Vol 3 Issue 6 March 2014

ISSN No : 2249-894X

Monthly Multidisciplinary Research Journal

Review Of Research Journal

Welcome to Review Of Research

RNI MAHMUL/2011/38595 **ISSN No.2249-894X**

Review Of Research Journal is a multidisciplinary research journal, published monthly in English, Hindi & Marathi Language. All research papers submitted to the journal will be double - blind peer reviewed referred by members of the editorial Board readers will include investigator in universities, research institutes government and industry with research interest in the general subjects.

Advisory Board

Address:-Ashok Yakkaldevi 258/34, Raviwar Peth, Solapur - 413 005 Maharashtra, India
Cell : 9595 359 435, Ph No: 02172372010 Email: ayisrj@yahoo.in Website: www.ror.isrj.net

Review Of Research
Vol. 3 | Issue. 6 | March. 2014
ISSN:-2249-894X
Available online at www.ror.isrj.net

ORIGINAL ARTICLE

ASSET CREATION FOR SUSTAINABLE DEVELOPMENT: A CONSCIOUS STRATEGY FOR ENHANCING LIVELIHOODS SECURITY AND QUALITY OF LIFE

Saurabh G. Vispute , V.V.Kulkarni and Priyanka P. Thipsay

Ph.D. Research Scholar , Department of Pharmaceutical Sciences St. John's University, New York, USA.
Asso. Professor, Social Science Centre, Bharati Vidyepeeth, Pune. India.
Ph.D. Research Scholar , Department of Pharmaceutics University of Mississippi, USA .

Abstract:

Health and other quality of life indices are deeply influenced by improvement in livelihoods security. Thus it forms one of the fundamental tenets of sustainable development. As per the Indian government's Census 2011, rural India constitutes 68.84 % of Indian population of which around 33% population is under the poverty line. If India has to realize its promised growth and development, it is imperative that this multitude of people be able to earn their livelihood in a sustainable way. This is the very objective with which the National Rural Employment Guarantee Act (NREGA) was passed in the year 2005 (rechristened as Mahatma Gandhi NREGA- MGNREGA in 2009) with an objective of providing 100 days of employment in way of manual labor which uses unskilled labor and with the help of that, create sustainable community assets. NREGA marks a paradigm shift & stands out amongst other rural employment programmes as it empowers the rural population with a legal right & employment guarantee through an act of parliament, unlike other wage employment programmes. The act targets unskilled laborers in the rural sections of this country which includes landless labors, SC's/ST's & women. This paper focuses on the implementation of NREGS scheme in various state of India and at the same time tries to highlight some successful activities which are being implemented under MGNREGA. The aim of the paper is to try to establish that quality assets are created over the years which have resulted in improvement of quality of life, women's role in economy and sustainable livelihood models, MNREGS is one of the most important programmes ever launched' for rural India. Although it has been positioned and popularised as social security and livelihood scheme but it also have a very important connotations for economy as a whole. NREGS has not only emerged as ray of hope for millions of poor and marginalised families in rural India but also as a massive rural investment program, which has promise to take India's growth in top gear. This scheme is gradually building physical assets in rural India which is visible, sustainable, technically sound and being monitored by people themselves. This study discusses the appropriateness of these structures, their economic impact on rural life and impact on livelihood of marginalised population of rural India. It was also important to study the implications of NREGS from minimum wage and employment point of view. The study also examines the multiplier effect of NREGS in context of agricultural productivity, scope for skill development in rural areas and employment generation outside NREGS.

Title: "ASSET CREATION FOR SUSTAINABLE DEVELOPMENT: A CONSCIOUS STRATEGY FOR ENHANCING LIVELIHOODS SECURITY AND QUALITY OF LIFE" , Source: Review of Research [2249-894X] Saurabh G. Vispute , V.V.Kulkarni and Priyanka P. Thipsay yr:2014 | vol:3 | iss:6

KEY WORDS:

sustainable livelihood, marginalised families, employment, sustainable community assets, empowerment,

INTRODUCTION:

Creation of sustainable assets that strengthen the livelihood resource base of rural areas is one of the key objectives of MGNREGA. To provide for inter-state and regional variations, the design of MGNREGA lists a wide range of permissible works. Since the inception of MGNREGA, around 146 lakh works have been undertaken; of these, almost 51 per cent are works related to water (water conservation, flood control, irrigation, drought proofing, renovation of traditional water bodies and micro-irrigation), and over 19 per cent works are related to rural connectivity (see Table 1). At such a scale, MGNREGA works have the potential to benefit rural communities by improving irrigation facilities, enhancing land productivity and connecting remote villages to input and output markets. This part does a critical review of the available literature on assets created under MGNREGA; their quality and durability, work completion rates, viability of these works (on public lands and private lands), and what uses they are put to. Overall, studies suggest that while many productive assets have been created on the ground owing to good planning and execution at the micro-level, there is need for more focused implementation with regard to the creation of durable and sustainable assets under MGNREGA. This is also an area where more rigorous research is required.

TABLE 1 Total Works Taken Up under MGNREGA FY 2006-07 to FY 2011-12*

	Type of Works	Total Number of Works Completed from FY 07 to FY 11-12* (In Lakh)	Ongoing works (In Lakh)	% of Total Works taken up from FY 6-07 to 11-12*
i.	Water Conservation and Water Harvesting (e.g. farm ponds, percolation tanks, etc.)	19.5	36.4	25
ii.	Flood Control and Protection (e.g. check dams, culverts, etc.)	3.9	5.9	4
iii.	Drought Proofing (e.g. afforestation/tree plantation, agro-forestry, etc.)	5.2	13.0	9
iv.	Irrigation Canals (macro- and micro-irrigation works, etc.)	5.7	9.5	7
v.	Renovation of Traditional Water Bodies (e.g. desilting of tanks, etc.)	6.6	9.8	7
	Total Water Conservation and Water-related Works (sum of (i) to (v) above)	**40.9**	**74.7**	**51**
vi.	Works on lands of SC/ST/ BPL/ SMF and IAY and Land Reform Beneficiaries	13.0	19.9	14
vii.	Land Development (e.g. contour bunds, field bunds, etc.)	13.9	18.8	13
viii.	Rural Connectivity (e.g. village roads, etc.)	16.0	28.3	19
ix.	Others (e.g. Bharat Nirman Kendras)	2.8	4.6	3
	Total Works	86.6	146.3	100

QUALITY AND DURABILITY OF ASSETS

When planned and executed well, studies indicate a positive Return on Investment for MGNREGA assets; a study observed a Return on Investment of over 100 per cent in a single year of use. On the other hand, some studies highlight design-specific and technical quality issues which undermine the potential of these works. That said, there are only a few studies that have conducted rigorous scientific analysis on the actual productive performance of these assets. Further, the quality and durability of the assets vary vastly with district/region and cannot easily be generalised at the national level. MGNREGA has faced criticism on the quality and sustainability of the assets created under it. Critics of the Scheme argue that since employment generation is the primary objective of the Act, the works undertaken are labour-intensive, these works tend to be non-durable and have limited use (N. Bassi and D. M. Kumar,

2010). On the other hand, other scholars suggest that earthen works can also be durable if planned, designed and constructed properly (M. Shah,2008).

Three metrics have been used to study the quality, durability and utility of the Scheme's assets; Rol/cost recovery, (RoI estimates the expected returns on the built asset including the initial cost of the structure) beneficiary perception-based surveys, and quality and soundness of technical design. However, these categories are not distinct. For example, beneficiary perceptions (on usage and expected returns) and technical design have often been used to estimate the RoI. Further, since these assets have been created under MGNREGA, perception-based surveys also use parameters related to processes and procedures, such as, participatory planning, timely measurements and wage payment, to make assessments.

Investment and Cost recovery

RoI estimates the expected returns on the built asset. Investment on the asset includes the initial cost of the structure. A comprehensive study on RoI related to MGNREGA works across eight districts of Bihar, Gujarat, Kerala and Rajasthan, is indicative of the productive potential of MGNREGA. The study assessed 143 best performing(It is important to note that the International Water Management Institute (IWMI)-Institute of Rural Management Anand (IRMA) study (S. Verma, MG-NREGA Assets and Rural Water Security: Synthesis of Field Studies in Bihar, Gujarat, Kerala and Rajasthan, Anand: International Water Management Institute, 2011) chose only the best-performing water assets and therefore results are indicative of the potential of the Scheme. Thus, the study may not be representative of all MGNREGA assets as the sample took into account only water-related assets and because it purposively chose only best-performing water assets.) MGNREGA water- related assets (for instance irrigation, ponds, wells) and found that RoI estimates are positive in the case of a majority of assets. Specifically, out of 143 assets, 117 assets (for which detailed quantitative data on costs and benefits was calculated) had a RoI of over 100 per cent in the first year, i.e. they recovered their investment in a single year of use. Across the four States, the RoI on all assets collectively was 126 per cent for Gujarat, 121 per cent for Bihar, 101 per cent for Kerala, and 61 per cent for Rajasthan. Micro-canal systems were found to have the highest rate of return compared to all other MGNREGA works (more than 200 per cent within a year)(In view of this, the new MGNREGA Guidelines have now explicitly included irrigation command related works in the list of permissible activities so that these may be undertaken on a large scale throughout the country).

Across the four States, the RoI on all assets collectively was 126 per cent for Gujarat, 121 per cent for Bihar, 101 per cent for Kerala, and 61 per cent for Rajasthan. Micro-canal systems were found to have the highest rate of return compared to all other MGNREGA works (more than 200 per cent within a year)(In view of this, the new MGNREGA Guidelines have now explicitly included irrigation command related works in the list of permissible activities so that these may be undertaken on a large scale throughout the country). With renovation, water is available in these canals for up to eight months in a year and this has allowed the farmers to provide 3-6 additional watering (One watering is one round of irrigation at a set interval of time for the crop) to their paddy crops. It must be noted that while the renovation increased the crop productivity by around 6-15 per cent, the bulk of the benefits for the farmers came in the form of diesel saving as they were able to replace costly well-irrigation.

However, other studies indicate a longer recovery period for 100 per cent RoI. A study in Madhya Pradesh estimated that for similar assets (including ponds, wells), the recovery of cost period on an average was five years(Institute for Development of Youth Women and Child (IDYWC), 'Impact Assessment of Mahatma Gandhi National Rural Employment Guarantee Scheme on Sustainable Asset Creation and Livelihood', IDYWC, Report submitted to Ministry of Rural Development/UNDP, 2010). This variation may be due to different methodologies followed for assessment as well as different geographic areas of evaluation.

Factors like, the type of work being undertaken, technical design, and the geological differences in areas of implementation are also crucial to determining the average recovery cost. Intra-state variation was apparent in the case of Gujarat where public assets created in Sabarkantha district were doing better than their counterparts in Junagadh in terms of economic benefits generated. Critical to this discussion, however, is the difference in geological and aquifer conditions in the two districts. Junagadh lies in the hard rock Saurashtra region while parts of Sabarkantha are underlain by an alluvial aquifer. The amount spent for recharging wells is therefore much higher in Junagadh vis-a-vis Sabarkantha.

Perception-based Surveys

Perception-based surveys have been used to assess the development utility of assets as perceived by the stakeholders. These surveys try to assess whether the assets are useful to the beneficiaries and are

being used for the purpose they were created for. In one of the survey rounds for the MGNREGA conducted by the National Sample Survey Organisation (NSSO2010-2011), in Andhra Pradesh, Madhya Pradesh and Rajasthan, it was found that around 99 per cent of rural households(A household is defined as members of a family related to each other by blood, marriage or adoption, and normally residing together and sharing meals) in Rajasthan, 82 per cent in Madhya Pradesh and 64 per cent in Andhra Pradesh were using the assets created through MGNREGA works. Further, out of all the MGNREGA assets being used, 83 per cent in Rajasthan, 80 per cent in Madhya Pradesh and 67 per cent in Andhra Pradesh, were considered to be of good or very good quality. In another study conducted in five districts of Madhya Pradesh, 74 per cent out of 100 sample beneficiaries stated that the dug wells(Dug wells refer to wells dug in the ground, normally through shovels, to access groundwater) created under MGNREGA had increased the total irrigated area and saved their crops from water scarcity(Madhya Pradesh Institute of Social Science Research (MPISSR), 'Assessment of the Effectiveness and Impact of Kapildhara Sub-Scheme, MPISSR, Study Commissioned by Ministry of Rural Development & UNDP, Ujjain, 2011). In Anantpur, Andhra Pradesh, out of 54 soil water conservation works surveyed such as farm ponds, tank desilting and field bunds,(Field bunds are mud walls built around the field area to prevent inundation) 76 per cent were serving the purpose of irrigation, water conservation, etc. and/or being used by the beneficiaries(K. Kareemulla(2009).

Research indicates that wherever village communities have taken enthusiastically to the idea of MGNREGA and where their enthusiasm has been supported by an able, well-staffed administration and capable local governance institutions and leadership, results have been positive. In other instances, lags in process and procedure have reduced the efficiency of assets. A study conducted in nine states including Andhra Pradesh, Himachal Pradesh, Madhya Pradesh, Odisha and Rajasthan undertook a perception-based evaluation of 40 assets, such that seven best and seven worst works were selected. The assets assessed as best were of good physical quality and had followed most of MGNREGA's processes in timely wage payments, etc. On the other hand, the seven worst assets had not followed MGNREGA processes in terms of timely wage payments, etc. and were of uneven quality; two assets were of moderate quality, two of poor quality and one was incomplete(T. Shah, 2010).

Technical Quality

The technical design of an asset takes into account its geographical location, feasibility, strength of the physical structure, etc. The sustainability of an asset depends to a large extent on the soundness of its technical design(It is interesting to note here that a study by the Indian Institute of Science (IISC), observed that in a lot of cases, MGNREGA assets are 'fail proof', that is, no matter the technical quality of the asset, the asset would still benefit the environment and be useful). A study evaluated 580 different types of works across four districts of Rajasthan and Madhya Pradesh, involving 640 households, with regard to critical design parameters under each category; for example, cost of investment, height, depth, technical design, quality of construction, time to recover the cost, among others. It was found that most of the structures, which have been built under the MGNREGA, are sustainable and will last for their designed average life. In particular, wells, check dams and anicuts (Anicuts are stone bunds) had been built with good-quality material and the right kind of technical inputs. These structures could be sustained over a period of 10-15 years and through physical verification did appear sound enough to last that long. However, the study indicated that the durability of civil works on all weather roads was low due to non-use of machines like road rollers which are necessary for compaction (IDYWC, 'Impact Assessment of Mahatma Gandhi National Rural Employment Guarantee Scheme on Sustainable Asset Creation and Livelihood).

Different assessments on works like plantations point to the criticality of planning and careful execution. In a study in Jharkhand, the average life of plants was found to be only two to three years (as opposed to 15 and above years of productive life depending on the type of tree), due to lack of planning in selection of the location for these works as well poor maintenance(Action for Food Production (AFPRO), 'Infrastructure Development and Beyond: Exploring the Scope for Sustainable Livelihood Support under NREGA,' AFPRO, Report submitted to the Ministry of Rural Development/United Nations Development Programme (UNDP), New Delhi, 2009).

In other places where plantation activities have been well-planned, saplings/trees were shown to have a high survival rate. For instance, in Madhya Pradesh, around 71,000 saplings were planted over 175 hectares of land under a large-scale four-year drought-proofing and greening project. The survival rate of the sapling was over 90 per cent (after four years) (Indian Institute of Forest Management (IIFM), 'Impact Assessment of MGNREGA's Activities for Ecological and Economic Security, Bhopal: IIFM, Report submitted to the Ministry of Rural Development/UNDP, 2010). These variations may be reflective of careful planning, execution and maintenance required for ensuring the feasibility and durability of works.

A research study from Rajasthan also concluded that inadequate staff was a major reason for poor

quality and effectiveness of assets. The study noted that in Dungarpur district, Rajasthan, each Technical Assistant (TA) was responsible for supervising works in three to four Gram Panchayats (GPs)(Gram Panchayat is the primary unit of the three-tier structure of local self-governances in rural India, the Panchayati Raj System. Each Gram Panchayat consists of one or more villages), while in Tonk, Rajasthan a TA was looking after works in 10-12 GPs; a large number of MGNREGA assets in Tonk were rendered ineffective due to insufficient technical inputs in design and site selection(A. Singh and R. Modi, 2010).

A major weakness of water-related works under MGNREGA has been the excessive concentration on excavation and desilting of ponds without corresponding work on treating their catchment areas or on the construction of dams based on earthen engineering (This is why the new Guidelines now specify a whole range of watershed works among the list of permissible works under MGNREGA).

WORK COMPLETION RATE

Out of 146 lakh works that have been taken up under MGNREGA since its inception (up to FY 2011-12 Provisional Data), 87 lakh works have been completed—this is a completion rate of around 60 per cent. There was a significant inter-state variation in the work completion rates in FY 2010-11; the highest work completion rate was that of Tripura at 71 per cent and the lowest was that of Karnataka at 21 per cent. Studies indicate that the completion rate of works, just as in the case of quality of assets, is dependent on district/region-specific implementation of the Scheme and is affected by factors such as poor planning, lack of technical support, irregular flow of funds, and delayed payment.

While work completion by itself is not a criterion to assess the quality of work, it is an important parameter to evaluate the MGNREGA processes involved in the creation of the asset. Out of 146 lakh works that have been taken up under MGNREGA (up to FY 2011-12*), 87 lakh works have been completed, reflecting a completion rate of around 60 per cent. However, there is significant inter-state variation in the work completion rates; in FY 2010-11, the highest work completion rate was that of Kerala at 71 per cent and the lowest was that of Maharashtra at 2 per cent (http://www.mgnrega.nic.in). Under the reporting system of the Scheme (MIS/MPR), spillover works (works not completed in the preceding year) are reflected as ongoing works. Thus the completion rate in any year is cumulative, indicating a completion percentage of both spillover works from the previous year and new works in the current year. While this may account for some percentage of incomplete works, the factors responsible for the low work completion need to be carefully researched and analysed further.

In a field study undertaken in Jharkhand in FY 2009-10, it was found that around 50 per cent of the 37 projects were incomplete, even though many of them started during the year 2006-07 and 2007-08. Incomplete works were a serious concern in this area, not only because these were not serving the purpose for which they were envisaged, but because loose soil from these works could potentially cause siltation of other water bodies. The reasons noted for non- completion were:

In the case of ponds, construction was not carried out according to planned dimensions (the dimensions may have been underestimated) and work started in June-July before the monsoon.
For farm wells, there was only one incomplete well where the constructed parapet collapsed and had not been reconstructed.

The study also assessed these works in terms of their technical design and found problems such as non-compaction of the soil leading to soil erosion and siltation and no provision for recharge around ponds and wells leading to the drying of the water source(AFPRO, 'Infrastructure Development and Beyond). The study suggested the need for more effective planning and giving priority to selection of smaller structures for soil and water conservation since this may improve the completion rate for works and accrue the desired benefits to stakeholders.

Irregular flow of funds was another reason for incomplete works, as concluded by a study in Meghalaya and Sikkim (IIM-S, 2009). In Mandla, Madhya Pradesh and Narmada, Gujarat, a report found that while people started to work on MGNREGA, due to delay in wage payments they shifted back to lower-paying works. Lack of technical support to communities, on how to plan and when and where to start a work is also a key factor in non-completion of works. A large number of works, particularly those related to water conservation, remain incomplete, either due to lack of technical support to GPs or the onset of monsoons (World Bank, Social Protection for a Changing India, Volume II, Chapter 4, 2011). The Working Group on MGNREGA set up by the Planning Commission towards formulation of the 12th Plan suggests that works are left incomplete for several reasons, which can be variously addressed:

The Management Information System (MIS) needs to identify those works which are to be executed over a

period of more than a year. Such works may be split into annual work elements, with each annual segment given a distinct work identity (The MIS has now been changed to allow for this).
Some works are left incomplete because revisions of wage and material rates raise the actual cost beyond the approved estimates. Whenever there is a revision in the Schedule of Rates (SoR), (The details of the productivity norms are listed in the Schedule of Rates SoRs). The SoRs are calculated through Work Time and Motion Studies. The SoRs, under the Act, have to be such that an average person working for nine hours, with one hour of rest, is able to earn the notified MGNREGA minimum wage) the District Programme Coordinator (DPC) (A District Programme Coordinator (usually the District Magistrate or District Collector) is the overall incharge of MGNREGA in a district) must revise the approved estimates for projects in the Annual Plan which are yet to begin. This should be done on a suo moto basis by the DPC and the revised estimates conveyed to Project Implementing Agencies (PIAs).
For projects which are under execution when the SoRs are revised, the DPC must conduct a survey re-estimating the value of the unfinished portion of the works. The entire process of re-estimation must be done within a period of one month of the revision of SoRs.
For those PIAs that have incomplete works for more than one fiscal year after the year in which the works were proposed, no sanction is to be given for beginning new works.

It is important to note that findings related to quality, durability and rate of work completion suggest that the problem is not in the design of the Act but the usefulness of the Scheme is dependent on the strength of its implementation at the field level. For instance, lack of planning in areas like potential demand and need for MGNREGA works, participation of villagers and prioritisation of works in the Gram Sabha (GS), (A Gram Sabha is a body of all persons as electors in the electoral roll for a Gram Panchayat. All the meetings of the GS are convened by the GP to disseminate information to the people as well as to ensure that development of the village is done through participation or consent of all households) and focus on creation of productive assets based on principles of watershed, etc., can greatly reduce the development potential of MGNREGA(Centre for Science and Environment (CSE), 'An Assessment of the Performance of the National Rural Employment Guarantee Programme in Terms of its Potential for Creation of Natural Wealth in India's Villages', New Delhi: CSE, 2008). Taking up of planned works, relevant to the need of the region and demand of the beneficiaries is also vital for ensuring ownership of assets and their development utility in the long run.

WORK ON PRIVATE LANDS AND PUBLIC LANDS

A significant share of MGNREGA works (12 per cent in FY 2011-12* and 20 per cent in FY 2010-11) is taken up on private land. Research on the subject compares and contrasts the advantages and challenges of these works visa-vis works on Public Lands. A study on best- performing assets in Bihar, Gujarat, Kerala and Rajasthan, estimated a higher RoI of 116 per cent for water-related public assets, due to the number of people they benefit, as against a RoI of 35 per cent for private assets, in a single year of use. However, private assets were found to be better maintained and hence more sustainable, due to definite ownership and rights. MGNREGA allows for asset creation, such as water conservation works, provision of irrigation facilities, land development, etc. on public land(Public land refers to government land or community land as a common property resource not belonging to only one individual). The Act also provides for taking up of works such as irrigation, horticulture and land development, on private land belonging to the Scheduled Castes (SCs) and the Scheduled Tribes (STs) or families below poverty line (BPL), or to the beneficiaries of land reforms or to those under the Indira Awas Yojana (IAY) of the Government of India (GoI) or that of the small or marginal farmers as defined in the Agriculture Debt Waiver and Debt Relief Scheme, 2008 of the GoI, or to the beneficiaries under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006.

Though MGNREGA is demand-based and taking up of one kind of work does not exclude the other, there has been some debate on the effectiveness of works undertaken on public land in comparison to works on private land. Studies show that while private assets are preferred by beneficiaries, public assets benefitted a larger area and more people, leading to higher returns on investments. However, public assets are prone to destruction because of neglect in maintaining them, in the absence of strong local institutions—the classic tragedy of the commons. With defined ownership, assets on private land are relatively well taken care of and better maintained. In fact, the development of private property under the Scheme has the potential to contribute to more sustainable livelihood creation (IIM-Shillong, 'Appraisal of MGNREGA in Sikkim and Meghalaya). In Gujarat, a study of ten farmers who had been provided private assets under the Scheme, found a significant impact on their livelihoods. The Gross Cropped Area (GCA) (Gross Cropped Area is the total land area where crops are sown once or more than once, during a year. The

area is counted as many times as there are sowings in the year) for these farmers more than doubled as a result of asset provision, from around 15 to 34 hectares. This also led to a reduction in the number of days of labour, on other farmers' fields, that these households engaged in, suggesting they became more self-reliant as a result of MGNREGA works.

On the other hand, community upkeep of public assets is limited, possibly due to ambiguity over ownership and usage rights. In Kerala, a study observed that, of the 23 public ponds studied, only one was being maintained by the community. Villagers, including those who were directly benefiting from the asset, asserted that it was the responsibility of the GP to regularly clean and maintain the assets. The possible reasons for the non-maintenance of these assets could be: diffusion of benefits over a large group and less individual ownership, disproportionate benefits accrued to influential groups, or weak Panchayati Raj Institutions (PRIs) (Panchayati Raj Institutions (PRIs) are systems of local governance in rural India at three levels of administration: village, block and district. From the point of view of reducing poverty, public works are prone to being taken over by interest groups (here, interest groups refers to stakeholder groups defined on the basis of traditional hierarchies, caste, etc. These groups may, sometimes, block equal and open access to community resources like ponds etc.). Thus, the choice between the two kinds of assets, in some cases, provides for a paradox between equity (since community resources can potentially benefit more people) and effectiveness (as works on private lands appear to be better maintained and more sustainable) (Verma, 2011). On effective utilisation of resources, a similar comparison may also be drawn between creation of new assets and renovation of old assets. A study found that while creation of new assets was beneficial, investments in expanding, deepening, improving and renovating existing assets provided the highest returns; existing assets renovations had a return of 136 per cent, much higher than the return on new assets created which was 65 per cent.

MULTIPLE USES OF MGNREGA ASSETS

Most assets created under MGNREGA are used for multiple purposes. As studies in Benefits from one Year of use as a Proportion of the Investment Made in Rajasthan, Gujarat, Kerala and Madhya Pradesh have shown, almost 50 per cent of the assets surveyed were designed for single-use such as, irrigation, but were de facto multiple- use structures (being used for household purposes, groundwater recharge, livestock etc.). This reflects the potential of MGNREGA to contribute to water and livelihood security in the village ecosystem. For assessing the development impact of MGNREGA assets, it is important to take into account the nature and multi-utility of each asset. Most rural households not only have multiple uses for water but also use multiple sources of water for their varied needs. Each source of water, such as a pond, serves multiple purposes(See, for example, the '7-harvest farm ponds' constructed by Samaj Pragati Sahayog in Central India (Mihir Shah et al.,1998). Even within the homestead, households can use up to nine different water sources. This makes most of the water structures created under MGNREGA multiple-use structures; in fact, MGNREGA may be viewed as the world's largest laboratory for community-based multi-use water services (MUS). Thus in order to quantify the impact of MGNREGA and benefits accrued, it is important to take into account the nature and multi- utility of each asset. Efficient MUS also emphasises the need to strike an appropriate balance between sustainable infrastructure investments and water governance.

According to a field survey in Bihar, while ponds were demanded by the GS primarily for purposes of irrigation, an important share of their benefits accrued were from pisciculture. In Nalanda, pisciculture on MGNREGA ponds was a major source of income. In the case of a public pond, pisciculture contributed an income of Rs 27,400 for farmers. In addition to this, farmers gained by saving the cost of purchasing water at Rs 60/hour. MGNREGA works on private land too were used both for irrigation of crops as well as for pisciculture. Quantification of the benefits from MGNREGA assets also includes other aspects. Some of these can be directly measured, as with a quantifiable increase in the area irrigated, the storage capacity of a water body, the area afforested, the production of food, fodder or grass and other parameters linked to the functioning of the ecosystems. There are other uses and advantages of these assets that are more difficult to quantify. For instance, a study conducted in Chitradurga, Karnataka, concluded that the MGNREGA activities reduced the vulnerability of agricultural production, water resources and livelihoods to uncertain rainfall, water scarcity and poor soil fertility(R.Tiwari, 2011). These findings were also supported by a study conducted in Maharashtra(WOTR,2010).

LEVERAGING MGNREGA FOR SUSTAINABLE DEVELOPMENT

Several states have initiated the convergence of MGNREGA with other Schemes/Government departments such as those dealing with agriculture and horticulture. Literature on this topic details several individual case studies and positive impacts of this approach. MGNREGA with its inter-sectoral approach

opens up opportunities for convergence with different programmes. The aim of convergence is to optimise public investments made under existing Schemes through suggested ways of linking and steering them towards a common/shared recipient end, both physical (area, infrastructure, natural resource) and human (person, group, agency) (MoRD 2009-10). The current studies and assessments on MGNREGA do not conduct a macro-analysis of the impact and benefits of convergence with MGNREGA, in other words, how supplementing the costs of development programmes through the Scheme is aiding beneficiaries. To support convergence initiatives and allow for greater flexibility in adopting agro-climatic specific works, the revised MGNREGA Schedules and Guidelines have added new works to the list of permissible works under the Scheme.

Environmental Services and Agricultural Productivity

MGNREGA is recognised as an ecological Act that aims to create sustainable livelihoods through regeneration of the natural resource base of rural India. In the process, it provides resilience and adaptation to climate change(CSE,2010). Evidence of the suitability of the MGNREGA works in terms of their usefulness for environment and ecology is emerging(A. Sharma, 2010). In the short run, environmental services(Environmental services include recharging groundwater, increasing rain water percolation, conserving water, increasing the area irrigated, reducing soil erosion, increasing soil fertility, conserving biodiversity, reclaiming degraded crop and grazing lands, and carbon sequestration) have an impact at the local level on natural resources, water availability, etc. At a large scale, these may have regional implications for climate change mitigation and carbon sequestration as well (see Table 2)(R. Tiwari, 2011). This paper looks at some of the evidence-based studies that have attempted to quantify and/or project the environmental and agricultural impact of the Scheme. The existing literature suggests that MGNREGA has had a positive impact at the micro-level. However, more scientific studies quantifying the macro-level impact of the Scheme are required; for instance, questions like has the MGNREGA affected the viability of cultivation of small/medium and large farm holders in certain/all tracts and for which crops, still remain unanswered.

ENHANCEMENT OF ENVIRONMENTAL SERVICES

Preliminary findings indicate that MGNREGA works have led to a rise in groundwater, improvement in soil quality and reduction in vulnerability of production systems to climate variability (by strengthening livelihood and water security). However, some literature also points out that the extent and kind of impact MGNREGA works have on the environment depend on the scale of the activities undertaken, the technical design, the quality of assets created, and ownership and use of the physical structures constructed. There are only a few studies on the subject. While there are several studies that suggest that MGNREGA has had a positive impact on the environment, there are only a few studies that have actually attempted to quantify this impact (IISc, 2012). A pilot study in Chitradurga, Karnataka, developed and tested a framework for quantification of environmental services provided by the MGNREGA(Tiwari et al.2011. The findings suggested that the potential and extent of impact depended on the scale, technical design, ownership and maintenance of the structures constructed and activities undertaken.

While effective planning is vital to ensure the usefulness and sustainability of MGNREGA works, studies point that some MGNREGA works are easy to execute and can even be categorised as 'fail-proof'. In other words these activities can improve soil, water and forest resources without requiring micro-plans and watershed plans. Listed below are some of the main findings of studies related to the impact of MGNREGA activities on the environment:

Improvement in Water Percolation and rise in Groundwater

Micro-level studies indicate that the water conservation structures, desilting of traditional water bodies, plantations and other works taken up in MGNREGA, have improved water percolation and helped recharge groundwater. This has also led to a rise in groundwater levels and water availability, increasing the area under irrigation in some cases. An assessment of 34 anicuts (Anicuts are stone bunds) in Rajasthan observed that on an average, an anicut built under MGNREGA was irrigating an area of 26 hectares (ha) and enhancing groundwater recharge for 3-25 wells leading to a rise in water levels between 10-40 feet(S. Verma, 2011). The Chitradurga study (mentioned above) noted that due to check dams created under MGNREGA, the percolation potential of the villages studied improved by 1,000-28,000 cubic metres a year. In one village, the construction of percolation tanks improved rechargeby 24 per cent in the watershed

considered. Desiltation works between 2006-09 further contributed to recharging of groundwater. Three villages out of the 20 studied, recorded a significant rise of 30 per cent (46 metre), 53 per cent (82 metre) and 77 per cent (113 metre) in groundwater. Rise in groundwater also led to an increase in the area irrigated. Six villages showed a significant improvement in areas irrigated by bore-wells; two villages recorded an increase of more than 90 per cent in irrigated area, one village recorded a doubling from 400 hectares (ha) irrigated before desilting to 800 ha irrigated after desilting, and three villages recorded an increase of more than 20 per cent.

Results from a project in the Khargone district of Madhya Pradesh also demonstrate the collective impact of planned MGNREGA works on water and livelihood security. At the end of a three-year MGNREGA project (2010-12), on revival of a river (including desilting, check dams, etc.), there was an increase in water availability such that the duration of the surface water level flow increased by two to three months, the groundwater level increased by two to three meters and the crop area increased by about 400 ha (MGNREGA 2011). Other studies from across India have put forward similar findings. In Maharashtra, in perception-based surveys, over 40 per cent of the 200 households in a sample survey said that there had been an increase in groundwater levels as a result of works taken up under the Scheme (WOTR, 2010).

Improvement in Soil Quality

Application of excavated silt from MGNREGA works has the potential to add to soil fertility. In a study in Chittoor, Andhra Pradesh, excavated silt was applied to 36,000 acres of degraded lands belonging to Scheduled Caste (SCs)/Scheduled Tribes (STs)/Below Poverty Line (BPL) families. This increased the soil fertility in terms of nutrients found in the soil (CERD, 2010). The Chitradurga study also confirmed this. Croplands that had been treated by silt excavated from water bodies, recorded a two- to threefold increase in the organic carbon content.

Potential for carbon Sequestration

The Chitradurga study (mentioned earlier) also attempted to estimate the potential of MGNREGA works to generate carbon sequestration. The study projected the potential carbon sequestration over a period of 30 years. From three plantations of over 35,000 trees, spread over an area of 80 ha, the potential carbon sequestration after a period of 30 years was projected at around 7,700 tonnes of carbon. Given that works related to afforestation make up around 10 per cent (including agro-forestry, etc.) of the total MGNREGA works, the carbon sequestration potential is enormous.

Reduction in vulnerability of Production Systems

MGNREGA activities have shown the potential to reduce the vulnerability of production systems to climate variability by strengthening livelihood and water security through water conservation, water harvesting and desilting and increased crop yields. For example, in a perception-based study in Sidhi and Nuapada in Madhya Pradesh, 79 per cent (out of 240 households) and 15 per cent (out of 240 households) of the respondents agreed that MGNREGA works had led to an increase in water availability, thus reducing the vulnerability of production systems (CSE, 2008).

CREATION OF GREEN JOBS

MGNREGA works have been described as 'Green' and 'Decent', i.e. the Scheme creates decent working conditions by ensuring workers rights and legal entitlements, providing social protection and employment and environmentally sustainable works that regenerate the ecosystem and protect bio-diversity. Evidence suggests this is bearing out in many cases. MGNREGA creates green jobs. Green jobs are decent jobs (ensuring productive and secure employment, social protection, rights, participation in planning) that contribute to environmental sustainability (protection of the ecosystem, reliance on renewable sources of energy) and are therefore directly related to climate change mitigation and adaptation activities(ILO, 2010). In a pilot study in Kaimur, Bihar, six worksites on rural connectivity, minor-irrigation and water conservation works were assessed on a point based index of 17 indicators related to decent work including, days of employment against demand, wage payment, worksite facilities, employment to women, etc. All six works scored high to be categorised as decent work, with water conservation scoring above rural connectivity and minor-irrigation works. The specific findings were:

100 per cent of the daily wage commensurate to the work done was paid,

91 per cent-100 per cent of the days of employment demanded were provided,
Worksite facilities such as crèches were not available at some locations,
All wage payments were made in 7-15 days,
Employment provided to women was more than 33 per cent.

Decent work also incorporates working with dignity and without harassment at workplace. For instance, a study (J. Dreze 2011) pointed out that work in the construction industry typically exposes workers to a range of vulnerabilities (such as exploitation, illness). MGNREGA provides an opportunity for decent work. A field survey conducted across 100 Gram Panchayats (GPs) in six northern states, found that workers regarded MGNREGA as dignified employment. Ninety per cent of the workers reported no incidence of harassment at the workplace. The improvement in work condition was also due to an absence of contractors (since there is a ban on contractors in MGNREGA). The workers were found to be more aware of their wages and how much they should be paid. Since MGNREGA works contribute towards water security, arresting soil erosion. They incorporate environmental considerations to begin with. The study in Kaimur, Bihar (mentioned above) also assessed works on indicators related to the environment, including protection of forests and water systems. All six works assessed scored high on the index and were categorised as environmentally sustainable. Specific findings with regard to these works included:

Roads/minor irrigation and water harvesting led to creation of structures that arrested soil erosion, however, no compaction was undertaken which made the structures less sustainable,
No machines were used and 100 per cent of the works were done by manual labour.

Overall, studies suggest that MGNREGA works are decent and green in their conception. However, the true potential of MGNREGA as a Green Scheme can be fully realised if additional parameters are included in planning and implementation, to focus on activities specifically from the point of view of environment sustainability and decent work, such as use of resource efficient materials at work sites, etc.

AGRICULTURAL PRODUCTION AND PRODUCTIVITY

Studies indicate that the impact of MGNREGA on agricultural production and productivity is not uniform. Districts and villages which have performed better in the MGNREGA implementation demonstrate a visible growth in agricultural production and productivity. However, more research is required to quantify the definite impact of MGNREGA on agricultural production and productivity at the macro-level.

Improved Irrigation and Change in Cropping Pattern

Provision of water for agriculture is vital for ensuring food and water security in rural India. Research suggests that water-related assets created under MGNREGA have increased the number of days in a year water is available and also the quantity of water available for irrigation.

A study in the Sidhi, Betul, Jhabua, Shivpuri and Rajgarh districts of Madhya Pradesh noted that 70 per cent of the irrigation structures under Kapildhara(The Kapildhara Scheme in Madhya Pradesh is a convergence between MGNREGA, agriculture and horticulture departments. The Scheme provides farm ponds, dug wells, tanks for increasing water availability on the lands of farmers who have more than 1 hectare of land and belong to SC/ST and BPL families.) Scheme ensured perennial water across agricultural seasons for beneficiaries(MPISSR, 2010). In the districts of Ujjain and Dhar, the irrigated land area increased by 26 per cent and 19 per cent respectively. In Chhindwara and Panna, the increase in irrigated area was even higher, i.e. 35 per cent and 30 per cent respectively, due to MGNREGA works(IIFM 2010).

The increased availability of water has also led to changes in crop patterns and increased area under cultivation according to some studies. A study conducted in Sidhi in Madhya Pradesh found that around 55 per cent of the 240 respondents together reported an increase of 372 acres under crops. And around 56 per cent of the respondents reported diversification of crops over previous years. Crops like Jowar, Bajra, Kodo, Makka and Arhar have been replaced by wheat, gram and vegetables due to increased availability of irrigation water (CSE, 'An Assessment of the Performance of the National Rural Employment Guarantee Programme in Terms of its Potential for Creation of Natural Wealth in India's Villages). In Kerala, it was seen that due to renovation and construction of ponds, and the resultant improved water availability, commercial crops like ginger and sugarcane are being grown (Verma, 2011).

In Bihar, a study conducted in 26 villages across the districts of Nalanda, Vaishali and Bhojpur,

found that there was an increase in the Net Sown Area (NSA) (Net Sown Area (NSA) represents the area sown with crops in any of the crop season of the year, counting area sown more than once in the same year only once.) the Gross Cropped Area (GCA) (Gross Cropped Area (GCA) is the total land area where crops are sown once or more than once during a year. The area is counted as many times as there are sowing in the area.) and Crop Intensity (CI) (Crop Intensity (CI) indicates the additional percentage share of the land area which is sown more than once a year to NSA, that is GCA/NSA* 100.). The per farmer increase among sample beneficiaries, was around 5 per cent in NSA, 9 per cent in GCA and 4 per cent in CI(A. A. Kumar, (2010).

Increase in Crop Productivity

With the improvement in irrigation (as discussed in the previous section), land development, regeneration of natural resource base and large-scale investment directly into the village economy, the impact of MGNREGA on agricultural productivity needs closer scrutiny. Districts and villages which have performed better in the MGNREGA implementation and used funds efficiently seem to demonstrate a visible growth in agricultural productivity. A study of 640 households in four districts of Rajasthan and Madhya Pradesh analysed the annual growth rate of agricultural productivity of non-irrigated land in 67 sample villages for 2006-09(IDYWC, 2010). In three districts, the average annual growth rate of agricultural productivity was positive and ranged from 1 per cent to 12 per cent across villages. This growth was directly attributed to the water-related works and structures taken up under MGNREGA since the monsoon in the years of reference was below normal. Significantly the growth in these areas was higher than the national average agricultural growth rate of 1.6 per cent for 2008-09. The impact was seen to be higher in places

where watershed development works had been executed in the past.38, 39 In Kerala, in an assessment of 40 ponds (25 public ponds and 15 private ponds), which were being used as secondary sources of irrigation in conjunction with canals, wells and bore-wells, rice yields went up from 3000 kg/ha to 4000 kg/ha, while coconut yields rose from 10,000 nuts/ha to 15000 nuts/ha.(N. Nair 2010) Another study of micro-canal systems in Bihar noted that due to renovation of these systems, water availability and irrigation for paddy increased. This resulted in a 6-15 per cent increase in crop productivity. Similar findings have been reported from Betul and Mandla in Madhya Pradesh. In Betul, farmers registered an increase of 6-12 quintals yield per acre for all major Kharif crops (The Kharif season is an agricultural season. In India the Kharif season is normally between May and January (the season differs across states). Kharif crops include paddy, millets, etc.)in irrigated areas and 3-6 quintals in rain-fed areas, post the MGNREGA. In Mandla, in irrigated areas yield per acre has risen from 7-9 quintals and 5-7 quintals in rainfed areas for Kharif crops (S. Babu, 2011).

Individual case studies also suggest an increase in productivity on the land of farmers where MGNREGA work was undertaken. In Bastar, Chhattisgarh a small farmer with one acre of land increased his yield from 1.5 quintals to 7 quintals such that his income went up from Rs 1200 to Rs 5600(R. Kumar 2010).However, literature on the impact of MGNREGA on agricultural productivity is neither uniform nor conclusive. For instance, in a study conducted in Himachal Pradesh, Punjab and Haryana, more than 62 per cent of the selected Panchayats in the district of Sirsa and nearly 75 per cent Panchayats in the district of Sirmaur reported that agricultural productivity had increased due to MGNREGA activities. The same study also observed that in 87 per cent Panchayats of Hoshiarpur, Punjab, MGNREGA did not have any impact on agricultural productivity and irrigation(CRRID,2009). There is also the problem of attributing changes in crop yield, increased water availability for irrigation, increase in crop area, productivity of agricultural land, etc., to MGNREGA. The values of all these variables can be influenced by several other external factors such as, rainfall, floods and economic shocks such as inflation (N. Bassi, 2011).

Labour Market and Migration

The impact of MGNREGA on rural labour markets is far from straightforward and has several dimensions that need careful consideration. For instance, the programme has increased rural labour participation rates by drawing into the workforce many who were not active workers, and making attractive and convenient work opportunities easily accessible. But it is also argued that the Scheme has created labour shortages by removing a block of labour supply from the residual labour market(S. Verma, 2012). People who are already participating in the rural labour market may seek MGNREGA work if wages and employment conditions are better than their current employment.

This part considers the available literature on the impact of MGNREGA on labour market shortage and whether this shortage, if any, has had any impact on agricultural productivity. It also looks at

the effect of the Scheme on migration. Overall, there is no conclusive evidence to support the claim that MGNREGA has led to a shortage of labour in the agriculture sector or vice versa. The setting of a reservation wage(A 'reservation wage' refers to the fall-back position if a bargain is not struck.) for rural labourers has been considered to be a significant impact of the Scheme.

IMPACT ON AGRICULTURAL LABOUR

Research seems to indicate that the agriculture labour shortage is not caused entirely by MGNREGA; trends of reduced labour force in agriculture precede MGNREGA. Data from FY 2010-11 suggests that 70 per cent of the works in the Scheme have been generated during the agriculture lean season. On the other hand, data from some studies demonstrates that there has been a change in the composition of the MGNREGA labour force where more agriculture labour is participating in the Scheme.

Shortage of Agricultural Labour

The impact of MGNREGA on agriculture labour has been the subject of considerable debate among researchers. It is hypothesised that government hiring of unemployed labourers would affect labour supply across peak and lean agricultural seasons directly through its effect on wages and indirectly through its effect on agricultural output(A. K. Basu, 2011). Data suggests that the MGNREGA has had a positive impact on labour force participation in public works or that participation in public works has increased following the implementation of MGNREGA. A study comparing(The study used Propensity Score Matching (PSM), a methodology attempting to provide unbiased estimation of treatment-effects vs the control group and the Difference in Difference (DID) method to determine a baseline. The DID is a quasi-experimental technique used in econometrics that measures the effect of a treatment at a given period in time. The DID estimator represents the difference between the pre-post, within-subjects differences of the treatment and control groups. Some pre-programme data was also used) the MGNREGA districts and non-MGNREGA districts, found that the probability of a casual worker being engaged in public works increased by 2.5 percentage points more in MGNREGA districts compared to non-MGNREGA districts(M. Azam, 2011). Another research confirmed the analysis— comparing 2007-08 and 2004-05, it was seen that the fraction of days spent in public works employment increased by 1.2 percentage points during the dry season in the programmes' districts(C. Imbert and J. Papp 2011). A large part of this can be attributed to the female labour force participation directly in the Scheme.

However, it is difficult to suggest that this casual labour in MGNREGA is actually labour from the agriculture sector. The shortage in agricultural labour and their diversion from farms may be due to factors outside MGNREGA. In fact, post 2004-05, there has been a negative trend in labour force participation(Azam, 'The Impact of Indian Job Guarantee Scheme on Labor Market Outcomes: Evidence from a Natural Experiment). The National Sample Survey Organisation (NSSO) data indicates that this decline is also with regard to the agriculture labour force. According to the Survey, the decline in agriculture labour, as a share of total economic activity, at the national level, is since 2004 that is the trend precedes MGNREGA (Peter Lanjouw and R. Murgai, (2008)

A study found that high non-farm wages have had a more significant role in the diversion of labour from agriculture than MGNREGA(S. Indumati b and P. M. Srikantha, (2011). Using macro- level data in the drought-prone states of Karnataka and Rajasthan as well as in an irrigation-dominated state like Andhra Pradesh, it observed that the impact of MGNREGA wages on the economic scarcity(Economic scarcity of labour as referenced in the paper implies a shortage in labour caused due to difference in wages) of labour is more prevalent in Karnataka and Rajasthan; however this impact is relatively modest when compared with the impact of hike in non- farm wages. Though the provision of food security through the Public Distribution System (PDS) (Public Distribution System (PDS) is a Scheme of the Government of India where foodgrains like wheat, rice, sugar, etc. are distributed to eligible poor persons) has also contributed to the economic scarcity of labour, the relative hike in non-farm wages is contributing to higher economic scarcity of labour rather than PDS and MGNREGA wages. In other words, labour is being diverted away from agriculture due to more lucrative non-farm wages (Indumatib and Srikantha, 'Economic Analysis of MGNREGA in the Drought-prone States of Karnataka, Rajasthan and Irrigation-dominated State'). A study in Maharashtra corroborated the findings. It noted that though there has been a shortage of labour, there has been a parallel increase in non-farm activity in the same villages such that it is difficult to segregate the effect of non-farm pull factors, spread of education and the MGNREGA factor(J. Kajale and S. Shroff, 2011)).

An analysis of the quantum of MGNREGA works provided across the year also indicates a powerful seasonal fluctuation, with a disproportionately higher share of works being done during the

agricultural off-season. The month-wise employment data under MGNREGA during FY 2010-11 indicates that it is in the lean agricultural season (April-June and January-March), that around 70 per cent of person-days of work were generated(MoRD 2012). While this does not factor in migration of labour during an agricultural lean season to other places, it does suggest that the impact of MGNREGA on labour markets may be limited at best (see Table 5.1).

Some studies, however, have found a change in the composition of the labour force that participates in MGNREGA, implying a more direct impact of the Scheme on the labour market. The results of a longitudinal study of over 1064 rural households (A household is defined as members of a family related to each other by blood, marriage or adoption, and normally residing together and sharing meals) from 200 villages of Medak district, Andhra Pradesh over two years, showed that in the initial years, MGNREGA predominantly attracted non- agricultural labour (78 per cent). This was because participation in the programme was concentrated in the dry summer months when agricultural labour work was scarce. Over time, however, the programme was seen to be attracting households that would have participated in agricultural labour (55 per cent). This suggests broader labour market distortions where MGNREGA is not just viewed as an employment assurance during slack agricultural seasons but as an alternative to agricultural labour work(: http://ssrn.com/paper=1336837). The NSSO panel survey on MGNREGA confirms the findings with regard to the constitution of MGNREGA labour force; for the states of Andhra Pradesh, Madhya Pradesh and Rajasthan, among the households that participated in MGNREGA work, a round within the survey observed that about 84 per cent, 80 per cent and 61 per cent were 'agricultural labour' households or 'self employed in agriculture' households (NSSO2010-2011).

Synthesising results from studies across 12 states, findings suggest that it is difficult to generalise the impact of MGNREGA on labour markets and that the impact may vary from place to place. They argue that for MGNREGA to have a major impact on farm labour markets, it is critical that the volume of work offered under the scheme is substantial during the peak agricultural season. They note that the impact of MGNREGA was additive, expanding the labour market by attracting new labour to the workforce in Dholpur, Rajsamand and Bikaner (Rajasthan); Idukki and Trivandrum (Kerala); West Sikkim (Sikkim); and Chitoor (Andhra Pradesh). In Palakkad, however, where the plantation economy demands farm labour throughout the year, MGNREGA offered nearly 100 days of work and the Scheme's impact on the labour market was substitutive; it drew a sizeable, mostly female, workforce away from agriculture and to make up, farm wages had to go up 50-70 per cent (T. Shah, 2010).

The study (Verma,2011) also outlined four distinct situations of MGNREGA's (demand, supply and market wages) interaction with the labour market (see Table 3). These categories may be explained as follows:

Table3 Monthwise Person-days Generated in FY 2010–11**

State	April		May		June		July		August		September	
	Person days(Lakh)	%	Person days(Lakh)	%	Person days(Lakh)	%	Person days(Lakh)	%	Person days(Lakh)	%	Person days (Lakh)	%
Andhra Pradesh	108.5	23	100.1	23	67*.5	23	206.3	*	16.3	3	32.8	1
Assam	42.6	10	28.8	*	18.2	4	14.3	3	21.4	5	28.3	*
Bihar	115.3	11	141.3	14	111.2	11	69.8	8	3*.8	6	70.4	7
Chhattisgarh	21.3 *	20	29*.2	2*	152.3	14	14.1	1	8.1	1	10.4	1
Gujarat	83.8	18	123.8	27	49.4	11	18.9	4	13	3	10.6	2
Haryana	3.2	4	2.9	3	2.6	3	2.9	3	4.3	5	5.1	6
Himachal Pra	20.2	10	2*	15	23.2	12	21.2	10	19.9	10	19.6	9
Jand Kashmir	1.8	4	1.6	3	1.5	3	2.8	6	3.5	*	4.3	9
Jharkhand	93.5	12	106.1	13	91.3	11	60.9	8	34.*	7	69.3	9
Karnataka	5.4	0	8.*	1	14	1	1*.9	2	24.6	2	34.8	3
Kerala	14.6	3	29.3	6	37.4	8	48.3	10	39.5	8	49.8	10
Madhya Pradesh	2**.*	16	31*.	18	293.3	1*.	133.2	8	8*.4	4	3*.3	3
Maharashtra	33	29	46.1	23	23.8	13	6.2	3	3.1	2	2.3	1
Odisha	163.9	1*.	239.9	23	124.3	13	39.9	3	2*.**	3	31.*	3
Punjab	6.1	8	*.3	10	8.1	10	5.3	*	3.8	*	6.1	8
Rajasthan	322.6	12	394	23	68*.4	26	243.2	9	89.1	3	40	2
Tamil Nadu	3136.9	12	3331.9	13	3118.3	12	419.4	16	282.6	11	200.3	8
Uttar Pradesh	2*3.6	9	3086.6	10	3126.2	10	300.1	10	184	6	88.8	3
Uttarakhand	16.6	8	12.3	6	12.*	6	13.*	*	13.*	8	12.4	6
West Bengal	243.9	1*	333	16	209.2	15	106.1	*	38.2	4	36.9	4
Total	9069.8	13	9943.4	1*	9388.2	14	1819	8	1139.3	5	934.4	4

Table 3 Contd Monthwise Person-days Generated in FY 2010–11

State	October		Nov.		December		January		February		March		
Andhra Pradesh	29	1	22.2	1	21.9	1	23.4	1	33.9	2	13*.2	8	3008.2
Assam	29.3	7	41.6	10	39.3	14	31.1	12	48	11	30.7	12	433.7
Bihar	36	3	39.2	4	91.9	9	98.4	10	98.2	9	63.6	6	1033.3
Chhattisgarh	21.4	2	19.*	2	34.8	3	106	10	118	11	94.3	9	1092.3
Gujarat	14.3	3	19.*	4	39.2	8	38.9	8	33.3	*	2*.4	6	481.*
Haryana	6.9	8	8.7	10	11.4	14	13.8	16	11.6	14	11.1	13	84.3
Himachal Pra	19.1	*	1*.1	8	11.2	5	4	2	8.9	4	19.*	9	209.2
Jand Kashmir	3.3	11	6.2	13	*.3	13	6.1	12	4.3	9	3.9	8	49.1
Jharkhand	49.*	6	38.3	5	4*.6	6	62	8	89.3	9	60.2	*	804.8
Karnataka	31.*	3	39.8	3	81.9	8	146.2	13	2*4.9	2*	368.2	33	1098.2
Kerala	33.1	*	33.4	*	43.3	9	35.8	11	33.1	11	48.8	10	492.*
Madhya Pradesh	39.*	3	66.6	4	118.3*	*	143.*	8	134.4	8	93.6	5	1*85.8
Maharashtra	2.*	1	2.3	1	6.2	3	8.6	5	13.3	*	13.9	9	184.1
Odisha	38.6	4	43.9	5	5*.9	6	66.2	*	*9.8	8	*0	*	9*3.8
Punjab	3.9	8	4.4	8	4.4	8	4.3	8	8.4	8	13.6	1*	91.8
Rajasthan	29.1	1	30.9	1	*3.3	3	153.8	8	136.2	*	139.1	6	2394.8
Tamil Nadu	201.*	8	84.3	3	100.*	4	94.3	4	136.1	5	137.9	5	2698.3
Uttar Pradesh	60.3	2	139.24	4	348	11	420.3	14	3*8.8	12	290.2	9	3114.4
Uttarakhand	12.6	6	13.3	6	23	11	29.5	13	23	11	13.8	6	202.9
West Bengal	45.6	3	41.1	3	69.3	5	119.4	8	141.*	10	108.5	*	1430.8
Total	849	4	840.*	4130*.4		61*28		8	19*1.4	9	1882.2	8	22**12

Source: Mahatma Gandhi National Rural Employment Guarantee Act (official website) www.nrega.nic.in

Table 4 Types of MGNREGA and Labour Market Interaction

	TYPE I Insignificant	**TYPE II Misfit**	**TYPE III Significant**	**TYPEIV Potentially Significant**
Wage Rates	^{w}MGNREGA> ^{w}LOCAL	^{w}LOCAL> ^{w}MGNREGA	^{w}MGNREGA> ^{w}LOCAL	^{w}MGNREGA> ^{w}LOCAL
Opportunities	MGNREGA work insignificant vis-a-vis local demand	Booming local labour market offering much greater opportunities	MGNREGA significant vis-a-vis local demand	MGNREGA potentially significant but poorly implemented
Impact	Impact of MGNREGA insignificant	Local labour market situation renders MGNREGA *misfit*	Impact of MGNREGA significant	Impact of MGNREGA insignificant
Examples	Godda (Jharkhand), Koraput (Odisha), Nalanda (Bihar), Narmada (Gujarat)	Kutch (Gujarat), Uttarkashi (Uttarakhand), Kangra (Himachal Pradesh)	Dholpur (Rajasthan), Palakkad (Kerala), Chitoor (Andhra Pradesh), Jalna (Maharashtra)	Narmada (Gujarat), Mandla (Madhya Pradesh)

Insignificant Impact: In places where the volume of MGNREGA work is small compared to the demand and compared to the total size of the labour market (due to limited institutional capacity, Panchayati Raj Institutions (PRIs) (Panchayati Raj Institutions (PRIs) are systems of local governance in rural India at three levels of administration: village, block and district.)not fully functioning and other factors), the Scheme has no perceptible impact on local labour markets (Verma,2011).

Misfit: A competitive local labour market, with several employment opportunities outside MGNREGA also offers limited scope for MGNREGA to influence the labour market. In such cases, there was neither interest in the Scheme's wage benefit nor in its non-wage benefit. For instance, the studies found that in Kutch, Gujarat, people had limitless work opportunities at twice the MGNREGA wage rates and therefore did not demand MGNREGA work. Likewise, in the study villages of Uttarakhand and Himachal Pradesh the prevailing agricultural wages were equal to or higher than the MGNREGA minimum wages, limiting the demand for MGNREGA.

Significant Impact: This represents places where the MGNREGA wage is higher than the local wage and, MGNREGA presence is large enough to catalyse widespread interest in the community and also to significantly change the structure, conduct and performance of agricultural labour markets.

Potentially Significant Impact: This represents cases where despite MGNREGA wages being significantly higher than local wages and the volume of potential MGNREGA work also significant, the MGNREGA invokes a lukewarm response owing to administrative constraints or lack of awareness, or both. For instance, the study found that in Mandla, Madhya Pradesh, wage payment delays prompted villagers to seek employment outside MGNREGA since they depended heavily on wage payments made weekly.

Thus, the local labour market can significantly influence the implementation of MGNREGA and participation in the Scheme.

INCREASE IN BARGAINING POWER AND CHOICE OF WORK

MGNREGA wages provide an alternative source of income for rural labourers, raising the reservation wage (the fall-back position if a bargain is not struck) and implicitly offering labourers bargaining powers in an otherwise inequitable rural labour market. The Scheme has also provided labourers (particularly those who are in debt bondage or contract labour) with a dignified choice of work. Thus the diversion of labour in places may reflect an active choice made by the workers. Given this, the practice of seasonal scheduling of works may not be an optimal solution.

Providing Reservation Wage for Labourers

Proponents of the Scheme believe that the MGNREGA wages ensure an alternative source of income raising the reservation wage (the fall-back position if a bargain is not struck) of all workers and implicitly offering them some bargaining powers. This must be seen as a positive development, since the Indian labour market, due to inequitable social and power dynamics, has suppressed wages far below the competitive wages for the rural labour force. For instance, as per agricultural practices in some areas, land owners lock-in or tie up labourers at a predetermined rate for agricultural seasons to minimise production costs. Other research concurs with the findings and further suggests that such benefits extend even to other workers who do not participate in the Scheme (P. Dutta, 2012). Thus, the increase in average wage, whether agriculture or non-agricultural is resulting in creation of more flexible and fair labour markets in rural areas (IDYWC, 2010).

Research also reflects favorably towards the 'choice of work' that MGNREGA offers to rural workers. The agrarian relations in rural India exhibit a variety of labour hiring arrangements— from active casual markets in both seasons, to tied- labour/implicit contracts to collective bargaining between labourers and landlords. The explicit and implicit objectives of MGNREGA target those labourers that are either involuntarily unemployed (Gaurav Datt and Martin Ravallion, 1994) in the agricultural lean season or those that are desperate to escape the vicious cycle of poverty and debt. Thus, in places where there is a diversion of labour to MGNREGA, the situation may just be indicative of an active and preferential choice made by workers. In fact provision of this choice of work is one of the arguments that support the need to effectively implement MGNREGA in areas where contract labour/debt bondage still exist. Although there may be difficulties in making the switch from agriculture to the MGNREGA, such as escape from the labour contractor, timely and regular wage payments would definitely make the Scheme more attractive(K.

Imai, 2009).

Seasonal Scheduling of MGNREGA Activities

Research claims that the positive effect of the Scheme on agricultural productivity may be offset by a diversion of labour away from the agricultural sector into the Scheme. As pointed out by a study in Kerala, the diversion of labour from rice fields may actually result in a decline in agricultural productivity (K. N. Nair, 2009). To limit distortion of the labour market during agricultural season, and ensure that employment opportunities are additive instead of substitutive, some districts schedule MGNREGA activities during the non-agricultural peak season. The Gram Panchayats (GPs) (Gram Panchayat is the primary unit of the three-tier structure of local self governance in rural India, the Panchayati Raj System. Each Gram Panchayat consists of one or more villages) prepare calendars, based on the advice of the Gram Sabha (GS), that demarcate exclusive times of the year for MGNREGA work and for agricultural work. In the Elapully GP in Kerala a calendar was prepared setting aside six months for MGNREGA and six months for agriculture work R. M. Sudarshan, (2011). The Dholpur and Rajsamand districts in Rajasthan, scheduled MGNREGA work during the summer when demand for agricultural labour was low such that MGNREGA work was additive and it expanded the labour market. Similar results were reported from Bikaner (Rajasthan); Idukki and Trivandrum (Kerala); West Sikkim District (Sikkim); and Chitoor (Andhra Pradesh).

The solution of limiting MGNREGA work days may also not be optimal in the case the GPs have surplus labour that could not find employment even during the peak agriculture seasons (and MGNREGA absorbs this labour) or in the case of labour (debt- bondage, tied labour, etc.) that prefers the choice of MGNREGA work over work on private farms as pointed in the paragraph under Providing Reservation Wage for Labourers above.

MIGRATION

MGNREGA has had a more direct and positive impact on reducing distress migration as compared to migration taken up for economic growth and other reasons.

The impact of MGNREGA may be more on Studies indicate that MGNREGA has reduced migration by providing work closer to home and decent working conditions. A study conducted in Anantpur, Andhra Pradesh observed that the scheme brought down the migration levels from about 27 per cent to 7 per cent in the sample villages due to availability of work (K. Kareemulla, 2009). Another case study from Bastar notes that in one block the number of people migrating declined from 4500 to 500 as a result of employment being provided close to home by MGNREGA (R. Kumar 2010). A survey of 240 households in the district of Sidhi in Madhya Pradesh also confirmed these findings; migration had reduced in sample areas by 60 per cent due to the availability of work (CSE, 2008).The population that migrates for employment; as per the National Census data 2001 around 15 per cent of the households migrate for employment (National Census 2001). In Punjab, while there has been a reduction in the in-flow of labour T. Shah and R. Indu,(2009), there is no significant impact of MGNREGA on out-flow of labour (K. Vatta, 2011). This may be because, to begin with only a limited percentage of population migrates out of the state for migration. In a study to assess the impact of MGNREGA on migration in Punjab, it was found that only around 5 per cent of the 300 households in five districts reported migration from the village due to employment opportunities.

The World Development Report 2009 contended that a reduction in migration, as caused by MGNREGA, is posing a barrier to internal mobility thus limiting economic growth of these households. A majority of the studies on the subject note that the Scheme has caused mostly a reduction in distress migration, and opportunistic or aspirational migration in search of better and more lucrative opportunities continues as before (particularly because MGNREGA cannot match the wages of skilled labour in cities, S. Verma, 2011). The reduction in distress migration may be more apparent in the case of households that need to migrate with their families; the entire family is forced to migrate to cities due to limited work opportunities. This leads to a disruption of children's education and access to family health care (P. Mistry and A. Jaswal, (2009). A study across 12 districts of Gujarat, Madhya Pradesh, Maharashtra and Rajasthan, found that out of 938 beneficiaries, 55 per cent of the respondents felt that migration had been reduced in their families as a result of MGNREGA. Thirty-five per cent of the respondents (out of 938 respondents) felt that their children's education had been positively benefitted by MGNREGA, while 30 per cent felt that their clothing had improved. A longitudinal study across six districts in Andhra Pradesh also highlights the positive impact of the Scheme on reduction in child labour. As per the research, MGNREGA reduced the probability of a boy (whose family was provided work under the Scheme) entering child labour by 13

percentage points and of a girl entering child labour by 8 percentage points(V. Uppal,2009). MGNREGA also provides supplementary income for family members who choose or are unable to migrate. In Palakkad (Kerala), the results of a study showed that the labour market got vertically segmented: women, old people and the infirm sought employment with MGNREGA and the able-bodied men demanding higher wages chose farm jobs (T. Shah, 2010). Likewise in Rajsamand and Dungarpur (Rajasthan) where migration to urban centers offers relatively higher incomes for men, much of the MGNREGA workers were found to be women and older men who had discontinued migration (S. Verma,2011).

Some reports indicate that in certain places the reduction in distress migration has been reversed due to improper implementation of MGNREGA processes. In Mandla (Madhya Pradesh), MGNREGA implementation initially reduced migration but the delay in payment of wages led the people back to their migrant ways. Delay in payment of MGNREGA wages was also found to be a key reason for the lack of enthusiasm among the tribal farmers in Narmada district (Gujarat). This was in spite of significant differences between the prevailing market wage rates (Rs 35/day plus meal; cash payment) and MGNREGA wage rates (Rs 100/day).

SUMMARY AND CONCLUSION

There has been significant progress towards the aim of MGNREGA of creating assets after few years of implementation, although MGNREGS is yet to completely fulfill the potential it has towards sustainable livelihoods. The finding suggests that the MGNREGS has substantially improved the livelihood scenario of the rural India by providing multiple livelihood options. The average wage, whether agriculture or nonagricultural has increased resulting in creation more flexible and fare labour market in rural areas. The study shows that average income of the households has increased considerably. There has been improvement in living conditions of the rural households and more importantly there has been significant expenditure on education and health by them. This impact vis-à-vis social assets is an important direction for further research.

REFERENCES

1.Azam, M. (2011) The Impact of Indian Job Guarantee Scheme on Labor Market Outcomes: Evidence from a Natural Experiment, 10 October, available at SSRN: http://ssrn.com/abstract=1941959.
2.Bassi, N. and D. M. Kumar, (2010)'NREGA and Rural Water Management in India: Improving Welfare Effects, Occasional Paper No. 3-0910, Hyderabad: Institute for Resource Analysis and Policy,
3.Basu, A. K. (2011)'Impact of Rural Employment Guarantee Schemes on Seasonal Labor Markets: Optimum Compensation and Workers, The Journal of Economic Inequality, USA: Springer, May.
4.CERD, 2010 Centre for Education and Research Development (CERD, 2010),)'NREGA Processes in Andhra Pradesh and Madhya Pradesh: Appraisal and Research Study', CERD, Report submitted to the Ministry of Rural Development/UNDP.
5.CSE, 2008 Centre for Science and Environment (CSE, 2008), An Assessment of the Performance of the National Rural Employment Guarantee Programme in Terms of its Potential for Creation of Natural Wealth in India's Villages', New Delhi: CSE,.)
6.Datt Gaurav and Martin Ravallion, (1994)'Transfer Benefits from Public-Works Employment: Evidence for Rural India', The Economic Journal, vol. 104, no. 427, pp. 1346-1369).
7.District Awards for excellence in MGNREGA (2011) Administration Presentation, Presentation made to the Ministry of Rural Development by district administration Khargone, Madhya Pradesh.)
8.Dreze J. and R. Khera, (2011) The Battle for Employment Guarantee, New Delhi: Oxford University Press, 2011, pp. 43-81.
9.Dutta, P. ,R. Murgai, M. Ravallion and M. V. Dominique,(2012)'Does India's Employment Guarantee Scheme Guarantee Employment', Policy Research Paper, Washington, DC: World Bank,.
10.Engler M. and S. Ravi,) Workfare as an Effective Way to Fight Poverty: The Case of India's NREGS, 2012, Retrieved from Social Science Research Network: http://ssrn.com/paper=1336837, accessed on 15 May 2012.
11.Imai, K. R., Gaiha, V. Kulkarni and M. Pandey, (2009)'National Rural Employment Guarantee Scheme, Poverty and Prices in Rural India', Economics Discussion Paper Series, EDP 908, Manchester: University of Manchester, 2009.
12.Imbert C. and J. Papp,(2011)Equilibrium Distributional Impacts of Government Employment Programs: Evidence from India's Employment Guarantee, Paris: Paris School of Economics .
13.Indian Institute of Forest Management (IIFM 2010)'Impact Assessment of MGNREGA's Activities for Ecological and Economic Security, Bhopal: IIFM, Report submitted to the Ministry of Rural

Development/UNDP, 2010.
14.Indian Institute of Management-Shillong (IIM-S), (2009)'Appraisal of MGNREGA in Sikkim and Meghalaya', Shillong: IIM, Report submitted to the Ministry of Rural Development/UNDP, 2009.
15.Indumatib, S. and P. M. Srikantha, (2011)'Economic Analysis of MGNREGA in the Drought-prone States of Karnataka, Rajasthan and Irrigation-dominated State, Agricultural Economics Research Review, vol. 24, pp. 531-36.
16.Institute for Development of Youth Women and Child (IDYWC, 2010), 'Impact Assessment of Mahatma Gandhi of National Rural Employment Guarantee Scheme on Sustainable Asset Creation and Livelihood', IDYWC, Report submitted to Ministry of Rural Development/UNDP, 2010.
17.International Labour Organization (ILO), 'MGNREGA: A Review of Decent Work and Green Jobs in Kaimur District in Bihar, ILO, 2010.)
18.Kajale and S. Shroff, (2011)'Impact of NREGA on Wage Rates, Food Security, an Rural Urban Migration in Maharashtra', Pune: Gokhale Institute of Politics and Economics, Agro-economic Research Centre, Report Submitted to the Ministry of Rural Development (MoRD 2012),
19.Kareemulla K. ,S. K. Reddy, C. A. Rao, S. Kumar and B. Venkateswarlu, (2009), 'Soil and Water Conservation Works through National Rural Employment Guarantee Scheme (NREGS) in Andhra Pradesh—An Analysis of Livelihood Impact', Agricultural Economics Research Review, vol. 22, 2009, pp. 443-50.
20.Kumar, R. and R. Prasanna, (2010)'Role of NREGA in Providing Additional Employment for Tribals and Curtailing Migration', in National Rural Employment Guarantee Act (NREGA): Design, Process and Impact, New Delhi: Ministry of Rural Development.
21.Kumar,A. A. (2010)'Effectiveness and Ownership of Irrigation Assets Created under MGNREGA and Labour Market Dynamics in Bihar, Anand: Institute of Rural Management, MTS Report, 2010.
22.Lanjouw Peter and R. Murgai,(2008)'Poverty Decline, Agricultural Wages, and Non-Farm Employment in Rural India 1983-2004, Policy Research Working Paper 4858 .
23.Ministry of Rural Development (MoRD),(2009-10) 'Guidelines for Convergence: Leveraging NREGA for Sustainable Development through Inter-sectoral Convergence', Ministry of Rural Development,.
24.Ministry of Rural Development (MoRD0, (2012)'Recommendations of the Working Group on Individual Land and List of Permissible Works', Report submitted to the Ministry of Rural Development, 2010, and MoRD, 'Report of the Committee on Revision of MGNREGA Operational Guidelines', New Delhi: Submitted to the Ministry of Rural Development, Government of India.
25.Mistry , P. and A. Jaswal,(2009) Study on the Implementation of NREGS: Focus on Migration, DISHA.
26.MPISSR, 2010. Madhya Pradesh Institute of Social Science Research (MPISSR, 2010), Assessment of the Effectiveness and Impact of Kapildhara Sub-Scheme, MPISSR, Study Commissioned by Ministry of Rural Development & UNDP.
27.Mukherjee D. and U. B. Sinha,(2011)Understanding NREGA: A Simple Theory and Some Facts, Centre for Development Economics, Delhi School of Economics.
28.Nair, K. N. , T. P. Sreedharam and M. Anoopkumar,(2009)(A Study of National Rural Employment Guarantee Programme in Three Gram Panchayats of Kasargod District, Thiruvananthapuram: Centre for Development Studies (CDS).
29.Nair, N. and S. Sanju, (2010)'Water Conservation and Irrigation Asset Creation under NREGS in Kerala: Understanding the Ownership and Effectiveness of the Assets created and Its Influence on Labor Dynamics', Anand: Institute of Rural Management, MTS report.
30.National Census 2001. The largest migration percentage was for marriage (44 per cent).
31.National Sample Survey Organization (NSSO2010-2011), Survey of MGNREGA, 2010-11.
32.Peter Lanjouw and R. Murgai,(2008)'Poverty Decline, Agricultural Wages, and Non-Farm Employment in Rural India 1983-2004, Policy Research Working Paper 4858 .
33.Shah , M.(2008) 'Manual Labour and Growth, Economic and Political Weekly, vol. 63, no. 51, 20.
34.Shah, T. , S. Verma, R. Indu and P. Hemant,(2010)'Asset Creation through Employment Guarantee?: Synthesis of Student Case Studies in 9 states of India, International Water Management Institute (IWMI).
35.Singh, A. and R. Modi,(2010) Effectiveness and Ownership of Assets created under NREGS in Rajasthan, Anand: Institute of Rural Management, MTS report, 2010.
36.Sudarshan, R. M. (2011)Examining India's National Regional Employment Guarantee Act: Its Impact and Women's Participation, New Delhi: Institute of Social Studies Trust.
37.Tiwari V.M (2011) 'MGNREGA for Environmental Service Enhancement and Vulnerability Reduction: Rapid Appraisal in Chitradurga District, Karnataka'.
38.Uppal, V. (2009)'Is NREGS a Safety Net for Children?", Young Lives Student Paper, Young Lives, Department of International Development, Oxford: University of Oxford.
39.Vatta, K. , D. K. Grover and T. Grover,(2011)'Impact of NREGA on Wage Rates, Food Security and

Rural Urban Migration in Punjab', Ludhiana: Agro-Economic Research Center, Punjab Agriculture University, Report submitted to Ministry of Agriculture, 2011.
40.Verma, S. (2011) MG-NREGA Assets and Rural Water Security: Synthesis of Field Studies in Bihar, Gujarat, Kerala and Rajasthan, Anand: International Water Management Institute.
41.Verma, S. (2011) 'Multiple Use Water Services in India: Scaling up Community based MUS through MGNREGA', International Water Management Institute (IWMI).
42.Verma,2011 'Labour Market Dynamics in Post-MGNREGS Rural India'.
43. Watershed Organization Trust (WOTR), (2010)'Impact Appraisal of NREGA in Aurangabad and Ahmednagar Districts of Maharashtra, WOTR, Report submitted to the Ministry of Rural Development/UNDP.