ECONOMIC IMPACT OF MGNREGP ON RURAL LIVELIHOOD SECURITY IN TUMKUR DISTRICT, KARNATAKA – A SAM ANALYSIS

CHIKKATHIMME GOWDA, H. R.

PALB 2102

DEPARTMENT OF AGRICULTURAL ECONOMICS
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GKVK, BENGALURU-560 065
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CHIKKATHIMME GOWDA, H. R.

PALB 2102

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Affectionately dedicated to my beloved MOTHER, FATHER, SISTER, BROTHER and Late GRANDMOTHER

DEPARTMENT OF AGRICULTURAL ECONOMICS
UNIVERSITY OF AGRICULTURAL SCIENCES
GKVK, BENGALURU - 560 065

CERTIFICATE

This is to certify that the thesis entitled **"ECONOMIC IMPACT OF MGNREGP ON RURAL LIVELIHOOD SECURITY IN TUMKUR DISTRICT, KARNATAKA – A SAM ANALYSIS"** submitted by **MR. CHIKKATHIMME GOWDA, H. R., ID NO. PALB 2102** in partial fulfillment of the requirements for the degree of **MASTER OF SCIENCE (AGRICULTURE)** in **AGRICULTURAL ECONOMICS** to the University of Agricultural Sciences, GKVK, Bengaluru is a record of bonafide research work done by him during the period of his study in this University under my guidance and supervision and the thesis has not previously formed the basis for the award of any other degree, diploma, associateship, fellowship or other similar titles.

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ECONOMIC IMPACT OF MGNREGP ON RURAL LIVELIHOOD SECURITY IN TUMKUR DISTRICT, KARNATAKA – A SAM ANALYSIS

CHIKKATHIMME GOWDA, H. R.

ABSTRACT

This study highlights construction of a 65 X 65 sector Social Accounting Matrix for Belladamadugu, a predominantly rural VDSA village economy of Tumkur district for 2012-13. The key sectors are identified for the village along with the economic role of MGNREGP through estimation of output, income and employment multipliers. The major transactions in the SAM were among the activity account to the commodity account, factor account and household account and not among sectors within the commodity account. The key sectors identified based on the column multiplier are 'Milk production and dairy cooperative' with potential multiplier value (Rs. 172 lakhs) followed by 'Tamarind harvesting and processing' (Rs.158 lakhs), 'SHGs' sector (Rs. 146 lakhs). The output multiplier of MGNREGP was the least being 1.08, with employment multiplier of 0.17 and household income multiplier of 0.20 (totaling 1.45). Wages earned per worker (Rs. 2370) formed a meager three per cent of total income, showing the poor role of MGNREGP, despite the fact that SAM multiplier matrix showed that 66 per cent of the sectors had interaction with MGNREGP. Even though, natural resource conservation activities were predominant under MGNREGP, in order to enhance MGNREGA activities, it is desirable to consider using MGNREGA fund for key sectors. In addition, convergence of MGNREGP with the agricultural activities (such as cultivation of millets) can serve the dual role of soil and water conservation on the one hand, and augmenting production of millets on the other, which serves the purpose of MGNREGP in the rural economy of Belladamadagu.

Palce: Bengaluru
Date: July, 2015

Major Advisor
(Dr. M. G. Chandrakanth)

ಕರ್ನಾಟಕ ರಾಜ್ಯದ ತುಮಕೂರು ಜಿಲ್ಲೆಯಲ್ಲಿ ಮಹಾತ್ಮ ಗಾಂಧಿ ಗ್ರಾಮೀಣ ಉದ್ಯೋಗ ಖಾತ್ರಿ ಯೋಜನೆಯಿಂದ ಗ್ರಾಮೀಣ ಜೀವನೋಪಾಯ ಭದ್ರತೆಯ ಮೇಲೆ ಆಗಿರುವ ಪರಿಣಾಮ: ಸಾಮಾಜಿಕ ಖಾತವ್ಯೂಹ ವಿಶ್ಲೇಷಣೆ.

ಚಿಕ್ಕತಿಮ್ಮೇಗೌಡ, ಹೆಚ್. ಆರ್.

ಸಾರಾಂಶ

ಈ ಅಧ್ಯಯನವು ತುಮಕೂರು ಜಿಲ್ಲೆಯ ಬೆಲ್ಲದಮಡುಗು ಗ್ರಾಮದ, ೨೦೧೭-೧೭ ನೇ ಸಾಲಿನ ೭೩ x ೭೩ ಆರ್ಥಿಕ ಚಟುವಟಿಕೆಗಳ ಸಾಮಾಜಿಕ ಖಾತವ್ಯೂಹದ ನಿರ್ಮಾಣವನ್ನು ಬಿಂಬಿಸುತ್ತದೆ. ಈ ಅಧ್ಯಯನದಲ್ಲಿ, ಗ್ರಾಮದ ಪ್ರಮುಖ ಚಟುವಟಿಕೆಗಳನ್ನು ಹಾಗೂ ನರೇಗಾದ ಆರ್ಥಿಕ ಪ್ರಾಮುಖ್ಯತೆಯನ್ನು ಉತ್ಪಾದನೆ, ಉದ್ಯೋಗ ಮತ್ತು ಆದಾಯ ಗುಣಕಗಳ ಮೂಲಕ ವಿಶ್ಲೇಷಿಸಲಾಗಿದೆ. ಸಾಮಾಜಿಕ ಖಾತವ್ಯೂಹದಲ್ಲಿ ಪ್ರಮುಖ ವ್ಯವಹಾರವು ಚಟವಟಿಕೆ ಖಾತೆಯಿಂದ ಸರಕು ಖಾತೆ, ಕಾರ್ಮಿಕ ಖಾತೆ, ಕುಟುಂಬ ಖಾತೆಯ ಜೊತೆ ನಡೆದಿರುತ್ತದೆ ಮತ್ತು ಸರಕು ಖಾತೆಯ ಕ್ಷೇತ್ರಗಳ ಮದ್ಯೆ ನಡೆದಿರುವುದಿಲ್ಲ. ಕಂಬ ಅಂಕಣ ಗುಣಕದ ಆಧಾರದ ಮೇಲೆ ಹಳ್ಳಿಯ ಪ್ರಧಾನ ಕ್ಷೇತ್ರಗಳನ್ನು ಗುರುತಿಸಲಾಗಿದೆ. ಅವುಗಳೆಂದರೆ ಹಾಲು ಉತ್ಪಾದನೆ ಹಾಗೂ ಸಹಕಾರ ಸಂಘ ಇದರ ಸಂಭಾವ್ಯ ಗುಣಕ ಮೌಲ್ಯವು ರೂ. ೧೬ ಲಕ್ಷದಷ್ಟಿದೆ, ಹುಣಸೆ ಹಣ್ಣು ಕೊಯ್ಲು ಮತ್ತು ಸಂಸ್ಕರಣೆ (ರೂ. ೧೩೬ ಲಕ್ಷ), ಸ್ವಸಹಾಯ ಸಂಘ ಕ್ಷೇತ್ರ (ರೂ. ೧೪೬ ಲಕ್ಷ) ಇತ್ಯಾದಿ, ನರೇಗಾವು ಕನಿಷ್ಟ ಉತ್ಪಾದನಾ ಗುಣಕ (೧.೧೩), ಉದ್ಯೋಗ ಗುಣಕ (೧.೧೭), ಆದಾಯ ಗುಣಕ (೧.೨೦) ಹಾಗು ಒಟ್ಟಾರೆ (೧.೪೩) ಗುಣಕ ಹೊಂದಿದೆ. ನರೇಗಾ ಕ್ಷೇತ್ರವು ಹಳ್ಳಿಯ ಶೇ. ೭೭ ಕ್ಷೇತ್ರಗಳ ಜೊತೆ ವಹಿವಾಟು ಹೊಂದಿದ್ದು, ಇದರ ಹೊರತಾಗಿಯೂ, ಪ್ರತಿ ಕೆಲಸಗಾರನ ವೇತನವು ಒಟ್ಟು ಆದಾಯದ ಶೇ. ೩ ರಷ್ಟಿದ್ದು, ಇದು ಹಳ್ಳಿಯ ಆರ್ಥಿಕತೆಯಲ್ಲಿ ನರೇಗಾದ ಅಪ್ರಮುಖ ಮಹತ್ವವನ್ನು ತೋರಿಸುತ್ತದೆ. ನರೇಗಾ ಯೋಜನೆಯಡಿ ನೈಸರ್ಗಿಕ ಸಂಪನ್ಮೂಲ ಸಂರಕ್ಷಣೆ ಕಾರ್ಯಗಳು ಪ್ರಧಾನವಾಗಿ ಇದ್ದರೂ ಸಹ, ಇತರೆ ಚಟುವಟಿಕೆಗಳನ್ನು ಹೆಚ್ಚಿಸುವ ಸಲುವಾಗಿ ನರೇಗಾ ಹಣವನ್ನು ಹಳ್ಳಿಯ ಪ್ರಧಾನ ಕ್ಷೇತ್ರಗಳಲ್ಲಿ ವಿನಿಯೋಗಿಸುವುದು ಅಪೇಕ್ಷಣೀಯವಾಗಿದೆ. ಇದರ ಜೊತೆಗೆ, ನರೇಗಾದಡಿ ಕೃಷಿ ಚಟುವಟಿಕೆಗಳ (ಕಿರು ಧಾನ್ಯಗಳ ಬೇಸಾಯ) ಸಂಯೋಜನೆಯು ದ್ವಂದ್ವ ಪಾತ್ರ ವಹಿಸುತ್ತದೆ. ಏನೆಂದರೆ ಒಂದೆಡೆ ಮಣ್ಣು ಮತ್ತು ನೀರಿನ ಸಂರಕ್ಷಣೆ ಮತ್ತೊಂದೆಡೆ ಕಿರು ಧಾನ್ಯಗಳ ಉತ್ಪಾದನೆಯು ಬೆಲ್ಲದಮಡುಗು ಹಳ್ಳಿಯ ಆರ್ಥಿಕತೆಯ ಅಭಿವೃದ್ಧಿಯಲ್ಲಿ ನರೇಗಾದ ಉದ್ದೇಶವನ್ನು ಪೂರ್ಣಗೊಳಿಸಬಹುದಾಗಿದೆ.

ಸ್ಥಳ: ಬೆಂಗಳೂರು

ದಿನಾಂಕ: ಜುಲೈ, ೨೦೧೭

ಪ್ರಧಾನ ಸಲಹೆಗಾರರು

(ಎಂ. ಜಿ. ಚಂದ್ರಕಾಂತ್)

Economic Impact of MGNREGP on Livelihood Security in Tumkur District, Karnataka- A Social Accounting Matrix Analysis

H.R. Chikkathimme Gowda (PALB-2102) and M.G. Chandrakanth

Department of Agricultural Economics, University of Agricultural Sciences, GKVK, Bangalore.

INTRODUCTION

❖ This study sponsored by ICRISAT's VDSA program, identifies the key sectors of the economy by estimating output, income and employment multipliers. For this purpose a 64 X 64 sector Social Accounting Matrix(SAM) is constructed for Belladamadagu village of Tumkur district for 2012-13.

❖ The study highlights the economic role of MGNREGA towards enhancing livelihood security of households. MGNREGA objective is to provide hundred days of guaranteed wage employment per rural household who volunteer to perform unskilled manual work as an employment guarantee program.

Objective

❖ To estimate employment, income generation and livelihood security provided by multiplier effects of village economy including MGNREGA . The key sectors of economy for efficient adoption of MGNREGA are identified.

METHODOLOGY

Study area: Belladamadagu village, Tumkur district of Karnataka. Period of study: 2012 – 2013.

Sampling: SAM matrix is constructed with primary data from 26 households, 21 farmers, 10 leaf plate makers, 4 luggage auto transport operators, 10 households involved in services, 35 participants of MGNREGA and 22 non participants of MGNREGA

Secondary Data: Village statistics, MGNREGA works undertaken were collected from village panchayath.

Analytical tools: SAM model is specified as:
$Y = W + X$, where W = endogenous accounts;
X = exogenous accounts.
$A_{ij} = W_{ij} / Y_j$ where A_{ij} = requirement of ith sectoral input to produce one Rupee of jth sectoral output
Thus, $Y = AY + X$, they are $Y-AY = X$
$(I-A)_{nxn} \ Y_{nx1} = X_{nx1}$
$Y = (I - A)^{-1} X = MX$, where M is SAM multiplier matrix. The column sum of each sector of inverted SAM matrix is the economic multiplier quantifying the direct, indirect, and induced increase in output of all sectors (at left of SAM), for one rupee increase in final demand for a specific sector (at the top of SAM). A 64 X 64 sector Social accounting matrix is constructed to study and analyse the inter-sectoral flows of inputs and outputs in the village along with payments to factors of production and income flow of households, payments to government, capital and Rest Of the World. These highlight employment and income generation in the village economy. MGNREGA is also included as an activity to estimate the associated multiplier effects.

RESULTS

❖ For Re. 1 increase in the final demand of milk dairy sector, the direct, indirect and induced increase in the output of all sectors in the village Rs. 3.58 of which Rs. 1.22 is the increase in the dairy's output, Re. 0.27 is increase in output of dairy co-operative, Re. 0.17 is the output of SHG's, Re. 0.11 is the output of paddy. Due to milk sector demand, flow of income to households is Rs 1.03 of which Re. 0.85 is for poor farm households and Re. 0.25 is for middle income households.

❖ For 1 Re. increase in final demand of MGNREGA, the total increase in income of households is Re. 0.20 of which Re. 0.17 is for poor farm households and Re. 0.03 is for middle income households. Accordingly, MGNREGA is yet to make economic impact in the village economy of Belladamadagu.

Table : Output, Employment and Income multipliers of key sectors in Belladamadagu

Key Sectors	Output multiplier	Employment multiplier	Income multiplier
Milk Dairy (coop)	2.08	0.32	1.10
Milk Dairy	2.52	0.24	0.81
Hrvtg. & processing of tamarind	1.39	0.55	1.26
Rainfed Groundnut	1.88	0.40	0.62
SHG	1.45	0.16	1.10
Brick Making	1.37	0.27	0.91
Paddy cultivation	1.50	0.19	0.98
Sheep & goat	1.39	0.41	1.12
Leaf plate making	1.41	0.29	1.02
Irrigated ground nut	1.58	0.15	1.13
MGNREGA	1.08	0.17	0.20
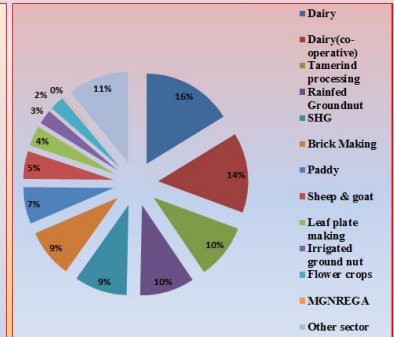
Fig 1: Key Sectors of Belladamadagu : weighted multiplier

Fig 2: Farm women actively involved in off - farm income activity

Fig 3: MGNREGA work on farmer's land and public road

DISCUSSION

❖Considering the SAM multipliers and the proportion of weighted activities in Belladamadagu, the dairy and dairy co-operative are the two key sectors exhibiting large multiplier effects. In addition the proportion of the income generated and the multiplier are highly associated. Thus, farmers are rational with respect to their economic association with dairy.

❖ Though harvesting & processing of tamarind has lower multiplier(3.27) than groundnut (2.91) cultivation, it assumes importance next to dairy because of the magnitude of tamarind processing (Rs.45,75,000) activity in the village.

❖ Though flower crops have higher multiplier (2.80) than SHG's (2.71), brick making (2.56) and paddy (2.67), in the village because, flower production as it constrained by access of ground water.

❖ MGNREGA has made modest impact on village economy since the multiplier is low (1.47). NREGA can play an efficient role by focussing on activities such as tamarind processing, cultivation of groundnut, leaf plate making. This enhances output and income of rural women in gender issue.

SUMMARY

❖ SAM multiplier analysis indicated that in water starved Belladamadagu, dairy and dairy co-operative have the highest potential in generating income for all categories of farmers followed by activities such as tamarind harvesting, processing and leaf plate making . As labor is economically scarce MGNREGA should be activated towards tamarind processing and leaf plate making activities to benefit farm women, from the largest direct, indirect and induced incomes in all the sectors to the tune of Rs. 5.98(3.27+2.71) for every rupee increase in final demand for tamarind processing and leaf plate making.

❖ Big push through MGNREGA is required for cultivation of flower crops, irrigated groundnut and brick making activities.

❖ At present, MGNREGA is yet to make economic impact as reflected in its poor multiplier effect. The role of MGNREGA can be enhanced by supporting the key sectors identified in the Table: harvesting and processing of tamarind, leaf plate making and groundnut cultivation.

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I INTRODUCTION

"I will give you a talisman. Whenever you are in doubt, or when the self becomes too much with you, apply the following test. Recall the face of the poorest and the weakest man whom you may have seen, and ask yourself, if the step you contemplate is going to be of any use to him. Will he gain any thing by it? Will it restore him to a control over his own life and destiny? In other words will it lead to Swaraj (i.e. self-rule/freedom) for the hungry and spiritually starving millions?"

By Mahatma Gandhiji

Mahatma Gandhi National Rural Employment Guarantee Programme (MGNREGP) is the flagship programme of Government of India aimed at enhancing livelihood security of households in rural areas of the country. This programme was envisaged by the National Development Council (NDC) and was approved by the parliament through an act; National Rural Employment Guarantee Act, 2005 (NREGA) on September 7, 2005. This programme was launched on February 2, 2006 as NREGP (National Rural Employment Guarantee Programme) by merger of two on-going programmes of Sampoorna Grameen Rozgar Yojana (SGRY) and National Food for Work Programme (NFWP).

Objectives of MGNREGP

The mandate of the programme is to provide 100 days of guaranteed wage employment in a financial year to every rural household whose adult members volunteer to do unskilled manual work.

The objectives of the programme include:

1) Ensuring social protection for the most vulnerable people living in rural India through providing employment opportunities

2) Ensuring livelihood security for the poor through creation of durable assets, improved water security, soil conservation and higher land productivity

3) Strengthening drought-proofing and flood management in rural India

4) Aiding in the empowerment of the marginalised communities, especially women, Scheduled Castes (SCs) and Scheduled Tribes (STs), through the processes of a rights-based legislation

5) Strengthening decentralised, participatory planning through convergence of various anti-poverty and livelihoods initiatives

6) Deepening democracy at the grass-roots by strengthening the Panchayath Raj Institutions

7) Effecting greater transparency and accountability in governance

MGNREGP has become a powerful instrument for inclusive growth in rural India through its impact on social protection, livelihood security and democratic governance.

According to Chambers and Conway (1992), "*A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation: and which contributes net benefits to other livelihoods at the local and global levels in the long and short term.*"

Rationale

This study has the objective to identify the key sectors of a village economy by estimating output, income and employment multipliers (Belladamadugu village of Tumkur district) for 2012-13. This study uses the Social Accounting Matrix (SAM model) as it includes activity, commodity, factor, institutions, savings and investment and rest of the world sectors, which has advantage over the classical input-output model.

In this study, the economic role of MGNREGP towards enhancing livelihood security of households is estimated with the following specific objectives.

Objectives of the Study

1. To estimate the output, employment and income multipliers of MGNREGP.

2. To analyze gender, age and other social dimensions of MGNREGP.

3. To estimate the asset creation and benefit derived from the assets created.

Hypotheses

1. Multiplier effect of MGNREGP on household sector is higher than that on other sectors in the village economy.

2. Female workers' participation is relatively higher than male workers' participation in MGNREGP resulting in differential gains in employment and income.

3. Marginalized sections have not been benefited significantly by participating in MGNREGP.

4. Aged worker (above 50 years) participation is relatively higher than young worker participation in MGNREGP.

5. MGNREGP has reduced migration of rural workers.

6. Natural resource conservation is the predominant activity under MGNREGP.

7. Private asset creation is marginal under MGNREGP.

Presentation of the Study

Present research work is organized in six chapters. The first chapter provides a brief introduction along with the specific objectives. In chapter-II, some pertinent reviews are presented in consonance with the study objectives. Chapter-III describes the main features of study area, sampling framework, database and analytical tools employed in

the analysis of data. The empirical results are presented in Chapter-IV followed by critical discussion of results in Chapter-V. Finally, Chapter-VI summarizes the major findings of the study and policy implications.

Limitation of the Study

In this study, the sample village chosen did not represent the village with adequate MGNREGP expenditure, since the choice was based on Village Dynamics in South Asia (VDSA) study village of International Crop Research Institute for Semi-Arid Tropics (ICRISAT). Therefore, accordingly the results of impact of MGNREGP suffer from this limitation and the choice of VDSA village was based on ICRISAT consideration and not based on MGNREGP expenditure.

II REVIEW OF LITERATURE

A review of past research studies helps in understanding the theoretical and conceptual framework relevant to the study. In addition, the review of previous studies provides insights into research gaps and up to date status of the research in the line of study. This will enable the researcher to collect relevant data, analyse and interpret the same so as to draw meaningful implications. This chapter attempts a brief review of the relevant studies related to the theme of research. Keeping in view the objectives of the study, reviews are presented under the following headings.

2.1 Social Accounting Matrix and estimation of output, income and employment multipliers of MGNREGP.

2.2 Impact of MGNREGP on income, employment and migration and analysis of social dimensions of MGNREGP.

2.3 Asset creation and benefit derived from them.

2.1 Social Accounting Matrix and Estimation of Output, Income and Employment Multipliers of MGNREGP

Adelman *et al.* (1988) have used Social Accounting Matrix (SAM) approach to study the effect of labour migration on a Mexican village economy for the year 1983. Detailed survey was done on each individual's contribution to family income and family labour and his/her consumption to construct SAM. The constructed SAM showed that the village economy had a trade deficit to the tune of 47 per cent and the largest linkage in the village economy was of trading activity through retail followed by livestock. Production linkages within the economy were weak. As migration was dominant in landless households, the migration remittances had the largest impact on landless households.

Subramanian and Sadoulet (1990) analysed the transmission of production fluctuations and technical change in agriculture sector in Kanzara village of Maharashtra state using Social Accounting Matrix (SAM) for the Agricultural Year 1984-85. Study used secondary data from the village level studies in Kanzara conducted by ICRISAT; various estimates of consumption from National Sample Survey Organisation (NSSO) data and primary data collected from villagers. SAM constructed in this study partially followed ICRISAT criteria to classify households and had eight classes of households. Extrapolation was done to arrive at estimates of the most of the values used in SAM by multiplying the corresponding average for each class of household by the number of households in that class in the village. Agricultural activities were divided into dry and wet agriculture, but agricultural commodity account had no such classification. Activities paid profit directly to institutions. Building construction, as an activity was not included and materials and labour used were paid directly by household class concerned. Since no formal financial institution was present in Kanzara at that time, interest payments were treated as direct payment by households and activities to the factor account concerned. To estimate the effects of change in technology and weather-induced fluctuations in agricultural output, agriculture was treated as an exogenous account. This study found

that irrigation had larger multiplier effect on the village economy than transfers. Investment in dairy sector was found to increase inequality in society because of its capital intensive nature.

Vedini (1997) studied interdependence of agriculture and livestock enterprises of Balanahalli village in Sira taluk of Tumkur district, Karnataka representing dryland. The 65 sample structure includes proportionate marginal, small, large, landless labourers and others. The Village SAM was developed to fulfil the objective of identification and quantification of inter-sectoral linkages in the dryland economy and found that value addition in the production was more than 50 per cent of the Gross Village Product (53.84 lakhs). The highest value addition was contributed by the plantation crops accounting for 56.18 per cent of Gross Village Product. On the contrary value addition from the trade was least. The contribution from livestock was 9.54 per cent of the Gross Village Product, while the share of commercial crops was 6.73 per cent. The major portion of the income for small, marginal, and large farmers was from farming and labour income within village. While the landless labourers earned almost 50 per cent of their income through their labour services within the village and the rest was earned as wage labourers from outside the village. In case of other households major income came from outside the village.

Agriculture sector in aggregate indicates that for every Rs.100 worth of total production the absorption of marginal farmers was Rs 21.58, small farmers was Rs.18.06 and large farmers was Rs.35.25 as outcome of their consumption demand. Similar trend was observed in livestock sector. In the trade sector for every Rs.100 increase in turnover of trade the marginal, small, large farmers, landless labourers and other households absorb Rs. 6.08, Rs. 2.12, Rs. 4.06, Rs. 6.11 and Rs. 3.63 as their private expenditure, respectively. The remaining was diverted to the export sector demand. Among small and large farmers, the investment effect on household income would increase the income of these two categories of household by more than 100 per cent. The income from agricultural sector through labour wage was higher than from livestock and trade sector. It was observed that plantation crop had the highest multiplier effect on factor employment (5.68), i. e., every rupee investment on plantations the factor employment opportunity created would be Rs. 5.68. The livestock showed the least multiplier effect on factor employment (0.94).

Subramanyan (2007) analysed distributional effects of agricultural biotechnology in cotton crop in Kanzara village of Maharashtra. The study used census approach to collect data from each and every household of the village leading to a consistent and accurate Social Accounting Matrix (SAM). SAM constructed for this study had activity and commodity account. Researcher found that Bt. cotton was associated with a substantial overall generation of rural employment, especially for hired female and family male agricultural labour. The SAM results showed that, the saved family labour can be re-employed efficiently in alternative agricultural and non-agricultural activities, so that the overall returns to labour would increase. Under irrigated conditions, aggregate household income was higher with Bt. cotton than with conventional cotton varieties, however corresponding figures were relatively lower in rain-fed cotton cultivation. Large

farm households benefitted significantly from dry land Bt. cotton adoption than small farmers. The reason for this seeming paradox was the importance of indirect effects, especially the role of opportunity cost saved on management time. The returns to saved management time in alternative activities appeared to be higher for large farmers than for small farmers.

Hirway *et al.* (2008) studied the economic impact of works undertaken under the National Rural Employment Guarantee Act (NREGA) on Nana Kotda village in Gujarat state using SAM. Various sectors of the village economy were analysed to understand its dynamics. It aimed mainly at studying the direct impact of NREGA works on reducing unpaid work of poor, especially women, which is characterized by low productivity, low returns and is time consuming and its indirect effect on the village economy. The SAM constructed for Nana Kotda village with 55 producing sectors (13 agricultural sectors, 25 manufacturing sectors and 17 service sectors); two factors of production viz., labour and capital; two institutions comprising of households and government and transactions with the external world like exports and imports. NREGA works were treated as external shocks on the village economy. SAM constructed had only activity account and no commodity account. Impact of the substitution of unpaid work by NREGA works on the village economy was analysed by estimating output, income and employment multipliers. Study found that maximum impact of NREGA works on the village economy was on PDS services for which output multiplier was 2.08 followed by Maize with 1.80 and Wheat sector with 1.79 as output multiplier values. The multipliers obtained were relatively small because of the leakages observed in the form of import of consumption goods.

In a study by Usami and Yoshifumi (2008) on construction of regional SAM with natural resource accounts: Linking village/industry level data to regional level studies employed regional (village) SAM to quantify the impacts of globalization on rural economy, inter-industry interactions in a region, inter-region interactions through trade in commodities, labour migration, and impacts of globalization on classes of households. It also measured the induced effects from the village to local markets, and to rest of India. This study had also addressed environmental problems such as depletion of water, changes in land use patterns and the resulting degradation of different types of land. A regional SAM with natural resource accounts helped in the analysis of extent of depletion of natural resources resulting from production activities as well as household consumption and its impact on the economy. Water, forest and land use accounts, representing natural resources account, were introduced into the conventional regional SAM. These natural resource accounts were measured in both physical and monetary terms. Water resource accounts consisted of both stock and flow accounts. However, since it was very difficult to get information on stock in groundwater, reservoirs, lakes and tanks and the stock water for rivers is not well defined, only water flow accounts were considered. Supply and use of water by the households as well as economic activities were measured in the flow accounts and were linked to the regional SAM. Likewise, asset account and flow account together formed the forest accounts. Stocks of standing timber were recorded in the forest asset account. Supply and use of forest products by economic activities including timber, NTFP such as wild plants and honey,

forest services like livestock grazing, recreation and tourism, and carbon storage, formed the content of forest flow accounts. Use of land for production and consumption, in physical terms, was shown in the land use accounts. Cultivated land, fallow land, forestland, and other land were the classes of land use included.

Marisa *et al*. (2010) analysed extension to the multiplier decomposition approach in a SAM framework in Vietnam and found that the highest direct effects on the income of household groups were related to exogenous injections into the agricultural sector, while the highest indirect effects result from investing in agriculture-related sectors such as food processing. Policy interventions focusing on the agricultural sector and on rural households will thus have the greatest effect on reducing the level of income inequality.

2.2 Impact of MGNREGP on Income, Employment and Migration and Analysis of Social Dimensions of MGNREGP

Das and Pradhan (2007) found that in a financial year, the material to wages ratio was shockingly 54 to 46 in Odisha state. In the last three months of the financial year however, things have improved and the material to wage ratio has come down to 26 per cent from 74 per cent. The rates for work on ordinary soil went up from Rs. 50 to Rs. 100 for 100 cubic feet of earth dug up, from Rs. 67 to Rs. 135 for 100 cubic ft. of hard soil and from Rs. 105 to Rs. 210 for every 100 cubic ft. of stony soil. The government also increased the daily wage from Rs. 55 per day to Rs. 70 per day from May 1, 2007 onwards. Orissa was the first state to place the name, age, job card numbers, and other details of each job card holder on the net, and enable access to online records of muster rolls, works undertaken with costs and bill numbers, etc. The state has also being projected as the first state in implementation of the NREGS showing a total expenditure of more than Rs. 700 crores, a fund utilization of 82.39 per cent, surpassing all the major states in percentage of expenditure against available funds. The state claims to have issued job cards to 23.30 lakh households, and provided employment to 11.19 lakh households. On an average, reports say, each household has been provided with 31 days of employment, but no household have completed 100 days of employment.

Jha *et al.* (2008) conducted study in Udaipur district, Rajastan about reviewing the National Rural Employment Guarantee Programme (NREGP). Results showed that, out of 340 households, one-third participated in NREGP. Majority of the participants belonged to other backward categories (90 %) and the remaining were equally divided among the SC and ST. Within each caste/ethnic group, the highest proportion of the participants was from ST, followed by others. The self-employed agricultural households accounted for about 46 per cent of the participants, followed by other labour households. The share of the participants was the highest among landless households (52 %). Among the SC and ST, more than one third were worked between 51 days to 70 days, and remaining worked between one to 50 days. All agricultural labour households worked in the range of one to 50 days while the majority of the other labour participating households worked in the ranges of 51 to 90 and more than 90 days. The dummy for the ST households have positive and significant coefficient, suggesting that the ST households were more likely to participate than others, the larger the household size, the higher the probability of participation.

Khera (2008) conducted a study in Madhya Pradesh and Rajasthan and found that in Pati block, the average number of days of employment during the 12 months preceding the survey was as high as 85 days, compared with just 23 days in Rajpur block. The corresponding average for the two districts surveyed in Rajasthan was 71 days.

Kumar and Prasanna (2008) studied the role of NREGA in providing additional employment for tribal and curtailing migration and found that in one acre of land in Muli village of Baster district, a farmer was producing a yield of 1.5 quintals before NREGA with the income level of Rs. 1200. After NREGA, through land development and irrigation, the yield increased to around seven quintals and earned around Rs. 5600 per acre. Apart from this, on an average the worker worked for 44 days under NREGA and earned Rs. 2860 at the rate of Rs. 65 per day.

Vanaik (2008) found that employment generation under NREGP in Hazaribagh of Jharkhand was quite low. In 2007-08, the average employment generated for the 1.23 lakh household that demanded work was only around 34 days per household per year until June 2008, only 31,658 households had been provided with employment under NREGP.

Anonymous (2009) conducted study in five districts of Tamil Nadu (Cuddalore, Dindugal, Kanchipuram, Nagai and Thiruvallur) and found that 38.49 per cent of households did not migrate after implementation of MGNREGP. Study did not establish whether the reduction in migration was only due to operation of MGNREGP. Only 1.25 per cent of participants admitted to have got 100-125 days of work under the programme and the highest number of respondents who received 100 or more days of employment under the programme were in Cuddalore district (3.36 %). About 34.25 per cent of respondents said that they had received employment for 25-50 days followed by 32.23 per cent, 17.68 per cent and 14.55 per cent of respondents received employment for below 25 days, 50-75 days, and 75-100 days respectively. Participation of workers belonging to SC category was the highest in Nagai district (65.38 %) and it was 44 per cent in all the four districts put together. Female worker participation was the highest in Thiruvallur district (88 %) and 77 per cent in all four districts of the whole. About 52 per cent of workers were between the age group of 18-36 years and participation by young worker was the highest in Kanchipuram (67 %).

Harish (2010) conducted study in Chikkamagaluru district of Karnataka and found that operation of MGNREGP increased the total number of working days modestly by 16.17 per cent. For the participants of MGNREGP, their total income was increased by 9.04 per cent and share of income earned from NREGA to their total income was 8.05 per cent which was much lower than the share of income from agriculture (62.95 %) and non-agriculture (29.25 %). This was because the household's average number of working days was only 32 under the Act.

Ahuja *et al.* (2011) conducted a study in agriculturally backward district of Mewat and agriculturally advanced district of Karnal in Haryana state and found that average number of days of employment generated through MGNREGP was 85 in Mewat

region compared to 71 in Karnal region per household per year. MGNREGP contributed 18.10 per cent of total employment for a household on average per year in both districts. Study found significant difference in employment generated through MGNREGP between Mewat region (24.6 %) and Karnal (13.7 %) for participating households per year. Study concluded that "MGNREGP is a good source for employment generation but it had not been able to check migration from developed region due to high wages prevailing in destinations".

Sarkar *et al*. (2011) who conducted study in Burdwan district of West Bengal concluded that annual per capita income of beneficiaries of MGNREGP increased by ten per cent from Rs. 9595 to Rs. 10602 in 2008-09 at constant prices over the previous year, but in 2009-10 it has slightly decreased (1.9 %) over the previous year (to Rs. 10,394). The per capita savings of beneficiaries had almost doubled (97.2 % increase) in 2008-09 over 2007-08 and had again increased by 40.30 per cent in 2009-10. The corresponding changes for non-beneficiaries were increased by 2.30 per cent and again by 0.50 per cent, during respective periods.

Srikantha Murthy and Indumati (2011) reported that the impact of MGNREGP wage on the economic scarcity of labour is relatively modest when compared with the impact of hike in non-farm wages n Chitradurga district. Even though the provision of food security through public distribution system has contributed to the economic scarcity of labour, the relative hike in non-farm wages is contributing to higher economic scarcity of labour rather than Public Distribution System and MGNREGP wages.

Sonypellissery and Kumarjalan (2011) in their study opined that MNREGA has no impact on the social transformation (though legally claimed through provisions such as equal wages) that women involved in the programme need, but nevertheless huge potential for women to do more benefit in terms of day-to-day welfare: the programme has potential to support women's empowerment in the sense that it affords them the opportunity to experience their collective strength, and potentially redefine relations with men through involvement in the programme.

Vanitha and Srikantha Murthy (2011) who conducted study in Mysore district of Karnataka found that average days of employment generated in MGNREGP was 57 days and average days of employment generated has increased by 34.52 per cent, average number of labour force per family has also increased by 15 per cent and the average annual wage income increased by 27.35 per cent after implementation of MGNREGP during 2010-11.

Roy *et al.* (2012) analysed the impact of standard of living of beneficiaries in Dalai district of Tripura state and found that the overall mean value of standard of living of beneficiaries before MGNREGP programme was found to be 36.5 per cent as compared to the overall mean value of 60.10 per cent after the implementation of MGNREGP programme. There is an enhancement of mean value in the standard of living of beneficiaries by 65 per cent indicating significant increase due to intervention of MGNREGP.

2.3 Asset Creation and Benefit Derived from them

Joshi *et al.* (2008) studied MGNREGP in five districts of Rajasthan (Dungarpur, Jhalawar, Jalore, Banswara and Karauli) and found that out of 13775 works that were completed in MGNREGP in five districts, maximum number of completed works were observed in Dungarpur district (5208) followed by Banswara (4525) and the least in Jalore (15) during 2006-07 and 2007-08. A maximum number of completed works were under category of water conservation and water harvesting (7303).

Anonymous (2010) conducted study in Chitradurga District of Karnataka found that due to de-siltation work taken up in village tank in 6 villages there was significant improvement in groundwater level. Area irrigated from increased groundwater level was significant in all the villages and increased was seen in range of 20-90 per cent.

A study conducted by Dhananjaya and Prathibha (2011) using secondary data of MGNREGP during 2008-09 from Ministry of Rural Development found that asset creation, maximum number of assets were created in the category of water conservation and water harvesting (25 %) followed by rural connectivity (16 %), provision of irrigation facility to land owned by backward classes (17 %), Land development (15.5 %), renovation of traditional water bodies (7.5 %), micro irrigation works(6 %), drought proofing (5.5 %), flood control and protection (4.5 %) and any other activity approved by Ministry of Rural Development(1.8 %) across the country.

Harish *et al*. (2011) conducted study in four districts of Karnataka (two good performing viz., Chitradurga & Davanagere and two passive performing namely Shimoga & Hassan) found that de-siltation of tanks taken up in all four districts of Karnataka had effect of improvement in water impounding, facilitating ground water recharge, double cropping, increased irrigated area and improved water bodies.

III METHODOLOGY

The research methodology in terms of conceptual and empirical framework followed and its operationalization is discussed in this chapter. The particulars include description of study area, sampling procedure followed, sampling framework and analytical framework. These are presented under the following heads.

3.1 Description of the Study Area

3.2 Sampling Framework

3.3 Analytical Tools and Techniques

3.1 Description of the Study Area

3.1.1 Geographical features of the study area

Study was undertaken in Belladamadugu village located between 13°41.82' N latitude and 77° 08.95' E longitude and is at a height of 789.94 m above the mean sea level in Madhugiri taluk of Tumkur district, Karnataka state. The village is nine kilo meters away from taluk headquarters and 53 kilo meters away from district headquarters. The village receives total rainfall of 650 mm per annum with only 44 rainy days in a year. Details of geographical location of the village are provided in Figure 3.1. The village was named as Belladamadugu because people used to store their marketable surplus beneath the ground. In Kannada language, 'Bela' means agriculture produce and 'madugu' means storing produce. Thus, Belladamadugu implies storing agricultural produce for consumption/use in future.

3.1.2 Demographic characteristics of the study area

The village has a population of 1,325 persons with density of 267 per sq. km and sex ratio of 1000 (male): 978 (female). Of the total population, 22 per cent, 13 per cent, 63 per cent and two per cent belong to ST, SC, OBC and minority categories, respectively. Out of 276 households, 20 per cent, 13 per cent, 66 per cent and two per cent of persons belong to ST, SC, OBC and minority categories, respectively. Table 3.1 provides the socio-economic details.

3.1.3 Occupational details of the study area.

In Belladamadugu, people mainly depend on agriculture and allied occupation such as dairy, sheep and goat rearing for their livelihood security. Dairy is the most progressive co-operative activity in the village and it has interwoven with agricultural activities through backward and forward linkages. On an average 650-700 liters per day of milk is milked in the village. Sheep (650) and goat (120) rearing is also a predominant activity in the village. People graze sheep and goat on nearby hillocks.

Villagers have diversified sources of income in addition to agriculture Gathering and leaf plate making using *Butea monosperma* tree leaves, tamarind harvesting and processing, brick making, beedi making are the village production (manufacturing) activities. Leaf gathering and leaf plate making and tamarind harvesting and processing

have become the most predominant occupations, about 35 per cent households make the leaf plates during the their leisure time. Leaf plates are made by the leaves of the tree called flame of the forest (*Butea monosperma*). Villagers collect leaves from different parts of the local forest area from about 50 km surrounding area of the village during January to April months. Households not only gather leaves but also purchase the leaves from traders. The collected leaves used to be neatly processed for making leaf plates. Tamarind harvesting and processing is a seasonal occupation, it would provide employment and income during the summer season. Women are actively involved in these production activities. Table 3.2 provides details of the occupational structure of Belladamadugu village.

3.1.4 Land Use Pattern

The details of land use pattern of village indicates that 70 per cent of the land in the village is having red sandy soil, and remaining 30 per cent of the land is red, shallow soil type. It can be observed that (Table 3.3) the total agricultural land is 364 hectares, gross cropped area was 392 ha. Borewell was the only source of irrigation. During kharif season, under rainfed condition, groundnut (205 ha), ragi (22 ha), piegeonpea (18 ha), horsegram (10 ha) were major crops cultivated. Castor, other pulse crops, oilseed crops were cultivated as intercrop, while paddy (51 ha), groundnut (13.2 ha), flower crops (8 ha), vegetables, and fodder crops were grown during both kharif and summer under irrigated condition. Even though flower crops such as chrysanthemum, jasmine etc., were grown in limited area but got commercial importance. Ragi and paddy are the staple food crops and groundnut, paddy, flower crops, vegetables are the commercial crops.

3.2 Sampling framework and database

In this study, ICRISAT, VDSA classification of households was followed, with five strata, viz., landless, marginal, small, medium and large land holding household as detailed in Table 3.4. From each household class, about five per cent of household was chosen as representative sample.

Field survey was carried to collect primary data from 26 households, 21 farmers, 10 leaf plate makers, four luggage auto transport operators, 10 households involved in services, 22 participants of MGNREGP and 35 non participants of MGNREGP. Occupation pattern of the sample households is presented in Table 3.5. Secondary data pertaining to village statistics and MGNREGP works were obtained from post office, government school, anganwadi, SHGs and official website of MGNREGP (http://nrega.nic.in/netnrega). Well-structured and pre-tested schedules were used to collect data from sample villagers, which included source wise information on the transaction, both within and outside the village. The sampling was taken care to nearly represent all sectors of the rural economy. List of all samples taken from different economic agents is provided in Table 3.6. Primary data were collected for the agricultural year 2012-13 (From 1st June 2012 to 31st May 2013) and secondary data collected were pertained to the financial years from 2009-10 to 2012-13. Stratified sampling method was used in the collection of data from the households.
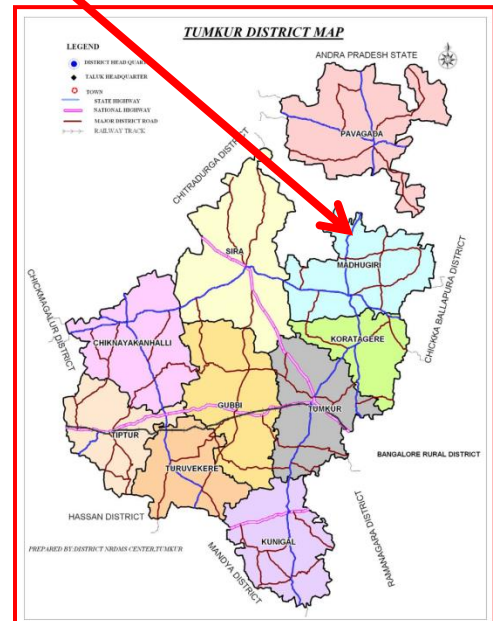
Fig. 3.1: Location of the study village (Belladamadugu) in Tumkur district, Karnataka

3.3 Analytical tools and techniques employed

3.3.1 Social Accounting Matrix (SAM)

A 65X65 sector SAM was developed to find the key sectors significantly contributing to the Belladamadugu village economy and to assess the contribution of MGNREGP to the livelihood security. A SAM is defined as an organized matrix representation of all transactions and transfers between different production activities, factors of production and institutions (households, corporate sector and government) within the economy and with respect to the rest of the world. (Saluja, M. R. and Bhupesh, V., 2006). A social accounting matrix is a single entry accounting system where each sector is represented by a column for payments and a row for receipts.

3.3.1.1 About SAM

A SAM is a comprehensive accounting framework within which the full circular flow of income from production to factor income, household income to household consumption and back to production is captured. In the SAM, all transactions in the economy are presented in the form of a square matrix. Each row of the SAM gives receipts of an account while the column gives the expenditure. The total of each row should be equal to total of each corresponding column. The fundamental law of economics says that for every income there is corresponding outlay or expenditure. It plays a major role in defining the completeness of a model or analytic formulation. A SAM is a simple and efficient way of representing this fundamental law.

SAM is represented in the form of a square matrix with rows and columns, which brings together data on production and income generation as generated by different institutional groups and classes, on the one hand, and data about expenditure of these incomes by them on the other. In SAM, incomings are indicated as receipts for the row accounts in which they are located and outgoings are indicated as expenditure for their column accounts. Adelman *et al.* (1988) opined that the SAM as a tabular presentation of the accounting identities, stating that incomings must be equal to outgoings for all sectors of the economy. SAM is a data system, including both social and economic data for an economy. SAM is broader than an input-output table and typical national account, showing more detail about all kinds of transactions within an economy. An input-output table records economic transactions alone irrespective of the social background of the transactors. A SAM, classifies various institutions to their socioeconomic backgrounds instead of their economic or functional activities

3.3.1.2 Assumptions of SAM

❖ Static economic conditions, i.e., price, population, employment, state of technology remains same for the year under consideration

❖ Supply is perfectly elastic. SAM models assume a Keynesian demand-driven system without resource constraints.

❖ Production utilizes linear, fixed-proportion technologies and the average and marginal expenditure propensities are the same.

Table 3.1: Socio-Economic profile of Belladamadugu village

Particulars		Values
Location (District)		Tumkur
Rainfall (mm)		650
Population	Male	670
	Female	655
	Total	**1325**
Households		276
Agricultural land (ha)		364
Soil type		Red sandy loam
Cropped area (ha)	Kharif	295
	Summer	97
	Total	**392**

Table 3.2: Occupational pattern / Economic agents of Belladamadugu village, 2013

Sl. No.	Particulars	Number	Employment (Persons)
1.	Anganwadi Centre	1	2
2.	Barber	1	1
3.	Bidi making	5	8
4.	Brick making	4	12
5.	Dairy	1	3
6.	Drum player	1	1
7.	Govt. School	1	4
8.	Grinding mill	1	1
9.	Hotel (including small tea shops)	4	8
10.	Leaf plate making	80	186
11.	Luggage auto driver	8	8
12.	Painter	3	3
13.	Panchayath employees	1	1
14.	Pigmi collector	1	1
15.	Private salaried work	6	6
16.	Provision store	1	2
17.	Public Distribution system shop	1	3
18.	Tailor	1	2

Table 3.3: Land Use Pattern in Belladamadugu village during Agricultural Year 2012-13

Particulars	Area (Ha)
Agriculture	364
• Kharif	
1. Groundnut	205
2. Paddy	33
3. Ragi	22
4. Flowers and vegetables	14
5. Others	21
Subtotal	**295**
• Summer	
1. Groundnut	38
2. Paddy	26
3. Flowers and vegetables	9
4. Others	24
Subtotal	**97**
Waste Land	2
Land used for roads, buildings and non-agricultural purposes	24
Land occupied by water resources (tank, river)	74
Land occupied by hills, rocks, etc	32
Total geographical area	**472**

3.3.1.3 Characters and features of SAM

The principle of a SAM is that of the double entry bookkeeping in accounting. A SAM is a series of accounts in each of which incomings and outgoings (or income and expenditure) must balance. What is "incoming" into one account must be "outgoing" from another account. In a SAM the double entries are achieved by only a single entry in a matrix. Each account consists of one row across the matrix and one column down it, both are identically numbered.

➢ Two principal objectives of SAM are

- Organization of information, usually information about the economic and social structure of a country/region/village in a particular year.

- To provide the statistical basis for the creation of a suitable economic model to analyze how the economy works and to predict the effects of policy interventions.

- SAM is designed to capture the micro and macro-economic structure of the economy.
- A SAM provides a snapshot of the economy by showing the circular flow of income and expenditure, usually for a given year.

Table 3.4: VDSA Household Classification and Sampling framework

Sl. No.	Category	Land Holding classification*	No. of Households in Belladamadugu	Sample size	per cent of sample households
1	Landless	<0.1 ha	26	5	19
2	Marginal	0.1 ha - < 1 ha	142	7	5
3	Small	1 ha - < 2 ha	58	7	12
4	Medium	2 ha- < 4 ha	35	5	14
5	Large	> 4 ha	15	2	13
	Total		**276**	**26**	**9**

Table 3.5: Occupation Matrix of Sample Households for Belladamadugu Village for Agricultural Year 2012-13 (post stratified)

Occupation	Ll*	Ma*	S*	Me*	La*	within village	outside the village	Total sample
Agri. labour	6	13	3	1	1	24	0	24
Anganwadi teacher	1	0	0	0	0	1	0	1
Beedi making	1	0	0	0	1	2	0	2
Drum player	1	0	0	0	0	1	0	1
Leaf plate making	1	2	0	0	0	3	0	3
Wood broker	1	1	0	0	0	1	1	2
Tea shop	1	0	0	0	0	1	0	1
Tractor driver	1	1	0	0	0	2	0	2
Tailor	0	0	0	1	0	1	0	1
Auto driver	0	1	0	1	0	2	0	2
Painter	1	0	0	0	1	0	2	2
Police constable	1	0	0	0	0	0	1	1
Dairy tester	0	1	0	0	0	1	0	1
Store labour	0	0	0	0	1	0	1	1
Naati vaidya	0	1	0	0	0	0	1	1
Factory worker	0	0	5	1	0	0	6	6
Total sample	15	19	8	4	4	38	13	51

Note: Ll*: Landless, Ma*: Marginal, S*: Small, Me*: Medium, La*: Large

Table 3.6: Sampling of Economic Agents in Belladamadugu village

Occupation	Population Size
Anganwadi Centre	1
Anganwadi workers	2
Barber shop	1
Bidi making	5
Dairy secretary	1
Dairy tester	1
Drum player	1
Tailor shop	1
Govt. School	1
Govt. school cook	3
Grinding mill	1
Hotel (including small tea shops)	4
MGNREGP participants	22
Pigmi collector	1
Provision store	1
Provision store	1
Public Distribution system shop	1
SHG (Information for 44 SHGs obtained from one main organization KDRDP)	44
TV cable operator	1

Occupation	Sample size
Leaf plate making	10
Luggage auto driver	4
MGNREGA Non participants	35
Private salaried	2
Brick making	1
Dairy (milk production)	15
Painter	1
Panchayath employees	1
Tractor driver	1
Farmers	21

> It also sheds light on the activities of different economic agents by describing the interrelationships between firms, farms, households, investors and the external sector.

> The extent of number of accounts in a matrix depends on the available data and the motivation one has for constructing it. The data and the effort available for constructing the SAM impose limitations. If one wishes to show how different activities affect or are affected by different socioeconomic groups in society, the amount of detail must correspond to the different one wish to make.

3.3.1.4 Village Social Accounting Matrix

Village Social Accounting Matrices (SAMs) are designed to capture the complex interlinkages among village production activities, village institutions, and the outside the world. SAMs are useful starting points for village wide economic analysis.

Village SAMs summarize and neatly illustrate the flows of inputs, outputs, and income between food production and other productive sectors in the village, the flows of income between production activities and village households, the channelling of household income into consumption and investments and the exchange of goods and factors between the village and the rest of the world.

Entries in a village SAM include

- Intermediate input demands between production sectors.

- Income (value added) paid by the production sectors to different types of labour (male or female, hired, permanent labour) or attributed to land or capital.

- The distribution of labour, land and capital value added across different household groups.

- The distribution of household groups' expenditure across consumption of domestically produced goods and services, savings and imports.

- Government account collects taxes from commodities and households and redirects this income within the system, saves it or uses it to pay foreigners (for imported goods and services or repayment of debt).

3.3.1.5 Designing village SAM

The task of designing a village SAM includes identifying the major production activities in the village, factors used in village production, village institutions for production, consumption, and marketing and exogenous institutions and capital accounts. The design must be based on thorough prior understanding of the structure of a village production, markets, institutions and interaction with outside world. Typically a significant amount of time in the village is required before the researcher actually gathers SAM data. To avoid possible inaccuracies or omissions in the survey, the researchers first need to obtain a feel for the workings of a village economy and society.

The design of a village SAM must reflect not only village realities but also the purposes of the research. For example, the focus of the present study was MGNREGP's impact on the village economy, the village SAM institutions should include MGNREGP as an account. A focus on regional economic development may call for the inclusion of both town and farm households. However, the village SAM design reflects research goals, it must at the same time be true to the structure of village economy, society, and institutions.

3.3.1.6 Description of Village SAM accounts

A typical village SAM contains major accounts such as

    A. Activity account

    B. Commodity account

    C. Factor account

    D. Household (HH) account

    E. Government account

    F. Savings-Investment (S-I) account

    G. Rest of the world

3.3.1.6a Activity account

Activity account for Belladamadugu village describes the disaggregate village production activities and how the respective transactions can be used to compute expenditure (column) and income (row) of the activity account. Including agriculture, there are seven other production activities such as livestock, village production (manufacturing), private services, public and transport services. In Agriculture, there are nine sub-accounts viz., rainfed groundnut cultivation, irrigated groundnut cultivation, finger millet cultivation, paddy cultivation, flower crop cultivation, redgram cultivation, horsegram cultivation, fodder crop cultivation and other crop cultivation include onion, tomato, leafy vegetables, castor, field bean and mango. Livestock has two sub-accounts viz., milk production and dairy cooperative sector and sheep and goat rearing activity. Village production has leaf plate making, tamarind harvesting and processing, brick making and beedi making sub-accounts. Private services include flourmill, tailor shop, barber shop, provision store including small tea shops, TV cable operator and pigmi collector. Public services such as anganwadi centre, government school and PDS shop. MGNREGP and SHGs were taken as separate accounts. Each of these village activities are described in detail below. But in aggregate village SAM private services, public services and SHGs were combined to make one account namely other sectors.

Agriculture: An important feature of agriculture in the village SAM is the contrast between rainfed and irrigated agriculture. All the crops are disaggregated into rainfed agriculture, irrigated agriculture and perennials because input intensities and composition differ substantially between rainfed and irrigated agriculture. Values of output for each household are calculated as the value of cash sales plus the value of unsold output. Some part of the unsold output kept for seed are valued at higher prices as indicated by farmers.

Similarly, the output sold as seed fetched a higher price compared to sale of output as grain. When small quantities of more than one vegetable crop are grown in the same plot of land, they are clubbed together as one single vegetable crop.

Farm input: Seeds used are either home produced or purchased both locally as well as imported from outside the village. Home produced seeds were valued at prices indicated by the households. Manures include both farm produced and purchased. Farm produced manures are valued at prices indicated by the farmers depending on source, i.e., goat manure is priced higher than cow dung. Fertilizers, insecticides and fungicides are imported from the rest of the village. Irrigation charges are either paid in kind or in cash. Cash payment is confined to payments made and kind payments were generally confined to sharing of well water from the neighbor's farm for which a part of the crop output is given as irrigation charges.

Tractors and bullocks are hired from households within the village and fuel charges, including electricity are paid outside the village and land revenue is paid to government outside the village. Labour use comprises total wage payment to hired labour for each operation, including both cash and kind valued at commodity specific prices. Similarly, family labour for each specific operation was imputed by using the prevailing operation and by gender per hourly wage rates. Land Rent: Rents were either fixed or based on crop sharing contracts. Fixed rents were either paid in cash or in kind. Interest: farmers take production loan from different sources: money lenders, credit cooperatives and commercial banks. Actual rates of interest for each loan borrowed are considered.

Livestock: Total livestock output in value is the sum of (a) milk sold and consumed (b) milk products sold and consumed (c) sale of livestock (d) sale and consumption of other products such as meat, eggs and manures. Livestock activity also earns from bullock services for agricultural operations on plots operated by the farmer and hired-out to households both inside and outside the village. This hiring activity is treated under factor capital account along with tractors and threshers. The major input costs are for fodder, veterinary services, and other expenses. Fodder is both farm produced as well as purchased and purchases made outside the village. Veterinary expenses are incurred outside the village. The cost of labour for livestock maintenance has taken per hour basis.

Agricultural services: This activity includes hiring-out of tractors, threshers and bullock-pair. The receipts from these services can be calculated from two sources: one from the household response on money paid for hiring these services and the other from the owner of these assets. Expenses related to hiring-out of the tractor and thresher includes fuel, maintenance expenses, tax and insurance payment. Profits are calculated residually. This hiring activity is treated under the factor capital account.

Village production or Manufacturing: This account is further disaggregated into production activities in the village viz., Leaf plate making, tamarind harvesting and processing, beedi making and brick making. Receipts for these activities are derived from the sale of products and by-products within and outside the village and service charges, the value of products and by-products retained for own consumption, other receipts

Plate 4: MGNREGP work (Water harvesting structure) in community field, Belladamadugu village, 2012-13

Plate 5: MGNREGP work (sand moram) in community field, Belladamadugu village, 2012-13

Plate 2: Dairy activity in Belladamadugu Village during 2012-13

Plate 3: Village production (manufacturing) activities viz., Leaf plate making, Tamarind processing and Brick making in the Belladamadugu village during 2012-13. (clockwise)

Plate 1: Agricultural activities viz., Rainfed Ragi, Rainfed Groundnut, Sprinkler Ragi, Irrigated Paddy and Irrigated Flower crop cultivation in Belladamadugu village during 2012-13. (clockwise)

changes in inventories. The cost of production of these activities includes the purchase of raw materials within the village and outside the village, wage payment to working labour and imputed value of family labour. Profits are derived residually.

Private services: These activities within the village includes services of barbers, electricians, painter, flour mills, private schools, drum players, pigmi collector, TV cable operator, provision store and private school teachers. Receipts such as service charges, salary, grants for schools, etc., and expenditures from within the village and outside the village have to be recorded.

Government services: Government services in the village include anganwadi center, government school and village ration shop. The village ration shop sells rice, wheat and kerosene at subsidized prices to households. Government school employ teachers and workers and have students from within the village as well as outside the village. The school paid various scholarships to students and receive several grants like free books, clothes, etc., from different schemes such as Sarva Shiksha Abhiyan Scheme, midday meal scheme and so on. The Integrated Child Development Services (ICDS) scheme in the village aims to improve the nutrition and health status of the vulnerable groups including pre-school children, pregnant women and nursing mother provided supplementary nutrition to households in the village. The aganwadi center in the village implements this scheme. The aganwadi center receives regular supplies of rice, wheat, pulses, oil, salt, and protovita once in every two months that are cooked and distributed to the pre-nursery children.

Transport services: The modes of transport in the village include auto rickshaw, tractor and bullock cart, as there was no bus services for transporting both people and agricultural produce on a regular basis from the village to rest of the village. Receipts are based on service charges. Expenditure side, payments made for fuel, maintenance, road tax, vehicle tax and insurance paid are considered

3.3.1.6b Commodity account

Every activity has its own commodity. Apart from each activity having its own commodity; many activities produce more than one commodity. In other cases, more than one activity produces the same commodity under different technologies. In the first case where one activity produces more than one commodity, enabling the production of by-products that are used in more than one sector are treated as separate commodities in the SAM.

3.3.1.6c Factor account

This account depicts receipts from productive activities such as wages, rent and interest, which pay for factor services, and payments to institutions (households) and Rest of the World (RoW), which provide these services. They are usually distinguished as hired and family labour and capital.

3.3.1.6d Institutions

Institutions normally comprise households and the government. Households are classified into landless households, marginal farm households, small farm households, medium farm households and large farm households based on VDSA criteria. Households earn income as factor payments, social transfers, remittances, savings and expenditure as household consumption, borrowings from different sources.

The village government, known as gram panchayath which was outside the village, carries out several activities such as drainage canal construction, water supply through pipeline, etc. The village (panchayath) government pays salary to panchayath workers. Apart from getting grants from rest of the world, the village government collects water tax and house tax from the village residents.

3.3.1.6e Saving-investment or capital

This account represents the capital account of the village. This account receives the savings of the households. Savings are derived as the residual at the end of the year after deducting the consumption from opening stock at the start of the year and supplied during the year. The capital is used for the purchase of investment products.

3.3.1.6f Rest of the world (RoW)

This account depicts the receipts and expenditure made by rest of the village. Land revenue paid by agricultural activities and taxes paid by other activities to outside village government. Road tax and vehicle insurance paid by owners of vehicles, taxes paid by retail shop, advance payment for electrical connection, income tax, professional tax and others paid outside the village were recorded as activity paying to the ROW and this forms the single largest entry in the account

Export of agricultural commodities such as cereals, pulses, cash crops, etc., and agricultural services such as threshing services, tractors, auto rickshaw and of commodities and services produced by the village such as barber, tailor, electrician and painter. Major imports were confined to import of agricultural inputs, imports (purchases) by the retail shop of different items and by ration shop. Livestock activity imports animals, concentrates and veterinary aid and agricultural service activity imports a number of producer durables. The transport activity within the village imports producer durables while a number of consumer durables and consumption of goods were imported by households and some households within the village imports insurance services from outside the village. Both schools as well as anganwadi import stationeries.

3.3.1.7 Methods Followed in Preparing the SAM Table

3.3.1.7a Activity and commodity accounts

The northwest corner of the SAM contains village production activity accounts i.e. it is the village input-output (Leontief) sub matrix. The "activities" account is different from the "commodities" account. Activities are the entities, such as crop production, livestock, dairy, tamarind processing, leaf plate making, brick making, beedi

making, flourmill, provision stores, tailor's shop, barber's shop, government school, anganawadi centers, MGNREGP and SHG activities. To produce commodities, the activities employ raw materials that are available in the village market as intermediate inputs such as seeds of the previous year (in agriculture), manures, fertilizers, and other material inputs used in agriculture. The extent of labour and land utilized was recorded in factor account. This was a payment from activities to factors, and hence the value-added entry in the SAM appeared in the activity column and the factor row [C_1 to R_3]. Intermediate demand is a payment from the activities of commodities for the goods and services in the domestic market used in the production process [C_1 to R_2]. Adding together the intermediate inputs [C_1 to R_2] and factor incomes [C_1 to R_3] gives the gross output (Table 3.7).

The commodities account represents the total domestic (village) and imported supplies of goods and services available in the economy. The domestic supply (commodity supply) [C_2 to R_1] captures the flow of domestic production from commodity to activity accounts and its value, which should be equal to gross output, i.e. the sum of column C_1. The cell "imports" [C_2 to R_7] describes the value of purchase of the goods and services from outside the village. Apart from the intermediate inputs for production [C_1 to R_2], the total demand for commodities consists of household consumption spending [C_4 to R_2], government spending [C_5 to R_2], investment demand [C_6 to R_2], and export demand [C_7 to R_2]. These sources of demand make up the commodity row [C_2] and represent the payments by the different entities for commodities. The commodity row and column accounts are referred as the Supply-Use Table, or the total supply of commodities and their different kinds of uses or demands.

Factor payment cell [C_3 to R_4] indicates that the income received by the factor owners (households) from the factor account that includes wages, rent and profits. And another factor payment cell [C_3 to R_7] shows that the payment made from the factor account to the rest of the world i.e., if the labour from outside the village works within the village then the wage received by him referred to this cell.

3.3.1.7b Institutions (Household and Government accounts)

In addition to tracing the income and expenditure flows of activities and commodities, the SAM also documents information on different institutional accounts, such as households and government. Households are the ultimate owners of the factors of production; they receive income earned by factors during the production process in the form of wages, rent and profits [C_3 to R_4]. Households also receive transfer payments from the government such as pensions and social security [C_5 to R_4], and from the rest of the world [C_7 to R_4], in the form of remittances and gifts. Households use their incomes to purchase commodities [C_4 to R_2] and pay direct taxes to the government [C_4 to R_5]. The remaining income is then saved (or dis-saved if expenditures exceed incomes) [C_4 to R_6]. The inter-household transfers cell [C_4 to R_4] refers to transaction takes place between the households in the village (Table 3.7).

The government mainly derives its revenues from taxes [C_2 to R_5], [C_4 to R_5], and transfer payments from the rest of the village government such as grants, and

Table 3.7: Basic Structure of Village Social Accounting Matrix

		Expenditure columns						
Income rows		**Activities C₁**	**Commodities C₂**	**Factors C₃**	**HH C₄**	**Village Government C₅**	**S-I C₆**	**Rest of world C₇**	**Total**
	Activities R₁		Commodity supply						Activity income
	Commodities R₂	Intermediate Demand			Consumption demand	Recurrent spending	Investment	Export earnings	Total demand
	Factors R₃	Factor payment			Interest on consumption loan			Factor earnings	Total factor income
	Households R₄	Profit		Factor payment	Inter HH transfers	Social transfers		Remittances	Total household income
	Village Government R₅		Taxes(land revenue)		Taxes(water, electricity)			Grants &loan	Government expenditure
	Saving and Investment R₆				Private savings	Public savings			Total savings
	Rest of world R₇	Import payment	Sales taxes &Import payments	Factor payment	transfers		Capital outflow		Foreign exchange outflow
	Total	Gross output	Total supply	Total factor spending	Total household spending	Government expenditure	Total investment	Foreign exchange inflow	

development assistance [C_7 to R_5]. The government then spends its revenues to pay for its recurrent spending on commodities [C_5 to R_2] and social transfers to households [C_5 to R_4]. The difference between total revenues and expenditures is the government savings (or deficit, if expenditures exceed revenues) [C_5 to R_6].

3.3.1.7c Savings, Investments, and Rest of the world Account

The savings and investment account captures the sources of savings that are used to finance domestic investments. Savings in the economy are classified into private and public savings. Private savings include savings from households [C_4 to R_6] and the government savings [C_5 to R_6]. Investment made in village economy [C_6 to R_2] and capital outflows [C_6 to R_7] to outside the village economy together referred as expenditure of S-I account. According to the ex-post accounting identity, investment or gross capital formation, which includes changes in stocks or inventories, must equal total savings (Table 3.7).

Rest of the village account, often called the "rest of the world" account in SAM, summarizes the economic interactions between the village and other economies in the region. Trade is captured in the interaction between the commodities account and this account by tracing the import payments [C_2 to R_7] and export earnings [C_7 to R_2], and also rest of the village account derives income as leakage from the village economy such as factor payment from factor account [C_3 to R_7] and transfers from household account [C_4 to R_7] and capital outflows [C_6 to R_7].

3.3.1.8 SAM Multipliers

For a SAM multiplier analysis, the endogenous and exogenous accounts are first identified. Normally activities, commodities, factors and household accounts are endogenous and village government, savings and investment and rest of the world accounts as exogenous as expenditure from those accounts is all exogenous. Next, the village SAM transaction matrix is converted into a matrix of average expenditure propensities by dividing each element in a SAM by its respective column total called column co-efficient matrix.

Hirway *et al.* (2008) used following method for calculation of multipliers using a village SAM.

Let the SAM model be written as

$$Y_j = \sum_i w_{ij} + \sum_i x_{ij}$$

Where,

$Y_j = \begin{bmatrix} y_1 \\ \vdots \\ y_j \end{bmatrix}$ And Y_j is a vector of column total of matrix Y, y_j is j^{th} column total;

$W = \begin{bmatrix} w_{11} & \cdots & w_{n1} \\ \vdots & \ddots & \vdots \\ w_{n1} & \cdots & w_{nn} \end{bmatrix}$ and W is a matrix of endogenous accounts;

And $X = \begin{bmatrix} x_{n+1,1} & \cdots & x_{n+1,n} \\ \vdots & \ddots & \vdots \\ x_{n+k,1} & \cdots & x_{n+k,n} \end{bmatrix}$ and X is the vector of exogenous accounts.

Upon dividing each element of W by its respective column total y_i we get coefficient matrix 'A' whose elements are a_{ij}. Mathematically, it can be represented as

$$a_{ij} = W_{ij}/Y_{ij}$$

Where,

$$A = \begin{bmatrix} a_{11} & \cdots & a_{n1} \\ \vdots & \ddots & \vdots \\ a_{1n} & \cdots & a_{nn} \end{bmatrix}$$

The above equation can be written as

$$Y = AY + X$$

$$(I - A)Y = X$$

$$Y = (I - A)^{-1}X = MX$$

Where,

$$M = \begin{bmatrix} m_{11} & \cdots & m_{n1} \\ \vdots & \ddots & \vdots \\ m_{1n} & \cdots & m_{nn} \end{bmatrix}$$

The matrix M is called the village multiplier matrix because it contains estimated total, direct, indirect and induced effects of exogenous income injections on the endogenous accounts in the village SAM. Multiplier matrix contains coefficients m_{ij}, which represents the total impact on account *i* because of a unit shock/change in account *j*.

There are three types of multipliers, namely; output, household income and employment multipliers. To calculate these multipliers from M matrix, the activity column for which multipliers are to be calculated is selected and then, all row values for commodity accounts, labour accounts and household accounts are summed up.

Linkages between production and factors, between factors and households, and between households and production shape the impact of exogenous changes in the village economy.

To illustrate, consider an exogenous increase in the demand due to village exports. The initial, direct impact of this change is felt on the production side of village SAM as the affected sector and Leontief-type production linkages increase the output of village production activities. A Leontief village multiplier analysis would stop here. The increase in village production, however, generates an increase in value added, resulting in increased incomes for village institutions. Part of this income is spent on goods and

services produced in the village, and some it leaks out of the village through village "imports". Increased demand for production unleashes a new round of income change in the village.

The village multiplier consists of a multiple rounds of feedback among sub-accounts in the village SAM. Each new injection of income into a SAM sub-account first swirls around the local sub-systems of accounts and then is transmitted into other sub-systems of the SAM. This process continues if new income generates a derived demand for goods and services or induces a redistribution of income flows within the village, while a part of income / savings leaks out.

3.3.1.5 Interpretation of SAM multiplier

Output multiplier estimates the change in total output demand of the economy from a unit change in output/investment in a given sector. Employment multiplier estimates the increase in demand for labour from a unit increase in output/investment in a given sector. Household income multiplier estimates the change in income of all household from a unit change in output/investment in a given sector. If output multiplier value is 2 for MGNREGP activity then it implies that for one rupee increase in the final demand for MGNREGP activity, then, this results in Rs. 2 increase in the activity sector of the entire economy due to direct, indirect and induced changes in the coefficients matrix. Thus, an additional rupee increase in final demand for MGNREGP results in direct, indirect and induced income increase by Rs. 2 for output of the activity sector of the economy.

Similarly an employment multiplier value of 0.7 for MGNREGP activity implies that for a rupee increase in final demand for MGNREGP, there will be Re. 0.7 increase in demand for labour in the economy. A household income multiplier value of 0.55 for MGNREGP activity implies that due to increase of one rupee in final demand for MGNREGP, the income of households increase by Re. 0.55 over the existing income level in the economy. All increase in output demand or labour demand can be interpreted as real increase and not accruing due to changes in price level because SAM analysis assumes prices as constant and exogenous to analysis.

3.3.2 Descriptive Statistics

Data collected were presented in tabular form to facilitate easy comparison. The data were summarized with the aid of statistical tools like averages, percentages to obtain the meaningful results.

IV RESULTS

The results of the study on developing the SAM for identification of key sectors in the Belladamadugu village economy and the multipliers describing the role of MGNREGP are presented in this chapter. The results are presented under following headings

4.1 Status of MGNREGP in Karnataka

4.2 Snapshot of the Belladamadugu village economy

4.3 Identification of key sectors of the Belladamadugu village

4.4 Impact of MGNREGP on livelihood security of the Belladamadugu village households

4.5 Estimation of output, employment and household income multipliers

4.6 Impact of MGNREGP on overall economy of the Belladamadugu village

4.7 Extent of participation and benefit derived by marginal sections from MGNREGP

4.8 Impact of MGNREGP on natural resource conservation

4.1 Status of MGNREGP in Karnataka

The percentage of rural households in the State who worked under MGNREGP was 17 per cent. For those 17 per cent households involved in MGNREGP, the proportion of households who completed 100 days of MGNREGP employment formed hardly eight per cent (Table 4.1).

Considering the total employment generated in MGNREGP, the families belonging to SC/ST formed around 25 per cent of the families in the State, Tumkur and Madhugiri while in DV Halli panchayath it formed around 16 per cent. About 50 per cent of the total person days worked in MGNREGP was represented by women in Karnataka and Tumkur. This indicates that MGNREGP is economically empowering rural women.

4.2 Snapshot of Village Economy

An aggregate village SAM (Table 4.2) provides the snapshot of the village economy of the Belladamadugu. The size of the village economy was Rs. 17.36 crores. Village households generated income for their livelihoods from labour account (excluding MGNREGP wages) being Rs. 1.02 crores, of which 49 per cent was hired labour income followed by village production sectors (Rs. 62.51lakhs), other sectors (Rs. 54.33 lakhs) including transportation, flourmill, provision stores, agriculture sector (Rs. 51.08 lakhs), livestock sector (Rs. 39.49 lakhs), remittances (Rs. 3.44 lakhs) and from MGNREGP (Rs. 1.32 lakhs). Thus, MGNREGP income formed only 0.08 per cent of the village economy which is a miniscule. Practically MGNREGP has had little or no impact, while non-farm wages outside agriculture, had discernible impact on the village economy. The village has a trade surplus of Rs. 1.01 crores forming 5.79 per cent of village economy. Among all the aggregate sectors of SAM (Table 4.2), Rest of World

sector has the largest size followed by household sector, agriculture, village production sectors, livestock sectors and other sectors.

Table 4.1: Overview of work status of the MGNREGP in Karnataka state

Sl. No.	Particulars	Karnataka state	Tumkur district	Madhugiri taluk	D.V. Halli panchayath
1	Total number of households worked	13,31,967	69,769	12,777	512
2	Percentage of total person-days worked by other categories)	74	78	70	84
3	Percentage of total person-days worked by SCs/STs	26	22	29	16
4	Total person-days worked (in lakhs)	618	38	8	0.31
5	Average number of person-days worked per households	46	55	63	61
6	Percentage of households who reached 100 day limit	8	14	17	15
7	Percentage of person-days worked by women in MGNREGP	46	47	47	49

Source: MGNREGP website

4.3 Identification of Key Sectors of the Belladamadugu Village

Considering the total multiplier, the value exceeding three are for four sectors viz., Tamarind harvesting and processing, Horsegram cultivation, Anganwadi centre and Pigmi collector. The total multiplier exceeds two but below three are for 21 sectors, the highest being sheep and goat rearing, redgram cultivation and so on up to brick making and flourmill. The sectors with multiplier between one and two are TV, provision store, MGNREGP and PDS. It is in order to note MGNREGP gets 26th out of 27 rank in total multiplier, thus making the least impact on the economy (Table 4.3).

The major sectors of the Belladamadugu village based on the weighted multiplier value (Table 4.4) were, the milk production and dairy cooperative sector with weighted multiplier value (Rs. 172.08 lakh) followed by Tamarind harvesting and processing (Rs. 158.27), SHGs sector (Rs. 145.58 lakh), Brick making (Rs. 131.70 lakh), Rainfed groundnut cultivation (Rs. 130.64 lakh). The MGNREGP has virtually the lowest weighted multiplier value (Rs. 1.92 lakhs) due to weak linkages of MGNREGP activities with the village economy. Livestock sectors have 21 per cent share of weighted multiplier value, of which milk production and dairy cooperative account for 14 per cent and sheep and goat rearing account for six per cent. Village production activities such as tamarind

Table 4.2: Aggregated village Social Accounting Matrix for Belladamadugu village, 2012-2013. (Values in Rs. lakhs)

	Activity					Commodity					Factor		HH	V. GOVT	S&I	ROW	Total
	Agri	LS	VP	MGNREGP	OTH	Agri	LS	VP	MGNREGP	OTH	L	C					
Agriculture	0	0	0	0	0	133	0	0	0	0	0	0	0	0	0	0	133
Live stock	0	0	0	0	0	0	93	0	0	0	0	0	0	0	0	0	93
Village Production	0	0	0	0	0	0	0	123	0	0	0	0	0	0	0	0	123
MGNREGP	0	0	0	0	0	0	0	0	1.32	0	0	0	0	0	0	0	1.32
Other sectors	0	0	0	0	0	0	0	0	0	76	0	0	0	0	0	0	76
Agriculture	13	11	0	0	0	0	0	0	0	0	0	0	12	0	0	97	133
Livestock	11	0	0	0	0	0	0	0	0	0	0	0	7	0	0	75	93
Village Production	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	123	123
MGNREGP	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Other sectors	3	0	0	0	9	0	0	0	0	0	0	0	84	0	4	8	109
Labour	22	22	41	0.32	7	0	0	0	0	0	0	0	0	0	0	10	102
Capital	3	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	9
Households	51	39	63	0	54	0	0	0	0	0	102	2	0	1.28	0	3	317
Village Government	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
Savings & Investment	0	0	0	0	0	0	0	0	0	0	0	0	104	0	0	0	104
ROW	30	20	19	1	0	0	0	0	0	32	0	6	109	0	101	0	319
Total	133	93	123	1.32	76	133	93	123	1	108	102	9	317	3	104	319	

Note: Agri: Agriculture, LS: Livestock, VP: Village Production, MGNREGP: Mahatma Gandhi National Rural Employment Guarantee Act, OTH: Others (service providers including SHGs), L: Labour Services (including family labour), C: Capital Services, HH: Households, V.GOVT: Village Government (Panchayath), S & I: Savings and Investment, ROW: Rest of the World.

harvesting and processing (13 %), brick making (11 %) and leaf plate making (5 %) add to 28 per cent in the aggregate weighted multiplier value. Agriculture activities such as rainfed groundnut cultivation, irrigated groundnut cultivation, paddy cultivation and flower crop cultivation have shares of 11 per cent, three per cent, eight per cent and three per cent of multiplier value, respectively. MGNREGP has the least percentage share (0.16 %) and SHGs sector has a 12 per cent share of weighted multiplier value (Figure 4.1).

4.4 Impact of MGNREGP on Livelihood Security

The net income received from village activities by households (Table 4.5) indicate that landless households generate their income from the labour service (77 %), leaf plate making activity (12 %), private services (9 %), public services (2 %), and MGNREGP (0.50 %). The marginal farm households received income of 48 per cent from the labour services, 18 per cent from the irrigated crop cultivation, ten per cent from the milk production, eight per cent from the tamarind processing and harvesting, seven per cent from the leaf plate making, two per cent from the sheep and goat rearing and only 0.08 per cent from MGNREGP.

Small farm households received Rs. 3,200 (0.07 %) income from MGNREGP while they received a major income from labour services (40 %), followed by irrigated crop cultivation (17 %), milk production (13 %), tamarind harvesting and processing (13 %), sheep and goat rearing (12 %) and leaf plate making (4 %). Medium farm households generated their major portion of income from labour service (35 %), irrigated crop cultivation (22 %), milk production (12 %), tamarind processing and harvesting (13 %), sheep and goat rearing (12 %) and a meagre (0.04 %) income from MGNRGA. For the large farm households, similar trend was noticed; where in, labour services (36 %), irrigated crop cultivation (28 %), milk production (15 %), tamarind processing and harvesting (12 %) were the major income generating activities. Overall, the village households generated major part of their income from labour services (44 %), irrigated crop cultivation (19 %) and milk production (10 %) and MGNREGP formed a miniscule insignificant portion (0.09 %) of the total income. Therefore this in itself is a prima facie indicator that MGNREGP is not playing a significant role in shaping the rural livelihoods of Belladamadugu village.

4.5 Estimation of Output, Employment and Household Income Multipliers

The results on Multiplier effects from aggregated village SAM for Belladamadugu village for the agricultural year 2012-13 are presented in Table 4.6, considering the total multiplier, The largest total multiplier was observed for village production was 2.85 (brick making, tamarind harvest, leaf plate and beedi making) followed by labour incomes (2.79) and livestock (2.75). If the final demand for agriculture increases by 1 rupee, then the output of agriculture increases by Rs. 1.46, of which 1 rupee is for meeting the final demand, 0.097 is the direct requirement, 0.063 is the indirect requirement, and Rs. 1.16 is the total requirement. The output of livestock increases by Re. 0.12, and other services by Re. 0.29. Thus, a one rupee increase in final demand for agriculture does not result in any effect on village production activities and

MGNREGP sector. Due to increase in one rupee in final demand for agriculture, the induced increase in the income of village households by Re. 0.89 and increase in village employment by Re. 0.24. The total (direct, indirect and induced) requirement of the entire economy, to meet one rupee increase in final demand of agriculture sector is Rs. 2.73 which is the column multiplier.

Table 4.3: Ranking of sectors of Belladamadugu village economy based on the total multiplier

Rank	Economic activities (sectors)	Total multipliers
1	Tamarind harvesting and processing	3.25
2	Horsegram cultivation	3.23
3	Anganwadi centre	3.21
4	Pigmi collector	3.15
5	Sheep and goat rearing	2.91
6	Red gram cultivation	2.88
7	Government School	2.86
8	Barber	2.84
9	Irrigated ground nut	2.80
10	Tailor	2.80
11	Fodder crops	2.78
12	Flower crops	2.77
13	Rainfed Groundnut	2.75
14	Leaf plate making	2.68
15	SHG	2.68
16	Dairy & Dairy cooperative	2.62
17	Transportation	2.61
18	Paddy	2.60
19	Finger millet	2.56
20	Beedi making	2.54
21	Other crops	2.54
22	Brick Making	2.53
23	Flourmill	2.52
24	TV cable operator	1.70
25	Provision store	1.57
26	MGNREGA	1.44
27	PDS Shop	1.00

Similarly, if the final demand for livestock increased by one rupee, then the output of livestock increases by 1.03, of which 1 rupee is for meeting the final demand, Re. 0.03 for indirect requirement as there is no direct requirement from livestock to livestock. The output of agriculture increases by Re. 0.17, other sectors increases by Rs 0.28. Livestock sector also does not have any effect on village production activities and MGNREGP. Due to increase in the one rupee final demand for livestock induced increase in the income of village households by Re. 0.95 and increase in the village employment by Re. 0.37. Thus the total (direct, indirect and induced) requirement of the entire economy, to meet one rupee increase in final demand of the livestock sector is Rs. 2.75. If the final demand for village production sector increased by one rupee, the induced increase in the village household's income by Rs. 1.07 and the total direct, indirect and induced increase in output of all sectors by Rs. 2.85.

Table 4.4: Key sectors of Belladamadugu village as indicated by weighted value of multiplier

Sl. No.	Key Sectors	Value of output in 2012-13 (Rs. lakhs)	Multiplier	Potential multiplier value (Rs. lakhs)
1	Milk Production and Dairy cooperative	65.66	2.62	172.08 (14)
2	Tamarind harvesting and processing	48.75	3.25	158.27 (13)
3	SHGs	54.31	2.68	145.58 (12)
4	Brick Making	52.00	2.53	131.70 (11)
5	Rainfed Groundnut cultivation	47.53	2.75	130.64 (11)
6	Paddy cultivation	37.08	2.60	96.25 (8)
7	Sheep & Goat rearing	26.96	2.91	78.37 (6)
8	Leaf plate making	20.49	2.68	55.00 (5)
9	Flower crops cultivation	14.18	2.77	39.24 (3)
10	Irrigated Groundnut cultivation	13.75	2.80	38.53 (3)
11	MGNREGP	1.33	1.45	1.92 (0.16)
12	Other sectors	75.74	2.28	172.42 (14)

Note: Figures in parentheses indicate percentage of respective column total.

If the final demand for MGNREGP sector increases by one rupee, then the output of entire economy increases by Rs. 1.47 of which Re. 0.21 is the direct, indirect and induced increase in household income and Re. 0.16 is the direct, indirect, and induced increase in income from labour.

The total multiplier value of each sector is further segregated into output multiplier, employment multiplier and household income multiplier that are given in the Table 4.7. For one rupee increase in the final demand of milk production and dairy cooperative, the direct, indirect and induced increase in the output of all sectors in the village Rs. 2.62 of which Rs. 1.03 is the increase in the dairy's output, Re. 0.14 is
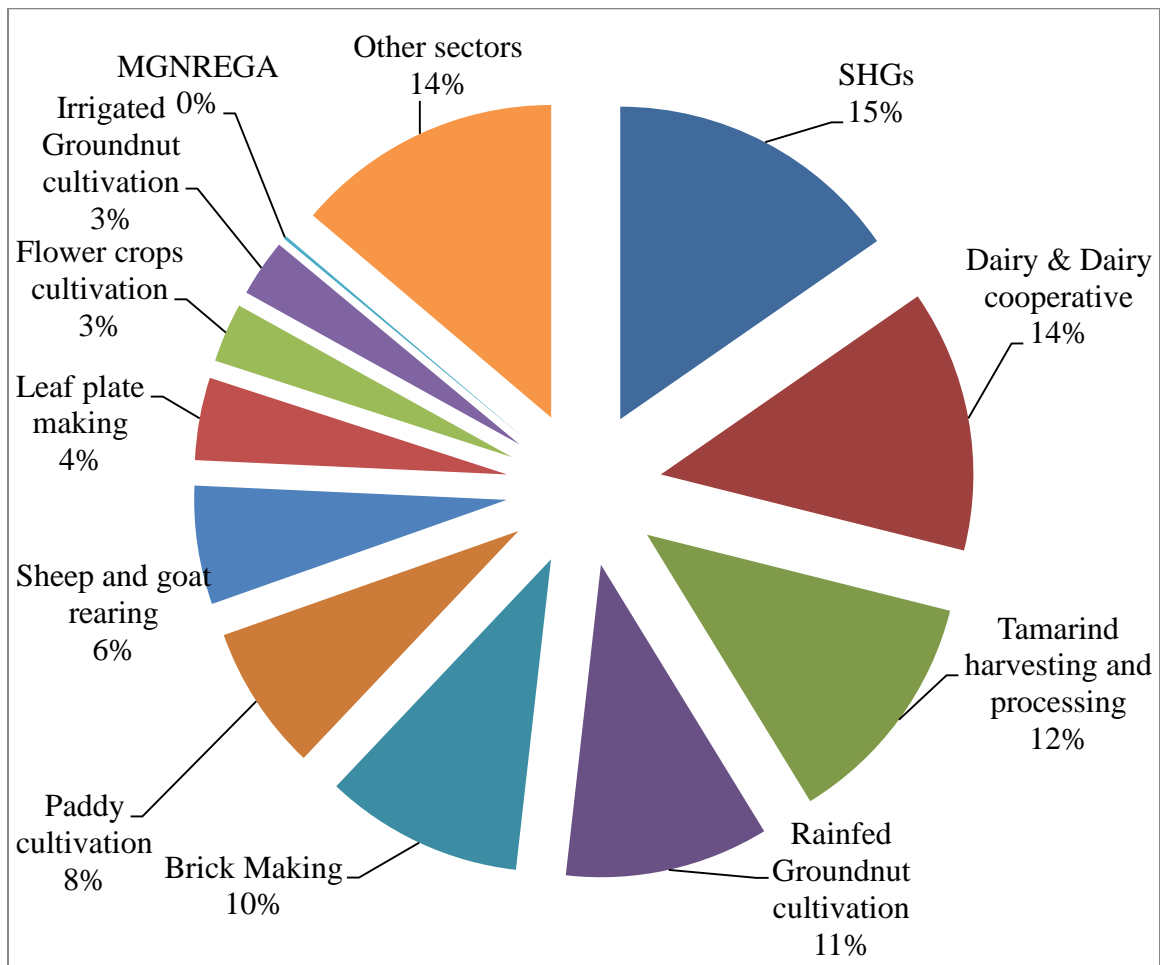
Figure 4.1: Key sectors of Belladamadugu village as indicated by potential multiplier values (in percentage)

increase in output of SHGs, Re. 0.09 is the increase in output of paddy and Re. 0.06 is increase in the output of fodder crop cultivation. Due to milk sector demand, flow of income to households is Re. 0.82 of which Re. 0.35 is for poor farm households and Re. 0.52 is for middle income households. Overall employment generated worth of Re. 0.25, of which family labour income increases by Re. 0.21 and hired labour income increases by Re. 0.04. If final demand for tamarind processing and harvesting sector increased by one rupee, the family labour income increases by Re. 0.22, hired labour income increases by Re. 0.33. Overall employment generated worth of Re. 0.55, if final demand for agriculture increased by one rupee and income of poor farm households increases by Re. 0.58 and Re. 67 increases for middle income households which adds up to the aggregate increase in the income of village households by Rs. 1.25.

Table 4.5: Estimated Net Income from Different Activities and MGNREGP in Belladamadugu Village (in Rs. 000s), for 2012-13

Sl. No.	Activities	Landless	Marginal farmers	Small farmers	Medium farmers	Large farmers	Total
1	Labour income	1,315 (77)	4,259 (48)	1,827 (39)	2,070 (35)	879 (36)	10,351 (44)
2	Income from cultivating Irrigated crops		1,633 (18)	770 (17)	1,336 (22)	689 (28)	4,428 (19)
3	Income from dairy	0	847 (9)	589 (13)	701 (12)	361 (15)	2,499 (10)
4	Tamarind harvesting and processing		750 (8)	579 (12)	782 (13)	334 (14)	2,445 (10)
5	Sheep and Goat rearing		200 (2)	443 (10)	718 (12)	88 (4)	1,449 (6)
6	Leaf plate making	198.80 (12)	661 (7)	202 (4)	77 (1)	0 (0)	1,139 (5)
7	Private Services (provision stores, tea shop......)	157.74 (9)	177 (2)	30 (1)	124 (2)	30 (1)	519 (2)
8	Public Services (Govt job....)	37.80 (2)	206 (2)	84 (2)	51 (1)	22 (1)	401 (2)
9	Rain fed crops cultivation	0	149 (2)	73 (2)	109 (2)	27 (1)	359 (1)
10	MGNREGP	8.52 (0.50)	7 (0.08)	3 (0.07)	2.13 (0.04)	0 (0.00)	21 (0.09)
	Total	1,757	8,926	4,616	5,981	2,432	23,712

Note: Figures in parentheses indicate percentage of respective column total

Table 4.6: Multiplier Values Derived from Aggregated Social Accounting Matrix for Belladamadugu Village for the Agricultural Year 2012-13

	AGRI	LS	VP	MGNREGP	OTH	L	C	HH
AGRI	1.16	0.17	0.05	0.01	0.04	0.06	0.01	0.06
LS	0.12	1.03	0.03	0.02	0.02	0.03	0.01	0.03
VP	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
MGNREGP	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
OTH	0.29	0.28	0.31	0.05	1.33	0.37	0.10	0.37
L	0.24	0.29	0.37	0.16	0.10	1.04	0.01	0.04
C	0.04	0.02	0.02	0.00	0.07	0.02	1.01	0.02
HH	0.89	0.95	1.07	0.21	0.81	1.27	0.33	1.27
Total	**2.73**	**2.75**	**2.85**	**1.45**	**2.36**	**2.79**	**1.46**	**1.79**

Note: AGRI.: Agriculture, LS: Livestock, VP: Village Production, OTH: Others (service providers including SHGs), L: Labour Services (including family labour), C: Capital Services, HH: Households.

Table 4.7: Output, Employment and Income multipliers of key sectors in Belladamadugu Village for the Agricultural Year 2012-13

Sl. No.	Key Sectors	Output multiplier	Employment multiplier	Income multiplier
1	Milk Production and Dairy cooperative	1.50	0.25	0.87
2	Tamarind harvesting and processing	1.44	0.55	1.25
3	SHGs	1.42	0.16	1.10
4	Brick Making	1.34	0.27	0.91
5	Rainfed Groundnut cultivation	1.77	0.39	0.58
6	Paddy cultivation	1.45	0.19	0.96
7	Sheep & Goat rearing	1.37	0.41	1.12
8	Leaf plate making	1.38	0.29	1.02
9	Flower crops cultivation	1.47	0.27	1.03
10	Irrigated Groundnut cultivation	1.54	0.15	1.11

For one rupee increase in the final demand of MGNREGP, the direct, indirect and induced increase in the output of all sectors in the village was Rs. 1.45 of which Rs. 1.00 is the increase in the MGNREGP's output, Re. 0.05 is increased in output of SHGs; Re. 0.02 is increased in the output of provision stores. MGNRGP has the least output,

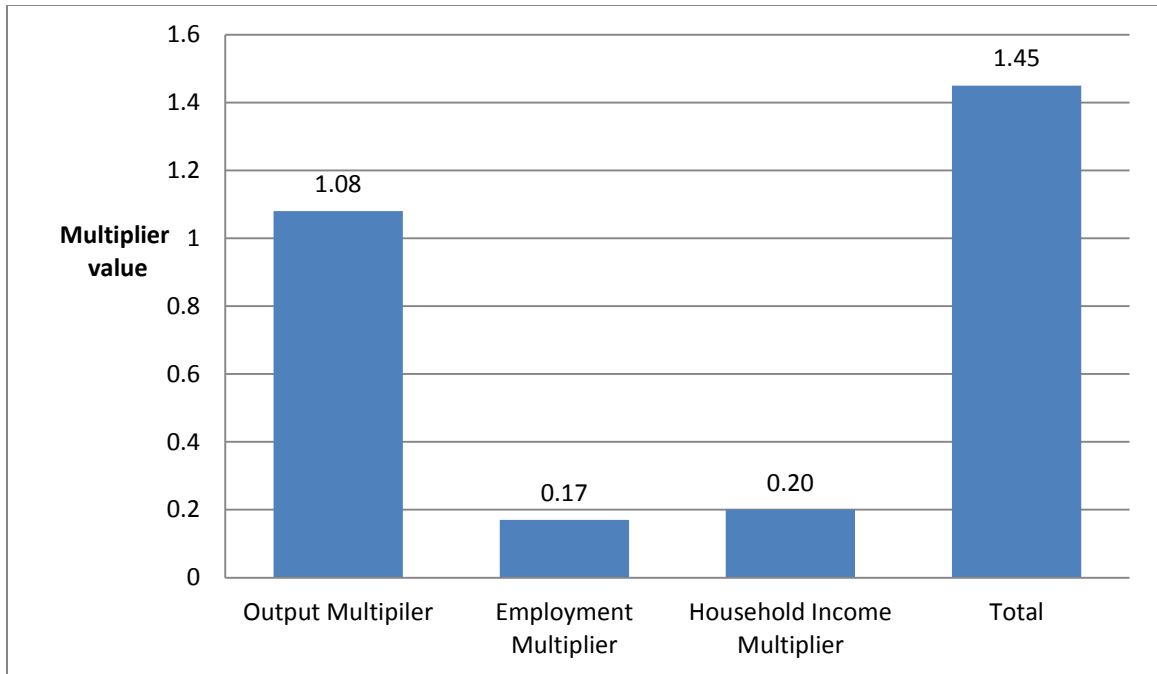**Figure 4.2:** **Comparison of different multiplier values of Belladamadugu village for agricultural year 2012-13**
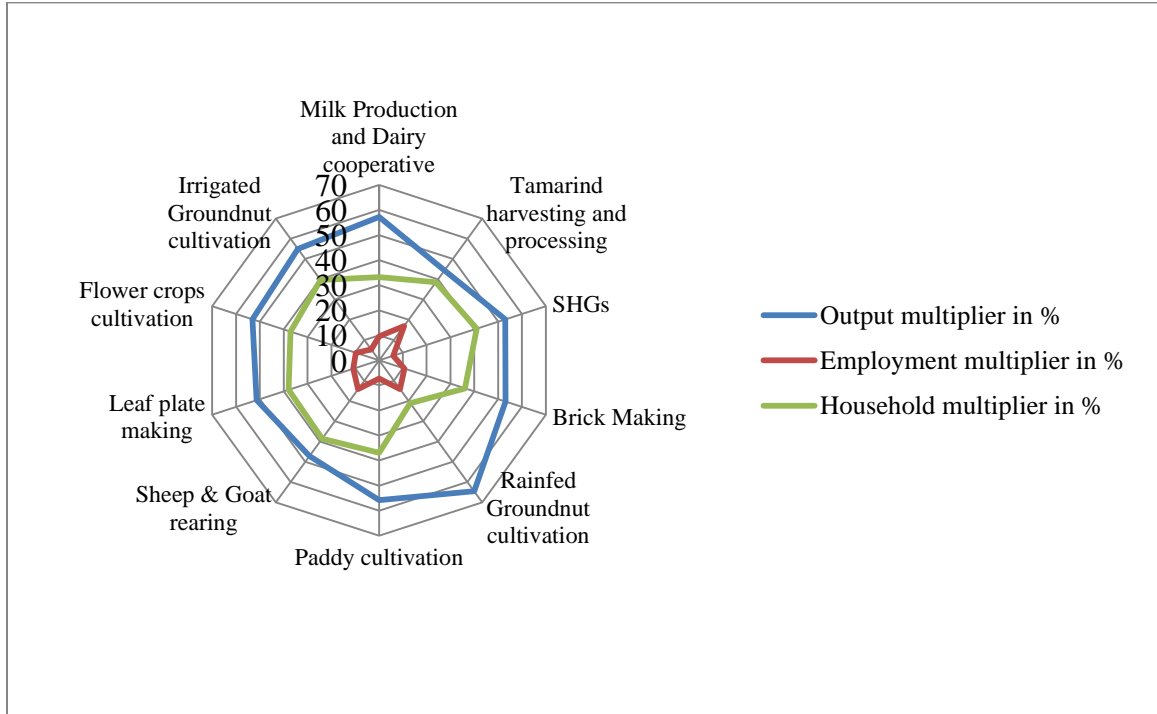
Figure 4.3: **Graphical representation of proportion of output, household income and employment multipliers out of total multiplier**

employment and household income multiplier. Comparison of output, employment and household income multiplier of MGNREGP was shown graphically in figure 4.2.

Table 4.8: Proportion of total multipliers of the Belladamadugu key-sectors into output, household income and employment multipliers.

Sl. No.	Key Sectors	Total Multiplier	Output multiplier	Household income multiplier	Employment multiplier
1	Milk Production and Dairy cooperative	2.62	57	33	10
2	Tamarind harvesting and processing	3.24	44	39	17
3	SHGs	2.68	53	41	6
4	Brick Making	2.52	53	36	11
5	Rainfed Groundnut cultivation	2.74	65	21	14
6	Paddy cultivation	2.60	56	37	7
7	Sheep & Goat rearing	2.90	47	39	14
8	Leaf plate making	2.69	51	38	11
9	Flower crops cultivation	2.77	53	37	10
10	Irrigated Groundnut cultivation	2.8	55	40	5

4.6 Impact of MGNREGP on Overall Economy of the Belladamadugu Village

Among the key sectors, tamarind harvesting and processing has the highest total multiplier (3.24), followed by Sheep and goat rearing (2.90), Irrigated groundnut cultivation (2.80), SHGs (2.68) rainfed groundnut cultivation (2.74) and so on (Table 4.8).

Segregating total multiplier into output, household income and employment multipliers (Table 4.8), it can be said that output multipliers contributes more than 50 per cent of the total multipliers except tamarind harvesting and processing, followed by household income multipliers which forms between 21 and 41 per cent of the total multiplier and employment multipliers which form six to 17 per cent of the total multiplier. In total, it can be concluded that the output multiplier wields the highest influence on the total multiplier followed by household and employment multipliers. The least influence on total multipliers is that of employment multipliers ranging from five to 17 per cent.

Out of 35 sectors, only one sector under MGNREGP being hired labour sector had technical coefficient of 0.1607 and the rest had zero interaction in technical coefficient matrix. However, when multiplier effect in SAM is considered, the indirect and induced effects of MGNREGP were found in 66 per cent of the sectors i.e., 66 per

cent of the sectors showed interaction with MGNREGP. However, the interactions were very week ranging from 0.00027 (rainfed groundnut cultivation) to 0.16125 (Hired labour) (Table 4.9).

Table 4.9: Impact of MGNREGP on different sectors of the village economy

Sl. No.	Sectors	MGNREGP SAM matrix coefficients	MGNREGP technical coefficients
1	Rainfed groundnut cultivation	0.000265	0
2	Irrigated groundnut cultivation	0	0
3	Finger millet cultivation	0.001119	0
4	Paddy cultivation	0.004932	0
5	Flower crops cultivation	0	0
6	Redgram cultivation	0	0
7	Horsegram cultivation	0.000215	0
8	Fodder crops cultivation	0.000349	0
9	Other crops (onion, tomato, etc.,)	0	0
10	Dairy & Dairy cooperative	0.005635	0
11	Sheep and goat rearing	0	0
12	Tamarind harvesting & processing	0	0
13	Brick Making	0	0
14	Leaf plate making	0	0
15	Beedi making	0	0
16	Provision store	0.015415	0
17	Flourmill	0.000249	0
18	Barber	0.000407	0
19	Tailor	0.000784	0
20	Tv cable operator	0.000417	0
21	Pigmi collector	0.002262	0
22	Transportation	0.005177	0
23	Anganwadi centre	0	0
24	Govt. School	0	0
25	PDS Shop	0	0
26	MGNREGP	1	0
27	SHG	0.032759	0
28	Family Labour	0.00471	0
29	Hired Labour	0.161249	0.160689
30	Capital	0.003613	0
31	Landless households	0.038081	0
32	Marginal farm households	0.100569	0
33	Small farm households	0.028525	0
34	Medium farm households	0.022483	0
35	Large farm households	0.012632	0

The sectors which have no interaction with MGNREGP were irrigated crops, sheep and goat rearing, village production activities (tamarind harvesting and processing, leaf plate making, brick making and beedi making) and government institutes (anganwadi center, government school and PDS shop). This also shows MGNREGP need to consider other activities viz. involvement of SHGs, dairy etc., in the village in reflecting the SAM multiplier effects.

4.7 Extent of Participation and Benefit Derived by Marginal Sections from MGNREGP

In all, only 24 (9 %) households out of 276 households participated in MGNREGP work (Table 4.10). Of these, 21 (87.5 %) out of 24 household belongs to other categories category and 3 (12.5 %) households belong to SC/ST category. Each of the other categories family, the MGNREGP employment was about 28 days where as in the case of SC/ST, it was about 32 days. i.e., each of the SC/ST family receives 33 per cent of employment out of 100 days of MGNREGP employment while other categories receive 28 per cent. Only seven per cent workforce has participated in MNREGA. Out of the meagre MGNREGP employment, 56 per cent was male workforce and 44 per cent was female workforce (Table 4.11).

Table 4.10: MGNREGP employment details of households belonging to SC/ST and other categories category for agricultural year 2012-2013

Particulars	SC/ST households (n=3)	Other categories households (n=21)
Mean days of work performed by Households (Days)	32.37	27.86
t-Stat		0.58 [NS]

Note: NS: Non Significant

Table 4.11: Male and female worker participation rate in MGNREGP works for agricultural year 2012-2013

Particulars	Male (n=37)	Female (28)
Average Employment (Days)	15.13	15.50
t-Stat		-0.20068 [NS]

Note: NS: Non Significant

According to secondary data from MGNREGP website (http://nrega.nic.in), 93 per cent of the workforce who worked under MGNREGP belongs to below 50 years age group and seven per cent belongs to above 50 years age group. Thus MGNREGP relatively provide employment to workforce below 50 years age (Table 4.12).

Table 4.12: Young worker participation and Aged worker participation (days) in MGNREGP for financial year 2012-2013

Particulars	Young worker participation (n=60)	Aged worker participation (n=5)
Mean days of work performed by worker	10.57	12.25
t-Stat		-0.83[NS]

Note: NS: Non Significant

4.8 Natural Resource Conservation

The total expenditure made on MGNREGP works was Rs. 2.20 lakhs. The expenditure on MGNREGP on water conservation and water harvesting structures (Rs. 1.14 lakh) and rural connectivity (Rs. 1.06 lakh) indicated that around 70 per cent expenditure was toward wags and 30 per cent was toward civil works. However the impact of this expenditure on water harvesting and rural connectivity is yet to make desirable impact on agriculture (Table 4.13).

Table 4.13: Expenditure on MGNREGP on water harvesting and rural road connectivity

Type of Work	Expenditure (Rs.)		Total (Rs.)
	On wages	Civil works	
Water conservation and water harvesting structure (from weak embankment to strong embankment)	79,600 (72)	30,956 (28)	1,13,714 (100)
Rural road connectivity (from No road to Sand moram)	74,441 (70)	31,903 (30)	1,06,344 (100)
Total	1,54,041 (70)	66,017 (30)	2,20,058 (100)

V DISCUSSION

In this chapter, the results of the study presented in previous chapter are discussed under the following headings.

5.1 Work status of MGNREGP in Karnataka state

5.2 Snapshot of the Belladamadugu village economy

5.3 Identification of key sectors of the Belladamadugu village

5.4 Impact of MGNREGP on livelihood security of the Belladamadugu village households

5.5 Estimation of Output, Employment and Household income multipliers

5.6 Impact of MGNREGP on overall economy of the Belladamadugu village

5.7 Extent of participation and benefit derived by marginal sections from MGNREGP

5.8 Natural resource conservation

5.1 Work Status of MGNREGP in Karnataka State

The percentage of rural households in the State who worked under MGNREGP was 17 per cent. This proportion itself is modest and accordingly is a prima facie indicator of the poor multiplier effect of MGNREGP in the village economy. Only eight per cent of the household completed 100 days of MGNREGP employment and each rural household who worked under MGNREGP got on an average 46 days of MGNREGP employment.

5.2 Snapshot of Village Economy

Labour income (Rs 1.02 crores) accounted as major source of income of village households. Obviously, the income from labour, has played a significant role in the economy of all classes of farmers, especially from non-farm sources, as the wage rates from non-farm labour has been impressively higher than the wage rates in agriculture and the MGNREGP wage rates. In fact MGNREGP wage rates have been way below the reservation wages of non-farm labour and hence cannot compete with agriculture wages or non-farm wages. The work turned over under MGNREGP is also meagre as it has not been able to attract labour to perform rural development works.

Considering column wise purchase, the household account is the highest due to Savings and Investment and the transactions in the Rest of the World. Row wise sales, the household account was the highest due to village production activities dominated by tamarind harvesting and processing and leaf plate making and labour incomes.

5.3 Identification of Key Sectors of the Belladamadugu Village.

The sector with the largest multiplier effect as well as the weighted value of multiplier is milk production and dairy cooperative, followed by tamarind harvesting and processing, SHGs, brick making, rainfed groundnut cultivation, paddy cultivation, sheep

and goat rearing, leaf plate making and flower crop cultivation. The labour intensive activities reflected in tamarind harvesting and processing, brick making, sheep and goat rearing, leaf plate making, have impressive multiplier effects compared with other activities such as milk production and dairy, SHGs, paddy, flower cultivation. The MGNREGP had the lowest multiplier, with the weighted multiplier value forming not even one per cent of the total value of output of all sectors.

5.4 Impact of MGNREGP on Livelihood Security of the Belladamadugu Village Households

Labour income earned formed the largest proportion of total income across all classes of farmers in Belladamadugu ranging from 35 per cent for Medium farmers to 77 per cent for landless labourers. Other impressive source of activities was leaf plate making for landless labourers 12 per cent, income from irrigated crops for all classes of farmers. Thus, irrigation serves as the major source of income after labour income.

Livelihood security

First, the presence of MGNREGP is week in the village. The proportion of employment offered around nine per cent of households and seven per cent of workforce in MGNREGP. Obviously the question of livelihood security is impractical, since the intensity of MGNREGP work is poor.

For those eight per cent families involved in MGNREGP, the wages earned from MGNREGP (Rs. 2370) formed three per cent proportion of their income which is prima facie indicator of the poor role of MGNREGP in Belladamadugu in contributing to livelihood security.

5.5 Estimation of Output, Employment and Household Income Multipliers

The column multiplier is the direct, indirect and induced increase in the output of all the sectors required to meet one rupee increase in the final demand of the sector under consideration. According to the column multiplier, the key sectors are comes under village production viz. tamarind harvesting and processing, leaf plate making, brick making and beedi making (2.85), followed by livestock viz. dairy and sheep and goat rearing (2.75) and Agriculture viz. cultivation of groundnut, paddy, ragi, irrigated crops and fodder crops (2.73). For one rupee increase in final demand of village production sector, the output of all sectors in the economy increases by Rs. 2,85, of which Re. one is for the final demand, and Rs. 1.85 is the direct, indirect and induced increase in output of all sectors. This includes Rs. 1.07 from household sector, and Re. 0.37 from labour.

The output multiplier for key sectors ranged from 1.34 to 1.77, the employment multiplier ranges from 0.16 to 0.55, while the income multiplier ranges from 0.58 to 1.11. Except for milk production and dairy cooperative, brick making, rainfed groundnut and paddy cultivation, the income multiplier has been above unity. Thus, the column multiplier exceeded two for all but these four sectors.

Among the 27 production sectors in the Belladamadugu village economy, the column multiplier was more than 2 for all the sectors except for MGNREGP (1.47), provision stores (1.57), TV cable operator (1.7) and PDS shop (1). Obviously, these did not have discernible impact on the village economy. The poor linkage of MGNREGP was also due to lack of efforts put in by the local government since a local promoter like person/s or organizations is required to convince the labour to offer for the going MGNREGP wage rate.

5.6   Impact of MGNREGP on Overall Economy of the Belladamadugu Village

The quintessence of the impact of MGNREGP is given by the size of the coefficients in the Leontief inverse matrix i.e. $(I-A)^{-1}$ matrix. Every element in the matrix highlights the direct, indirect and induced increase in output of all sectors at left, for one rupee increase in final demand for MGNREGP sector, in relative terms. Considering the elements of this matrix, they indicate the relative performance of each sector in relation to all other sectors since the matrix of technical coefficients is obtained from the interdependence of different sectors. Therefore interdependence is the key in Leontief as well as SAM models.

Out of 35 sectors including household sectors, only one sector under MGNREGP being hired labour sector had technical coefficient of 0.1607 and the rest had zero interaction in technical coefficient matrix. However, when multiplier effect in SAM is considered, the indirect and induced effects of MGNREGP were found in 66 per cent of the sectors i.e., 66per cent of the sectors showed interaction with MGNREGP in multiplier analysis. However, the interactions were very weak ranging from 0.00027 to 0.16125. These shows with current level of operation of MGNREGP, the multiplier effects are weak and can only be strengthened by enhancing the MGNREGP operations. This can be done by convergence, facilitating small and marginal farmers to involve in dairy, Tamarind harvesting and processing, Leaf plate making and cultivation of millets etc.

5.7   Extent of Worker Participation and Benefit Derived by Marginal Sections from MGNREGP

In all, nine per cent of families' workforce participated in MGNREGP work. Of these, 87 per cent households belong to other categories category and 13 per cent household belong to SC/ST category. These findings are in conformity with the results of Raghbendra *et al.* (2008). Each of the other categories family, the MGNREGP provided 28 days of employment and SC/ST, it was 32 days. i.e., each of the SC/ST family receives 33 per cent of employment out of 100 days of MGNREGP employment while other categories receive 28 per cent. Thus, MGNREGP is not been able to achieve or make significant impact on village employment.

Only seven per cent workforce has participated in MGNREGP. Out of the meagre employment, 56 per cent was male workforce and 44 per cent was female workforce. Ninety three per cent of the workforce who worked under MGNREGP belongs to below

50 years age group and seven per cent belongs to above 50 years age group. Thus MGNREGP relatively provide employment to workforce below 50 years age.

The village is located far of place from Bengaluru and it is not well connected by transportation. Therefore the proportion of migration was very meagre; consequently meagre income from migration. Therefore the size of the non-farm income is compared with MGNREGP wage income per family. MGNREGP wage income forms eight per cent of non-farm income. Obviously MGNREGP did not have any effect on migration.

5.8 Natural Resource Conservation

Expenditure on water conservation and water harvesting is a long-term investment and obviously takes time in reflecting the impact. The sectors such as agriculture, livestock, dairy considered in SAM have not exhibited the impact of expenditure on water conservation and rural road through the multiplier effect. Accordingly it is in order to wait longer than necessary to experience the impact. In addition, expenditure on water conservation is only one side of the coin of resource conservation while the other side onset of adequate rain. Belladamadugu village has been experiencing frequent droughts and hence farmers have shifted to dairy, leaf plate making and tamarind harvesting and processing which by itself reflects the impact of drought. Further the lack of entrepreneurship on the part of the villagers to utilize the MGNREGP funds has exacerbated the predicament due to lack of required efforts on the part of the village to seek funds from MGNREGP through the village panchayath.

VI SUMMARY AND CONCLUSION

6.1 Introduction

Study has the objective to identify the key sectors of a village economy by estimating output, income and employment multipliers. Study used the SAM model (Social Accounting Matrix) as it include activity, commodity, factor, institutions, savings and investment and rest of the world sectors, which has advantage over the classical input-output model. In this study, the economic role of MGNREGP towards enhancing livelihood security of households is estimated with the following specific objectives.

6.2 Objectives of the Study

1. To estimate the output, income and employment multipliers of MGNREGP.

2. To analyze gender, age and other social dimensions of MGNREGP.

3. To estimate the asset creation and benefit derived from the assets created.

6.3 Methodology

This study was undertaken in Belladamadugu village, Tumkur district of Karnataka during 2012-13. Field survey was carried out to collect primary data from 26 households, 21 farmers, ten leaf plate makers, four luggage auto transport operators, ten households involved in services, 22 participants of MGNREGP and 35 non participants of MGNREGP. Secondary data pertaining to village statistics and MGNREGP works undertaken were collected from village panchayath and MGNREGP website (http://nrega.nic.in/netnrega). A 65 X 65 sector Social accounting matrix is constructed to study and analyze the inter-sectoral flows of inputs and outputs in the village along with payments to factors of production and income flow of households, payments to government, capital and rest of the world. These highlight employment and income generation in the village economy. MGNREGP is also included as an activity to estimate the associated multiplier effects.

6.4 Major Findings of the Study

➢ In Karnataka, 17 per cent of the rural households worked under MGNREGP and out of 17 per cent, only eight per cent households received 100 days of employment.

➢ The size of the Belladamadugu village economy was Rs. 17.36 crores and the labour income of Rs. 1.02 crores accounts for the major source of income of village households.

➢ In the aggregate SAM, 'Rest of the World' sector has the largest size followed by 'Households' sector, 'Agriculture' sector, 'Village production' sector, 'Livestock' sector and other sectors.

➢ The key sectors of the Belladamadugu village are, 'Milk production and dairy cooperative' sector with weighted multiplier value (Rs. 172 lakh) followed by 'Tamarind harvesting and processing' (Rs. 158 lakh), 'SHGs' sector (Rs. 146 lakh),

'Brick making' (Rs. 132 lakh), 'Rainfed groundnut cultivation' (Rs. 130.64 lakh), 'Paddy cultivation' (Rs. 96 lakh), 'Sheep and goat rearing' (Rs. 78 lakh), 'Leaf plate making' (Rs. 55 lakh), 'Flower crop cultivation' (Rs. 39 lakh) and 'Irrigated groundnut cultivation' (Rs. 38 lakh).

➢ The MGNREGP had the lowest (total) multiplier (1.45), with the weighted multiplier value (of Rs. 1.92 lakhs) forming not even one per cent of the total value of output of all sectors.

➢ Labour income formed the largest proportion of total income across all classes of farmers in Belladamadugu ranging from 35 per cent to 77 per cent.

➢ The proportion of MGNREGP employment offered is for nine per cent of households. About seven per cent of workforce of the village was employed in MGNREGP.

➢ Wages earned from MGNREGP (Rs. 2370) formed a mere three per cent of their income reflecting the poor role of MGNREGP in Belladamadugu in contributing to livelihood security.

➢ MGNREGP has output multiplier of 1.08, employment multiplier of 0.17 and household income multiplier of 0.20 (totaling 1.45). MGNREGP has the least output, employment and household income multiplier.

➢ Out of 35 sectors in SAM, one sector under MGNREGP - the hired labour sector had technical coefficient of 0.1607 and the rest had zero interactions in technical coefficient matrix. However, 66 per cent of the sectors showed interaction with MGNREGP in SAM multiplier matrix.

➢ About nine per cent of the households participated in the MGNREGP work. Of these, 88 per cent belonged to other categories category and 12 per cent belonged to SC/ST category.

➢ Out of the meagre MGNREGP employment, 56 per cent was male workforce and 44 per cent female workforce.

➢ About 93 per cent of the workforce MGNREGP belonged to below 50 years age group and seven per cent belongs to above 50 years age group. Thus MGNREGP relatively provided employment to workforce below 50 years age

➢ MGNREGP wage income forms eight per cent of non-farm income. Obviously MGNREGP did not have any effect on migration.

➢ The total expenditure made on MGNREGP works was Rs. 2.20 lakhs in the village. The expenditure on MGNREGP on water conservation and water harvesting structures (Rs. 1.14 lakh) and rural connectivity (Rs. 1.06 lakh) indicated that around 70 per cent expenditure was toward wages and 30 per cent was toward civil works.

6.4 Policy Recommendations

The results of the study indicated the MGNREGP had the weakest multiplier effect in the village i.e. weakest direct, indirect and induced income effect in the village. However, the SAM matrix analysis indicated that the multiplier effect due to interaction between activity, commodity, factor and households accounts enhanced the interaction from virtually zero in technical coefficient matrix to 66 per cent in SAM multiplier matrix.

Thus, even though the MGNREGP interaction effects are the weakest, the multiplier analysis reflected the potential interactive effects. Since the MGNREGP interactions were 66 per cent of sectors through SAM multiplier effects. This underscores the potential role that MGNREGP could play if MGNREGP funds are diversified into dairy, SHGs activities which are prominent in the Belladamadugu village.

Convergence of developmental programs

The MGNREGP has been found to exert the lowest multiplier effect (1.45) compared with all other sectors included in the Village SAM. Accordingly it is logical to conclude that MGNREGP does not have the economic influence on the different sectors of the village economy and therefore remains as a weak sector. The possible reasons for this observation are (1) the very choice of the study area – Belladamadugu in Tumkur district, is the village with the lowest budget under MGNREGP and (2) the existing work had weak linkages with MGNREGP. MGNREGP in its objective has deep commitment to natural resource conservation through programmes such as soil and water conservation and watershed structures. However, in addition to construction of soil and water conservation structures, cultural operations such as pre-monsoon ploughing by bullocks, also results in conservation of soil moisture. Similarly, cultivation of low water crops such as millets (ragi, fox tail millet, proso, kodo, barnyard, pearl millets) needs to be considered as water conservation methods as these crops are hardy and thrive in low soil moisture, thereby indirectly conserving soil and moisture. Unfortunately cultivation of low moisture crops is not considered under MGNREGP activity. It is therefore necessary for the MGNREGP authorities to incorporate labour utilized for cultivation of millets as another measure of 'soil and moisture conservation' including that for mulching. This will lead to convergence since MGNREGP can consider these activities as part of MGNREGP so that marginal and small farmers in rainfed agriculture can participate actively in MGNREGP and get the labour payments made in the cultivation of millets reimbursable. Convergence can thus play a crucial role in enhancing the multiplier effects of MGNREGP.

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Department of Agricultural Economics

U.A.S, GKVK – Bengaluru

Title: "Economic impact of MGNREGP on livelihood Security in Tumkur district of Karnataka: A SAM Analysis"

Student: Chikkathimme Gowda, H. R.

SCHEDULE FOR FARMER

Details of family head

Name of farmer	Age (year)	Education level	Caste	Mobile no.
			GM/SC/ST/OBC	

Details of family members

Family members	Occupation	Age (years)	Education level	Income earned (Rs.)	Remarks
1.					
2.					
3.					
4.					
5.					

Information about land holding

Land type	Area (acres/ guntas)	Owned (acres/ guntas)	Leased in (acres/guntas)		Leased out (acres/guntas)	Remarks
			Within	Outside		
Irrigated						
Rain fed						

Details of sources of irrigation and investment

Source of irrigation	Area irrigated (acres/guntas)	Investment amount (Rs.)	Year	Remarks
1.				
2.				
3.				
4.				
5.				
6.				

Details of investment on assets

Assets	Value (Rs.)	Quantity	Purchased from	Year	Remarks
Machinery					
1.					
2.					
3.					
4.					
5.					
Equipment					
1.					
2.					
3.					
Assets	Value (Rs.)	Quantity	Purchased from		Remarks
4.					
5.					
Livestock					
1.					
2.					
3.					
4.					
5.					

Details of subsidy availed

Source of subsidy	Amount (Rs.)	Purpose
1.		
2.		
3.		
4.		

Details of construction work on farm

Farm building/ structure	Material used												Total expenditure (Rs.)
	Cement		Sand		Tiles		Labour		Brick		Other		
	Amount (Rs.)	o/w	Amount (Rs.)	o/w	Amount (Rs.)	o/w	Amount (Rs.)	o/w	Amount (Rs.)	o/w	Amount (Rs.)	o/w	
1.													
2.													
3.													
4.													

Cropping pattern

Crop	Kharif /rabi/ summer	Irrigated or rain fed	Area (acres/guntas)	Remarks
1.				
2.				
3.				
4.				
5.				
6.				
7.				

Details of cost of cultivation for crop

Crop name		Within	Outside	Within	Outside	Within	Outside
Area (acres/guntas)							
Seeds	Kgs						
	Value(Rs.)						
Fertilizers (Rs)							
Manures (Rs)							
Labour charges 1. Man (person days)							
2. Women (person days)							
3. Bullock pair (BP days)							
4. Machines (hours)							
Plant protection chemicals (Rs)							
Irrigation charges(Rs)							
Processing charges (Rs)							
Land revenue (Rs.)							
Other charges (Rs)							

Details of output and marketing

Particulars Crop	Quantity (quintals)	Price	Quantity Marketed (quintals)		Consumed at home (quintals)	used as animal feed (quintals)	used for seed (quintals)
			In village	Other market			
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							

Details of marketing charges

Crop	Marketing charges inside the village					Marketing charges outside the village				
	Bagging	Loading & unloading	Transportation	Commission	Others	Bagging	Loading & unloading	Transportation	Commission	Others
1.										
2.										
3.										
4.										
5.										
6.										
7.										
8.										
9.										
10										

Details of expenditure on raring animal (in Rs.)

Type of animal	Dry fodder		Green fodder		Conc.		Vet. aid		Labour		Others	
	Within	Outside	Within	Outside	Within	Outside	Within	Outside	Within	Outside	Within	Outside
Buffalo												
Cow												
Sheep												
Goat												
Poultry												
Others												

Details of livestock output marketing

Particulars	Quantity	Consumed at home	Marketed quantity		Marketing charges (Rs.)	Price
			Within	Outside		
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						

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SCHEDULE FOR MGNREGP AND NON WORKER

Details of family head

Name:		BPL/APL card holder	M\F
Mobile no.		Education:	
Age:	caste:	participation in NREGP: yes or no	

Details of wage rate (in Rs.)

Market wage rate received	Before MGNREGP participation				After participation in MGNERGP			
	Agriculture	Construction	Other		Agriculture	Construction Amount	Other	
			Amount	Type			Amount	Type
Men								
Women								

Details of family members

Working Family member	Age (years)	Education level	Occupation	Income level (Rs.)	Total no. of days of employment received in a year		Remarks
					Within village	Outside village	
1.							
2.							
3.							
4.							
5.							

Details of MGNREGP participation

Family member	No. days worked under MGNREGP	Wages received (Rs.)	Type of work participated in	Remarks
1.				
2.				
3.				
4.				
5.				

Details of other Govt. Scheme participation

Name of the scheme	Wages received (Rs.)	No. of days of employment received	In which village\city\state	Other Benefits received	Remarks
1.					
2.					
3.					
4.					
5.					
6.					

Details of migration

Migrated member name	Duration of migration (days)	Period of migration (Kharif, rabi, summer, whole year)	Place of migration	Type of work received upon migration	Wage rate received upon migration (Rs.)	Other benefits received upon migration
1.						
2.						
3.						
4.						
5.						