Income and livelihood promotion through individual assets under MGNREGS

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Income and Livelihood Promotion through Individual Assets under MGNREGS

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Abstract: The potentialities of individual assets, created under Category-B of the Schedule-I of the Mahatma Gandhi National Rural Employment Guarantee Act, for enhancing income of rural households and increasing productivity of land and agriculture is examined. The beneficiaries of individual assets gained through the creation of new sources of livelihoods, additional utility of their existing assets and a rise in their income levels. The community also gained by increase in food security through the enhanced productivity of land and agriculture, mainly through increase in crop acreage, yields per acre, and crop diversification. However, a proactive selection of landless households and diversification of individual assets is required to make the benefits of assets creation inclusive.

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Paragraph 4 of Schedule 1 of the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) 2005, divides permissible works under the scheme (MGNREGS) into four categories, namely, A, B, C and D. Category A provides for public works relating to natural resource management, mostly water conservation, watershed management, micro and minor irrigation, renovation of traditional water bodies, land development in common land and afforestation. Category B provides for community or individual assets for the most vulnerable households.[1] These are scheduled castes (SCs), scheduled tribes (STs), nomadic tribes, denotified tribes, below poverty line (BPL) families, women-headed households, physically handicapped–headed households, beneficiaries of land reforms and the Pradhan Mantri Awas Yojana (PMAY), and traditional forest dwellers as listed in the Forest Rights Act, 2006. Small and marginal farmers, as defined in the Agricultural Debt Waiver and Debt Relief Scheme, 2008, are also eligible for the benefits of the Category B assets, but only after exhausting the list of above-mentioned eligible beneficiaries. Category C makes provision for common infrastructure for the National Rural Livelihood Mission–compliant self help groups (SHGs) that promote agricultural productivity by creating durable infrastructure for bio-fertilisers, warehouses for post-harvest storage and common work sheds for livelihood activities of SHGs. Category D provides for rural infrastructure like all-weather roads, rural sanitation–related works like individual household latrines, school toilets, Anganwadi centre toilets, play fields, compound walls for government schools, construction of gram panchayat buildings, etc.

It seems that the NDA-II government had prioritised creation of income-generating individual assets under Category B of Schedule 1 of the Act.[2] In sync with this priority, the government, through an amendment, dated 21 July 2014, made a provision in Paragraph 4 (2) of Schedule 1 of the Act, thereby providing for 60% of the works in terms of cost to be undertaken for the creation of productive assets, directly linked to agriculture and allied activities through the

[1]Individual assets created under Category B are of two types: income-generating, like irrigation, land development works, livestock shelters, fish ponds and horticultural farms; and amenities-related, mainly house and toilet construction in convergence with the Prime Minister Gramin AwasYojana- Rural (PMGAY-R).

[2] For a detailed analysis of the shift in approach towards the programme under the NDA and its priority, see Ashok Pankaj (2017).

development of land, water and trees.[3] As per the MGNREGS Master Circular for the Financial Year 2018–19, there are 260 identified permissible works or activities (MoRD 2018). Out of these, 164 are related to agriculture and allied activities. Apropos the provisions, in 2017–18, the cost of works related to agriculture and allied activites constituted 67.8% of the toal expenditure incurred under the MGNREGS.

With the above provisoins, the scope of individual assets had increased. Moreover, it had become inevitable in several gram panchayats, where the scope for the creation of community assets had either shrunk or saturated, due to the scarcity of common land. For example, in the Morinda block of Rupnagar district of the Punjab, out of 73 villages across 63 gram panchayats, only 93 acres of common land were available, and only in 23 villages.[4] The scarcity of community land was found in other places as well.

Prior to the NDA-II government, individual assets constituted 20% of the total MGNREGS works (completed, ongoing and in progress) and 7% of the cost, cumulative of 2012–13 and 2013–14. The share of individual assets increased to 37.8% percent of the total number and 15% of the cost, cumulative of 2014–15, 2015–16 and 2016–17. Three-fourths of the individual assets created during the triennium of 2014–15, 2015–16 and 2016–17 were income generating, mostly related to agriculture and allied activities. More than half of them pertained to land and irrigation (48.61% irrigation and 2% development of fallow and waste land); 16.12% to horticulture and plantation, 7.81% to livestock, and 0.33% to fisheries. About 25% of the total works pertained to the construction of houses under PMAY-R.[5]

While there has been a greater emphasis on individual assets, there are only a few studies on the contribution of individual assets to income and livelihood promotion of its beneficiaries.

[3] There are other indications of push towards the creation of assets pertaining to agriculture and allied activities. In the fourth meeting of the Governing Council of the NITI Aayog, held on 17 June 2018, a decision was taken to constitute a sub-group of Chief Ministers, headed by Shivraj Singh Chouhan, the then-Chief Minister of Madhya Pradesh, to give a report within three months as to how assets creation under MGNREGS could be linked to agriculture (see *Jansatta*, 20 June 2018, New Delhi, p 8).

[4]This information was provided by the Block Development Officer, during field work, conducted in February 2018.

[5] It is to be noted that MGNREGS only supplements house construction under PMAY-R by providing 90 days of wage employment in plain areas and 95 days in hilly areas to a beneficiary household and by providing ₹12,000 for the construction of individual household latrines. Thus, though PMAY-R houses under MGNREGS are about 25% of total works in number, the expenditure incurred on PMAY-R under the scheme is small.

They, however, show significant impacts. A joint study by the United Nations Development Programme (UNDP) and Sambodhi (2012-13), conducted across six states, found that there was an improvement in the quality of land of small and marginal farmer beneficiaries, and that their income levels also increased. Aggarwal et al (2012) examined the impact of dug wells in Jharkhand. They found that these wells had not only increased crop intensity and productivity, but also decreased the cost of cultivation. Bhaskar et al (2016) showed a triple-fold increase in the incomes of dug well beneficiaries in Jharkhand. Ranaware et al (2015) examined assets creation in Maharashtra and found that MGNREGS works benefited agriculture, especially small and marginal farmers. In Tripura, a number of beneficiaries had been provided with rubber plantations, fishponds, betel vine orchards, etc, with significant impact on their livelihoods (Pankaj 2017; MoRD 2016).

This paper examines the impacts of income-generating individual assets on the livelihood conditions of rural households. It shows the impacts of different types of individual assets and argues that the selection of the types of assets is of great significance, as different kinds of assets create different impacts. While the main impact of land development works was increase in acreage of staple crops and coarse grains, the impact of irrigation works was diverse and of greater significance as they resulted in greater yields per acre, and crop diversification. Horticulture works created a sustainable source of livelihood. Its disadvantages are a relatively long gestation period, and the requirement of a sizeable amount of land. In contrast, fishponds, even of the size of 200*200 metres, resulted in substantial increase in income within a short span of time. The paper also examines the transformational potentialities of these assets and suggests measures for the inclusion of landless households for the benefits of individual assets. It suggests that a pro-active selection of landless households, as carried out by the Tamil Nadu government in some places, and diversification of assets, including innovative approaches to suit landless households—such as the formation of landless collectives for transferring of usufructuous rights over the assets created on community land—would make the exercise of assets creation more inclusive.

Methodology, Study Area and Sample

This study is based on a primary survey, conducted in six districts, two each from Uttar Pradesh (UP), Rajasthan and Tamil Nadu (TN). The districts were selected from different agro-climatic zones, based on the proportion of completed individual works (or assets) to the total MGNREGS works. During the 2014–15, 2015–16 and 2016–17 periods, the completed individual works constituted 31.91% of the total MGNREGS works in Rajasthan, 21.12% in UP and 12.99% in TN, against the all-India average of 29.75% (Table 1)

Table 1: Status of Individual Works
(Cumulative of 2014–15, 2015–16 and 2016–17) (%)

Regions	Completed	Ongoing	Approved but not in Progress
India	**29.75**	**43.47**	**35.77**
Rajasthan	31.91	61.98	51.30
Uttar Pradesh	21.12	44.67	46.59
Tamil Nadu	12.99	13.84	0.16

Source: Authors' calculations from data available on http://www.nrega.nic.in.

The types of individual assets created in the selected states and districts varied. Rajasthan, being in dry land area, the majority (62.45%) of individual works pertained to irrigation. In TN and UP, a very large number of completed assets pertained to house construction under the PMAY. After house construction, irrigation assets formed the next highest component, that is, 15.57% in TN and 8.01% in UP (Table 2).

Table 2: Types of Completed Category B Works
(Cumulative of 2014-15, 2015-16 and 2016-17) (%)

Category B Works	Rajasthan	Uttar Pradesh	Tamil Nadu	All India
Irrigation	62.45	8.01	15.57	49.00
Land Development	2.41	0.79	0.23	2.00
Livestock	2.20	0.67	1.59	8.00
Fisheries	0.00	0.04	1.00	0.33
Horticulture	3.06	1.98	0.63	16.00
House Construction	29.88	88.52	80.98	24.67

Source: Authors' calculations from data available on http://www.nrega.nic.in.

From each state, two districts were selected taking into account their agro-climatic conditions and proportion of completed Category B works to the total MGNREGS works. The districts

selected for the survey were: Sawai Madhopur and Banswara in Rajasthan; Shravasthi and Mirzapur in UP; and Krishnagiri and Cuddalore in TN (Table 3). From each selected district, two blocks were chosen based on the proportion of Category B works to the total MGNREGS works.

Table 3: Sample Districts, Blocks and Agro-Climatic Zones

States	Districts	Agro-Climatic Zones
Rajasthan	Sawai Madhopur	Flood Prone Eastern Plain
	Banswara	Humid Southern Plain
Uttar Pradesh	Shravasthi	Bhabar&Terai Zone
	Mirzapur	Vindhyan Zone
Tamil Nadu	Krishnagiri	North West Zone
	Cuddalore	North East Zone

Source: Field Survey

From each block, 20 beneficiaries of income-generating individual assets were randomly chosen, preferably from one gram panchayat, but in the case of non-availability of 20 beneficiaries of individual assets within one gram panchayat, they were selected from adjoining ones. Care was taken to select beneficiaries of different kinds of assets. Thus, a total of 240 individual beneficiaries (80 from each selected state), from a total of 71 villages spread over 57 gram panchayats, constituted the sample of this study. The study covered only those assets that were completed and handed over to the beneficiaries by 2016–17.

In Sawai Madhopur district (Rajasthan), water harvesting works were undertaken in large numbers. A few beneficiaries were also provided with livestock shelters. In Banswara district (Rajasthan), most of the assets pertained to irrigation and water harvesting. The Shravasthi district of UP is located in the Bhabar and Terai zones, characterised by high soil-moisture content and easy availability of ground water. The majority of individual works in the district were irrigation bore wells. In Mirzapur district of UP, the selected blocks are situated on slightly hilly and rocky regions of the Vindhyan ranges. Because of the lack of irrigation facilities and the problem of undulating terrain, a large number of individual works in the survey region of Mirzapur were related to fallow and waste land development, and construction of farm ponds. In Cuddalore district (TN), traversed by two rivers and close to the Bay of Bengal, fishery was a popular economic activity, and hence fish ponds were constructed in substantial numbers. In

Krishnagiri district of TN, characterised by rocky outcrops of the Deccan plateau, livestock rearing was found to be an important economic activity. Hence, livestock shelters were provided to a large number of beneficiaries.

The category-wise distribution of the surveyed assets shows that 51.82% of them were related to irrigation (dug wells- 31.25%, farm bunding- 29%, bore wells- 25% and farm ponds- 15%), 14.17% to land development, 17.81% to livestock and 15.38% to fisheries. Horticulture assets constituted less than 1% of the total. Irrigation assets were mostly from UP and Rajasthan; livestock and fishery assets from TN and horticultural assets (mango, cheeku and guava orchards) from Rajasthan and TN. All the landless sample beneficiaries got livestock shelters. In the Bonli block of Sawai Madhopur district in Rajasthan, seven individual beneficiaries received more than one asset.

Out of 240 sample beneficiaries, 220 (92%) were landed and 20 (8%) were landless. All landless beneficiaries were from TN, where there was a pro-active selection of landless and women-headed households who were provided livestock shelters on their homesteads. The average size of landholdings of a beneficiary was 2.27 acres. The sample was, however, fairly distributed among castes. The SCs constituted 27.92% of the beneficiaries, STs, 25.83%, OBCs, 37.92% and upper castes, 8.33%. The upper caste beneficiaries were found mainly in Rajasthan. The majority of beneficiaries were Below Poverty Line (BPL) card-holders, but one-fourth of them were also holders of Above Poverty Line (APL) cards.

A structured schedule was canvassed to the selected beneficiaries of individual assets. Apart from discussions with the officials and representatives of gram panchayats, focus group discussions with the villagers were also conducted.

Livelihood Promotion through Individual Assets

Different types of assets created different kinds of benefits. While the main impact of fallow and wasteland development works was increase in total crop acreage, the creation of irrigation assets, apart from crop acreage increase, resulted in high productivity (greater yields per acre) and crop diversification. Their overall impacts were enhanced income to the beneficiary households, and

greater food security to the community. Livestock and fishery assets contributed to the enhanced income of the beneficiary and greater availability of high protein nutritious food to the community. Livestock assets also provided organic manure and draught animal power to agriculture.

Land and Irrigation Assets

Increase in Crop Acreage: There was an increase in crop acreage by 0.41 acres on an average per irrigation asset, and by 0.53 acres on an average per land development asset. While both land and irrigation assets resulted in crop acreage increase, the increase was higher in the case of land development assets. This was mainly because land development assets brought uncultivated parcels of land under cultivation, whereas irrigation assets, first, provided water to the existing cultivable land, and then, brought new parcels of land under cultivation.

The increase in acreage varied across the survey regions, and depended on availability of water, apart from other factors. In the case of irrigation assets, there was an increase of 0.67 acres on an average per asset in UP, but only 0.27 acres in Rajasthan and 0.17 acres in TN. Similarly, the increase in crop acreage per land development asset was 0.54 acres on an average per asset in UP, but negligible in Rajasthan. Water was not as scarce in the survey regions of UP as in those of Rajasthan. Hence, in UP, once the fallow or wasteland was developed, the beneficiary was able to provide irrigation on the developed parcel of land. On the other hand, in Rajasthan, even when a parcel of land was developed, due to the overall scarcity of water, the land remained uncultivable. This was also the case in Krishnagiri, a relatively dry district of TN (Table 4).

Table 4: Irrigation and Land Development Assets and Crop Acreage Increase

Regions	Total Crop Acreage of Sample Beneficiaries of Irrigation Assets (acres)			Total Crop Acreage of Sample Beneficiaries of Land Development Assets (acres)		
	Pre-assets Total Area	Post-assets Total Area	Change in Total Area	Pre-assets Total Area	Post-assets Total Area	Change in Total Area
Bonli	84.06	94.07	10.01			
Sawai Madhopur	59.4	63.13	3.73	3.76	3.76	0
SAWAI MADHOPUR	*143.46*	*157.2*	13.74	*3.76*	*3.76*	0
Choti Saran	50.12	53.85	3.73			
Gagartalai	31.9	34.4	2.5			
BANSWARA	*82.02*	*88.25*	6.23			
RAJASTHAN	**225.48**	**245.45**	19.97	**3.76**	**3.76**	**0**
Jamunaha	24	29.4	5.4	3.2	6.55	3.35
Sirsiya	22.6	46.8	24.2			
SHRAVASTHI	*46.6*	*76.2*	29.6	*3.2*	*6.55*	*3.35*
Rajgarh	22.75	23.56	0.81	9.28	11.01	1.73
Pahari	7.2	7.82	0.62	9.45	22.88	13.43
MIRZAPUR	*29.95*	*31.38*	1.43	*18.73*	*33.89*	*15.16*
UTTAR PRADESH	**76.55**	**107.58**	31.03	**21.93**	**40.44**	**18.51**
Kelamangalai	15	13.5	-1.5			
Hosur		3	3			
KRISHNAGIRI	*15*	*16.5*	1.5			
Vridhachalam*						
Cuddalore*						
CUDDALORE						
TAMIL NADU	**15**	**16.5**	**1.5**			
Total	**317.03**	**369.53**	**52.5**	**25.69**	**44.2**	**18.51**

Source: Field Survey
Note: In Vridhachalam and Cuddalore, there was no beneficiary of land and irrigation works in the sample

Land development works invariably brought uncultivated parcels of land under cultivation. A poor landowner is not in a position to invest in both land development and irrigation works. However, once, they receive assistance for land development, there is an incentive for the owner to invest in irrigation. Since the poor beneficiary is making a venture on an entirely new piece of land, with unassured irrigation, they first aim to secure their own food consumption needs, and hence prefer traditional crops like paddy and wheat, which are relatively risk free, over cash crops. Land development assets resulted in significant increase in crop acreage of wheat

(169.14%) and paddy (93.56%) of the sample beneficiaries in the survey regions of UP (Figure 2). In addition, new land was brought under the cultivation of maize, gram, til, chilly and green peas, again mainly from UP. The increase in crop acreage not only varied across the types of assets and regions, but also across crops (Table 5).

The acreage increase due to irrigation assets was more diverse. Significant increase in acreage was found in case of tomato (200%), lentils (*masur*) (170.73%), cotton (73.87%), wheat (62.59%), *urad* (28.31%), paddy (13.49%), bajra (10.51%) and mustard (1.41%) (Figure 1). A high increase in crop acreage in tomato, grown by the beneficiaries in Kelamangalai block of Krishnagiri district in TN, was driven by high price in the preceding year. Incentivised by the high price of tomato in the preceding year, the beneficiaries brought additional land under the cultivation of tomato. The acreage increase in lentil was mainly seen in the Shravasthi district of UP where beneficiaries were provided with bore wells. *Arhar* also showed high increase in acreages (152%) in Shravasthi, but the acreages had declined in Rajasthan, as the beneficiaries shifted to other crops (Table 5).

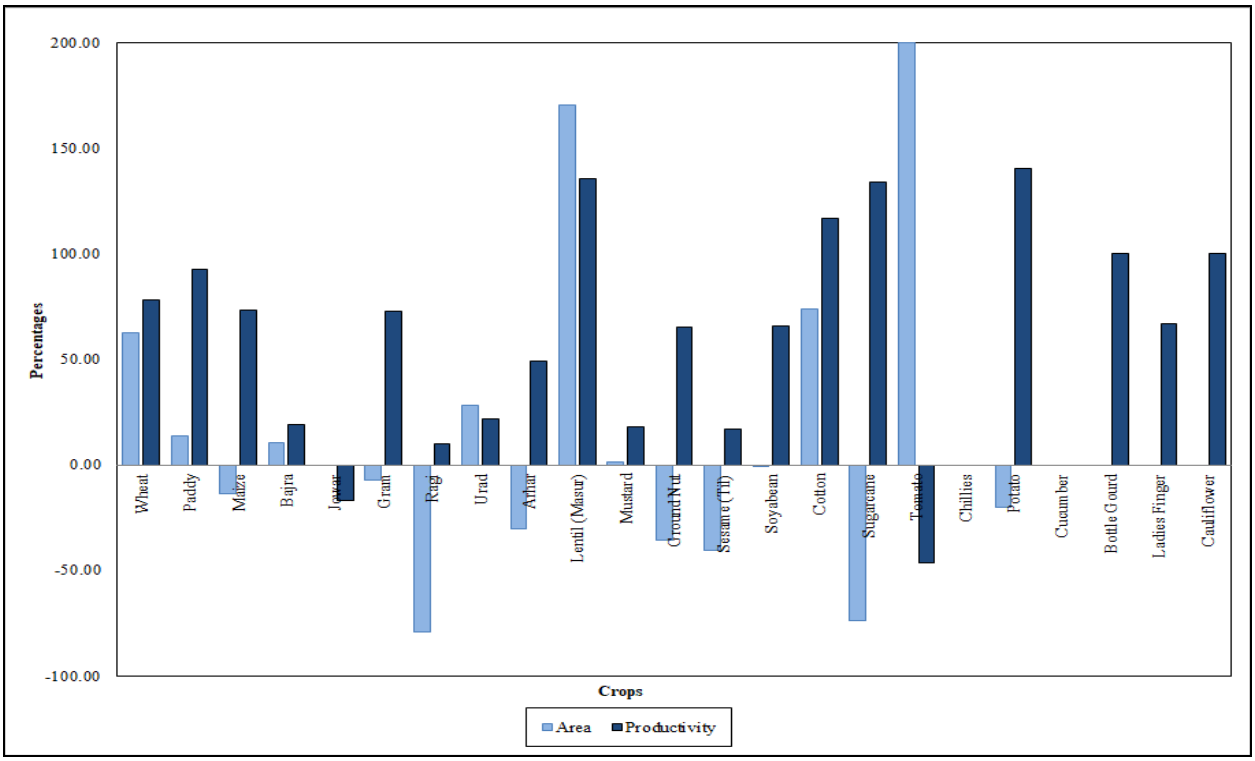
Increase in Productivity (yield per acre): A major impact of irrigation assets was an increase in yield per acre, which was found across most of the crops cultivated by the beneficiary households on land that was provided irrigation through MGNREGS. The sample beneficiaries of irrigation assets cultivated 29 crops on the treated (newly-irrigated) land and there was an increase in yield of 19 crops. This, of course, varied across crops and regions. For example, it increased substantially in the case of potato (140.38%), lentil (*masur*) (135.65%), sugarcane (133.90%), cotton (116.88%), bottle gourd (100%), cauliflower (100%), paddy (92.63%), wheat (78.06%), maize (73.50%), gram (73.05%), ladies finger (66.67%), soyabean (65.68%), ground nut (65.48%), *arhar* (49.04%), *urad* (21.83%), *bajra* (19.17%), mustard (18.19%), sesame (*til*) (17.13%) and *ragi* (9.83%).

The high increase in the yields of potato was found in the Choti Saran block of Banswara district of Rajasthan, where the beneficiaries were provided with dug wells. High increase in yields of lentil (*masur*) and sugarcane was found in the Mirzapur district of UP where both dug wells and farm ponds were provided to the beneficiaries. In the Kelamangalai block of Krishnagiri district

of TN, where beneficiaries grew chilly and cucumber, the impact on yield was negligible (Table 5). There was a decline in the yields of tomato in the Kelamangalai block of Krishnagiri district due to drought in the reporting year. Deficient and erratic rainfall was the main reason for the decline in the productivity of some crops even after post irrigation assets, as recharging of these assets was dependent on the overall rainfall in the region.

Some beneficiaries of irrigation assets grew new crops on the newly irrigated land. The increase in productivity of such crops could not be measured, as the crops were grown for the first time in the reporting period. The new crops, which were grown by the beneficiaries, were: coriander, green fodder and *methi* in Rajasthan; mustard, peppermint and brinjal in UP; and maize and capsicum in TN (Table 5).

Figure 1: Irrigation Assets and Change in Acreage and Productivity of Crops (%)



Source: Field Survey

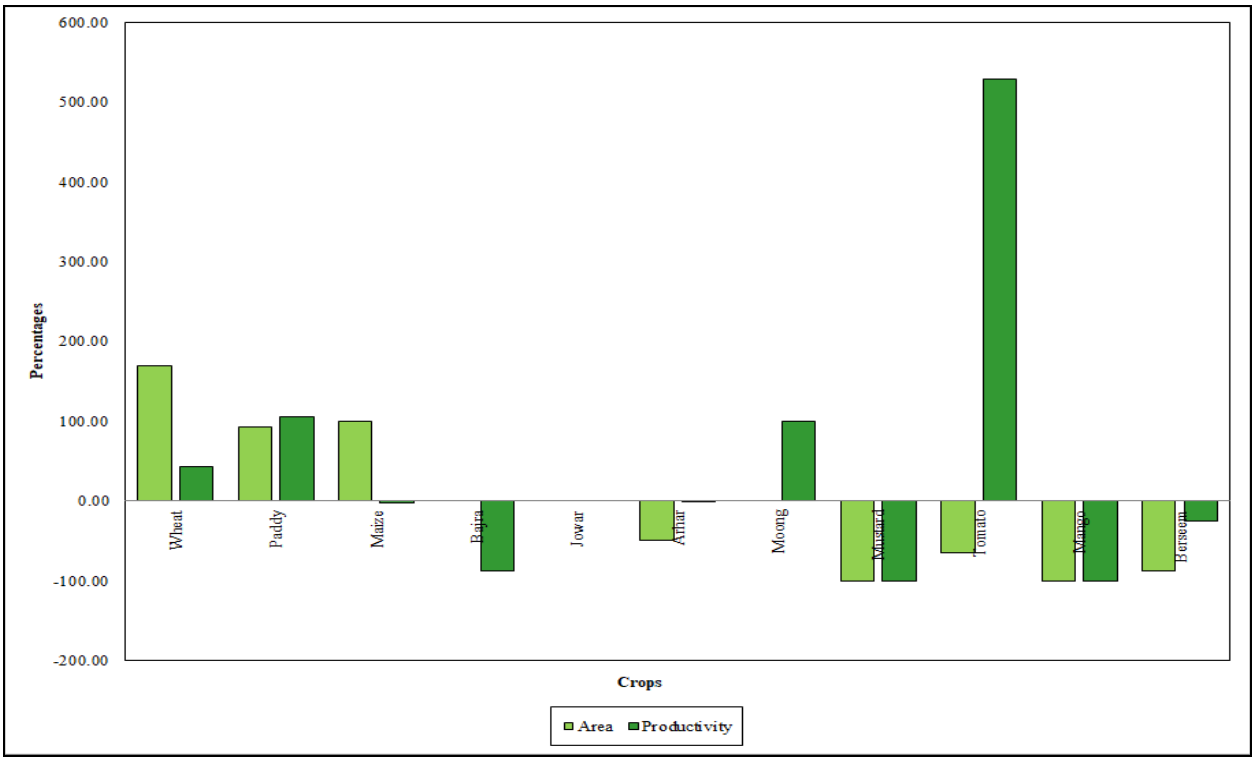
Land development assets had greater impact on crop area increase than on yields per acre. Out of 15 crops grown by the sample beneficiaries of land development assets, there was a substantive increase in the yields of only four crops, which were tomato (528.54%), paddy (105.27%),

moong (100.00%) and wheat (43.47%) (Figure 2). The high increase in the yield of tomato was found mainly in the Rajgarh block of Mirzapur district in UP. This was also due to the use of high-yielding variety. High increase in the yields of paddy and wheat was also found in UP. High increase in the yield of *moong* was found in the Sawai Madhopur district of Rajasthan (Table 5).

The main reason for the decline in the acreage of some crops was a shift towards new crops. There was a decline in the crop acreage of coarse grains and pulses and increase in the crop acreages of wheat, paddy, tomato and *moong*. Many of the beneficiaries of land development works were able to provide irrigation facilities on the newly developed parcels of land and shifted to the cultivation of crops like wheat, paddy, tomato, and moong, which require assured irrigation. On the other hand, coarse grains and pulses, which were being grown earlier, were mainly based on rainfall. They were not in a position to make investment for both land development and irrigation facilities on their own. With the provision of one facility, they were able to add another. In a sense, MGNREGS assets catalysed latent capacities.

Although the increase in yield depends on a number of factors, including soil condition, seeds, use of fertiliser, methods of sowing, timing of irrigation, pest control, etc, the findings of this study assert that other conditions remaining the same, providing irrigation facilities and land development works under MGNREGS have huge potentialities to increase agricultural production.

Figure 2: Land Development Assets and Change in Area and Productivity of Crops (%)



Source: Field Survey

Crop Diversification: The beneficiaries of irrigation assets tend to shift some areas from food grains cultivation to cultivation of high value cash crops. Thus, there was a slight decline in the total acreage under food grains cultivation of sample beneficiaries, from 81% to 80%. There was a shift from food grains to high-value crops, such as vegetables, oilseeds, pulses, chilly and cotton. Some of the beneficiaries also grew high-value crops, like peppermint, brinjal, capsicum, coriander, *methi* and green fodder. Some of them moved to multiple cropping. They grew high value crops in addition to food grains. Hence, the overall reduction in the acreage under food grains was not very high. In contrast, in the case of land development works, the total acreage under food grains cultivation of the sample beneficiaries increased from 88% to 96%, an increase of nine percentage points. Some beneficiaries of land development assets grew high-value crops such as gram, *til*, chilly and green peas on the developed land.

Table 5: Impact of Irrigation and Land Development Assets on Crop Acreages and Yields

Irrigation Assets			
States	**Incremental Acreage (%)**	**New Acreages Added (Acres)**	**Incremental Yields (%)**
Rajasthan	Cotton (74%), Wheat (65%), Paddy (28%), Urad (28%), Bajra (11%), Mustard (1%)	Coriander (0.63 ac), Green Fodder (0.4 ac), Methi (0.31 ac)	Cotton (116%), Potato (100%), Maize (78%), Gram (70%), Wheat (65%), Soyabean (65%), Masur (50%), Arhar (25%), Groundnut (25%), Urad (22%), Bajra (19%), Mustard (18%), Paddy (5%)
Uttar Pradesh	Masoor (210%), Arhar (152%), Maize (81%), Wheat (60%), Paddy (14%)	Mustard (0.1 ac), Peppermint (2 ac), Brinjal (1.56 ac)	Sugarcane (134%), Masur (130%), Paddy (104%), Cauliflower (100%) Maize (95%), Wheat (91%), Arhar (81%), Bottlegourd (67%), Tomato (20%)
Tamil Nadu	Tomato (233%)	Maize (2 ac), Capsicum (1 ac)	Ragi (10%)
Land Development Works			
Rajasthan			Moong (100%)
Uttar Pradesh	Wheat (233%), Paddy (94%)	Maize (0.31 ac), Gram (0.16 ac), Til (0.31 ac), Chillies (0.67 ac), Green Peas (0.01 ac)	Tomato (258%), Paddy (105%), Wheat (64%)

Source: Field Survey

Note: In Rajasthan, there was only one sample beneficiary of land development work who cultivated Moong (pulse) that showed incremental yiled, but no increase in acreage..Similarly, there was no sample beneficiary of land development work In Tamil Nadu where most of the sample consisted of fish ponds and animal sheds beneficiaries. There is a tendency to provide only one type of assets to beneficiaries at some places. .

Crop diversification is a function of many other factors, like soil and climate conditions, availability of seeds and fertilisers, know-how about crops, price of the products, own needs of the beneficiary households, for instance, consumption, etc. Yet, the elasticity of diversification is greater in the case of irrigation than land development assets, other things remaining the same.

Livestock Assets

The beneficiaries of livestock assets were provided with animal sheds for cows, buffaloes, pigs, sheep, goats, poultry, etc. A major impact of these shelters was enhanced productivity of the livestock, and thereby an increase in income of the beneficiary households. The provision of shelters increased the production and quality of meat (healthier livestock); decreased the frequency of diseases; and increased the yield of milch animals. Shelters protected the livestock from scorching heat in the summer, cold in the winter, and rains in the monsoon. These shelters also protected them from pests and infectious diseases, especially in the rainy season.

The revenue of a livestock shelter beneficiary increased, on an average, by 84.53%. This was, however, relatively higher in the case of those beneficiaries who were already having livestock before shelters were provided under MGNREGS (Table 6). The increase in the revenues of new beneficiaries who reared livestock after the provision of shelter was relatively less. The reason is that the former was skilled. This suggests two things. First, to optimise the benefits of assets, the type of assets should be linked to skill and endowment of the beneficiaries. Second, a provision should be made to provide them training along with the assets. This would enhance the utility of the assets provided through the MGNREGS.

Table 6: Livestock Assets and Increased Income of Beneficiary Households

Regions	Pre - Assets			Post- Assets								
	Total Livestock Asset Holders (Nos.)	Livestock Value of Production (Rs.)	Livestock Value of Production (Rs/HH)	Livestock Beneficiaries with Pre MGNREGS Assets (Nos.)	Livestock Value of Production (Rs.)	Pre-assets Livestock Value of Production (Rs/HH)	New MGNREGS Livestock Beneficiaries (Nos.)	Livestock Value of Production (Rs.)	New-assets Livestock Value of Production (Rs/HH)	Total Livestock Asset Beneficiaries (Nos.)	Livestock Value of Production (Rs.)	Post-assets Livestock Value of Production (Rs/HH)
	(a)	(b)	(c=b/a)	(d)	(e)	(f=e/d)	(g)	(h)	(i=h/g)	(j=d+g)	(k=e+h)	(l=k/j)
Bonli	3	36950	12317	3	69000	23000	5	73600	14720	8	142600	17825
Sawai Madhopur							3	81300	27100	3	81300	27100
SAWAI MADHOPUR	*3*	*36950*	*12317*	*3*	*69000*	*23000*	*8*	*154900*	19363	*11*	*223900*	*20355*
Choti Saran												
Gagartalai							1	2400	2400	1	2400	2400
BANSWARA							*1*	*2400*	*2400*	*1*	*2400*	*2400*
RAJASTHAN	**3**	**36950**	**12317**	**3**	**69000**	**23000**	**9**	**157300**	**17478**	**12**	**226300**	**22755**
Kelamangalai	3	59000	19667	3	42000	*14000*	9	141400	15711	12	183400	15283
Hosur	7	281640	40234	7	338800	*48400*	11	62200	5655	18	401000	22278
KRISHNAGIRI	*10*	*340640*	*34064*	*10*	*380800*	*38080*	*20*	*203600*	*10180*	*30*	*584400*	*37561*
Vridhachalam												
Cuddalore	2	66000	33000	2	368800	*184400*				2	368800	184400
CUDDALORE	*2*	*66000*	*33000*	2	368800	*184400*				*2*	*368800*	*184400*
TAMIL NADU	**12**	**406640**	**33887**	**12**	**749600**	**62467**	**20**	**203600**	**10180**	**32**	**953200**	**29788**
Total	**15**	**443590**	**29573**	**15**	**818600**	**54573**	**29**	**360900**	**12445**	**44**	**1179500**	**26807**

Source: Field Survey
Note: "Income" refers to gross income, that is, total value of production

Fishery Assets

Out of 31 sample fish pond beneficiary households, except for one from Kelamangalai block of Krishnagiri district of TN, all the rest were from Cuddalore, a coastal district in TN. One of the beneficiaries had a fish pond prior to MGNREGS, and the remaining 30 were first-time owners of fish ponds, as they became beneficiaries of fish ponds under the MGNREGS. Interestingly, out of the 31 fish pond beneficiaries, 24 reported increase in their income levels. Seven did not

report any increase. The income of a beneficiary from the fish pond varied, depending on the size of the pond, skills, knowledge, entrepreneurship, etc. The seven beneficiaries, with no impacts of fish ponds on their income levels, reported two main reasons. One, their ponds became dry and they were not able to provide water to keep the pond charged, mostly due to the lack of capital. Two, their fish died due to the lack of skill/care. Although, the TN government provided fingerlings to these beneficiaries at subsidised rates, post-assets technical support was missing. This emphasises the need for hand-holding and pre-and post-assets training through convergence with other departments.

Horticulture/Plantation Assets

There were only two beneficiaries of horticulture and plantation in the sample. One was a beneficiary of mango and c*heeku* plantation in the Gagartalai block of Banswara district, Rajasthan. Another was a beneficiary of a guava plantation in the Cuddalore block of Cuddalore district, TN. The mango and c*heeku* orchard was provided in 2012, and the guava plantation in 2013. The average revenue of a beneficiary household from a horticultural asset was ₹48,500 per annum. It was found to be much higher for guava orchard (₹67,000) compared to mango and c*heeku* orchard (₹30,000). Again, the earning from the assets depended on many other factors like the number of trees, agro-climatic conditions, knowledge, local market price, etc. Horticulture has a relatively long gestation period, yet the returns are higher, and for a longer duration, without much recurring costs. This was seen also in the case of betel leaf wine orchard, rubber plantation and tea garden in Tripura (Pankaj 2017).

Individual Assets and Increase in Income

Most of the beneficiaries of MGNREGS individual assets were marginal and small farmers. They realised substantial part of their annual income from agriculture and allied activities. Some of them also supplemented their income by wage labour, including the MGNREGS. The individual assets provided to them under the MGNREGS added to their income levels.

On an average, a beneficiary earned about 31.28% of the gross annual income from individual assets. This varied across the survey regions. It was 24.47% of the total income of a beneficiary

household in Banswara, 35.24% in Sawai Madhopur, 61.21% in Shravasthi, 22.27% in Mirzapur, 37.01% in Krishnagiri, and 26.51% in Cuddalore districts (Table 8).

Table 8: Shares of Category– B Individual Asset in the Gross Annual Income of a Beneficiary Household (%)

Regions	MGNREGS Individual Asset Income (in Rs.)								MGNREGS Wages (Rs)	Non-MGNREGS Income/Other Income (Rs.)	Grand Total Income (Rs.)	Income Shares (%)			Total MGNREGS Income (Rs/HH)
	Agricultural Asset Income		Value of Production of Milk/Dairy	Value from Sale of Sheep & Goats & Sale of Meat	Value of Sale of Vermicompost	Value of Fish Production	Value of Horticultue Production	Total MGNREGS Individual Asset Income				MGNREGS Individual Asset Income	MGNREGS Wages	Non-MGNREGS Income	
	Value of Crop Production from Irrigation Assets	Value of Crop Production from Land Development Assets													
Bonli	992138		137000		5600			1134738	27450	1551700	2686438	42.24	1.02	57.76	56736.90
Sawai Madhopur	702173	21040	81300					804512.51	102784	2012504	2817017	28.56	3.65	71.44	40225.63
SAWAI MADHOPUR	*1694311*	*21040*	*218300*		*5600*			*1939251*	*130234*	*3564204*	*5503455*	*35.24*	*2.37*	64.76	*48481.26*
Choti Saran	862500							862500	120125	860775	1723275	50.05	6.97	49.95	43125.00
Gagartalai	438125				2400		30000	470525.01	41850	3130240	3600765	13.07	1.16	86.93	23526.25
BANSWARA	*1300625*				*2400*		*30000*	*1333025*	*161975*	*3991015*	*5324040*	*24.47*	*3.04*	*75.53*	*33325.63*
RAJASTHAN	**2994936**	**21040**	**218300**		**8000**		**30000**	**3272276**	**292209**	**7555219**	**10827495**	**29.94**	**2.70**	**70.06**	**40903.44**
Jamunaha	383250	67063						450312.5	5200	371488	821800	54.80	0.63	45.20	22515.63
Sirsiya	821800							821800	26250	434600	1256400	65.41	2.09	34.59	41090.00
SHRAVASTHI	*1205050*	*67063*						*1272113*	*31450*	*806088*	*2078200*	*61.21*	*1.51*	*38.79*	*31802.81*
Rajgarh	253881	140285						394166	46542	1948344	2342510	16.83	1.99	83.17	19708.30
Pahari	157325	289015						446340	102738	985238	1431578	31.18	7.18	68.82	22317.00
MIRZAPUR	*411206*	*429300*						*840506*	*149280*	*2933582*	*3774088*	*22.27*	*3.96*	*77.73*	*21012.65*
UTTAR PRADESH	**1616256**	**496363**						**2112619**	**180730**	**3739670**	**5852288**	**36.10**	**3.09**	**63.90**	**26407.73**
Kelamangalai	308500			183400		100000		591900	202750	849050	1440950	41.08	14.07	58.92	29595.00
Hosur	15100		357000	44000				416100	139100	866750	1282850	32.44	10.84	67.56	20805.00
KRISHNAGIRI	*323600*		*357000*	*227400*		*100000*		*1008000*	*341850*	*1715800*	*2723800*	*37.01*	*12.55*	*62.99*	*25200.00*
Vridhachalam						428000		428000	267100	2235900	2663900	16.07	10.03	83.93	21400.00
Cuddalore			226800		142000	1369000	67000	1804800	119100	3699700	5504500	32.79	2.16	67.21	90240.00
CUDDALORE			*226800*		*142000*	*1797000*	*67000*	*2232800*	*386200*	*5935600*	*8168400*	*26.51*	*4.73*	*73.49*	*55820.00*
TAMIL NADU	**323600**		**583800**	**227400**	**142000**	**1897000**	**67000**	**3240800**	**728050**	**7651400**	**10892200**	**29.14**	**6.68**	**70.86**	**40510.00**
Total	**4934792**	**517403**	**802100**	**227400**	**150000**	**1897000**	**97000**	**8625694**	**1200989**	**18946289**	**27571983**	**31.28**	**4.36**	**68.72**	**35940.39**

Source: Field Survey

The variances in the share of income from the MGNREGS individual assets were due to a number of factors. Important among them were land and assets base of the household, the type of assets provided, agro-climatic conditions, and skill and entrepreneurial level of the beneficiary.

It is to be noted that all 240 sample beneficiary households also earned wages from MGNREGS.[6] The share of MGNREGS wage income was 4.36% of the total gross annual income of a

[6] The provision of Paragraph 5, Schedule 1 of the Act says that small and marginal farmers are eligible for individual assets, provided they have job cards and are willing to work under wage employment.

beneficiary household. It was 2.37% of the total annual income of a beneficiary in the Sawai Madhopur, 3.04% in Banswara, 1.51% in Shravasthi, 3.96% in Mirzapur, 12.55% in Krishnagiri and 4.73% in Cuddalore districts. The contribution from the MGNREGS wage income was the highest in Krishnagiri district of TN, where a large number of beneficiaries of individual assets were landless, and also worked as wage earners under the MGNREGS. This indicates that the dependence of a landless beneficiary on wage employment under the MGNREGS continues to be high, whereas for the landed, or relatively better off, the wage income from the MGNREGS is largely supplementary. Perhaps, they worked under the MGNREGS either on the construction of their own assets or to become eligible for receiving individual assets.

Transformational Impacts of Individual Assets

The section below examines transformational impacts of individual assets on beneficiary households. Transformational impact has been defined loosely as a change in the character of the household, from casual labour to self-employed, dramatic increase in income and wellbeing, a decline or even end of perennial dependence on wage employment, and distress migration.

In Sawai Madhopur district of Rajasthan, a farmer was provided with a dug well, which was located just near a highway, abutting the bus stand of the village. Earlier, the bus stand was just a pick-up and drop-off point. After the provision of irrigation dug well, the beneficiary farmer opened a tea-cum-provisional store to cater to the needs of commuting villagers. He had thought of opening of such a shop earlier, but was hesitant to do so, due to the lack of water nearby. Very soon, the shop attracted commuters who would stop there for water or tea. There was no other irrigation facility in the area. The beneficiary farmer also started selling irrigation water to other farmers. There was thus, a significant increase in the income of the household.

In the Cuddalore district of Tamil Nadu, there was a carpenter whose livelihood depended on daily wage earnings. His wife was an ad-hoc teacher in a private school. The family owned around one and a half acres of land with limited agricultural activities. This household was initially provided a small fish pond under the MGNREGS. He started earning around ₹50,000–

₹60,000 per annum from this pond. He decided to expand the size of the pond by ploughing back his earnings from the fish pond. He had heard that a poultry farm on the bank of a water body gave high yield and was a profitable proposition. He opened a poultry farm on both sides of the bank of the pond. The cool breeze of the pond kept the poultry healthy and free from diseases. The excreta of the poultry were used as fish-fodder. He expanded his activities and bought two cows. After meeting his own consumption needs, he sold the surplus milk in the market. The cow dung was spread in the pond for the fish. His overall earnings from the fish pond, poultry farm and cows gave decent income, so much so that he stopped working as a carpenter for which he would get on an average of only 20 days of wage employment in a month. His wife left her ad-hoc private school teacher job. Both of them now worked full time in their own activities of fishery, poultry and animal husbandry. The household thus transited from the status of a wage-employment seeker to that of self-employed. Also, this was an interesting case of environmentally sustainable and mutually complementing economic activities.

There are some other evidences. About 25% of the sample beneficiary of individual assets stopped seeking wage employment under the MGNREGS. The largest numbers of them were from TN followed by UP and Rajasthan. Of the remaining 75% households that continued seeking MGNREGS wage employment, 73.33% would avail it for additional income, 11.11% due to inadequate income from other sources, and another 6.67% for easy cash money. One-fourth of the total sample beneficiaries (33.75% in Rajasthan, 27.5% in UP and 11.25% in TN) reported that they stopped migrating after they got individual assets. Out of those who continued to migrate, 55.71% of them reported inadequate income including from the MGNREGS individual assets, and 44.29% reported irregular returns from these assets as the main reasons for their dependence on migration. The number of households reporting insufficient income as the reason for no change in their migration status was the highest in Rajasthan, whereas those reporting irregular returns from assets as the reason for the same was the highest in UP.

V

Way Forward

To sum up, the major impacts of land and irrigation works were increase in crop acreage, yields per acre, and crop diversification. The overall impact was increase in the income level of the beneficiary households and greater food security to the community. The promotion of livestock and fishery assets improved the availability of high protein nutritious food. Livestock assets also contributed to the promotion of agriculture.

Individual assets have transformative potentialities that, however, depend on factors such as the nature and types of assets created, agro-climatic conditions, land, assets and capital base of individual beneficiaries, knowledge and requisite skills for harvesting of assets, pre-and post-assets technical support, entrepreneurial ability, etc. Thus, the emphasis on the creation of productive individual assets for the beneficiaries listed in Paragraph 5 of the Act, has merits. A number of measures to increase the utility of individual assets, enhance their transformative potentialities, and rectify lopsided distribution are suggested below.

Individual assets are targeted at the most vulnerable households; Paragraph 5 of Schedule 1 of the MGNREGA lists them in the order of priority. Although, it does not mention landless households as a category, the intention of the provision is to target them. As against this, landless households have been excluded from the benefits of individual assets, as they do not have land to offer for assets creation. On the other hand, small and marginal farmers, last in the order of priority, took the lion's share of individual assets. Many of them were from SC and ST communities, but a sizeable number of them were also from OBCs and upper castes.

A proactive selection of landless households and diversification of the list of permissible assets, with space for innovative approaches at the local level, suiting the conditions of the landless households, may make the exercise more inclusive. In addition, landless households can be provided assets on community land with usufructous rights. The agency of self help groups (SHG) and organisations like Shram Shakti Sanghathan (in Telangana) can be mobilised for this

purpose. Landless collectives can also be formed and encouraged to come up with a proposal for asset creation on the community land.

The selection of individual beneficiaries through the gram sabha should be strictly adhered to. Also, there should be a cap on the number of assets given to one household. A few beneficiaries received more than one asset, while many more deserving candidates could not get a single one.

The benefit–cost ratio (BCR) varies across the types of assets. This makes it imperative that the BCR of assets should be taken into account while selecting them. Further, BCR can be improved by adopting a combination approach. For example, the BCR of irrigation assets is higher than that of land development works. Therefore, a provision for land development work along with irrigation assets would improve BCR. Thus, a combination approach should be adopted. Land development work should be undertaken along with irrigation work. There could be many such combinations.

A number of beneficiaries of fish ponds could not benefit, either due to the lack of financial resources to provide water to the pond, or the lack of proper training and knowledge. This emphasises the necessity of providing credit, technology and knowledge to maximise the benefits of the assets. Again, convergence with other schemes and departments would be helpful.

A number of beneficiaries were provided technical support during the creation of assets, but post-asset technical support was missing. Hand-holding is important to prevent assets from losing their value.

About 40.83% of the total beneficiaries (51.25% in Rajasthan, 41.25% in TN and 30% in UP) incurred out-of-pocket expenditure in the creation of individual assets. This was due to many reasons. Important among them was inadequacy of the sanctioned amount, as beneficiaries reported. They paid extra to the workers as MGNREGS wages were less than the prevailing market wages, and workers insisted on individual assets beneficiaries to compensate for the difference in the market and MGNREGS wages. However, many of the beneficiaries may not be able to bear out-of-pocket expenditure. In such cases, the quality of assets would be compromised; they would remain incomplete as well.

Since individual assets compete with community assets in terms of allocation of resources, it is advisable that only income generating individual assets should be undertaken under the

MGNREGS. More importantly, there is a need for massive increase in resource allocation to cover a large number beneficiary households, as listed in Paragraph 5 of the MGNREGA, in order to make this exercise a catalyst of transformation. Individual assets could, indeed, be a game changer.

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