Contextual influences on the sustainability of prospective livelihood diversification initiatives in farm villages in the Karnataka semiarid dryland region of India

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Our study examined current livelihood strategies among dryland villagers in Karnataka, India, and evaluated prospective farm and nonfarm diversification strategies for sustainable livelihood outcomes. Using a sustainable livelihoods framework, data were collected using interviews, focus groups, and questionnaires to identify contextual influences on prospective livelihood diversification initiatives in the region. This paper situates diversification within the broader context of rural India while identifying wider influences to present a number of recommendations on livelihood diversification initiatives. We argue that decision-makers in diversification initiatives must gain an understanding of the complexities, influences, and capacities at local and broader levels to promote sustainable interventions.

**Keywords:** smallholder and landless farmers; rural India; sustainable rural livelihoods; livelihood diversification

1. **Introduction**

Poverty in India is predominately a rural phenomenon (World Bank 2012) and rural areas are home to approximately 72% of India’s 1.1 billion people. Agriculture is the largest economic sector in India, and most of the rural poor are dependent on the natural resource base for their agrarian livelihoods. This sector has suffered, however, from a continuous slowdown in growth and productivity. In the state of Karnataka, for example, approximately two-thirds of the population resides in rural areas, and cultivators and agricultural laborers compose approximately 56% of the workforce (Census of India 2001). However, the contributions of the agrarian sector to the state Gross Domestic Product (GDP) fell from 60% in 1961 to less than 20% by 2007 (GoK 2007). Setbacks for Karnataka’s agrarian sector are multifaceted and include ecological, sociopolitical, and economic impediments. For instance, much of northern Karnataka is semiarid dryland and is considered a marginal production environment as it faces severe agro-climatic and resource constraints (GoK 2006), most notably water deprivation. Successive droughts from 2001 to 2004 caused the production of food grains to substantially decrease, continued in 2012 by the worst drought in 42 years (Yousaf 2012). To make matters worse, Karnataka is one of the states with the lowest proportion of cultivated lands under irrigation (GoK 2006). Increased rural population and land fragmentation have resulted in reduced productivity, poor resource management and degradation, increased landlessness, and poverty (UNEP 2001). Approximately 48% of the holdings in 2005–2006 were classified as marginal and/or smallholding (less than 1 hectare), with the average size being 0.45 hectares (GoK 2007). Landless farmers make up 50–60% of the northern Karnataka population. The agrarian crisis has resulted in an unrelenting cycle of debt and distress, especially among the poor and landless. Farmers’ distress is manifested by an increase in suicides, seasonal migration, poverty, poor health outcomes, and family instability (Nagaraj 2008; The Times of India, February 2, 2010; Nagthan et al. 2011).

In its 11th five-year rural development plan (2007–2012), the Government of India recognized the need for poverty reduction initiatives in the form of livelihood diversification interventions and processes, in order to improve the socioeconomic condition of poor farmers. The Government of Karnataka (2007, 10) expanded the initiative by supporting ‘no field with one crop and no farmer with one income’ and developed specific, top-down recommendations for interventions. Through diversification initiatives, poor farm households are encouraged to diversify their income portfolio by engaging in alternative choices in the farm and nonfarm markets.

Situated within this context, the purpose of this study was to take top-down ideas for economic diversification to...
an agrarian dryland village to seek bottom-up perspectives. Using a sustainable livelihoods framework as an exploratory tool, poor farmers were asked what they thought of prospective diversification strategies as sustainable livelihood alternatives. Due to the extent of the themes covered in the study and limited space, this paper focuses on one particular set of findings that situate diversification as an initiative for poverty reduction within the broader context of rural India. To assess the practical capacity of farmers to diversify economic activity findings are drawn from research conducted in Byalal village, Bijapur District, Karnataka. Specifically, the aims of this paper are to identify macro-level contextual factors (including social and natural structures and processes) that may condition rural livelihood diversification as a prospective micro-level poverty alleviation initiative in Byalal and to offer policy recommendations for prospective diversification initiatives in Byalal and the surrounding dryland region.

The paper presents in Section 2 a brief review of the literature on diversification as an initiative for rural poverty reduction in India and elsewhere, and in Section 3 an overview of the study methodology. Section 4 turns to the local context of Byalal village and profiles current livelihood strategies among households. Section 5 explores the macro contextual influences on livelihood diversification. Section 6 provides a detailed analysis of the vulnerability context. Section 7 analyses institutional processes and organizational structures, and presents recommendations for prospective diversification initiatives. Section 8 provides concluding remarks.

2. Rural livelihood diversification and poverty reduction

Rural livelihood diversification is ‘the process by which rural families construct a diverse portfolio of activities and social support capabilities in order to survive and improve their standards of living’ and may increase livelihood security by reducing income variability, improving economic conditions, and coping with distress in deteriorating conditions (Ellis 1998, 4). Livelihood diversification is common among rural areas throughout the world; however, there is a wide range of motives and determinants of diversification at the household and village levels. Barriers, facilitators, and impacts of rural livelihood diversification are three main themes within the literature that merit examination.

In a paper focused on diversification in rural Africa, Barrett, Reardon, and Webb (2001b) note that nonfarm diversification seems to provide a pathway out of poverty and suggest that effective diversification interventions will identify means of targeting the poorest populations and barriers to efficient market functioning in land, labor, and capital. A village case study in Uttar Pradesh, India, by Himanshu et al. (2013) suggests that nonfarm diversification is not only increasing incomes and reducing poverty but also seems to be breaking down traditional barriers to upward social mobility among the poorest segments of rural society, including agricultural laborers. An earlier study from Burkina Faso found income diversification to be associated with higher incomes and food consumption among small farm households (Reardon, Delgado, and Matlon 1992).

Reardon (1997) identifies the poor distribution of nonfarm earnings in rural areas in Africa as a worrying finding. His interpretation is that this poor distribution implies significant entry barriers, despite the importance of diversification to food security and farm investments. Among barriers and facilitators, Kisaka-Lwayo and Obi (2012) highlight the importance of understanding smallholder rural farmers’ perceptions of, and responses to, risk. The authors examined the relationships between various socioeconomic characteristics and perceived sources of risk, and found that price, production, and financial risks were perceived as the most important sources (Kisaka-Lwayo and Obi 2012). Even farm diversification such as horticultural production, often advocated in India for small and marginal farmers because of its higher benefit–cost ratio, is constrained by traditional production techniques, huge post-harvest losses, and poor marketing strategy (Mittal 2009).

Among the facilitators of diversification are participation in local groups that receive financial resources to implement community-driven initiatives, as found by Deining, Galab, and Olsen (2005) in their evaluation of the Andhra Pradesh District Poverty Initiatives Project. An important aspect of this enabling was the federated structure of the project (self-help group federations), which allowed groups to significantly expand the availability of credit to members, and consequently take on completely new activities which had often remained out of the reach of the poor (Deining, Galab, and Olsen 2005). As well, a study on rural employment diversification in Eastern India suggests that participation in high-value agriculture and in nonfarm employment is related to knowledge and technical levels of rural households (Kumar 2009). Furthermore, a study conducted in India on rural nonfarm employment suggests that policy-makers seeking to maximize the impact of an expanding nonfarm sector on rural poverty should concentrate their efforts on removing the barriers of entry of the poor into the nonfarm sector, which involves improving education in rural areas (Lanjouw and Shariff 2002).

3. Methodology

The qualitative ethnographic research (Tedlock 2003) used a case study strategy of inquiry (Yin 2009). The case was the dryland village of Byalal and selection of the site was done in two phases: District Selection (Phase I) and Village Selection (Phase II). Selection criteria were based upon a literature review and consultation with local
people and institutions such as the University of Agricultural Sciences Dharwad (UASD) and Karnataka Health Promotion Trust. The selection criteria for Phase I were: (1) marginal agriculture production environment (low potential area, drought proneness, water deprivation, natural resources degradation); (2) prevalence of farmer suicide and seasonal/circular migration; (3) socioeconomic depression; (4) large number of smallholder and landless farmers; and (5) convenient entry point with preference to areas familiar with or supported by UASD. Basavana Bagewadi taluka (subdistrict) of Bijapur District met all criteria and was chosen as the general study area. According to the Census of India (2001), there were approximately 660 villages in Basavana Bagewadi. Selection criteria for Phase II were: (1) population between 1000 and 2500; (2) interest in exploring prospective diversification activities, especially among poor farmers; (3) awareness of agroecological changes and variation of agricultural productivity; and (4) permission of villagers to allow the research to take place over a minimum of eight weeks. Upon consultation with local people, the researchers narrowed potential study sites to four villages. The researchers visited each village and met with village leaders to discuss project feasibility. All villages were viable options; however, Byalal was chosen because it was the most remotely located from the taluka headquarters.

Fieldwork took place between October and December during the fall growing season, known as rabi. The study used methods drawn from rapid rural appraisal (Chambers 1994a; Beebe 1995) while following principles of participatory rural appraisal (Freire 1968; Chambers 1994a, 1994b, 1994c). To mitigate culture and gender barriers and time restrictions, the lead researcher hired a team of local research assistants to assist as interpreters and to collect data. Data collection methods included semi-structured interviews, focus groups, mini-questionnaires, seasonal calendars, resource flow maps, and participant observation. In order to collect a variety of data quickly, the research team administered three mini-questionnaires, each composed of 6–10 questions: QI (n = 33) – livelihood security/quality of life/community; QII (n = 30) – natural resources/agriculture practice; and QIII (n = 33) – livelihood strategies/diversification interests. For a deeper perspective, the lead researcher conducted 20 semi-structured interviews, each of which lasted between 60 and 90 minutes. Purposive opportunity sampling was used in the selection of individual interviewees. Researchers sought out participants of diverse backgrounds and experiences (i.e. gender, age, education, caste, marital status, landed status, and occupation), particularly marginalized persons and/or members of poor households. Three focus groups were also held, each of which lasted 60–90 minutes. Each group was composed of between five and eight participants and was not mixed gender but was of mixed castes. Data were crosschecked with villagers and the research team.

The study used the sustainable livelihoods framework from the International Fund for Agricultural Development (IFAD), which captures the complexities of rural livelihoods and poverty through a holistic lens. The sustainable livelihoods framework was used to design the research instruments, to guide the fieldwork, and as an analytical tool.

4. Village context and current livelihood strategies in Byalal

Byalal has a history that dates back at least five centuries to the Muslim rule of the Bijapur Sultanate during the Adil Shahi dynasty. The residential area is centrally located where people of all castes live, albeit in distinct caste-denominated sections. Surrounding this area are vast fields. Some of these fields are cultivated while the rest are common property lands such as grazing areas. The rest of the land is made up of patches of scrub forest and wasteland. There are approximately 164 households in Byalal, with an average family size of 6.5. Households are typically composed of individuals of near and/or extended kinship through blood or marital family relations. Half of the population belongs to Scheduled Castes/Scheduled Tribes. Many villagers (65%) are illiterate, and the literacy rate is lower for females than males. Village teachers reported that only about 80 of the 200 school-age children in the village attended classes. The teachers believed that children were kept at home to support the household. The majority of villagers were Hindu, but there were several Muslim households as well.

Byalal lies on the tract of the northern dry agroclimatic zone of the Deccan Plateau, which is one of the hottest and driest regions in peninsular India. Droughts generally occur twice every five years, while severe droughts that persist for three to four years occur approximately once every 30 years. Most of the population lead subsistence-oriented livelihoods and, to a lesser extent, are involved in commercial farming. Along those lines, most farms are not irrigated and thus rain-dependent and susceptible to drought. Given the low agronomic potential and limited resources, our data indicate that migration is an important coping mechanism among households to secure livelihoods, with approximately 60% of the working-age population engaging in long-distance seasonal (rural to urban) migration, typically between late October and early April.

Agriculture is the mainstay of the Byalal economy. Farm income is generated from the farming of both small and large landholdings whether through owner-occupied land or land accessed through cash/harvest-share tenancy. The most common crops grown are drought-tolerant cereals such as jowar (sorghum) and bajra (millet); dal (pulses) such as lentil and bengal gram (chickpea); groundnut; and sunflower. In addition to these crops, farmers with irrigation facilities (open wells or borewells) grow onion,
garlic, and wheat. Pastoralists accrued income mostly from sheep/goat-rearing and dairy production from buffalo.

The most common nonfarm source of income we identified was from labor wages (mainly agriculture and construction), both from local and migratory work. Nonfarm business ventures included tailoring, charcoal production, chili-grinding, general stores/tea cafes, a government-run fair-trade store, transport, bangle-selling, labor contracting, commission earned as subagents, a farmer investment company, rental income, and sex work. Most nonfarm households in our sample were income-diversified.

We found that households with two or more income sources were considered to be income-diversified and subcategorized as: farm-diversified (farmers using integrated farm systems such as agro-pastoralism, agroforestry, or agro-silvo-pastoralism), nonfarm-diversified (such as business-labor, business-sex work, two businesses, etc.), or farm/nonfarm-diversified. Of these, farm/nonfarm diversification was the most common livelihood strategy, used by over one-third of the respondents. Those in this category largely consisted of smallholder irrigated farm households, smallholder rain-fed farm households, or largeholder rain-fed farm households that also accrued income from agricultural labor on others’ farms, seasonal migrant remittances, and/or business, as well as landless pastoralist households that also accrued income from agricultural labor, migrant remittances, and/or business.

Livelihoods in Byalal are particularly vulnerable in the midst of turbulent social, economic, and ecological vagaries. The linkages and flows between the farm and nonfarm sectors are complex – the stability of the nonfarm sector is dependent on the stability of the farm sector and vice versa. For instance, when drought plagued the farm sector, the entire nonfarm sector became destabilized because farmers and agricultural laborers left the village in unusually large numbers for lengthy time periods, causing disruption of supply and demand dynamics. When household livelihoods become insecure, villagers reported that they were most likely to adopt the following coping mechanisms (listed in order of most to least likely): borrow money, long-distance migrant work, work in nearby villages, diversify economic activity, or liquidate assets (land, house, gold, or livestock). Women more frequently undertook income diversification as a coping strategy, whereas men tended to migrate.

5. Macro contextual influences on prospective livelihood diversification interventions in the region

Our larger study found that farm and nonfarm diversification initiatives that do not further degrade the natural resource base may offer prospects for sustainable livelihood outcomes for villagers in Byalal for the following reasons: (1) there is strong villager interest to diversify activity locally and a desire to discontinue seasonal long-distance migration for work as a livelihood strategy, (2) local evidence shows that diversified households generally had a more secure livelihood than non-diversified households, and (3) there are local organizations that have the willingness and expertise in region-appropriate technologies to support diversification initiatives (however, these may need to be strengthened).

As has also been found in other studies (Reardon and Vosti 1995) the villagers’ strong interest to diversify is not matched by their capacity, as barriers from the wider context leave them with few options. Diversification was an established fact of people’s struggles to improve their livelihoods (a diversified portfolio was the norm rather than the exception in Byalal), and accumulating evidence points to the benefits of diversification for people and sustainable natural resources.

Our study identified several macro factors (social and natural structures and processes) from the broader context of rural India that may condition villagers’ realistic options for sustainable livelihood outcomes from diversification initiatives. The sections that follow present the macro contextual factors while discussing linkages between the macro context and micro village particularities of Byalal against the backdrop of prospective diversification initiatives as a general poverty reduction strategy in the dryland region of northern Karnataka. Recommendations are provided throughout the sections. The sections follow the sustainable livelihood framework categories of vulnerability context, institutional processes and organizational structures. The vulnerability context takes into account trends (economic, political, technological), shocks (natural disasters, epidemics, conflict), and seasonality (production, employment availability). Institutional processes include the prevailing social and political environment. Organizational structures are defined as external enabling agencies and service providers that influence livelihoods, including associations, donor organizations, universities, non-governmental organizations (NGOs), and local/state/federal government bodies.

6. Vulnerability context

6.1. Semiarid dryland region: ecological constraints

Dryland populations are among the most ecologically, socially, and politically vulnerable populations in the world (Reynolds et al. 2007). It is estimated that half of the 2.3 billion people inhabiting the world’s drylands are poor and marginalized (UNDP 2011). In northern Karnataka, ecological shocks from natural disasters (most frequently droughts) are a threat to agrarian livelihoods and result in crop failures and the destabilization of the entire village economy. Ecological shocks of highest concern to Byalal villagers are droughts, unpredictable rainfall patterns, and torrential rainfall and/or flooding during monsoons. Increased rainfall variability means that farmers can no longer predict the rains. Of additional concern are the changes in natural resource endowment over the past
four decades. Trends are related to resource exploitation: a lower water table, increased soil erosion, a decline in natural soil fertility, and desertification. Farm elders also reported an increase in pest and disease resistance over the last four decades.

Ecological crises result in Byalal farmers adopting coping mechanisms that lead to further uncertainty, such as seasonal/circular migration, increased dependency on others, and increased indebtedness. Successive droughts may likewise obstruct the successfulness and sustainability of prospective diversification initiatives. Thus, the rationale for livelihood diversification as a ‘drought-proofing’ strategy seems somewhat paradoxical. During the study, the stability of the local nonfarm sector was uncertain because it was contingent upon a substantial portion of the village population being present year-round, and nonfarm activities did not necessarily provide households with higher incomes or livelihood security. Consequently, the stability of the farm sector affected the stability of the nonfarm sector, and vice versa. Successful diversification initiatives should enable villagers to remain in the area following natural disasters to avoid economic destabilization. Nonfarm diversification initiatives, in particular, may offer more reliable alternative income sources for vulnerable households.

Less conspicuously, ecological stresses and trends such as degradation of the natural resource base (soil, water, forest cover) and the increasingly erratic rainfall pattern have reduced agricultural productivity and the income earning capacity of farmers over time. Climate change projections for India predict warming above the global mean and an increase in extreme precipitation events (Christensen et al. 2007) with drastic effects on the agrarian sector. Therefore, diversification initiatives should address ecological stresses and trends by reversing the local degradation of the natural resource base and encouraging a shift toward sustainable agricultural intensification and diversification. Without regionally appropriate resource-conserving technologies such as water harvesting, construction of effective embankments to prevent soil erosion, and rainfall prediction technology, farm diversification initiatives will not be sustainable. Interventions should be closely linked to local organizations including the UASD-Bijapur campus and regional Watershed Management Programs (WMPs) to establish resource-conserving measures and disseminate information to farmers. Study findings also indicate that goals for environmental sustainability and economic diversification may collide at times and that initiatives should anticipate potential unintended consequences.

6.2. Seasonality

Seasonality is an inherent feature of household livelihoods in Byalal. Our research to establish the villagers’ seasonal calendars showed that availability of time was a potential inhibiting factor of their ability to engage in income-diversifying activities, particularly among women. Although women were more likely to uptake diversification activities than men, women already carried a ‘double-burden’ workload of productive and reproductive activities. Farmers and laborers reported that current activities kept them busy; therefore, some reported that prospective diversification activities could only be possible during off-season months (April and May). Understanding the region-specific seasonal nature of livelihoods will help improve the timing, targeting, and delivery of future diversification initiatives. An understanding of seasonality is also critical when assessing the need for external assistance to rural households. Additionally, given the burdens on women, initiatives should identify ‘who’ can adopt new income-earning activities in the household and ‘how’ that household member will work it into their already busy schedules in order to achieve ‘what’ measurable degree of livelihood security.

6.3. Seasonal migration

Each year approximately 60% of the Byalal working-age population (particularly poor dryland farmers and agricultural laborers) engage in long-distance seasonal migration for six months out of the year to urban centers in Mumbai or Goa. Local factors which push migration include a weak village economy, poverty/indebtedness, drought, and insufficient local jobs. Factors which pull migrants include numerous job opportunities for unskilled workers and higher labor wages.

Although migration is an important and prevalent household livelihood strategy, the majority of respondents expressed a strong desire to increase local income generation so that villagers would no longer need to migrate. A male, landowning farm elder noted that

Nobody likes to migrate. Migrants would prefer to stay here. If they could increase crop production somehow, then they could stay here ... migrant activity has a positive effect on the family in that it provides income to support the family. But migration has a negative effect on the family, too.

Migrant households considered migration undesirable but necessary, and there was wide interest in the adoption of new production activities. Their only stipulation was that the potential diversification activity must be at least as profitable as earnings made from migrant activity.

According to our findings, when agriculture fails to provide sufficient livelihood, the incomes of the poor cannot sustain their basic needs, and migration becomes an integral strategy for survival. Contrary to common perceptions, migration to cities has not been the main cause of rural poverty reduction: 80% of the decline in rural poverty is attributable to improved conditions in rural areas rather than to out-migration of the poor (World Bank 2008).
Furthermore, given the rising number of poor and landless, migration is a public health concern as a known at-risk behavior associated with the spread of sexually transmitted infections (Halli et al. 2006; Moses et al. 2006; NACO 2006). Migration can also be disruptive because it destabilizes the social and economic ways of life among households and communities. Successful diversification initiatives may have an impact in reducing seasonal migration. To encourage migrant participation, initiatives should have a strong point-of-entry plan with scheduling that is convenient for migrants and farmers. Initiatives should begin during the off-season when migrant returnees and farmers are less busy.

6.4. Macroeconomic and macro-political conditions
Investigations into the expansive realm of macro-political and economic trends that influence the vulnerability of rural livelihoods were beyond the scope of this study; however, government policies for rural development (or the lack thereof) may have profound impacts at every level and cannot be ignored. A comparative assessment on poverty reduction policies in China, India, and Brazil found that India ranked poorly in its pro-poor growth and pro-poor social policies due to inequalities between the rich and poor, despite its reductions in poverty during the country’s reform period (Ravallion 2009). The study suggested that a major problem for India was its extensive capture of policies by non-poor groups. A more interregional balance of investments between the rich and poor and the urban and rural is necessary to reach the most vulnerable. Given the enormity of India’s water issues (Amarasinghe, Shah, and McCormick 2009), farmers in marginal production environments such as the rain-dependent dryland regions are perhaps the most neglected in the political realm. For example, Indian policies have largely neglected investments in research and technology for dryland agriculture to increase productivity (Patnaik 2009).

Fickle price regime policies also have a negative impact on farmers and result in shifts in the type of crops grown. To illustrate, the current overemphasis we found on water-intensive crops such as wheat and maize in the study area means there has been a shift away from growing drought-tolerant millet and sorghum, which are more appropriate crops for dryland regions. However, only farmers with irrigation facilities in Byalal were able to produce the higher-valued wheat and maize, while farmers with rain-fed fields – with their lower-valued millet and sorghum – were left to struggle with lower incomes and their dreams of someday constructing groundwater irrigation systems to grow higher-valued crops. The price regime policies and market signals were indeed so appealing that several of Byalal’s risk-adverse farmers had significant debts from failed attempts to dig for groundwater. The erratic price regimes frustrated farmers. Furthermore, the harvest prices for cereal crops including sorghum and millet have increased by less than 10% while the input prices have doubled (Bantilan and Anupama 2006).

7. Institutional processes and organizational structures
7.1. Bartering economics and marketability
Our data indicate that bartering of goods and services is the most prominent form of economic transaction among Byalal villagers. For instance: a labor contractor receives an annual payment of four quintals of grain worth, Rs 8 K; a barber provides services in exchange for jowar (sorghum); neighbors exchange dairy products for grains. Villagers perceived that certain prospective diversification activities would not be successful due to the un-marketability of their products, such as roti preparation (nonfarm activity) and honey production (apiculture). All Byalal households eat roti, an Indian bread made from jowar at every meal. Preparation of roti was a time-consuming activity women in our study identified, and it was a product that was in high demand. However, villagers argued that women made roti daily and often gave them away to neighbors free of charge; thus, a roti preparation business would not be profitable because no one would actually barter goods/services for the food-stuff. Likewise, respondents contended that a successful apiculture business is implausible since, if a villager wanted honey, s/he would extract it from local hives rather than purchase it.

Markets influence livelihood outcomes from diversification. The finding that marketability among villagers in a largely subsistence-based and bartering economy may not be consistent (or may even be in conflict) with outside-driven initiatives suggests that diversification initiatives may need to encourage the commoditization of goods perceived by villagers as unmarketable. Initiatives must find a way to work within the existing barter system while encouraging expansion into local and regional markets. Among possible initiatives are ongoing participatory community engagement; providing information about market opportunities and cost-benefit analyses, price trends, and advice on informed marketing; and building the capacity of self-help groups and other networks to promote fair transaction of products.

7.2. Markets and profitability: demand and supply
The study examined the prospects for diversification from villagers’ economic viewpoints of markets and profitability. Farm and nonfarm diversification activities perceived as having low product demand, high competition, low profitability, and/or requiring long-distance travel to larger markets were considered least adoptable. Villagers indicated that the activities most likely to be adopted were those with local high demand and low competition. For
example, starting a new general store, tea cafe, or transportation business were regarded as not profitable due to the already high competition in the village, whereas starting a tailoring or chili-grinding business was considered profitable due to low competition and high demand. Contemplation of supply and profitability in the market revealed three challenges to sustainable livelihood outcomes from diversification related to issues of land access. First, various land reforms have resulted in fragmentation so that most Karnataka farmers own plots smaller than one hectare, yet some prospective diversification activities require a certain minimum extent of land for production. The ability to adopt various diversification activities (especially farm related) is therefore contingent upon land ownership, availability, and/or landholding quantity/quality. Landless households are left out of opportunities that require land, and there is limited land available for those wishing to expand. As well, smallholder farmers of dryland large-holding farms with multiple small fragmented plots (rather than a single large contiguous plot) do not adopt farm activities generally associated with large tracts of land (such as horticulture or agroforestry).

Second, many prospective diversification activities adopted as small-scale production may not provide sufficient income as an alternative/substitute when crops fail. Some farm diversification activities (such as poultry farming, vermiculture, horticulture, apiculture, and sericulture) and nonfarm activities (such as specialty businesses including candle/agarbatti-making, toy/doll/mat-making, and bangle-selling) would likely serve as income supplements to farm income and labor wages but are unlikely to yield profits that would suffice as income alternatives when crops fail unless they are adopted on a full-time basis and/or at a large scale of production.

Third, unless local improvements are made in natural resource management, intensifying pressure on an already degraded natural resource base will not lead to sustainable livelihood outcomes. To illustrate, when surveying for local diversification interests, most respondents in our study (75%) cited interest in livestock husbandry, an activity already widely practiced in the village. However, human-livestock population pressure has made common property lands and grazing areas increasingly unavailable, and recurrent droughts in the last eight years have reduced fodder availability. Given the agroecological constraints, if all villagers wishing to adopt livestock husbandry in Byalal do so as part of a diversification initiative, they may likely surpass the land’s capacity to sustain large populations of livestock. Likewise, all dryland farmers expressed interest in crop intensification through construction of groundwater irrigation facilities although most farmers recognized a decline in the water table.

Challenges to successful and sustainable diversification initiatives imposed by small-scale production, including small landholdings (particularly for farm diversification), could be mitigated by promoting group approaches, such as the group farming approach outlined by the Government of Karnataka (2007). Also, challenges related to market supply and demand, poor infrastructure for market transport (road conditions) and productivity (power shortages), land access, and scale of production of new diversification activities may be better addressed by the implementation of prospective diversification initiatives. Furthermore, institutional incentives to help shift diversification initiatives away from practices heavily reliant on natural resources and toward sustainable farm activities and nonfarm activities may be beneficial. The following are region-specific recommendations for diversification initiatives extrapolated from the data that may inform such a shift:

(1) Farmers of rain-dependent farms:
(a) Dryland smallholder farmers may benefit more from nonfarm diversification and/or farm diversification activities requiring minimal or no land.
(b) Dryland large-holding farmers of a single contiguous tract of land may benefit from nonfarm diversification and/or sustainable farm intensification and diversification into mixed-farming systems. In particular, region-specific resource-conserving technologies to increase productivity include proper bunds, technology for predicting rainfall, rainwater harvesting, green manuring, agroforestry, planting cover crops, mulching, reduced/zero tillage, re-vegetation of common lands, and improved integrated pest management. Such investments should be complemented with social and human capital investments (Turton 2000).
(c) Farmers of irrigated farm systems (regardless of landholding size) may likewise benefit from nonfarm and/or farm diversification as described in (b). Of the overwhelming majority of villagers interested in diversifying into livestock husbandry, the data suggest that these farmers are best equipped to adopt this activity. The development of mixed-farming systems promotes greater on-farm resource flows and synergistic effects of crops and livestock, namely nutrient balance (Steinfeld, de Haan, and Blackburn 1998). However, the high number of villagers interested in livestock husbandry (in addition to the many already practicing this activity) raises concerns regarding its long-term sustainability. Initiatives need to address the broader question of how the process of desertification can be mitigated (and preferably reversed) in the presence of a scaled-up livestock population.
(2) The use of common property lands considered unproductive by villagers may be an option for vermiculture, apiculture/sericulture, and/or nonfarm diversification production. On the other hand, expansion into areas used for grazing is not ideal and may lead to unintended negative outcomes for pastoralists.

(3) Because the capacity of farm diversification and intensification to provide sustainable livelihood outcomes for Byalal households is questionable, an emphasis on nonfarm diversification is recommended. Seeking out marginal and landless farmers, agricultural laborers, and farm households wishing to exit the farm sector is suggested. However, initiatives should not be overly focused on the expansion of the nonfarm sector at the expense of the farm sector but rather take a balanced development approach, given that the two sectors are interlinked. Himanshu et al. (2013) caution that, although nonfarm diversification in rural India has reduced poverty by increasing incomes among the poor, a significant rise in income inequality has accompanied diversification away from the farm that risks affecting the fabric of village community life and undermines diversification initiatives. Initiatives should identify how the farm sector might provide potential engines of growth for the nonfarm sector, such as improvements in agricultural service provision (Davis 2003) and monitor both short- and long-term livelihood outcomes.

7.3. Markets and practice: economic behavior in decision-making and risk aversion

A basic understanding of economic decision-making behaviors may help diversification initiatives by ensuring an environment that not only gives locals more reasonable options to choose from but also helps them make informed decisions. The study revealed themes related to the lack of longer-term vision and immediacy regarding household decision-making for prospective diversification strategies. For example, while discussing the feasibility of prospective diversification strategies, villagers had difficulty exploring future possibilities beyond the immediate needs of irrigation, money, or skills for the adoption of new strategies. One possible explanation for this might be that villagers felt they had limited realistic options to uptake alternative measures without external interventions and support. Alternatively, perhaps villagers envision the future differently and place emphasis on more immediate needs. Indeed, villagers indicated that they typically only took action if returns on investments could be reaped in the short term. For instance, some farm diversification strategies (organic farming, dryland horticulture, agroforestry) were considered unfeasible by farmers due to the length of time it would take before these activities produced income. Horticulture and agroforestry, although profitable, were unappealing because farmers would have to wait several years before crops reached maturity; and the amount of time needed to prepare fields for organic production, together with the lack of market incentives, made this option undesirable. Apiculture activity was unappealing among villagers because profits would be received only once per month whereas activities such as dairy production, although less profitable, provided daily income. As a second example, most villagers did not perceive ecological degradation from human activity as an immediate threat; consequently, they did not show particular interest in adopting sustainable technologies. Perhaps villagers may not imagine future environmental implications from present activity because they have to meet immediate livelihood challenges on a near-daily basis and are thus mainly focused on the present. Although researchers often perceive or foresee ecological degradation to be a problem, farmers may not mention such concerns if their immediate survival is threatened (Fujiska 1989). Initiatives should promote resource conservation practices that are likely to benefit the farmer in the same year, thus achieving short-term welfare as well as long-term ecological benefits.

The role of risk perception also influenced decisions regarding the adoption of diversification strategies. For example, villagers perceived some farm activities (agroforestry, apiculture) and nonfarm activities (agarbatti-making, chili-grinding, tailoring/embroidery, roti-making) as too risky an investment. Indeed, there is a lack of margin in Byalal livelihoods for taking risks to introduce innovative practices or to endure crop failure. Poor villagers are vulnerable and understandably risk averse, and use migration as both a standard diversification strategy as well as a coping mechanism during crises. Even though villagers perceived migration as undesirable, risk and fear were relatively low compared to engaging in diversification activities they were unfamiliar with. As such, new diversification opportunities are likely to be attractive only if activities improve short-term welfare and offer relatively equal or even higher returns than those offered by migration. Initiatives may encourage participation by reducing risk perceptions of the poor through in-depth risk assessments of each prospective diversification activity, instituting strong financial safety nets and incentives to lower risk and mitigate potential short-term negative effects, and providing ongoing support for households and groups in their diversification endeavors.

7.4. Social relations and inequality: gender and caste

Like many parts of India, the ancient caste system in Byalal was found to play a significant role in perpetuating
discrimination and gender inequality, and women (especially of lower castes) were particularly disadvantaged. Most female participants over the age of 40 were married before age 11, and female participants aged 40 and below were married between the ages of 15 and 21. Upon marriage, we found that females assumed responsibility of household work in addition to working in an income-earning job and were denied the opportunity to complete their education. All female participants had less than a ninth-grade education. One-third of the women interviewed were the primary income earners of their household. In this group, either the husbands were no longer able to work because of disability, old age, or alcoholism, or the husbands had left. These women were particularly burdened by their workload. Perhaps the most outcast and marginalized villagers were the widows. Both male and female villagers frequently subjected widows to discrimination and stigmatization, rendering it nearly impossible to remarry. One young landless widow shared the following:

They [nonspecific] will talk bad about me and other widows. At others’ marriages, people will not allow me to worship. They think it is bad luck if I do this. For these reasons, I feel very bad. I have been trying to remarry for two years, but no one has come forward.

Our data also revealed that women did not have equal legal ownership/entitlement rights and could not own property. They worked in the fields or businesses owned by their husbands or fathers. Agriculture labor wages were unequal: men received Rs 70 per day while women received Rs 30 per day. The extent of a woman’s role in economic decision-making varied among households, although most reported that their husbands included them in decision-making processes. Although a major rationale for self-help groups for rural Indian women was to curtail this phenomenon through group decision-making, the study identified some weaknesses within the groups. For instance, the self-help groups themselves were a barrier to adoption of diversification activities because of a lack of consensus among members. Some members were more risk averse than others; but, without a unanimous vote, new activities were not adopted.

It was not possible to determine the impacts of caste as a constraining factor during the field season; however, there were several signs in the village that caste relations had progressed beyond the formerly strict division traditional in Hindu society. Although the layout of the village remains segregated along caste lines, gatherings composed of mixed castes occurred regularly throughout the fieldwork, and village leaders referred the research team to villagers of mixed castes. One key informant belonged to a Scheduled Caste while the other key informant was a Brahmin. Nearly all respondents reported that cooperation among castes has improved over the last three decades. The following quote from a middle-aged male landowner belonging to a lower caste described this phenomenon:

Fifteen to 20 years ago, there were untouchables. But now we do not have this problem. I am from a backward caste, all of my friends are from upper castes, and I spend most of my time with them. These friends will even come to my home and eat food. When lower castes apply for a job or college, castism [a reservation] is there for them. If a backward caste woman would open a tea cafe here, then upper caste people would also come to her tea shop.

Perhaps in a less optimistic vein, a village Brahmin described the increased cooperation among castes as the result of a necessity for economic survival and political compliance rather than an egalitarian societal trend.

Many respondents considered that differences of opinion were more a result of age than of caste divisions. In particular, elders complained that young farmers did not heed their advice regarding farm practices. They considered that young men should follow in their father’s footsteps; that is, pursuing an agrarian livelihood as their ancestors had done. On the contrary, younger individuals appeared more likely to embrace the opportunity of transforming the village by boosting the nonfarm economy.

On reflection, caste divisions and gender inequality may undermine diversification initiatives among stigmatized and marginalized individuals (including lower castes and widows). If entry barriers to diversification for women are not mitigated in initiatives, then the extent to which village economic stability can take place will be limited, particularly given that women (if they had the option) were reportedly more likely to uptake diversification activities than men. Also, initiatives should explore how various age groups envision the future direction of the village.

7.5. Social relations: the role of fate in Hinduism

One common observation during fieldwork was that villagers made frequent references to and seemed to be strong believers in fatalism, the doctrine that fate predetermines all events which are therefore unalterable. Villagers often attributed ecological and social change as being caused by Devaru (God). For instance, most respondents explained erratic rainfall, increased pest infestations, decline in soil fertility, or reduced forest cover as caused by Devaru rather than by human activity. When asked why Devaru made such undesirable changes, one elder landowning male farmer simply said, ‘It is our fate.’ Fatalism is also conceived as playing a role in social changes including health, and financial and political events. Likewise, auspiciousness – the degree to which events, times, and relationships are conducive to the well-being of an individual or of the society (Flood 1996) – was another tradition observed by village Hindus.
Social traditions and norms with religious connotations were observed to be an essential component in the daily lives of Byalal villagers and in the broader context of Karnataka. Therefore, interventions must recognize that Hinduism (which the caste system is strongly identified with) is more than a religion—it is a way of life. It is the cultural lens through which local realities are constructed and therefore a prominent influence on how villagers interact with processes that affect their livelihoods. With this realization, two key findings emerged. First, it became obvious that the ‘social’ aspects of cultural and religious norms and traditions are inseparable from the ‘economic’ and the ‘environmental’ aspects, particularly in this rural part of India. Second, because Hinduism plays a central role in decision-making, it will likely influence future decisions and interactions with institutions regarding diversification strategies and livelihood outcomes. Accordingly, the sustainability of livelihood outcomes from an economic-driven initiative for diversification may be uncertain if social factors and dynamics are not given equal attention.

7.6. Alcoholism

Our data show that alcoholism in Byalal is primarily a male phenomenon and was found to have high social and economic costs within households. Alcoholism resulted in a reduced quantity of labor and increased hardships within households. Women and children bore the indirect costs of male alcohol abuse. In 2000, the prevalence of alcohol dependence in Karnataka was an estimated 3.79% (Benegal, Velayudhan, and Jain 2000). Of particular concern is the amount of alcohol consumption in India that is unrecorded because of illicit home brewing. A study conducted in Karnataka suggested that India’s poor are drinking more than they earn, resulting in a deadly spiral of alcohol and debt (Prasad 2009). The sustainability of diversification initiatives will likely be constrained by continued alcohol abuse in Byalal, which further perpetuates the labor imbalance and leaves already burdened women to bear the brunt of the work and keeps children out of school. However, initiatives must resist a tendency toward paternalistic and individualistic (‘blame the victim’) approaches toward alcoholism and instead tackle the underlying drivers of alcoholism in this rural area, particularly the physical and psychosocial impacts related to the living conditions characterized by poverty, post-colonialism, socioeconomic distress, migration, long-term negligence of resource-poor areas by national and international communities, and perceived transitioning of traditional values and systems.

7.7. Government agencies: infrastructure investment

The lack of new infrastructure investments in Byalal, not to mention the state of disrepair of existing infrastructure, by local and state governments was clearly observable. In addition to villagers’ complaints about the government not expanding irrigation to the region and thus limiting their livelihood options, villagers indicated they would be less inclined to adopt diversification activities that required frequent travel to distant markets unless the government repaired the roads. Villagers emphasized the importance of diversification activities that resulted in products that could be sold in Byalal or neighboring villages without requiring long-distance travel to markets due to poor road conditions.

Also, villagers experienced hardships caused by frequent, unpredictable, and long-lasting power outages. The government of Karnataka provided subsidized electricity to villagers, but the poor quality of service from the regional hydropower plant resulted in reduced productivity and loss of income. Farmers with irrigation facilities suffered losses in water-intensive crops from forgone irrigation. The intermittency of power availability also led to losses in labor wages. To illustrate, one male farm elder said:

"Earlier, we used to get [predictable] power supply in the mornings from 6am to noon or from noon to 6pm continuously for 6 hours...the main problem now is that the power is not continuous; therefore, I do not know when to tell the labourers to come for work. If the power supply goes off during farm work, the hired labour sits without doing any work, and we farmers still have to pay them."

Villagers in the nonfarm sector relying on power for the operation of equipment, such as a chili grinder, were also inconvenienced by power outages. However, they were less vulnerable than farmers, given that nonfarm operations could resume after sundown with power. Exacerbating the power shortage problem, the electricity department was slow in repairing infrastructure in the village. A transformer had been broken for five months and no one had come to fix it.

Although the shortcomings of government agencies imposed limits to villagers’ diversification options, they can also be seen as potential instruments in the facilitation of diversification initiatives. The poor infrastructure and village remoteness will likely limit the market efficiency of prospective diversification activities; therefore, government investments in infrastructure (especially transportation and power generation and distribution) and sustainable agriculture and regenerative technologies should be a top priority. Such investments for the rural poor in marginal production areas can make significant cuts in poverty, contribute to resolving environmental problems, and improve livelihoods (Fan, Hazell, and Haque 2000; Ruben, Kuyvenhove, and Hazell 2003). Initiatives should work with local policy-makers for long-term development to ensure that equitable resources are allocated to rural areas for infrastructure improvement but should also
seek short-term solutions/alternatives to increase market efficiency.

7.8. Rural microfinance institutions

In addition to water deprivation, the lack of access to credit was the most frequently cited reason among villagers for livelihood insecurity and a major barrier to the adoption of diversification activities among poor households. Some households had utilized credit and savings systems created by microfinance institutions such as the local Grameen Bank and the Agricultural Cooperative Society, while households that were unable to access credit from these institutions borrowed money from neighbors. Barriers to borrowing from financial institutions included the inability of the borrower to provide the required official documentation (such as proof of completion of 10th grade, legal papers of land ownership, and updated land entitlements), and the inability of the borrower to convince the lender of their ability to repay loans. According to study participants who had previously applied for loans, convincing criteria included landholding size, irrigation facilities, and production of higher-valued crops. Respondents mainly linked access to irrigation to loan eligibility: rain-dependent farmers were less likely to qualify for credit as compared to farmers with irrigation.

In addition to these barriers to credit, villagers who had participated in local training programs for new income-earning activities challenged their effectiveness, since many trainees were unable to adopt activities due to their inability to secure a loan to cover initial capital costs. Participants were given a certificate of completion at the end of training and were advised to take the certificate to financial institutions for loan qualification. Even after providing the certificate, most trainees were rejected by the financial institutions for credit. The villagers expressed frustration and were confused by the rejection. According to Rudset (a local NGO), the two most common reasons for loan rejection were the inability to provide proof of education and excessive money requests.

Although there has been an increase in the number of rural microfinance institutions and cooperatives as a means to extend credit services to underserved areas for investments in productive activities, the study indicates that poor Byalal households are still excluded. Most farm households were smallholders or landless, lacked irrigation, and produced low-profit crops, making them ineligible for credit. The poorest villagers were thus limited to low-return livelihood strategies. To expand diversification options for poor households, initiatives should close the gap in communication between training programs and financial institutions, establish and/or strengthen institutional partnerships and schemes for poor households, and assist villagers in obtaining the necessary documents required by loan officers.

7.9. Local farm and nonfarm extension and training programs

Limited access to reliable farm information and technologies from local external support networks was another prominent barrier to farm diversification. Farmers widely voiced their dismay that no farm extension workers had come to Byalal in recent memory. One middle-aged female landholding farmer described this in a seemingly acquiescent way:

If crops fail, we are not upset because agriculture is the only thing we know how to do! Why be upset, when this is all we could do? I am not expecting to ever get help because we have never been given help by the college or any other organization. At this point, I would take the advice of anyone who would give it.

Local farm extension programs were limited in their networking ability to disseminate information, particularly to marginalized villages. According to UASD-Bijapur campus academics, local organizations such as the university research and extension programs, WMPs, and NGOs have proven technologies for improving productivity and sustainability in dryland farming with competent individuals overseeing these programs. However, efforts to bring such technologies to villagers were undermined by a shortage in funding and the number of dedicated extension workers. For the adoption of new diversification activities, the extension/training department at the UASD-Bijapur campus offered an extensive number of training programs to villagers free of charge including room and board; however, very few villagers were aware of these opportunities or were unable to attend due to transportation issues.

Our findings strongly suggested that future diversification initiatives should work closely with university campus extension and training departments in order to strengthen its networking capacity to disseminate information to remote and marginalized villages such as Byalal. UASD academics have found that farmers often adopt measures taught by extension workers but implement such measures incorrectly or modify them in ways they see fit. Without a feedback mechanism, the transfer of technology takes a top-down and short-term approach that is less effective. However, it is well established that when the knowledge and engagement of local people is sought and given value during planning and implementation, then they are more likely to continue activities after project completion (Pretty 1995).

7.10. Watershed management programs

Although Byalal falls under the domain of a government regional WMP, no one was aware of any recent WMP activity in the village. Only a few respondents were vaguely familiar with a structure that had been built several years ago through WMP efforts. The only other WMP activity mentioned by villagers was a rainwater
harvesting demonstration held in Maharashtra. Sixty Byalal villagers attended, but no one adopted the advice. Respondents explained that agroecological conditions in Maharashtra were not the same as in Byalal, thus the advice was not applicable.

There is a need to strengthen the WMPs in Karnataka’s dryland region to increase the productivity of the land in a sustainable way and encourage villagers to protect and revive their watersheds. Impact assessments of India’s watershed development have suggested several positive trends: increased productivity, reduced vulnerability during droughts, recharged water table, improved fodder production, improved access to drinking water, increased local job opportunities, and diversification of the village economy (Turton 2000). Since the 1990s, however, the Indian government and NGOs have spent $500 million annually on the redeveloped of watersheds with efforts that fell short of their goals due to an overemphasis on technical aspects while failing to understand the complex social dynamics of agrarian villages (Corbett 2009). The presence of stronger and more effective grassroots watershed development programs would likely have far-reaching benefits in the region. Our findings suggest that initiatives should work with local WMPs.

8. Concluding remarks

The scholarly significance of this village case study stems from its attempt to explore the complexities of rural livelihoods (micro-level experiences) and to contextualize diversification initiatives for sustainable livelihood outcomes in the larger macro-level context of resource-poor dryland villages in India. The insights of the study suggest that future diversification initiatives will be confronted with many significant challenges. However, community-based participatory diversification initiatives that take seriously the macro structures that condition the local micro capacities of villagers while incorporating long-term goals may offer one means toward the reduction of vulnerability and poverty in Byalal. Further research must be done to understand what kinds of interventions are appropriate for resource-poor and remotely located villages such as Byalal. The study also provides the groundwork for future diversification initiatives in the area.

An important finding of the study was that long-distance seasonal migration, while undesirable, is an important and prevalent coping strategy, as approximately 60% of the village working-age population annually migrates to urban centers. Furthermore, the study found that households that were dependent on migrant remittances expressed a strong desire to increase local income generation through diversification initiatives so that they would no longer need to migrate, similarly to what was found by previous research (Shehrawat Singh and Singh 2003). This confirms the importance of seeking ways to reduce barriers and increase opportunities for livelihood diversification initiatives of smallholder farmers (Barrett et al. 2001a). However, a number of constraints identified by previous studies were also apparent. This includes the ecological constraints and issues of seasonality as highlighted by other authors (Shehrawat Singh and Singh 2003), skill development and education (Kumar 2009), social relations and gender inequality (Deininger, Galah, and Olsen 2005), and markets and marketability (Mittal 2009; Rada 2013). Central among the findings was the issue of risk and risk perception. Similarly to what was found by Kisaka-Lwayo and Obi (2012) in relation to smallholder farmers in South Africa, ‘farmers’ perceptions of and responses to risk are … important in understanding their risk behavior’. Smallhold farmers are vulnerable and risk-averse, and they have good reasons to be so. It is indeed the role of institutions and government to provide them with some level of safety nets to allow them to undertake the diversification initiatives they are interested in but are wary of, given their lack of room for error.

Mahatma Gandhi once famously said, ‘India is not Calcutta and Bombay. India lives in her seven hundred thousand villages.’ Certainly then, India stands to benefit from poverty reduction in its villages, where the majority of its people reside. The study concludes that diversification is feasible. If sustainable strategies are developed from the beginning, diversification may indeed be the main pathway out of poverty for Byalal and similar villages in the region. Decision-makers in diversification initiatives must gain an understanding of such complexities, influences, and capacities at local and broader levels to promote sustainable interventions.

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