7.1. Discussions

This research work on studying the livelihood pattern in a least known territory emanates from a voluminous literature available worldwide. It uses the definition of livelihood given by Chambers and Conway (1992) as the basis for the study. Further, contextually, livelihood pattern is considered, as a set of activities/portfolios people tend to do/adopt under different conditions as emerged from the findings.

Conceptual and methodological questions in the pursuit of research reveals that livelihood, as a ‘means to living’ can be studied by using simple exploratory methods. This assumes greater significance in communities where collecting information on many aspects is confronted by inherent difficulties. The current work therefore draws parallel to the understanding by many early proponents that it is really a dynamic, complex, multifaceted and inter-disciplinary entity.

The current work further reveals that livelihood is a consequence of different geo-ecological, socio-economic, cultural and political conditions that offers different opportunities over time and space. In context of Lower Subansiri District, it is observed that tribal people live in varied geo-physical conditions, which offers them different opportunities to adopt to location specific portfolios thereby determining the livelihood pattern specific to the conditions and different from one community to other.

Different scholarly works on the livelihood with policy perspective using empirical tools makes it an interesting subject of enquiry. It not only helps in understanding the dynamics of how people, possessed with range of resources (assets/capital) use available opportunities to make a living but also creates an un-biased assessment in order to measure the issues concerning the sustainability in the portfolios they chose in given situations. This was therefore found useful in understanding from the perspective of different assets viz. natural, social, human, physical, financial and from the
political capital, which were used in current research for livelihood framework analysis across three communities. This has helped in understanding inter-community variations largely and to identify areas for policy interventions.

Having deep-rooted existence in practice, ever since emergence of human civilisation the academic discourse followed by development compulsions, livelihood encompasses a harmonious blend of capabilities, assets and activities as pre-requisites for a means of living. Under sustainable livelihood dispensation, it is considered sustainable when it is able to cope with and recover from stress and shocks, maintain and enhance its capabilities and assets or resources, and provide sustainable opportunities for the generations to come. The tribal communities living in the district despite being vulnerable to different stressful situations have shown considerable resilience to sustain them.

The current enquiry in the livelihood pattern of tribal communities in the geo-ecologically diverse Lower Subansiri District in Arunachal Pradesh is an attempt to enrich scarcely available database on this important aspect of tribes. It primarily emanated from the very idea that very large numbers of development-oriented initiatives are used as a medium to address livelihood centric issues. However, umbrella approach in delivery of such programmes does not provide scope for appropriate measures in understanding the existing livelihood pattern. The priorities in difficult hilly and remote areas are influenced by external forces and rests primarily with achieving fixed targets. The decentralised form of development administration and universalisation of participatory models in development however necessitates a comprehensive mechanism to comprehend livelihood scenario in order to address main issues of concerns. This further necessitated selection of development blocks as unit of study for comparative analysis.
7.2. **Results & Conclusions**

Following section presents the results of the study and conclusions primarily based on the objectives of the research.

7.2.1. **Geo-ecological Conditions**

a) District demonstrates significant level of geo-ecological diversity due to its location in proximately the central part of the eastern Himalaya.

b) About 93.39 per cent of terrain embraces greater and lesser Himalayan physiographic zone with general altitude varying from about 500 meters to above 2000.

c) Hill topography further results in three distinct agro-climatic zones viz. sub-tropical (51.29 per cent), tropical (25.62 per cent) and temperate (23.08 per cent).

d) About 81 per cent of land is covered with evergreen /semi evergreen, forest plantation, scrubs, grass and grazing land. This demonstrates good biotic wealth as a critical source for livelihood support to local people.

e) About 17 per cent land area is identified as wastelands constituting open and dense scrub, current and shifting cultivation, which are primary close to habitation areas posing major concerns for the livelihoods of the people.

f) Sample villages identified for detail enquiry, representing three homogenous regions portray broad variations in geo-physical conditions. Tajang village is situated on a very gentle sloppy intermountain flat with temperate climatic conditions. On the other hand off-road Seya village with moderate sloppy hilly terrain with flat inter-valley spurs has sub-tropical climatic conditions. Further,
the Dek Godak village located along the approachable road in the far
northeast corner of the district with preponderance of steep hilly
terrain with ridge-line with wind gap and very small flat summits has
both tropical conditions in the lower heights and sub-tropical
conditions on little higher slopes.


g) The district was subject to frequent bifurcation thereby resulting in
frequent priorities in respect of development and with regard to
multitude of dimensions having direct and indirect bearing on the
lives of local people traditionally living in harmony with nature.

h) The district is currently divided into three divisions, eight circles and
three community development blocks.

i) The origin of the sample villages can be traced back to migration
during early period. However, different geo-ecological and
economic compulsions, over time and space have contributed to
frequent shifting of villages to better locations influencing the
current livelihood pattern to a greater degree. This is evident in
respect of Seya and Dek Godak villages.

j) The district witnessed about two-fold increase of number of
inhabited villages during 2001-2011. This is primarily due to re-
organisation and bifurcation of villages due to different socio-
cultural, economic and political considerations, contributing
significantly on the available resource base and livelihood pattern.

k) District with 536 villages and 15249 households inhabits 83030
persons with a recorded increase of 48 per cent against 55726
persons in 2001. There exist contrasting variations with regard to
demographic variables across three community development blocks
as influenced by prominent geo-physical conditions.

l) About 91.98 per cent villages are very small in size with 1 to 50
households. Terrain plays a very significant role in determining the
population concentration. The population density is highest in Ziro I C. D. Block (106 persons per km$^2$), low in Ziro II (17 persons per km$^2$) and least in Tamen Raga (8 persons per km$^2$).

m) District has witnessed an upward trend in the overall literacy rate from 59.39 per cent in 2001 to 69.13 per cent in 2011. Male literacy (75.55 per cent) is higher than female literacy (62.19 per cent).

n) Literacy rate in sample villages is recorded highest in Tajang (78.66 per cent) followed by Seya (67 per cent) and Dek Godak (66.09 per cent). The male literacy rate is higher in comparison to their counterparts amongst all social groups in the district.

o) Agriculture is the main stay of rural economy in the tribal dominated Lower Subansiri District. People in the district sustain their lives primarily from intensive settled fish-cum-paddy cultivation in Tajang to shifting-cum-settled cultivation in Seya and only shifting cultivation in Dek Godak Village.

p) Other activities such as livestock rearing, cultivation of seasonal vegetables and horticulture also play a varying degree of role in determining the state of economy across the district.

q) Besides, the geo-physical conditions, other market forces play a very significant role in determining the level of diversification. Tajang village due its locational advantage witnessed more diversification than other two sample locations. The base of industrial activities is reportedly limited to small scale (home based) enterprises comprising primarily of handloom and handicrafts.

r) Tribal societies live in close association with the forests for quite a significant number of products and services for both self and limited commercial purposes. The health of the forests adjoining inhabited areas has been a concern for most of the people living in the district. Areas with highest dependence on shifting cultivation are subject to
more degradation of natural resource wealth resulting in depletion of traditional water sources, consequently increasing the vulnerability.

s) General physiographic conditions leave a significant impact on the development of socio-economic infrastructure in hilly areas. The secondary data based analysis for the entire district reveals that Ziro I block having highest concentration of villages has better socio-economic infrastructure facilities in comparison to sparsely populated Ziro II and Tamen-Raga C. D. blocks.

t) The cumulative weightage analysis of the identified fifteen variables reveal that geo-physical conditions play a very significant role in determining intra-district variations in respect to overall state of development. Ziro I community development block with its better cumulative score appeared ideally developed unit in comparison to Ziro II and Tamen Raga C. D. Blocks.

7.2.2. Livelihood Framework Analysis

a) Sample villages portraying different geo-physical, socio-cultural and economic conditions provide ample opportunities in understanding the overall livelihood pattern in the district. Livelihood framework analysis centred on natural, human, social, physical, financial and political assets/capital/resources help in understanding inter-block and inter-village variations as a pre-requisite for elaborate enquiry of the livelihood pattern.

b) An analysis of general population features reveal that sample villages differ in their size and composition. Tajang village located in the intermountain flat valley had about 136 reported households in a compact area. On the other hand Dek Godak situated on the hill slope inhabits 53 households is moderately scattered. Seya situated along the riverbank is the home for nearly 46 households and is highly scattered than other villages.
c) It is observed that Tajang village is highly populated with 328 persons (158 male and 170 females) followed by Seya with 303 persons (158 male and 145 females) and Dek Godak 233 (111 male and 122 females).

d) The consequent sex ratio is highest in Dek Godak (1099) followed by Tajang (1076) and least in Seya (918). Major of tribal people represent nuclear family status viz. 100 per cent in households in Seya followed by 88.37 per cent in Dek Godak and 77.36 per cent in Tajang.

e) The work participation rate is higher in Seya than Dek Godak and Tajang.

f) Livelihood of the people in the district revolves around agriculture as the principal source. The proportion of cultivators to total working population is highest in Seya (85.70 per cent) followed by Dek Godak (83.50 per cent) and low in Tajang (51.30 per cent).

g) Other activities such as livestock rearing, plantation, pisciculture, forest based, handloom and handicrafts, business, wage earning and other activities form the major economic base of the people in sample villages with inter village variations in the intensity activities. The diversity is however reported highest in Tajang in comparison to other villages.

h) Contrasting inter-village variations are evident with regard to natural capital (land, livestock, forest farms, farm ponds, bamboo farms, and water bodies), human capital (population, age group, literacy, work participation, skills, and health), social capital (participation in different activities), political capital, and physical capital (housing, toilets, bathroom, electricity, access, water supply, assets, educational facilities, health facilities, markets, and banking)
and financial capital (income, number of sources of income and savings).

i) The ownership pattern of natural assets such as farmland for cultivation, homestead garden, forest and bamboo farms and cattle/mithuns can be described as good in Tajang and Seya villages in comparison to hilly Dek Godak village. This shows that pressure on natural assets is more in this village than other better locations.

j) Human capital plays a very significant in determining the state of livelihood pattern. Based on the studied variables such as average family size, working age group population, literacy rate, work participation rate, skills and affliction to disease, the situation in Dek Godak is better in comparison to Seya and Tajang.

k) The analysed indicators of social capital reveal that in most of the villages people do participate in various activities as a single unit. However, the degree of participation is reported highest in Seya followed by Tajang and Dek Godak. Hence, it is evident that tribal societies represent higher degree of social cohesion, which is critical for societies to prosper economically and for development to be sustainable.

l) In democratic societies, political capital has occupied a greater degree of influence on many fronts. Very High to high degree of political participation in Seya and Dek Godak villages play a very significant role in affecting the overall behavioural pattern of the societies.

m) The economic production processes contribute in creation of physical capital, which ultimately determine or facilitate livelihood diversification. Due to its proximity to the district headquarter and easy access with other parts of the state Tajang village has better
advantage in respect of physical resources in comparison to remotely located Seya and Dek Godak villages.

n) Financial capital primarily referring to the stock of money plays a very significant role in determining the state of livelihood if properly used for material gains. Proximity to urban centres plays a very significant role in enhanced opportunities for earning income. Tajang village due to its advantageous location in the inter-mountain flat valley has strong base of financial resources comparison to Seya and Dek Godak.

o) Cumulative analyses based on evaluated resources reveal physical features play a very significant role in determining the state of livelihoods. Tajang village due to its location has better asset base. This is attributed to better financial, physical and natural assets in comparison to other villages. Further stronger human capital base in Dek Godak does not help this remotely located village much due to poor natural, financial, physical, political and medium social capital stronger human asset base in Dek Godak. The Seya village on the other hand with stronger political, social and natural asset base is ranked second amongst the three sample villages.

p) Overall vulnerability in Dek Godak is recorded highest in comparison to Seya and Tajang.

7.2.3. Livelihood Pattern

a) Annual work cycle analysis reveal that tribal people in the district remain pre-occupied throughout the year in multiple activities to meet their requirements.

b) The activities, which people adopt to sustain themselves varies in numbers and size depending upon the geo-ecological conditions and opportunities the cumulative set of resources provide. Hence, it
may be safely inferred that no single parameter proves dominance in determining livelihood of a household or a group of people in the instant case study.

c) Multiplicity of cropping systems has been one of main features of agriculture in tribal societies. Findings reveal the presence of crop diversity across all the habitations. Predominance of traditional crops from jhum lands in Seya and Dek Godak, settled cultivation in Tajang and Seya and homestead/kitchen garden in all localities forms the diversity of crops. However, better exposure, suitable agro-climatic conditions and market forces have helped people in Tajang and Seya for adopting horticulture as an alternative means for earning income.

d) No single portfolio or activity constitute as the lone source for sustaining the livelihoods. Analysis reveal that people in all the villages perform combined operations such as cultivation, logging, hunting, livestock rearing, trade, business and contractual works and government/private sectors as the principal/main source and secondary source for livelihood. This proves that there exists a greater diversity of portfolios that tribal people exercise in order to make a living.

e) Majority of people still prefers to earn their livelihood from the territorial confinements of the village. However, a significant proportion of villagers in Tajang also earn livelihood by engaging themselves outside the village.

f) Tribal people since generations have used biotic wealth as a central mode for sustainable livelihoods. The large part of forest (primarily unclassified state forests) with open access to local becomes a regular source for dependence.
g) The availability of range of major and minor forest products exclusively for own consumption and occasional as well incidental commercial purpose do help expanding the peripheries of livelihood support system in such areas.

h) Excessive use of floral wealth with bare minimum measure for regeneration consequently resulting in depletion of traditional water sources however results in growing livelihood insecurity. The increase of distance in availability and procurement of major and minor forest based products beyond 2 to 3 kilometres in hilly areas particularly in Dek Godak is apparent from the empirical findings.

i) Based on standardized measures of production it is found that in steep hilly areas such as Dek Godak the quantum of production of main food crops is reported inadequate by majority of families. On the other nearly 50 per cent of the households in Tajang reported surplus production against 12.24 per cent in Seya. Very significant number of households in Seya and Dek Godak has reported inadequate production of the main food crops. Therefore, it can be concluded that communities having higher degree of dependence on exclusive shifting cultivation are more vulnerable than those practicing both shifting-cum-settled cultivation.

j) Income from different sources plays a very significant role in determining the status of livelihood options people practice. The analysis based on standardized empirical information gathered that income in Tajang is recorded highest in comparison to other villages. However a significant number of households in Seya has falls in the monthly income range of beyond Rs. 20000/- followed by Tajang. The incidence of this pattern income in Seya is primarily due to large-scale cardamom plantation by quite a significant number of families. On the other hand majority of people in Dek Godak earn monthly income of less than Rs. 20000/-
k) Contrary to the income, monthly expenditure is reported high in most of the villages. The trend of excess in expenditure of income is generally managed by seeking help from friends and relatives, sale of animals and other products and free items collected from the forests.

l) Cognitive perspective to the existing livelihood pattern reveals a contrasting picture across all the habitations. Majority of households in Tajang have expressed satisfaction with current state of livelihood. This is followed by nearly 51 per cent household in Seya and least (37 per cent) in Dek Godak. Majority of the households in Dek Godak (i. e. about 63 per cent) have expressed dissatisfaction with current livelihoods.

m) Better earning opportunities by way of business, hard work, price support for diversified agri-horti products and increase in production are some of the expectations, which people feel could help them in supporting lives on sustainable basis. Surprisingly very significant number of families in Dek Godak feel better residential house would help in improving their livelihoods.

n) Traditional vocations and complexity in the livelihood pattern have existed from generations. Changing development priorities and market forces are other features that leave a compounding impact on the dynamics of the current state of livelihood pattern.

o) Despite growing diversification in the forms of portfolios adopted by the people inhabiting the district there are inherent limitations across natural, human and physical assets owned or accessed by tribal people for making livelihoods. These factors can be considered as contributing to the vulnerability to the existing livelihood pattern, across varied geo-physical regions.
7.2.4. Policy Perspective

a) Findings in the current research portray the presence of three distinct geo-ecological conditions. Traditional means of survival, growing aspirations for much better lives necessitates prospective policy initiative. Therefore it is necessary to suggest that there is a need for linking the future policies to the spatio-temporal, socio-cultural, economic and political conditions specific to different regions.

b) There is a need to identify the vulnerable lands specifically wastelands which can be brought under productive use so that further degradation is arrested. Communities are required to be encouraged with necessary incentives for allowing conservation, development and re-generation of natural resources on sustained basis.

c) Areas with predominance of shifting cultivation and devoid of better alternative sources of livelihood are subject to increasing pressure on the floral wealth. This is one of the major reasons for depletion of traditional water sources, thereby resulting in stress to the existing livelihood sources. Hence, alternative land use options with water harvesting would arrest the growing vulnerability to the livelihoods.

d) The frequent bifurcation of the villages, principally motivated by political considerations needs to be viewed in respect of its implications for re-organisation of territorial boundaries of the villages. This will not only address the issues of growing pressure on the land but also ensure stronger social bonding required to address different livelihood concerns in the transitional societies.

e) Since traditional sources of livelihood are becoming unsustainable, investments in creation of workable social and economic infrastructure in vulnerable areas will contribute in boosting livelihood base with distributive justice.
f) Human capital is the stock of competencies, knowledge, social and personality attributes, including creativity, embodied in the ability to perform labour to produce economic value. It is an aggregate economic view of the human being acting within economies, which is an attempt to capture the social, biological, cultural and psychological complexity as they interact in explicit and/or economic transactions. Therefore, rural livelihood investments in human capital need to be addressed by capacity building for empowerment and building skills for employment. Investments in education and health sector will also help in addressing issues of vulnerability in the long run.

g) Diversity in portfolios of activities is an inevitable in transitional societies and needs to be addressed with focussed initiatives of backward and forward linkages. Hence, prospective livelihood issues can be addressed by identifying skills of the people in traditional vocations viz. weaving, knitting, wood work, carpentry, artisan work, bamboo and cane work. Adding value to these skills along with a blend of modern emerging vocations and sustainable vocations such as eco-tourism, eco-marketing, production linked agro-horticulture processing and marketing would be a meaningful policy initiatives.

h) Since communities in the district remain busy throughout the year, it is essential to consider the lean agriculture season or more specifically lean agriculture days across all seasons so that participation in alternative livelihood initiatives is assured in any systematic quest in transforming or enhancing existing sources of livelihood and sustaining the same in the existing symbiotic setup of the communities.

i) A blend of development must address the issues of distributive justice so that people can participate and evolve their own model of
development fully from within instead of an inappropriate imitation of growth and development that alienate people instead of integrating. This will also ensure a sense of belongingness and stewardship for resource utilisation for the good of the masses.

j) Existing vulnerability arising due to growing stress on natural, human and physical resources across varied geo-physical and homogenous regions needs to be addressed with multi-pronged strategic development models suitable to the specific needs of the tribal areas in the district.