RESOURCE ECONOMICS AND ENVIRONMENTAL SOCIOLOGY

Alleviating Poverty and Malnutrition in Agro-biodiversity Hotspots: Baseline Report

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Alleviating Poverty and Malnutrition in Agrobiodiversity Hotspots
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Chapter 1: Introduction to the APM Project

The Alleviating Poverty and Malnutrition in Agrobiodiversity Hotspots (APM) project, jointly designed and implemented by the M.S. Swaminathan Research Foundation (MSSRF) and the Faculty of Agriculture, Life, and Environmental Sciences at the University of Alberta (U of A), aims to address the disparity between richness in biodiversity and severe poverty in three selected agro-biodiversity hotspots in rural India. The interdisciplinary team of natural and social scientists is implementing innovative and interactive strategies to enhance agricultural production and improve nutritional standards. The project aims to empower local residents by providing them opportunities to conserve and utilize local genetic resources. The project also aims to build technical skills and community organizations, develop novel on-farm and off-farm enterprises, build connections with outside markets, and take better advantage of available government services/schemes. Novel aspects of the APM project are the focus on preserving under-utilized traditional varieties and knowledge, empowering women and local organizations, providing each household with information about their rights to public services, and improving access to information through novel information and communication technologies. Research in the three project locations is based on a randomly selected sample of 3845 rural households and uses participatory research methodology. Rigorous methods for monitoring, evaluation and impact assessment are used to assess the ways that different combinations and intensities of interventions are adopted and utilized by households, and the ways that the interventions affect behavior, nutrition and income within the contexts of various government policies and programs. Lessons learned from the three APM locations will be relevant to key policy questions, and also to help address the challenges of alleviating poverty elsewhere in India, South Asia and other developing regions of the world.

The three locations chosen for inclusion in this study are in Kundura block of Koraput District, Odisha, Kolli Hills Block of Namakkal District, Tamil Nadu, and Perumkadavila Block of Wayanad District, Kerala. These locations have been selected because they all feature rich genetic diversity in one or more crop species and are largely inhabited by tribal communities who strive to conserve the rich biodiversity in their areas despite high rates of illiteracy, low human development indicators, and lack of economic prosperity. Despite the biodiversity riches in these areas, productivity is low as a majority of the farm-holdings practice rain-fed agricultural strategies on marginal lands in semi-arid or hilly regions. These

areas and their inhabitants, with rich biodiversity under threat and 60- 85 % of people living in poverty are representative of the paradoxes of agro-biodiversity hotspots in India and other developing countries.

In India, rural poverty as found in the three locations is very common, with 75% of the nation's poor living in rural areas. Poverty in areas like the APM project locations affects women and landless agricultural laborers the hardest. While many government policies and programs have been put in place to help alleviate poverty in these populations, including measures such as the public distribution system (PDS) and the Integrated Child Development Scheme (ICDS), these often do not align with the needs of the rural poor. For example, the PDS promotes only the two major cereals (wheat and rice) in distribution thus indirectly reducing incentive for farmers to grow traditional crops and conserve local genetic diversity. Such policies tend to be implemented in a piecemeal fashion, with the alleviation of poverty and development of the agriculture sector being treated separately. The premise of the APM project is that integrated approaches to agriculture will be more effective in improving income levels than piecemeal interventions. The results from the APM interventions in Jeypore, Kolli Hills and Wayanad will give insight into future policy strategies at the regional and global levels.

The main goal of the APM is to overcome the challenges facing the rural poor in Indian agro-biodiversity hotspots by achieving the following objectives:

1) Increased farm productivity by promoting integrated and sustainable use of local crop and livestock diversity with special attention to under-utilized crops and breeds, vegetables and fruit trees.
2) Enhancing food and nutrition security at individual, household and community levels,
3) Enhancing on- and off-farm livelihood diversification options.
4) Needs-based capacity building of focal farm families involving panchayats, governmental, non-governmental and service providing institutions and policy makers.
5) Developing tools and processes including Information and Communication Technology (ICT) for information/knowledge management and policy advocacy.

This report presents baseline conditions in the three APM study locations. The remainder of the report is organized into 4 sections and draws upon both primary data and secondary information sources. In section 2, secondary data and information are presented to set the context of the study sites within their state and national level situations. In section 3, results

from the first ‘baseline’ survey of households in the three study sites, conducted between November 2011 and February 2012, are presented to provide an overview of the resources and activities of study participants. In section 4, results from the baseline survey and other secondary sources are used to provide an overview of the agro-ecological conditions in the three project locations. In section 5, key informant and direct observation is used to compile a list of government programs and services that are potentially available to households in the three study sites.

Chapter 2: Overview of APM Project Locations

Introduction

As mentioned in the introduction, the project sites are in three states of India, namely Odisha, Tamil Nadu, and Kerala. Figure 2-1 is a map showing all the states of India. In Odisha, the project is located in three Gram Panchayats of Kundura block (Dangarpaunsi, Banuaguda and Mosigam) in Koraput District. The site in Tamil Nadu State is located in Valappur Nadu Gram Panchayat, Kolli Hills Block in Namakkal District, while the site in Kerala State is in Meenangadi Gram Panchayat, Perumkadavila Block of Wayanad District. In Figure 2-1, the project sites are indicated by yellow dots. This section presents baseline information about the study locations in the broader state and national context. All of the information is drawn from secondary sources, including the 2011 Census of India.

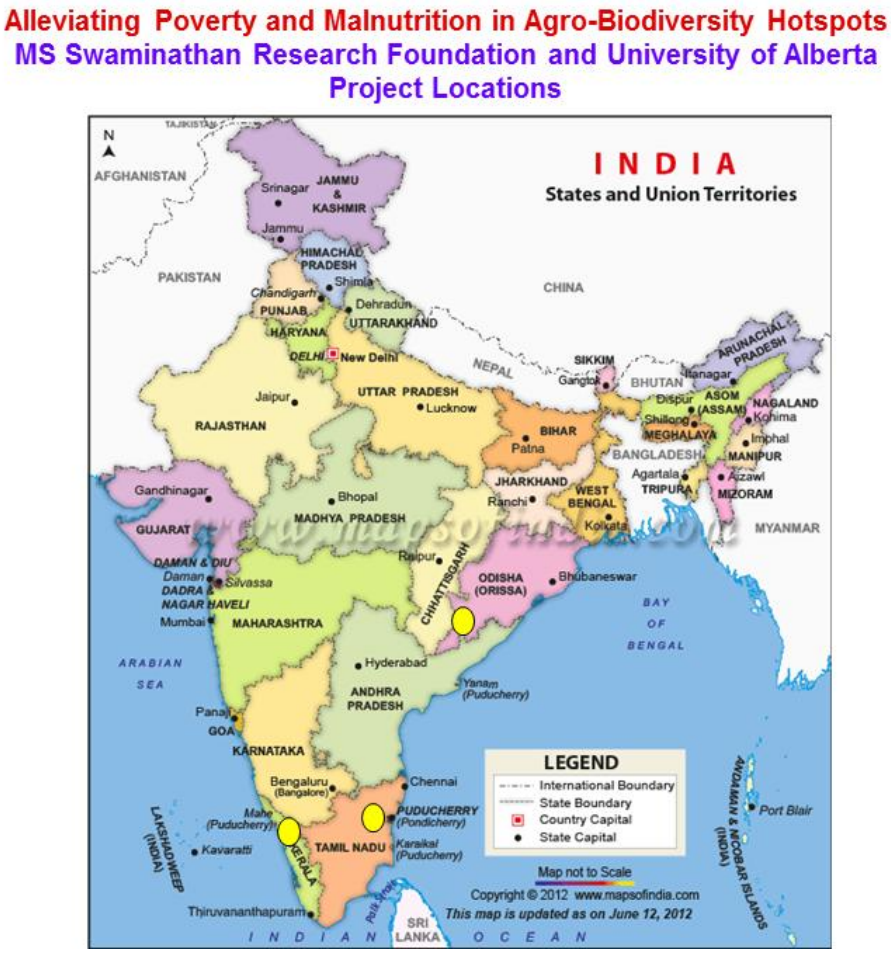


Figure 2-1: Map showing the APM project locations

2.1. Koraput District

Koraput district is a hilly region of 8807 square kilometres located in the southwest part of Odisha State (Figure 2-2) at the northern end of the Eastern Ghats range between 18° - 19° north latitude and 82° - 83°E 24′ east longitude. The average annual rainfall is 1540 mm per annum and soils are deep, loamy red and lateritic (Foundation for Ecological Security, 2013). At the time of the 2011 census, Jeypore had a population of 1.38 million people, and a population density of 156 persons per square kilometre. The literacy rate in 2011 was 49.9% on average, 61.3% for males and 38.9% for females. These percentages are much lower than the Odisha state averages of 82.4% for males and 64.4% for females, but higher than the comparable 2001 numbers of 47.2% for males and 24.3% for females. The nearest significant town is Jeypore, with a population of approximately 76,560 in 2011 (Census of India, 2011). As of 2001, 94.8% of the district population were of the Hindu religion, 13.0% were members of scheduled caste groups, 49.6% were members of scheduled tribes, and 83.8% of people had income below the poverty line. The main tribal groups are Paroja, Khond and Bhottada and the primary source of income and employment is agriculture.

The district of Koraput is part of the Jeypore Agro-biodiversity hotspot, as classified by the Government of India Plant Authority (http://www.plantauthority.gov.in/hotspots.htm), in large part due to its wealth of rice diversity. Rice has been the principal food crop of Odisha for at least 600 years, and hundreds of cultivated and wild varieties of rice have been found in the area. A collection undertaken in 1951-55 in Jeypore found 1745 types of rice, which earned the area the designation of "Secondary Centre of Origin of Cultivated Rice" (Govindswamy and Krishnamurty, 1959 as cited in Khatana et al, 2004). A collection undertaken in 1995-98 collected 2000 rice varieties from Jeypore, Kalahandi and Mayurbhani districts, and the MSSRF has a collection of over 325 varieties at its facilties in Jeypore and Chennai (Khatana et al, 2004). Rice varieties are selected and cultivated for a variety of reasons, including nutrition, medicinal value, scent, taste, resistance to pests and disease, resistance to salinity, size of panicles, maturity period, and size of grains (Living Farms, http://www.living-farms.org/site/articles/rice-in-orissa/119-rice-in-orissa). Traditional rice varieties have different growing durations, varying from 70 to 180 days. Short duration varieties are highly tolerant to drought, pests and diseases, while longer-duration varieties have poor drought tolerance, but higher tolerance to water logging. Over time, farmers have tended to shift toward medium-duration varieties, including introduced varieties (Khatana et al, 2004).

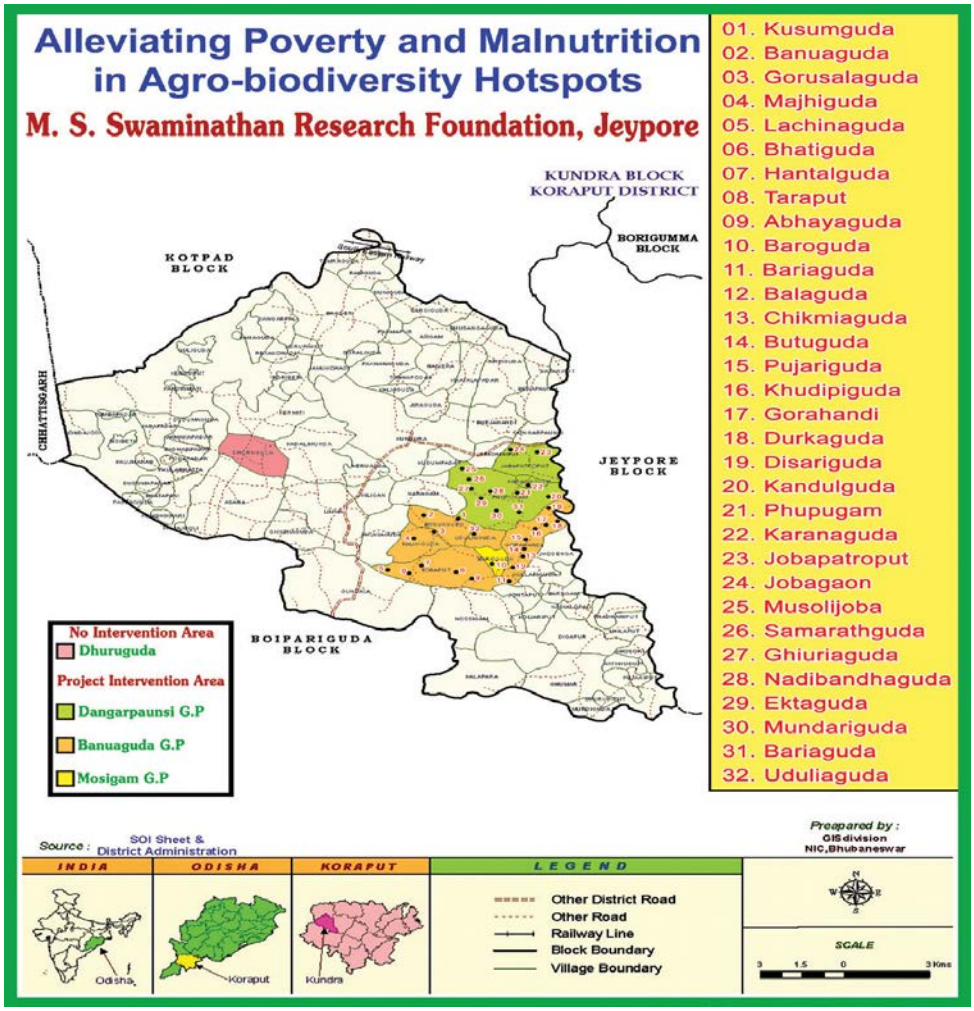


Figure 2-2: Map showing the project locations in Koraput district of Odisha

2.2. Kolli Hills Block

Kolli Hills Block in Namakkal District, Tamil Nadu State, is located at the southern end of the Eastern Ghats range in South India (Figure 2-3). Kolli Hills covers about 283 km² and is located between 10°- 11° north latitude and between 76° - 77° east longitude. The Kolli Hills plateau stretches 29 kilometres from north to south and 10 kilometres from east to west. Altitude varies between 1000 to 1350 meters above mean sea level. Approximately 51% of the area is cultivated agricultural land and 44% is forest. Soils are red loamy and black. Average annual rainfall is 1324 millimetres, which is mostly received between May and December (Natarajan and Udhayakumar, 2013). At the time of the 2011 census, there were 42,200 people living in the Kolli Hills, at a density of 150 persons per square kilometre (Census of India, 2011). The main inhabitants in the area are Malayalis, one of the Scheduled Tribes of India. The majority of households are poor, owning small or marginal farm holdings, with rice and minor millets as the locally-produced staple foods. Important

fruit crops are jackfruit and hill banana, well known for its flavour and heady scent. Other crops are coffee, pineapple, and spices such as black pepper. More recently, tapioca (cassava) has become common, often replacing small millets in upland farming areas. This increase of tapioca production, particularly as an industrial crop, is posing a threat to the genetic diversity of traditional crops such as small millets (FAO and MSSRF, 2002). The Kolli Hills are also well-known for the rich diversity of medicinal and aromatic plants. Natarajan and Udayakumar (2013) recently documented 83 species of medicinal plants in the area, which are used to treat a wide variety of ailments.

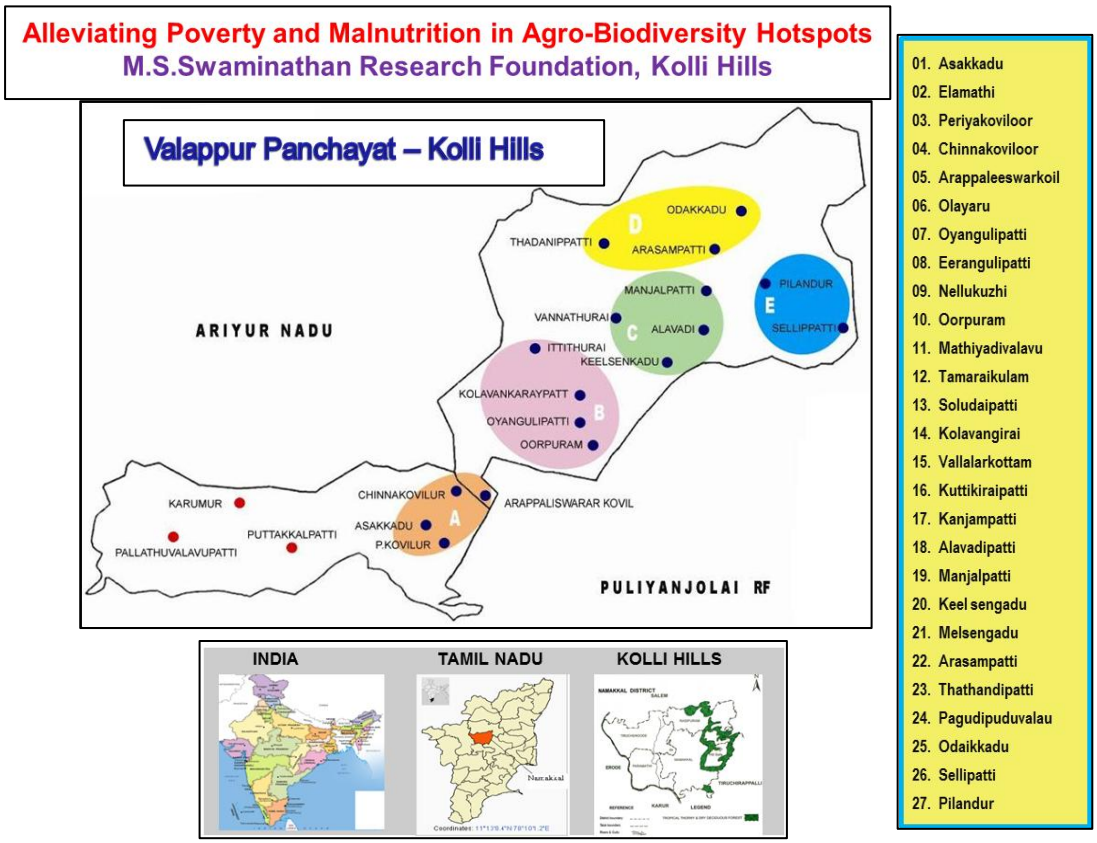


Figure 2-3: Map showing the project locations in Kolli Hills of Namakkal District

2.3. Wayanad District

Meenangadi, in Wayanad district, is in the north-east part of Kerala (Figure 2-4). This area is part of the Western Ghats region, which is recognized as one of the world's 35 biodiversity hotspots due to the many endemic floral and faunal species, as well as the threats to those species. The region is replete with mountainous ridges interspersed with tropical forest fragments, with altitudes ranging from 700 to 2100 m above mean sea level. In Wayanad District, average annual rainfall is 2322 mm

(www.NammudeWayanad.blogspot.com) and average population density is about 380 persons per square kilometre. The region is located between 11° - 15° north latitude and 70° - 75° east longitude, and has large populations of minority tribal groups, with the most numerous groups being the Paniyas, Kattunaikkans, Kurumas and Kurichiyas. All except the Kurichiyas are known to be very poor and to hold very small (on average 0.4 ha) plots of land. Agriculture is the main source of livelihood, with the principal agricultural economy coming from plantation crops such as coffee, tea, cocoa, pepper and rubber, while seasonal crops such as rice, banana, tubers and fruits serve as the local food sources. The region has huge disparity in land ownership and associated economic status.

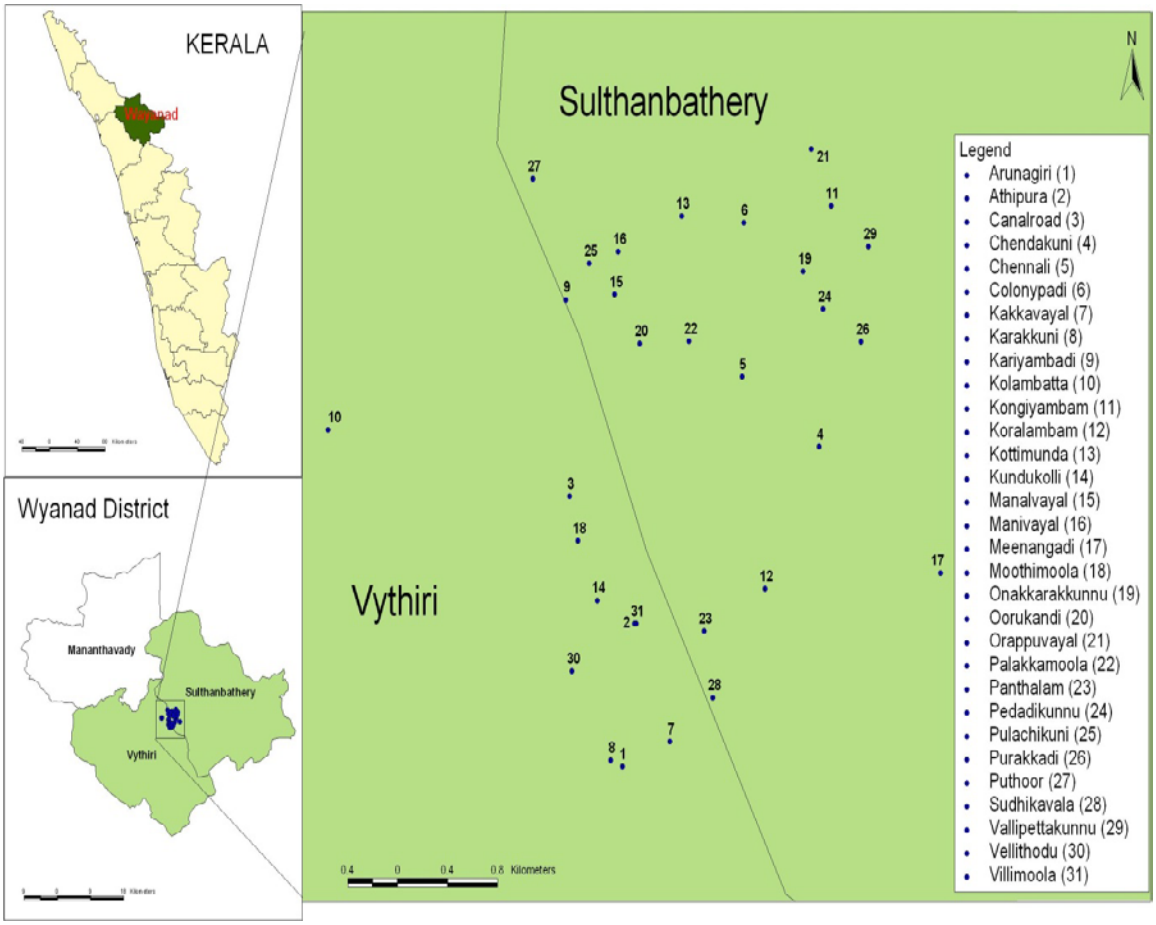


Figure 2-4: Map showing the project locations in Meenagadi panchayat of Wayanad District

2.4. Socio-Economic Indicators

In 2011, India's Human Development Index (HDI) was 0.547, which placed the country 134th in the world (the world average was 0.682) (UNDP, 2012). Of the three APM

states, Kerala did the best with an HDI of 0.764, followed by Tamil Nadu with 0.666 and Odisha with 0.537 (UNDP, 2006). Among other factors, India's low HDI rank is due to wide-spread poverty, low educational attainment, high infant and maternal mortality rates, and lack of access to clean drinking water and sanitation facilities which have adverse impacts on health.

(i) Poverty and Malnutrition

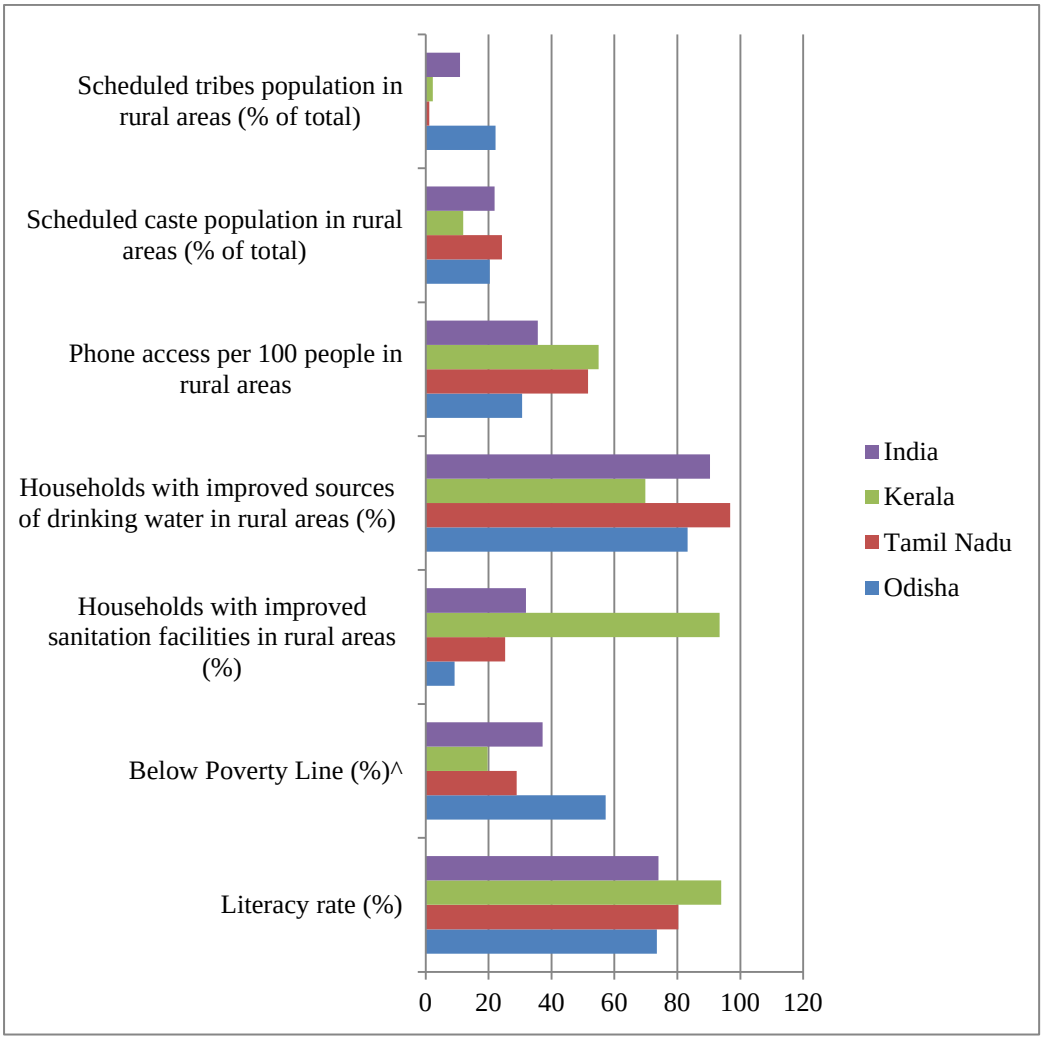
Recent reports show that India faces an uphill challenge in achieving the Millennium Development Goal (MDG) of eradicating extreme poverty and hunger by 2015 (see for example UNDP, 2012; FAO, 2012). India is second largest country in the world in terms of population, and is also home to the largest number of poor and the malnourished people. Even though the country has made significant progress in the last 10 years, about 37% of its population still lives below the international poverty line of US$1.25 per day, while 68% of the population live on less than US$2 per day (World Bank). There is a high prevalence of poverty in all three APM states, though it is worst in Odisha with 57.2% of the population being poor, followed by Tamil Nadu with 28.9% and Kerala with 19.7% (Figure 2-5).

India's poverty is found mainly in rural areas; 69% of Indians and 75% of the poor live rurally, depending largely on agriculture for their livelihood. The extent of poverty is most severe among women, landless agricultural workers, and small-land owners. Out of the 120 million farming households in the country, 90% have less that 2 ha of land and 80% have less than 1ha, and 10% are landless as of 2003 (NSSO, 2006) Most of these farming households rely on rain-fed agriculture, which is not reliable, particularly in fragile arid, semi-arid and hilly regions. As a result, agricultural productivity is low, seriously impacting the household income as well as the nutritional uptake.

Table 2-1: India: Selected socio-economic indicators

Indicator	Odisha	Tamil Nadu	Kerala	India
Population (in millions)	41.9	72.1	33.4	1210.2
Per Capita Gross GDP (in Rupees)	46150	94796	83725	60603
HDI	0.537	0.666	0.764	0.547

Figure 2-5: Selected socio economic indicators in the study area

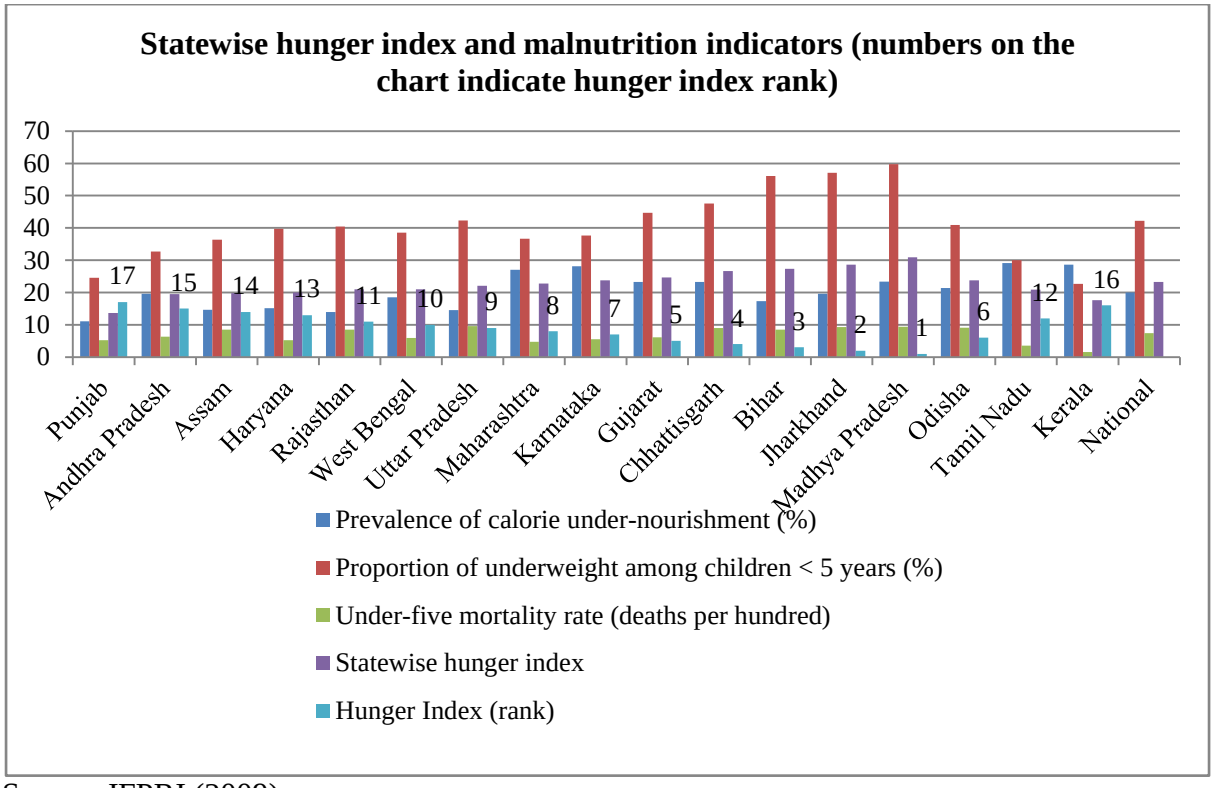


Source: Census (2011); World Bank (2010), Government of India MDG (2011), NCAP (2012)
* The HDI estimate for India as a whole is for 2011 (UNDP, 2012), while the state wise estimates are for 2006.
^ The overall poverty rate for India is from World Bank, 2010. The state wise rates are 2005 estimates from Government of India (2011).
^^ 2011-12 estimates. In November 2012, 1US$ = 55 Rupees.

Similarly, India has about 217 million undernourished people, which is 17.5% of the country's population (FAO, 2012). According to IFPRI (2012), although both South Asia and Sub-Saharan Africa have high Global Hunger Index (GHI) scores, India's are even higher. Against a global average of 14.7, the GHI scores for Sub-Saharan Africa, and South Asia are 20.7 and 22.5 respectively, while India's GHI score is higher at 22.9. The estimates also show that 79% of children under the age of three, 56% of women and 24% of men in India are malnourished and anaemic, and cases of stunted or underweight children are very common. About 50% of children are underweight at birth, 42% of children below five years are underweight, and 59% are stunted. India has both protein-calorie malnutrition and more

widespread micronutrient deficiency, which is especially prevalent among women and adolescents. Figure 2-6 shows the Hunger Index for India disaggregated by states (the State Hunger Index or SHI). SHI is estimated using the same method as for estimating the GHI scores of countries. Also shown in Figure 2-6 are the underlying components used to construct the SHI, with the SHI for the three project states of Odisha, Kerala, and Tamil Nadu shown separately. The higher the SHI, the higher the incidence of hunger. A SHI of less than 5.0 indicates "low" level of hunger, SHI of 5.0 - 9.9 is "moderate" hunger, 10.0-19.9 is "serious" hunger, 20.0 - 29.9 "alarming", and more than 30.0 is "extremely alarming". Overall, India is in the alarming category, with the state of Madhya Pradesh in extremely alarming hunger. Amongst the three project states, Kerala is better than the national average and falls in the serious hunger category, while both Tamil Nadu and Odisha are both in the alarming category.

Figure 2-6. India: The State Hunger Index and its underlying components (2008)



Source: IFPRI (2009)

(ii) Literacy

According to the 2011 Census of India, about 74% of the population is literate. In comparison, the average literacy rate across the world is 84%. However, literacy rates in rural areas in India are still lower at 69% indicating a wedge in educational attainment between urban and rural areas. Among the three APM states, Kerala is acknowledged as the national leader in literacy with about 94% of its population being able to read and write. However, Tamil Nadu and Odisha are well behind with literacy rates of 80 and 73.4% respectively (Figure 2-5).

(iii) Gender Inequality

Gender equality is one of the eight Millennium Development Goals and one on which India again fares quite poorly. The gender inequality is reflected in low gender ratios, wide differences between male and female literacy rates, high maternal mortality rates and low share of women among people with wage employment (Table 2-2). On average, there are 940 females per 1,000 males in the country, although the gender ratios in all the three APM states are much better than the national average. Kerala has a positive gender ratio of 1084, while Tamil Nadu and Odisha are behind with 995 and 978 respectively. Similarly, the female literacy rates are much lower than the male literacy rates, though the gap is quite low in Kerala, with the female literacy rate about 4 percent less than the male literacy rate. However, the gap is much wider in both Tamil Nadu (13%) and Odisha (18%). India also witnesses very high maternal mortality rates, and this indicates the low access of women to health services, especially in rural areas. On average, the maternal mortality rate for India as a whole is 212 per 100,000 live births. The maternal mortality rate for Odisha is at 258, while both Kerala and Tamil Nadu are much better with 81 and 97 respectively. Women also have low access to wage employment opportunities outside of the family farm. In 2009-10, only 18 percent of all women had any kind of employment outside the agriculture sector. Although Odisha had even lower proportion of the women being able to access wage employment, Tamil Nadu and Kerala showed slightly higher numbers.

Table 2-2. India: Status of Gender inequality

Indicator	Odisha	Tamil Nadu	Kerala	India
Gender Ratio (number of females per 1000 males)	978	995	1084	940
Female Literacy rate (%)	64.4	73.9	92	65.5
Maternal mortality rate (deaths per 100,000 live births)	258	97	81	212
Women's share in wage employment (% of women employed in non-agriculture sector)	17.2	24.6	29.3	18.6

Source: Census (2011); Government of India MDG (2011)

(iv) Access to improved water and sanitation

According to the MDG India Country Report (2011), access to improved drinking water and sanitation facilities remains low in India. Figure 2-5 shows that two of the three APM states have low access to sanitation facilities especially in rural areas – in Odisha only 9% of rural households have access to good sanitation facilities, while in Tamil Nadu the proportion is 25%. It is ironic that in rural India, there is better access to telephones than there is to toilets. Lack of access to good quality drinking water and sanitation facilities has negative impact on health, especially for women who often walk long distances to fetch drinking water for the family and suffer from sanitation related diseases. Preliminary findings from the Indian census of 2011 and recent UN reports also corroborate these results.

(v) Access to telephones

Phone access in India is on the rise, both in urban and rural areas. On average, there are 35.6 phones per 100 people in rural India according to the MDG India Country Report (2011) and TRAI (2011). Amongst the three APM states, teledensity (number of telephone lines and cellular subscribers per 100 people) is highest in Kerala (55.0), followed by Tamil Nadu (51.7) and Odisha (30.6). The growing use of phones in rural areas presents great opportunities for ICT-based interventions aimed at alleviating poverty.

(vi) Disadvantaged groups

The Scheduled Castes (SCs) and the Scheduled Tribes (STs) are two groupings of historically disadvantaged people. They are placed the lowest among India's strict hierarchical caste system, which implies that they are usually poor and often fare badly on

most socio-economic indices. The SCs and STs are predominantly rural based, and live in villages; about 88.4 and 94.5 percent of SCs and STs in Odisha live in rural villages respectively. Similarly, the majority of SCs and STs in Tamil Nadu and Kerala reside in rural areas. According to Census of India (2011), the SCs and STs make up about 22 and 11 percent of the rural population in India. In Odisha, the SCs and STs constitute 20.3 and 22.1 percent of the state's rural population (see Figure 2-5). The State has 11th ranking for SC population across all states. In Tamil Nadu, the SCs and STs population constitutes 24.3 and 1.2 percent of the rural population respectively. In Kerala, these figures are 12.0 and 2.2 percent.

2.5. Agro-Biodiversity

India is one of the 12 mega-diversity countries of the world and also a major centre of crop plant domestication. India has several agro-biodiversity hotspots. These hotspots represent the primary or secondary centre of diversity for about 168 crop species, 320 species of wild crop relatives, and several species of domesticated animals. There is a vast genetic diversity within species including 50,000 species of rice, 1,000 mango varieties, 5,000 sorghum varieties, 27 cattle breeds, 22 goat breeds, 40 sheep breeds, and 18 poultry breeds (National Bureau of Plant Genetic Resources, National Bureau of Animal Genetic resources, Central Rice Research Institute of India, cited by Chauduri, 2005). According to FAO (1997), India has a large diversity of cultivated plants such as wheat, maize, cotton, kodo millet, aubergine, mango, black pepper, sugarcane, brassica, groundnut, garlic, onion, cassava, cowpea, among others.

Ironically, abject poverty is endemic in many of India's agro-biodiversity hotspots. Agro-biodiversity is critically important to the farmers' present and future agriculture, and the promotion of combined production of local crops (which constitute the agro-biodiversity resource) with major cereals (e.g. wheat and rice) is important in addressing the hunger problem. The local crops also tend to have higher resilience to climate variability and drought than main cereals. The APM project sites are located in three of India's agro-biodiversity hotspots with the aim to address this paradox between rich genetic diversity on one hand and chronic poverty on the other. According to Plant Authority (2011), the Jeypore agro-biodiversity region forms part of Northern Eastern Ghats in south-western Orissa and north-eastern districts of Andhra Pradesh. Kolli Hills district is also close to another agro-biodiversity region in Tamil Nadu.

Table 2-3. Per-capita production of food grain and major non-food grain crops (Kgs) in 2012

	Odisha	Tamil Nadu	Kerala	National
Rice	158.00	110.47	17.44	101.41
Wheat	0.07	-	-	91.28
Coarse cereals	7.02	37.61	0.02	40.84
Pulses	9.71	6.40	0.11	16.73
Food grains	174.80	154.48	17.57	250.25
Oilseeds	4.33	18.26	0.07	29.17
Cotton (Lint)	8.83	7.21	-	34.22
Sugarcane	24.04	629.49	4.90	347.68
Raw Jute and Mesta	2.76	0.05	-	11.25
Net Area Swon (ha)	5 407 000	4 953 658	2 040 132	162 000 000

Source: Reserve Bank of India (2012)

Table 2-3 shows the per capita production of different crops in the project sites; of interest is the production of the main food crops (rice and wheat) and coarse cereals (which constitute most of the traditional crops). Rice production is common in all the project sites, whereas wheat is only produced in Odisha and only to a limited extent. Of the three project sites, Odisha State also has the highest net land area sown of the project sites, while Kerala has the least net area sown. Production of coarse cereals in all three states is lower than the national average. However, coarse cereal production in Tamil Nadu is much higher than in the other project locations, being very close to the national average.

2.6. Related Previous and Ongoing Research in Project Sites

The APM project team has the benefit of having done previous work in the study sites and surrounding areas. This previous work, some of which is ongoing, is complementary to the current project's initiatives.

MSSRF has implemented several projects in collaboration with local communities in Jeypore, Koraput District of Odisha since 1998. Jeypore is a secondary centre of rice diversity. MSSRF's work focused on participatory plant breeding, seed selection in local rice cultivars and value chain development. MSSRF also promoted conservation of rice diversity by advocating establishment of Village Gene Seed Grain Banks.

MSSRF has some ongoing work in the Namakkal District. For the last five years, MSSRF has carried out work on "Strengthening the identity of rural poor by enhancing

income and nutritional security" through value chain interventions in neglected and under-utilized crops. The project was implemented in five villages in Kolli Hills and supported by International Fund for Agricultural Development (IFAD) and internationally coordinated by Bioversity International. A 24-month extension of this project has been approved by the CIFSRF under title "Strengthening of rural families through empowerment by introducing food security through production, processing and value addition of regional under-utilized food grains", and is under the leadership of University of Agricultural Sciences (UAS), Dharwad with McGill University as the Canadian partner, and MSSRF as one of the collaborating partners.

In Wayanad District, MSSRF's previous work has focused primarily on facilitating and empowering local tribal and non-tribal poor farmers in enhancing their livelihood options. Strategies have focused on creating an economic stake in conservation, such as value addition and marketing of local agro-biodiversity including medicinal plants, tubers and rice. MSSRF's other research interests in this region include characterizing economic utility of several species of wild tubers, which assume importance as staple for the local poor during times of food shortages. MSSRF has also successfully launched ICT-enabled need assessment and capacity building of local communities in this region.

Chapter 3: Demographic and Economic Profile of the Study Area

Introduction

This chapter provides a demographic and economic profile of the three study locations: Kundra block in Koraput district of Odisha, Meenagadi Panchayat in Wayanad district of Kerala and Vallapur Nadu of Kolli Hills in Namakkal district of Tamil Nadu. The results provided in this chapter were analysed from the primary survey conducted during November 2011 to February 2012. This survey was designed by the MSSRF – U of A team and was administered by a group comprised of an economist (1), social scientists (3), field technicians (15) and enumerators (15) in the three project sites featured in the APM project. The sample sizes are 2004 households in Koraput district, 1000 households in Wayanad and 841 households in the Kolli Hills. The demographic and economic profiles discussed are general household characteristics, home ownership and types, household land holdings, asset ownership disaggregated by gender, sources of annual income, migration information, liabilities and savings of the households.

3.1 Household Characterisation

The household characterisations are presented in Table 3-1. In Kolli Hills, most of the families belong to Scheduled Tribes (97.4%) followed by Jeypore (40.1%) and Wayanad (20.2%). The average household size in all three locations is approximately 4.3 persons. Higher proportions of female-headed households are found in Wayanad (15.5%), than in Jeypore (11.3%) and Kolli Hills (7.8). The average age of the head of household is around 43 years in Jeypore and Kolli Hills and 50 years in Wayanad. Average number of years of education for household heads is 3.3 years higher in Wayanad than in Kolli Hills or Jeypore. The major primary occupation of household head is farming in all three project sites, with 90.6% of household heads in Kolli Hills, 60.5% in Wayanad and 56.6% in Jeypore farming, as shown in Table 3-2. The second major primary occupation of household head is informal wage earning, with 29.8% heads of household doing so in Jeypore, and migration within India and Gulf countries, with 32.3% in Wayanad.

Table 3-1. General Household and Head of Household Information

	Kundura (Jeypore)	Meenangadi (Wayanad)	Valapur (Kolli Hills)
Average household size (number)	4.3	4.3	4.4
	(2.0)	(1.5)	(1.9)

% of male headed household	88.7	84.5	92.2
Average age of household head (years)	42.5	50.3	43.4
	(13.4)	(12.4)	(12.7)
Average education household head (years)	1.7	3.3	2.4
	(1.0)	(1.6)	(1.7)
Social category of household (%)			
General/ forward caste	8.2	28.9	0.4
Backward caste	23.6	45.9	1.2
Most backward caste	0.0	0.9	1.0
Scheduled caste	28.1	3.1	0.1
Scheduled tribe	40.1	21.2	97.4
Religious category of household (%)			
Hindu	95.5	53.6	99.8
Muslim	0.3	24.4	0.0
Christian	4.1	22.0	0.1

*Note: Figure in the parenthesis is Standard Deviation

Table 3-2. Primary occupation of the household head

(% of household head)	Kundura (Jeypore)	Meenangadi (Wayanad)	Valapur (Kolli Hills)
Crop farming	56.6	60.5	90.6
Livestock & poultry	0.1	0.1	0.5
Trading in livestock and livestock product (not own)	0.0	0.0	0.1
Trading in farm (crop) product (not own)	0.4	0.4	0.0
Salaried employment	1.7	2.3	2.9
Business/ trade	2.8	1.3	3.2
Informal wage labourer	29.8	0.2	0.1
Not working/ un-employed	0.8	2.3	1.5
Old/ retired	4.7	0.0	0.0
Disabled/ sick and unfit for work	0.7	0.2	0.7
Home maker	2.2	0.4	0.2
Others	0.0	32.3	0.1
Total	100	100	100

3.2 Home Ownership and Types

The home ownership and type of homes owned by households are presented in (Table 3-3 and Figure 3-1 to 3-3). Most households own their homes, with 98.2% of households in Jeypore, 96.0% in Kolli Hills and 90.1% in Wayanad. The average number of rooms per

household is greater in Wayanad than the other two sites with 4.8 rooms, compared to 2.2 and 2.0 rooms per home in Jeypore and Kolli Hills respectively. Among 78% of households in Jeypore, the floor and walls are made of earth or mud and in 72% of households, the roof material is thatch grass/palm leaves. Most households in the Kolli Hills (78.0%) and Wayanad (68.5%) use cement for constructing floors and wall material with cement or brick being used in 75.0% and 68.4% of households in Kolli Hills and Wayanad respectively. Concrete roofs are popular in Wayanad, with 50.3% of households having them, and slightly less so in Kolli Hills, with 37.7% of households having a concrete roof. Most of these families have accessed the benefits of the centrally sponsored construction schemes such as Indra Avaz Yojana.

Table 3-3: Home Ownership and Types

	Kundura (Jeypore)	Meenangadi (Wayanad)	Valapur (Kolli Hills)
Home ownership (%)			
Own	98.2	90.1	96.0
Rented	0.1	9.1	1.7
Leased	0.1	0.0	2.0
Others	1.5	0.6	0.4
Average number of rooms	2.2	4.8	2.0
	(1.0)	(1.6)	(1.1)

*Note: figure in the parenthesis is standard deviation.

Figure 3-1: Home Ownership and Types

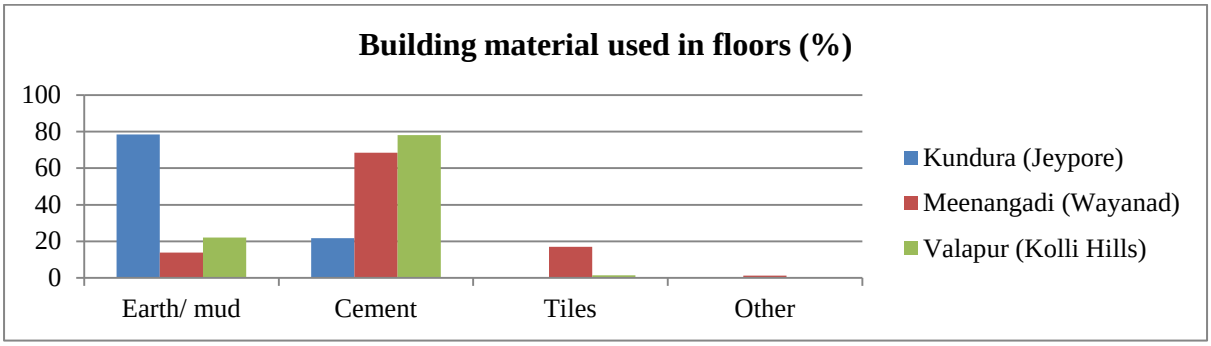


Figure 3-2: Home Ownership and Types

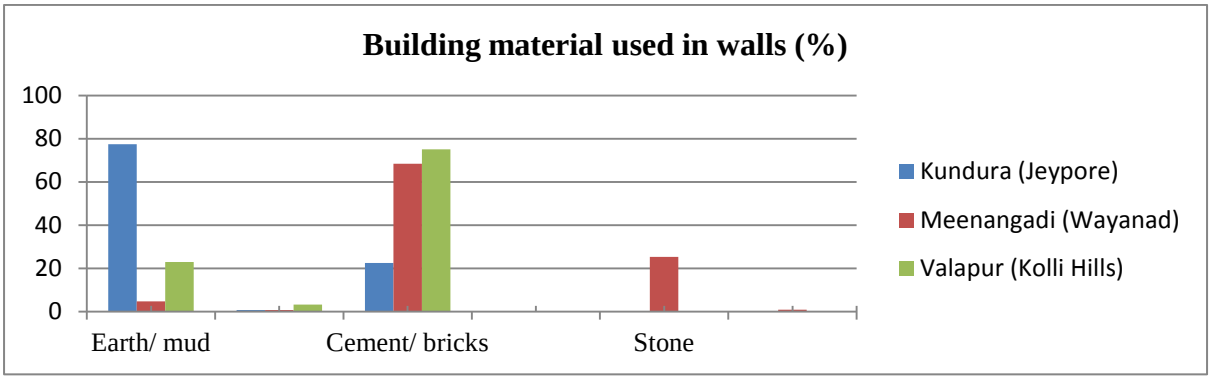
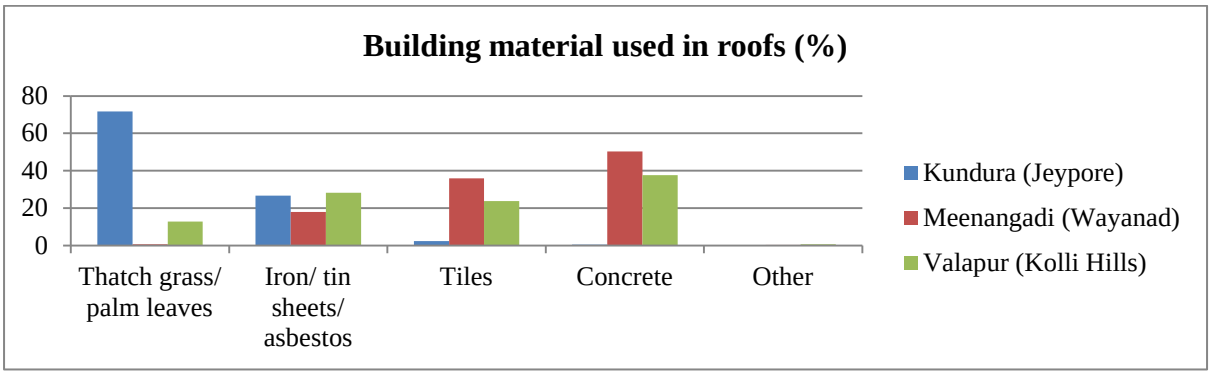


Figure 3-3: Home Ownership and Types



3.3 Household Land Holdings

The average land holdings are categorized into low wet land, up dry land, irrigated low land and irrigated upland is presented in (Table 3-4 to 3-6). The average land holding size is 1.78 acres in Jeypore, 1.05 acres in Wayanad, and 1.93 acres in Kolli Hills. Leasing-in and leasing-out activities exists in all the project locations, with the leased-in area ranging from 0.11 to 0.19 acres and leased-out area ranging from 0.03 to 0.15 acres. Kharif (July to October) is the important growing season in all three sites, with crops being cultivated in 69.7% of land holdings in Jeypore, 47.7% in Kolli Hills and 24.8% in Wayanad. During the Rabi season (November to April), approximately 3.4% of land holdings in Jeypore and 10.5% of holdings in Wayanad are cultivated. During the summer months, 6.2% and 11.4% of owned land in Jeypore and Wayanad were cultivated respectively, while no crop cultivation is seen in the Kolli Hills during the summer season. Plantation crop occupies 54.3% of owned land in Wayanad, followed by 17.4 and 11.9% in Jeypore and Kolli Hills.

Table 3-4: Average household land holding details in Kundura, Jeypore (in acres)

	Own lands	Leased-in land	Leased-out land	Cultivated land			
				Kharif	Rabi	Summer	Plantation
Low (wet) land	0.91	0.15	0.06	0.94	0.02	0.04	Nil
	(2.25)	(0.72)	(0.42)	(2.11)	(0.23)	(0.84)	
Up (dry) land	0.79	0.03	0.01	0.30	0.02	0.003	0.31
	(1.76)	(0.26)	(0.16)	(0.70)	(0.10)	(0.04)	(1.13)
Irrigated wet land	0.07	0.002	0.0005	nil	0.01	0.06	Nil
	(1.40)	(0.04)	(0.02)		(0.08)	(1.40)	
Irrigated up land	0.01	0.001	nil	0.0005	0.01	0.004	Nil
	(0.11)	(0.02)		(0.02)	(0.11)	(0.05)	
Total land	1.78	0.19	0.07	1.24	0.06	0.11	0.31
	(4.03)	(0.79)	(0.48)	(2.39)	(0.33)	(2.02)	(1.13)

Table 3-5: Average household land holding details in Meeangadi (Wayanad) (in acres)

	Own lands	Leased-in land	Leased-out land	Cultivated land			
				Kharif	Rabi	Summer	Plantation
Low (wet) land	0.44	0.08	0.03	0.25	0.11	0.11	0.03
	(3.06)	(1.28)	(0.49)	(0.59)	(0.46)	(0.37)	(0.20)
Up (dry) land	0.58	0.02	0.002	0.0003	nil	nil	0.54
	(1.29)	(0.23)	(0.04)	(0.01)			(1.78)
Irrigated wet land	0.02	0.002	nil	0.001	nil	0.004	Nil
	(0.16)	(0.06)		(0.02)		(0.05)	
Irrigated up land	0.004	nil	nil	0.003	0.003	0.003	Nil
	(0.10)			(0.09)	(0.09)	(0.09)	
Total land	1.05	0.11	0.03	0.26	0.11	0.12	0.57
	(3.48)	(1.31)	(0.49)	(0.62)	(0.48)	(0.41)	(1.80)

Table 3-6: Average household land holding details in Valapur (Kolli Hills) (in acres)

	Own lands	Leased-in land	Leased-out land	Cultivated land			
				Kharif	Rabi	Summer	Plantation
Low (wet) land	0.19	0.04	0.02	0.17	0.17	nil	Nil
	(0.35)	(0.20)	(0.13)	(0.33)	(0.33)		
Up (dry) land	1.73	0.11	0.13	0.75	0.02	nil	0.23
	(2.33)	(0.52)	(0.91)	(1.16)	(0.12)		(0.63)

Irrigated wet land	0.004	nil	nil	nil	nil	nil	Nil
	(0.04)						
Irrigated up land	0.01	nil	nil	nil	nil	nil	Nil
	(0.21)						
Total land	1.93	0.15	0.15	0.92	0.18	0.00	0.23
	(2.52)	(0.58)	(0.93)	(1.30)	(0.35)	(0.00)	(0.63)

Note: figure in the parenthesis is standard deviation.

3.4. Household Assets

Household assets are classified into domestic assets, transport assets and farm assets (Table 3-7). Domestic assets are higher in Wayanad compared to the Kolli Hills and Jeypore. More than 60% of households in Wayanad own a cooker or gas stove, television, mobile phones and mixer grinder, while ownership status in Jeypore is insignificant for these domestic assets. In the Kolli Hills, approximately 80% of farmers own mobile phones and a television, though most television sets in the Kolli Hills have been provided by the Tamil Nadu state government under a subsidy scheme. Around 8-10% of households own radios in the study locations. The ownership of other domestic assets is insignificant in Jeypore and Kolli Hills, but better in Wayanad. The list of transport assets are car/truck/tractors, motor cycles, auto rickshaws, bicycles and bullock carts. The ownership of car/truck/tractor in Wayanad is 12.1 percent and 1.7% and 0.2% in Kolli Hills and Jeypore respectively. Motor cycle ownership is higher in Kolli Hills at 25.8% compared to Wayanad (18.4%) and Jeypore (6.8%). Bicycle ownership is higher in Jeypore (45.0%) than in Kolli Hills (9.0%) and Wayanad (4.6%). Auto rickshaw and bullock cart ownership is very uncommon in all three project locations. The ownership of farm assets like hoes, spades and shovels is significant in all the locations (except spades and shovels in Wayanad). Ownership of ploughs in Jeypore, Kolli Hills and Wayanad are 23.1, 20.0, and 2.1% respectively. Approximately, 4 to 6% own sprayer pumps and 2 to 3% own irrigation pumps.

Table 3-7: Household Assets and Farming Tools

	Kundura (Jeypore)	Meenangadi (Wayanad)	Valapur (Kolli Hills)
Domestic Assets (% of household)			
Cooker/Gas stove	1.3	69.4	16.2
Refrigerator	1.4	15.8	0.7
Radio	8.7	7.6	10.3

Tape recorder	1.1	6.1	5.0
Television	7.1	76.8	85.5
DVD player	1.6	30.1	13.3
Mobile phones	20.4	88.9	78.6
Fixed phones	0.6	26.5	0.2
Computer	2 HHs	9.6	0.1
Mixer grinder	1.1	63.5	17.4
Washing machine	0.2	12.7	0.6
Sofa set	0.3	21.3	0.4
Sewing machine	1.1	20.4	1.8
Mosquito nets	22.3	17.1	Nil
Transport Assets (% of household)			
Car/ truck/ tractor	0.2	12.1	1.7
Motor cycle	6.8	18.4	25.8
Auto rickshaw	0.3	4.9	1.3
Bicycle	45.0	4.6	9.0
Bullock cart	2.2	1 HH	0.6
Farm Assets (% of household)			
Hoes	62.5	71.3	77.6
Spades/shovel	74.3	2.5	92.4
Ploughs	23.1	2.1	20.0
Sprayer pump	6.4	6.1	4.3
Irrigation pump	2.6	2.5	1.9

3.5. Asset Ownership Disaggregated by Gender

Ownership of house, land and jewellery disaggregated by gender is presented in Table 3-8. Most of the male heads have the ownership title for both the home and the land. The percentage of female ownership titles for home in Wayanad, Kolli Hills and Jeypore were 31.4%, 15.1%, and 5.1% respectively. Land ownership by female head in the same order was 36.4%, 12.0% and 1.9%. The joint (male and female head) ownership is also presented in Table 3-8. Maximum number of female head has ownership of jewellery in Wayanad (80.3%), followed by Kolli Hills (64.3%) and Jeypore (45.6%).

Table 3-8: Asset Ownership Disaggregated by Gender

	Kundura (Jeypore)	Meenangadi (Wayanad)	Valapur (Kolli Hills)
Home ownership (%)			
Male head	94.7	64.3	74.8
Female head	5.1	31.4	15.1
Joint (both heads)	0.2	4.3	10.1

Land ownership (%)			
Male head	98.1	57.8	78.1
Female head	1.9	36.4	12.0
Joint (both heads)	0.0	5.8	9.9
Jewellery ownership (%)			
Male head	52.8	14.8	32.5
Female head	45.6	80.3	64.3
Joint (both heads)	1.6	4.9	3.2

3.6. Sources of Household Income

The average household income in Wayanad is Rs. 1,45,751; which is 454% and 169% higher than in Jeypore and Kolli Hills respectively (Table 3-9). Crop production is the major source of income in Jeypore and Kolli Hills contributing 47.1% and 36.9% to total household income. Farm wages is the second most important source of income in both these locations, at 15.2% and 22.1% respectively. The share of third-most income in Jeypore is non-farm wage earning at 12.4% and, in the Kolli Hills, remittance from migrant employment at 13.9%.The major source of income in Wayanad is non-farm wage sources at 24.8% and salaried employment/ pension at 21.8%, followed by crop production at 17.7%.

Table 3-9. Sources of household income

	Kundura (Jeypore)	Meenangadi (Wayanad)	Valapur (Kolli Hills)
Average annual income (Rs)	32,094	1,45,751	86,243
Share of income from different sources (%)			
Crop production*	47.1	17.7	36.9
Livestock production	1.8	7	3.4
Farm wage earning	15.2	15.1	22.1
Non-farm wage earning	12.4	24.8	9
Salaried employment/ pension	9.1	21.8	9.4
Business/ trade	6.3	3.8	4
Remittance from migrant employment	6.4	8.6	13.9
Money lending	0	0.5	0.3
Other sources	1.6	0.7	1
Total	100	100	100

Note:* Income from crop production stated in the table is gross income. Cost of cultivation information was not collected during the baseline survey.

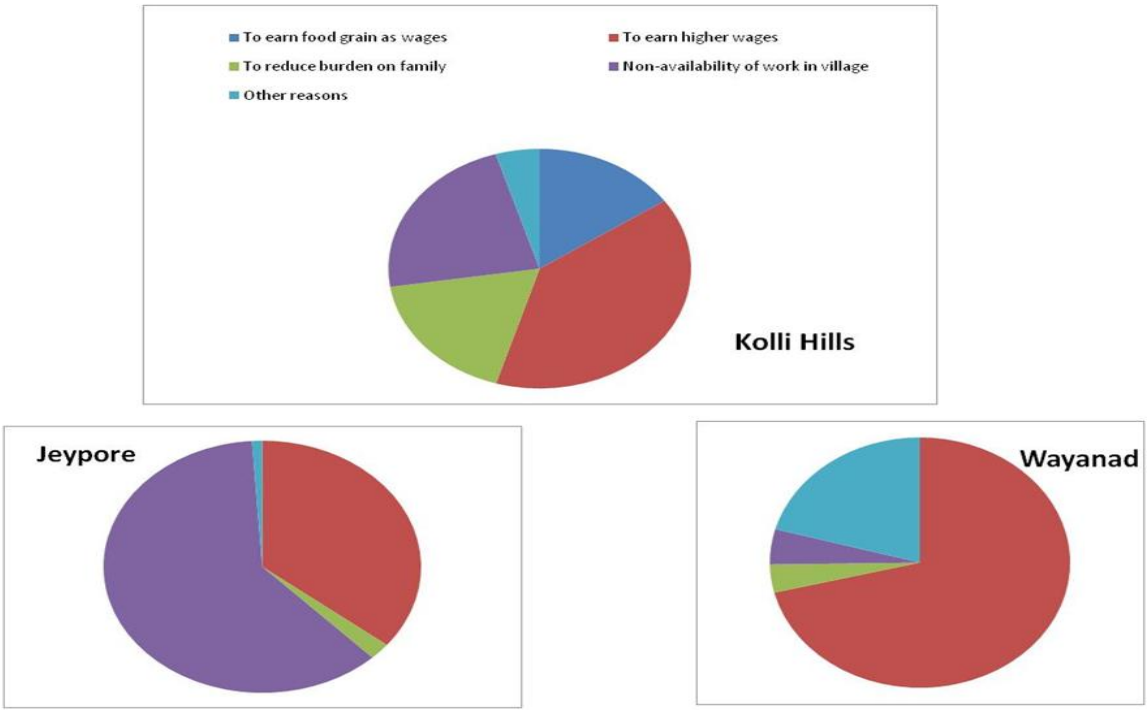
3.7. Details about Migration

Information on migration is provided in Table 3-10 and Figure 3-4. Among the sampled households of the Kolli Hills, around 40.7% of households migrated in 2010; the migration rate in Kolli Hills is approximately three times higher compared to Jeypore and Wayanad. Income earned through migration in Jeypore is Rs.17, 119 (for 3.9 months), in Wayanad is Rs. 1,15,869 (for 10.1 months) in Kolli Hills is Rs. 30,354 (for 3.6 months). The male household head is most likely to migrate to the Middle East countries. The most important reported reason for migration from Jeypore is non-availability of work in village, while in Wayanad and the Kolli Hills, the main reason is to earn higher wages.

Table 3-10: Migration details

Details	Kundura (Jeypore)	Meenangadi (Wayanad)	Valapur (Kolli Hills)
% of household migrate in the past 12 months: (at least one (or more) member from the household)	12.0	10.9	40.7
Average household members migrated (Number)			
Adult males	1.0	0.9	1.1
Adult females	0.7	0.2	0.6
Childrens	1.0	0.0	0.0
Average duration of migration (months)	3.9	10.1	3.6
Average earning from migration (per year)			
Cash (Rs.)	17,119	1,15,869	30,354

Figure 3.4: Reason for Migration in the study area



3.8. Status of Liabilities of Households

In the sampled households, liability rate and amount is higher in Wayanad with 72.1 % of households having an average liability of Rs. 1,31,945. This figure is followed by the Kolli Hills with 67.3% of households having an average liability of Rs. 59,100, and Jeypore with 24.2% of households having a liability of Rs. 15, 227 (Table 3-11). The major source of loans in Jeypore is co-operative societies and self-help groups, followed by commercial banks. Banks are the main source in Wayanad, followed by self-help groups, while loans from friends are the major source in Kolli Hills followed by money lenders. A larger proportion of households in Jeypore use the loan for crop production (75.6%) and for meeting family needs. In Wayanad and Kolli Hills the loans are used to meet family needs (61.4% and 40.8%, respectively), followed by crop production (28.6% and 38.0% respectively).

Table 3-11. Status of liabilities of households

	Kundura (Jeypore)	Meenangadi (Wayanad)	Valapur (Kolli Hills)
% of households have current loan	24.2	72.1	67.3
Average loan liability (Rs)	15,227	1,31,945	59,100

Figure 3-5. Details on sources of loan taken by households

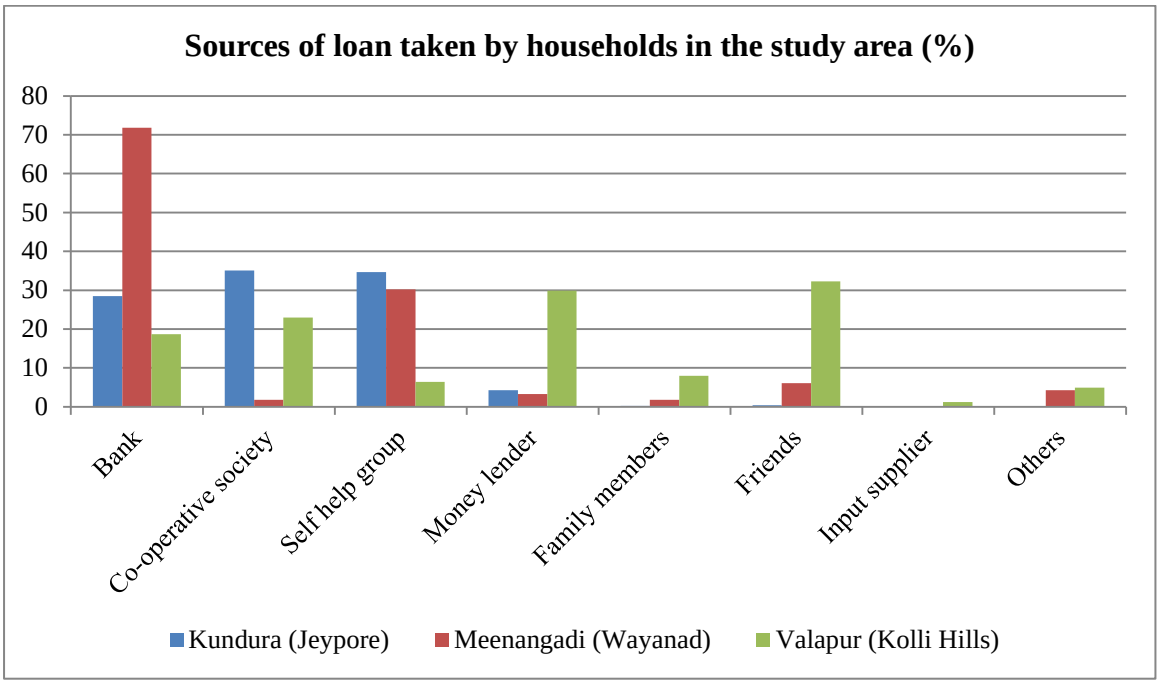
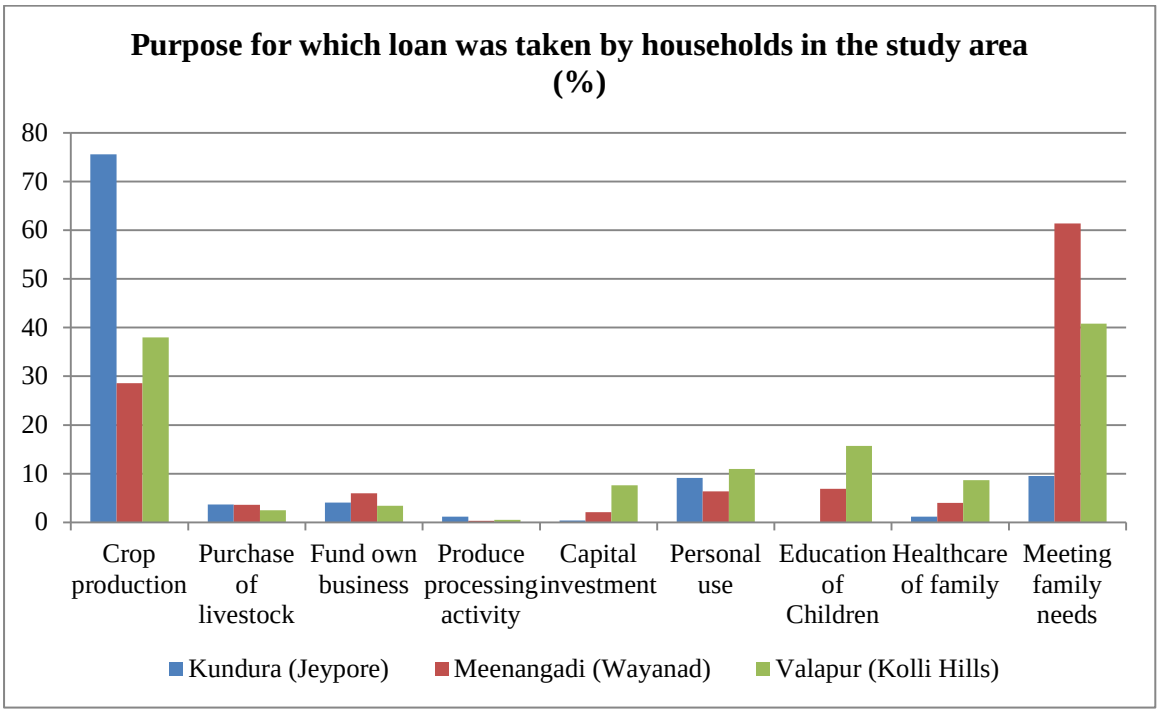


Figure 3-6. Purpose for which loan taken by households



3.9. Saving Status of Households

The status of savings in the three sites is presented in (Table 3-12 and Figure 3-7 to 3-8). The saving rate is highest in Kolli Hills, with 89.4% of households having an average savings of Rs. 7,701; this is followed by Wayanad with 75.0% of households having an average savings of Rs. 17,623. In Jeypore, 39.8 per of households have average saving of Rs. 3,417. The savings account holders are mostly female heads, followed by male heads of the household. Two major types of saving accounts in the all three locations are individual account and group account in Jeypore and Kolli Hills.

Table 3-12: Household Status on Savings

	Kundura (Jeypore)	Meenangadi (Wayanad)	Valapur (Kolli Hills)
% of households have saving	39.8	75.0	89.4
Average savings (Rs)	3,417	17,623	7,701

Figure 3-7. Details of saving account holder in the study area

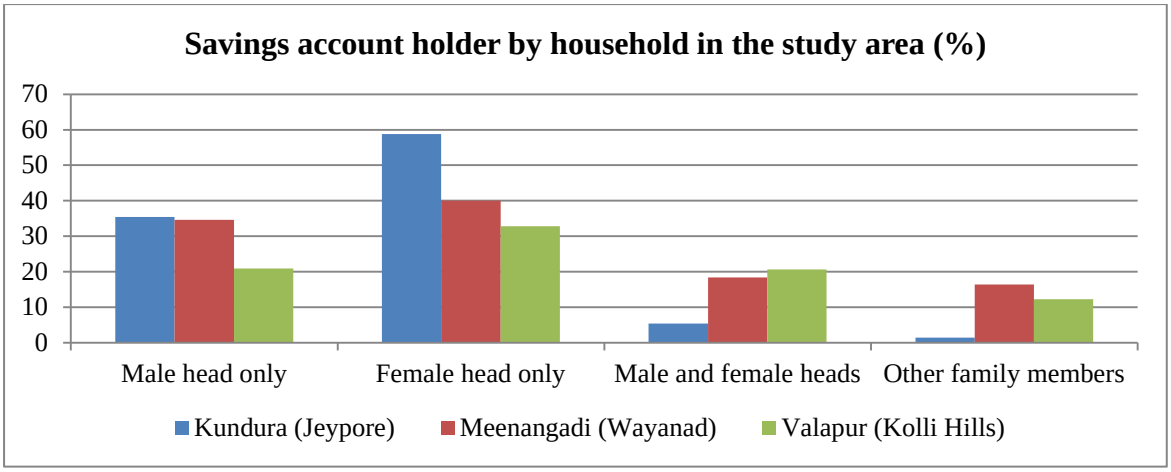
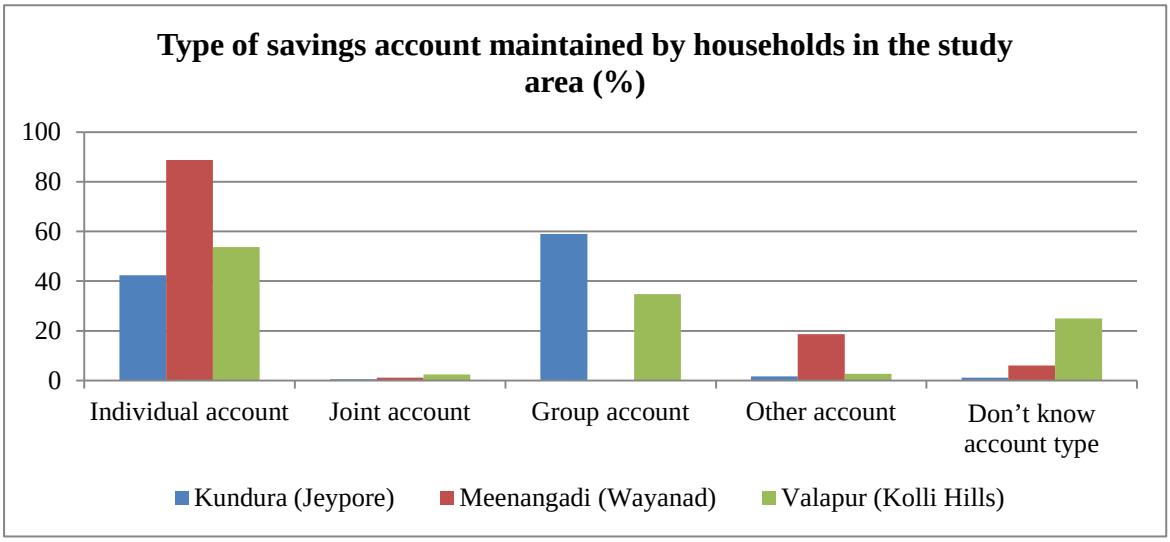


Figure 3-8. Details of saving account type maintained by households in the study area



3.10. Information Sources and Services

The households in the three project sites availed different information sources for agriculture, horticulture, animal husbandry, fisheries, coffee, weather, healthcare, electricity, rubber, spices and silk (Table 3-13). Agricultural extension information sources are used by 24.6% of households in Wayanad and 6-7% in Kolli Hills and Jeypore. Horticultural extension information sources are used by more households in Kolli Hills at 7.4 % compared to Jeypore (3.2 %) and Wayanad (1.3%). Animal husbandry information sources are used by more households in Jeypore at 29.6% than Wayanad and the Kolli Hills, where approximately 6-7% of households use the sources. Fisheries extension information sources are used by less than 2% of households in the three study locations.

Non-governmental organizations (NGOs) and weather information for agricultural activities are used significantly only in Kolli Hills. Around 90% of households used information for health services by accessing primary health centres. Electricity supply is used by 91.7% of households in Wayanad, while 49.8 and 34.9% of households use electricity in Kolli Hills and Jeypore respectively. In most cases, the male head of the household receives information from these sources, except in households headed by women participating in NGOs in Kolli Hills. Interestingly, both heads (male and female) receive information for health care from primary health centres (90.8% in Wayanad, 69.7 % in Kolli Hills and 61.7 % in Jeypore).

Table 3-13: Information sources and services

	Kundura, Jeypore		Meenangai, Wayanad		Valapur, Kolli Hills	
	Aware of service available (%)	Household using service (%)	Aware of service available (%)	Household using service (%)	Aware of service available (%)	Household using service (%)
Agricultural Extension	17.4	6.1	46.6	24.6	43.0	6.7
Horticultural Extension	12.2	3.2	1.7	1.3	43.4	7.4
Animal Husbandry	53.8	29.6	27.6	6.9	40.8	5.7
Fisheries Extension	3.5	1.7	1.5	0.3	7.5	1.0
Coffee Board of India	0.1	0.9	12.2	1.9	32.8	3.8
Non-governmental Organisation	5.9	0.8	3.1	0.6	81.0	61.2
Weather information for agricultural activities	1.4	1.0	1.3	0.9	63.5	59.0
Health service from primary health centre	96.6	84.8	97.0	94.8	90.1	88.3
Electricity supply	69.6	34.9	94.8	91.7	86.6	49.8
Rubber Board	Na	na	2.8	0.5	2.4	0.0
Spices Board	Na	na	4.3	1.0	4.5	2.0
Silk Board	Na	na	na	na	35.1	3.6

Chapter 4: Agricultural and Agro-Ecological Profile of APM Study Sites

Introduction

In continuation with chapter 3, this chapter presents additional results obtained from the baseline survey conducted in project locations during November 2011 – February 2012. The present chapter focuses on the agricultural and agro-ecological circumstances of households in the study sites. Agricultural production details include descriptive statistics of land cultivated with categories of farmers, major crops, vegetables and fruit cultivated, varietal adoption of major and staple crops, coping mechanisms for crop stresses and marketing of farm produce. Details of livestock production include household maintaining livestock with average numbers, produce (eggs, milk and meat), consumption and marketing, income earned, purpose and constraints in maintaining livestock.

Results and discussions

4.1. Details of Agricultural Production

This section provides information on land cultivated by household with categorisation, major and staple crops cultivated including details about area cultivated, percentages of farmers who cultivate, yield, consumption and marketing of produce and income earned from agriculture, varietal adoption and coping mechanism for crop stresses, and details about vegetable and fruits cultivated.

4.2. Land Cultivated

Land cultivated in the project location are categorised and presented in Figure 4-1and 4-2. The land cultivated category is based on Agricultural Statistics of India. Majority of households in the project location are marginal farmers (0.1 – 0.99 ha) with 42.9 percent of households in Jeypore, 56.1 percent in Wayanad and 60.9 percent in Kolli Hills. The proportions of landless farmers are higher in Jeypore comprising of 34.8 percent of households, Wayanad with 32.5 percent and Kolli Hills with 11.5 percent. The other farmers group (small, semi-medium, medium and large) comprise 27.6 percent in Kolli Hills, 22.3 percent in Jeypore and 11.4 percent in Wayanad.

Figure 4-1: Farm Size Categories in Project Sites (in hectare)

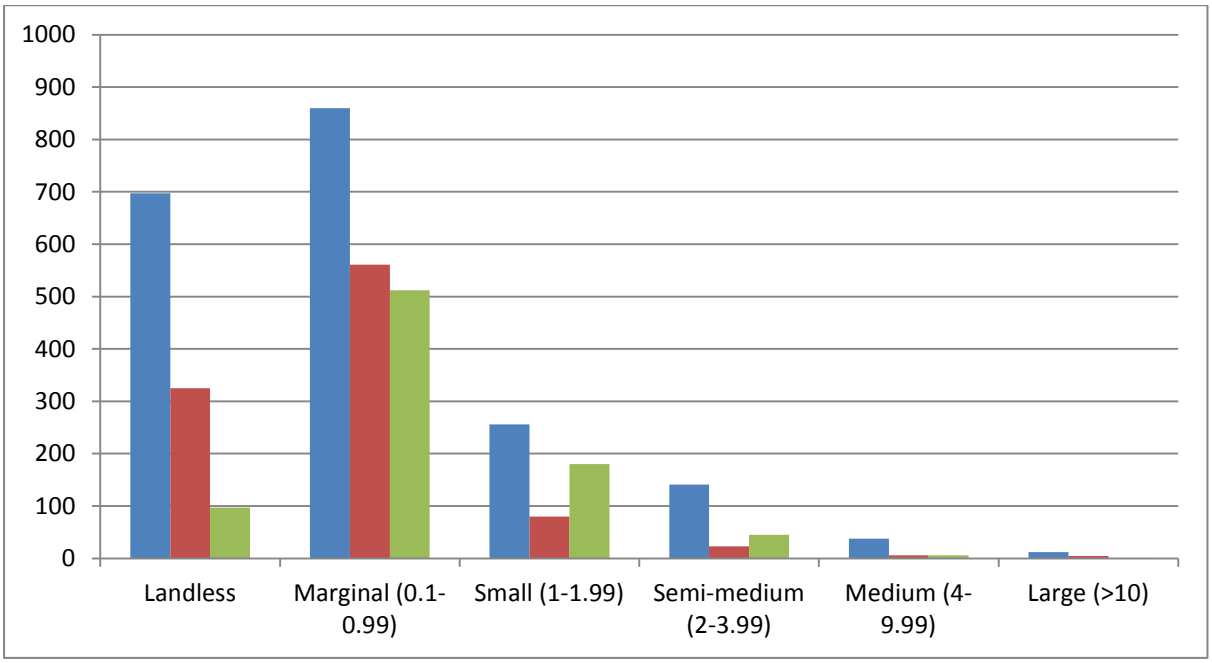
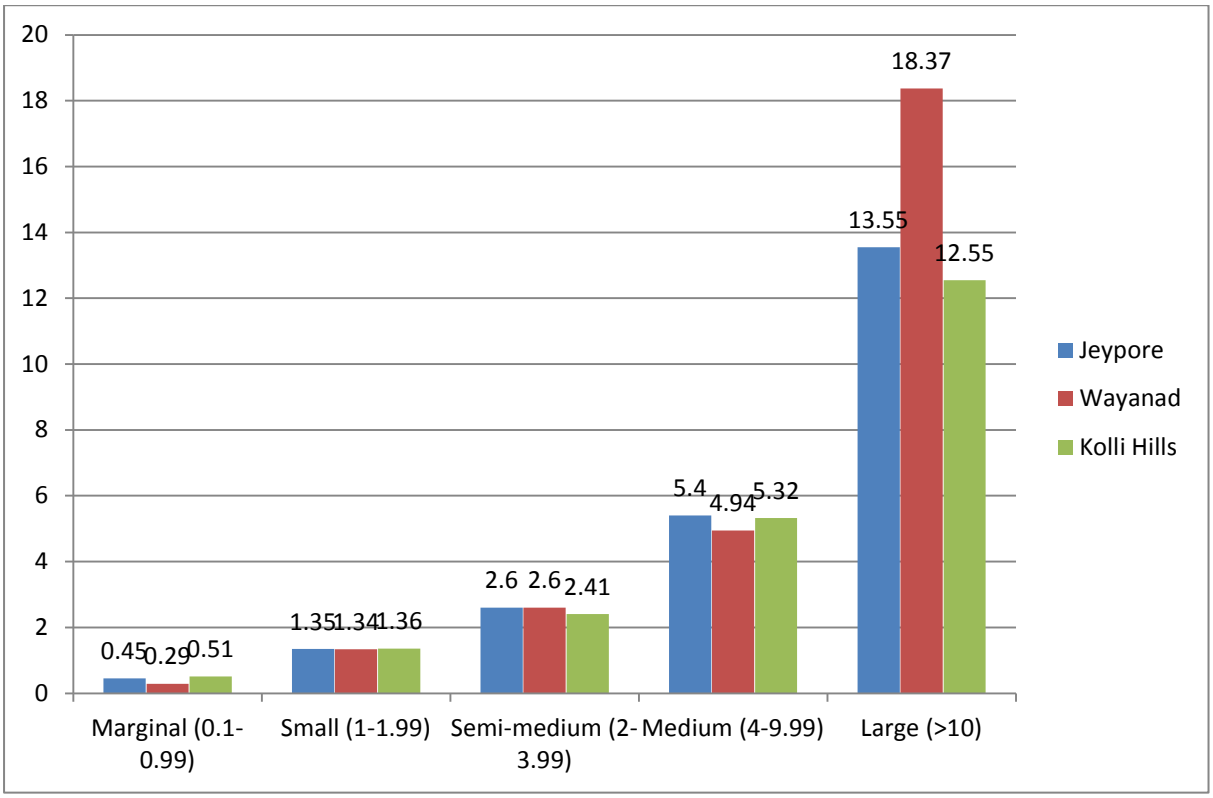


Figure 4-2: Average Cultivated (ha) in each Farm Size Category



4.3. Major Crops Cultivated During 2010-11

A. Jeypore

Paddy in the kharif season is the major crop in Jeypore (Table 4-1), 58.4 percent of households cultivate an average area of 1.68 acres with an average yield of 1314 Kg/acre (52.4% of total produce consumed by households). The second major crop is small millets, which 16.5 percent of the households cultivate (average area of 1.0 acre). The yield of small millets seems to be lower with 169 Kg/acre, of which 44.6 percent is consumed. The third and fourth major crops are upland rice and maize in the kharif season (cultivated respectively by 52% and 3.9% of households). Use of farmyard manure and chemical fertilizer is significant for all major crops. Middlemen are the major primary buyer of farm produce. The other crops cultivated in Jeypore are also presented in Table 4-1.

Table 4-1: Major crops cultivated in Kundura, Jeypore

Crop name	Average cultivated area (acre)	% of HHs Cultivating	Crops grown as (% of HHs)			% of HHs using FYM	% of HHs using chemical fertilizer	Yield (Kg/ acre)	Gross income (Rs/acre)	% grain marketed	Primary Buyer (%)			
			Pure	Inter	Mixed						Middleman	Friends/ relative	Input dealer	Others
Paddy – Kharif	1.68	58.4	100.0	-	-	94.1	98.3	1314	10954	47.6	84.0	-	-	16.0
Paddy – Rabi	1.51	0.8	100.0	-	-	63.1	94.7	1381	11171	63.0	84.3	15.7	-	-
Paddy – Summer	3.80	1.0	100.0	-	-	95.0	95.0	1862	16201	60.0	80.0	-	-	20.0
Upland Rice	1.00	5.2	100.0	-	-	81.9	96.1	696	5829	52.3	92.7	-	7.3	-
Small Millets	1.00	16.5	88.9	-	11.1	64.6	84.8	169	1797	55.4	79.0	7.0	7.0	7.0
Maize – Kharif	0.96	3.9	100.0	-	-	82.5	83.7	631	5613	92.5	80.0	10.0	3.0	7.0
Green gram	2.23	0.4	100.0	-	-	71.4	57.1	141	4595	79.5	71.6	14.2	-	14.2
Horse gram	0.76	0.7	100.0	-	-	35.7	50.0	128	3392	67.5	100	-	-	-
Black gram	0.77	0.2	100.0	-	-	33.3	33.3	233	6066	100	33.4	33.3	-	33.3
Sugarcane	1.76	0.2	100.0	-	-	60.0	100	1493	24746	100	100	-	-	-
Niger	1.25	0.2	100.0	-	-	25.0	25.0	55	1622	100	100	-	-	-

B. Wayanad

Areca nut is the major cash crop in Wayanad, with about 40.2 percent of households cultivating with an average area of 1.04 acres (Table 4-2). The average yield of areca nut is 476 Kg/acre, all of which is sold. Areca nut is mostly grown as a mixed or inter crop. Coffee

is the second major cash crop with 37.8 percent of households cultivating (with average area of 1.16 acres). The whole harvest is marketed. Most households cultivate coffee either as mixed or inter crop. Paddy in the kharif season and elephant foot yam are the third and fourth major crops cultivated by 25.8 and 13.3 percent of households. Adoption of farmyard manure and chemical fertilizer in Wayanad is also significant. Middle man is the only dominant buyer of farm produce in Wayanad.

Table 4-2: Major crops cultivated in Meenangadi, Wayanad

Crop name	Average cultivated area (acre)	% of HHs Cultivating	Crops Grown (% of HHs)			% of HHs using FYM	% of HHs using chemical fertilizer	Yield (Kg/acre)	Gross income (Rs/acre)	% grain marketed	Primary Buyer (%)			
			Pure	Inter	Mixed						Middleman	Friends/ relative	Input dealer	Others
Paddy - Kharif	0.99	25.8	96.5	2.7	0.8	94.2	96.0	1511	15110	51.2	97.8	-	1.5	0.7
Paddy – Summer	0.67	12.0	93.4	3.3	3.3	91.6	91.6	1666	16660	55.4	100.0	-	-	-
Green Gram	0.10	0.01	-	100.0	-	100.0	100.0	350	3500	100.0	100.0	-	-	-
Banana	1.01	12.5	29.6	47.2	23.2	94.4	93.6	2309	32321	98.3	100.0	-	-	-
Tapioca	0.62	1.4	35.7	42.8	21.4	85.7	85.7	1661	9965	0.0	-	-	-	-
Coffee	1.16	37.8	8.7	30.4	60.8	90.0	85.1	302	30213	100.0	99.5	-	-	0.5
Areca nut	1.04	40.2	19.8	27.9	52.3	87.0	80.0	476	19036	100.0	100.0	-	-	-
Coconut	1.89	9.3	5.4	18.3	76.3	91.0	75.0	906	12688	65.3	99.0	1.0	-	-
Elephant foot yam	1.65	13.3	29.3	36.1	34.6	93.2	88.7	2628	39414	100.0	100.0	-	-	-
Ginger	1.11	6.4	34.0	30.0	36.0	95.3	95.3	2238	14547	100.0	100.0	-	-	-

C. Kolli Hills

In Kolli Hills, paddy is cultivated in wet (low) land, about 56 percent of households cultivate in both kharif and summer season. In each season the average area cultivated paddy in 0.36 acres (Table 4-3). The yield of paddy in kharif (1155 Kg/acre) and summer (480 Kg/acre) and cent percent of it is consumed. Tapioca is the major and cash crop in Kolli Hills, with 74.0 percent of households cultivating the crop covering an average area of 1.47 acres. Coffee and pepper are cultivated by 33.8 and 24.6 percent of households respectively, mostly for markets. Banana is also cultivated by 29.3 percent of households covering an average area of 0.62 acres. Only 3.3 percent of household cultivate small millet with limited

area (0.33 acres). Chemical fertilizer is mostly used by all tapioca cultivators, while around 50 percent of households use farmyard manure for most of their crops.

Table 4-3: Major crops cultivated in Valapur, Kolli Hills

Crop name	Average Cultivated Area (acres)	% of HHs Cultivating	Crops Grown (% of HHs)			% of HHs using FYM	% of HHs using chemical fertilizer	Yield (Kg/acre)	Gross income (Rs/acre)	% grain marketed	Primary Buyer (%)			
			Pure	Inter	Mixed						Middleman	Friends/ relative	Input dealer	Other
Paddy – Khaif	0.36	56.9	100.0	-	-	25.0	51.0	1155	Own Consumption					
Paddy – Summer	0.36	55.0	100.0	-	-	44.7	50.6	1480	Own Consumption					
Small Millets	0.33	3.3	64.0	11.0	25.0	50.0	11.0	377	Own Consumption					
Green Gram	0.09	6.4	37.0	43.0	20.0	46.0	15.0	288	Own Consumption					
Banana	0.62	29.3	75.0	15.8	9.2	64.3	40.8	1714	23996	57.3	87.0	-	-	13.0
Tapioca	1.47	74.0	95.0	2.5	2.5	34.0	94.0	5215	26075	100	100.0	-	-	
Coffee	0.74	33.8	6.0	6.0	88.0	57.5	18.2	102	13260	98.5	100.0	-	-	-
Pineapple	0.53	1.4	58.4	8.3	33.3	50.0	8.3	6321	94815	100	100.0	-	-	-
Pepper	0.88	24.6	1.4	7.3	91.3	60.0	20.2	65	20800	100	1.0	-	-	-

4.4. Varietal Adoption of Major and Staple Crops (For Crop-Cultivating Farmers)

The prevalence of adoption of improved or hybrid seeds and traditional varieties is presented in Table 4-4. The highest rate of adoption is in Kolli Hills (89.4%) and Jeypore (86.3%), with 50.3% adoption rate in Wayanad. In Kolli Hills, 40.7% of households use improved or hybrid seed for a few of the major and staple crops, followed by most of the major and staple crops (29.3%). Improved or hybrid seed is used only for selected crop by 31.3% of households in Wayanad.

The adoption of traditional varieties is highest in Wayanad, 69.0%, compared to Kolli Hills, 31.3%, and Jeypore, 21.1%. In Wayanad, traditional varieties are used by 25% of

households for only selected major and staple crops, 20.4% of households for all the crops grown, and 18.2% of households for a few crops grown in the farm. In Kolli Hills, 21.5% of households use traditional varieties for a few selected crops in the farm, while 10.6% of households use traditional varieties for all the crops grown in Jeypore. Knowledge about traditional varieties varies among the project sites. In Jeypore, approximately 31.0% of households were familiar with two traditional varieties and similar percentages were familiar with three to five traditional varieties. In Kolli Hills, 24.8% of households were familiar with only one variety, while in Wayanad 29.0% and 20.7% of households were familiar with 3-5 and two traditional varieties respectively.

Table 4-4: Varietal Adoption for Major and Staple Crops (Crop Cultivating Farmers)

	Kundura (Jeypore)	Meenagadi (Wayanad)	Valapur (Kolli Hills)
% of household use improved varieties/ hybrid seed	86.3	50.3	89.4
Improved varieties/ hybrid seed used for (% of HHs)			
All crops grown in the farm	68.8	3.1	29.2
Few crops grown in the farm	9.4	15.9	40.7
Only for selected crops in the farm	0.5	31.3	13.1
% of household use traditional varieties	21.1	69.0	38.4
Traditional varieties used for (%)			
All crops grown in the farm	10.6	20.4	2.3
Few crops grown in the farm	8.7	18.2	10.8
Only for selected crops in the farm	0.5	25.0	21.5
Number of traditional varieties, households familiar with respect to major crops on your farm (% of HHs)			
None	2.1	32.1	58.1
Only one	4.3	16.4	24.8
Two	31.8	20.7	8.6
Three to five	31.0	29.0	2.6
More than five	5.7	0.6	0.0

4.5. Coping Mechanisms of Farmers Cultivating Major and Staple Crops

The major nutrient management measures followed by farmers in the project locations are presented in Table 4-5. Chemical fertilizer is common among farm households; around

90% of households in Kolli Hills and Jeypore use chemical fertilizer, compared to 68.1% in Wayanad. Using farmyard manure to improve soil quality was practiced by 83.3% of households in Jeypore, followed by Wayanad (67.4%) and Kolli Hills (56.8%). The most common measure followed for pest mitigation by farm households is the application of chemical pesticides by 88.5% of households in Jeypore, 35.9% in Kolli Hills and 18.5% in Wayanad. This method is followed by mixed cropping and intercropping in approximately 15% of households in all three areas. The soil conservation measures followed are the application of green manure by 76.9% of households in the Kolli Hills, terracing and mulching in 30.0% of households in Wayanad, and trenches as soil conservation measures in 6.8% of households in Jeypore. The major constraints affecting farm production reported were high pests and disease by 27.8% of households in Kolli Hills, lack of irrigation by 27.4% in Jeypore, and lack of market price by 15.9% of households in Wayanad.

Table 4-5: Measures Taken for Dealing with Stress Faced by Major and Staple Crops

	Kundura (Jeypore)	Meenangadi (Wayanad)	Valapur (Kolli Hills)
Nutrient management measures followed in the farm (% of HHs)			
Chemical fertilizers	90.3	68.1	90.6
Organic manures	0.5	2.7	0.1
Farmyard manures	83.3	67.4	56.8
Bio fertilizer	0.2	1.5	0.1
Crop rotation with legumes	0.6	1.0	0.1
Green manures	0.2	46.7	38.1
Vermi composting	0.2	2.1	0.1
Intercropping	0.0	16.6	1.0
Pest mitigation measures followed in the farm (% of HHs)			
Mixed cropping	0.0	15.9	1.0
Trap crops	0.0	0.6	0.1
Intercrops	0.0	15.3	2.9
Mulching	0.0	1.5	0.0
Natural Pesticides	0.2	0.4	1.8
Chemical pesticides	88.5	18.5	35.9
Physical traps	0.2	1.2	0.0
Pheromone traps	0.2	0.0	0.1
Agro forestry/ hedgerows	0.2	15.1	0.1
Soil conservation measures followed in the farm (% of HHs)			

Terracing	0.1	29.5	0.1
Strip cropping	1.3	0.3	0.3
Agro-forestry	0.2	15.0	1.2
Mulching	0.1	31.0	3.6
Green manure	0.1	0.3	0.0
Grass bands	0.2	0.1	79.6
Trenches	6.8	23.4	0.8
Hedge rows	0.4	14.8	7.0

Table 4-5 cont.: Measures Taken for Dealing with Stress Faced by Major and Staple Crops

	Kundura (Jeypore)	Meenangadi (Wayanad)	Valapur (Kolli Hills)
Constraints affecting farm production (% of HHs)			
Non-availability of quality seeds	3.1	0.7	1.1
High price of quality seeds	2.9	0.6	0.6
Non-availability of farmyard manure	4.0	1.0	8.2
Non-availability of fertilizers	12.0	1.9	1.4
High cost of fertilizers and chemicals	15.2	6.2	4.8
Non-availability of credits	7.2	0.1	2.8
High interest rate of credits	0.3	0.1	1.2
Lack of market price	4.0	13.0	5.1
Shortage of labour	3.8	15.9	7.2
Lack of irrigation	27.4	1.0	8.5
High pest and disease	7.1	11.3	27.8

4.6 Vegetables and Fruits Grown in Home Gardens

The number of households that tend home gardens varies within the three APM project sites: 35.6 percent of households in Wayanad, 26.7 percent in Jeypore and 10.6 percent in Kolli Hills tend household gardens. The average area of home gardens in Jeypore is 4.6 cents, 1.7 cents in Kolli Hills, and 1.2 cents in Wayanad, and the average distance of the home garden from the house ranges from 3.4 meters in Wayanad and 11.8 meters in Kolli Hills. The primary constraints for maintaining home gardens were determined by ranking. The most important constraint is lack of quality seed, with this factor ranking number 1 in all locations. The second most important reported constraint is water shortage in Jeypore and Kolli Hills, and pest and disease in Wayanad. The vegetables grown in home gardens are

consumed by households (none sold) in 97.5 percent of households in Wayanad, 78.7 in Kolli Hills and and 40.2 percent of households in Jeypore.

During the survey, households were asked if they wished to receive help to start a home garden and improve vegetable consumption. Of the households that responded, 86.7% of households in Wayanad, 76.3% in Jeypore, and 56.6% of households in Kolli Hills were interested in starting a home garden.

The number of fruit trees also varies among the project sites. 84.7% of households in Wayanad, 77.5% in Kolli Hills and 25.9% of households in Jeypore have fruit trees. More than 95% of farmers replied that they do not get quality planting material. The majority of households consume an equal proportion of fruits that are sold, and the income from vegetables and fruit ranges from Rs. 1,106 per year in Kolli Hills to Rs. 2,140 in Wayanad.

Table 4-6: Vegetables and Fruits Cultivated in Home Gardens

	Kundura (Jeypore)	Meenangadi (Wayanad)	Valapur (Kolli Hills)
% of households have home garden	26.7	35.6	10.6
Average area of home gardens (in cents) [Std. Dev.]	4.6 [6.4]	1.2 [2.1]	1.7 [3.0]
Average distance of home garden (in meters) [Range]	10.1 [0.5 – 500]	3.4 [0.3 – 100]	11.8 [0.5 – 200]
Important constraint for maintain home garden [Ranking]			
Lack of quality seed	1	1	1
Water shortage	2	4	2
Shortage of FYM	4	3	4
Pest & disease	3	2	3
Poor management	5	5	5
Vegetable produced are (% of HHS)			
Most of it consumed and excess is sold	39.8	2.2	5.6
Most of it sold and little consumed	7.7	0.0	2.2
Almost equally consumed and sold	0.4	0.3	0.0
All consumed and none sold	40.2	97.5	78.7
Households wish to get help for starting a home garden and improve vegetable consumption (% of households)	76.3	86.7	56.6
If yes, do you have following facility for starting the home garden			
Land close to home	69.2	84.7	30.5
Water to irrigate	3.7	0.6	14.3
FYM supply	1.7	0.0	3.1

Time to manage	1.5	0.0	0.5
% of households have fruit trees	25.9	84.7	77.5
% of households getting quality planting fruit trees	4.6	0.2	4.9
Purpose of fruits produced in home garden			
Most of it consumed	26.0	1.4	14.6
Excess is Sold	2.7	0.0	41.1
Most of it sold and little consumed	4.8	0.0	2.6
Almost equally consumed and sold	52.6	72.0	34.8
Annual income from selling vegetables and fruits(Rs./year)	1521	2140	1106

4.7. Marketing Information for Farm Products

The most important channel of marketing farm produce (Table 4-7) in Kolli Hills and Jeypore are village shandy, with 29.8% and 63.0% of households through shandies (street vendors), while 47.3% of households in Wayanad sell through middle men.. The most important source of market information is from friends and relatives in Jeypore and Kolli Hills with 41.7% and 50.5% respectively, while in Wayanad it is the local input dealer (18.8%) followed by friends and neighbours (10.8%). Family members are the second most important source of market information in Jeypore and Kolli Hills with 29.0% and 16.5% respectively.

Table 4-7: Marketing Information for Farm Products

	Kundura (Jeypore)	Meenangadi (Wayanad)	Valapur (Kolli Hills)
Important market for farm product sales (% of household)			
Village Shandy	29.8	3.4	63.0
Local middleman	16.6	47.3	20.9
Co-op. marketing society	0.3	0.7	0.1
District market	0.1	0.1	0.0
Value-addition group	0.0	0.1	0.1
Other markets	2.0	0	0.7
Important sources of market information (% of household)			
Family members	29.0	8.5	16.5
Friends & neighbours	41.7	10.8	50.5
Farmers association	0.2	0.3	0.2
Community leaders	0.0	0.0	0.1
Village knowledge centres	0.0	0.0	0.0
Local input dealer	0.6	18.8	3.4

Television & radio	0.4	4.7	0.1
Local NGOs	0.9	0.0	0.0
Newspaper	0.0	6.1	0.1
Private procurers	0.6	0.6	12.7
Extension officers/agencies	0.0	0.0	0.1
Other Government sources	0.0	0.1	0.0

4.8. Livestock Production Details

Livestock production details mentioned in this section are the percentage of households that own livestock, as well as the average production and consumption of milk and eggs, the average income earned from livestock, the purpose of keeping livestock, and the constraints in maintaining livestock.

A. Jeypore

The livestock information including production, purpose of use and constraints for rearing animals is presented in Tables 4-8 and 4-9. Chicken is owned by 40.0% of households, with an average of 3.5 chickens per household. The purpose of keeping chicken is meat for sale and home consumption (81.7%) and eggs for own consumption (10.1%), with the major constraints to grow chicken being lack of health care facilities (67.3%) followed by high cost of feed (18.6%). Cowsare owned by 25.9% of households, with an average of 1.9 cows per household, and oxen are owned by 23.0% of households with an average of 2.0 oxen per household. The purpose of keeping cows is milk for sale and consumption for 61.6% of households, and ox for draught use in 56.0% of households; major constraints for keeping cattle are lack of green/ dry fodder among 72.4% of households, and lack of health care facilities among 29.9%. Goat and sheep are owned by 8.7% and 14.5% of households respectively, with the major purpose of keeping these animals being meat for sale and consumption, followed only by meat for own consumption. The major constraints for raising goats and sheep are a lack of green/ dry fodder followed by lack of health care facilities. Keeping buffalo, pig and duck in households in Jeypore is uncommon.

Table 4-8: Details of Livestock in Kundura, Jeypore

	% Households Own	Average Number Owned	Milk produced (Litres/animal/ day)	Milk consumed (Litres/day)	Eggs Produced per week	Eggs Consumed per week	Average income earned (Rs/annum)
Cow	25.9	1.9	1.4	1.0	-	-	1888
Buffalo	11.3	2.3	2.2	1.5	-	-	2829
Ox	23.0	2.0	-	-	-	-	Nil
Goat	8.7	2.7	-	-	-	-	2983
Sheep	14.5	3.7	-	-	-	-	2526
Pig	0.001	2.0	-	-	-	-	Nil
Chicken	40.0	3.5	-	-	To be cross checked	To be cross checked	573

Table 4-9: Purpose of Maintaining Livestock and Constraints in Kundura, Jeypore

Jeypore	Cow/ox	Buffalo	Goat	Sheep	Pig	Chicken
Purpose of livestock (% of HHs)						
Draught	56.0	62.6	0.0	0.0	0.0	0.0
Meat for sale and home consumption	1.7	0.9	57.5	61.5	33.3	81.7
Meat only for sale	0.2	0.9	36.2	34.4	66.7	2.5
Milk for sale and home consumption	61.6	45.4	0.0	0.0	0.0	0.0
Milk only for sale	1.4	1.3	0.6	0.3	0.0	0.0
Egg for own consumption	0.4	0.0	0.0	0.0	0.0	10.1
Egg for sale and own consumption	0.0	0.0	0.0	0.0	0.0	0.2
Egg for sale	0.0	0.0	0.0	0.0	0.0	0.0
Constraints of livestock (% of HHS)						
Lack of green / dry fodder	72.4	61.2	56.9	51.5	na	3.5
Lack of time to manage the livestock	1.7	4.0	2.9	1.7	na	0.9
High cost of feed	20.3	19.8	14.4	19.6	na	18.6
Poor marketing facilities	0.8	0.4	1.7	1.4	na	0.1
Lack of healthcare facilities	29.9	31.7	33.9	38.8	na	67.3
Others	1.0	0.0	1.1	0.0	na	4.5

B. Wayanad

In Wayanad, livestock adoption rate is low compared to the other two locations, as shown in Tables 4-10 and 4-11. In Wayanad, 22% of households keep cows, with an average of 1.8 cows per household. 93.2% of those households reported that milk for sale and own consumption was the main reason to keep cows. The main constraints to raising cows are lack of green/ dry fodder in 74.5% of households and high cost of feed in 50.0%. One-fourth of the households keep chicken mostly for home consumption and the main constraint for keeping chicken is a lack of healthcare facilities.

Table 4-10: Details of Livestock in Meenagadi, Wayanad

	% House holds Own	Average Number Owned	Milk Produced (Litre/animal /day)	Milk Consumed (Litre/day)	Eggs Produced per week	Eggs Consumed per week	Average Income Earned (Rs/annum)
Cows	22.0	1.8	12.3	1.4	-	-	53758
Herd Buffalo	1.0	2.0	-	-	-	-	25625
Ox	0.02	2.0	-	-	-	-	Nil
Goats	5.4	2.5	-	-	-	-	3971
Pigs	0.1	20.0	-	-	-	-	250000
Chickens	24.6	4.5	-	-	18.5	11.2	2742
Meat Chicken	2.8	3.1	-	-	-	-	6253

Table 4-11: Purpose of maintaining livestock and constraints in Meenangadi, Wayand

Wayanad	Cow	Herd Buffalo	Goat	Pig	Chicken	Chicken layer
Purpose of livestock (% of HHs)						
Draught	0.0	0.0	0.0	0.0	0.0	0.0
Meat for sale and home consumption	0.0	0.0	3.7	0.0	0.8	28.6
Meat only for sale	0.0	0.0	38.9	100.0	0.0	0.0
Milk for sale and home consumption	93.2	60.0	42.6	0.0	0.0	0.0
Milk only for sale	2.7	0.0	0.0	0.0	0.0	0.0
Egg for own consumption	0.0	0.0	0.0	0.0	87.8	25.0
Egg for sale and own consumption	0.0	0.0	0.0	0.0	2.4	0.0
Egg for sale	0.0	0.0	0.0	0.0	0.0	0.0
Constraints of livestock (% of HHs)						
Lack of green / dry fodder	74.5	36.4	27.8	na	0.0	0.0
Lack of time to manage the livestock	2.3	0.0	0.0	na	0.0	0.0

High cost of feed	50.0	9.1	13.0	na	1.6	0.0
Poor marketing facilities	1.4	0.0	0.0	na	0.0	0.0
Lack of healthcare facilities	8.2	9.1	14.8	na	38.6	25.0
Others	0.5	0.0	5.6	na	2.4	0.0

C. Kolli Hills

Compared to the other two locations, Kolli Hills households keep more livestock (Tables 4-12 and 4-13). Approximately 38% households keep cows, with an average of 1.6 cows per household, and the main purpose of keeping cows is milk for sale and home consumption for 72.7% of households. The main constraints to keeping cows in Kolli Hills are lack of healthcare facilities for 49.2% of households, and lack of green/ dry fodder for 32.4% of households. Approximately 18% of households keep oxen for draught purposes. In the Kolli Hills, 35% of households keep goats for meat, mostly for sale (77.6%) and also for home consumption (27.2%). Raising pigs is practiced by more households in the Kolli Hills, mainly for sale of meat. Chicken are kept by 44 percent of households, most of whom keep the chickens for sale of meat only. The major constraint for keeping chickens in Kolli Hills is a lack of health care facilities.

Table 4-12: Details of Livestock in Valapur, Kolli Hills

	% of Households Own	Average Number Owned	Milk Produced (Litres/day)	Milk Consumed (Litre/day)	Eggs Produced per week	Eggs Consumed per week	Average Income Earned (Rs/annum)
Cow	37.5	1.6	3.6	1.6	na	na	16406
Buffalo	0.2	1.0	1.0	1.0	na	na	nil
Ox	18.0	1.7	na	Na	na	na	10734
Goat	35.0	2.3	1.0		na	na	4657
Sheep	0.2	5.0	na	Na	na	na	6500
Pig	11.9	1.3	na	Na	na	na	5337
Chicken	12.6	2.7	na	Na	11.7	7.0	649
Chicken Layer	31.2	3.7	na	Na	11.4	8.4	792

Table 4-13: Purpose of Maintaining Livestock and Constraints in Valapur, Kolli Hills

Kolli Hills	Cow	Buffalo	Ox	Goat	Sheep	Pig	Chicken	Chicken layer
Purpose of livestock (% of HHs)								
Draught	1.0	50.0	90.1	0.0	0.0	0.0	0.0	0.0

Meat for sale and home consumption	1.9	0.0	1.3	27.2	50.0	14.0	74.5	77.9
Meat only for sale	4.1	0.0	2.6	77.6	100.0	84.0	28.3	28.2
Milk for sale and home consumption	72.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Milk only for sale	30.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Egg for own consumption	0.0	0.0	0.0	0.0	0.0	0.0	2.8	48.5
Egg for sale and own consumption	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Egg for sale	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Constraints of livestock (% of HHs)								
Lack of green / dry fodder	32.4	50.0	27.2	5.8	0.0	0.0	0.0	0.8
Lack of time to manage the livestock	7.0	0.0	3.3	5.1	0.0	4.0	5.7	2.7
High cost of feed	5.4	0.0	2.0	1.4	0.0	1.0	0.9	0.0
Poor marketing facilities	0.6	0.0	0.0	1.0	0.0	1.0	0.9	0.0
Lack of healthcare facilities	49.2	50.0	51.0	39.1	50.0	34.0	49.1	65.3
Others	7.9	0.0	6.0	8.8	0.0	12.0	12.3	5.0

4.9 Conclusion

The survey data have been used to determine household and farm characteristics in the three project sites. The average cultivated land in all three project locations falls in the category of marginal farms (0.1-0.99 hectare) as defined by the Agricultural Statistics of India. The major crops in Jeypore are paddy during the *Kharif* season and small millets (in terms of number of households, amount produced and average area). In the Wayanad region, areca nut, coffee and paddy in the *Kharif* season are the main crops/cash crops. Tapioca, paddy (in *Kharif* and summer), coffee, pepper and banana are the important crops in the Kolli Hills region. Traditional variety adoption is reported by 69 % of surveyed households in the Wayanad region. Uses of improved varieties, mostly major and staple crops, were reported among 89.4% of households in the Kolli Hills region, and 86.3% of households in the Jeypore region. Lack of quality seed, water shortage, pest and disease is a major constraint for home garden. Vegetable produce is mostly consumed by households while 50% of fruit production is sold while the remaining 50% is used for own consumption purposes. The major constraint for maintaining livestock is lack of veterinary facilities and for cattle the lack of dry and green fodder.

Chapter 5 Government Programs and Services

The APM project is connected to government policies, programs and services in three respects. First, one of the key objectives of the project is to empower people in the project locations to take better advantage of programs and services to which they are entitled. This objective is advanced through the establishment of village knowledge centers and village resource centres, issuance of entitlement cards to each participating household, support to local organizations and self-help groups and connections to local government offices. Second, we recognize that government programs and services establish the context in which participating households participate in the various components of the project, and the ways in which that participation affects their behavior and well-being. And third, the project seeks to learn lessons from its involvement in the three project locations that can lead to improvements in government programs and services at the local, state and national levels.

Given the central importance of policy, the project undertook a profile of government programs and services in the three project locations. Information for that profile came from informal interviews with informants in local government offices. The results are presented in Table 5-1. Check marks indicate programs which are currently being implemented in some way in the location, while x marks indicate programs that are not currently being implemented. A row without shading indicates a program that is offered in two or more locations. A blue-shaded row indicates a program that is implemented only in Jeypore, a green-shaded row indicates a program that is implemented only in Kolli Hills, while an orange-shaded row indicates a program that is implemented only in Wayanad.

Schemes related to Block Office / Gram Panchayat				
		Valapur, (Kolli Hills)	Meenangadi (Wayanad)	Kundura (Jeypore)
1	BPL Card/ PDS	✓	✓	✓
2	APL Card/ PDS	✓	✓	✓
3.	Annapoorna Yojana	✗	✗	✓
4	Antyoday Anna Yojana	✗	✗	✓
5	National old age pension Yojana	✓	✓	✓
6	Madhubabu Pension Yojana	✗	✗	✓
7	MGNREGS	✓	✓	✓
8	Indira Awas Yojana	✓	✓	✓
9	Mo Kudia Yojana	✗	✗	✓
10	Total Sanitation Programme	✓	✗	✓
11	Pudu Vazhvu Project (World Bank)	✓	✗	✗
12	Green House Project	✓	✗	✗
13	THAI Project	✓	✗	✗
14	SGSY	✓	✗	✗
15	Aam Admi Bima Yojana	✗	✓	✗
16	Schemes of Resettlement of landless tribes	✗	✓	✗
17	Balika Samridhi Yojana	✗	✓	✗
18	Single Women Benefit Scheme	✗	✓	✗
19	MN Laksham veedu punarnirmana Padhathi reconstruction	✗	✓	✗
20	Scheme for women entrepreneurs to setup industrial units	✗	✓	✗
Schemes related to Health Department:				
1	Mamata Yojana	✗	✗	✓
2	Janani Surakshya Yojana	✓	✓	✓
3	Janani Sishu Surakshya Yojana	✓	✗	✓

4	Birth Control Yojana Male/ Female	✓	✗	✓
5	Rastriya Swasthya Bima Yojana	✗	✓	✓
6	Dr.Muthu Lakshmi Retti Magaperu Udhavi Thittam	✓	✗	✗
Schemes related to Veterinary Department:				
1	Animal Vaccination	✗	✓	✓
2	Artificial Insemination	✓	✓	✓
3	Free Distribution Milch Cow Scheme	✓	✓	✗
4	Free Distribution of Goats / Sheep Scheme	✓	✗	✗
5	Commercial dairy & milk shed development programme	✗	✓	✗
6	Cattle feed for summer season	✗	✓	✗
7	Piggery	✗	✓	✗
8	Cow & Goat for SHG	✗	✓	✗
9	Poultry production unit	✗	✓	✗
10	Calf care kit	✗	✓	✗
11	Goat club	✗	✓	✗
Schemes related to ICDS:				
1	**Chuda Mix (Chhatua):** a.) Children 7 months -3 years	✓	✓	✓
	b.) Pregnant women	✓	✓	✓
	c.) Lactating women (Up to 6 months of child)	✓	✓	✓
2	Kishori Shakti Yojana: Chuda mix Iron Tablet De-worming Tablet	✓	✗	✓
3	Food for shelter less old people	✗	✗	✓
4	Pre-School education at Anganwadi Centre (4-6 yrs)	✓	✓	✓

Schemes related to Education Department:				
1	Cycle distribution programme for girl student	✓	✗	✓
2	Cycle distribution programme for boy student	✗	✗	✓
3	Educational scholarship for the differently able students	✓	✓	✓
4	Educational scholarship for the SC/ST/General students	✓	✓	✓
5	Monetary help to the SC/ST girl students for education	✓	✓	✓
6	Mid Day Meal programme	✓	✓	✓
7	Free Text Book & Uniform	✓	✓	✗
8	Free Tuition Fees	✓	✓	✗
9	Flagship Programme on finishing school for women	✗	✓	✗
Social Welfare Schemes:				
1	Marriage Assistance Schemes for poor families	✓	✗	✗
2	Widow Daughters Marriage Assistance Scheme	✓	✓	✗
3	Inter caste Marriage Assistance Schemes	✓	✗	✗
4	Unemployment Allowance for Degree holders	✓	✗	✗
5	Destitute Widow pension scheme	✓	✓	✗
6	Destitute Agriculture Labour pension scheme	✓	✓	✗
7	Flagship programme on gender awareness	✗	✓	✗
Schemes related to THADCO Office:				
1	Free Computer Training programme for ST students	✓	✓	✓
2	Vocational Training programme for ST students	✓	✓	✓

3	Free Boarding Education for SC & ST students	✓	✓	✓
4	Land purchase scheme	✓	✓	✗
Schemes related to District Welfare Office:				
1	Schemes for Physically impaired people: (Tri- Cycle and Pension)	✗	✗	✓
2	National family welfare scheme	✗	✗	✓
3	Motorised cycles for Matru Thiranali	✓		✗
4	Free travel concession pass	✓	✓	✗
Schemes related to Tahasil Office:				
1	Compensation for natural calamity and emergency (drought / flash flood/fire)	✓	✓	✓
2	Basundhara Yojana	✗	✗	✓
3	Land for the land less people	✗	✓	✓
Schemes related to District Industrial Centre (DIC):				
1	Subsidized loan by District Industrial Centre	✓	✗	✓
Schemes related to Agriculture Office:				
1	**Agricultural Subsidy Schemes:**			
	1. Tractor	✓	✓	✓
	1. Power tiller	✓	✓	✓
	1. Spray machine	✓	✓	✓
	1. Water pump	✓	✗	✓
	1. Winnowing Fan	✗	✗	✓
	1. Seed materials		✓	✓
	1. Fertilizer	✗	✓	✓
	1. Green Manure Seeds	✓	✗	✗

	1. Seed Multiplication scheme for Paddy, Millet, Pulses, Oil Seed and Cotton	✓	✗	✗
	11. Assistance to farmers for increasing the crop productivity	✓	✓	✗
	12. Seed Village Scheme	✓	✗	✗
	13. National Agricultural Development Project scheme	✓	✗	✗
2	Scented Rice cultivation	✗	✓	✗
3	Vegetable farming for SHG	✗	✓	✗
4	Precision farming vegetable garden	✗	✓	✗
Schemes related to Horticulture Office:				
1	**Horticultural Subsidy Schemes:**			
	1. Mango orchard	✗	✗	✓
	1. Cashew plantation	✗	✗	✓
	1. Other planting materials	✓	✗	✓
	1. Vermicompost pits (Training) (Pits)	✓	✓	✓
	1. Hybrid / High yield vegetable seed	✓	✓	✗
	1. Oil Engine	✓	✗	✗
2	Drip Irrigation Scheme	✓	✗	✗
3	Samagrapurayida krishi	✗	✓	✗
4	Vyaktigatha anukulayam	✗	✓	✗
5	Cardamom regeneration scheme	✗	✓	✗
6	Bio agent units	✗	✓	✗
7	Scheme on pepper (Supply of threshers, bamboo mats, replanting pepper, pepper standers)	✗	✓	✗

8	Irrigation (Construction, IP sets, Sprinkler, Gravity irrigation with tanks, Gravity irrigation with house pipes, Rain water harvesting)	✗	✓	✗
Schemes related to Fishery Department:				
1	New pond construction and Pisciculture	✗	✗	✓
2	Renovation of old pond and Pisciculture	✗	✗	✓
Schemes related to Nationalized Bank:				
1	Loan for SHGs with 50% Subsidy	✗	✓	✓
2	Agriculture loan with low interest rate	✓	✓	✓
Other Schemes				
1	Annathana Thittam in Hindu temples	✓	✗	✗
2	Chief Ministers Health Insurance Scheme	✓	✗	✗
3	AIY bhavana vaypa padhathi	✗	✓	✗

Source: Informal interviews of APM staff with local residents and government service providers

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