agricultural techniques and pertinent farming knowledge, which is offered by these sources. Livelihood security involves the bodily and perceptual aspects, which include maintaining a balance in calorie intake, establishing interaction patterns, and establishing links with Government Institutions. During episodes of food insecurity, individuals tend to display less social interaction and restricted involvement with institutions.

#### 4.2 Institutional role in livelihood generation

The hamlet is supported by several institutions, such as the Integrated Tribal Development Agency (ITDA), Krishi Vigyan Kendra (KVK), Non-Governmental Organisations (NGOs), and the Christian University of Munising (CUTM). The investigation is centred upon the data depicted in Figure 4.2.1, which offers valuable insights into the effects and significance of these institutions on the network of livelihood.



**Figure 4.2.1: Institutional role in livelihood generation - Analysed through UCINET**

#### 4.2. The Effects and Influence of Institutions:

Krishi Vigyan Kendra (KVK) is an agricultural science centre. The data from Figure 4.2.1 suggests that KVK has a relatively less effect on livelihood generation, as seen by its fractional rank of prestige ratings at 0.72. This can be ascribed to several factors, including limited scope, reduced involvement with the local population, or a more specific emphasis on agricultural research and extension initiatives rather than direct assistance for livelihoods.

The data indicates that Christian Missionaries and NGOs have a significant influence on the livelihood network, as evidenced by their high fractional rank of prestige ratings, which stands at 4.82. Furthermore, they are renowned for possessing the greatest social influence. This may be attributed to their comprehensive outreach, active involvement in the community, and varied initiatives that directly enhance the quality of life. Their emphasis on social welfare and development initiatives may account for their notable position in the livelihood network.

The examination of Figure 4.2.1 demonstrates that the Integrated Tribal Development Agency (ITDA) and District Administration (DA) have the greatest impact on the livelihood network, as evidenced by their fractional rank of prestige ratings at 6.79. Their supremacy can be linked to government-supported initiatives, a comprehensive approach, and extensive development programmes aimed at enhancing all elements of livelihood. Their robust organisational framework and ample resources are undoubtedly key factors in their significant influence.

Centurion University of Technology and Management (CUTM) has been shown to have a favourable influence on the livelihood network, as indicated by its fractional rank of prestige ratings at 1.85. CUTM's presence, although not as prominent as ITDA and DA, is likely a result of its educational programmes, research efforts, and possible collaborations that contribute to the development of skills and enhancement of knowledge within the community.

## 4.3 Tracing out Peoples' Perception on Livelihood Related Problems

### 4.3.1 Participatory SWOT analysis

It entails engaging stakeholders actively in evaluating the Strengths, Weaknesses, Opportunities, and Threats. Within the framework of the Rubber Cultivation Project in Munising Village, several stakeholders including community members, local authorities, and supporting agencies work together to identify and analyse these elements.

#### **Strength:**

The project's primary advantage rests in its rubber plantation and processing operations. This has generated an additional source of income for the community.

- The endorsement of the Integrated Tribal Development Agency (ITDA) provides robust institutional support, which enhances the project's implementation and ensures its success.
- Support from CCM and CUTM: The collaboration with academic institutions such as CCM and CUTM showcases a cross-sectoral strategy, which boosts the project's credibility and potential for innovation.

#### **Weakness:**

- Solely concentrate on rubber. An excessive focus on rubber planting may restrict the expansion of income streams and leave the community vulnerable to market volatility.
- Insufficient Skilled Workforce: The absence of a workforce with the necessary expertise may impede the efficient processing of rubber and other value-added activities.
- Diversion of Funds from Productive Activities: If funds are redirected from productive activities to administrative or non-essential uses, it could reduce the overall impact of the project.

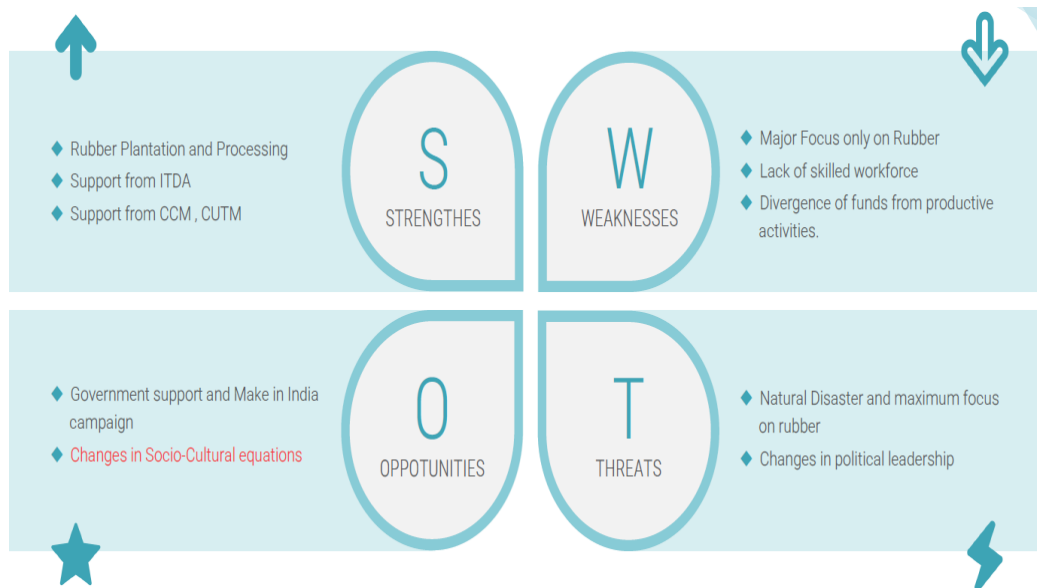
#### **Opportunities:**

- Government backing and Make in India effort: The project is in line with the Make in India effort and has the potential to receive further government backing, which would improve its chances of growth.
- Alterations in Socio-Cultural Dynamics: Socio-cultural shifts in the area may generate fresh market needs or prospects for community involvement, extending beyond the scope of rubber cultivation.

#### **Threat:**

Overreliance on rubber without diversification increases the vulnerability of the community to the potential hazards of natural disasters, which have the capacity to disrupt the overall livelihood system.

- Political Leadership Transitions: Transitions in political leadership have the potential to impact the project by influencing financial backing, regulatory measures, and the general continuity of the project.



**Figure 4.3.1: Participatory SWOT analysis**

## 5. CONCLUSION

The research carried out in Gumma, Odisha, illuminates the complex correlation between the environment and human habitation, specifically in forest edge areas. The indigenous populations of Gumma have historically flourished by engaging in traditional agricultural livelihoods, creating a distinct ecology that has supported these communities for millennia. Nevertheless, recent developmental initiatives have triggered a profound change, resulting in a substantial alteration in the native population's means of sustenance. The coordinated efforts of governmental and non-governmental organisations in Gumma were focused on enhancing socio-economic circumstances, leading to a significant shift from conventional agricultural methods to the cultivation of rubber. This transition not only signifies a change in the economy but also highlights a deep reassessment of the relationship between tribal populations and their natural environment. The historical analysis unveiled clear stages in the development of Gumma's way of life. During the 1950s-70s, the primary means of obtaining food was through traditional food collecting and hunting. This shifted to an emphasis on shifting cultivation during the 1970s-80s, and later to government-supported agriculture in the 1980s-90s. As a result, there was a notable increase in rubber planting from 1990 to 2000. The Rubber Board and ITDA performed crucial roles in promoting and supporting community members in adopting rubber cultivation as a feasible means of earning a living. According to the recent participatory livelihood survey carried out in Munising, rubber growing emerges as the most favoured method of earning a living among the participants. The Rubber Board and ITDA's assistance and interventions have played a crucial role in the success of this transition, highlighting the efficacy of these initiatives in creating long-lasting means of earning a living. The Livelihood Trends Network Cloud, depicted in Figure 4.1.3.2, visually displays patterns and emphasises the impact of social connections on involvement in rubber cultivation. Significantly, persons who have robust affiliations with powerful individuals are more inclined to switch to rubber cultivation. Subsequent examination uncovers favourable connections between the size of farms and the security of people's means of living, highlighting the significance of larger farms in improving

overall sustainability and ensuring an adequate food supply. Furthermore, the involvement of non-governmental organisations (NGOs) and government organisations (GOs) has a beneficial effect on food security. This highlights the importance of enhancing skills and knowledge sharing, which is facilitated by these organisations. The study assesses the influence of several entities on the livelihood network, identifying ITDA, DA, Christian Missionaries, NGOs, and CUTM as significant drivers. The ITDA and DA, which are backed by the government, have the greatest prestige ratings due to their comprehensive approach and significant influence on all elements of livelihood.

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