Research Report

Submitted by the UAS, Bangalore, the partner institution for collaboration on the CGIAR Research Program on "Policies, Institutions and Markets" to ICRISAT, Patancheru, the Program Participant Centre.

Research Project on

Assessment of economic impacts of MGNREGA in selected two villages of Karnataka state using Social Accounting Matrix (SAM)

Research Team

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Background and Context of MGNREGA in Karnataka

In Karnataka 71% of workforce is engaged in agriculture and other allied activities and 70 percent of the population lives in rural areas. While the absolute contribution of agriculture to state economy is increasing, the relative contribution is declining over the years due to better growth of manufacturing and secondary sector. Primary sector's contribution was 59 percent during 1960-61 which fell to 19 percent during 2007-08. The state has ten agro-climatic zones, of which five are predominantly dry zones. These dry zones account for 71 percent of the

cultivated area with 72 percent of operational holdings belonging to small and marginal farmers. The state has 62 lakh agricultural laborers.

The rural employment in the Indian economy has grown at 2.34% per annum during 1999- 2004 and is characterized as "distress-driven" as agriculture is in the phase of low productivity, poor competitiveness and adverse climatic conditions. There has been rise in labour participation and employment of women and older age cohorts in rural areas an indication of the nonworking population pushed to labour market for forced employment due to acute distress in the rural areas. (NSSO 2005)

The National Rural Employment Guarantee Act (NREGA) that came into force on February 2, 2006 brought a ray of hope in securing livelihood for vulnerable section of rural population and here the role of 'reservation wage' deserves to be examined. MGNREGA has the objective to enhance livelihood security to the rural poor with inclusive growth. It guarantees at least one hundred days of wage employment to every rural household family whose members are ready to do unskilled manual work.

MGNREGA is the first attempt guaranteeing wage employment at macro level with objective to ensure wage employment, and sustainable development through natural resource management. The Act also envisions strengthening democracy at the grass root levels, bringing transparency and accountability in governance.

In Karnataka, MGNREGS was implemented in three phases; the first phase (2006-07) covered five districts, the second phase, six districts and third phase (from 2008) covered all the 27 districts.

Objectives of the study

1. Developing an empirical village level Social Accounting Matrix (SAM) for two villages in Karnataka, one in Tumkur district in Southern region and the other in Bijapur district in Northern region. SAM analysis of impacts of MGNREGA interventions, and investment multiplier effects in the selected villages.

2. Policy simulations using SAM to form alternate policy measures, and analysis of implications of MGNREGA on the synergies between safety nets and agricultural and rural development interventions; labour wage rate, labour scarcity (and out migration), farm production and other major changes brought in agricultural activities in the selected villages of Karnataka. This includes analysis of multiplier effects of MGNREGA and direct and total village wide economic effects of the MGNREGA program interventions in the selected villages.

3. Based on results of the SAM, derivation of policy recommendations for welfare of the village economy.

Activities under taken

1. Participation in the Project Planning Workshop of the project 'Impacts of Social Safety Nets Programs in Semi-Arid Tropics of India" held in ICRISAT, Hyderabad, on 18-19 December 2012.

Sri P.S. Srikantha Murthy, Dr M.R. Girish, Sri Gourav Kumar Vani and Sri H.R. Chikkathimmegowda participated in the workshop and made presentation on SAM and their proposed plan of work. A brief report of the presentation is presented below.

The Social Accounting Matrix:

Concepts and Methods

An input-output matrix shows the flow of commodities from the source to the use destination. National accounts show the flow of income and expenditure in an economy. A Social Accounting Matrix is a combination of both Input-output matrix and national accounts. A SAM may be prepared for a country or a state or a district or even for a village.

A SAM is constructed as a Square matrix. Each row and column in the matrix represents an account. All the accounts shown in the columns are represented in the corresponding rows. Accounts presented vertically represent expenditure columns and those presented horizontally represent income rows. Each cell in the matrix represents a payment made by the column account to the row account. Thus expenditure incurred by one account will be the income earned by another account. For example, household expenditure on commodities will be income for the producers, indirect taxes paid by the producers will be income for the government and old age pension transfers by the Government will be an income for the households. This ensures that the circular flow of income and expenditure is closed, all income and expenditure flows are accounted for, and there are no leakages from the system.

The entries made in the matrix are in monetary values and not in physical units. Since SAM follows double entry accounting principle, all the column totals must be equal to corresponding row totals i.e.; total expenditure must be equal to total income.

Activities and commodities

A SAM considers activities and commodities separately; though different sectors included both in Activities account and Commodities account are the same. Commodities are the output from Activities. Since, each sector in an activity may produce many outputs (agriculture sector may produce field crops like cereals, pulses, oilseeds; horticultural crops like fruits, vegetables, plantation crops, livestock products like milk, eggs, meat and so on) the two are considered as separate entities.

Basic structure of a SAM								
		Expenditure columns						
		Activities C1	Commodities C2	Factors C3	Households C4	Government C5	Savings and investment C6C3	Rest of world C7	Total
Income rows	Activities R1		Domestic supply						Activity income
	Commodities R2	Intermediate demand			Consumption spending (C)	Recurrent spending (G)	Investment demand (I)	Export earnings (E)	Total demand
	Factors R3	Value-added							Total factor income
	Households R4			Factor payments to households		Social transfers		Foreign remittances	Total household income
	Government R5		Sales taxes and import tariffs		Direct taxes			Foreign grants and loans	Government income
	Savings and investment R6				Private savings	Fiscal surplus		Current account balance	Total savings
	Rest of world R7		Import payments (M)						Foreign exchange outflow
	Total	Gross output	Total supply	Total factor spending	Total household spending	Government expenditure	Total investment spending	Foreign exchange inflow	

Source: Breisinger et.al. (Ref:1)

Part of the goods produced may be used as intermediate inputs (grains produced in one season may be used as seeds during the coming season or as animal feed). Value of goods used as intermediate inputs will be entered in the cell R_2-C_1 as payment by Activities account to Commodities account. The values in the activity accounts are usually measured in producer prices or farm gate prices.

In producing goods, Activities use land, labour, management and so on. The payment made for the use of these factors of production will be entered in R3-C1 as value-added, which will be an income to the factors of production. Sum of payments to intermediate inputs and factors of production gives the value of gross output at farm gate price or total expenditure on domestic supply of goods and services.

The total quantity of commodities required by the economy is either supplied domestically (R_1-C_2) or imported (R_7-C_2). Sales taxes paid for domestic supply and import tariffs paid on imports is entered in R_5-C_2, which is an income to the Government. So, values in the commodity accounts are measured at market prices.

Output of Activities is the commodities which are purchased as intermediate inputs (R_2-C_1), household consumption needs (R_2-C_4), Government consumption (R_2-C_5), export demand (R_2-C_7) and the balance is gross capital formation or investment (R_2-C_6). The R_2 row sum gives the income from the domestic supply of goods and services or the total demand for the domestically produced goods and services.

Thus, the commodity row and column accounts form the "Supply–Use Table," or the total supply of commodities and their different kinds of uses or demands.

Domestic institutions

A SAM contains complete information on different institutional accounts, such as households and the Government. In that sense it is different from an Input-Output matrix.

The households which own the factors of production receive incomes earned by the factors (R_4-C_3), through transfer payments from the Government, such as old age pension (R_4-C_5) and remittances from the rest of the world i.e.; remittances made by family members working outside the economy. The R_4 row total gives the total income earned by the households.

Out of the total income received by the households, expenditures including purchase of commodities (R_2-C_4), payment of direct taxes (R_5-C_4) are met out. The remaining income is either saved or dis-saved, in case the expenditure exceeds the income (R_6-C_4). The C_4 column total gives the total expenditure of households.

Direct taxes paid by the households (R_5-C_4), sales taxes and import duties from the commodities account (R_5-C_2) and grants, aids, assistance from the rest of the world (R_5-C_7) constitute the Government revenue. Government's payment for recurrent consumption (R_2-C_5), transfer payments to households (R_4-C_5) and fiscal surplus or deficit, which is the difference between total revenues and expenditures (R_6-C_5), gives C_5 column total.

Savings, investment, and the foreign account

Sum of private savings (R_6-C_4) and public savings (R_6-C_5) forms the total domestic savings. The difference between total domestic savings and total investment demand is the total capital inflows from abroad, or the current account balance (R_6-C_7). This is also equal to the difference between foreign exchange receipts and expenditures. Horizontal summation of these three cells forms the total savings of the economy.

SAM Multiplier Analysis

Since, SAM is a comprehensive as well as a disaggregated data system that captures all the linkages that exist among the various sectors within a socio-economic system; SAM becomes the basis for simple multiplier analysis. One of the many advantages of SAM is that it can be used as a conceptual framework to examine the impact of exogenous changes (Government expenditure / investment, increase in demand for a given production activity, exports, etc.) on the whole socio-economic system (structure of production, factorial and household income distribution, etc.).

If an economy has excess capacity and if the labour resources are either unemployed or underemployed, the SAM can be used to analyse the result of exogenous changes on the various sectors of the economy. For example, an exogenous change in demand can be met by a related increase in output without affecting the prices. In other words, the influence of an injection gets transmitted through the various sectors of the socio-economic system. Through the multiplier process, one can estimate the total (direct and indirect) effects of the exogenous changes on the

endogenous variables (outputs of production activities, factorial income distribution, household-wise income distribution, etc.). In the present study, a modest attempt will be made to analyse the impact of MGNREGA works on the economy of the two villages considered for the study. The works undertaken under MGNREGA are expected to have multiplier effects on output, income and employment of various sectors in the village economy. The multiplier analysis treats MGNREGA works as exogenous changes to the village and the resultant total effects (direct as well as indirect) can thus be examined through this process.

Let us write SAM model as

$Y = W + X$,

where W consists of endogenous accounts and X is the exogenous account.

$A_{ij} = W_{ij} / y_j$ where A_{ij} gives the requirement of account i for one unit account j

The above equation can be written as

$Y = AY + X$

$(I-A) Y = X$

$Y = (I -A)^{-1} X = MX$, where M is SAM multiplier matrix, m_{ij} is the total impact on account i, because of a unit shock in account j. (Source: Hirway *et al.*)

The response of the economy to a given change in demand of a sector can be assessed through multipliers. The total impact of an exogenous demand shock comprises of direct and indirect effects. The indirect effects include both production linkage effects and consumption linkage effects. Production linkages cover both the backward linkages and forward linkages. Backward linkages refer to the additional demand generated by producers when they purchase intermediate inputs from other sectors while forward linkages refer to the supply of upstream producers with intermediate inputs. Consumption linkages refer to the increased incomes generating consumption demand for other sectors products.

From the SAM multiplier matrix, one can derive the output, income and employment multipliers.

The output multiplier for a sector is defined as the total value of production by all the sectors of the economy required to satisfy one unit of final demand for that sector's output. For example, if one unit of final demand is increased in the animal husbandry sector (i.e., milk), it will require more feed for livestock (different crops). In turn, the increase in the demand for the output of these crops will necessitate additional production of seed, fertilizers, labour, etc. The increased employment of labour will result in their higher incomes, which will increase expenditures. The increased expenditure will need more output and so on. These are called indirect requirements. These direct and indirect requirements result in the "output multipliers". The income or value-added (labour+ capital) multiplier gives an estimate of the direct and indirect income changes resulting froma one unit change in output. These are also obtained from the labour and capital rows of the SAM multiplier matrix. The employment multiplier gives an estimate of the direct and indirect employment changes resulting from a change in unit output. These multipliers are obtained by multiplying the output multiplier of each sector with the relevant employment co-efficient. The employment co-efficient of each sector presents the number of person-days generated per unit of output. (Source: Hirway *et al.*)

The process of obtaining SAM multiplier matrix and the subsequent multipliers is as follows.

Table 1: SAM entries expressed as letters or symbols

	Activities A1	Activities A2	Commodities C1	Commodities C2	Factors F	Households H	Exogenous demand E	Total
A1			X_1					X_1
A2				X_2				X_2
C1	Z_{11}	Z_{12}				C_1	E_1	Z_1
C2	Z_{21}	Z_{22}				C_2	E_2	Z_2
F	V_1	V_2						V
H					$V_1 + V_2$			Y
E			L_1	L_2		S		E
Total	X_1	X_2	Z_1	Z_2	V	Y	E	

where X is gross output of each activity (i.e., X_1 and X_2)
Z is total demand for each commodity (i.e., Z_1 and Z_2)
V is total factor income (equal to household income)
Y is total household income (equal to total factor income)
E is exogenous components of demand (government, investment, and exports)

We then divide each column in Table 1 by it's column total to derive a co-efficients matrix called "M-matrix." This is shown in Table 2. Note that the M-matrix excludes the exogenous components of demand.

Table 2: M-matrix

	Activities A1	Activities A2	Commodities C1	Commodities C2	Factors F	Households H	Exogenous demand E	Total
A1			$b_1 = X_1/Z_1$					X_1
A2				$b_2 = X_2/Z_2$				X_2
C1	$a_{11} = Z_{11}/X_1$	$a_{12} = Z_{12}/X_2$				$c_1 = C_1/Y$	E_1	Z_1
C2	$a_{21} = Z_{21}/X_1$	$a_{22} = Z_{22}/X_2$				$c_2 = C_2/Y$	E_2	Z_2
F	$v_1 = V_1/X_1$	$v_2 = V_2/X_2$						V
H					1			Y
E			$l_1 = L_1/Z_1$	$l_2 = L_2/Z_2$		$s = S/Y$		E
Total	1	1	1	1	1	1	E	

where a is technical coefficients (i.e., input or intermediate shares in production)
b is the share of domestic output in total demand
v is the share of value-added or factor income in gross output
l is the share of the value of total demand from imports or commodity taxes
c is household consumption expenditure shares
s is the household savings rate (i.e., savings as a share of total household income)

Using the symbols in the SAM, total demand Z in each sector is the sum of intermediate input demand, household consumption demand and other exogenous sources of demand E, such as public consumption and investment. This is shown in Equations (1).

$$Z_1 = a_{11}X_1 + a_{12}X_2 + c_1Y + E_1$$
$$Z_2 = a_{21}X_1 + a_{22}X_2 + c_2Y + E_2$$
(1)

From the SAM, we know that gross output X is only part of total demand Z, as shown in Equations (2).

$$X_1 = b_1Z_1$$
$$X_2 = b_2Z_2$$
(2)

We also know that total household income depends on the share of factors' earnings in each sector, as shown in Equation (3).

$$Y = v_1X_1 + v_2X_2$$
(3)

Substituting Equation (2) into (3) gives the following identity for total income Y.

$$Y = v_1b_1Z_1 + v_2b_2Z_2$$
(4)

We can now replace X and Y in Equations (1) using Equations (2) and (4).

$$Z_1 = a_{11}b_1Z_1 + a_{12}b_2Z_2 + c_1(v_1b_1Z_1 + v_2b_2Z_2) + E_1$$
$$Z_2 = a_{21}b_1Z_1 + a_{22}b_2Z_2 + c_2(v_1b_1Z_1 + v_2b_2Z_2) + E_2$$
(5)

We move all terms, except for exogenous demand E, onto the left-hand side.

$$Z_1 - a_{11}b_1Z_1 - c_1v_1b_1Z_1 - a_{12}b_2Z_2 - c_1v_2b_2Z_2 = E_1$$
$$-a_{21}b_1Z_1 - c_2v_1b_1Z_1 + Z_2 - a_{22}b_2Z_2 - c_2v_2b_2Z_2 = E_2$$
(6)

Finally, we group Z terms together.

$$(1 - a_{11}b_1 - c_1v_1b_1)Z_1 + (-a_{12}b_2 - c_1v_2b_2)Z_2 = E_1$$
$$(-a_{21}b_1 - c_2v_1b_1)Z_1 + (1 - a_{22}b_2 - c_2v_2b_2)Z_2 = E_2$$
(7)

We can now use matrix algebra to convert Equations (7) into matrix format.

$$\begin{pmatrix} 1 - a_{11}b_1 - c_1v_1b_1 & -a_{12}b_2 - c_1v_2b_2 \\ -a_{21}b_1 - c_2v_1b_1 & 1 - a_{22}b_2 - c_2v_2b_2 \end{pmatrix} \begin{pmatrix} Z_1 \\ Z_2 \end{pmatrix} = \begin{pmatrix} E_1 \\ E_2 \end{pmatrix}$$
(8)

The first term in Equation (8) is the identity matrix (I) minus the co-efficient matrix (M).

$$\begin{pmatrix} 1 - a_{11}b_1 - c_1v_1b_1 & -a_{12}b_2 - c_1v_2b_2 \\ -a_{21}b_1 - c_2v_1b_1 & 1 - a_{22}b_2 - c_2v_2b_2 \end{pmatrix} = I - M$$
(9)

If we rename the other two vectors Z and E we can express Equation (8) as Equation (10).

$$(I - M)Z = E$$
(10)

Finally, by rearranging terms, we arrive at the multiplier formula in Equation (11).

$$Z = (I - M)^{-1}E$$ (11)

This formula tells us that, when exogenous demand E increases, then after taking all rounds of direct and indirect linkage effects into account, you will end up with a final increase in total demand equal to Z (that is, some multiple of the initial or direct shock). The information on linkage effects from the SAM is incorporated into the multiplier model through the co-efficient matrix M. With this formula, we can now calculate the size of multiplier effects. (Source: Breisinger *et al.*)

References

1. Breisinger, C., M. Thomas, J. Thurlow. 2010. *Social Accounting Matrices and Multiplier Analysis – An Introduction with Exercises.* International Food Policy Research Institute.

2. Hirway, I., M.R. Saluja, B. Yadav. 2008. *The Impact of Public Employment Guarantee Strategies on Gender Equality and Pro-poor Economic Development*: UNDP Reaearch Project No. 34 Report, The Levy Economics Institute, New York.

3. Usami, Y. 2008. *Studying Village Economics in India – A Colloquium on Methodology*. Draft Paper. Osaka Prefecture University.

Village level SAM: To be constructed for selected villages in Tumkur and Bijapur districts of Karnataka.

The proposed SAM for the selected villages would include the following components.

Accounts
1. Activities

a. Agriculture (field crops –major crops and others, horticultural crops – fruits, plantation crops , floriculture, others, livestock – dairy, sheep rearing, poultry, others)
b. Manufacturing (agro processing and others)
c. Trade
d. Public service (finance, health, education, transportation, communication, PDS and others)
e. Private service (finance, health, education, transportation, communication and others)
f. NREGS (i) agriculture, forestry and soil and water conservation   ii) road connectivity iii) sanitation, schools and others)
g. SHGs

2. Commodities
   a. Agriculture
   b. Manufacturing
   c. Trade
   d. Public service
   e. Private service
   f. NREGS
   g. SHGs

3. Factors
   a. Labour (male and female)
   b. Capital

4. House holds
   a. Landless workers
   b. Marginal farmers
   c. Small farmers
   d. Large farmers
   e. Non agricultural households

5. Government (Local panchayath)
   a. Revenue (taxes, grants, donations)
   b. Expenditure (consumption, investment)

6. Rest of the world
   a. Exports (labour, capital, commodity)
   b. Imports (labour, capital, commodity)

7. Total

Planned Output and Work Plan

1. Construction of SAM and developing output and income multipliers: November 2013
2. Report – The economic impact of MGNREGA in the selected villages of Karnataka using SAM: February 2014
3. Report – Policy recommendations for welfare of village economy through MGNREGA: April 2014

Likely journals for submission of research papers:

1. Agricultural Economics Research Review
2. Indian Journal of Agricultural Economics
3. Economic and Political Weekly

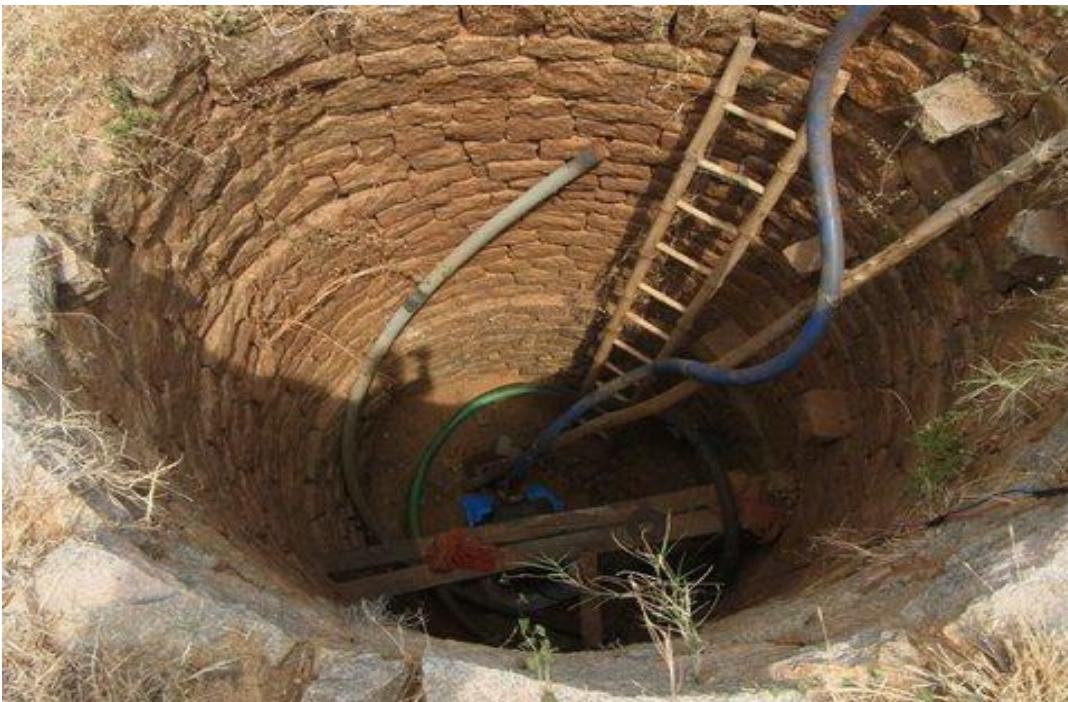## 2. <u>Visit to Tharati and Belladamadagu, the two VDSA villages in Tumkur District</u>

Research team in farmer's field in Belladamadagu

Interaction with villagers in Belladamadagu

A dried up well in Tharati

Visit to a sweet flag field in Tharati

Report:

Field impressions of Visit to Tharati and Bellada madagu villages in Tumkur District on March 30, 2013

Tharati in Koratagere Taluk and Bellada madagu in Madhugiri Taluk of Tumkur district are the two VDSA villages of ICRISAT in Southern Karnataka. One of these two villages is to be selected by our research team to carry out research work under the project, " Assessment of economic impacts of MGNREGA in selected two villages of Karnataka state using Social Accounting Matrix (SAM)" sponsored by ICRISAT under CGIAR Research Program on "Policies, Institutions and Markets". The team consisting of Sri P.S. Srikantha Murthy (PI), Dr. M.G. Chandrakanth (Co-PI), Dr. M.R. Girish (Co-PI), Mr. H.R. Chikkathimme Gowda (Research Fellow) and Mr. Gourav Kumar Vani (Research Fellow) along With Dr. N. Nagaraj, Scientist from ICRISAT visited the two

villages on 30th March 2013 to conduct a reconnaissance survey and select the study village. The team had discussions with VDSA field assistants, some of the MGNREGA beneficiaries, other villagers and visited some of the fields and work sites. The following observations are made.

Sl. No.	Tharati	Bellada madagu
1	The number of households in the village is 401	The number of households in the village is 276
1	The village has diversified cropping pattern. The farmers cultivate ragi, paddy, pigeon pea, cow pea and field bean during Kharif season. In Rabi season they are growing ragi, maize, fodder jowar, fodder maize. Commercial crops cultivated are Chrysanthemum, Jasmine, vegetables, areca nut and betel vine.	The major crops grown are Groundnut, ragi, paddy, maize, fodder Sorghum, fodder maize.
2	The major commercial activities are floriculture and tamarind processing. The women folk are engaged in stringing floral garlands and marketing them in Bengaluru / Tumkur markets.	The major commercial activities are dairying and making *Butea monosperma* (Muttuga) leaf plates. Daily milk collection in the local Milk Producers' Cooperative Society is about 500 litres.
3	Tharati is surrounded by hillocks which have the potential to contribute interms of good water resource if there are good rains. villagers have access to Bengaluru and Tumkur markets due to good approach road and transportation facilities.	market is not accessible due to lack of good approach road to the high way and poor transportation facility, even though it is just around 30 KMs away from Tharati.
4	Since the village is surrounded by the hillocks and less endowed with irrigation water availability. Total number of bore wells in the village is 130, out of which only 30 are working wells (23 percent). Still the cropping pattern is more diversified since the farmers are highly enterprising. Tharati had a history of cultivating water intensive crop such as Acorus calamus. In 1998 around 45 farmers (almost 40%) cultivated sweet flag, while in 2013, not even one % are	The village is relatively better endowed with irrigation water availability. Total number of bore wells in the village is 87, out of which 62 are working wells (71 percent). Still the farmers cultivate low water consuming low value crops such as groundnut, and are not ready to venture in to profitable / commercial crops, since their entrepreneurial ability is low compared with Tharati farmers.

	cultivating this crop, as it requires 10months of standing water. Hence water yield in wells has drastically depleted in just 15 years.	
5	Labour migration is comparatively lower because of commercialization of farming activities.	Labour migration is comparatively higher because of lesser commercialization of agriculture.
6	MGNREGA activities taken up in the village include construction of check dams (2), farm ponds (3), fish pond (1), farm bunds, minor irrigation work (cleaning of water channels (once)), desilting of tanks (once), jungle clearing, planting of areca nut (10 beneficiaries), banana (6 beneficiaries), mango (2 beneficiaries), tamarind (2 beneficiaries) seedlings, forest species like silver oak and teak .	MGNREGA activities taken up in the village include construction of check dam, Gokatte, RCC road, cleaning of wells, repairing of irrigation channels and desilting of tank.
7	The total amount spent on MGNREGA works in the village is around 12 lakh Rupees, since its inception.	The total amount spent on MGNREGA works in the village is around 8 lakh Rupees, since its inception.
8	Number of MGNREGA works implemented, fund utilized and benefits derived (both community and individual) are more.	Number of MGNREGA works implemented, fund utilized and benefits derived are comparatively less.

3.Selection of the VDSA villages for the study

Belladamadagu in Madhugiri Taluk of Tumkur District and Markabbinahalli in Basavanabagewadi Taluk of Bijapur District were the two VDSA villages selected for the study with the following justification.

Belladamadagu: Since illegal sand mining activity was found to be intense and vitiating the village level interactions among different economic sectors in Tharati, it was decided to undertake SAM work in Belladamadagu. In addition it has a prominent dairy sector as 26% of the households have dairy activity, receiving sustainable income flows and the **crops cultivated including groundnut, ragi are the ICRISAT mandate crops.**

Markabbinahalli: Though Markabbinahalli is prone to the predicament from Dhoni river flash floods, it was decided to undertake SAM work in that village **since cultivation in the village is dominated by ICRISAT mandated crops.**

Rainfed Crop Activities in Belladamadagu

Irrigated Paddy in Belladamadagu

Flower cultivation in Belladamadagu

4. Conducting Focused Group Meetings to study MGNREGA activities in VDSA villages

Focused group meetings conducted in Tharati village revealed many discrepancies in the official records of the government with respect to MGNREGA activities undertaken in the villages.

Year	Official information: What work has been executed?	FGM information: Whether the work has been executed?
2009-10	Construction of fish pond (1)	Yes
	Not in the record	Construction of farm pond (3)
	Not in the record	Road construction
	Canal cleaning	Yes
	Construction of box drainages	Yes
	Desilting of tanks	Yes
	Planting arecanut seedlings	Yes
	Planting forest seedlings	Yes
	Fodder development	Not aware of
2010-11	Metalling the roads	Yes
	Box drainage construction	Not aware of
2011-12	Not in the record	Duck construction
	Arecanut planting	Not aware of
	Metalling of road	Not aware of
2012-13	Not in the record	Planting areca seedlings
	Construction of recharge pit	Not aware of
	Construction of check dam	Not aware of
	Construction of School building	Not aware of

Discrepancies in the information available in official records of the government with respect to MGNREGA activities undertaken as revealed by the FGM in Tharati village.

Year	Official records						FGM information
	Total person days of work provided	Total amount disbursed (Rs.)	No. of families worked *	Person days of work per family per year *	Average income per family per year (Rs.) *	MGNREGA wage rate (Rs. per day)	
2010-11	1302	1,62,750	27	49	6125	125	Machines were used to execute the work
2011-12	739	92375	17	44	5500	125	
2012-13	1869	2,89,695	31	61	9455	155	

Difference between FGM information and Official records in Markabbinahalli

Year	Official records			FGM information
	Total person days of work provided	Total amount disbursed (Rs.)	MGNREGA wage rate (Rs. per day)	
2012-13	3996	10,07,000	155	Machines were to execute the work

Public toilet constructed under MGNREGA in Markabbinhalli

Drainage work under MGNREGA in Markabbinhalli

Desiltation of village tank under MGNREGA in Markabbinahalli

Interaction with respondents in Markabbinahalli

Summary of the discussions held in Focused Group Meetings

MGNREGA: Benefits derived

For the question, whether MGNREGS provided Social protection?

The answer we got was, social protection in terms of infrastructure created is an indirect contribution. However as machinery is used, machinery gets paid what labor ought to get. But labor is expensive due to rise in wages in sand mining activities

Benefits in terms of asset creation?

Benefits obtained are largely at community level.

Community level benefits derived include:

i)Desilting irrigation tanks and construction of check dams:

- Bore wells are recharged and water table improved,(quantification needs to be done).

- Livestock are ensured source of drinking water even during summer months.

 ii)Road works:

- Rural connectivity has improved

   iii)Construction of school building:

- Village children benefited due to reduction in drudgery of travelling to far away schools.

Individual level benefits derived include:

➢ Reduced the problem of labour scarcity to some extent as MGNREGA provided labor.

➢ Helped in establishing orchards / plantations which extends a long term benefit.

Reasons for poor performance of MGNREGS in these VDSA villages:

➢ The MGNREGA wage rates are not as remunerative as market wages in non-farm activities (around Rs. 350/- per person day). Hence workers preferred non-farm labor, especially sand mining wages (around Rs. 600/- per person per truck load) which are very high.

➢ Women cannot do drudgery work as done by men.

➢ In the event of non availability of men labor the only alternative left is to use the machinery to meet the compulsive need to execute MGNREGS works in rural areas.

Thus, the use of machinery is by default in MGNREGA.

- ➢ MGNREGA fails in providing social protection where the leadership of implementing agencies is weak and leaders lack dynamism.

- ➢ Stringent rules and regulations results in inordinate delay in executing works and making timely payment to workers. Ex: Introduction of Video recording of the works.

- ➢ However, even with video recording of works, there is shift to machine labor. This shows poor governance.

- ➢ Lack of awareness: many villagers, are still ignorant of MGNREGA.

- ➢ Over burdened staff**:** Panchayath staff have to attend to many works and programmes, and have no enthusiasm or incentive to execute MGNREGS.

Reasons for labour scarcity in agriculture:

- ➢ It is not due to MGNREGA activities.

- ➢ Economic scarcity of labour is due to increasing opportunities for men labor outside agriculture, for example in sand mining within the village, and in construction and related activities.

- ➢ Provision of food articles in the public distribution system which renders food availability and security for a month with only one or two person days of labor.

- ➢ The provision of food security through PDS reinforces the backward bending supply of labour already manifested due to the hike in non-farm wages.

The reasons for rise in agricultural wages:

- ➢ Impressive rise in non-agricultural wage rates has resulted in labour outmigration creating economic scarcity of labour in the villages.

- ➢ Inflation related hike in prices of essential commodities has reduced purchasing power of workers, resulting in demand for hike in wage rate.

Suggested solutions:

- ➢ Ban Illegal sand mining.

- ➢ Provide adequate staff and train them.

> ➢ Create awareness among all the villagers regarding provisions and benefits of MGNREGA.

> ➢ Implement MGNREGA activities only in needy areas.

Sand mining   vs   MGNREGA and Agriculture

Sand mining is weaning away rural labour from not only agriculture activities, but also from MGNREGA activities.

Tharati was the only village (in India and the world) cultivating Baje (sweet flag). As revealed by the table presented below, area under cultivation of baje has drastically reduced over the years. A similar trend is observed in other irrigated crops viz; groundnut, paddy and ragi. Sand mining has contributed to this decline in irrigated area in the village.

Crops	1998 (Acres)	2011 (Acres)	% change
Paddy & Ragi	39	20	- 49
Groundnut	10	1	- 90
Sweet flag	21	0.5	- 98
Chrysanthemum & China aster	0	11	
Perennial crops	8	10	+ 25

Open wells of the past are museum pieces of the present in Tharati village

Sweet flag farmer with abundant Groundwater resource in 2000

Farmers cultivating Sweet flag in Tharati village in 2000 – nostolgic memories of groundwater abundance

Sweet flag crop cultivated in 2000

Sweet flag replaced by Arecanut in 2013

5. Discussion with Dr Arjunan Subramanian who has developed a Micro-SAM Multiplier Model for Kanzara village in Murtizapur Taluk of Maharashtra

Dr Arjunan Subramanian, University of Glasgow, UK has developed village SAM as part of his PhD thesis on "Distributional Effects of Agricultural Biotechnology in a Village Economy: The Case of Cotton in India". On invitation by Dr MG Chandrakanth he visited the Department of Agricultural Economics, UAS, GKVK and had discussion with our research team. It helped our team immensely in preparing schedules and data collection.

6. **Preparation of Schedules for data collection**

The M.Sc. students, after completion of their first year PG programme and the project assistant, appointed to speed up the work, on the advice of Dr Madhusudan Bhattarai prepared the schedule for data collection, both in Markabbinahalli and Belladamadagu villages. It covers the information needed pertaining to all the activities, factors of production, earnings, expenditure, savings, MGNREGA works, from all the household categories, local government, SHGs and rest of the world. A copy of the schedule has been enclosed with this report.

7. **Data collection**

The students, who are part of the project, with the help of ICRISAT field staff have collected data in Markabbinahalli and Belladamadagu villages from all the households. As advised by the ICrisat team managing MGNREGA project, we are using VDSA data related to crop cultivation. VDSA data of Markabbinahalli for the year 2012-13 was received last week and Belladamadagu data is awaited.

8. **Preparation of village SAM structure**

The research team from the University has prepared a village SAM structure for Markabbinahalli. A copy of the same has been enclosed with this report. Data entry work of Belladamadagu village is in progress. SAM construction work would be completed by the end of January 2014.

9. **Workshop on Assessment of Economic Impact of MGNREGA using village SAM held on 21ˢᵗ and 22ⁿᵈ October 2013 in the Department of Agricultural Economics, UAS, GKVK, Bangalore**

The participating institutions in the workshop were UAS, Bangalore; ICRISAT, Patancheru; GIDR, Ahmedabad.

Members who participated in the discussions were Mr P.S. Srikantha Murthy, Dr M.G. Chandrakanth, Mr Gourav Kumar Vani, Mr Chikkathimmegowda, H.R. , Mr Kiran Kumar Patil, Dr M.R. Girish, Dr Murthuza Khan from UAS, Bangalore, Dr Madhusudhan Bhattarai from ICRISAT, Dr Rudra N Mishra from GIDR, Ahmedabad and Mr Ravikumar from Hyderabad University.

A brief report of the workshop is as follows.

Day 1: 21-10-2013

Presentation by Mr P. S. Srikantha Murthy on Village Social Accounting Matrix

He discussed following points

1. Objective of the study
2. Social Accounting Matrix: concepts and methods
3. Village Level SAM

This discussion led to following outcomes

- **To use VDSA classification of land holding**: It becomes confusing if not explicitly mentioned. Hence, while using VDSA classification we must prefix "VDSA" to distinguish it from other land holding classification systems available.

- **To get the effect of MGNREGA separately:** Consider MGNEGA as a separate activity, which the Bangalore team has already done.

- **To account for effect of various Government schemes like ASHA:** Consider different schemes separately under disaggregated sub accounts which shall be then merged under Public Service account. To record these transactions in SAM, they will be expenditure for

Government while for households they will be receipt of benefit. If benefits are in kind then they should be converted into monetary terms using imputed market value.

- **To accommodate PDS benefit:** We can have an additional row as well as an additional column in the matrix which will show benefit transfer from Government to various sectors of economy. Benefit here means difference between market prices of commodities provided by PDS and prices at which Government makes them available.

Presentation by Mr. Gourav Kumar Vani

He discussed following points in his presentation

1. Village details of Markabbinahalli
2. Occupational Structure of Markabbinahalli village
3. Sampling method followed
4. Classification of households and selection of representative households
5. Various activities considered under SAM
6. Questionnaires used for data collection

Discussion led to following outcomes

- Looking at occupational structure of Markabbinahalli village, it was decided to follow similar classification, as first step in data collection in Dokur village of Andhra Pradesh.
- Activities or sub activities of minor importance shall be clubbed and included as "miscellaneous" activities or crops of minor importance as "others".
- Upon review of questionnaire it was decided to use the questionnaire prepared for Markabbinahalli village with modification to suit to local requirement in other centres.
- Village SAM shall be analysed and presented at disaggregated level to get meaningful inferences in terms of income, employment and output multiplier effects.
- Inventory change account shall be included to balance SAM.

Presentation by Mr Chikkathimmegowda, H. R.

He discussed following points in his presentation

- Characteristics of Belladamadagu village
- Sample structure of households
- Activities included in village SAM

Presentation by Mr Kiran Kumar Patil

He explained methodology (Matrix-inverse) for getting multiplier effect for various activities using village SAM.

Discussion led to following outcome

- Mr. Kiran Kumar Patil shall be invited to GIDR, Ahmedabad to help in SAM analysis work.

Day 2: 22-10-2013

<u>Presentation by Dr. Rudram Mishra</u>

Following points were presented by him

1. Context of preparing SAM
2. Introduction to village
3. Economy of the village
4. Challenges faced in construction of SAM

Discussion led to following outcomes

- Bhal system of labour exchange is adopted in the village and its imputed cost has to be used.
- Imputed value of effect of check dam construction under MGNREGA on agriculture crop production has to be considered.
- Respondents' recall period in answering questions relating to business transaction and consumption is 8 days. So, the data so collected has to be distended to the reference year after adjusting for additional days in the reference year.
- The reference year has to be one agricultural year and not the financial year.
- Since no work was executed during the reference year of 2012-13, MGNREGA work executed and expenditure incurred during 2011-12 shall be considered for construction of village SAM.
- Questionnaire developed by Bangalore centre may be used as reference with modifications to suit local conditions.

<u>Presentation by Mr. Ravi Kumar Gogulamudi</u>

Points discussed by him during his presentation were

1. Objectives of the study
2. Methodology of the study
3. Village SAM
4. Work plan of the project

Discussion led to following points as outcomes

- In all four villages of Andhra Pradesh rice is purchased by rich people at 1 Rupee per Kg from FPS and sold to poor at Rupees 10 per Kg. To analyse its impact on the households, a few suitable questions may be included in the questionnaire. Upon data collection, if it is found that no substantial amount is involved in this transaction, it may be ignored. Otherwise, the amount involved may be used in balancing SAM.
- VDSA classification of households based on landholding status shall be used.
- Labour in factor account shall be classified into two components viz., hired labour and family labour.
- Imputed cost of family labour shall be included in SAM, where expenditure on imputed cost of family labour will be shown as expenditure by Agriculture account and receipt for family labour account. Then, family labour transfers this imputed income to landed households or small and marginal households where family labour is used for carrying out farm operation.
- On suggestion by Dr. M. G. Chandrakanth, it was decided to use the word 'synergy' to represent the relationship between MGNREGA and PDS.

10. Participation in the **"The Future Of MGNREGA In The Emerging Context Of Rural India: Learnings From Selected States"** Jointly organized by GIDR, Ahmedabad and ICRISAT, Hyderabad on 10th and 11th December 2013 at Ahmedabad, Gujarat

Mr P.S. Srikantha Murthy, Principal Investigator and Mr Kiran Kumar Patil, PhD Scholar participated in the work shop, helped GIDR research team in preparing the draft SAM for selected village of Gujarat and presented the progress in the project work at Markabbinahalli and Belladamadagu. A copy of the PPT used in presentation is enclosed with theis report.

Acknowledgement:

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