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Capital endowments and livelihood security of tribal communities in Central Kashmir

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Abstract The tribal communities living on the fringes of forests in Central Kashmir face several positive and negative externalities. Their endowments of livelihood capital, including land, are poor, as are their social bonds. Their livelihoods are insecure, and their food consumption is less than the medical recommendations. Livestock rearing is their most important economic activity. The households in the study area ranked low on the overall livelihood security indices, but households farther away ranked even lower. The livelihood security of tribal households is significantly impacted by the number of workers; security of economic, human, and natural capital; and livestock ownership.

Keywords Tribals, capital endowment, externalities, livelihood security, forests, Jammu & Kashmir

JEL Codes Q1, D6, H51, H52, H53, H75

Livelihoods are constituted of on-farm and off-farm activities (Bhatia, Bhat, and Khan 2011; Usman, Danjuma, and Abdulkarim 2016). Livelihood security is sustainable access to adequate income and resources to meet basic needs (Frankenberger and McCaston 1998). A household's vulnerability to insecurity of income, food, health care, and nutrition is its risk of livelihood failure (Drinkwater and McEwan 1992).

The concept of livelihoods analysis is associated with the goal of reducing poverty reduction. Livelihood analysis considers elements that constitute the physical, economic, social, and cultural environment wherein families live (Hogger 2004). The concept emerged in the mid-1990s.

Livelihood approaches are a comprehensive way of thinking about the objectives, scope, and priorities of development (Rahman and Akhter 2012; Langat et al. 2016). Livelihood approaches focus on empowering the poor by building on their own opportunities and supporting their access to assets (Sharma et al. 2015). Livelihood resources—including land, livestock and other capital—have a major bearing on many basic issues that affect the tribal peoples living around forest fringes in developing countries (Pandey 2009; Singh and Quli 2011).

The livelihood pattern of tribal communities in India is complex, dynamic, and multi-dimensional (Kumar et al. 2009). Agriculture is the main source of their livelihood (Surayya et al. 2008), though it is constrained by their meagre land holdings (Chakraborty, Tewari, and Jha 2009) and cause millions insecurity (Mourlin 2007). Agriculture and livestock production does not offer a sustainable livelihood, and that capability is in continual decline (Maske et al. 2011).

Non-timber forest products (NTFPs) are considered vital in sustaining rural livelihoods and reducing rural poverty (Maske et al. 2011). Tribal communities are the poorest social groups in India; over half the tribal population lives below the poverty line (Singh 1993).

The collection and sale of NTFPs is often viewed as a marginal activity (Chamberlain et al. 2000). Over 500 million people depend on NTFPs for subsistence and cash income, according to the World Resources Institute (Sarmah and Arunachalam 2011). Households living in and around forests earn 40–60% of their income from the sale of NTFPs (Nayak, Kohli, and Sharma 2014). Livelihood systems based on NTFPs vary considerably by region and ethnic group (Tewari 2014).

Purchasing power depends on employment and income security, but the tribal population lacks purchasing power (Shit and Pati 2012); therefore, the survival of 90% of the tribal population depends directly or indirectly on land (Verma 1990). They reside in remote areas and engage in a variety of formal and informal labour activities (Ajaz-ul-Islam et al. 2013). The livelihood load of the tribal population on forest areas erodes natural wealth (Pal 2009).

Social and cultural diversity, coupled with environmental complexity, have generated a variety of approaches and technologies to manage and use natural resources (Mishra 2007). Livelihood diversification strategies have enormous potential in securing the living of tribal communities (Ajaz-ul-Islam, Rai, and Quli 2014), and their cultural fabric can accelerate this process, social scientists emphasize (Upadhyay 2000).

The country's forest resources are distributed across its regions; some states are heavily forested, others less so. Jammu & Kashmir, a territory in the northern Himalayas, has about 2 million hectares of coniferous and deciduous forests, including 658,000 hectares of reported area. Besides ecosystem goods and services, forests provide a variety of livelihood opportunities to the region's tribal population (about 1.49 million, or about 12% of the population). Over 50% of the tribal population live and rear livestock in forests, and over-extraction of resources has made them more vulnerable.

Jammu and Kashmir has 12 Scheduled Tribes, enumerated officially for the first time during 2001. The Gujjars are the most populous, at 763,806 (69.1% of the total population of Scheduled Tribes). Tribal communities are socio-economically vulnerable, and we study their livelihoods in relationship with their interaction with forests. Against this background, this study is a humble endeavour to comprehensively investigate the tribal livelihood in relationship with forest habitation.

Data and methodology

The central part of Kashmir valley is at the transition phase of development, and it is modernizing rapidly; therefore, tribal communities residing at the forest fringes have the opportunity to transform their economic activities. This study investigates the facets of the livelihoods of these communities by employing primary data, collected using a multistage sampling technique from a sample of tribal households during 2018.

We randomly selected Srinagar as representing an area close to town and Ganderbal as representing an area far from town at the first stage of sampling. At the second stage, in consultation with government forest officials, we randomly selected a forest fringe from a forested area—Harwan from Srinagar and Kangan from Ganderbal—and identified a cluster of 4 villages at each forest fringe. From each village cluster we randomly selected 75 respondents, forming a sample of 150 respondents at the final stage.

Conceptual framework

The organization Cooperatives for Assistance of Relief Everywhere (CARE) has been using the household livelihoods framework. Their approach originates in the food crisis of the mid-1980s and in the theory that considers capital endowments crucial in protecting livelihoods (Sen 1982; CARE 2002). CARE considers livelihoods in terms of access to human, economic, social, natural, and physical capital. The asset box (Frankenberger and Luther 2002; CARE 2004) comprises resources household members have access to and can use to generate productive wealth. Several studies find that capital is important in securing livelihoods.

The level of, and access to, livelihood capital heavily influenced the choice of livelihood options and, consequently, the well-being of a family (Israr and Khan 2010; Bebbington 1999). Capital endowments are vital in securing household livelihoods, but they must also interact in a specific mix, because the mix influences a household's capacity to cope with livelihood risks (Zhao 2015; Bebbington 1999). Natural capital—land, livestock, and water—is considered the

primary sources of livelihood (Mohapatra 2017); insufficiency makes livelihoods insecure (Bhandari and Grant 2007; Kumar, Gupta, and Radhakrishnan 2015; Bhandari 2013).

Social capital contributes significantly to livelihood resources and outcomes (Gopu and Velusamy 2020); social risk negatively affects livelihood capital (Su, Saikia, and Hay 2018; Chen 2005). Adequate employment and income depend on human capital (Mohapatra 2017). Households that lack economic capital find it difficult to sustain their livelihoods (Su, Saikia, and Hay 2018). An individual or a household cannot achieve their livelihood objectives without physical resources, or their stock of assets (Mohapatra 2017).

Tribal households generate capital in various forms by performing economic activities such as farming and collecting forest produce, including NTFPs. The environment is provided by the forest ecology and by government and institutional investments and development schemes. The interplay of various kind of capital help tribal households to meet livelihood objectives such as creating capital, earning cash and improving dietary intake.

We take the consumption pattern of tribal households as an outcome of a given livelihood scenario and analyse their livelihood scenario within the frame of capital endowments. To capture livelihood security, we considered the variables that explain the capacities of tribal households in terms of the kinds of capital. For each kind of capital, we considered several indicators, with different units, and estimate an index for each. We used the methods of Iyenger and Sudarshan (1982) to give each indicator due weight. Later, we averaged the capital indices to construct the Livelihood Security Index (LSI) (Baba 2018; Rahman and Akter 2010; Baba, Ali, and Wani 2018). To quantify the impact of the kinds of capital on the livelihood security of the tribal people living at the forest fringes, we employed the regression function

LSI = f (HSI, NSI, PSI, ESI, SSI, WRK, FRI, LVST, U)

where,

LSI = livelihood security index,

HSI = human capital security index,

NSI = natural capital security index,

PSI = physical capital security index,

ESI = economic capital security index,

SSI = social capital security index,

WRK = workers in family (%),

FRI = income from forests (%),

LVST = livestock possession (adult cattle unit/farm), and

U = the random term or error term.

We attempted to construct the model with several exogenous variables, but we retained at the final estimation only those variables that gave the best fit. We estimated the model in linear form.

Results and discussion

The government of the territory has been working to facilitate the development of the Scheduled Tribe (ST) population.

Role of government

The government has launched state and centrally sponsored schemes for the inclusive development of tribal populations, like Special Central Assistance to Tribal Sub-Scheme, Scheme of Grant-in-Aid to Voluntary Organizations working for the welfare of Scheduled Tribes, Scheme of Strengthening Education among ST Girls in Low Literacy Districts, Scheme of Vocational Training areas, Grants-in-Aid under Article 275(1) of the Constitution of India, and scholarship schemes.

The government encourages tribal children to study further by providing them hostel facilities so that they need not travel far to and from education centres. There are now 17 hostels for Schedule Tribe (Gujjar) that can accommodate 1,475 students, primarily boys. The social welfare schemes help reduce the poverty and economic stress of tribal people. Their development has been prioritized in the Plan periods and separate specialized allocations made under Tribal Plans.

Public investment under Tribal Plans

The fifth Five Year Plan (1974–1979) introduced Tribal Sub-Plans to develop tribal communities. Initially implemented in 17 states and 2 union territories, by the end of the ninth Five Year Plan (2002) the Tribal Sub Plans had been implemented in 23 states or union

Table 1 Public development expenditure under Tribal Plan at current prices

Year	Expenditure (INR)	Expenditure (INR per capita)
2002–03	117.95	10.26
2003–04	970.00	81.63
2004–05	1,004.75	81.93
2005–06	886.44	70.10
2006–07	1,580.04	121.30
2007–08	1,165.33	86.92
2008–09	585.85	42.49
2009–10	1,000.42	70. 60
2010–11	1,414.98	97.24
2011–12	943.60	63.19
2012–13	874.47	57.10
2013–14	885.27	56.40
2014–15	1,001.63	62.30
2015–16	1,505.66	91.48
2016–17	1,714.95	101.84
CGR(SE)	7.16*(3.39)	4.44(3.78)

Note *Denotes significance at 0.05 probability level

territories. The government invests heavily, but the investment pattern fluctuates. The per capita development expenditure increased up to 2006-–07, but declined up to 2014–15, though recently it has resumed its increasing trend at current prices (Table 1). The absolute investment has been growing at over 7% per annum, but the growth per capita, INR 100, is insignificant; if the community is to be put on a trajectory of steady growth, the investment must be increased steadily.

Occupation and earnings

The landholding ranged from 0.26 hectare for tribal households at the forest fringes near towns to 0.33 hectare for those far away. The mean landholding was 0.29 hectare, and 52% of the households owned 0.25–0.50 hectare of land. Only 10% owned over 0.5 hectare, and most of them lived far from towns (Table 2). We expect that their meagre landholding prompted tribal households to engage in economic activities other than farming.

The area under cultivation is small in both absolute and proportionate terms. Cherry alone occupied 48.52% of the gross cropped area allocated to crops,

Table 2 Landholding, cropping pattern, and income levels of tribal households

Particulars	FFpt	FFft	Pooled
Average land holding	0.26	0.33	0.29
Operational land holding	0.06	0.11	0.09
Farm categories (%)			
0.1–0.25 ha	44.00	32.00	38.00
0.25–0.5 ha	52.00	52.00	52.00
>0.5 ha	04.00	16.00	10.00
Cropping pattern (%)			
Rice	-	17.16	8.58
Maize	21.95	13.21	17.58
Oilseeds	-	17.16	8.58
Legumes	4.88	2.08	3.48
Apple	2.44	15.60	9.02
Cherry	66.85	31.20	48.53
Walnut	2.44	1.89	2.16
Vegetables	2.44	4.68	3.56
Total cropped area	4.10	6.41	5.26
Cropping intensity (%)	100.00	121.00	111.81
Income levels (%)			
Agriculture	7.00	7.70	7.40
Livestock	14.1	15.8	14.9
Labour*	41.9	40.8	41.4
Self-business	4.20	3.40	3.80
Services	30.9	29.8	30.3
Timber & NTFPs	1.90	2.60	2.20
Total	100.00 (402,399.0)	100.00 (347,850.0)	100.00 (375,125.0)

Note FFpt = forest fringe in proximity of towns, FFft = forest fringe far from towns; *including income earned by horse/pony labourers in providing services to Amarnath yatra, etc. Figures within parentheses indicate absolute income in INR.

and tribal households far from towns cultivated a larger area. The cropping intensity is low because the topography is uneven, slopes steep, and climatic conditions harsh. The households grow maize for fodder and other crops for consumption; they were ignorant of production technologies and uses of cultivating the land races of these crops.

The annual household income averaged INR 375,125; households near towns made more. The major proportion of income is from labour services in the

construction work of irrigation schemes, defence, and other government services. Livestock rearing and crop farming also contribute to their income. Only 7% of the tribal community was engaged in professional jobs or services. During the pilgrimage season to Amarnath and Nara Nag they earn an income by helping the pilgrims navigate the terrain on horses and ponies.

The tribals collect forest produce like fuelwood, fodder, and timber, and medicinal and aromatic plants. Local traders pay better for the gucchi mushroom (*Morchella esculenta*), sheetkar (*Fritillaria roylei*), chuhur (*Angelica glauca*), and pattris (*Aconitum heterophyllum*). But over-extraction must be curbed and farm-level cultivation encouraged instead.

Livelihood capital

We determined the tribal communities' endowments of livelihood-determining capital in the study area (Table 3).

Human capital

About 58.6% of the heads of tribal families are in the 35–55 age group; this percentage was higher far from towns. Another 25.3% of the heads are 35 or younger. These 2 groups may be considered agents of growth and their capacities developed to perform economic activities, like scientific cultivation or livestock rearing, and generate livelihood resources.

Table 3 Endowments of livelihood-determining capital in the study area

Livelihood capital	FFpt	FFft	Pooled
Human capital			
Active population (%)	74.70	81.30	78.00
Average family size (No.)	7.42	7.97	7.70
Sex ratio (total family)	1,096	1,166	1,132
Illiterate family heads (%)	24.00	28.00	26.00
Family heads having experience in farming/domestication of livestock (%)	56.00	77.33	66.67
Natural capital			
Operational area (% of total holding)	23.53	34.38	28.95
Fruit area (% of total holding)	56.86	48.44	52.65
Irrigated area (% of operational area)	13.00	22.38	24.19
Animals ownership (ACU)	3.35	2.98	3.17
Average holding size (ha)	0.26	0.33	0.29
Physical capital (% of total value of physical capital)			
Land	49.9	49.8	49.9
Residential structure (%)	41.3	41.4	41.4
Land development structures and plantation (%)	5.1	4.7	4.9
Machine and implements (%)	2.0	2.1	2.1
Others (%)	1.7	2.0	1.9
Total value of physical capital (INR)	48,454	57,951	53,203
Economic capital			
Income (INR per annum per household)	402,399.0	347,850.0	375,125.0
Livestock income (INR per annum/household)	56,558.0	55,031.0	55,794.5
Crop income (INR per annum per household)	28,196.0	26,785.0	27,490.5
Saving (INR per annum per household)	20,133.3	31,093.3	25,646.3
Credit (INR per annum per household)	6,400.0	8,400.0	7,400.0
Social capital			
Participation in organizations (%)	52.33	46.00	49.17
Participation in extension programmes (%)	21.50	20.20	20.90

Tribal families have 7.7 members on average, and women outnumber men in the study area. The sex ratio was even higher for the new generation, or 1,268 women for every 1,000 men, and higher still far from towns. As men migrate to work in the rural non-farm sector and agriculture becomes increasingly feminized, families will require more women because only they perform many activities—collecting seeds, NTFPs, and other forest resources; manuring, fertilization, weeding, transplanting, and harvesting; and livestock activities. However, a vigorous campaign must be undertaken to educate tribal youth about family planning and gender issues, and the government has launched schemes such as "Beti Bachao Beti Padhav" to achieve that goal.

About 26% of the family heads were illiterate. The incidence of illiteracy was higher far from towns and lower near towns. The tribal communities must be encouraged to participate in formal and informal education, make better use of livelihood resources, and find jobs at government or private enterprises.

Tribal family heads at forest fringes far from towns had greater experience of farming and livestock domestication (77.33%). This experience could be used to retain the younger generation in these economic activities. The differential endowment of human capital across household categories is expected to determine their relative livelihood security.

Natural capital

"Natural capital" is the stock of natural resources from which services flow out and help tribal households to earn livelihood capital. Landholdings, and the way these are utilized, are an important constituent of natural capital. The landholding of tribal households averaged 0.29 ha; 6.85% was residential, 3.52% wasteland, 3.72% pasture or grazing land, and 4.30% forests and under social forestry. Measures must be taken to encourage the tribal households to make productive use of their landholdings and investments made to expand the irrigation facilities within the operational areas of the forest fringes.

The tribal communities within the selected forest fringes had a good endowment of livestock capital, and the returns contribute a major share of the family income. Each family possesses 3.17 cattle units at their farms; families at forest fringes far from towns owned a greater number. The tribal families had more livestock than any other kind of capital at their farms; livestock constituted over 75% of the capital formation per farm—worth about INR 96,000, and more at the forest fringes near towns. Taking a scientific approach to domesticating livestock should be emphasized, as should be deciding on the appropriate mix of species, rather than increasing the number of animals at the farms.

Physical capital

Physical capital, comprised of basic infrastructure, is productive for several years, because the lead time is long. Tribal households owned physical capital mostly in the form of residential houses, land, and land development. Although tribal families inherited some land, they have generated about 50% of their capital in the form of land. Two or three tribal families live in a common kuccha house; its value constitutes only 41% of the household capital formation. Land development structures and plantations constituted 2.05% of their capital. The tribals generated little physical capital at their households and farmland because it is prone to the vagaries of nature and also because the topography is uneven.

Economic capital

The financial resources, cash or equivalent, that let people adopt livelihood strategies and meet their objectives is their economic capital. Tribal families at the forest fringes near towns earned a significantly high INR 375,125 annually on average. Access to formal financial services is limited in tribal areas; savings and loans play a crucial role in capital creation. Tribal families borrowed INR 7,400 on average. Most know about savings and loans, but they save their money in traditional or primitive ways; however, they were unaware of development schemes and financial products. Tribal communities would benefit from knowing about financial schemes and financial assistance for new economic ventures, including scientific cultivation of crops or livestock rearing.

Social capital

Few among the tribal communities participate in organizations or extension programmes because they are not aware of these and they are afraid to. About 21% of the sample respondents participated in extension programmes and 52% of the household heads

are members of organizations; the percentages were lower at the forest fringes far from towns. The government should create cooperatives to disseminate information among the tribal communities and encourage them to form social bonds and take a collective approach to solving their livelihood problems.

Livelihood security scenario

We examined the livelihood security scenario of tribals within the frame of five kinds of capital: human, natural, physical, economic, and social. Tribal families at the forest fringes near towns ranked a relatively high 0.4212 on the index of economic capital because their family and agricultural income was higher. They ranked 0.6211 on the index of human capital because a larger number of the family members worked on the farm and the sex ratio favoured women. Tribal families far from towns had access to irrigation facilities and the maximum relative area under cultivation, and they had more natural capital security than tribal families at the forest fringes near towns. Tribal families near towns had better security in physical capital, and better values for all the indicators identified, because they participated in extension activities and social events.

We aggregated all these indices to calculate the LSI. Tribal households near towns ranked higher on the index (Table 4). The rank on the security indices does not differ widely by location, but we may infer that the better access to amenities in towns improves the security of all kinds of capital. Quality amenities, and natural resource management techniques, should be provided for at tribal locations.

We attempted to ascertain the role of security in the kinds of capital on the LSI of tribal households by fitting a regression function wherein we endogenized the LSI with 8 exogenous variables (Table 5). The exogenous variables specified in the model together explain 71% of the variation in livelihood security; therefore, the model is the best fit.

Table 4 Livelihood security of tribal families

Security index	FFpt	FFft	Pooled
Economic capital	0.4212	0.3311	0.3844
Human capital	0.6211	0.5310	0.5822
Natural capital	0.5721	0.6102	0.5932
Physical capital	0.4110	0.3730	0.3901
Social capital	0.3831	0.2833	0.3302
Livelihood security	0.4843	0.4232	0.4433

Note FFpt = forest fringe in proximity of towns, FFft = forest fringe far from towns

Table 5 Estimates of regression function

Variable	Coefficient
Intercept	0.4279
WRK	0.0037* (0.0013)
FRI	-0.0802 (0.022)
ESI	1.3148* (0.23)
HIS	0.2147* (0.049)
NSI	0.244* (0.11)
PSI	-0.1795 (0.184)
SSI	-0.01411 (0.11)
LVST	0.0029* (0.006)
Adjusted R^2	0.7127
F Cal	70.11

Note Figures within parentheses indicate standard error; *denotes significance at 5% probability level

Workers are a significant positive determinant of the LSI, as expected, and their work proficiency should be improved by training them in specialized skills and educating them about supplementary income opportunities like handicraft.

Forest income negatively affects livelihood security, though the effect was statistically insignificant, possibly because collecting forest produce contributes only 2% of their family income and has negative externalities. The law restricts tribal communities from collecting many medicinal and aromatic plants in the study area, because over-extraction has endangered these, and the restrictions may be why the tribals' livelihood resources are insignificant. The tribal communities depend on forests for habitation and on forest produce for livelihood, and the importance of forest services and goods to their livelihood security needs to be evaluated through proper research.

Natural capital is a statistically significant and positive determinant of the LSI, as expected. The tribal communities domesticate large herds of livestock and let them graze on the collective property commons. The practice is cost-effective, and their livestock endowment is a significant positive determinant of their

livelihood security. They need to commercialize their farming and agricultural practices and rear their livestock scientifically.

Tribal families live in isolated communities on uneven terrain and endure a harsh climate most of the year, and their participation in social organizations, mohalla committees, or political groups is too limited to obtain opportunities to cope with their external environment and livelihood risks. Physical and social capital are insignificantly negative determinants of their LSI. The government should create effective physical capital by supporting them in erecting concrete or mixed houses, and shelter for livestock, and create cooperatives to strengthen their social relationships. The various coefficients need to be taken care of to enhance their livelihood security.

Livelihood vulnerability factors as perceived by tribal families

The members of particular tribal groups experience several socio-economic disadvantages and vulnerabilities that limit their development and access to daily livelihood requirements, most importantly health and health care. The tribal farmers perceive that their livelihoods are vulnerable to the vagaries of the climate. Often, they are forced to migrate, though migration puts their livestock at risk. And about 65% of the respondents said that they were vulnerable to attacks by wild animals and the ensuing psychological trauma (Figure 1). The government institutions should eliminate these vulnerabilities and improve the livelihood security of the tribal communities in the Valley.

Externalities of residing at the forest fringes

Living at the forest fringes has positive externalities: the air is pure, the water supply abundant, and fodder is aplenty, and there is little disease or soil erosion (Figure 2). But there are negative externalities, too: the burden of livelihoods has reduced the ability of forests to sustain the tribal peoples, and people and livestock are at the risk of animal attacks, obnoxious weeds, forest fires, and the vagaries of the climate (Figure 3). A well-knit insurance scheme is needed to protect the vulnerable tribal population, therefore.

Consumption pattern: an outcome

Capital endowment reflects the level of resources and the extent to which the stakeholders' resource endowments have improved their consumption pattern. Consumption improves people's capabilities and productivity; the household food consumption pattern indicates the welfare and well-being in a region. We examined the consumption pattern of tribal

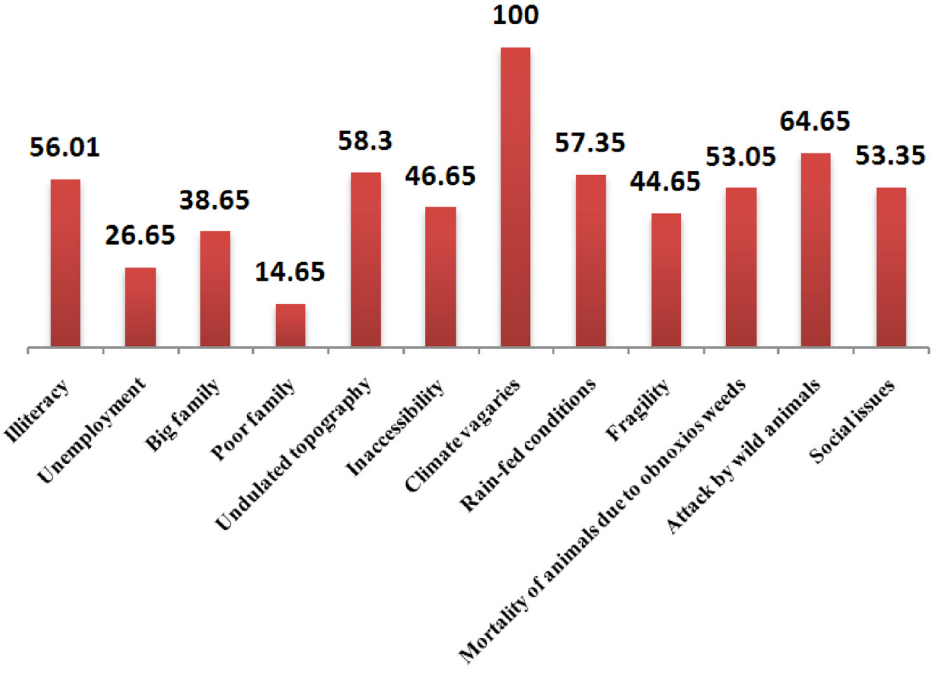

Figure 1 Vulnerability perceived by tribal families

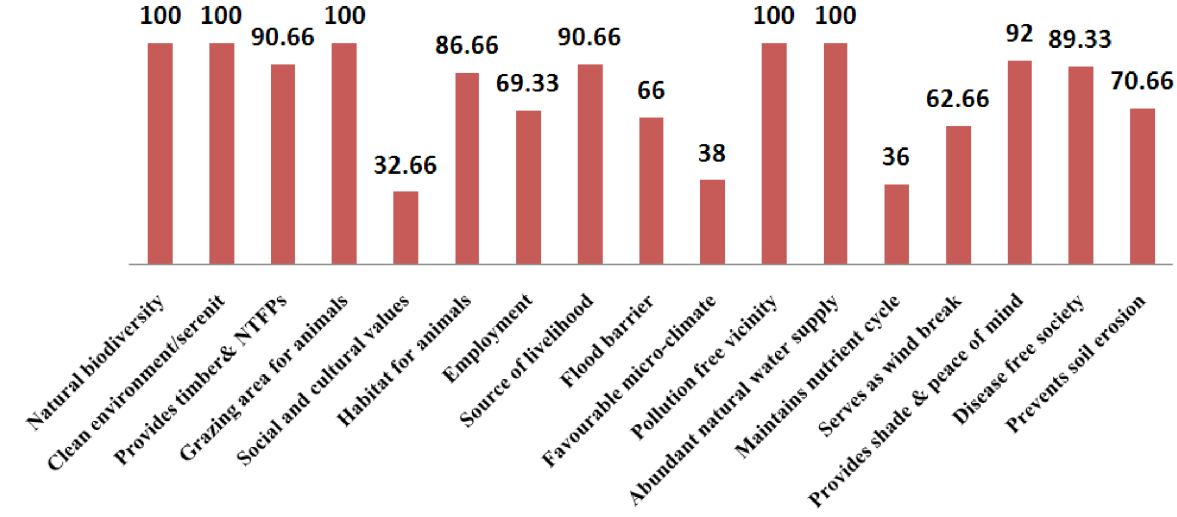

Figure 2 Positive externalities of residing at the forest fringes

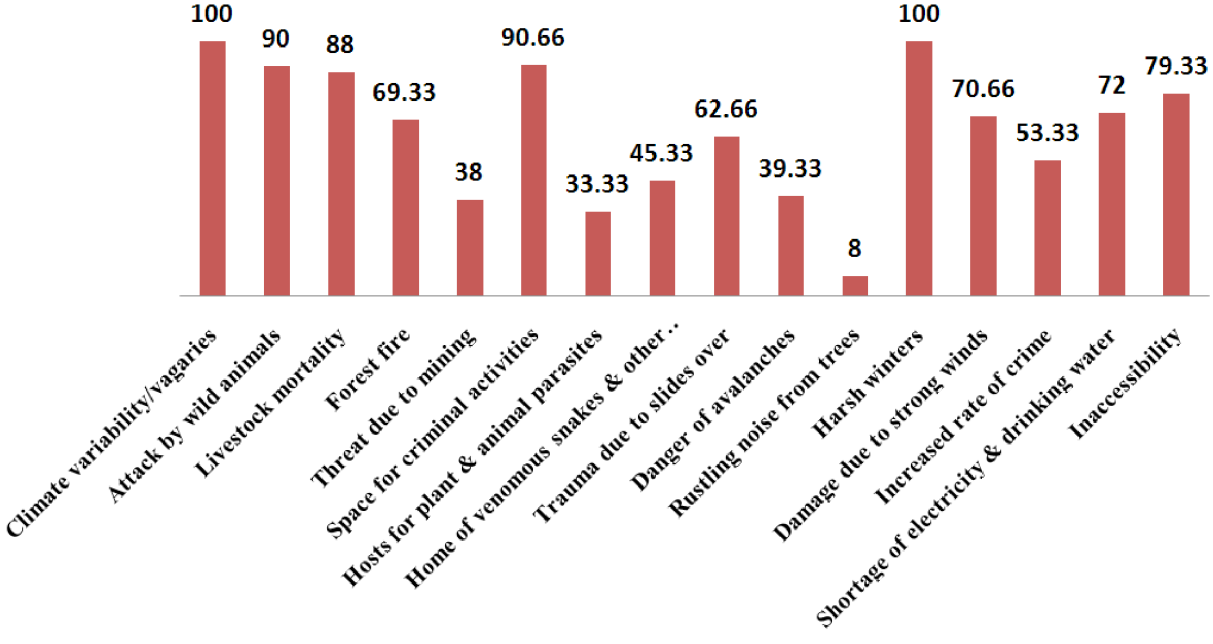

Figure 3 Negative externalities of residing at the forest fringes

communities (Table 6). They consume as staples the crops they grow and purchase other important items; and they consume much less than the diet recommended by the Indian Council of Medical Research (ICMR). The deficiency was highest in fish, pulses, and legumes.

Conclusions and policy suggestions

We study the livelihoods of tribal communities living on the fringes of forests in the Kashmir valley in relation to their capital endowments. The communities at the forest fringes have been deprived of amenities and other services. The communities far from towns cultivated a larger area, and their farming was more intensified, than those near towns. The capital endowment of tribal households was poor and social capital almost absent. Living in forests yields positive externalities, but the negative externalities are significant. The resource and livelihood security of the tribal communities in Kashmir must be enhanced.

Since human resources are the key to development, and the participation of tribals in formal education is

Table 6 Consumption pattern of sample tribal household

(gram per capita per day)

Item	ICMR dietary recommendations	FFpt	FFft	Pooled
Cereals and millets	420	380.0	332.0	356.0
Pulses & legumes	40	24.5	22.4	23.5
Fruits	50	39.0	38.5	38.8
Vegetables	125	90.7	91.0	90.9
Roots and tubers	75	59.0	52.0	55.5
Milk	260	272.0	261.0	266.5
Meat	25	18.7	17.5	18.1
Eggs*	180	92.0	100.0	96.0
Fish	25	4.20	3.97	4.10

Note FFpt = forest fringe in proximity of towns, FFft = forest fringe far from towns; * Denotes number of eggs per capita per year

low, the educational facilities within a radius of 1 km of their habitation should be improved. The communities have access to rich natural capital but they do not know how to use natural resources sustainably or farm scientifically. Capacity building is important; extension agencies must disseminate technologies and train tribal farmers to make productive use of their available landholdings and of scientific agricultural practices and to domesticate livestock of elite breeds.

The state government should innovate schemes to alleviate the poverty of Scheduled Tribes; increase the pension for widows and the elderly and allocate more funds to these schemes; and increase the allocation to empower women of Scheduled Tribes. It needs to start public–private partnerships to create infrastructure and amenities around residential patches in and around forests while retaining their ecological value. Tribal households are vulnerable to several hazards; they need a safety net comprising insurance schemes and protective financial support.

Livelihood resources need to be created and economic and social activities collectivized; concerted measures are needed from central agencies, like National Bank for Agriculture and Rural Development (NABARD) and tribal affairs institutions, to train tribal communities in subsidiary occupations like handicraft and handlooms, encourage them to practise these to augment family income, and link them to financial and rural development institutions to support their ventures.

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