

LEVY INSTITUTE



## Research Project No. 34

**THE IMPACT OF PUBLIC EMPLOYMENT GUARANTEE STRATEGIES  
ON GENDER EQUALITY AND PRO-POOR ECONOMIC DEVELOPMENT**

### INDIA

**Reducing Unpaid Work in the Village of Nana Kotda, Gujarat:  
An Economic Impact Analysis of Works Undertaken under the  
National Rural Employment Guarantee Act (NREGA)**

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## **1. EMPLOYMENT CHALLENGE AND NREGA IN INDIA**

### **1.1 Introduction**

The Indian constitution has given “right to life” to all its citizens as a fundamental right. That right also implies right to work for all. This goal of ensuring employment to all is very much in line with Article 23 of the UN Declaration of Human Rights that states that “every one has a right to work, to free choice of employment, to just and favourable conditions of work and to protection against unemployment” (UN Universal Declaration of Human Rights 1948). The ILO Convention 122 also reiterates this goal by declaring that “each Member shall declare and pursue, as a major goal, an active policy designed to promote full, productive and freely chosen employment.” The legal guarantee of work given to Indian citizens under the National Rural Employment Guarantee Act (NREGA), therefore, reflects the global, as well as national, commitment to full employment.

A wage employment programme (WEP) or a public works programme (PWP), (also known as employment guarantee programme [EGP] when a guarantee of work is included), apart from having an intrinsic value, addresses the employment crisis in the developing world (including India). During 1995–2005, open unemployment has grown by 22 per cent in the world, putting the global unemployment rate at 6.3 per cent. The annual average output growth in the world economy has been 1 per cent as against 0.3 per cent rate of growth of employment, with the employment elasticity of growth declining continuously (Rodgers 2008, ILO 2007, Salazar 2008). In the case of most developing countries, however the rate of growth of employment has been much lower than the rate of growth of labour force, adding to the already existing large stock of unemployment. Also, most new jobs are created in the informal economy, with the result that the number of the working poor has been increasing in these economies. In 2005, 48 per cent of workers were observed to be poor on \$2 a day criterion and 18 per cent on \$1 a day criterion.

Neo-liberal policies have impacted adversely on the employment scene in developing countries in multiple ways. First, a high rate of growth is achieved through a jump in technical progress leading to increasingly capital intensive technologies, which is accompanied by declining employment intensity. Second, growth of exports of labour intensive products has increased employment, albeit of poor quality. Third, import of cheap goods under liberalization has resulted in closure of local production units, resulting in loss of jobs. Fourth, liberalization has frequently intensified gender inequalities in the labour market, further deteriorating women’s position in the labour market. Finally, opening of economies has exposed developing countries to global competition as well as to the global volatility, leading to increased employment insecurity, uncertainties, and vulnerability.

Promotion of labour intensive sectors has been recommended by experts including the Indian Planning Commission, to address these problems. This could be achieved by encouraging the corporate sector to move into more labour intensive sectors and by facilitating expansion of employment and of unorganized enterprises that operate in labour intensive sectors. However, there are two questions: (1) What will happen to the un/underemployed until labour intensive



sectors are developed enough to generate adequate employment? (2) Is it feasible to use the labour of the un/underemployed to promote labour intensive sectors in the economy through an EGP? We believe that a well-designed PWP, preferably with legal guarantee of work, can answer both questions positively. In such a programme, national governments can provide work to all those who are willing and ready to work at a fixed minimum level of wages;<sup>12</sup> this can also promote labour intensive growth in the medium and long terms.

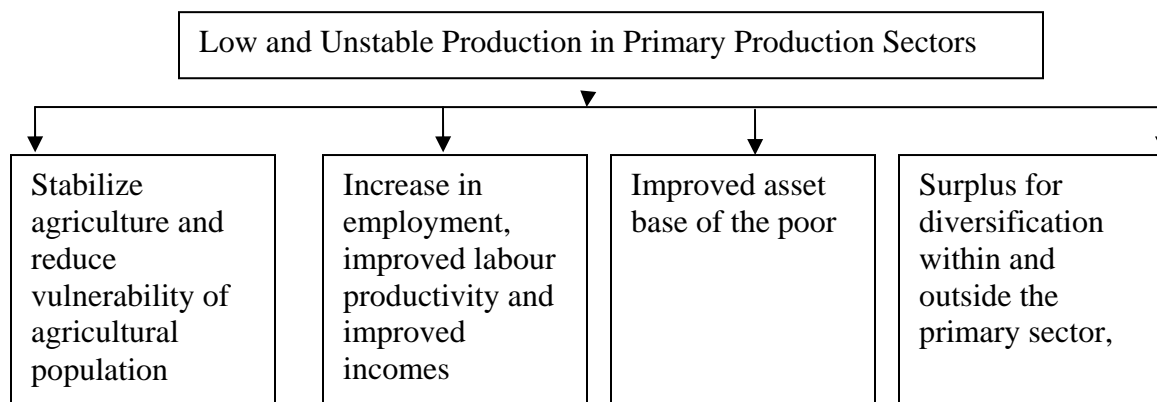
### 1.2 Links between PWP/EGP and Full Employment Path

There are several possible links between a PWP and full employment growth path in developing countries. These can be strengthened by a well-designed EGP.

#### a. Strengthening the sectors in which the poor are predominant

The majority of the poor and marginalized in developing countries can be founded in agriculture and allied activities, which suffer from low productivity, as well as uncertainty arising from fluctuating production and incomes. An EGP can be planned in such a way that it stabilizes these sectors by reducing fluctuations and promotes their growth by raising labour productivity. An EGP can improve assets of the poor and promote diversification of the economy. Some of the activities would be construction of small and large irrigation facilities to ensure water availability or construction of water harvesting structures, including farm ponds, as well as revival of traditional structures like ponds and tanks, watershed development to enhance productivity of land, etc.

**Figure 1: Low and Unstable Production in Primary Production Sectors**

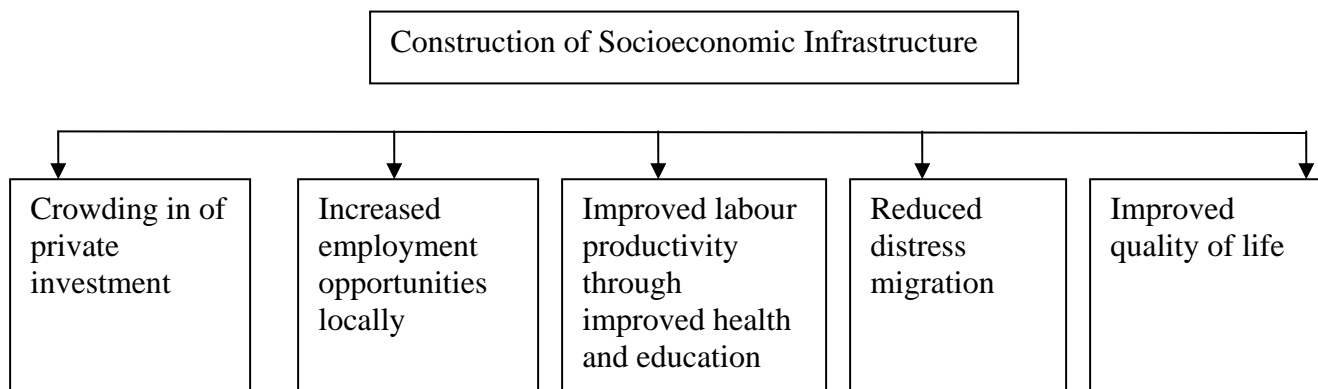


<sup>12</sup> Such programmes have been used for different reasons: to ameliorate the after-effects of financial crisis (for example, *Jefes* programme in Argentina, *Padat Karya* in Indonesia, *Master Plan for Tackling Unemployment* in South Korea); to ensure food security (*Rural Maintenance Programme* and *Food for Work Programmes* in Bangladesh, Ethiopia, and in many other countries); to stabilize the economy during the downward trend of business cycles in developed countries (the Netherlands, Sweden, and USA); to address structural poverty (labour-based infrastructural programmes in Ghana, Zimbabwe and many other African countries, including the *Expanded Public Works Programme* in South Africa); and to ameliorate effects of droughts, to ensure food insecurity during the lean season, and to address structural poverty (*National Rural Employment Guarantee Act [NREGA]* in India).

***b. Construction of socio-economic infrastructure for promoting employment intensive development***

Absence of adequate socio-economic infrastructure is a major cause of a low level of development. Construction of basic infrastructure facilities under an EGP can be a good link between labour intensive construction of infrastructure and employment intensive development. These facilities can result in new approach roads that improve connectivity; water harvesting for ensuring water supply; drainage, sanitation, and arrangements for disposal of solid and liquid waste; internal roads, including paving of existing internal roads; housing for the poor; buildings for basic educational and health services, etc.

**Figure 2: Construction of Socio-economic Infrastructure**



Construction of basic socio-economic infrastructure facilities promote crowding in of private investments, improved health and educational facilities to enhance labour productivity, reduced distress migration of the poor, and improved local infrastructure to improve the quality of life.

***c. Addressing unpaid work of women for promoting women’s work in the labour market***

Unpaid work essentially means work that does not receive any direct remuneration. It includes unpaid work covered under the Production Boundary of the UN System of National Accounts (SNA),<sup>13</sup> as well as unpaid non-SNA work covered under the General Production Boundary<sup>14</sup> of the UN System of National Accounts. Unpaid SNA work includes non-marketed work (non-marketed production of goods), unpaid work in family enterprises, and collection of free goods (for example, water, fuelwood, and raw materials for income-generating activities, such as fodder for animal husbandry, leaves, bamboo, or wood for crafts from common lands, forests, etc.) Unpaid SNA work usually has low productivity (that keeps the household in poverty), is time consuming, and involves drudgery. This work is largely performed by women and children, and the poor in general. Unpaid non-SNA work, on the other hand, includes domestic work that consists of: (1) household upkeep and management (cleaning, washing, cooking, shopping for the household, etc.); (2) care of children (active and passive care); (3) care of the

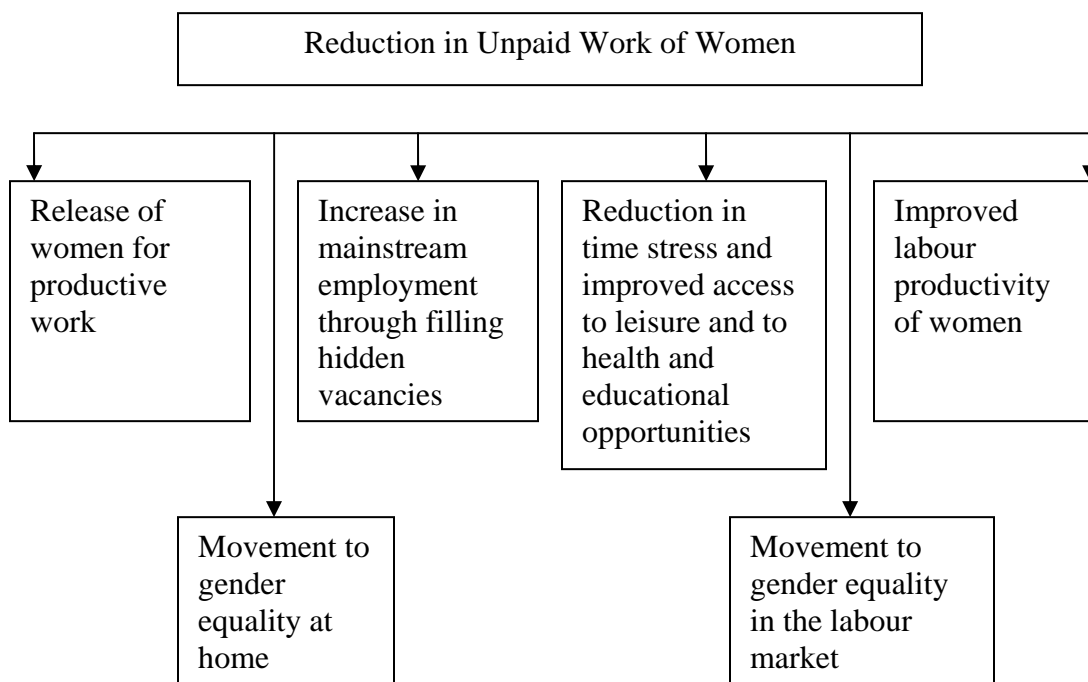
<sup>13</sup> This production boundary includes activities that fall within the purview of national income accounts.

<sup>14</sup> The general production boundary includes those activities that fall outside the production boundary and are related to production of services by households for household members and community services.

sick, old, and disabled in the household; and (4) community services. This work is also predominantly performed by women and sometimes by children. A paradox observed in developing countries is the simultaneous existence of sizable underemployment on the one hand and sizable unpaid work, which is usually drudgery, on the other. If a part of unpaid work is brought into public domain through constructing suitable infrastructure, unpaid workers can be released for productive work.

Women in developing countries spend up to 30–40 per cent of their productive time (men spend less than 10 per cent) on the unpaid activities mentioned above. The unequal distribution of unpaid work between men and women results in an inferior status for women at home as well as in the labour market. An EGP can reduce women’s unpaid work in multiple ways (Appendix C) and can promote women’s productive employment in market-oriented activities by releasing them for productive work in the market and reducing their time stress, enabling them to access leisure and educational or skill-related opportunities. Women’s participation in market activities will help them to improve their status at home and, in turn, will promote gender equality in the labour market. All these developments will increase mainstream employment opportunities in the labour market, as the “hidden vacancies” of unpaid work (so far filled by unpaid work) will be filled by paid labour. That is, larger employment opportunities will be created in the labour market in the basic services like childcare services, managing local water supply, organizing sanitation services, etc. (Antonopoulos and Fontana 2006).

**Figure 3: Reduction in Unpaid Work of Women**



#### ***d. Other links between EGP and labour intensive development process***

There are several other possible links between an EGP and the labour-intensive development process in developing countries: (1) an EGP can put upward pressure on market wages by paying legal minimum wages; (2) it can help in effective enforcement of a minimum wages act; (3) it can reduce/remove wage rate inequalities across seasons, as well as across different socio-economic groups, since wage rates on an EGP are equal for all; (4) it can improve the quality of employment, as the government programme can ensure a minimum package of entitlements to workers (i.e., social security, working conditions, and facilities and amenities at work sites); and (5) a large number of workers working together for a long time can lead to formation of labour unions. That is, an EGS can encourage workers to develop their collective strength and bargaining power in the labour market.

In short, a well-designed EGP can take on, to a considerable extent, the challenges posed by the changing employment scene in developing countries under the neo-liberal policies. It can not only address the immediate problem of ensuring employment and wages to the poor at the bottom, but it can also promote full employment and pro-poor economic growth.

### **1.3 Employment Challenge in India**

India has achieved a high rate of economic growth in the recent decades. It is one of the fastest growing countries in the world and, with a per capita GDP of US \$1,033, it is now regarded as a middle-income developing country (Planning Commission, 2008). Though the global crisis has reduced the growth rate in the recent period, it is much higher than most countries.

The Indian economy, however, has experienced a highly unbalanced structural transformation of the economy, with agricultural growth being stagnant and lagging far behind. The growth rate was less than 2 per cent during the 1990s. The agriculture sector, which contributes less than 20 per cent to the national GDP, employs about 57 per cent of the workforce, implying a very low average labour productivity. Since the majority of the cultivated area is rain-fed, depending on the erratic behaviour of the Indian monsoon (with the low level of assured water supply through irrigation), agriculture is also unstable and uncertain. Consequently, the highest incidence of poverty and vulnerability in India is on marginal and small farmers and agricultural labourers. The rural economy also suffers from poor diversification limiting the opportunities of productive employment for the rural labour force. This is due to: (1) depletion and degradation of the natural resources on which the livelihoods (in animal husbandry, dairying, horticulture, fishery, forestry, etc.) of majority of people depend; and (2) the limited development of socio-economic infrastructure in rural areas that can support and promote productive economic activities.

The long-term annual rate of growth of employment has declined from 2.1 per cent during 1983–1993/94 to 1.84 per cent during 1993/94–2004/05. Though one observes a marked improvement in employment in recent years (2.46 per cent during 1999/00–2004/05), it cannot be considered a positive development because a large part of this new employment is in self-employment, which is emerging as a residual sector. A significant part of this increase is of subsidiary employment, i.e., part-time, marginal employment and almost the entire increase (60 million) is of informal employment, either in the informal sector or in informal jobs in the formal sector (Bhalla 2007). A related problem is the low and fast-declining employment

elasticity of economic growth in all the major sectors of in the economy. The overall employment elasticity was 0.40 during the period 1983–1993/94. It declined to 0.32 during 1993/94–2004/05. The decline has been from 0.50 to 0.33 for the primary sector, from 0.53 to 0.51 for the secondary sector, and from 0.58 to 0.32 for the tertiary sector.

Another worrisome feature of the employment scene in India is the rising incidence of unemployment. The overall rate of unemployment has increased from 6.1 per cent in 1993/94 to 8.3 per cent in 2004/05. The unemployment rate for women in rural and urban areas has increased to 8.7 per cent and 11.6 per cent, respectively, in 2004/05. The impact of the overall high growth has not been very positive on poverty reduction either. The incidence of poverty declined from 30 per cent in 1993/94 to 27.8 per cent in 2004/05, implying a very small annual rate of decline of 0.74 per cent per year during the period. The elasticity of poverty reduction with respect to per capita GDP growth has also declined from 1.13 per cent during 1993/94–1999/00 to 0.69 per cent during 1999/00–2004/05. In the case of some marginalized groups like the scheduled tribes, the reduction in poverty has been almost zero. That is, the glorious performance of economic growth is not really reflected in poverty reduction.

In short, the major areas of concern in the field of employment in India are several: the low and declining rate of growth of employment, the rising incidence of unemployment, the rapid deterioration in the quality of employment, and the negligible increase in the real wages of workers. The major challenge is to ensure faster growth of employment than the rate of growth of labour force so as to reduce unemployment and to ensure faster growth of employment with “decent work.”

Papola has quantified this challenge on the basis of the unemployment rates and underemployment rates of the workforce. This comes to 76.8 million persons in 2007 (Papola 2008). Adding the working poor who are too vulnerable in their present jobs and who need new employment, total employment required to be generated has been estimated at 92.3 million.<sup>15</sup> As against this demand, supply of employment that will be generated in the economy will depend on the economic growth and labour coefficients (employment elasticities) of this growth. Given the pattern of growth and the low and declining elasticity, it is clear that the present growth will not be able to generate adequate employment in the economy. It has been estimated that with the employment elasticity of 0.25 (which seems to be realistic), the Indian economy will have to grow at 11 per cent just to absorb the new labour force and the openly unemployed (at 2.7 per cent growth of employment). This growth will not offer employment to the vulnerable working poor. Considering the fact that this growth is neither feasible nor adequate for the required employment generation, one has to look for alternatives.

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<sup>15</sup> **Employment Required to be Generated in Eleventh Plan**

1	Unemployment 2007	<b>21.6 million</b>
2	Addition to labour force (2007–2012)	<b>44.7 million</b>
3	Working poor that need employment	<b>26.0 million</b>
	<b>Total</b>	<b>92.3 million</b>

A useful strategy in this context would be of promoting labour intensive sectors in the economy, so that the overall employment elasticity of growth improves. It has been estimated by Papola that 9.3 per cent growth at the 0.44 overall employment elasticity during the eleventh plan will enable employment to grow at 4.09 per cent and generate adequate employment during the eleventh plan. The primary, secondary and tertiary sectors will have to grow at 4.00, 11.00 and 10.00 annual rates respectively with 0.45, 0.68 and 0.58 employment elasticities, respectively. The required overall growth rate of the economy (9.3 per cent) seems to be realistic looking at the recent trends, however, shifting the employment elasticities in the different sectors to the required levels appears to be a tall order. How can we reach this rate and pattern of economic growth? In other words, promotion of labour intensive sectors is a sound strategy, but achieving this is a big challenge.

Linking NREGA with the growth of labour-intensive sectors has several specific advantages. First, it can ensure coordination of three key elements to the growth of labour-intensive sectors in the economy—namely, natural resource management, infrastructural development, and basic services—to improve human capabilities and productivity of labour. Second, it can raise demand for wage goods in the economy, which can be enhanced through labour-intensive industrialization. Finally, it can provide guarantee of employment and thereby ensure full employment. By providing work at the minimum wage, with decent working conditions as well as social protection, NREGA can provide a bottom line of decent work for workers.

#### **1.4 From Public Works Programmes to NREGA**

India has a long history of public works programmes. They started as relief works during the pre-British and British period when disasters like drought and floods threatened the survival of people. They provided employment at minimum wages to enable affected people to survive. However, assets were selected in an ad hoc manner, keeping in mind largely the convenience of affected people. After Independence, however, public employment programmes were viewed as a means of generating employment to address the structural un/underemployment, as well as a means of creating productive assets for expanding the labour-absorbing capacity of the economy (Nurkse 1957, Hirschman 1961). The first public works programme, Rural Works Programme (RWP), was introduced in the 1960s and was followed by a series of wage employment programmes, each trying to improve upon the earlier one. These initially were the Crash Scheme for Rural Employment (CSRE), Pilot Rural Employment Project (PIREP), and then two national employment programmes—the National Rural Employment Programme (NREP) from 1980/81–1989 and the Rural Labour Employment Guarantee Programme (RLEGP) during 1982/83–1989. The Jawahar Rojgar (employment) Yojana (programme) was introduced in the mid-1990s to involve panchayati raj institutions and a modified version of this programme, Sampurna Grameen Rojgar Yojana (SGRY), was introduced in the late 1990s to provide massive wage employment to the rural population (Hirway and Terhal 1994). Maharashtra's Employment Guarantee Scheme (MEGS) is important in this context, as it has several useful features not found in early employment programmes. MEGS was introduced in the early 1970s with multiple objectives of guaranteeing work to all those who were willing to work at a fixed wage rate in rural areas. The element of guarantee was to ensure that the programme reached the poor at the bottom on the one hand and promote development of backward/poor regions on the other. The other objective was meant to ensure that the programme did not end up creating a permanent army of unskilled labour.

The workings of these programmes have been evaluated by a large number of official and non-official agencies. An important observation coming out of these studies is that these programmes have definitely helped the poor, at least in selected pockets, by raising their employment and wage incomes. However, they have not had much impact at the macro level (Hirway 2003).<sup>16</sup> To make these programmes successful, it is necessary that employment is made available on a scale that meets the demand for work, work is provided at a minimum wage rate and for adequate number of days to ensure minimum incomes, employment is made available locally, employment is accompanied by a minimum package of social security (security against injury, sickness and death, old age, maternity), and a good public distribution system ensures supply of food grains, etc. at reasonable prices (Hirway 2003). Also, if the use of surplus labour has to result in capital formation, it is necessary that selection and sequencing of assets/works is done systematically. That is, the assets selected should be labour-intensive during the construction phase, have short gestation periods, and generate sustainable employment in the mainstream economy. In short, if planned and implemented well, these programmes can promote strategic use of surplus labour to promote labour-intensive, sustainable development in the economy.

### **1.5 National Rural Employment Guarantee Act 2005 and NREGS**

Learning from the past experiences of wage employment programmes, the government introduced an employment guarantee programme in 2006. The National Rural Employment Guarantee Act (NREGA), under which every rural household living in the most backward 200 districts of the country was guaranteed at least 100 days of wage employment at the minimum wage rate of the concerned state, was passed by the parliament in 2005 and was implemented in February 2006. The act was extended to 100 more districts in the second year and was extended to *the entire country (rural areas)* from April 2008. The act was followed by the formulation of national guidelines, on the basis of which each state government was asked to design an employment guarantee scheme.

This legal commitment is a landmark event in the history of poverty reduction strategies in India. It is also a unique event among the pro-poor strategies in the world, as no country has ever given a right of this kind to such a large section of the population so far. Major features of the act and the schemes are discussed in the following paragraphs.

#### ***a. Guarantee of work***

Under the act: (1) guarantee is given for casual and manual work on public works (and on private works under specified situations) to all households (all members of the household above 18 years) living in rural India; (2) the guarantee is for at least 100 days in one year at the stipulated minimum wages; (3) work should be provided within 15 days of demanding it; and (4) work should be located within 5 km of distance. If work is not provided to anybody within the given time, he/she will be paid a daily unemployment allowance, which will be at least

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<sup>16</sup> The major observations are as follows: (1) the programmes have recorded a limited impact at the macro level in terms of generation of employment per worker; (2) they have made a limited impact in terms of production of durable, good quality assets; and (3) selection and sequencing of assets have not been the best with the result that the assets have not been adequate to expand the labour-absorbing capacity of the mainstream economy.

one-third of the minimum wages. If work is provided outside the limit of 5 km, the worker will get an allowance for travelling and living there.

#### ***b. Entitlements***

NREGA workers are entitled to several amenities, facilities, and allowances including: (1) worksite facilities like safe drinking water, shade for small children and workers for rest period, a first aid box with adequate material for emergency treatment of minor injuries, strokes, body ache, and other health hazards, and crèche facilities for babies; (2) medical treatment and hospitalization costs in case of injury on work, along with a daily allowance of not less than half of the statutory minimum wages; and (3) deduction of 5 per cent of wages as contribution to welfare schemes like health insurance, accident insurance, survivor benefits, maternity benefits, and social security schemes. Strict penalties have been laid down in the Act for non-compliance with the rules relating to employment guarantee, terms of employment, and entitlement of workers.

#### ***c. Planning for works and funding***

A Central Employment Guarantee Council came into existence at the national level to implement the act. The council, with adequate representation from women and Dalits (members of low status casts), advises the central government on matters concerning implementation of the act, has established central evaluation and monitoring systems, and organizes regular monitoring. At the state level there is a state council that advises the state government on all matters concerning NREGS. At the district level, the collector or the CEO is responsible for the implementation of the programme. At the block level, there is a programme officer and the panchayat samiti in charge of the implementation of the Act.

The Village Panchayat (local elected body) at the village level is expected to prepare a perspective plan (for five years), an annual plan, and a shelf of projects/works in a participatory manner in consultation with the gram sabha (village assembly, consisting of all adults in the village) and technical experts. Fifty per cent of the works are to be planned at the village level, while 25 per cent each at the block and district levels, in consultation with people and experts. Each person wanting employment gets registered with the village panchayat and gets a job card along with his/her photograph. Work is to be provided to all registered persons as according to the rules laid down in the state.

A separate National Employment Guarantee Fund has been set up at the central government level. State-level funds will be created to ensure availability of funds for the programme. The wage component will be paid by the central fund while the material component will be shared by the centre and the state government.

#### ***d. Transparency and accountability***

The act lays down provisions for ensuing transparency in implementation and accountability of implementers. These provisions include: (1) an annual report, as well as all accounts and records relating to NREGS, is to be made available in convenient form for public scrutiny; (2) the details of each project, including accounts, are to be displayed prominently on a board close to the site and at the office of the village panchayat; and (3) the gram sabha has to monitor the performance of NREGS through conducting social audit and having the quality of assets



evaluated by technically qualified personnel to ensure that they meet the required technical standards and measurements. Heavy penalties have been laid down for non-compliance of any rules under the act, including a fine not less than Rs.1,000, imprisonment up to six months, or both.

In short, the national rural employment guarantee programme (NREGP) is seen as an effective instrument in eradicating the poverty of the poor at the bottom and a tool for empowering them, as well as a programme that generates assets for enhancing the livelihood of people. The long-term objectives of the programme, however, do not include reduction in unpaid drudgery of women. We believe that it is important to recognize this programme as a transitional programme that “contributes towards transformation of the labour surplus economy into a full employment economy through ‘strategic use of surplus labour’ for generating productive assets to expand employment avenues in the mainstream economy” (Tinbergen 1994).

#### *e. Unpaid work and wage employment programmes*

The highly unequal distribution of unpaid work, both SNA and non-SNA, between men and women puts women in a disadvantageous position within and outside the household. To start with, unpaid work is not visible, as no data on unpaid work are collected in India. Unpaid workers do not get any direct remuneration, they have no/low prospects for upward mobility, they suffer from limited exposure to outside world, acquire limited human capital, and have overall poor chances in life. Unequal distribution of unpaid work is at the root of gender inequality and the hierarchical power structure within the household. It is clear that if women (and the poor) can be relieved of this work, they will have more freedom of choice in using their time for leisure, productive work, education, skill training, etc. There is therefore a need to transform unpaid work to publicly funded employment to relieve women (and poor) of the drudgery of unpaid work. There is need to expand the purview of EGP to include assets that reduce the unpaid work of women and allow, thus, women to access better opportunities in the labour market.

### **1.6 NREGS: Overview of the First Three Years**

Table 1 presents in brief the data on the performance of NREGS in the first three years. NREGS covered 200 districts in the first year, 331 in the second year, and all 615 districts in the third year. The size of the scheme has grown over the years, with Rs.272,501 million spent in the last year. The scheme is well-targeted in the sense that about 30 per cent of the beneficiaries belong to the scheduled castes and 25 per cent to the scheduled tribes. Women’s participation is high and increasing, with almost half the beneficiaries (48 per cent) being women. About 45 million households (almost equal to the below-poverty-line households) have participated in NREGS in the last year (2008–09), and, on average, have worked for about 48 days on NREGS. So far, 12.14 million works have been completed and 27.75 millions are under construction. With the generation of total employment of 2,163 million person-days and creation of purchasing power of Rs.272,501 million, NREGS has clearly made a significant impact at the macro level. Despite these important outcomes, several studies have revealed weaknesses of design and implementation, and therefore there is room for improvements. Yet, it is safe to say that its overall performance has been quite good.

**Table 1: Performance of NREGA**

<b>Year</b>	<b>2006-07</b>	<b>2007-08</b>	<b>2008-09</b>
Number of districts	200	331	615
Households demanding work (in millions)	21.19	34.33	45.52
Households provided work (in millions)	21.02	33.91	45.11
<b>Household provided work per district</b>	<b>105,100</b>	<b>102,445</b>	<b>73,350</b>
Person-days (in millions)	905.06	1,436.8	2,163.25
<b>Person-days per household</b>	<b>43.05</b>	<b>42.37</b>	<b>47.96</b>
Women (in millions)	367.9	610.91	1,035.72
Per cent women	40.65	42.52	47.88
Scheduled castes (in millions)	229.5	394.23	633.59
Per cent scheduled castes	25.36	27.44	29.29
Scheduled tribes (in millions)	329.88	420.56	550.16
Per cent scheduled tribes	36.45	29.27	25.43
Others (in millions)	345.6	622.09	1,035.72
Per cent others	38.19	43.29	45.28
<b>Person-days per district (in millions)</b>	<b>4.52</b>	<b>4.34</b>	<b>3.52</b>
Funds allotted (in millions)	120,735.55	192,787.77	363,004.6
Funds used (in millions)	88,233.55	159,997.79	272,501.0
Per cent of funds used	73.08	81.98	75.07
<b>Funds used per district (in millions)</b>	<b>441.17</b>	<b>483.38</b>	<b>590.25</b>
Total works (in millions)	8.42	17.92	39.89
Ongoing	4.49	9.69	27.75
Completed	3.97	8.24	12.14
Per cent completed	47.14	45.96	43.76
Number of works per district	4,207	5,415	2,582
<b>Number of works completed per district</b>	<b>1,984</b>	<b>2,489</b>	<b>1,974</b>

### 1.7 The Empirical Study

The focus this study is examining the multiple impacts of NREGS works. The study involves construction of a village Social Accounting Matrix (SAM) to understand the village economy and to assess the impact of NREGS works on household production, incomes, and employment, as well as on the village economy, through multiplier analysis. NREGS works are treated as external shocks. The study also examines how portions of unpaid SNA and non-SNA work can be substituted by NREGA works and what impact it can make on the incomes and employment of households and on the economy. This has been done by estimating the

multiplier impact of the substitution of unpaid work by NREGP assets/infrastructure on the village economy.

Nana Kotda, a medium-sized village located in north Gujarat, has been selected for in-depth study. There are several reasons for selecting this village. First, this village (and the district) has been covered under NREGS from the first year, as it is a backward tribal village (located in a backward tribal district). The village has also selected as a case study under the concurrent monitoring of NREGS by CFDA.<sup>17</sup> In addition, Sabarkantha district is also covered under the pilot time use survey that was conducted in India in 1998–99. We therefore have detailed data on the time use pattern of the population of the district.

The next section describes the economy of Nana Kotda based on the SAM constructed for the village. Section 3 discusses the time use of the villagers, based on the survey done earlier, as well as the recent data collection, Section 4 analyzes the NREGS works undertaken in this village so far, and Section 5 presents the multiplier impacts of the NREGS interventions on the village economy in terms of output, income, and employment. The final section summarizes the results of the analysis and makes policy suggestions.

## **2. EMPLOYMENT, POVERTY, AND HUMAN DEVELOPMENT IN NANA KOTDA**

Nana Kotda is a mid-sized village, with a population of 1,870 persons, located in Idar block (taluka) in the Sabarkantha district of Gujarat. Sabarkantha is one of the most 200 backward districts of India and was selected for implementing the National Rural Employment Guarantee Act (NREGA) in its first year from February 2006. The majority of the population belongs to low castes and tribes. Of the total 404 households in the village, 94 belong to the scheduled castes, 4 households belong to the scheduled tribes, and 283 belong to OBC (other backward castes). That is, about 94 per cent of the population belongs to low castes. The village has nine wards (*falias*) that are inhabited by different castes.<sup>18</sup>

### **2.1 Village-level Amenities and Facilities**

The village has an all-weather road connecting the village to the highway going towards Idar, the block headquarter 9 km away. There is regular bus service from the state transport department three times a day. A low bridge on the river nearby that gets flooded in the monsoon cuts off the village from the rest of the world during most of the monsoon. Though a proposal has been made to raise the level of the bridge to improve connectivity to the village, no decision has been taken so far. The internal roads in the village are paved in only half the wards and there is no drainage facility in any ward. There is no public system for disposing of solid and liquid waste, though some households manage it for themselves. The result is that the village is vulnerable to water-and air-borne diseases.

The village does not have any local health facility; it lacks a primary health centre (PHC), a sub-PHC, or a family welfare centre. There is no qualified private doctor or a private

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<sup>17</sup> While conducting the concurrent monitoring of NREGA, a few village-level studies were conducted. Nana Kotda was one such village.

<sup>18</sup> The settlement pattern in the village is caste-based. Each settlement or a *Falia* is inhabited by one caste. A few settlements are mixed.

dispensary. The only professional health facility available to the village is a nurse (from the health department), who is expected to visit the village once a week. The nurse, who visits the anganvadi (preschool) when she visits the village, is not regular and not everyone is aware of her timings. Villagers therefore go to a private clinic in Idar. They prefer the private facility to the government hospital because the timings of the government hospital are inconvenient (9.00 to 12.00 in the morning) and doctors are not always available in the hospital, even during the fixed timings. There are four unqualified medical persons (quacks) who give some medicines for common diseases. As was pointed out by the sarpanch (village head), people go to them “at their own risk.”

Educational facilities in the village, however, are for better. There are two preschools (for children between 3–6 years), one elementary school (1 to 7 standards), and one residential school (1 to 7 standards), which is known as Ashramshala. The Ashramshala, which is located on the outskirts of the village, serves only students from neighbouring villages and has teachers from outside the village. Children go to schools outside the village or Idar for higher education. The two preschools do not have a proper building. The elementary school also needs a few more rooms.

The village has been provided with electricity connection for agricultural, as well as domestic, use; three-hundred and fifty one households (about 86 per cent) have electric connection to their homes. There are street lights on all major internal roads. There is only one source of drinking water in the village, the group scheme that covers a group of 15 villages and brings water to the village from Dharoi Dam on the Sabarmati River located 50 km from the village. There is only one outlet for water supply in the village that was constructed by the Gujarat Water Supply and Sewerage Board. There are long queues for fetching water, with some women walking up to one km. Most households use this water for drinking and cooking, and use other local sources for washing and cleaning. Since the inter-village pipelines under the group scheme are not maintained well, there are frequent breakages and leakages, resulting in irregular and non-dependable water supply. There are one or two breakages every month, resulting in the lack of water supply for four to six days each month. The breakages increase in summer when there is general scarcity of water supply. Wards belonging to low castes, like Vaghari, Raval, Thakavada, and Vankar, reported a general shortage of water supply throughout the year, as they are last in the queue. Villagers believe that local sources of water are adequate (with 800 mm annual average rainfall and a small river passing by the village) if harnessed well. Deepening of two tanks and construction of wells can solve their problem forever.

As far individual/household-level amenities and facilities are concerned, 140 households have individual water connection, 351 households (85 per cent) have electricity connection, and 156 households (34 per cent) have individual bathrooms. Not a single household has a drainage connection.

**Major gaps** in basic amenities and facilities are as follows:

- The village does not have reliable and sustainable water supply in all wards and in all seasons;

- The village lacks drainage facility and arrangement for disposal of solid and liquid waste. Most houses lack toilets and bathrooms;
- The village does not have internal paved roads in all wards;
- The two preschools do not have a room and other facilities like toilets and drinking water and the elementary school does not have an adequate number of rooms;
- There is no health facility in the village; and
- The village has a small panchayat office, but no community hall or a library.

## 2.2 Poverty and Human Development in Nana Kotda

### a. Income poverty

According to official data, 67 households have been declared as below poverty line (BPL) households.<sup>19</sup> This figure is misleading, as the concept of “poverty line” is extremely narrow here; it is primarily based on the norms of calorie consumption (2,100 calories per capita per day). The poverty line includes neither adequate nutrition, nor other basic needs like clothing, housing, etc.

**Table 2: Incidence of Poverty in Nana Kotda**

Occupation	Per cent of Below Poverty Line Households
<b>Agriculture</b>	<b>11.76</b>
Marginal	14.76
Small	4.05
Other	0.00
Self-employed in non-professional non-agriculture	17.14
Agricultural labour	21.23
Other labour	33.33
Service (government)	0.00
Service (private)	3.40
Animal husbandry	12.50
Interest/royalties income	15.00
Pension income	50.00
Beggar	100.00
Destitute	82.50
<b>Total</b>	<b>16.58</b>

The incidence of poverty is highest on agricultural labour households and other labour households, being 21.23 and 33.33 per cent, respectively. This is followed by self-employed in non-agriculture and marginal farmers, and then by households employed in animal husbandry. Beggar households and the destitute are clearly below the poverty line. Pensioner households also are poor, as the old age pension given to those belonging to BPL households is not enough to keep them above the poverty line. As regards social grouping of the poor, 93 per cent of the poor belong to the low castes and 15 per cent households are female-headed.

<sup>19</sup> Poverty line is basically determined primarily on the basis of calorie norms.

Educational achievement reflects the quality of life enjoyed by people on the one hand and the level of their skills and productivity on the other hand. Nana Kotda is very poor in educational achievements, with half the adult women in the village being illiterate and 18 per cent having studied up to fifth standard. In the case of men, 22.35 are illiterate, 14 per cent have studied up to the tenth standard, and the rest above tenth standard. Also, 9.65 per cent of boys and 25 per cent of girls in the age group 6–14 years do not go to school. The scheduled tribes are the least educated, followed by OBC, and the scheduled castes.

We do not have data on life expectancy at birth (LEB), infant mortality rate (IMR), etc. Our investigation reveals that major health problems in the village are water-borne diseases (diarrhea, typhoid, gastro, etc.), malaria, and diseases related to unclean environment. This is largely because of the shortage of potable water, absence of a clean environment, and lack of a reliable health facility in the village. One of the major causes of indebtedness in the village is sickness and this has been a major source of vulnerability and poverty.

### **2.3 Labour and Employment in Nana Kotda**

#### ***a. Major occupations in Nana Kotda***

The village economy is predominantly agricultural, with most households engaged in crop cultivation and animal husbandry. There are 102 households whose main occupation is crop cultivation and 45 households whose secondary occupation is crop cultivation, bringing the total to 147 farming households. Animal husbandry is another important activity; about 16 households have animal husbandry as their main occupation and 107 households have it as a secondary occupation. These households earn a living from selling milk, meat, and wool, and from using animals for transportation. The most important occupations in the village are agricultural labour and other manual labour. In all, 203 households (51 per cent) reported labour as their main source of income and 68 households (16.83 per cent), usually with small land holdings or small income sources, depend on labour for supplementing their income. Twenty-eight households are self-employed in the manufacturing sector, trade, and services. Many of them go to Idar, the block headquarter, for service and business. There are a few shops in the village and a few vendors. Some households are engaged in trade and services, such as government services in and outside the village, as well as private services like hiring of tractors and threshers, domestic service, helpers in tailoring shops and in the flour mill, catering, astrologer, Pujari (priest), and other services). About 19 households depend on pension, interest/rent income, help from relatives, or begging. About 70 per cent of households have more than one source of income. This is because one job does not provide full-time employment or enough income. In short, the economy of Nana Kotda is predominantly agricultural with a very small non-agricultural sector and suffers from low and fluctuating agricultural incomes.

#### ***b. Underemployment of workers***

Workforce participation rates for men and women in the village are 78.38 and 64.52 per cent, respectively. However, the average annual employment is 132 days. There is not much difference in the days of work for men and women. Except for those employed in government services, no occupation provides full employment (except for begging). The highest number of person-days are provided by government services (365 days), followed by private services (225 days), and self-employment in non-agriculture (207 days).

Low employment of large farmers (141 days) is perhaps voluntary, as their annual income is more than Rs.100,000. Low employment of agricultural labour households (128 days), marginal farmer households (120 days), and small farmers (121 days) does indicate a significant level of seasonal unemployment, arising from the predominance of single-crop farming in the village. In the absence of assured water supply, most farmers in the village grow only one crop (i.e., kharif). Landless agricultural labourers migrate or commute to nearby villages for work. Similarly, households with animal husbandry as their main occupation also are highly underemployed (121 days of employment). A worker in the village works for 132 days in a year. If 270 days of employment is considered as full employment, almost all occupations in the village (except government service) fail to provide full employment. In other words, the incidence of unemployment is significant. Though women's employment is not less than that of men's, it is much less diversified. Men spend 42 per cent days on agriculture (crop farming) compared to 70 per cent for women. Again, men spend almost half of their days on non-agricultural activities as against a mere 11 per cent by women.

**Table 3: Employment of Workforce in Nana Kotda by Household Occupation**

Main Occupation of HHs	No. of HH S	No. of HH Members			No. of Workers			No. of Work Days			Average No. of Work Days		
		M	F	T	M	F	T	M	F	T	M	F	T
Agriculture	102	347	308	655	343	287	630	38,747	36,914	75,661	113.00	128.60	120.10
MF	63	220	201	210	144	119	263	15,572	16,342	31,914	108.14	137.33	121.35
SF	30	77	59	105	53	41	94	7,711	7,360	15,071	145.49	179.51	160.33
LF	9	50	48	39	17	15	32	1,915	2,604	4,519	112.65	173.60	141.22
SENA	27	64	54	118	44	10	54	9,625	1,585	11,210	218.80	158.50	207.59
AL	192	460	451	911	308	263	571	37,586	35,083	72,669	122.00	133.40	127.27
OL	1	3	2	5	7	7	14	981	726	1,707	140.10	103.70	121.93
Service G	6	18	11	29	13	3	16	4,745	1,095	5,840	365.00	365.00	365.00
Service P	18	48	37	85	30	8	38	6,627	1,907	8,534	220.90	238.40	224.58
AH	5	13	15	28	4	0	4	485	0	485	121.30	0.00	121.25
Interest	2	0	2	2	0	2	2	0	365	365	0.00	182.50	182.50
Pension	3	0	3	3	4	0	4	1,095	0	1,095	273.80	0.00	273.75
Beggar	1	0	1	1	2	0	2	730	0	730	365.00	0.00	365.00
Destitute	8	2	7	9	0	0	0	0	0	0	0.00	0.00	0.00
Closed House				0	0	0	0	0	0	0	0.00	0.00	0.00
<b>Total</b>	<b>404</b>	<b>968</b>	<b>902</b>	<b>1,870</b>	<b>758</b>	<b>582</b>	<b>1,340</b>	<b>99,560</b>	<b>77,174</b>	<b>176,734</b>	<b>132.30</b>	<b>132.60</b>	<b>132.4</b>

**Note:** MF=marginal farmer; SF=small farmer; LF=large farmer; SEN A=self-employed in non-agriculture; AL=agricultural labour; OL=other labour

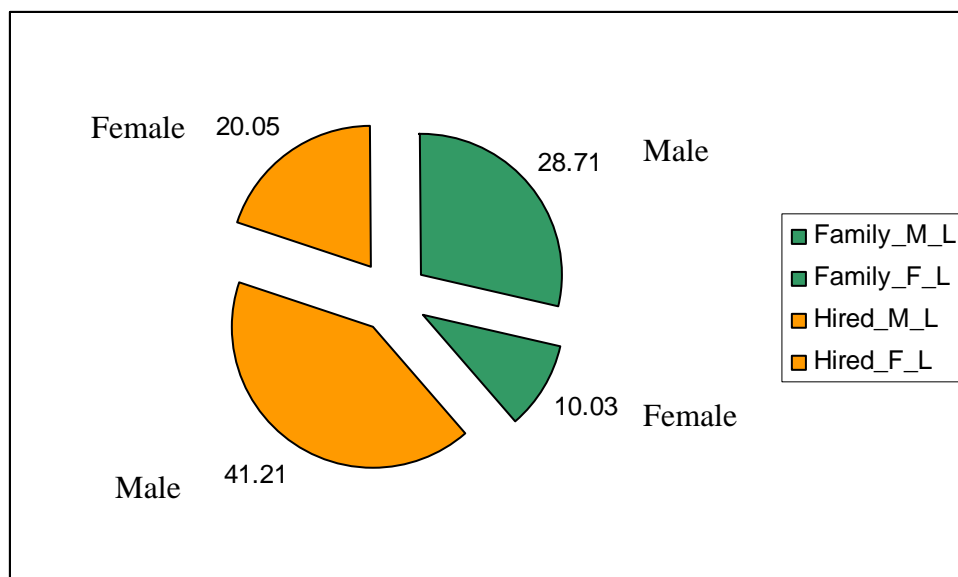
It is clear that there is a need to at least double the level of employment in the village. About 400 workers from labour households and 300 workers from small and marginal farmers want more wage work. In addition, there are others wanting more work. The educational status of the workforce is very poor. Except for government service, no other occupation seems to need high and formal educational qualifications. Of the total work force in the village, 34 per cent is illiterate, 20 per cent has studied up to the primary level, and 30 per cent have studied up to

secondary level. The rest have higher qualifications, but none have any formal technical qualification.

**c. Hired and family labour**

Family labour constitutes an important part of the total workforce, as it is a common practice to work on family farms/enterprises. Hired labour income and family labour income constitute 61.36 per cent and 38.74 per cent, respectively, of the total labour income in the village. Of these, women’s shares are 20.05 per cent and 10.03 per cent, respectively. In other words, women contribute 34.94 per cent to the total family labour income and 25.89 per cent of the total hired labour income. To put it differently, women contribute 30.08 per cent of the total labour income in the village. Of this, one-third is family labour and two-thirds is hired labour. In the case of men, about 60 per cent labour is hired labour. About 70 per cent of total labour income is produced by men.

**Figure 4: Distribution of Labour Incomes by Hired/Family Labour Status and Sex**



**d. In and out migration of workers**

All labour in the village is local except for a few school teachers and majority of workers in the ginning factory who come from outside the village. The ginning factory employs mainly migrant workers because they come at a lower wage rate. There is no out migration for work. However, there is a lot of commuting for work, as all government servants who work in Idar commute. Those engaged in small business or in private services also commute (mainly to Idar). About 200 workers commute to nearby villages for agricultural and non-agricultural unskilled work. Unskilled workers indicated that they would prefer to work in their own village if work is available. The percentage of women migrating out is very small.



### *e. Wages and wage structure*

The average wage rate in agriculture and other unskilled work is Rs50.00 per day (2006–07). However, the working hours are usually longer than eight hours. There are no seasonal differences in the wage rate, but farmers usually employ and compensate workers for half a day during the lean season while they habitually make workers work for more than the agreed upon four hours. This results in lower wage rates in the lean season. Workers migrating to nearby villages earn up to Rs55.00 per day; they consistently report that they would prefer to work in the village, because, they spend time and money in travelling and the wage difference is not big enough to cover these additional costs.

### *f. Quality of employment*

All employment (except permanent government servants) in the village is temporary, contractual, or casual. Some operations in crop cultivation are paid on the basis of work performed. There is no social protection or social security, and legal regulations of work conditions are not implemented effectively in the village except in government services, where there are rules regarding working hours, leave, and some times social protection.

## **2.4 Consumption and Savings and Indebtedness**

### *a. Household consumption expenditure*

The average household consumption expenditure in the village is Rs.34,035 (at 2006–07 prices). This comes to Rs.7,608 per capita per year, which is indeed very low. As expected, large farmers enjoy the highest average consumption expenditure per household at Rs.71,389 (2006–07), followed by service households (Rs.62,953) and small farmers (Rs.51,367). Labour households have the lowest average annual consumption expenditure, Rs.34,176, along with other households (pensioners, destitute, etc.), whose expenditure is Rs.20,061. Almost half of the expenditure is incurred on food items. This is followed by consumer durables (beds, utensils, cupboards, fans, etc.), and then by health and education. As one would expect, the proportion of expenditure on food is minimum for big farmers (35.37 per cent) and maximum for self-employed in non-agriculture households (57.81 per cent). Labour households spend relatively large amounts on food grains and less on milk and milk products compared to self-employed in non-agriculture households.

Households belonging to the lowest income groups (i.e. labour households, marginal farmers and self-employed in non-agriculture) spend a very high percentage on health and medical services. Marginal farmers allocate 10.05 per cent (Rs.3,575), small farmers spend 8.63 per cent (Rs.4433), and labour households allocated 8.17 per cent of their expenditures (Rs.1,758) on health. These amounts are larger than the corresponding amounts spent by large farmers and those employed in government services. Expenditure on health is lowest for large farmers and government service households. This indicates the poor health conditions and a high incidence of morbidity of the poorer groups on the one hand and very low access to government health services (where they get medical services almost free) on the other hand. It appears that the better-off groups have better access to free/subsidized government health facilities! As we shall soon see, the high health expenditure is an important cause of the indebtedness, vulnerability, and poverty of the poorer groups. At the village level, 8 per cent of the total expenditure is on health and medical services.

The high percentage of expenditure incurred on health and medical services also indicates that there is a good scope for strengthening health-related infrastructure in the village. NREGS can help here though the provision of potable drinking water to all, drainage facilities, toilets, and the paving of internal roads, all of which can contribute towards improving the overall health status of people.

The average household expenditure on education is 5.09 per cent. For the poorer groups it varies between 2 and 5 per cent. This implies that even free education is not free, as households have to spend on books and stationary. Households employed in government services spend a high portion (12.38 per cent) on education since they send their children out for higher education. The poorer groups incur low expenditure on consumer durables—they spend less on tobacco and paan (betel leaf) and very the least on fuel, as they get free firewood from common lands.

### ***b. Household savings***

The total savings of all the households in the village is Rs.25.9 lakh.<sup>20</sup> It is the big farmers who save the most, followed by services households. Labour households to have almost negligible savings. All other households have negative savings. It needs to be noted that the savings refer to the average of the two normal years in agriculture.

### ***c. Indebtedness of households***

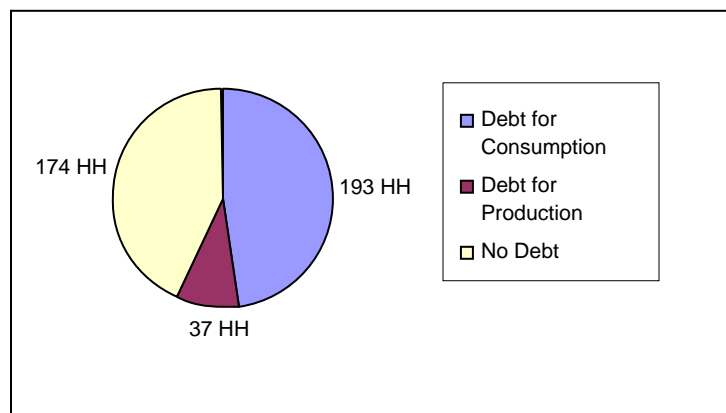
Low income and consumption levels, unstable and less-developed agriculture (the main occupation in the village), and lack of adequate employment avenues have pushed many households into debt. Households seem to incur debts for consumption smoothing; social functions such as funerals, marriages, etc; sudden emergencies, like ill health; education of children; and, for production purposes (buying capital and other inputs). Since financial institutions do not give loans for consumption, the households have borrowed from private sources including from local money-lenders, employers, large farmers, relatives, etc. These loans are usually unfavourable in terms of rate of interest charged and other conditions, and the households frequently find it difficult to get out of the debt trap.

Debt incurred for consumption in the village is Rs.64.97 lakh, which comes to about 84 per cent of total debt in the village. The debt/loans for production constitute only 16 per cent of total debt and only 9 per cent of the households are able to access it. About 48 per cent of the households have incurred debts for consumption (the average amount being Rs.33,667) and 37 households (9.01 per cent) have incurred debt for production purposes. About 65 per cent of the indebted households (for consumption loan) are labour households and 19 per cent are farmers (all marginal farmers). That is, the highest incidence of indebtedness is on agricultural labour households and small farmers.

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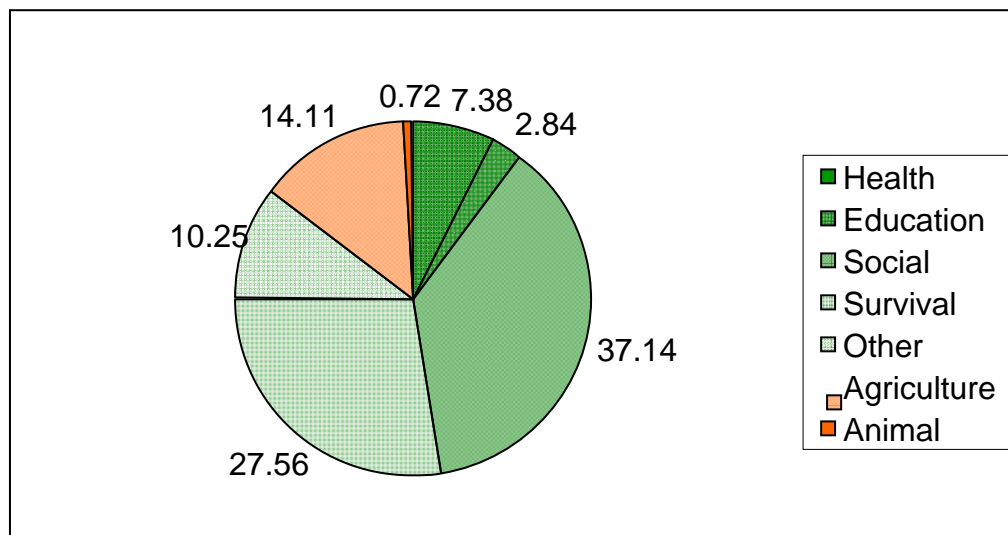
<sup>20</sup> 1 lakh = 100,000  
1 crore = 100,100,000

**Figure 5: Indebtedness in Nana Kotda (shares of households)**



The most important reason for incurring debt is social functions, such as weddings, funerals, and other social celebrations (37.14 per cent), followed by survival, for example, for buying food and other basic necessities (27.56 per cent), and ill health (10.25 per cent). It is important to note that about one-fourth of the indebted households have incurred debt for health reasons and the amount of this debt is 10 per cent of total.

**Figure 6: Purpose of Incurring Debts (per cent of the total amount of debt)**



As seen above, less than 10 per cent of households have incurred debt for production. This debt is incurred mainly by farmers (mostly large farmers and a few small farmers). Other borrowers are agricultural labour households and (private) service households. About 80 per cent of households have incurred debt for agriculture (i.e., for buying equipment and machinery, inputs and irrigation). The rest have taken loans for buying animals.

In short, poverty and vulnerability on the one hand the lack of health facilities on the other are primarily responsible for the high incidence of indebtedness in the village. The average amount of debt incurred for consumption is Rs.33,666 per indebted household. The average debt for

production is almost the same, Rs.34,464 per household, but it is available to about 9 per cent of the total households.

**d. Social accounting matrix (SAM) for the village<sup>21</sup>**

We constructed a Social Accounting Matrix (SAM) for Nana Kotda to understand the dynamics of the village economy by analysing its different sectors. Technical details of the SAM are presented in the appendix at the end of this chapter. A SAM can be defined as an organized matrix representing of all transactions and transfers between different production activities, factors of production, and institutions (like households, corporate sector and government) within the economy and with respect to the rest of the world. It is, thus, a comprehensive accounting framework within which the full circular flow of income from production to factor incomes, household income to household consumption, and back to production is captured. A SAM covers production activities (crop husbandry, animal husbandry, construction, service-providers and self-employed, manufacturing, and services), factors of production (labour and capital), institutions (households, government), and transactions with the external to the village economy (exports and imports, if you may). A complete census of all households in the village was carried out to collect data on all entities and sector-wise expenditure of different types of households and data about occupation and education level of all household members. In addition, detailed information was collected from all institutions/organizations like schools, cooperative societies, and panchayats about their activities, costs, and revenues.

**Figure 7: Aggregated SAM, 2006–07 (in Rs.)**

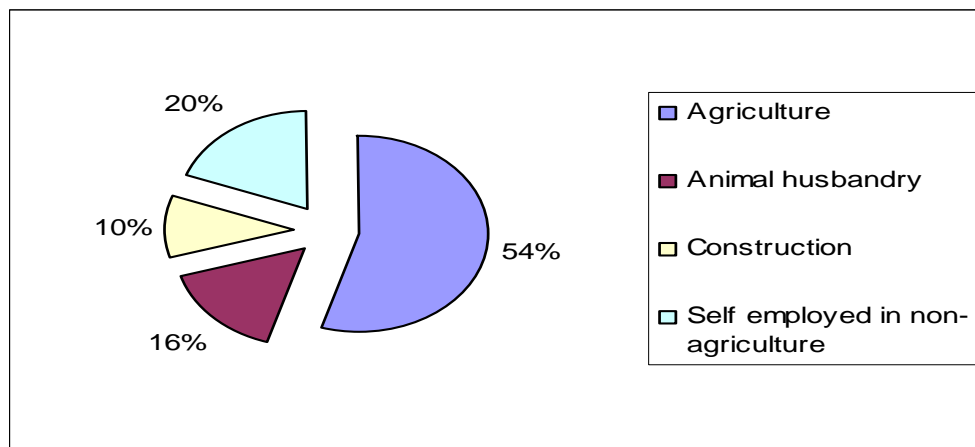
			Expenditures					Totals	
			Endogenous			Exogenous			
			Factors	Households	Productive activities	Government	Rest of the world		Capital account
RECEIPTS or Incomes	Endogenous	Factors	0	0	29,515,186	80,146	-14,317,045	0	15,278,287
		Households	15,278,305	0	0	1,512,000	0	0	16,790,305
		Productive activity	0	13,992,536	158,621,685	128,600	172,692,294	1,440,525	345,435,115
	Exogenous	Government	0	183,000	0	0	0	0	183,000
		Rest of the world	0	0	158,738,767	0	0	0	158,738,767
		Capital accounts	0	2,614,753	0	-1,537,746	363,518	0	1,440,525
		Totals	15,278,305	16,790,289	346,875,638	183,000	158,738,767	1,440,525	

<sup>21</sup> The full technical details are presented in the appendix 1 at the end of this chapter.

**e. Contribution of different sectors to village economy**

SAM for the village consists of 55 producing sectors. Total production of all the sectors inside the village is Rs.186.00 million and items worth Rs.158.9 million come from outside the village. The high value of internal production of the village economy is mainly because of the cotton ginning factory whose output is Rs.167.0 million and which forms 90 per cent of the output produced in the village. Similarly, the huge import figure is because the cotton ginning factory imports raw cotton of worth Rs.145.0 million, which forms 91.2 per cent of the imported items. If we exclude the cotton ginning factory, the total output in the village is Rs.18.62 million.

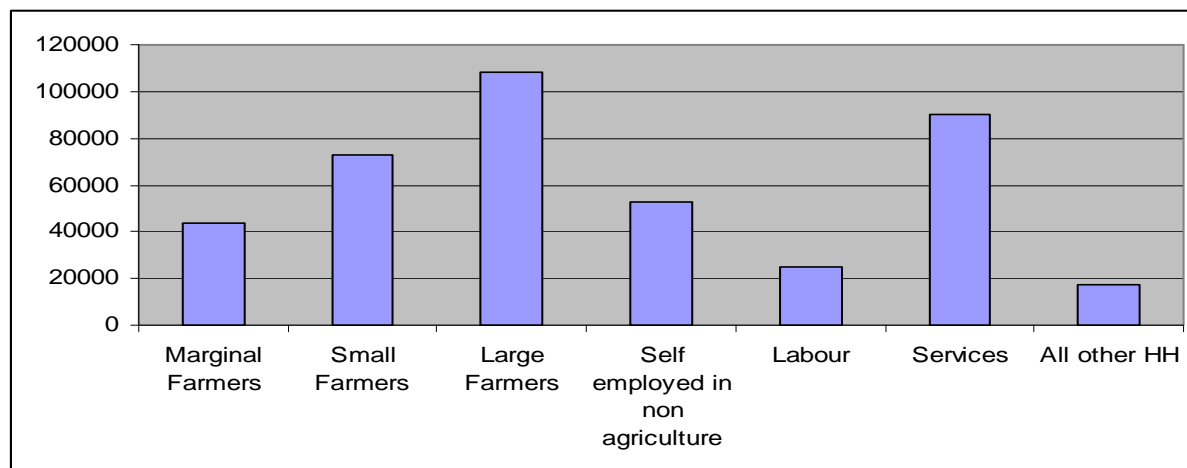
**Figure 8: Sectoral Distribution of Output**



Agriculture forms 54 per cent of the total value of output of all sectors, followed by 20 per cent in self-employed in non-agriculture, 16 per cent in animal husbandry, and 10 per cent in construction. More than 72 per cent of the households in the village depend on crop cultivation, however, the contribution of agriculture to the village output is only 54 per cent.

The average annual income per household in the village is Rs.45,296, which comes to Rs.9,846 per capita. The highest income per household is earned by large farmers (Rs.108,264), followed by service households (Rs.90,448), small farmers (Rs.72,974), and self-employed in non-agriculture (Rs.52,711). The lowest income is of labour households (Rs.24,711) and other households (Rs.17,485). Labour households, which constitute 47.3 per cent of the total households, earn only about one-fourth of the total village income. On the other end, large farmers, who constitute 4.7 per cent of the household, earn more than 11 per cent of the village income.

**Figure 9: Annual Income of Households by Occupation**



**f. Agriculture in Nana Kotda**

Major crops grown in the village are cotton, maize, jowar, wheat, tur, and other pulses, as well as castor and groundnut.

**Table 4: Crops Grown in Nana Kotda**

Name of crop	Irrigated area (in acres)	Non-irrigated area (in acres)	Total area (in acres)
Maize	24.70	81.51	106.21
Cotton	24.70	49.40	74.10
Jowar	12.35	34.58	46.93
Tur	19.76	37.05	56.81
Udad/mug	7.41	14.82	22.23
Wheat	19.76	61.75	81.51
Tomato	9.88	19.76	29.64
Castor	44.46	93.86	138.32
Groundnut	9.88	24.70	34.58
Bajari	0.00	2.470	2.47
<b>Total</b>	<b>172.90</b>	<b>419.90</b>	<b>592.80</b>

About 30 per cent of the cultivated area is irrigated and 70 per cent area is rain-fed. Agricultural production in the village shows wide fluctuations because of variations in rainfall. In every five years there are two to three years of droughts or floods that result in agricultural losses. For example, in 2006–07, the year of investigation, farmers in the village experienced huge losses owing to floods and diseases. Total agricultural production was Rs.40 lakh, as against total costs of Rs.49.88 lakh. All categories of farmers reported losses. The rates of return were: 29 per cent for marginal farmers, 36 per cent for small farmers, and 11 per cent for

large farmers. Such losses result in farmers mortgaging or selling their land and in incurring debts. In short, fluctuating crop production makes cultivation overall non-viable and makes small and marginal farmers highly vulnerable.

**Table 5: Returns on Agriculture by Marginal, Small, and Large Farmers in 2005–06 (bad year; in Rs.)**

	Marginal farmers	Small farmers	Large farmers
Production	1,517,140	1,097,350	1,385,510
Inputs	903,686	555,692	579,513
Female Hired Labour	309,234	344,996	423,672
Male Hired Labour	342,171	441,796	441,796
Female Family Labour	184,150	60,250	37,900
Male Family Labour	216,500	88,500	57,900
Profits	-438,602	-393,884	-155,271
Profit per Household (annual)	-3,814	-10,941	-6,470
Number of Households	115	36	24
<b>Returns (profit/output)</b>	<b>-0.29</b>	<b>-0.36</b>	<b>-0.11</b>

In a normal year, however, crop cultivation is viable, with positive returns. The average production of two normal years (2003–04 and 2004–05) has been used as normal production in our analysis. As the table indicates, total output in normal years is Rs.100.20 lakh and net profit is Rs.50.32 lakh. The rate of returns (profits) is 49 per cent, 46 per cent, and 56 per cent for marginal, small, and large farmers, respectively. The average annual income earned by a marginal farmer (Rs.16,041) is almost one-fifth of the income earned by a large farmer (Rs.80,413) from crop cultivation.

***g. Value-added by different crops***

Cotton is the most frequently cultivated crop in the village (Rs. 50 lakh), followed by wheat (Rs 21.04 lakh) and maize (Rs 14.6 lakh). Other crops like Jowar, bajra, tur, etc report much lower production.

**Table 6: Crop-wise Value of Output, Value-added, and Inputs Consumed (in Rs.)**

	Wheat	Jowar	Bajra	Maize	Tur	Pulses	Castor	Ground-nut	Cotton	Fruit and vegetable	Other crops
Seed	198,450	7,580	350	33,510	4,932	850	4,900	800	233,490	5,720	17,828
Animal husbandry	91,200	21,872	4,100	145,200	36,785	3,450	5,000	3,200	260,180	6,250	17,828
Fertilizer	67,900	19,600	1,500	84,175	24,115	1,275	5,500	1,500	174,840	4,425	
Pesticide	15,600	2,400	0	7,250	0	0	1,100	500	104,250	2,150	
Electricity	5,179	0	0	5,179	0	0	0	0	0		
Other expenditure	5,612	0	0	5,612	0	0	0	0	0		
Equipment and repair	1,897	0	0	1,897	0	0	0	0	0		
Transport	48,675	10,450	1,200	61,975	30,518	0	4,600	1,600	126,800	1,500	
Other services	48,971	600	500	49,381	1,090	0	1,200	500	500	1,900	
Labour M	301,651	42,908	3,762	230,454	39,837	8,404	17,307	13,200	531,377	8,077	71,313
Labour F	224,048	30,936	3,762	195,796	39,837	6,876	17,307	13,200	507,279	8,077	71,313
Capital	1,095,425	98,249	19,476	642,538	68,360	51,910	123,982	97,500	3,055,835	42,673	534,848
From outside the village	0	0	58,854	0	0	145,319	0	0	145,321,035	336,072	92,228
<b>Total</b>	<b>2,104,608</b>	<b>234,595</b>	<b>93,504</b>	<b>1,462,967</b>	<b>245,473</b>	<b>218,084</b>	<b>180,896</b>	<b>132,000</b>	<b>150,315,586</b>	<b>416,844</b>	<b>805,358</b>

The Farmers Service Society (FSS), which provides inputs as well as marketing services to farmers, has 410 members. FSS buys fertilizer (urea, DAP, Narmada force, biogold, superphos, etc.), seeds, and pesticides in bulk from outside and sells these to farmers with a small profit. FSS also borrows from outside and lends to local farmers at a slightly higher interest rate. In 2006–07, FSS sold fertilizers worth Rs.2.25 lakh and seeds worth Rs. 1.25 lakh. It lent Rs.45.00 lakh to local farmers and made a small profit of Rs.52,068. It supports the Agriculture Department in organizing meetings, demonstrations, training programmes, etc. to help farmers adopt new technologies.

#### ***h. Animal husbandry and milk cooperative society***

There is a milk cooperative society in the village with more than 410 members (sometimes there is more than one member from a household). It collects surplus milk from the village to send it to the district diary, Sabar Diary, which processes it and sells milk and milk products to outside markets. In 2006–07, the society collected about 4.15 lakh liters of milk. Of this, 36.4 per cent was cow milk and the rest was buffalo milk. The society provides veterinary services, cattle feed, medicines, etc. for milch animals. It earned a profit of Rs.1.14 lakh in 2006–07. This came to an average of Rs.285 per member (in addition to milk price), which is a pittance. It is clear that, like agriculture, this sector, which is a major source of livelihood, suffers from low productivity and low incomes. There is a need to raise the productivity by improving the breeds, ensuring water supply and quality fodder, and by increasing the number of milch animals. NREGS can play a role here.

Animals are also used for carrying loads and transporting people/luggage, as well as for wool. In all, 170 households are engaged in these activities and the total returns (profits) are Rs.3.48 lakh, which gives, on an average, an annual income of Rs.2,049. It is clear that the activity yields low incomes and there is a need to increase it by increasing number of animals as well as their productivity. It is important to note that family labour is predominant in animal husbandry. Of the total person-days of employment in this sector, 76.9 per cent are of family



labour. Of this, 73 per cent is women’s labour. Hired labour is male labour only. This is largely in animal grazing and related activities. Women’s share in total labour is 56 per cent.

**Table 7: Animal Husbandry in Nana Kotda**

Items	(in Rs.)
Output	2,989,812
Inputs	1,349,730
Hired labour M	298,981
Hired labour F	0
Family labour M	273,380
Family labour F	719,420
Profits	348,301
Number of households having animals	170
Profits per household (annual)	2,049
Returns (profits/output)	0.116

**Note:** It is assumed that a person spends on an average 4 hours a day on animal husbandry activities and gets Rs. 4 for an hour

***i. Non-agricultural sectors***

Non-agricultural enterprises and non-agricultural employment are located inside and outside the village. The value of total output produced in non-agricultural sectors is Rs.3,687,510 and the value of total inputs is Rs.2,079,695. This sector contributes 37 per cent of total output in the village. The occupations in this group are vendors (bangle vendors, fruit and vegetable vendors, barbers), rural artisans/manufacturing (carpenter), shops (a cloth shop, pan shops, a PDS shop), and services. The value of output in the reference year is the most for carpenters (Rs.721,200), followed by that for transport, pan shop, cloth shop, other services, and the PDS shop. The highest annual income is earned by the cloth shop owner (Rs.137,700), followed by transporters. Households of government servants also earn relatively good money (Rs.42,000). Others engaged in petty trade and petty services earn less than Rs.25,000 a year. This barely meets their basic needs.

**Table 8: Self-employed in Non-agriculture: Annual Revenue and Income**

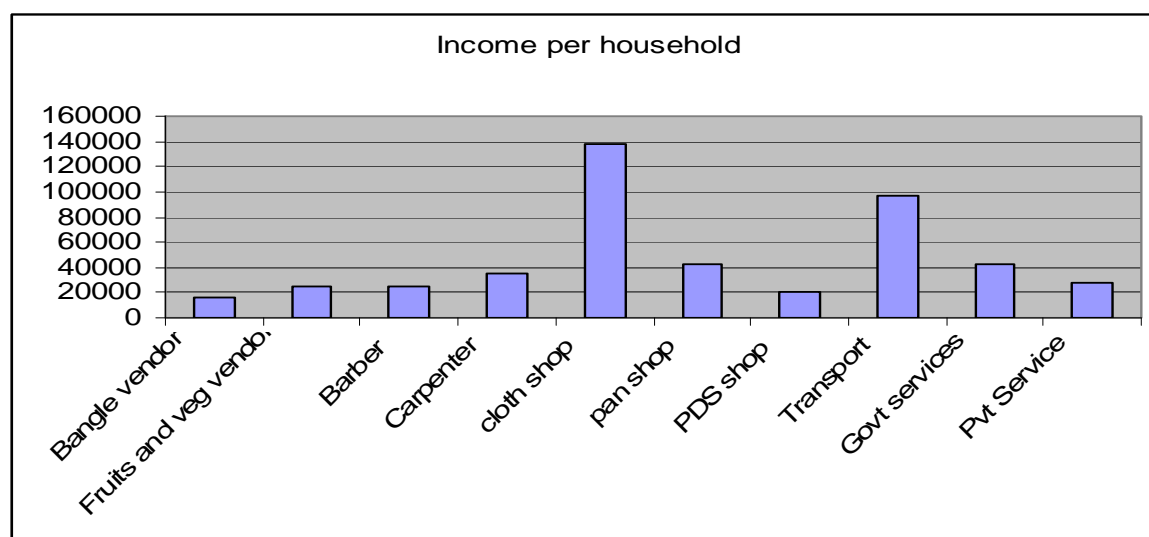
Main occupation	Number of households	Revenue (in Rs.)	Income (in Rs.)	Income per household (in Rs.)
Bangle vendor	2	112,000	32,000	16,000
Fruit and vegetable vendor	6	278,000	146,600	24,433
Barber	3	90,000	74,875	24,958
Carpenter	8	721,200	276,000	34,500
Cloth shop	1	560,000	137,700	137,700
Pan shop	2	588,000	84,000	42,000
PDS shop	1	408,000	20,480	20,480
Transport	5	619,000	485,640	97,128
Government services	16		674,140	42,134
Private services	35		956,980	27,342

**Note:** Revenue - Expenditure = Income

***j. The public distribution shop (PDS)***

The PDS shop in the village acquires supplies of essential commodities (wheat, rice, sugar, oil, and kerosene) from the government and sells these to the villagers. There are two sets of buyers, below poverty line (BPL) households and above poverty line (APL) households. The commodities are sold at fixed (fair) prices and in limited quotas. All supplies come from outside the village and are sold within the village. In 2006–07, the PDS shop sold commodities worth Rs.3.40 lakh and made a small profit of Rs.20,480. The low earnings of the PDS shop was because of its limited business. However, managing the shop is a part-time business, as it is open for a few hours in the morning only.

**Figure 10: Income per Household by Occupation**



### ***k. The ginning factory***

There are quite a few ginning factories in this cotton growing region. There is a ginning factory, Surod Ginning and Pressing Factory, in Nana Kotda that works eight months a year. It buys cotton from the surrounding villages and produces cotton bales that are sold to spinning mills in the state. There is a huge demand for cotton bales from purchasers who come to Nana Kotda to buy it. The factory, set up in 1968, employs 64 workers on contract basis and has a manager supported by a small permanent staff of four persons (an accountant, an office boy, and two watchmen). Of the contract workers, 44 are men and 20 are women. In 2006–07, the factory purchased 750,000 kg cotton and sold 15,000 bales (each 165 kg) and 4.8 million kg of cotton seeds. The factory made a profit of Rs.15.0 million.

### ***l. Village panchayat (local body)***

The local elected government, the village panchayat, is responsible for the affairs of the village. It is headed by a *sarpanch*, the elected head of the village, and eight elected members to support him. The panchayat is supported by a *talati* who acts as secretary of the panchayat. The talati (the revenue man) is the secretary to four other village panchayats. The income of the panchayat comes from government grants for different schemes and programmes, local taxes, and donations made by local people or the Member of the Legislative Assembly/Member of Parliament (MLA/MP). In 2006–07, the panchayat received a grant of Rs.19.4 lakh for different programmes like housing schemes (Rs.15.12lakh), NREGS, street lights, road construction, etc. All the funds were spent on specified schemes and programmes.

### ***m. Consumption expenditure of different categories of households***

The following table on consumption expenditure of village households shows that labour households spend the highest per cent of their expenditure on food items (56.54 per cent) followed by small and marginal farmers (46.86 per cent and 47.49 percentages, respectively). Households with services as their main occupation and large farmers spend the lowest percentage on food items, 36.63 and 37.17 per cent, respectively. The composition of the food items, however, reveals that the richer households spend a larger per cent on fruits, milk, and vegetables, while the poorer households spend large amounts on food grains. Another interesting point is that households allocate more than one-fifth of their expenditure (23.54 per cent) to consumer durables. The highest percentage is spent by large farmers (45.67 per cent), followed by households in services. Labour households spent the lowest percentage (10.03 per cent) on these items. The high percentage of expenditure on health and education by labour households (14.60 per cent) and small and marginal farmers (14.33 and 18.55 percent, respectively) indicates the non-availability of free health and educational services in the village. As we have already seen, people in the village have poor access to public health services and they have to spend huge amounts on healthcare. Households cannot avoid spending on medicines if there is illness in the family, but they can avoid paying for education if they do not want to spend on school fees or books. Finally, at the village level, food items have the maximum share in total consumption expenditure (about half the expenditure is on food items), followed by consumer durables (23.54 per cent), such as beds, tables, chairs, and other furniture, as well as radio/TV/mobiles, etc. Around 11 per cent is spent on health and education and 9 per cent on housing (mainly electricity).

It is to be noted that except for some food items and housing, most of the consumption goods and services come from outside the village. As it will be soon seen, this tends to restrict the impact of NREGS works on the village economy.

**Table 9: Percentage Distribution of Consumption of Commodities and Services by Different Categories of Households, 2006–07**

	Marginal farmers	Small farmers	Large farmers	Self - employed in non-agriculture	Labour	Services	All other HH
Food grains	13.22	12.67	8.08	10.77	23.35	7.13	10.71
Fruits and vegetable, milk/animal products	12.98	17.35	18.97	20.95	9.12	15.86	17.74
Other food items	3.75	3.03	2.20	4.54	5.52	3.11	4.73
Total fuel	15.91	14.43	8.10	11.54	18.54	10.52	18.31
Subtotal	<b>45.86</b>	<b>47.49</b>	<b>37.17</b>	<b>47.81</b>	<b>56.54</b>	<b>36.63</b>	<b>49.09</b>
Clothing and cosmetics	4.34	3.61	6.35	5.89	7.87	3.58	4.60
Consumer durables	26.61	27.68	45.67	27.42	10.03	31.87	23.54
Health and education	18.55	14.33	9.37	12.31	14.60	21.62	11.37
Rent and electricity	6.64	6.89	4.44	6.58	10.97	6.30	9.00
Grand total	100.00	100.00	100.00	100.00	100.00	100.00	100.00
<b>Total (Rs.)</b>	<b>3,515,993</b>	<b>1,438,279</b>	<b>1,356,384</b>	<b>922,763</b>	<b>4,706,603</b>	<b>1,535,779</b>	<b>542,542</b>

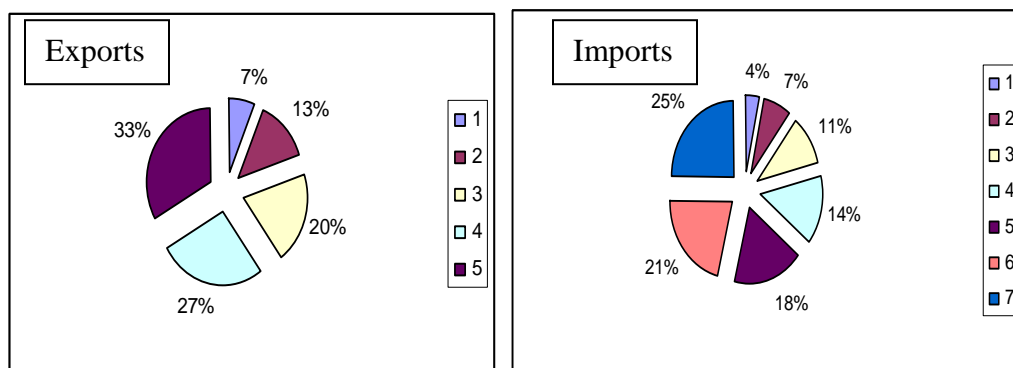
***n. Exports from and imports to Nana Kotda***

Total exports from the village are worth Rs.1,727.26 lakh, of which cotton (along with cotton seeds) forms the major part (the ginning factory). If we exclude the ginning factory, the highest exports are of agricultural crops like maize, wheat, castor, Jowar, etc. (Rs.24.62 lakh), followed by animal husbandry (Rs.12.68 lakh). Other exporting sectors are carpentry and education (figure 10).

Total imports to the village are worth Rs.1,589.19 lakh, of which cotton is the most important with a value of Rs.1,453.10 lakh. Imports include food grains (including rice and wheat not grown in the village), fruits and vegetables, other food items (tea, coffee, spices, sugar, etc.), textiles, consumer durables (furniture, bicycles, and two/four wheelers), and construction

material. The village also depends on outside sources for health and medical services, for agricultural inputs (fertilizers, pesticides, equipment, etc.) for agriculture, and for other miscellaneous items.

**Figure 11: Composition of Exports and Imports from Nana Kotda**



**Note:** Exports: 1=Total Crops, 2=Animal Husbandry, 3=Cotton Ginning, 4=Education, 5=Carpentry

**Note:** Imports: 1=Food grains and other food items; 2=Fuelwood, LPG, kerosene, and electricity; 3=Consumer durables; 4=Construction material (bricks, sand, cement, metal sheets, etc.); 5=Medical and health services; 6=Others; and 7=House rent

The total gross value-added (GVA) of the village economy is Rs.152.00 lakh. Income from labour contributes 39.3 per cent of this and the rest is capital amounting to Rs.92.63 lakh. About 36.2 per cent of labour income comes from outside the village and the rest, Rs.3.83 million, is earned inside the village, with the major part being earned by labour households. Most of the income earned outside the village, about 91.7 per cent, comes from income earned by service households. The rest of the GVA, which is formed by way of capital amounting to Rs.92.63 lakh, is distributed among different categories of cultivator households, self-employed, and other households.

Land and house taxes paid by the village households come to Rs.183,000, except for the labour households who do not pay the tax since they do not have land. In addition, the panchayat gets grants from outside sources and distributes these to various sections of people as help for construction.

***o. To sum up***

Nana Kotda is a typical village, the economy of which is predominantly agricultural. Agriculture suffers from low and fluctuating yields. Animal husbandry, the second most important activity in the village, also yields low incomes. The village economy is poorly diversified because of its low and unstable incomes and poor infrastructure. The economy is far from closed. The village exports surplus agricultural products and a significant number of village households depend on government and private services in Idar or commute as unskilled workers to nearby villages. Half of the products consumed in the village come from outside, as the village has a poor production base. The village urgently requires some measures to stabilize and enhance agricultural production, strengthen the natural resource base to promote and diversify the primary sector, and improve the socioeconomic infrastructure for better quality of

life for people, as well as to provide enabling conditions and for diversification of the economy.

### **3. TIME USE PATTERNS IN NANA KOTDA AND THEIR IMPLICATIONS FOR NREGS**

One of the objectives of the study is to examine the feasibility, as well as the multiple impacts on the village economy, of reducing unpaid work of the poor (particularly poor women) through NREGS. It is expected that when unpaid work—which usually has low productivity, low remuneration, and is time consuming—is reduced, the unpaid worker enjoys less time stress and is in a position to participate in productive and remunerative work, including NREGS work. Since neither NREGS works already undertaken in the village nor the design of NREGS itself focuses directly on reducing unpaid work, this discussion will be largely based on the potential of reducing unpaid work in the village and its likely impacts on the village economy.

The data required for this analysis concerns the time use pattern of the village population. We are using two sources of time use data, namely, the Indian time use survey conducted in 1998–99, which covered Sabarkantha district where Nana Kotda is located, and the focus-group discussions organized in the village as a part of data collection. The former is the main source of the data and the latter is the supplementary source.

#### **3.1 Time Use Survey 1998–99**

The first (pilot) national level time use survey was conducted in six major states in India in 1998–99 by the Department of Statistics, Government of India. The objectives of the survey included the collection of comprehensive information on how people spend their time on different paid and unpaid activities.<sup>22</sup> In all, 18,591 households (12,750 rural and 5,841 urban) were selected for the survey. All members of the households (above 6 years) were selected for the purpose of recording their time use. The total number of persons selected for time use data collection was 77,593, of which 53,981 were from rural and 23,612 were from urban areas.

Gujarat, in which Nana Kotda village was located, was one of the states selected for the survey. Out of 19 districts in the state (in 1998–99), 7 were selected and, of these, 140 were rural centres/villages and 124 were urban centres. In all, 3,168 households were selected, of which 1,680 were rural households and 1,488 were urban households. Nana Kotda village is located in one of the districts (Sabarkantha) selected for the survey in Gujarat. We used the time use pattern of rural areas of this district for the study.

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<sup>22</sup> The specific objectives of the survey were: (1) to collect and analyse data on the time use pattern of people in selected states in India; (2) to use the data in generating more reliable estimates on the workforce and, if possible, national income as per the SNA 1993, and in computing the value of unpaid work; (3) to infer policy/programme implications from the analysis of the data on distribution of paid and unpaid work among men and women and nature of unpaid work and sharing of unpaid work by men and women; (4) to use the data to draw inferences for employment and welfare programmes, particularly for women and children; and (5) to develop a conceptual framework and suitable methodology for designing and conducting time use studies in India on a regular basis.

The Indian time use survey collected time use data through a well-designed set of schedules/survey instruments.<sup>23</sup> The main questionnaire was divided into three blocks. Block One collected data on major household characteristics, Block Two collected particulars of each of the household members (6 years +) selected for the survey, while Block Three collected data on how the members of the selected households spent their time during the past 24 hours. The data were collected for a normal weekday and a weekly variant day, as well as for an “abnormal” day if the selected day happened to be an “abnormal day.” Weekly estimates on time use were prepared based on the data.

Keeping in mind the level of literacy of its population, data collection was done by interviewers, who collected time use data for the previous day.<sup>24</sup> Women investigators were hired to collect information on women’s time use, particularly in rural areas where women are sometimes reluctant to speak freely to men. Two context variables were used for the collected information, namely whether the work was paid or unpaid, and whether the activity was performed within or outside home. Preparation of a detailed instruction manual in the local languages and intensive training workshops, along with a follow-up training workshop and close monitoring ensured good quality of data (Hirway 2003).

The Technical Advisory Committee designed a suitable classification for time use activities. This classification had nine major groups:

1. Primary production activities;
2. Secondary sector activities;
3. Territory sector activities (trade, business, and services);
4. Household maintenance, management, and shopping for own household;
5. Care of children, elderly, disabled and sick of own household;
6. Community voluntary services;
7. Learning;
8. Social and cultural activities and mass media; and
9. Personal care and self-maintenance.

The first three categories refer to SNA activities, the next three activities refer to non-SNA activities or unpaid domestic and community work, and the last three activities refer to personal activities. These broad major groups are divided into subgroups (two digits) and into three-digit activities. In all, there are 154 three-digit activities (see appendix). Interviewers were instructed to record activities performed by respondents in their own language and code and classify them as per the classification later on.

The following categories of unpaid work, which are identical to those used in the TUS of India 1998-99, were identified for the purpose of this study:

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<sup>23</sup> A Technical Advisory Committee, headed by Professor Indira Hirway, was set up by the Government of India (Ministry of Statistics and Programme Implementation) to finalize the design of the survey, methods of data collection, classification of activities, and data analysis.

<sup>24</sup> The interviewer asked how the respondents spent the day before and recorded chronologically the activities in one-hour time slots in the 24 hour time diary that was designed for entering the time use of respondents during the past 24 hours. No proxy was allowed for data collection. Investigators were instructed to visit the household more than once if any respondent was not available.

- Non-market SNA activities, which involved free collection of basic necessities like fetching water, collecting fuelwood, etc.;
- Non-market SNA activities, which involved free collection of raw material for Income-generating activities, such as collection of fodder for animals, collection of wood/bamboo for crafts, etc.;
- Non-market production of goods for self-consumption and subsistence crop cultivation;
- Unpaid non-SNA work involving care of children, the sick, old, and disabled in the Household;
- Unpaid non-SNA work related to domestic work; and
- Travelling (on foot)

### **3.2 Time Spent by Men and Women on Different Activities**

Men and women distribute their time broadly in three types of activities, namely, SNA activities or activities that are covered under national income accounting; non-SNA activities that fall outside the purview of national income accounting, but contribute to human well-being (cooking, washing, and cleaning, as well as the care of children, old, and sick for own household); and personal activities that are related to personal care and well-being, but are non-delegable (sleeping, watching movies, listening to music, personal care, etc.).

Table 10 shows that men spend 44.83 hours in a week on SNA work as against 23.90 hours of women. However, women spend 37.55 hours on non-SNA work while men spend only 3.25 hours. The weekly average time spent by men and women on total work (SNA + non-SNA) is 48.08 hours and 61.45 hours, respectively. That is, women spend 28 per cent more time on total work than men. Women spend almost 9 hours per day on work as against 6.8 hours by men. If we apply the ILO norm of 48 hours a week, women in Nana Kotda are highly time stressed, while men are within the limits of the norms. Women get much less personal time, 106.52 hours as against 120 hours of men. Women also get less time to sleep and rest. To put it differently, the time use pattern of men and women in Sabarkantha district shows that women work much harder than men and women's work is predominantly unpaid.

This highly unequal sharing of work and the consequent gender inequalities have multiple impacts on women's opportunities for development. Firstly, the burden of work causes time stress that affects women's health and well-being adversely. Secondly, it leaves less time for to acquiring capabilities like education and skills. The very low educational status of women in the village, to a considerable extent, can be attributed to their excessive burden of work. It also leaves less time for productive work in the labour market. Thirdly, since the work is unpaid, there is no remuneration and it is not recognized, giving women low status within, as well as outside, the home.



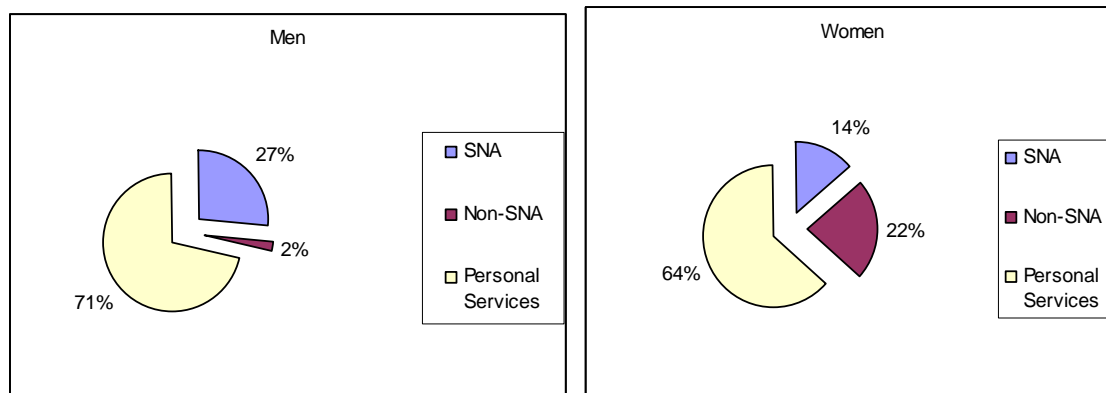
**Table 10: Weekly Average Time Spent by Men and Women on SNA, Non-SNA, and Personal Activities (all; in hours and minutes)**

	Men	%	Women	%	Total	%
<b>SNA</b>	44.83	26.68	23.90	14.23	34.74	20.68
	(77.96)		(70.75)		(74.50)	
<b>Non-SNA</b>	3.25	1.93	37.55	22.35	19.73	11.74
	(37.52)		(92.50)		(63.88)	
<b>Personal services</b>	119.93	71.39	106.52	63.40	113.69	67.67
	(100.00)		(100.00)		(100.00)	
<b>Total</b>	168.00		168.00		168.00	
	(100.00)		(100.00)		(100.00)	

**Note:** Figures in the brackets indicate participation rates, i.e., per cent of persons participating in the activities  
**Source:** Indian Time Use Survey 1998–99

The following pie diagrams make this very clear.

**Figure 12: Weekly Average Time Spent by Men and Women on SNA, Non-SNA, and Personal Activities**



**a. Time spent on unpaid non-market SNA work**

Officially, Nana Kotda has 42.12 acres of common land and 3.66 acres of government wasteland. Because of legal and illegal encroachment, actual availability is around 12–15 acres. This land, which is degraded, is an important source of fuelwood, fodder, fruits, vegetables, leaves, etc., as well as of small wood and grass for repairing and constructing shelter for the rural population, and particularly for the poor and women. The common practice is that women, and sometimes men and children, go to common lands for collecting these items. Since common lands are degraded, they spend a lot of time on collecting.

**Table 11: Weekly Average Time Spent by Men and Women on Collection of Free Goods (in hours and minutes)**

Activity	Men		Women	
	Time	PR	Time	PR
Fetching of water	3.2	1.69	5.54	36.83
Collection of fruits, vegetables, berries, mushrooms, and other edible goods	14.25	0.21	3.96	2.66
Collection of minor forest produce, leaves, bamboo, etc.	1.33	0.03	8.33	0.04
Collection of fuel, fuelwood, and twigs	3.23	0.65	4.19	16.90
Collection of raw material for crafts	1.32	0.10	4.44	0.58
Collection of building materials	0	0.00	4.67	0.08
Collection of fodder	8	9.30	13.25	25.42
Sale and purchase-related activities	10	0.28	8.39	0.66
Collection of other items	13	0.10	16.81	0.15
<b>Total</b>	<b>7.15</b>	11.64	<b>13.41</b>	65.92
<b>Nana Kotda Population (6+ years)</b>		<b>860</b>	<b>800</b>	<b>1660</b>

**Note:** PR stands for participation rate of persons in the specified activity. Please note that some persons particularly participate in more than one activity.

**Source:** Indian Time Use Survey 1998–99

Women spend 13.41 hours a week on free collection of goods as against 7.15 hours by men. Also, almost two-thirds of women participate in these activities. Fetching water for household use is a most common activity for women. This is a time consuming task because, as seen above, there is only one outlet for water for drinking and cooking. About 26 per cent of women spend more than 5.54 hours in a week on fetching water. Similarly 16.90 per cent of women spend 4.19 hours a week on collection of fuelwood as against 3.23 hours by 0.65 per cent of men. The most time, however, is spent on collection of fodder, at 13.25 hours by women and 8

hours by men. More than one-fourth of women and a little less than one-tenth of men perform this activity. A careful look at the data indicates that many of these workers are children below the age of 14 years.

Common lands/forests are also used for collecting wood, bamboo and other raw material for craft, as well as material for construction and repair of shelter (building material). Though the participation rates are small for some of these activities, participant households seem to be spending more than four hours a week on the activities involving the collection of minor forest produce like bamboo and leaves, as well as the collection of other material for craft, building material, etc. In all, women spend about 13.41 hours on collection of free goods and men spend 7.15 hours on these activities. That is, in a week, men spend approximately 715 hours on collection of free goods while women spend approximately 6,973 hours. Clearly, a lot of time can be saved by appropriate assets/infrastructure being generated under NREGS.

**Table 12: Weekly Average Time Spent on Animal Husbandry (in hours and minutes)**

Activity	Men		Women	
	Time	PR	Time	PR
Grazing animals outside	18.75	12.72	19.42	8.24
Tending animals	7.47	24.79	8.88	63.07
Caring for animals—breeding, medical service, etc.	4.08	1.79	3.5	6.44
Milking, processing of milk, storing	3.78	11.26	4.44	37.36
Making dung cakes	4.27	0.21	3.92	17.96
Poultry rearing	40.09	0.14	41.61	0.31
Other related activities	3.23	1.34	3.31	7.56
Sale and purchase-related activities	9.45	0.79	2.19	1.93
Travel to work	4.85	3.79	4.07	8.91
<b>Total</b>	<b>11.5</b>	<b>28.51</b>	<b>15.8</b>	<b>71.78</b>

Source: Indian Time Use Survey 1998–99

About 13 per cent of men (mainly boys) and 8 per cent of women (girls) spend between 18 and 20 hours a week on animal grazing. Since the common grassland in the village is depleted and degraded, they have to spend long hours on grazing. Regeneration of common lands, with a special focus on growth of nutritious grasses, can reduce this time on the one hand and improve the production of milk on the other hand. NREGS needs to focus on growing enough supply of grasses on common lands.

***b. Time spent on unpaid non-SNA work: care of children, the old, and the sick***

A major component of unpaid non-SNA work is care-related work. As indicated in the following table, about 25.33 per cent of women spend, on an average, 13.15 hours in a week on care activities. As against this, 5.85 per cent of men participate in care-related work. Childcare is the most important activity, with 22 per cent of women spending 12 hours in a week for physical care of children, 20 per cent of women spending time on accompanying children to different places, and 6–8 per cent of women busy with supervising children. These percentages are much smaller for men.

**Table 13: Weekly Average Time Spent in Care for Children, the Sick, Elderly, and Disabled for Own-householders (in hours and minutes)**

Activity	Men		Women	
	Time	%	Time	%
Physical care of children—washing, cleaning, feeding, dressing	4.48	2.27	11.58	21.70
Teaching, trainings, instructions	4.84	0.96	9.93	0.66
Accompanying children to school, sports, lessons, etc.	5.72	0.34	3.75	20.39
Supervising children needing care	4.44	2.17	9.4	6.82
Physical care of sick, disabled, and elderly members of the household	8.64	0.34	5.84	1.77
Accompanying adults to receive care, etc.	1	0.03	4.31	0.08
Supervising adults needing care	5.25	0.14	9.43	0.15
Travel related to adult care	3.39	0.14	1.17	0.04
Any other related activity	2.31	0.34	3.51	0.46
<b>Total</b>	<b>6.17</b>	<b>5.85</b>	<b>13.15</b>	<b>25.33</b>

**Source:** Indian Time Use Survey 1998–99

Women’s participation is also higher than men in other activities like taking care of the adults, disabled, sick, etc. in the family. About 2 per cent of women spend up to six hours a week on this care. Men’s participation is less than 0.50 per cent and they spend up to eight hours a week on this care. In all, 202 women spend 13.15 hours a week and 50 men spend about six hours a week on care-related activities.

***c. Time spent on unpaid non-SNA household work***

More than half of the women in the village (52.66 per cent) spend about 30 hours on household work. This comes to more than four hours of work per day. As against this 15 per cent of men spend about five hours on household work in a week, which comes to 0.7 hours a day. Women spend the most time on cooking (15.46 hours), followed by cleaning and washing (13 hours), and care of textiles (7.15 hours). In the case of men, the most important activity is “do-it-yourself work,” followed by cooking, washing, and cleaning. It is important to know that 7 per cent of women (56 women) spend 5.50 hours on household maintenance and about 1 per cent

of men (9 men) spend 6.38 hours on household maintenance. Since houses in this region are semi-durable, they need constant repairs. Construction of durable housing under NREGS can reduce this work of men and women.

**Table 14: Weekly Average Time Spent by Men and Women on Household Maintenance and Management (in hours and minutes)**

Activity	Men		Women	
	Time	PR	Time	PR
Cooking food items and serving	3.79	6.06	15.46	46.07
Cleaning and upkeep of dwelling	2.97	2.48	6.07	43.83
Cleaning utensils	3.25	2.07	6.74	41.94
Care of textiles—washing, mending, ironing, etc.	2.36	2.13	7.15	32.00
Shopping for goods and household appliances	3.18	5.68	2.99	4.20
Household management—planning, supervising, etc.	3.21	0.59	5.00	0.27
Do-it-yourself home improvement	6.38	0.90	5.49	6.94
Pet care	5.31	0.10	3.99	0.31
Travel related to household management	2.42	1.89	2.89	2.66
Other activities related to household maintenance and management	2.00	1.07	4.87	2.85
<b>Total</b>	<b>5.15</b>	<b>15.05</b>	<b>29.57</b>	<b>52.66</b>

Source: Indian Time Use Survey 1998–99

It needs to be underlined that the burden of non-SNA work on women is a major cause for their lower participation in SNA activities. This is because: (a) mothers with small children cannot participate in the labour market in the absence of adequate facilities of childcare; (b) other women cannot work long hours owing to domestic responsibilities; (c) women do not get adequate time to acquire skills/human capital; and (d) women are not treated as equals with men owing to their low status within and outside the household.

**d. Personal time available**

As a result of the higher burden of total work (SNA + non-SNA work), women get less time for sleep (58.82 hours) than men (61.56 hours), less time for eating, drinking, and personal care, and less time for relaxation and entertainment. If one adds up the total time for sleep, rest, and relaxation, men spend 105.29 hours on these activities as against 98.74 hours by women. That is, women get almost one hour less of relaxation and rest per day.

**Table 15: Weekly Average Time Spent on Personal Care, Rest, and Relaxation (in hours and minutes)**

Activity	Men		Women	
	Time	PR	Time	PR
Sleep and related activities	61.56	100.00	58.82	100.00
Eating and drinking	9.01	100.00	8.36	100.00
Smoking, drinking alcohols, intoxicants	7.49	13.95	5.84	0.69
Personal hygiene and health	6.29	100.00	5.42	100.00
Walking, exercise, jogging, etc.	3.67	8.30	3.10	2.39
Receiving medical care and other care from professionals	3.38	0.69	1.94	0.39
Receiving medical care and other care from household members	3.55	0.21	23.01	0.12
Talking, gossiping	9.04	52.72	9.67	44.68
Doing nothing: rest, relaxation	14.52	63.98	13.04	58.64
Religious practices	6.38	4.06	5.09	3.01
Other related activities	5.65	7.64	6.26	6.05
Convalescing	46.64	0.48	37.87	0.23
Travel related to personal care	3.51	23.04	3.26	18.50
<b>Total</b>	<b>101.8</b>	<b>66.08</b>	<b>96.8</b>	<b>61.80</b>

### 3.3 Unpaid Work and Poverty

In order to understand the relationship between time use and poverty levels, we divided the households into four categories based on the monthly per capita expenditure (MPCE) levels: ultra-poor, poor, non-poor, and rich. Our analysis of the time use of the households has shown the following.

The ultra-poor households spend a significant proportion of their productive time on the subsistence work of collecting basic necessities of the household (collection of fuelwood, making dung cakes, fetching water, and collection of other free goods like vegetables and fruits, wood for construction and repair of shelter, and raw materials for household income-generating activities (collection of fodder for animals and other raw materials for family enterprises). It is estimated that men from ultra-poor households spend 1.24 hours per week on this work while women spend 4.20 hours. That is, women spend about 18 per cent of their productive time (i.e., time spent on SNA activities) on this unpaid work.

It is important to note that women from the non-poor and rich households are not excluded from this burden. They spend about three hours per week on this unpaid work as against less than one hour by men.

The ultra-poor men and women spend 3.18 hours and 31.20 hours, respectively, on unpaid domestic work per week. The corresponding percentages of the non-poor are 2.98 and 35.29 hours, respectively. The longer hours are largely because there are almost no facilities for childcare and poor infrastructural support for other household work. This burden of unpaid work is experienced by women in ultra-poor as well as non-poor households. Infrastructural support like childcare or day care facilities for children can help women in reducing this burden of work.

In short, the burden of unpaid work is significant on the poor as compared to the non-poor, but women from non-poor households are not excluded from this burden. Since the drudgery of unpaid work is a major obstacle for women's participation in the productive, market-oriented work, it is necessary to relieve women of this burden.

### **3.4 Insights Gained through Focus-Group Discussions**

In addition to the national time use survey, we organized focus group discussions to understand the specific time use pattern of the village population and their major concerns with respect to unpaid SNA and non-SNA work. The discussions revealed the following:

- Women have to spend long hours in fetching drinking water, as there is only one outlet for drinking water. Women walk long distances (particularly those living in distant falias) and frequently wait for in queue water. They need better water facilities that are more dependable (preferably from a local source) and brings water within homes.
- Another activity that consumes a lot of time is medical services. Since no reliable medical facility is available locally, villagers go all the way to Idar if they fall sick. They go to private doctors, as government facilities are irregular and doctors are frequently absent. There was a common demand from all sectors of the population for creating a local health facility.
- Many women observed that they are not able to take up any work/job in the labour market because they have to take care of small children. They cannot work on NREGA sites because no childcare facilities are provided on the NREGA work sites. In fact, many more reported that they would like to participate in the labour market if childcare facilities are available.
- Lastly, ready access to fuelwood and fodder will make their life easier. Since collection of fuelwood and fodder from the depleted common land has become difficult, there was a strong demand for regeneration of common lands for fuelwood and fodder, as well as for reclaiming encroached common lands from powerful/rich farmers.

Men in the village agreed with women in their demand for regeneration of common land for securing fodder and fuelwood for the village. They also agreed with the demand for

constructing water harvesting structures for ensuring an adequate potable water supply for the village

### 3.5 Addressing Unpaid Work through NREG Works

Based on the above discussion, the table below indicates the total unpaid work time that can be reduced through NREGS works. As the table indicates, 15,494 hours of women and 3,315 hours of men are spent on unpaid work that can be reduced by NREGS works. Even if we assume that 80 per cent of the unpaid time can be saved by suitable NREGS works, 332 man-days and 1,551 woman-days can be saved for other productive work, preferably on NREGS works. At the daily wage rate of Rs. 60 the additional direct income earned in the village will be Rs. 1.14 lakh. Indirect income will be additional to this. Also, some girls and boys will be released for attending school.

**Table 16: Time Spent on Unpaid Work that Can Be Reduced through NREGS (in hours)**

Activity	Men			Women		
	Number	Total time	PR	Number	Total time	PR
Fetching of water	15	46.40	1.7	295	1,634.30	36.8
Collection of fuel/fuelwood/twigs	6	18.20	0.7	135	565.60	16.9
Collection of fodder	80	661.30	9.3	203	2,689.80	25.4
Collection of other items	4	38.20	0.4	29	131.00	3.5
Grazing animals outside	109	2,043.75	12.7	66	1,281.70	8.24
Making dung cakes	2	7.60	0.2	144	563.40	18.0
Care of children—direct and indirect	53	253.40	6.1	243	2,626.10	30.4
Cooking food items and serving	52	197.50	6.1	368	5,697.70	46.1
Do-it-yourself home improvement	8	49.10	0.9	56	304.80	6.9
<b>Total</b>		<b>3,315.45</b>			<b>15,494.40</b>	

**Note:** PR stands for participation rate of persons in specified activity

**Source:** Indian Time Use Survey 1998–99

Addressing unpaid SNA and unpaid non-SNA work through the right kind of asset/infrastructure creation will bring unpaid work into public domain and this will have a positive impact in multiple ways. It will reduce the time stress of men and particularly women workers to the provide time for leisure or for productive work; it will improve productivity in SNA work and thereby reduce poverty; it will improve health and overall well-being of women and children; and it will expand long-term employment as there will be a need to hire people to



run/manage new services. The additional time used for productive work will have multiplier impact on the village economy. This will be estimated later on using multiplier analysis.

To sum up, NREGA has the potential for empowering women and engendering the mainstream development process. There is therefore a need to expand the purview of employment guarantee programmes to take up works that replace unpaid work, to the largest extent possible, by creating public assets/infrastructure.

#### **4. NREGA IN NANA KOTDA**

NREGA was launched in the Sabarkantha district in February 2006. A state-level NREGS (National Rural Employment Guarantee Scheme) was designed by the Gujarat Government based on the national guidelines to implement the guarantee act. Implementation of NREGA in Nana Kotda started on March 30, 2006, when a village assembly<sup>12</sup> was organized to inform people about the Act and the underlying scheme. Out of the more than 2,000 people in the village, 151 persons participated in the meeting. The village *talati* (revenue collector cum secretary of the Village Panchayat) and the Sarpanch addressed the Assembly to inform them about the scheme. Another meeting was held after a month when the local member of the State Legislative Assembly (MLA) visited the village. After this meeting a few posters were put up in the village to inform people about NREGS.

People started applying for registration under the Act after the meeting. Households were asked to get themselves photographed for getting registered. The village panchayat arranged this through a photographer who charged Rs. 15 per household (group) photograph. After registration, job cards were distributed to households. So far about 264 job cards have been issued. That is, about 63 per cent of households have a job card. Most of them demanded work orally, as there was no form to be filled to demand work. The first work under NREGS started on April 10, 2006, two months after the Act came into being.

##### **4.1 NREG Works Undertaken**

Until April 2008, six works were taken up under the scheme; all were for de-silting the check dams in the village. Six check dams were constructed on the Debhol River nearby the village during 2001–03 under the check-dam programme of the Gujarat government. Since the check dams need de-silting after every 4–5 years, this work was taken up under NREGS. The works continued for 91 days, spread over the period from April 10 to July 5, 2006. The works stopped after the rains started. No NREGS works have been taken up thereafter. In all, Rs. 58,6131 was spent on the works. The entire cost is reported as labour cost, as the money was spent on wages. In addition, 5 per cent of the total amount was spent on contingency, i.e. maintenance of implements and administration.

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<sup>12</sup> A village Assembly consists of all adults in the village. They meet to take major decisions about village affairs.

**Table 17: NREGS Works in Nana Kotda, 2006–07**

Description of work	From	To	Duration (in days)	Labour cost (in Rs.)	Total cost (in Rs.)
<b>Duration</b>	<b>Total Cost</b>				
De-silting Check dam near Raval Falia	10/4/06	29/4/06	21	173,481	173,481
De-silting Check dam near Uparvas Falia	1/5/06	13/5/06	14	173,481	173,481
De-silting Check dam near Vanjara Falia	15/5/06	20/5/06	6	60,327	60,327
De-silting Check dam near Amthavada Falia	20/5/06	27/5/06	8	22,799	22,799
De-silting Check dam Near farm of Divchand Falia	29/5/06	17/6/06	21	87,676	87,676
De-silting Check dam Uparvas near the tank	19/6/06	5/7/06	21	68,367	68,367
<b>Total</b>			<b>91</b>	<b>586,131</b>	<b>586,131</b>

#### 4.2 Employment Generated under NREGS

In all, 238 persons (127 women and 111 men) from 161 households participated in NREGS; and 9,812 person-days of employment were generated (5,492 women-days and 4,320 man-days). Women have also shared 56 per cent of the total NREGA earnings. The average daily wage rate under NREGS varied between Rs. 55 and Rs. 74. The average wage rate was Rs. 60.

**Table 18: Employment Generated under NREGS Works**

	Person-days			Wage incomes earned (Rs.)			Average daily wage rate
	Men	Women	Total	Men	Women	Total	Rs.
Work 1	1,655	2,104	3,759	74,475	94,680	169,155	45
Work 2	1,074	1,287	2,361	78,402	93,951	172,353	73
Work 3	463	467	930	29,632	29,632	59,264	64
Work 4	236	269	505	12,980	14,795	27,775	55
Work 5	493	708	1,201	36,482	52,392	88,874	74
Work 6	399	657	1,056	25,935	42,705	68,640	65
<b>Total</b>	<b>4,320</b>	<b>5,492</b>	<b>9,812</b>	<b>257,906</b>	<b>328,155</b>	<b>586,061</b>	<b>60</b>

Source: Village records at Nana Kotda and records at Block Office at Idar

A careful study of NREGS works in Nana Kotda shows the following:

- Out of 404 households, 161 households have participated in NERGS, that is, about 40 per cent;
- Of the total 1,312 adult persons (14 + years) of the 161 households, 237 persons, or 18.64 per cent, have participated in NERGS. Participation is slightly higher for women (19.30 per cent) than for men (16.91 per cent);
- Women and men who participated in the NERGS (from 161 households) got employment for 36.13 and 38.25 days, respectively. On an average, a person who participated in NREGS got work for 36.27 person-days during the one and a half years of NREGS in the village (from February 2006 to July 2007);
- At the household level, the participating households got employment of 53.62 person-days during the first 18 months, against the target of 100 days per 12 months;
- The average daily wage rate on the works was Rs. 60. It varied between Rs. 45 on the first work and Rs. 73. Since the schedule of rates (SORs), on the basis of which the wage rate is calculated, were revised later, the wage rate was low on the first work. The variations in the wage rate thereafter were owed to the variations in the hours of work put in by workers. In most cases workers worked for more than 8 hours a day;
- There were no separate wage rates for women, as wages were paid to the gang leaders (a gang is a group of 4–5 workers who work together), who were usually male heads of the households;
- Drinking water was provided on the worksites. However other facilities like a shed, first kit, crèche, etc. were missing.

On an average, 1.47 persons participated from each household. In 88 households (in more than half the participating households) only one person each participated, while in 68 families (42 per cent) two persons each participated. In the case of two households, three persons each participated and in two households four persons each participated. Participants were mainly from labour and farming households.

**Table 19: Person-days of Employment Generated for Participating Households in NREGS**

Main occupation	Number of households participating	Number of persons participating			Number of person-days generated			Person-days per person			Number of days per household No of days
		M	F	T	M	F	T	M	F	T	
Agriculture	150	103	119	222	3,672	4,349	8,021	35.65	36.54	36.13	53.47
Labour	11	8	8	16	282	330	612	35.25	41.25	38.25	55.64
<b>Total</b>	<b>161</b>	<b>111</b>	<b>127</b>	<b>238</b>	<b>3,954</b>	<b>4,679</b>	<b>8,633</b>	<b>35.62</b>	<b>36.84</b>	<b>36.27</b>	<b>53.62</b>

Also, 13.71 per cent of the participating households got employment for less than 20 days and 27.62 per cent households got employment between 21 and 40 days, implying more than 40 per cent of the participating households got employment of less than 40 days. Only six households got work for more than 100 days during the period from February 2006 to July 2007.

**Table 20: Average Employment Generated during February 2006–July 2007**

Number of days of work	Number of households	Person-days of work	Person-days per household
0–20	14	192	13.71
21–40	42	1,160	27.62
41–60	44	2,177	49.48
61–80	31	2,104	70.13
81–100	24	2,270	94.58
100+	6	634	105.67
<b>Total</b>	<b>161</b>	<b>8,537</b>	<b>53.36</b>

It is important to underline the fact that no efforts were made to provide a guarantee of work in the village.

### 4.3 Profile of Participant Households

The highest participation was from landless households (90 households participated), followed by marginal farmers, i.e., farmers with less than 2.5 acres of land (64 households participated). The participation from medium and large farmers was small. However, when we view this participation in the context of the total households in these categories, the data show that 43.24 per cent of the total marginal farmers and 38.8 per cent of the total landless households participated. The percentages were significant for other land size categories also: 28 per cent for small farm households and 33 per cent for medium farm households. An important implication of this is that NREGS is attractive to non-poor households and a relatively small proportion of the poorest—the landless—participated in the programme.

**Table 21: Participation in NREGS by Landholding**

Land holding (acres)	Total number of households	Number of households participating in NREGS	Per cent of the households participating	Per cent share in participation
No land	232	90	38.79	55.90
0–2.5	148	64	43.24	39.75
2.5–5.0	18	5	27.77	3.10
5–10	6	2	33.33	1.24
10 +	0	0	0.00	0.00
<b>Total</b>	<b>404</b>	<b>161</b>	<b>39.85</b>	<b>100.00</b>

Similar observations can be made about participation by income groups. The percentage of participation from the poorest income groups, up to Rs. 10,000, was much less than that in

higher income groups. The highest participation was from the income groups Rs. 10,000–25,000 and Rs. 25,000–50,000, i.e., the groups just below the poverty line and just above the poverty line, respectively. About 50 per cent of households participated in NREGS from these groups. Participation is also high (42.86 per cent) from the highest income group with an annual income above Rs 125000. On the other hand less than one-fourth of households have participated from the poorest income groups. This once again indicates that the poorest strata do not or could not participate fully in NREGS and that the poorest households constitute only 2.48 per cent of the total participating households.

**Table 22: Participation in NREGS by Household Income**

Household income (Rs.)	Total number of households	Households participating in NREGS	Per cent of households participating	Per cent share in participation
< 5,000	17	4	23.53	2.48
5,000–10,000	51	13	25.49	8.07
10,000–25,000	194	94	48.45	58.38
25,000–50,000	95	43	45.26	26.70
50,000–75,000	17	1	5.88	0.62
75,000–100,000	13	2	15.38	1.24
100,000–125,000	7	1	14.29	0.62
125,000 +	7	3	42.86	1.86
<b>Total</b>	<b>404</b>	<b>161</b>	<b>39.85</b>	<b>100.00</b>

There are several reasons for the poor participation. To start with, many of the poorest commute to neighbouring villages to work on farm and non-farm activities. They have a long-term contract with the employers, formal or informal, according to which the workers get continuous employment for several days. As against this, work on NREGS is short term and scattered without any guarantee of employment. Even though many of the workers who commute reported that they prefer to work in their own village, they cannot do so as NREGS work is not dependable. As the wage rates on NREGS works and outside are fairly comparable, around Rs. 50–60 per day, there is a general preference for local work, as it saves their travel cost and it spares them from the inconvenience of commuting. However, NREGS work is just not available on any significant scale. An employment guarantee is also missing in practice. The poorest households therefore prefer to migrate rather than participate in uncertain NREGS work.

As regards the sex and age of the participants, the data show that, except for one, no children participated in the NREGS. The highest participation was from the age group 15–35 years, followed by the 35–50 age group. Participation was low in the age groups 50–60 years and 60+ years. It is to be noted that persons above 60 years also participate in the programme.

**Table 23: Participation in NREGS by Age and Sex**

Age group	Total persons			Number of persons participating in NREGP			Per cent participation		
	M	F	T	M	F	T	M	F	T
0–14	264	250	514	0	1	1	0.00	0.40	0.019
15–35	391	351	742	68	68	136	17.43	20.79	18.960
36–50	171	189	360	41	50	91	24.11	26.45	25.350
51–60	65	63	128	6	1	7	9.23	1.58	5.460
60 +	55	53	108	0	2	2	0.00	3.77	1.850
<b>Total</b>	<b>946</b>	<b>906</b>	<b>1,852</b>	<b>115</b>	<b>122</b>	<b>237</b>	<b>12.19</b>	<b>13.87</b>	<b>13.000</b>

Our survey revealed that 80 per cent of the households are interested in participating in NREGS; some of them are interested in working during the lean season or for a limited number of days. Only 20 per cent of households are not interested in NREGS work because they find the work too strenuous or because they do not need extra employment.

To sum up, there is no guarantee of work given under NREGS. Works are taken up in a scattered manner and their availability still depends on the sweet will of the local bodies or government administration. The implementers are not interested in ensuring guarantee of work, nor are people capable of demanding work as a right.

**Table 24: Reasons for Not Working in NREGS**

Reasons	Caste of Households				
	SC	ST	OBC	Others	Total
We do not know about NREGS	3	0	5	5	13
We do not know when/where NREGS work started	0	0	3	1	4
Absents from the village when the program came	1	3	1	0	5
Not allowed to work	0	0	1	1	2
Work stopped because of rains	35	2	54	9	100
Could not form a gang	0	0	4	0	4
Could not get registration	8	2	24	8	42
Could not get a job card	3	0	13	2	18
<b>Subtotal</b>	<b>50</b>	<b>7</b>	<b>102</b>	<b>26</b>	<b>185</b>
Small children at home	1	0	3	0	4
Engaged in household work	1	1	1		3
Busy with outside village work	5	3	9	13	30
Wages are low	0	0	4	1	5
<b>Subtotal</b>	<b>7</b>	<b>4</b>	<b>17</b>	<b>14</b>	<b>45</b>
Social functions	16	5	16	0	37
Sickness	19	16	13	0	48
Caste does not allow (rajput)	0	0	13	0	13
Working as crop sharer	1	0	1	0	2
No worker in the household	2	3	10	3	18
<b>Subtotal</b>	<b>38</b>	<b>24</b>	<b>53</b>	<b>3</b>	<b>118</b>
We do not need any extra work	9	2	19	11	41
We do not like the hard work involved/too old	5	0	20	12	37
No response	10	4	6	3	23
<b>Subtotal</b>	<b>24</b>	<b>6</b>	<b>45</b>	<b>26</b>	<b>101</b>
<b>Grand Total</b>	<b>119</b>	<b>41</b>	<b>217</b>	<b>69</b>	<b>449</b>

The Sarpanch and some others told us during our discussion that there is not much scope for NREGS works in the village, as not many works can be taken up in the village under the programme. This kind of thinking had come up largely because there was no long-term planning under NREGS. Since there is no long-term perspective for NREGS works and since

the decisions on works are taken on purely ad hoc basis, no shelf of projects is available to choose works from. However, when we sat with village leaders and helped them in building a long-term view, a long list of works emerged from their suggestions. In other words, there is a need to develop a long-term perspective for NREGS to make it more useful.

#### 4.4 Do People Want More NREGS Work?

When we asked people whether they are interested in getting work (or more work), the response was positive. Almost 80 per cent of them, both men and women, replied that they want more work. It is important to note, however, that women want more work, but not necessarily on NREGS. This is partly because available work does not always suit women (no efforts are made in the village NREGS to design works that suit women) and partly because they do not get adequate support for childcare or for reducing the drudgery of collecting fuelwood, water, fodder, etc. Considering the fact that in spite of these constraints women’s participation is significant and that there is a good potential for women to work, there is a need to pay attention to women’s unpaid work under the programme.

**Table 25: Persons Who Want More NREGA Employment**

Total Employment during the last year (person-days)	Do you want more work?		How many days (per person)		Type of work					
					NREGA		Other labour		Other work	
	M	F	M	F	M	F	M	F	M	F
0–30	47	52	102	109	47	40	0	12	0	0
30–60	60	62	99	98	60	40	0	22	0	0
60–90	6	10	107	104	6	4	0	6	0	0
90–120	1	0	150	0	1	0	0		0	0
120–150	0	0	0	0	0	0	0		0	0
150–200	0	0	0	0	0	0	0		0	0
200–250	0	0	0	0	0	0	0		0	0
250–300	0	0	0	0	0	0	0		0	0
300+	0	0	0	0	0	0	0		0	0
<b>Total</b>	<b>114</b>	<b>124</b>			<b>114</b>	<b>62</b>	<b>0</b>		<b>0</b>	<b>0</b>

Source: Primary survey



The demand for additional NREGS comes from labour households, farmers, and households engaged in private service. More than half the suggestions are for removing the limit of 100 days of work per household. In short, there does not seem to be any dearth of demand for NREGA work.

**Table 26: Suggestions for Improving NREGP by Household Occupation**

Main occupation of household	1	2	3	4	5	Total
Agriculture	50	2	0	1	45	98
Self employed non-professional in non-agriculture	5	0	0	0	4	9
Agricultural labour	74	1	21	0	74	170
Other labour	1	0	0	0	25	1
Service (government)	1	0	0	0	1	2
Service (private)	6	0	0	0	1	7
Animal husbandry	2	0	0	0	5	7
Interest/royalty	1	0	0	0	0	1
Pension income	0	0	0	0	0	0
Beggar	0	0	0	0	2	2
Miscellaneous	0	0	0	0	0	0
<b>Total</b>	<b>128</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>157</b>	<b>322</b>

**Notes:** 1. We need (more) NREGS employment; 2. More NREGS employment needed in non-agricultural seasons; 3. Local employment needed to avoid migration; 4. Food grains should be distributed as part of wages; and 5. the limit of 100 days per household should be removed.

#### 4.5 Potential NREGS Works for Nana Kotda: Suggestions about NREGS Works

When households were asked about their suggestions for works, women suggested drinking water facilities in each ward, if not in every house, and easy availability of fuelwood and fodder. They also suggested a full-day facility for childcare and a health facility in the village. Men wanted water for agriculture through constructing check-dams on the rivulet passing by the village and deepening of the existing tanks in the village. There does not seem to be a dearth of works also in the village if we go by what the villagers want for the village under NREGS.

During our first meeting the Sarpanch (the village head), the talati (revenue collector and secretary to the Village Panchayat), and village leaders stated that there was not much scope for NREGS in the village. After our subsequent visits and discussions they realized that a lot can be done for the village by using NREGS. Our focus discussions helped in the identification of potential works for the village, as the discussions helped people to view NREGS in the long-term perspective of about 5–7 years and helped in identifying some relevant works. The most important demand from the village is for constructing a water harvesting structure, i.e., deepening of the village tank for ensuring potable water. Other suggestions, as reported above, are related to natural resource management and assets for quality of life. The villagers also want cleanliness in the village, their major recommendations here being construction of drainage, paving of internal roads, construction of latrines, etc.

**Table 27: Suggestions for NREGS Works by Household Occupation**

Main occupation of household	Number of total households with main occupation	Suggested Works										
		1	2	3	4	5	6	7	8	9	10	11
Agriculture	32	9	3	12	0	3	21	1	31	12	20	5
Self-employed non-professional in non-agriculture	0	4	2	0	0	1	0	0	0	2	0	0
Agricultural labour	117	11	8	12	1	4	23	1	10	30	10	6
Other labour	1	0	0	0	0	0	1	0	0	1	0	0
Service (government)	1	0	1	1	0	0	1	0	0	1	0	0
Service (private)	2	1	0	0	0	1	0	1	0	2	0	0
Animal husbandry	7	1	2	3	0	0	0	0	0	5	0	0
Interest/royalty income	0	0	0	0	0	0	0	0	1	0	0	0
Pension income	0	0	0	0	0	0	0	1	0	0	0	0
Beggar	0	0	2	0	0	0	0	0	0	0	0	0
Servant	0	1	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>160</b>	<b>27</b>	<b>18</b>	<b>28</b>	<b>1</b>	<b>9</b>	<b>46</b>	<b>4</b>	<b>42</b>	<b>53</b>	<b>30</b>	<b>11</b>

**Notes:** 1. House construction; 2. Latrines and bathrooms for households; 3. Drainage; 4. Construction; 5. Growing fodder for animals; 6. Irrigation works and digging a new tank; 7. Basic needs/infrastructure; 8. Forestation and plantation on common lands and nursery; 9. Drinking water/water harvesting; 10. Deepening of tanks and the river; and 11. Construction of road/paving internal roads.

When asked in focus-group discussions why they did not make these suggestions in the Village Assembly that was called for NREGS, we were told that they did not know about the meeting of the assembly, they did not know about the details of the NREGS, and nobody asked them for their suggestions. In other words, the role of participatory planning in NREGS is not known or appreciated by the implementers of the scheme.

Not all the works suggested are labour intensive. However, with good planning, it may be possible to manage all these works with the maintenance of the overall labour-material ratio. Women have important suggestions for reducing their unpaid work. In short, villagers do make relevant suggestions for NREGS works if helped. It is important to help villagers to develop a long-term view of development of the village and incorporate women’s concerns into NREGS planning. These concerns do not come automatically to them. Details of the potential works for the village are given below.

***a. Works that reduce drudgery of unpaid/non-market SNA work***

The first category of potential works for Nana Kotda consists of works that reduce the drudgery of non-market SNA work.

*1. Drinking Water in Nana Kotda:* The present arrangement for drinking water is far from satisfactory. Villagers therefore want to develop local sources to ensure regular and dependable water supply. Villagers believe that the local sources are adequate, as the village gets about 700–750 mm of average annual rainfall, has a small river, two ponds, and good groundwater condition. Good rainfall in recent years, accompanied by de-silting of the check dams, has improved the groundwater position in the village. If efforts are made, the leaders believe the village can easily augment its own water supply for drinking and domestic use. Nana Kotda therefore needs the following asset creation projects to be taken up under NREGS:

- Deepening of the tank located in the village to augment local water resources;
- Water works to treat the harvested water; and
- Pipelines in the wards with a standpost.

*2. Regeneration of Common Lands for Energy Security:* Another major drudgery in Nana Kotda is collecting fuelwood. As seen before, women spend long hours in collecting fuelwood; collection of fuelwood is time consuming and does not allow women to participate in other more remunerative activities. With the environmental degradation and declining common lands, the problem has acquired serious dimensions in the village. Collecting fuelwood is also a danger to the safety of collectors—mainly women. Use of this energy creates indoor pollution, which has several serious health hazards. This method of acquiring energy is also responsible, to a considerable extent, for children’s lack of education, as children are engaged in this activity in a big way.

There are several alternatives for addressing these problems, such as plantation of fuelwood and use of fuel-efficient stoves, use of kerosene or gas, use of natural gas use of non-conventional energy sources, etc. Considering the fact that more than 85 per cent of households use fuelwood (the village does not use cow dung for fuel), the immediate need is to promote fuelwood plantation, supported by both fuel-efficient stoves and by charcoal manufacturing. Nana Kotda officially has 42 acres of common land. Of this, about 14 acres are available (the rest of the land is either encroached upon by villagers or is under ponds), but are badly degraded. A part of this land can be regenerated for fuelwood plantation and fodder for animals. Since about 42 per cent households in the village have milch animals that need fodder, it will be a good idea to develop common lands keeping in mind the need for fuel and fodder. Systematic regeneration of common land will ensure good quality, highly productive fodder and good quality fuelwood. This will also enable the landless to buy milch animals and participate in the fast-developing dairy industry in the state. Usually a plot of five acres is taken for regeneration of common lands. Of this three acres are meant for fodder and two are for plantation of trees that provide fuelwood and fodder. The work is highly labour intensive, as the major tasks involved are fencing (with vegetation), land development, and plantation. We propose that about 15 acres of common land should be regenerated in the village.

***b. Works that reduce the burden of unpaid domestic work***

As seen earlier, women in Nana Kotda spend a considerable amount of time in household work, including care of children and other household members, with the result that they are not able to take part in economic activities, including NREGS. Childcare centres that run for full hours (8 hours a day) and well-run pre-schools can be of great help. One of preschools in the

village is housed in a private building and the other functions from a hired room that is not adequate. There is a need to construct buildings for the preschools and organize full-day care for children.

***c. Works that improve the quality of life***

We have identified the gaps that need to be filled in to ensure a minimum quality of life of people. The following NREGS works can fill in these gaps.

*1. Paving of internal roads:* It improves access to village-level services like schools, bus stops, PDS, schools, temple, cremation grounds, the flour mill, etc., and reduces the time spent on accessing these services. It improves cleanliness and reduces breeding places for mosquitoes (particularly in the rainy season) and other germs. Half the wards do not have paved roads. The village needs paving of internal roads of the length of 2,500 meters, with 3.5 m width and 0.30 m thickness. The first phase of this work will be of earth work, which will be highly labour intensive, with more than 85–90 per cent of the costs being labour cost. The second phase will use materials as well as skilled labour for making roads durable.

*2. Construction of toilets (under the Total Sanitation Campaign Programme):* The number of households with their own toilet is 156 in Nana Kotda. That is, 248 households do not have a toilet. Construction of toilet will improve the quality of life in multiple ways: (a) it will improve cleanliness in the village; (b) it will improve women's health, as women suffer most when there is no toilet facility; and (c) it will help in producing manure. Villagers proposed construction of at least 200 toilets under the programme. Since the Total Sanitation Programme requires that beneficiaries also contribute to the total cost, the cost on NREGS will be much lower than the total cost.

*3. Construction of drainage:* Nana Kotda does not have any drainage system to dispose of domestic wastewater and rainwater. Construction of a drainage system will: (a) improve cleanliness in the village, as well as reduce breeding places for mosquitoes and other germs; and (b) help in reusing the water for irrigation and other uses. There is a need for a drainage system throughout the entire village. The length has been estimated to be 2,500 meters.

***d. Productive assets for income generation***

NREGS can contribute to the village economy by constructing productive assets to enhance productivity in existing economic activities, as well as new ones, including allied economic activities.

Agriculture is a major economic activity in the village. However, it suffers from uncertainty, consequent fluctuations, and low productivity. Lack of ensured water supply is a major problem that can be addressed effectively by NREGS. De-silting of check dams has already contributed to improvement in agriculture, as seen earlier. The village has the potential for further water harvesting, as there is good rainfall and good geohydrological conditions exist for water harvesting. The following works are suggested.

*1. Digging two more tanks:* Two more tanks can be dug in the village area to harvest rain water. This will further improve the groundwater level, which will allow assured water supply

to many more farmers. The first phase of digging will involve manual work, while later on the material component will be used for pitching to make the assets durable.

2. *Deepening of the river/stream*: Another possibility for water harvesting is through deepening of the river.

**Table 28: Potential NREGS Works for Nana Kotda**

Works	Skilled labour	Material cost	Unskilled labour	Total	Skilled labour in per cent	Material cost in per cent	Unskilled labour in per cent	Total
Deepening of the tank	0	0	36,000	36,000	0.00	0.00	100.00	100.00
Laying pipelines to distribute water in the wards		1,695,200	423,800	2,119,000		80.00	20.00	100.00
Regeneration of common lands		60,000	45,000	105,000	0.00	57.14	42.86	100.00
Construction of childcare centres	50,000	300,000	150,000	500,000	10.00	60.00	30.00	100.00
Paving of internal roads								
<i>First phase: only earth work</i>			156,750	156,750	0.00	0.00	100.00	100.00
<i>Second phase: surfacing the roads</i>	100,000	600,000	300,000	1,000,000	10.00	60.00	30.00	100.00
Construction of toilets (under Total Sanitation Campaign Programme)	80,000	480,000	240,000	800,000	10.00	60.00	30.00	100.00
Construction of drainage	45,000	270,000	135,000	450,000	10.00	60.00	30.00	100.00
Digging two more tanks								
<i>Phase one: digging</i>	0	0	400,000	400,000	0.00	0.00	100.00	100.00
<i>Phase two: pitching</i>	50,000	300,000	150,000	500,000	10.00	60.00	30.00	100.00
<b>Total cost</b>	<b>325,000</b>	<b>3,705,200</b>	<b>2,036,550</b>	<b>6,066,750</b>	<b>2.36</b>	<b>61.07</b>	<b>35.57</b>	<b>100.00</b>

The table indicates that there is potential for ten NREGS works to start with. Works relating to water harvesting, improving connectivity, and natural resource management are admissible under the NREG Act. Works that improve the quality of life, i.e., sanitation and public hygiene, have a relatively high material component and their construction can be managed through proper convergence with other programmes. It is to be noted that the 60:40 labour-material cost ratio is to be maintained at the district level on an annual basis and additional funds can come from the State Finance Commission, special funds of the local MP/MLA, or the district planning board.

The list of potential NREGS works is not exhaustive in the sense that many more works are needed in the village to enhance capital formation to improve productivity in agriculture and allied activities, as well as in other activities in the secondary and tertiary sectors.

#### **4.6 Summing Up**

It appears that NREGS does not provide any guarantee of work to people. It is implemented in an ad hoc manner and is scattered. The size of the programme is very small and the number of households getting 100 days of work is also very small. The poorest at the bottom do not benefit from the programme and because there is no guarantee of work, there is little effect on migration. Though NREGS has good potential in the village, the potential is far from being tapped. What is important to note is that 80 per cent of the households in the village would like to work on NREGS, either during the lean season, to avoid migration, or to fill the gaps in periods of unemployment. It is also worth noting that to the degree that modifications are implemented, villagers do see the role of NREGS in improving the quality of life as well as productivity and production in the village.

### **5. MULTIPLIER IMPACTS OF NREGS**

This section examines the multiple impacts of an employment guarantee programme on the economy of Nana Kotda. This has been done through a multiplier analysis in which NREGS works are treated as external shocks on the village SAM (social accounting matrix). The study examines how portions of unpaid SNA and non-SNA work can be replaced by NREGA works and what impact it can make on the incomes and employment of households, as well as on the economy. This has been done by estimating the multiplier impact of the substitution of unpaid work by NREGS assets/infrastructure on the village economy.

#### **5.1 Social Accounting Matrix (SAM) for the Village**

As seen earlier, a social accounting matrix (SAM) is a comprehensive accounting framework within which the full circular flow of income from production to factor incomes, household income to household consumption, and back to production is captured. The village SAM for Nana Kotda has four components: (1) production activities, such as crop husbandry, animal husbandry, construction, service providers and self-employed, manufacturing, and government and private services; (2) factors of production, such as labour and capital; (3) institutions, like households, government, Village Panchayat, etc.; and (4) “outside the village,” consisting of values of sectors and labour going out of the village and coming into the village.

In all, there are 55 producing sectors. The first 13 sectors, from rice to animal husbandry, correspond to the agricultural sector, where most of the items in the village are produced. For the construction of the SAM, the normal yield for the crops (as averages of the last two years) was taken for last two years because 2006–07 happened to be a drought year. The next sectors, from 14 to 38, are manufacturing sectors where all items are brought from outside the village except for cotton ginning (for which there is only one factory), which produces cotton in the village and sends the entire production, including that of cotton seed, outside the village. Other remaining sectors are service-providing sectors in the village. The activities could not be separated from commodities because available data was directly on commodity basis for inputs and outputs. Hence, the SAM is in the commodity times commodity form and is derived from use and supply matrices. In addition, detailed information was collected from institutions/organizations (like schools, cooperative societies, and the panchayats) about their activities, costs, and revenues. Details were also collected about the workings of NREGA in the village.

## 5.2 Multiplier Analysis

NREGS works undertaken will have a multiplier impact on the total output, income, and employment of the village economy. This impact has been estimated using a multiplier analysis that treats NREGS works as external shocks to the village SAM. This section analyses the multiplier impacts. It also goes beyond the multiplier analysis and discusses the other impacts of the works.

The village SAM can be used for estimating the direct and indirect impact of various external shocks on the economy with the help of multiplier analysis. With the help of multiplier models, questions related to the nature of linkages between the structure of production and distribution of income can be addressed.

Let us write the SAM model as:

$$Y = W + X$$

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

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

The above equation can be written as:

$$Y = AY + X$$

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

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

where M is SAM multiplier matrix and  $m_{ij}$  is the total impact on account i because of a unit shock in account j. Different multipliers can be output, income, and employment.

The multipliers measure the response of the economy to a change in demand of a sector. When the total output of a sector increases or decreases, it has direct, as well as indirect, effects on the economy. Direct effects are the immediate effects associated with the change in the final demand for a particular sector or industry. Indirect effects (or secondary effects) are because of the backward linkages of sectors. The following paragraphs present the results of our multiplier analysis.

## 5.3 Output, Income, and Employment Multipliers

The output multiplier for a sector is defined as the total value of production by all the sectors of the economy required to satisfy one unit of final demand for that sector's output. For example, if one unit of final demand is increased in the animal husbandry sector (i.e., milk), it will require more feed for livestock (different crops). In turn, the increase in the demand for the output of these crops will necessitate additional production of seed, fertilizers, labour, etc. The increased employment of labour will result in their higher incomes, which will increase

expenditures. The increased expenditure will need more output and so on. These are called indirect requirements. These direct and indirect requirements result in the “output multipliers” estimated by the SAM multiplier matrix given in Table 29. The income or value-added (labour + capital) multiplier gives an estimate of the direct and indirect income changes resulting from a one unit change in output. These are also obtained from the labour and capital rows of the SAM multiplier matrix. Table 30 gives the total output, income, household income, and employment multipliers.

The employment multiplier gives an estimate of the direct and indirect employment changes resulting from a change in unit output. These multipliers are obtained by multiplying the output multiplier of each sector with the relevant employment coefficient. The employment coefficient of each sector presents the number of person-days generated per unit of output (say for per thousand rupees).

The inverse of the SAM (only those sectors for which there is production in village are taken for the inverse) is given in Table 29. Each column of this inverse (from row 1 to 24) gives the increase in output of different sectors because of a one unit increase in the final demand of that sector. The total of rows 25 and 27 of the sectors gives the corresponding income multiplier. The rows from 28 to 34 give the impact on the incomes of various sections of the households. For example, one unit of increase in the demand for labour will cause an increase of 0.338 units of income from wheat, 0.305 units of income from jowar, and so on. The rows from 28 to 34 present the impact of the increased purchasing power on the incomes of various sections of the population. Again, a one unit increase in demand for wheat will increase the income of marginal farmers by 0.320 units, of small farmers by 0.188 units, of large farmers by 0.189 units, and of all households (which also include labour households, households self-employed in non-agriculture, and households in services) by 0.040 units. The difference in the values of multipliers arises from the output and income structures in the village economy.

Rows 1 to 24 indicate output multiplier, rows 25 to 27 will give the values of corresponding income multiplier, and the totals of the rows 28 to 34 will give household income multipliers. Table 30 presents these totals in terms of output, income, household income, and employment multipliers. The output multipliers indicate the coefficients by which the outputs will increase if there is an increase in the expenditure owing to an external stock (here, NREGA works). For example, if the expenditure on the consumption of wheat increases by Rs. 1,000 because of some NREGA works, its impact in terms of increase in total production of wheat will be Rs. 1,793 ( $1,000 \times 1.793$ ). In other words, the table shows that a one unit increase in the demand for wheat will increase the total output by 1.793 units, a one unit increase in the demand for jowar will increase the total output by 1.671 units, and so on. Similarly, a one unit increase in demand for wheat will increase total income by 1.228 units, a one unit increase in demand for jowar will increase total income by 0.953 units, and so on.

The multipliers, as can be seen below, are relatively small. This is because there are leakages; it is estimated that more than half of the backward and forward linkages of new demand generated are not absorbed within the village income, but rather are satisfied by commodities obtained from outside the village. To increase the multiplier impact on the village economy, several activities—including some manufacturing (even on a small scale) activities like



processing of food and oilseeds—must take place within the village. Coordination of policy intervention is therefore critical here.

**Table 29: Per Unit Change in Output Due to Change in Final Demand from Different Sectors**

	Wheat	Jowar	Bajra	Maize	Tur	Pulses	Castor	Groundnut	Cotton	Fruit and vegetables	Other crops	Animal husbandry
Wheat	1.184	0.067	0.029	0.082	0.015	0.026	0.074	0.076	0.002	0.014	0.068	0.095
Jowar	0.007	1.040	0.003	0.008	0.002	0.002	0.006	0.006	0.000	0.001	0.006	0.033
Bajra	0.005	0.005	1.006	0.006	0.001	0.002	0.004	0.004	0.000	0.001	0.004	0.030
Maize	0.021	0.019	0.008	1.047	0.004	0.007	0.019	0.020	0.001	0.004	0.018	0.044
Tur	0.014	0.011	0.005	0.014	1.006	0.005	0.013	0.014	0.000	0.002	0.012	0.012
Pulses	0.013	0.012	0.006	0.015	0.003	1.009	0.013	0.013	0.000	0.003	0.012	0.038
Castor	0.000	0.000	0.000	0.000	0.000	0.000	1.028	0.000	0.000	0.000	0.000	0.000
Groundnut	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.006	0.000	0.000	0.000	0.000
Cotton	0.004	0.004	0.002	0.005	0.001	0.001	0.003	0.003	1.002	0.001	0.003	0.030
Fruit and vegetables	0.030	0.023	0.011	0.029	0.005	0.010	0.030	0.031	0.001	1.019	0.028	0.027
Other crops	0.039	0.045	0.021	0.052	0.011	0.013	0.035	0.035	0.001	0.009	1.054	0.273
Animal husbandry	0.137	0.166	0.077	0.188	0.042	0.047	0.121	0.118	0.005	0.031	0.107	1.095
Cotton ginning	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Construction	0.025	0.020	0.009	0.025	0.005	0.008	0.024	0.024	0.001	0.004	0.022	0.021
Education	0.042	0.033	0.015	0.041	0.007	0.014	0.042	0.043	0.001	0.007	0.039	0.037
Bangle vendor	0.008	0.006	0.003	0.008	0.001	0.003	0.009	0.009	0.000	0.002	0.008	0.008
Fruit and vegetable vendor	0.020	0.016	0.007	0.020	0.004	0.006	0.019	0.019	0.001	0.003	0.017	0.017
Barber	0.006	0.005	0.002	0.006	0.001	0.002	0.007	0.007	0.000	0.001	0.006	0.006
Carpenter	0.021	0.016	0.008	0.020	0.003	0.007	0.021	0.022	0.001	0.004	0.020	0.019
Cloth shop	0.040	0.032	0.014	0.040	0.007	0.013	0.038	0.039	0.001	0.007	0.035	0.034
Pan shop	0.044	0.036	0.016	0.044	0.008	0.015	0.043	0.044	0.001	0.008	0.039	0.038
PDS shop	0.030	0.024	0.010	0.030	0.005	0.010	0.028	0.029	0.001	0.005	0.026	0.025
Transport	0.052	0.066	0.023	0.068	0.027	0.010	0.054	0.041	0.002	0.009	0.026	0.029
Other services	0.051	0.023	0.015	0.059	0.005	0.009	0.035	0.032	0.001	0.010	0.025	0.026
Labour total	0.338	0.305	0.107	0.368	0.074	0.091	0.253	0.258	0.009	0.051	0.232	0.218
Labour income from outside	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Labour from outside	0.039	0.031	0.014	0.038	0.007	0.013	0.039	0.040	0.001	0.007	0.036	0.034
Capital	0.852	0.617	0.327	0.779	0.123	0.320	0.954	0.983	0.029	0.157	0.883	0.857
Marginal farmer	0.320	0.232	0.123	0.293	0.046	0.120	0.359	0.370	0.011	0.059	0.332	0.322
Small farmer	0.188	0.136	0.072	0.172	0.027	0.071	0.211	0.217	0.006	0.035	0.195	0.189
Large farmer	0.189	0.137	0.073	0.173	0.027	0.071	0.212	0.218	0.006	0.035	0.196	0.190
Self-employed in non-agriculture	0.114	0.083	0.044	0.104	0.016	0.043	0.128	0.132	0.004	0.021	0.118	0.115
Labour	0.329	0.297	0.104	0.359	0.072	0.088	0.246	0.252	0.009	0.050	0.226	0.212
Services	0.008	0.008	0.003	0.009	0.002	0.002	0.006	0.006	0.000	0.001	0.006	0.005
All other households	0.040	0.029	0.015	0.037	0.006	0.015	0.045	0.046	0.001	0.007	0.042	0.040

**Table 30: Per Unit Change in Income Due to Change in Final Demand from Different Sectors**

	Cotton ginning	Construction	Education	Bangle vendor	Fruit and vegetable vendor	Barber	Carpenter	Cloth shop	Pan shop	PDS shop	Transport	Other services
Wheat	0.008	0.037	0.014	0.017	0.037	0.051	0.023	0.019	0.017	0.438	0.048	0.052
Jowar	0.001	0.002	0.001	0.001	0.003	0.004	0.002	0.001	0.001	0.095	0.004	0.004
Bajra	0.000	0.001	0.000	0.001	0.002	0.003	0.001	0.001	0.001	0.003	0.003	0.003
Maize	0.002	0.010	0.003	0.004	0.009	0.013	0.006	0.005	0.004	0.103	0.012	0.013
Tur	0.002	0.005	0.001	0.004	0.008	0.011	0.005	0.004	0.003	0.008	0.010	0.011
Pulses	0.001	0.005	0.002	0.003	0.007	0.010	0.004	0.003	0.003	0.097	0.009	0.010
Castor	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Groundnut	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cotton	0.895	0.001	0.000	0.001	0.002	0.002	0.001	0.001	0.001	0.002	0.002	0.002
Fruit and vegetables	0.004	0.011	0.004	0.009	0.420	0.025	0.012	0.009	0.008	0.018	0.024	0.026
Other crops	0.004	0.009	0.003	0.008	0.019	0.024	0.011	0.008	0.138	0.025	0.023	0.024
Animal husbandry	0.014	0.028	0.012	0.028	0.064	0.081	0.037	0.027	0.028	0.090	0.077	0.082
Cotton ginning	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Construction	0.003	1.011	0.004	0.006	0.012	0.017	0.008	0.006	0.006	0.015	0.016	0.017
Education	0.005	0.016	1.003	0.012	0.024	0.034	0.016	0.012	0.011	0.026	0.032	0.035
Bangle vendor	0.001	0.002	0.000	1.003	0.006	0.009	0.004	0.003	0.003	0.005	0.008	0.009
Fruit and vegetable vendor	0.002	0.009	0.002	0.005	1.010	0.014	0.006	0.005	0.005	0.012	0.013	0.014
Barber	0.001	0.001	0.000	0.002	0.005	1.007	0.003	0.002	0.002	0.004	0.006	0.007
Carpenter	0.003	0.006	0.001	0.007	0.014	0.020	1.009	0.006	0.006	0.012	0.018	0.020
Cloth shop	0.004	0.018	0.003	0.009	0.020	0.028	0.013	1.010	0.009	0.024	0.026	0.028
Pan shop	0.005	0.019	0.003	0.011	0.023	0.032	0.015	0.012	1.011	0.027	0.030	0.033
PDS shop	0.003	0.014	0.003	0.007	0.014	0.020	0.009	0.007	0.007	1.018	0.018	0.020
Transport	0.005	0.006	0.002	0.009	0.021	0.027	0.012	0.009	0.008	0.033	1.026	0.027
Other services	0.004	0.006	0.001	0.009	0.020	0.026	0.012	0.008	0.008	0.028	0.025	1.027
Labour total	0.016	0.262	0.050	0.013	0.045	0.039	0.018	0.043	0.036	0.205	0.037	0.047
Labour income from outside	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Labour from outside	0.007	0.015	0.929	0.011	0.023	0.031	0.014	0.011	0.010	0.024	0.030	0.032
Capital	0.136	0.136	0.023	0.345	0.698	1.003	0.462	0.304	0.285	0.516	0.947	1.010
Small farmer	0.051	0.051	0.009	0.130	0.262	0.377	0.174	0.114	0.107	0.194	0.356	0.380
Medium farmer	0.030	0.030	0.005	0.076	0.154	0.222	0.102	0.067	0.063	0.114	0.209	0.223
Large farmer	0.030	0.030	0.005	0.077	0.155	0.223	0.103	0.067	0.063	0.114	0.210	0.224
Self-employed in non-agriculture	0.018	0.018	0.003	0.046	0.093	0.134	0.062	0.041	0.038	0.069	0.127	0.135
Labour	0.015	0.256	0.049	0.013	0.044	0.038	0.018	0.042	0.035	0.200	0.036	0.046
Services	0.000	0.007	0.001	0.000	0.001	0.001	0.000	0.001	0.001	0.005	0.001	0.001
All other households	0.006	0.006	0.001	0.016	0.033	0.047	0.022	0.014	0.013	0.024	0.044	0.047

**Table 31: Total Output, Income, and Household Income Multipliers**

<b>Sector</b>	<b>Output multipliers</b>	<b>Income multipliers</b>	<b>Household income multipliers</b>	<b>Employment multiplier</b>
Wheat	1.793	1.228	1.189	2.639
Jowar	1.671	0.953	0.922	8.024
Bajra	1.291	0.448	0.434	1.834
Maize	1.805	1.185	1.147	4.796
Tur	1.165	0.204	0.197	8.844
Pulses	1.219	0.423	0.410	2.440
Castor	1.666	1.246	1.207	2.084
Groundnut	1.636	1.281	1.241	1.999
Cotton	1.024	0.039	0.038	1.811
Fruit and vegetables	1.144	0.215	0.208	2.989
Other crops	1.576	1.151	1.116	1.229
Animal husbandry	1.936	1.108	1.074	1.695
Cotton ginning	1.966	0.158	0.152	2.868
Construction	1.217	0.413	0.398	1.987
Education	1.063	1.002	0.073	5.609
Bangle vendor	1.157	0.369	0.358	3.950
Fruit and vegetable vendor	1.742	0.765	0.743	7.277
Barber	1.456	1.074	1.042	12.501
Carpenter	1.210	0.494	0.480	5.348
Cloth shop	1.157	0.358	0.347	0.588
Pan shop	1.278	0.331	0.321	1.870
PDS shop	2.085	0.744	0.721	3.538
Transport	1.430	1.013	0.983	2.966
<b>Other services</b>	<b>1.463</b>	<b>1.089</b>	<b>1.057</b>	<b>7.925</b>

The education sector has a forward linkage with the wheat sector, as wheat is used for preparing mid-day meals in village schools. Similarly, the per unit change can be studied for all the sectors in which change is instituted. The maximum impact on the increased output generated in the economy is owed to the increase in the consumption of PDS services with multiplier of 2.08, followed by maize with value 1.80, and the wheat sector with multiplier of 1.79. Within the economy the sectors that have the most impact in absolute-value terms owing to the increased expenditure are wheat, animal husbandry, pan shop, cloth shop, and education, as these sectors have the highest consumption within the village and more demand for these items would be generated.

#### **5.4 Impact of NREGS Works on the Village Economy**

Six check dams were de-silted in the village during the year 2006–07. The total cost of the public works was Rs. 586,131, all of which was spent on labour, i.e., wages (there was no material cost). The effect of this new injection (“cost” from the standpoint of government spending and “new income” received from the standpoint of participating beneficiaries) on the

economy is arrived at in accordance to the prevailing expenditure patterns of households that received this income. Out of this, the labour households spend Rs. 297,579 (approximately 50 per cent of the total Rs. 586,131) on items that are produced inside the village (wheat, jowar, bajra, etc.) while the rest was spent on items that were imported or bought from outside the village (rice, pesticides, etc). By distributing the amount of Rs. 297,579 among the sectors in the ratio of household expenditure, we get the increase in final demand of goods and services. It is then multiplied with the inverse matrix and, by adding these, we get an additional output of Rs. 452,219, additional value-added of Rs. 226,577, and additional household income of Rs. 196,823 in the village economy. In other words, the effect will be in terms of the increase in expenditure on items produced in the village and also on items brought from outside the village. The effect of the increase in output of sectors having production in the village will increase the income of the hired workers as well as those receiving capital income. This will again have an impact on the expenditure structure of different occupational households.

Of the additional gross value-added (GVA) generated in the village, 34 per cent is contributed by labour (from inside and outside the village) and 66 per cent is contributed by capital. Of the 34 per cent labour contribution, 15 per cent is contributed by internal male labour, 6 per cent is contributed by internal female labour, and the rest is contributed by labour from outside. Similarly, in the increased income of households, the share of marginal farmers is 28 per cent, followed by labour households (24 per cent). In all, the cultivator households will share 62 per cent of the increase in household incomes.

The cumulative impact of the expenditure on the output after the multiplier round, as well as occupation-wise household income, is given in the following two tables. Table 31, which presents data on the increase in the village output with NREGA works, shows that the absolute increase is highest in agriculture (Rs. 1.74 lakh), followed by self-employed in agriculture (Rs. 1.67 lakh), and animal husbandry (Rs. 0.53 lakh). In all, the total increase is Rs. 4.20 lakh, which is 2.23 per cent of the base output. In terms of percentage growth, self-employed in non-agriculture have experienced the highest rate, 4.53 per cent. The highest increase, among the self-employed in non-agriculture is likely to be due to the increased demand for the products of the units that are self-employed in non-agriculture in the village economy.

**Table 32: Increased Output from De-silting Six Check Dams**

<b>Output</b>	<b>Base (in Rs.)</b>	<b>Increased (in Rs.)</b>	<b>Growth (in per cent)</b>
Agriculture	10,256,406	174,535	1.70
Animal husbandry	2,989,812	53,077	1.78
Construction	1,927,027	25,451	1.32
Self-employed in non-agriculture	3,687,510	167,023	4.53
<b>Total</b>	<b>18,861,755</b>	<b>420,086</b>	<b>2.23</b>

Table 32 presents data on increased household incomes arising from NREGA works. The increase in household incomes is smaller than that in output because all output does not go to income. The table shows that the overall increase has been Rs. 1.97 lakh, which is 1.17 per

cent of the base income. The highest increase in income has gone to farmers, as the demand for food has increased from NREGA incomes. Small and large farmers have therefore benefited most in terms of an increase in income. The labour households have experienced the lowest increase, though they have experienced a high direct impact from NREGS in terms of wage incomes. It needs to be added that when we add the direct incomes generated under the NREGS works, the total increase in household incomes will be Rs. 7.82 lakh (Rs. 5.56 lakh + Rs. 1.96 lakh).

**Table 33: Increased Household Income from De-silting Six Check Dams**

<b>Occupation</b>	<b>Base Income (in Rs.)</b>	<b>Increase in Income (in Rs.)</b>	<b>Growth in Income (in %)</b>
Marginal farmer	3,879,411	55,891	1.44
Small farmer	2,043,283	32,851	1.61
Large farmer	2,057,010	32,999	1.60
Self-employed in non-agriculture	1,423,202	19,918	1.40
Labour	4,744,524	46,973	0.99
Services	2,170,760	1,204	0.06
All other households	472,098	6,986	1.48
<b>Total</b>	<b>16,790,288</b>	<b>196,822</b>	<b>1.17</b>

### 5.5 Impact of Additional Works on the Village

The above effects are of NREGS works (de-silting of six check dams) that have already taken place in the village. Now let us have a look at the effects of the proposed works that can be carried out in the village. As mentioned in the earlier section, these works have come as suggestions during our discussions with the leaders and people in the village. There will be an additional expenditure of Rs. 1,559,882 in the village when these works are implemented. This will raise the output generated in the village, GVA, to the tune of Rs. 781,554 and household income amounting to Rs. 678,920 (Tables 33 and 34). Table 33 presents data on the increased output in the sectors of the village economy achieved through increased expenditure of the households from NREGS incomes. This includes both the works already undertaken (effect 1) as well as proposed works (effects 2 to 8). The sector-wise impacts reflect the pattern of consumption of the items provided within the village.

If these works are taken up, the highest increase in output will be in food grains (the increase being the highest in wheat, followed by maize) the increased demand for which will originate in the new incomes generated by the newly undertaken NREGS works. The output of wheat will increase by Rs. 3.69 lakh, of maize by Rs. 0.96 lakh, and of pulses by Rs. 0.98 lakh. The output of fruits and vegetables will increase by Rs. 0.96 lakh. Since castor and groundnut are not important in local consumption, there will not be any substantial change in their level of output. The next important sector will be animal husbandry, the output of which will increase by Rs. 2.36 lakh, followed by the construction sector with an increase of Rs.1.13 lakh. The output of the self-employed in non-agriculture (shops and business) will also increase significantly. The total impact in terms of the increase in output will be Rs. 20.12 lakh, as against the total NREGS expenditure of Rs.15.59 lakh. It needs to be noted that the per unit change in wheat is the highest, with value 1.184. This is followed by animal husbandry and the

transport sector; these sectors have better linkages with the wheat sector, as cow dung manure forms part of the animal husbandry sector and is also a substantial input in the wheat production. Similarly the wheat sector gets inputs from the transport sector in form of tractors and bullocks.

The differences in the size of the impacts arise from the differences in the size of labour costs of different proposed works (labour costs are presented at the end of the table.) The implications are that labour-intensive works (with higher labour costs) have higher impacts in terms of output and the initial impacts will be higher on agriculture, as they will raise food consumption in the initial stages.

We have not taken material costs into consideration because most of it comes from outside the village and therefore will not have much of a multiplier impact on the village economy. However when the village economy starts producing some materials, the values of the multiplier will go up.

It should also be noted that there will be significant second-round impact, however this cannot be captured in this table, as the values of the multiplier coefficients are fixed in a SAM. This aspect of the impact will be discussed at length later on.

**Table 34: Increased Output in Sectors Achieved through Increased Expenditure of labour Households under NREGA Works—Past (Effect 1) and Proposed (Effects 2–8) Works (in Rs.)**

Sector	Effect1	Effect2	Effect3	Effect4	Effect5	Effect6	Effect7	Effect8	Total
Wheat	82,961	59,985	5,662	28,308	23,354	56,616	34,394	77,847	369,127
Jowar	4,298	3,108	293	1,467	1,210	2,933	1,782	4,033	19,124
Bajra	2,304	1,666	157	786	649	1,572	955	2,162	10,251
Maize	21,625	15,636	1,476	7,379	6,088	14,758	8,965	20,292	96,219
Tur	12,001	8,678	819	4,095	3,378	8,190	4,976	11,262	53,399
Pulses	10,086	7,293	688	3,442	2,839	6,883	4,182	9,465	44,878
Castor	0	0	0	0	0	0	0	0	0
Groundnut	0	0	0	0	0	0	0	0	0
Cotton	1,436	1,038	98	490	404	980	595	1,347	6,388
Fruit and vegetables	21,550	15,582	1,471	7,353	6,066	14,707	8,934	20,222	95,885
Other crops	18,274	13,213	1,247	6,235	5,144	12,471	7,576	17,147	81,307
Animal husbandry	53,077	38,377	3,622	18,111	14,941	36,222	22,005	49,805	236,160
Cotton ginning	0	0	0	0	0	0	0	0	0
Construction	25,451	18,402	1,737	8,685	7,165	17,369	10,552	23,882	113,243
Education	32,132	23,233	2,193	10,964	9,045	21,928	13,321	30,151	142,967
Bangle vendor	2,917	2,109	199	995	821	1,991	1,209	2,737	12,978
Fruit and vegetable vendor	18,933	13,690	1,292	6,460	5,330	12,921	7,849	17,766	84,241
Barber	2,335	1,688	159	797	657	1,593	968	2,191	10,388
Carpenter	11,413	8,252	779	3,894	3,213	7,789	4,732	10,709	50,781
Cloth shop	38,744	28,014	2,644	13,220	10,907	26,440	16,063	36,355	172,387
Pan shop	40,838	29,528	2,787	13,935	11,496	27,869	16,931	38,320	181,704
PDS shop	30,618	22,138	2,090	10,448	8,619	20,895	12,694	28,731	136,233
Transport	10,131	7,325	691	3,457	2,852	6,914	4,200	9,506	45,076
Other services	11,094	8,021	757	3,785	3,123	7,571	4,599	10,410	49,360
<b>Total</b>	<b>452,218</b>	<b>326,976</b>	<b>30,861</b>	<b>154,306</b>	<b>127,301</b>	<b>308,612</b>	<b>187,482</b>	<b>424,340</b>	<b>2,012,096</b>

**Notes:** The effects imply the following:

Effect 1=De-silting of six check dams, Labour cost: Rs. 586,131

Effect 2=Laying pipelines to distribute water in the wards, Labour cost: Rs. 423,800

Effect 3=Deepening of the tank, Labour cost: Rs. 40,000

Effect 4=Construction of childcare centres, Labour cost: Rs. 200,000

Effect 5=Paving of internal roads—phase I, Labour cost: Rs. 165,000

Effect 6=Paving of internal roads—phase II, Labour cost: Rs. 400,000

Effect 7=Construction of toilets, Labour cost: Rs. 243,000

Effect 8=Digging two more tanks (digging + pitching), Labour cost: Rs. 550,000

Table 34 presents the increase in incomes arising from works already undertaken (i.e., effect 1), as well as the proposed works. Total increase in the village income will be Rs. 14.6 lakh, of which the highest increase will be in capital (Rs. 5.13 lakh), followed by income to farmers (Rs. 1.93 lakh to marginal farmers, Rs. 1.13 lakh to small farmers, and Rs. 1.14 lakh to large farmers). Male labour will get Rs. 1.21 lakh, while female labour will get Rs. 0.46 lakh and

labour from outside will earn Rs. 1.03 lakh. Once again, the second round impacts will be significant, but are not included in this analysis.

To put it differently, the change in the expenditure level of labour households will have the most impact on the household incomes of small farmers, large farmers, marginal farmers, and labour households in that order. The marginal cultivators will get the most benefits because they cultivate their small farms and also work as agricultural workers in others' farms. The least affected by this change are services households.

**Table 35: Increase in Income of Labour, Capital, and Households arising from Increase in Expenditure of Labour Households under NREGA Works (in Rs.)**

	Effect1	Effect2	Effect3	Effect4	Effect5	Effect6	Effect7	Effect8	Total (2-8)
Labour M	34,976	25,289	2,387	11,934	9,846	23,869	14,500	32,820	120,645
Labour F	13,202	9,545	901	4,505	3,716	9,009	5,473	12,388	45,537
Labour from outside	29,754	21,514	2,031	10,153	8,376	20,305	12,336	27,920	102,635
Capital	148,645	107,477	10,144	50,721	41,845	101,442	61,626	139,482	512,737
Marginal farmer	55,891	40,412	3,814	19,071	15,734	38,142	23,171	52,445	192,789
Small farmer	32,851	23,753	2,242	11,209	9,248	22,419	13,619	30,826	113,316
Large farmer	32,999	23,860	2,252	11,260	9,290	22,520	13,681	30,965	113,828
Self-employed in non-agriculture	19,918	14,402	1,359	6,797	5,607	13,593	8,258	18,691	68,707
Labour	46,973	33,964	3,206	16,028	13,223	32,056	19,474	44,077	162,028
Services	1,204	871	82	411	339	822	499	1,130	4,154
All other households	6,986	5,051	477	2,384	1,967	4,768	2,896	6,556	24,099
<b>Total</b>	<b>423,399</b>	<b>306,138</b>	<b>28,895</b>	<b>144,473</b>	<b>119,191</b>	<b>288,945</b>	<b>175,533</b>	<b>397,300</b>	<b>1,460,475</b>

## 5.6 Employment Generation through NREGS

The employment multiplier for different sectors can be interpreted as the number of person-days generated in the economy owing to an increase in the output in a sector, caused by increased consumption of that product arising from an external shock in the form of an increase in income of labour. For example, if there is an additional expenditure on wheat because of an increase of expenditure by labour, the final demand for wheat increases and the employment in terms of person-days generated in the whole of the economy (owing to an increase in production of this sector) will also increase as per the value of the multiplier. Similarly, multipliers in all sectors are multiplied by the additional expenditures allocated to the labour in respective sectors. This will give us estimates of the employment generated in the economy owing to changes in different sectors.

To get detailed information on employment generated in each sector, we have multiplied the employment coefficients of each sector by the sector-wise effect of the NREGS works (already



undertaken) on output. The additional employment generated is given in Table 35. The table also shows that the employment multiplier for sectors like barber, other services, fruits and vegetable vendor, and carpenter are higher than the production sector except for jowar and tur, which would generate more person-days in the economy owing to increase in the output. Despite the higher number of person-days in these two sectors, the return in terms of total output is not commensurably high. Also, the multipliers of the non-agriculture sectors are higher than those of the producing sectors (such as wheat, jowar, etc). When there is an increase in the income of labour households owing to NREGA wages, they spend more on personal care, other services, fruits and vegetables, education, and all other service-providing sectors. Because of this spending, the output of these sectors rises, which requires more people and creates more person days in the economy.

**Table 36: Present and Indirect Employment Generated by NREGS Works Already Undertaken, by Sectors and Sex (in person-days)**

	Base			Indirect employment	Increase		Growth (Per cent)	
	Present employment total	M	F		M	F	M	F
Wheat	2,041	1,085	956	80	46	34	4.25	3.59
Jowar	1,312	727	585	28	17	12	2.30	1.99
Bajra	44	22	22	3	1	1	6.65	6.65
Maize	4,473	2,500	1,973	66	36	30	1.43	1.54
Tur	384	200	184	102	51	51	25.58	27.80
Pulses	144	73	71	20	11	9	15.04	12.65
Castor	114	65	49	0	0	0	0.00	0.00
Groundnut	76	59	17	0	0	0	0.00	0.00
Cotton	8,834	6,861	1,973	3	1	1	0.02	0.06
Fruit and vegetables	216	101	115	58	29	29	28.53	25.06
Other crops		0		0	0	0	0.00	0.00
Animal husbandry	1,291	426	865	23	23	0	5.36	0.00
Cotton ginning	16,320	12,720	3,600	0	0	0	0.00	0.00
Construction	2,925	1,637	1,288	39	39	0	2.36	0.00
Education	7,300	7,300	0	177	177	0	2.42	0.00
Bangle vendor	400	400	0	10	10	0	2.60	0.00
Fruit and vegetable vendor	1,540	720	820	102	102	0	14.19	0.00
Barber	1,025	1,025	0	27	27	0	2.59	0.00
Carpenter	3,491	3,491	0	55	55	0	1.58	0.00
Cloth shop	640	640	0	8	8	0	1.30	0.00
Pan shop	730	730	0	62	62	0	8.51	0.00
PDS shop	480	480	0	36	36	0	7.50	0.00
Transport	1,195	1,045	150	20	20	0	1.87	0.00
Other services	2,655	2,555	100	75	75	0	2.95	0.00
<b>Total</b>	<b>59,998</b>	<b>44,861</b>	<b>12,768</b>	<b>994</b>	<b>826</b>	<b>168</b>	<b>1.84</b>	<b>1.30</b>

The above table shows that employment in the village economy is 59,998 person-days. Indirect employment generated in the economy because of NREG interventions (de-siltation of the six

check dams) is 994 person-days, an increase of 1.67 per cent in the person-days generated. Of this increase in indirect employment, 826 are man-days and 168 are women-days.

If this indirect increase of 994 person days of employment is compared to the direct increase in employment of 9,812 person days under NREGA works already undertaken in the village, the former turns out to be more than 10 per cent of the latter. This is significant. It is interesting to note that the increase is less for women than for men. In fact, the increase of 168 person days for women is about 17 per cent of the total increase (994 person-days), though under NREGA works women's share in the total person-days generated is much more, i.e., 56 per cent of the total (5,492 person-days for women in the total of 9,812 person-days generated under NREGS). This indicates the tiny share of women in mainstream employment in the village, through they are willing to work much more.

It needs to be noted that indirect employment would have been much greater if a larger part of the additional income from NREGS was spent on local goods and services. However, since the village is less developed, about half of the goods and services consumed in the village come from outside, with the result that the multiplier impact is reduced.

Table 36 presents data on the indirect impact of potential NREGS works. That is, they present the number of additional days of employment generated owing to increased output of the sectors arising from all NREGS works, including potential works. In the table below, M refers to the additional man-days generated, while F refers to the additional woman-days generated through the employment multiplier effects.

**Table 37: Number of Additional Person-days Generated Due to Increased Output of Sectors**

Sector	Effect1		Effect2		Effect3		Effect4		Effect5		Effect6		Effect7		Effect8		Total (2-8)	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Wheat	46	34	33	25	3	2	16	12	13	10	32	23	19	14	43	32	159	118
Jowar	17	12	12	8	1	1	6	4	5	3	11	8	7	5	16	11	58	40
Bajra	1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	1	5	5
Maize	36	30	26	22	2	2	12	10	10	9	24	21	15	13	34	28	123	105
Tur	51	51	37	37	3	3	17	17	14	14	35	35	21	21	48	48	176	176
Pulses	11	9	8	6	1	1	4	3	3	3	7	6	5	4	10	8	38	31
Castor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Groundnut	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cotton	1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	1	4	4
Fruit and vegetables	29	29	21	21	2	2	10	10	8	8	20	20	12	12	27	27	99	99
Other crops	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Animal husbandry	3	0	2	0	0	0	1	0	1	0	2	0	1	0	3	0	11	0
Cotton ginning	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction	39	0	28	0	3	0	13	0	11	0	26	0	16	0	36	0	133	0
Education	177	0	128	0	12	0	60	0	50	0	121	0	73	0	166	0	609	0
Bangle vendor	10	0	8	0	1	0	4	0	3	0	7	0	4	0	10	0	36	0
Fruit and vegetable vendor	102	0	74	0	7	0	35	0	29	0	70	0	42	0	96	0	352	0
Barber	27	0	19	0	2	0	9	0	7	0	18	0	11	0	25	0	92	0
Carpenter	55	0	40	0	4	0	19	0	16	0	38	0	23	0	52	0	191	0
Cloth shop	8	0	6	0	1	0	3	0	2	0	6	0	3	0	8	0	29	0
Pan shop	62	0	45	0	4	0	21	0	17	0	42	0	26	0	58	0	214	0
PDS shop	36	0	26	0	2	0	12	0	10	0	25	0	15	0	34	0	124	0
Transport	20	0	14	0	1	0	7	0	6	0	13	0	8	0	18	0	67	0
Other services	75	0	55	0	5	0	26	0	21	0	51	0	31	0	71	0	260	0
<b>Total</b>	<b>826</b>	<b>168</b>	<b>584</b>	<b>121</b>	<b>54</b>	<b>11</b>	<b>275</b>	<b>56</b>	<b>226</b>	<b>47</b>	<b>550</b>	<b>115</b>	<b>334</b>	<b>71</b>	<b>757</b>	<b>156</b>	<b>2780</b>	<b>578</b>

The above table shows the number of man-days and woman-days that will be generated in the village economy when the potential NREGA works are taken up. The works will generate 2,780 man-days and 578 woman-days. The smaller number of woman-days generated in most sectors, as well as in the total economy, reflects the low participation of women in the village economy. The table shows that for men the most employment generated will be in agriculture

(662 days), followed by non-agricultural employment. In the case of women, however, almost the entire increase in employment will be in agriculture.

The employment multipliers are expressed in person-days because if we measure employment in persons, there would be duplication in estimation as persons would work in more than one sector/crop production.

### **5.7 Impact of the Reduction in Unpaid Work**

As seen above, women and men spend 18,810 person-days (3,315 man-days and 15,494 woman-days) in the village on unpaid work that can be reduced through NREGS works. If we assume that 80 per cent of the unpaid work is likely to be reduced through the works, 15,048 person-days will be released for NREGS works in the village. At the wage rate of Rs. 60 per day, this will generate Rs. 9.03 lakh in the economy.

Out of the Rs. 9.03 lakh generated, the households will spend Rs. 437,688 (approximately 50 per cent of the amount) on items that are produced inside the village (such as wheat, jowar, bajra, etc.) and the rest of the expenditure is accrued on items that are imported or bought from outside the village (rice, pesticides, etc.). By distributing the amount Rs. 437,688 among the sectors in the ratio of household expenditure of all the households put together, we get a column in the SAM. This column is multiplied with the inverse matrix and by adding these we get an additional output of Rs. 656,848, additional value-added of Rs. 346,385 and additional household income of Rs. 294,329 in the village economy.

The increased output in the different sectors, achieved through reduction in unpaid work, is presented in Table 37. As in the case of the other multipliers, the most output gains will be for agriculture, as the increased wage income of women will be largely spent on food items. The highest increase is observed in wheat (Rs. 86,831), maize (Rs. 22,719), pulses (Rs. 29,182), and, finally, fruits and vegetables. The increase in the output of animal husbandry is of the order of Rs. 103,525. In short, the bringing unpaid work of men and (mainly) women into the public domain will increase the mainstream output significantly.

**Table 38: Increase in Output through Reduction in Unpaid Work of Men and Women**

<b>Sectors</b>	<b>Rs.</b>
Wheat	86,831
Jowar	6,113
Bajra	3,741
Maize	22,719
Tur	15,298
Pulses	13,784
Castor	0
Groundnut	0
Cotton	2,801
Fruits and vegetables	34,129
Other crops	31,575
Animal husbandry	103,525
Cotton ginning	0
Construction	29,390
Education	56,216
Bangle vendor	9,417
Fruit and vegetable vendor	22,540
Barber	7,489
Carpenter	23,852
Cloth shop	45,356
Pan shop	48,331
PDS shop	33,110
Transport	31,245
Other services	29,384
<b>Total</b>	<b>656,846</b>

The increase in household incomes emanating from a reduction in unpaid work through NREGA works is presented in Table 38. The table shows that the total increase in income will be of the order of Rs. 640,712, of which the major share (about one-third) of income will go to farming households. The largest share of this will go to marginal farmers and then to small and large farmers. Labour households also will experience an increase in their incomes, though of a smaller size. The smallest gain will be among services households.

**Table 39: Increase in Income of Labour, Capital, and Households, Achieved through Reduction in Unpaid Work of Men and Women**

	Rs.
Labour total	60,680
Labour from outside	52,056
Capital	233,648
Marginal farmer	87,852
Small farmer	51,636
Large farmer	51,870
Self-employed in non-agriculture	31,309
Labour	59,163
Services	1,517
All other households	10,981
<b>Total</b>	<b>640,712</b>

The multiplier impact of the reduction in unpaid work on the employment in the village economy is presented in Table 39. This has been computed using the employment multipliers of the SAM. The table shows that there will be an increase of 1,589 person-days of work in the economy. This will be in addition to the direct employment generated in the construction of assets that would reduce unpaid work. Once again, the most employment will be generated in agriculture, followed by education, and then by employment in the non-agricultural sectors. In short, a reduction in unpaid work in the economy will have a considerable impact on income, output, and employment in the village economy.

**Table 40: Number of Additional Person-days Generated Due to Reduction in Unpaid Work of Men and Women**

Sector	Person-days
Wheat	84
Jowar	40
Bajra	5
Maize	69
Tur	130
Pulses	27
Castor	0
Groundnut	0
Cotton	5
Fruit and vegetables	91
Other crops	0
Animal husbandry	45
Cotton ginning	0
Construction	45
Education	309
Bangle vendor	34
Fruit and vegetable vendor	122
Barber	85
Carpenter	115
Cloth shop	10
Pan shop	74
PDS shop	39
Transport	60
Other services	200
<b>Total</b>	<b>1,589</b>

To sum up, a small investment of Rs. 5.86 lakh in the form of de-silting six check-dams in a poor tribal village can have multiple impacts on the village economy in terms of an increase in output, income, and employment. Though NREGS works were only continued for 91 days and generated less than 10,000 person-days of employment for 161 households, they could potentially trigger a process that would generate some medium-term positive impacts on the economy.

Including the direct impact under NREGS works, the total impact will be Rs. 7.82 lakh in terms of household incomes and 10,106 person-days in terms of employment. The multiplier values will be (in terms of growth rates) 2.23, 1.17, and 1.65 per cent for output, income, and employment, respectively. The multiplier coefficients/values will vary from 1.063 to 1.793 for output, from 0.369 to 1.228 for income, and from 0.073 to 1.189 for employment.

Our simulation exercise for potential NREGS works also produces optimistic results in terms of income, output, and employment increases. It shows that there is a good scope for NREGS works for reducing the unpaid work of men and women in the economy. If unpaid workers are released by appropriate NREGS works that shift unpaid work to the public domain, they will

be able to work (including on NREGS works) and this will generate direct and indirect employment and incomes in the village economy.

### **5.8 Multipliers Underestimate the Impact**

A striking feature of the above analysis is that the values of the multipliers are low. The main reason for the low value is the fact that about half the products consumed in the village come from outside the village. That is, a considerable part of the impact has gone outside the village—which is not really a loss to the total economy.

It is important to note that the values of the multipliers are likely to increase if the right kind of works is selected. For example, availability of water supply will encourage farmers to introduce changes in agriculture that may increase the values of the multipliers. Each of the check dams in Nana Kotda is, on an average, 30 meters long, 1.5 meters Deep, and has the capacity of storing 45,000 cubic meter feet (1 cubic meter feet: M3 = 1000 liters) of water. That is, they have created a storage capacity of 270,000 cubic meter of water in the village by constructing six check dams. Since the storage of water gives 2.5 times additional water supply through seepage, the village has created the capacity to provide 625,000 cubic feet of water in the village. However this capacity has declined over time. When the check dams were de-silted under NREGS (check dams need de-silting every 4–5 years), water storage capacity was increased by 8,268.22 cubic meters to reach the original capacity. De-silting had the following impact on the village economy:

- The groundwater level increased with the result that groundwater is now available at 80 feet, even in summer, instead of at 150 feet. The wells, which had dried up earlier, now have water. All the 200 wells now have good water supply.
- The area used for irrigated crops has increased, particularly for those crops that are grown only under irrigation. The village has 461 hectare (ha.) (1,188 acres) net area under cultivation. Before the de-silting of the check dams, the gross cropped area in the village was 561 ha., implying an 80 ha. area was cropped more than once. (Cotton, a major crop in the village, being a long-term crop that takes eight months to grow tends to reduce the area under multiple crops in the village.) After de-silting, there was an increase of 225 ha. in the gross cropped area, the main increase being in (irrigated) wheat by 100 ha. and summer crops, namely black millet, jowar (a cereal), and mung (a pulse) by 60 ha. This has improved the productivity coefficients, as well as the employment coefficients, of agriculture.
- Area under cotton has not increased, but its productivity has increased because of improved water supply and labour intensity. Similarly, there has not been much increase in the area under castor, but there has been an increase in its productivity and labour intensity.
- In addition, a new, highly profitable crop—variyaali—is now grown on 25 acres the village after the first year of NREGS. This area is likely to increase further with irrigation. It was also observed by the talati that villagers will grow more vegetables around their homes once water supply increases.



- Consumption of electricity per unit of water declined, as water was now available at a higher level in the wells. There was a decline in the cost of electricity by 50 per cent. This has reduced the cost of irrigation per acre.
- In addition, fodder (crop residues) on farms has increased owing to an increase in the gross cropped area. This has helped animal husbandry and dairying in the village.

In short, farmers in the village have already shifted to more productive, more remunerative, and more labour intensive crops, changing the production and employment multipliers. Again, availability of nutritious grass has contributed to the improved productivity of animals considerably. The present multiplier analysis has not been able to capture these changes, as it is assumed that the values of the multipliers are constant. This is because the SAM is a static model and assumes that all multiplying coefficients are static. These dynamics can be captured only after a new SAM is constructed for the village for the second year.

It is also assumed that the share of goods coming from outside the village remains the same. This situation is also likely to change gradually for several reasons. According to local farmers, this share has changed slightly as local people consume more local crops this year (particularly wheat and millet) and increased supply of local cotton to the ginning factory. It is also observed that with assured irrigation farmers may grow more vegetables in the village instead of importing them as they have in the past.

In the long run, particularly with more water availability and its assured supply, many more changes are likely to occur in the village economy: (1) the surplus generation in the village may lead to local production of other consumption goods; (2) an improvement may take place in health, nutrition, education, and skills of the people as a consequence of NREGS works (as we shall see later). This will tend to increase skills and productivity of labour; and (3) again, the reduction in unpaid work of men and women brought about by NREGS works will improve their productivity, which, in turn, will have an impact on the value of multipliers. Well-planned and appropriate NREGS works will increase the values of the multiplier coefficients gradually. In short, these factors are likely to increase the value of the multiplier.

According to the talati and local farmers, it is possible to harvest enough water to irrigate all the cultivated land in the village. However this region (Idar taluka/block) is declared a dark zone, i.e., an area where digging of new wells is not permitted and the government does not provide electricity for new connections for drilling wells and bore wells. Once water harvesting is undertaken and water availability is stabilized, these restrictions may be removed. In this context, deepening of existing ponds and deepening of the local river have been suggested by local farmers. The total cost expected to be Rs. 10.00 lakh, of which 85 per cent will be labour costs. It has been estimated that 700 workers will get work for six months if these works are taken up under NREGS. In addition, the digging of two more ponds also is seen as feasible and desirable to store more water. According to the talati, all these works will raise the level of irrigation to almost 100 per cent.

The values of the multipliers can thus increase continuously, raising the impact of NREGS works over the years.

## **5.9 Maximizing Values of Multipliers**

In order to maximize the value of the multipliers, the strategy under the NREGS should aim at increasing the production of goods and services that are consumed in the village. The larger the share of the consumption of the goods and services produced in the village, the larger will be the values of the multipliers. Similarly, the larger the increase in the export of goods and services produced in the village, the larger will be the values of the multipliers. There is therefore a need to develop a strategy that maximizes the values of the multipliers to maximize the benefits accruing to the village.

In addition to the extent to which people consume local goods and services, the value of the multiplier for the village economy will depend on: (1) the distribution of income in the village (the higher the share of the poorer sections the higher be the value of the multiplier will be); and (2) the labour intensity of the production (for the employment multiplier) in the village. It must be noted that with the expansion of NREGS works both these factors will move in the favourable direction to raise the value of the multiplier. In other words, there will be acceleration in the value of the multiplier as NREGA progresses.

### ***a. Labour intensive NREGS works for labour intensive growth***

To start with, the value of the multipliers will be high if the works are labour intensive and are likely to promote labour-intensive sectors in the economy. Labour-intensive NREGS works will increase the incomes of those workers—largely poor—whose marginal propensity to consume is very high. They will consume more food in the initial years, resulting in higher demand for food grains. This, in turn, will push local agriculture upwards. In other words, labour-intensive NREGS works will increase the income of the poor directly and subsequently promote the sectors (i.e., agriculture) where the poor are located. The increased productivity in agriculture will increase incomes of agricultural and rural labour.

Agricultural growth, including diversification of crops and increased production, will gradually generate surplus that will lift agriculture from the subsistence level to the surplus generation level. This will not only increase the proportion of the goods consumed in the village, but will also encourage farmers to sell their products outside village and/or promote agro-processing units within the village. Both of these will raise the values of multipliers, though the second option will result in more positive impact. This will encourage the badly needed shift of agricultural workers to non-agricultural sectors.

### ***b. NREGS works to promote quality of life***

NREGS works, such as water harvesting and provision of potable water to people, drainages and waste disposal, sanitation, and public hygiene facilities, will improve the quality of life of people. The improved health of people, brought about by ensuring potable water and clean environment, will improve health and thereby reduce health-related debts and vulnerability arising from health-related expenditure, as well as reduce the loss of person-days of work for workers and improve labour productivity arising from good health. This will have a highly favourable impact on the values of the multipliers.

***c. NREGS for health, education, and other basic infrastructure***

NREGS works that fill in the gaps in the education and health-related infrastructure can also have a positive impact on the value of the multipliers, though these assets may not be very labour intensive when constructed. This can happen in two ways. First, easy access to these facilities and improved quality of these services will improve the education levels and health status of the local population, improving their productivity and enabling them to participate in skilled work. Second, this infrastructure will create a number of jobs/services in the local economy in the form of teachers and staff to man these childcare and health centres, as well as cooking for children, etc.

Construction of basic infrastructure, including connectivity, will create enabling conditions for economic growth in the village. It will attract private investments in small and large enterprises, which, in turn, will raise local production and thereby the values of the multipliers.

***d. NREGS works for reducing unpaid work***

NREGS works that reduce unpaid work of men and (particularly) women will also raise the values of the multipliers. To start with, such works will release women (and children) engaged in drudgery to undertake productive work in the labour market, including NREGS work. That is, apart from generating employment in the process of construction of assets that reduce unpaid work, the works will promote employment of women. In addition, NREGS works that reduce unpaid work will generate employment opportunities in the mainstream economy in several sectors—regeneration of common lands will improve women’s access of fodder, promoting animal husbandry and dairying, which is a highly labour-intensive activity. Also, childcare centres (day care included) will not only reduce women’s work in childcare, but will also ensure healthy development of children in their early childhood. This is because it will be possible to provide professional care of children for their healthy intellectual and physical growth. In the process, there will be an increase in the employment in of those who take care of childcare centres and crèches. More importantly, the increase in wage incomes of women will have an impact in terms of income, output, and employment multipliers in the village economy. As seen earlier, the values of the multipliers will be larger if the works are planned well.

***e. Size of NREGS funds for significant impact***

Finally, NREGS works will have a significant impact when the size of the programme is large enough to generate large-scale employment to meet the demand for such work. Scattered and intermittent implementation of NREGS, undertaken by the sweet will of the administration or panchayats (as in the case of Nana Kotda), will not have the desired impact on the economy.

The experience of Nana Kotda has shown that there is no concept of right to work incorporated in the way NREGS is implemented at present. There has not been any attempt to provide continuous employment to workers nor is there any strong demand for work coming from workers. Consequently, the works are at a low level and do not maximize the multiplier impacts. Unless the work guarantee is ensured and the size of NREGS is up-scaled significantly, it is not likely to achieve much in terms of its long-term impact on the economy.

## **5.10 Going beyond Multiplier Analysis**

NREGS works are likely to have an impact on the village economy in several other areas that cannot be estimated through a multiplier analysis. These multiple impacts go beyond multiplier analysis.

### ***a. Impact on health status in the village***

NREGS works that reduce unpaid SNA and non-SNA work of women and the poor is likely to improve the health status of the village population. This will reduce their expenditure on health (which is usually private expenditure) and improve their productivity at work. This is because potable water, drainage, toilets, and cleanliness in the village will improve general health in the village. Also, reduction in unpaid work will reduce the drudgery and time stress of women, and construction of childcare facilities will improve childhood development. Considering the fact that ill health is one of the major factors that throws people in to poverty, improved status of health will go a long way in reducing vulnerability and poverty of the people.

### ***b. Impact on education status in the village***

As seen earlier, the level of literacy in the village is less than satisfactory. Many children of school age are frequently engaged in collection of fodder, fuelwood, water, or in animal grazing. Assuring water supply at the doorstep and regeneration of common lands for fuel and fodder, as well as the establishment of childcare centres, will reduce unpaid work of children and enable them to attend school regularly. This will be particularly beneficial to girl children who stay back at home either to take care of younger siblings or to help in collection of water and fodder, and in other household work. In addition, construction of two pre-school rooms will ensure the healthy intellectual development of pre-school children in the village.

### ***c. Improved access to productive work for women***

Reduction in unpaid work will release women for more productive work. NREGS will provide productive employment to women immediately, as well as in the long run, through promoting development of labour-intensive sectors in the economy.

## **5.11 Improved Scope for Diversification of the Village Economy**

As regards the impact of potential NREGS works, one can say that increased productivity in agriculture and animal husbandry will improve the income levels of the households and reduce poverty in the village. This will also help in turning subsistence farming into profitable farming. Diversification of crops, increased area under cultivation of more productive crops (like wheat, bajri, and jowar), and increased productivity in agriculture are bound to lead the village economy to diversification. The increased agricultural incomes and surplus will lead to increased savings and investment in agri-business or agro-processing and in non-farm economic enterprises, the increased demand for non-food products will encourage local enterprises to undertake new enterprises, and there will be an overall increase in trading in the village.

This diversification is likely to be labour intensive, as it will promote labour-intensive agriculture, diversification in the primary sector, and labour-intensive processing, as well as trading. Clearly, all these developments, if achieved in many villages/regions, will contribute to the labour-intensive and sustainable development of the regional economy.

## **5.12 NREGA: A Component in Full Employment Strategy**

It needs to be underlined that NREGA can only be a component of a full employment strategy. It can be a first step, an essential and critical step, towards full employment, but by itself it cannot lead the economy to full employment. It will be an essential first step because: (1) it will generate massive employment for people—particularly for the poor at the bottom—at the prevailing minimum wages to construct labour-intensive assets; (2) it will generate assets that will generate large-scale employment in the second and subsequent rounds; (3) it will generate minimum incomes for people, who will raise the aggregate effective demand in the economy (which, in turn, will give a push to economic growth); and (4) it will establish/ensure basic infrastructure and ecological regeneration—both of which will provide a sound foundation for economic growth in the concerned regions.

However, the process towards full employment will continue only if it is supported by the following supplementary policies:

- Construction of durable assets will require skill training (to start with, on-the-job training or short training) in the areas of masonry, carpentry, etc. Building of assets and infrastructure, like durable approach roads and internal roads, water harvesting structures, watershed development, and forestation, will require training of participating beneficiaries to create appropriate skills. NREGS will have to incorporate such training programs into these schemes.
- Ensuring productive use of assets and infrastructure constructed under NREGS will need support in terms of credit, technical guidance, marketing support, etc. It will be necessary to link NREGS with ongoing programmes, as well as additional programmes like entrepreneurship development training, to ensure that the assets are used. For example, if an irrigation facility is created, farmers will need support in terms of access to inputs, technical guidance, credit, etc.
- In order to ensure that NREGS does not promote development at low productivity/incomes, it will be necessary to link it with mainstream development and through diversification promoted via well-designed projects.

To sum up, NREGA works will have, in the subsequent rounds, multiplier impacts on the output, income, and employment levels in the village. It will be highly desirable to increase the value of these multipliers by selecting the assets well. Systematic planning of works that keep in mind the features of the village economy will give maximum results in terms of economic growth, reduction in unpaid work/drudgery, and engenderment of the development.

## **6. SUMMARY AND CONCLUSION**

### **6.1 Major Observations Emerging from the Study**

The present study has drawn attention to the potential of an employment guarantee programme like NREGS in a developing economy. The multiplier analysis has shown that, even in a backward poor village located in one of the most 200 backward districts in India, NREGS can

make a significant positive impact on the economy. It has also shown that if undertaken and implemented well, in the short run, NREGS can reduce poverty at the bottom and empower the poor. If planned well, it can have highly positive output, income, and employment multiplier effects on the local economy in the medium and long run. These works can also raise the multiplier coefficients and accelerate the process of development subsequently. NREGS has the potential for transferring both SNA and non-SNA work of women into productive work in the mainstream economy. NREGS can also relieve women from spending long hours on the collection of water, fuelwood, fodder, and childcare by strengthening local infrastructure to provide easy access to drinking water, fuelwood and energy, fodder, and childcare facilities. The availability of extra time can help women to access better opportunities in the labour market. The reduction in unpaid work can also have multiplier impact on the economy that will give another push to income, output, and employment.

The study has also identified an approach to maximize the values of the multipliers in the short and long run. It has been shown that the value of the multipliers can be raised by selecting works that promote the production of goods that are consumed in the local economy, as well as exported outside, works that are labour intensive in the construction phase and promote labour-intensive sectors in the post-construction phase, works that improve quality of life of people and productivity of workers, works that improve infrastructure related to health, education, and quality of life, and works that reduce unpaid work of women. Clearly, this calls for systematic planning of works, keeping in mind the needs of the local economy and its growth potential.

The positive impact of NREGS goes beyond the multiplier analysis. NREGS works can have a positive impact on the overall health and education status of the population, can lead to gender equality, and, in the long run, can contribute towards pro-poor and engendered development of the economy.

Another important finding of the study is that NREGS does not give any guarantee of work. In fact, its performance in terms of guaranteeing entitlements to workers is very poor. Since the guarantee of work and the related entitlements are at the core of NREGS, it is necessary to give them the highest priority. The entitlements also will mean a multi-fold expansion of the programme that will enable it to play its developmental role in the economy.

In order to create a significant impact of NREGS at the macro-level, it is important that NREGS is treated as a major programme that can have multiple macroeconomic impacts. Now that NREGS is spread over the entire country (rural areas), covers 45 million rural households, generates 2,163 million person-days, and spends the whopping amount of Rs 272,501 million (2008–09), it can have a highly significant impact on the national economy. There is therefore a need to plan for NREGS keeping in mind this developmental role of the programme. It needs to be underlined, however, that NREGS needs supplementary interventions to ensure construction of the right kind of assets and productive use of the assets generated under the scheme. Unless this is organized, the scheme may not yield optimum benefits.

## 6.2 Implications for Modifying NREGS Design

Our analysis of NREGS in Nana Kotda shows that there is a need to reorient NREGS and to modify its design. Reorientation refers to changes in the emphasis, while redesigning refers to additions of new features.

### *a. Reorientation in NREGS*

There is a need to enforce the following existing features with renewed focus:

- *Strong commitment to the basic entitlements to workers:* The first important reorientation required for NREGS is to focus on guaranteeing the basic entitlements of NREGS, as these are at the core of the programme. As seen earlier, this focus will enable multipliers to work in the economy.
- *Long-term perspective:* NREGS will have to be viewed in terms of its medium- and long-term impact on the economy, and its planning will have to facilitate this long-term role. Preparing a systematic perspective plan under the scheme needs to be enforced strictly. Such a plan will have to be prepared in a multi-level framework when necessary.
- *Strong planning component:* Organizing horizontal coordination and ensuring convergence of NREGS with ongoing programmes and processes will have to be an essential element of planning. Convergence will enable construction of durable assets along with the maintenance of the 60:40 labour-material ratio.
- *Decentralized planning and implementation:* Decentralization under NREGS will help in incorporating local needs and local potentials on the one hand and ensuring local participation, bringing transparency, and accountability and systematic monitoring on the other. It is therefore essential that this component of NREGS is enforced.
- *Social mobilization:* The role of social mobilization is critical in the enforcement of NREGS. Putting in place different committees at the state, district, block, and village levels will go a long way in encouraging mobilization of the people. Supporting NGOs as implementers and as social auditors will also help a lot.

### *b. Modifications in the design of NREGS*

The scheme needs some *modifications* in its designing. We strongly recommend the following:

- *Skill training:* This will have to be an important component of NREGS. It needs to be recognized that the construction of quality infrastructure, systematic management of natural resources, etc. requires skilled labour. Skill acquisition will help in improving the productivity and employability of workers. NREGS should allow for skill formation on the job or through specially designed short-term courses.
- *Additional assets in list:* There is a need to include some infrastructural assets related to quality of life of the poor in the list of permitted assets. These could be drinking water, sanitation, public hygiene, childcare centres, and critical and basic infrastructure for health and education. The required material components should come from other programmes.

- *Maintenance of public assets:* Considering the fact that lack of proper maintenance of roads and other public infrastructure is a serious problem in India and results in serious losses in the economy, inclusion of maintenance of public infrastructure will go a long way in maintaining the infrastructure on the one hand and generating regular wage employment for masses on the other. The successful of maintenance of public roads programmes in Bangladesh has helped keep roads in good condition, reduced the cost of frequent repairs, and created a surplus for further construction of roads (Rabbani Mehnaz 2006). Other countries that have included road maintenance in their employment programmes include Indonesia (Padata Karya EPWP) and South Africa.
- *Inclusion of services:* There is a strong case for including certain services under NREGS. There are several critical services that are important for women, children, and the poor that have not been provided by the government owing to a lack of funds and for other reasons. These services include childcare, particularly day-care of children; maintenance of public hygiene, water supply, and roads; and care of the sick, elderly and disabled. NREGS can include these services by providing employment to beneficiaries for three to four months or so. The rationale behind the inclusion of services is that: (1) persons performing these services are trained on the job so that their employability improves; (2) these services, which are very important, are provided to the community on rotation basis, but continuously; and (3) in the long run, these services can be converted into permanent services available to communities. Several countries have included services, such as childcare, care of the old and the sick (particularly HIV/AIDS patients), cooking for community, and other social services as a part of employment guarantee. Examples include *Jefes* of Argentina, *Padat Karya* of Indonesia, and EPWP of South Africa.
- *Labour-based infrastructural development:* The ILO has initiated a very useful programme of labour-based infrastructural development in many African countries (Miller 2006, ILO 2006). EPWP of South Africa is one success story. The objective is to maximize employment in the construction of infrastructure like roads, buildings, bridges, airport, etc. The programme uses light equipment in place of heavy machinery whenever feasible. This reduces cost of construction of infrastructure on the one hand and expands employment avenues on the other. This approach emphasizes that quality of infrastructure is up to the mark, i.e., quality is not compromised to generate employment. The issue of the ratio of labour cost and material cost is important. However, this can be worked out by selecting the right kind of infrastructure and the labour-intensive component of infrastructure for NREGS. Convergence of infrastructure development programmes like Bharat Nirman, the PM's flagship rural-road construction programme (Pradhan Mantri Gram Sadak Yojana), or other with NREGS could be very important here.
- *Focus on unpaid work:* Unpaid work in the labour market and unpaid domestic services, including care, are serious obstacles to the participation of women (and poor) in productive employment. The paradox of the simultaneous existence of unpaid work and high level of un/underemployment indicates that there is good potential for bringing unpaid work out into public domain to release unpaid workers for productive work. We believe that NREGS, through construction of required infrastructure, can perform this task. Though there are some scattered programmes in the areas of childcare, rural energy, water supply, and so on, they are far from adequate. There is need to develop a *focused and effective strategy* to reduce unpaid work, which is a major hurdle in gender equality. Since a lot of



this work can be planned at the local level, we believe that reduction in unpaid work should be a major focus of NREGS.

To sum up, NREGS needs a new orientation to serve as a scheme that generates productive assets in the economy. It needs a medium- to long-term perspective and goals, strong planning, and some additional features that can enable it to perform well as a scheme (along with being a scheme that empowers the poor) that contributes towards the shift of the economy to a full employment path.

### **6.3 Some Additional Recommendations**

Based on our field study, we make some additional recommendations: (1) the limit of 100 days should be raised to 200 days, at least in selected backward areas and for ST and SC population; (2) stress should be laid on the dissemination of NREGS to the villagers (ICE—information, communication, and education) so that people know their entitlements clearly; (3) social audit should be organized to ensure public participation on the one hand and accountability of administration to people on the other; and (4) supervision and monitoring should be strengthened to ensure that the employment guarantee and other entitlements are enforced.

To conclude, an employment guarantee scheme can address several issues in multiple ways. It can address the present employment challenge in these countries directly and indirectly by guaranteeing work at the lowest level on the one hand and by expanding the labour absorbing capacity of the mainstream economy on the other. It can develop infrastructure that contributes towards creating an enabling conditions for growth and reduce unpaid work by shifting it into the mainstream economy to relieve unpaid workers to access better opportunities in the labour market. The challenge is to maximize these benefits by maximizing the value of multipliers—employment, output, and income—by selecting the right kind of works and by ensuring the use of productive assets.

**APPENDIX A. VILLAGE SAM FOR NANA KOTDA**

**Appendix Table 1: Village SAM for Nana Kotda Village, 2006–07 (created March 2008)**

	Rice	Wheat	Jowar	Bajra	Maize	Tur	Pulses	Castor	Groundnut	Cotton	Fruit and vegetables	Other crop
Rice	0	0	0	0	0	0	0	0	0	0	0	0
Wheat	0	198,450	0	0	0	0	0	0	0	0	0	0
Jowar	0	0	7,580	0	0	0	0	0	0	0	0	0
Bajra	0	0	0	350	0	0	0	0	0	0	0	0
Maize	0	0	0	0	33,510	0	0	0	0	0	0	0
Tur	0	0	0	0	0	4,932	0	0	0	0	0	0
Pulses	0	0	0	0	0	0	850	0	0	0	0	0
Castor	0	0	0	0	0	0	0	4,900	0	0	0	0
Groundnut	0	0	0	0	0	0	0	0	800	0	0	0
Cotton	0	0	0	0	0	0	0	0	0	23,3490	0	0
Fruit and vegetables	0	0	0	0	0	0	0	0	0	0	5,720	0
Other crops	0	0	0	0	0	0	0	0	0	0	0	17,828
Animal husbandry	0	91,200	21,872	4,100	145,200	36,785	3,450	5,000	3,200	260,180	6,250	17,828
Wood	0	0	0	0	0	0	0	0	0	0	0	0
Kerosene	0	0	0	0	0	0	0	0	0	0	0	0
LPG	0	0	0	0	0	0	0	0	0	0	0	0
Cooking oil	0	0	0	0	0	0	0	0	0	0	0	0
Sugar	0	0	0	0	0	0	0	0	0	0	0	0
Tea and coffee	0	0	0	0	0	0	0	0	0	0	0	0
Tobacco products	0	0	0	0	0	0	0	0	0	0	0	0
Salt	0	0	0	0	0	0	0	0	0	0	0	0
Spices	0	0	0	0	0	0	0	0	0	0	0	0
Other food products	0	0	0	0	0	0	0	0	0	0	0	0
Cosmetics	0	0	0	0	0	0	0	0	0	0	0	0
Fertilizer	0	67,900	19,600	1,500	84,175	24,115	1,275	5,500	1,500	174,840	4,425	0
Pesticide	0	15,600	2,400	0	7,250	0	0	1,100	500	104,250	2,150	0
Textiles	0	0	0	0	0	0	0	0	0	0	0	0
Cotton ginning	0	0	0	0	0	0	0	0	0	0	0	0
Furniture	0	0	0	0	0	0	0	0	0	0	0	0
Bicycle	0	0	0	0	0	0	0	0	0	0	0	0
Fan	0	0	0	0	0	0	0	0	0	0	0	0
Two-wheeler	0	0	0	0	0	0	0	0	0	0	0	0
Four-wheeler	0	0	0	0	0	0	0	0	0	0	0	0
Electronics	0	0	0	0	0	0	0	0	0	0	0	0
Bricks	0	0	0	0	0	0	0	0	0	0	0	0
Cement	0	0	0	0	0	0	0	0	0	0	0	0
Sand	0	0	0	0	0	0	0	0	0	0	0	0
Roof metal sheet	0	0	0	0	0	0	0	0	0	0	0	0
Construction	0	0	0	0	0	0	0	0	0	0	0	0
Electricity	0	5,179	0	0	5,179	0	0	0	0	0	0	0
Medical and health	0	0	0	0	0	0	0	0	0	0	0	0

Education	0	0	0	0	0	0	0	0	0	0	0	0
Rent	0	0	0	0	0	0	0	0	0	0	0	0
Other expenses	0	5,612	0	0	5,612	0	0	0	0	0	0	0
Equipment and repair	0	1,897	0	0	1,897	0	0	0	0	0	0	0
Bangle vendor	0	0	0	0	0	0	0	0	0	0	0	0
Bangles	0	0	0	0	0	0	0	0	0	0	0	0
Fruit and vegetable vendor	0	0	0	0	0	0	0	0	0	0	0	0
Barber	0	0	0	0	0	0	0	0	0	0	0	0
Carpenter	0	0	0	0	0	0	0	0	0	0	0	0
Cloth shop	0	0	0	0	0	0	0	0	0	0	0	0
Pan shop	0	0	0	0	0	0	0	0	0	0	0	0
PDS shop	0	0	0	0	0	0	0	0	0	0	0	0
Transport	0	48,675	10,450	1,200	61,975	30,518	0	4,600	1,600	126,800	1,500	0
Other services	0	48,971	600	500	49,381	1,090	0	1,200	500	500	1,900	0
Labour M	0	301,651	42,908	3,762	230,454	39,837	8,404	17,307	13,200	531,377	8,077	71,313
Labour F	0	224,048	30,936	3,762	195,796	39,837	6,876	17,307	13,200	507,279	8,077	71,313
Labour income from outside	0	0	0	0	0	0	0	0	0	0	0	0
Labour from outside	0	0	0	0	0	0	0	0	0	0	0	0
Capital	0	1,095,425	98,249	19,476	642,538	68,360	51,910	123,982	97,500	3,055,835	42,673	534,848
Small farmer	0	0	0	0	0	0	0	0	0	0	0	0
Medium farmer	0	0	0	0	0	0	0	0	0	0	0	0
Large farmer	0	0	0	0	0	0	0	0	0	0	0	0
Self-employed in non-agriculture	0	0	0	0	0	0	0	0	0	0	0	0
Labour	0	0	0	0	0	0	0	0	0	0	0	0
Services	0	0	0	0	0	0	0	0	0	0	0	0
All other Households	0	0	0	0	0	0	0	0	0	0	0	0
Village panchayat	0	0	0	0	0	0	0	0	0	0	0	0
Capital A/C	0	0	0	0	0	0	0	0	0	0	0	0
From outside the village	428,185	0	0	58,854	0	0	145,319	0	0	145,321,035	336,072	92,228
<b>Total</b>	<b>428,185</b>	<b>2,104,608</b>	<b>234,595</b>	<b>93,504</b>	<b>1,462,967</b>	<b>245,474</b>	<b>218,084</b>	<b>180,895</b>	<b>132,000</b>	<b>150,315,585</b>	<b>416,844</b>	<b>805,358</b>

	Animal husbandry	Wood	Kerosene	LPG	Cooking oil	Sugar	Tea and coffee	Tobacco products	Salt	Spices	Other food products	Cosmetics
Rice	0	0	0	0	0	0	0	0	0	0	0	0
Wheat	82,095	0	0	0	0	0	0	0	0	0	0	0
Jowar	82,095	0	0	0	0	0	0	0	0	0	0	0
Bajra	82,095	0	0	0	0	0	0	0	0	0	0	0
Maize	82,095	0	0	0	0	0	0	0	0	0	0	0
Tur	0	0	0	0	0	0	0	0	0	0	0	0
Pulses	82,095	0	0	0	0	0	0	0	0	0	0	0
Castor	0	0	0	0	0	0	0	0	0	0	0	0
Groundnut	0	0	0	0	0	0	0	0	0	0	0	0
Cotton	82,095	0	0	0	0	0	0	0	0	0	0	0
Fruit and vegetables	0	0	0	0	0	0	0	0	0	0	0	0
Other crops	713,130	0	0	0	0	0	0	0	0	0	0	0
Animal husbandry	0	0	0	0	0	0	0	0	0	0	0	0
Wood	0	0	0	0	0	0	0	0	0	0	0	0
Kerosene	0	0	0	0	0	0	0	0	0	0	0	0
LPG	0	0	0	0	0	0	0	0	0	0	0	0
Cooking oil	0	0	0	0	0	0	0	0	0	0	0	0
Sugar	0	0	0	0	0	0	0	0	0	0	0	0
Tea and coffee	0	0	0	0	0	0	0	0	0	0	0	0
Tobacco products	0	0	0	0	0	0	0	0	0	0	0	0
Salt	0	0	0	0	0	0	0	0	0	0	0	0
Spices	0	0	0	0	0	0	0	0	0	0	0	0
Other food products	138,930	0	0	0	0	0	0	0	0	0	0	0
Cosmetics	0	0	0	0	0	0	0	0	0	0	0	0
Fertilizer	0	0	0	0	0	0	0	0	0	0	0	0
Pesticide	0	0	0	0	0	0	0	0	0	0	0	0
Textiles	0	0	0	0	0	0	0	0	0	0	0	0
Cotton ginning	0	0	0	0	0	0	0	0	0	0	0	0
Furniture	0	0	0	0	0	0	0	0	0	0	0	0
Bicycle	0	0	0	0	0	0	0	0	0	0	0	0
Fan	0	0	0	0	0	0	0	0	0	0	0	0
Two-wheeler	0	0	0	0	0	0	0	0	0	0	0	0
Four-wheeler	0	0	0	0	0	0	0	0	0	0	0	0
Electronics	0	0	0	0	0	0	0	0	0	0	0	0
Bricks	0	0	0	0	0	0	0	0	0	0	0	0
Cement	0	0	0	0	0	0	0	0	0	0	0	0
Sand	0	0	0	0	0	0	0	0	0	0	0	0
Roof metal sheet	0	0	0	0	0	0	0	0	0	0	0	0
Construction	0	0	0	0	0	0	0	0	0	0	0	0
Electricity	0	0	0	0	0	0	0	0	0	0	0	0
Medical and health	5,100	0	0	0	0	0	0	0	0	0	0	0
Education	0	0	0	0	0	0	0	0	0	0	0	0
Rent	0	0	0	0	0	0	0	0	0	0	0	0

Other expenses	0	0	0	0	0	0	0	0	0	0	0	0
Equipment and repair	0	0	0	0	0	0	0	0	0	0	0	0
Bangle vendor	0	0	0	0	0	0	0	0	0	0	0	0
Bangles	0	0	0	0	0	0	0	0	0	0	0	0
Fruit and vegetable vendor	0	0	0	0	0	0	0	0	0	0	0	0
Barber	0	0	0	0	0	0	0	0	0	0	0	0
Carpenter	0	0	0	0	0	0	0	0	0	0	0	0
Cloth shop	0	0	0	0	0	0	0	0	0	0	0	0
Pan shop	0	0	0	0	0	0	0	0	0	0	0	0
PDS shop	0	0	0	0	0	0	0	0	0	0	0	0
Transport	0	0	0	0	0	0	0	0	0	0	0	0
Other services	0	0	0	0	0	0	0	0	0	0	0	0
Labour M	298,981	0	0	0	0	0	0	0	0	0	0	0
Labour F	0	0	0	0	0	0	0	0	0	0	0	0
Labour income from outside	0	0	0	0	0	0	0	0	0	0	0	0
Labour from outside	0	0	0	0	0	0	0	0	0	0	0	0
Capital	1,341,101	0	0	0	0	0	0	0	0	0	0	0
Small farmer	0	0	0	0	0	0	0	0	0	0	0	0
Medium farmer	0	0	0	0	0	0	0	0	0	0	0	0
Large farmer	0	0	0	0	0	0	0	0	0	0	0	0
Self-employed in non-agriculture	0	0	0	0	0	0	0	0	0	0	0	0
Labour	0	0	0	0	0	0	0	0	0	0	0	0
Services	0	0	0	0	0	0	0	0	0	0	0	0
All other households	0	0	0	0	0	0	0	0	0	0	0	0
Village panchayat	0	0	0	0	0	0	0	0	0	0	0	0
Capital A/C	0	0	0	0	0	0	0	0	0	0	0	0
From outside the village	0	729,200	254,630	58,789	780,095	285,284	329,257	415,823	31,487	157,150	176,130	172,121
<b>Total</b>	<b>2,989,812</b>	<b>729,200</b>	<b>254,630</b>	<b>58,789</b>	<b>780,095</b>	<b>285,284</b>	<b>329,257</b>	<b>415,823</b>	<b>31,487</b>	<b>157,150</b>	<b>176,130</b>	<b>172,121</b>

	Fertilizer	Pesticide	Textiles	Cotton ginning	Furniture	Bicycle	Fan	Two-wheeler	Four-wheeler	Electronics	Bricks	Cement
Rice	0	0	0	0	0	0	0	0	0	0	0	0
Wheat	0	0	0	0	0	0	0	0	0	0	0	0
Jowar	0	0	0	0	0	0	0	0	0	0	0	0
Bajra	0	0	0	0	0	0	0	0	0	0	0	0
Maize	0	0	0	0	0	0	0	0	0	0	0	0
Tur	0	0	0	0	0	0	0	0	0	0	0	0
Pulses	0	0	0	0	0	0	0	0	0	0	0	0
Castor	0	0	0	0	0	0	0	0	0	0	0	0
Groundnut	0	0	0	0	0	0	0	0	0	0	0	0
Cotton	0	0	0	150,000,000	0	0	0	0	0	0	0	0
Fruit and vegetables	0	0	0	0	0	0	0	0	0	0	0	0
Other crops	0	0	0	0	0	0	0	0	0	0	0	0
Animal husbandry	0	0	0	0	0	0	0	0	0	0	0	0
Wood	0	0	0	0	0	0	0	0	0	0	0	0
Kerosene	0	0	0	0	0	0	0	0	0	0	0	0
Lpg	0	0	0	0	0	0	0	0	0	0	0	0
Cooking oil	0	0	0	0	0	0	0	0	0	0	0	0
Sugar	0	0	0	0	0	0	0	0	0	0	0	0
Tea and coffee	0	0	0	0	0	0	0	0	0	0	0	0
Tobacco products	0	0	0	0	0	0	0	0	0	0	0	0
Salt	0	0	0	0	0	0	0	0	0	0	0	0
Spices	0	0	0	0	0	0	0	0	0	0	0	0
Other food products	0	0	0	0	0	0	0	0	0	0	0	0
Cosmetics	0	0	0	0	0	0	0	0	0	0	0	0
Fertilizer	0	0	0	0	0	0	0	0	0	0	0	0
Pesticide	0	0	0	0	0	0	0	0	0	0	0	0
Textiles	0	0	0	0	0	0	0	0	0	0	0	0
Cotton ginning	0	0	0	0	0	0	0	0	0	0	0	0
Furniture	0	0	0	0	0	0	0	0	0	0	0	0
Bicycle	0	0	0	0	0	0	0	0	0	0	0	0
Fan	0	0	0	0	0	0	0	0	0	0	0	0
Two-wheeler	0	0	0	0	0	0	0	0	0	0	0	0
Four-wheeler	0	0	0	0	0	0	0	0	0	0	0	0
Electronics	0	0	0	0	0	0	0	0	0	0	0	0
Bricks	0	0	0	0	0	0	0	0	0	0	0	0
Cement	0	0	0	0	0	0	0	0	0	0	0	0
Sand	0	0	0	0	0	0	0	0	0	0	0	0
Roof metal sheet	0	0	0	0	0	0	0	0	0	0	0	0
Construction	0	0	0	40,000	0	0	0	0	0	0	0	0
Electricity	0	0	0	1,600,000	0	0	0	0	0	0	0	0
Medical and health	0	0	0	0	0	0	0	0	0	0	0	0
Education	0	0	0	0	0	0	0	0	0	0	0	0
Rent	0	0	0	0	0	0	0	0	0	0	0	0
Other expenses	0	0	0	800	0	0	0	0	0	0	0	0

Equipment and repair	0	0	0	150,000	0	0	0	0	0	0	0	0
Bangle vendor	0	0	0	0	0	0	0	0	0	0	0	0
Bangles	0	0	0	0	0	0	0	0	0	0	0	0
Fruit and vegetable vendor	0	0	0	0	0	0	0	0	0	0	0	0
Barber	0	0	0	0	0	0	0	0	0	0	0	0
Carpenter	0	0	0	0	0	0	0	0	0	0	0	0
Cloth shop	0	0	0	0	0	0	0	0	0	0	0	0
Pan shop	0	0	0	0	0	0	0	0	0	0	0	0
PDS shop	0	0	0	0	0	0	0	0	0	0	0	0
Transport	0	0	0	0	0	0	0	0	0	0	0	0
Other services	0	0	0	0	0	0	0	0	0	0	0	0
Labour M	0	0	0	415,099	0	0	0	0	0	0	0	0
Labour F	0	0	0	109,863	0	0	0	0	0	0	0	0
Labour income from outside	0	0	0	0	0	0	0	0	0	0	0	0
Labour from outside	0	0	0	398,438	0	0	0	0	0	0	0	0
Capital	0	0	0	15,234,238	0	0	0	0	0	0	0	0
Small farmer	0	0	0	0	0	0	0	0	0	0	0	0
Medium farmer	0	0	0	0	0	0	0	0	0	0	0	0
Large farmer	0	0	0	0	0	0	0	0	0	0	0	0
Self-employed in non-agriculture	0	0	0	0	0	0	0	0	0	0	0	0
Labour	0	0	0	0	0	0	0	0	0	0	0	0
Services	0	0	0	0	0	0	0	0	0	0	0	0
All other households	0	0	0	0	0	0	0	0	0	0	0	0
Village panchayat	0	0	0	0	0	0	0	0	0	0	0	0
Capital A/C	0	0	0	0	0	0	0	0	0	0	0	0
From outside the village	384,830	133,250	812,010	0	172,591	206,650	209,250	784,000	753,000	607,280	756,000	155,400
<b>Total</b>	<b>384,830</b>	<b>133,250</b>	<b>812,010</b>	<b>167,948,438</b>	<b>172,591</b>	<b>206,650</b>	<b>209,250</b>	<b>784,000</b>	<b>753,000</b>	<b>607,280</b>	<b>756,000</b>	<b>155,400</b>

	Sand	Roof metal sheet	Construction	Electricity	Medical and health	Education	Rent	Other expenses	Equipment and repair	Bangle vendor	Bangles	Fruit and vegetable vendor
Rice	0	0	0	0	0	1,557	0	0	0	0	0	0
Wheat	0	0	0	0	0	8,327	0	0	0	0	0	0
Jowar	0	0	0	0	0	11	0	0	0	0	0	0
Bajra	0	0	0	0	0	48	0	0	0	0	0	0
Maize	0	0	0	0	0	1,157	0	0	0	0	0	0
Tur	0	0	0	0	0	0	0	0	0	0	0	0
Pulses	0	0	0	0	0	1,927	0	0	0	0	0	0
Castor	0	0	0	0	0	0	0	0	0	0	0	0
Groundnut	0	0	0	0	0	0	0	0	0	0	0	0
Cotton	0	0	0	0	0	0	0	0	0	0	0	0
Fruit and vegetables	0	0	0	0	0	2,974	0	0	0	0	0	110,000
Other crops	0	0	0	0	0	0	0	0	0	0	0	0
Animal husbandry	0	0	0	0	0	7,410	0	0	0	0	0	0
Wood	0	0	168,000	0	0	0	0	0	0	0	0	0
Kerosene	0	0	0	0	0	2,100	0	0	0	0	0	0
LPG	0	0	0	0	0	2,200	0	0	0	0	0	0
Cooking oil	0	0	0	0	0	750	0	0	0	0	0	0
Sugar	0	0	0	0	0	160	0	0	0	0	0	0
Tea and coffee	0	0	0	0	0	0	0	0	0	0	0	0
Tobacco products	0	0	0	0	0	0	0	0	0	0	0	0
Salt	0	0	0	0	0	0	0	0	0	0	0	0
Spices	0	0	0	0	0	50	0	0	0	0	0	0
Other food products	0	0	0	0	0	0	0	0	0	0	0	0
Cosmetics	0	0	0	0	0	0	0	0	0	0	0	0
Fertilizer	0	0	0	0	0	0	0	0	0	0	0	0
Pesticide	0	0	0	0	0	0	0	0	0	0	0	0
Textiles	0	0	0	0	0	0	0	0	0	0	0	0
Cotton ginning	0	0	0	0	0	0	0	0	0	0	0	0
Furniture	0	0	0	0	0	0	0	0	0	0	0	0
Bicycle	0	0	0	0	0	0	0	0	0	0	0	0
Fan	0	0	0	0	0	0	0	0	0	0	0	0
Two-wheeler	0	0	0	0	0	0	0	0	0	0	0	0
Four-wheeler	0	0	0	0	0	0	0	0	0	0	0	0
Electronics	0	0	0	0	0	0	0	0	0	0	0	0
Bricks	0	0	756,000	0	0	0	0	0	0	0	0	0
Cement	0	0	155,400	0	0	0	0	0	0	0	0	0
Sand	0	0	96,600	0	0	0	0	0	0	0	0	0
Roof metal sheet	0	0	168,000	0	0	0	0	0	0	0	0	0
Construction	0	0	0	0	0	2,227	0	0	0	0	0	0
Electricity	0	0	0	0	0	981	0	0	0	0	0	0
Medical and health	0	0	0	0	0	1,204	0	0	0	0	0	0
Education	0	0	0	0	0	0	0	0	0	0	0	0
Rent	0	0	0	0	0	600	0	0	0	0	0	4,800
Other expenses	0	0	0	0	0	9,166	0	0	0	4,400	0	16,600
Equip. & repair	0	0	0	0	0	0	0	0	0	0	0	0



Bangle vendor	0	0	0	0	0	0	0	0	0	0	0	0
Bangles	0	0	0	0	0	0	0	0	0	75,600	0	0
Fruit and vegetable vendor	0	0	0	0	0	0	0	0	0	0	0	0
Barber	0	0	0	0	0	0	0	0	0	0	0	0
Carpenter	0	0	0	0	0	0	0	0	0	0	0	0
Cloth shop	0	0	0	0	0	0	0	0	0	0	0	0
Pan shop	0	0	0	0	0	0	0	0	0	0	0	0
PDS shop	0	0	0	0	0	0	0	0	0	0	0	0
Transport	0	0	0	0	0	800	0	0	0	0	0	0
Other services	0	0	0	0	0	0	0	0	0	0	0	0
Labour M	0	0	462,000	0	0	55,122	0	0	0	0	0	0
Labour F	0	0	0	0	0	0	0	0	0	0	0	0
Labour income from outside	0	0	0	0	0	0	0	0	0	0	0	0
Labour from outside	0	0	0	0	0	1,228,907	0	0	0	0	0	0
Capital	0	0	121,027	0	0	0	0	0	0	32,000	0	146,600
Small farmer	0	0	0	0	0	0	0	0	0	0	0	0
Medium farmer	0	0	0	0	0	0	0	0	0	0	0	0
Large farmer	0	0	0	0	0	0	0	0	0	0	0	0
Self-employed in non-agriculture	0	0	0	0	0	0	0	0	0	0	0	0
Labour	0	0	0	0	0	0	0	0	0	0	0	0
Services	0	0	0	0	0	0	0	0	0	0	0	0
All other households	0	0	0	0	0	0	0	0	0	0	0	0
Village panchayat	0	0	0	0	0	0	0	0	0	0	0	0
Capital A/C	0	0	0	0	0	0	0	0	0	0	0	0
From outside the village	96,600	168,000	0	2,143,761	970,204	0	69,200	128,849	232,633	0	75,600	0
<b>Total</b>	<b>96,600</b>	<b>168,000</b>	<b>1,927,027</b>	<b>2,143,761</b>	<b>970,204</b>	<b>1,327,678</b>	<b>69,200</b>	<b>128,849</b>	<b>232,633</b>	<b>112,000</b>	<b>75,600</b>	<b>278,000</b>

	Barber	Carpenter	Cloth shop	Pan shop	PDS shop	Transport	Other service	Labour M	Labour F	Labour income from outside	Labour from outside	Capital
Rice	0	0	0	0	72,000	0	0	0	0	0	0	0
Wheat	0	0	0	0	144,000	0	0	0	0	0	0	0
Jowar	0	0	0	0	36,000	0	0	0	0	0	0	0
Bajra	0	0	0	0		0	0	0	0	0	0	0
Maize	0	0	0	0	36,000	0	0	0	0	0	0	0
Tur	0	0	0	0		0	0	0	0	0	0	0
Pulses	0	0	0	0	36,000	0	0	0	0	0	0	0
Castor	0	0	0	0	0	0	0	0	0	0	0	0
Groundnut	0	0	0	0	0	0	0	0	0	0	0	0
Cotton	0	0	0	0	0	0	0	0	0	0	0	0
Fruit and vegetables	0	0	0	0	0	0	0	0	0	0	0	0
Other crops	0	0	0	74,400	0	0	0	0	0	0	0	0
Animal husbandry	0	0	0	0	0	0	0	0	0	0	0	0
Wood	0	380,000	0	0	0	0	0	0	0	0	0	0
Kerosene	0	0	0	0	36,000	0	0	0	0	0	0	0
LPG	0	0	0	0	0	0	0	0	0	0	0	0
Cooking oil	0	0	0	0	0	0	0	0	0	0	0	0
Sugar	0	0	0	0	0	0	0	0	0	0	0	0
Tea and coffee	0	0	0	0	0	0	0	0	0	0	0	0
Tobacco products	0	0	0	223,200	0	0	0	0	0	0	0	0
Salt	0	0	0	0	0	0	0	0	0	0	0	0
Spices	0	0	0	37,200	0	0	0	0	0	0	0	0
Other food products	0	0	0	37,200	0	0	0	0	0	0	0	0
Cosmetics	4,025	0	0	0	0	0	0	0	0	0	0	0
Fertilizer	0	0	0	0	0	0	0	0	0	0	0	0
Pesticide	0	0	0	0	0	0	0	0	0	0	0	0
Textiles	0	0	400,000	0	0	0	0	0	0	0	0	0
Cotton ginning	0	0	0	0	0	0	0	0	0	0	0	0
Furniture	0	0	0	0	0	0	41,200	0	0	0	0	0
Bicycle	0	0	0	0	0	0	0	0	0	0	0	0
Fan	0	0	0	0	0	0	0	0	0	0	0	0
Two-wheeler	0	0	0	0	0	0	0	0	0	0	0	0
Four-wheeler	0	0	0	0	0	83,000	0	0	0	0	0	0
Electronics	0	0	0	0	0	0	0	0	0	0	0	0
Bricks	0	0	0	0	0	0	0	0	0	0	0	0
Cement	0	0	0	0	0	0	0	0	0	0	0	0
Sand	0	0	0	0	0	0	0	0	0	0	0	0
Roof metal sheet	0	0	0	0	0	0	0	0	0	0	0	0
Construction	0	0	0	0	0	0	0	0	0	0	0	0
Electricity	0	31,200	1,500	1,200	1,800	0	5,190	0	0	0	0	0
Medical and health	0	0	0	0	0	0	0	0	0	0	0	0
Education	0	0	0	0	0	0	0	0	0	0	0	0
Rent	0	1,320	0	7,200	480	0	8,600	0	0	0	0	0

Other expenses	3,600	500	4,800	15,600	19,200	33,160	3,800	0	0	0	0	0
Equipment and repair	7,500	32,000	0	0	40	17,200	7,100	0	0	0	0	0
Bangle vendor	0	0	0	0	0	0	0	0	0	0	0	0
Bangles	0	0	0	0	0	0	0	0	0	0	0	0
Fruit and vegetable vendor	0	0	0	0	0	0	0	0	0	0	0	0
Barber	0	0	0	0	0	0	0	0	0	0	0	0
Carpenter	0	0	0	0	0	0	0	0	0	0	0	0
Cloth shop	0	0	0	0	0	0	0	0	0	0	0	0
Pan shop	0	0	0	0	0	0	0	0	0	0	0	0
PDS shop	0	0	0	0	0	0	0	0	0	0	0	0
Transport	0	0	0	0	0	0	0	0	0	0	0	0
Other services	0	0	0	0	0	0	0	0	0	0	0	0
Labour M	0	80	16,000	0	6,000	0	3,000	0	0	0	0	0
Labour F	0	0	0	0	0	0	0	0	0	0	0	0
Labour income from outside	0	0	0	0	0	0	0	0	0	0	0	0
Labour from outside	0	0	0	0	0	0	0	0	0	0	0	0
Capital	74,875	276,000	137,700	84,000	20,480	485,640	350,520	0	0	0	0	0
Small farmer	0	0	0	0	0	0	0	0	0	0	0	3,483,429
Medium farmer	0	0	0	0	0	0	0	0	0	0	0	20,43,283
Large Farmer	0	0	0	0	0	0	0	0	0	0	0	2,057,010
Self-employed in non-agriculture	0	0	0	0	0	0	0	0	0	0	0	1,243,202
Labour	0	0	0	0	0	0	0	2538,458	1,197,048	181,018	0	0
Services	0	0	0	0	0	0	0	66,259	31,245	2,001,256	0	0
All other households	0	0	0	0	0	0	0	0	0	0	0	436,098
Village panchayat	0	0	0	0	0	0	0	0	0	0	0	0
Capital A/C	0	0	0	0	0	0	0	0	0	0	0	0
From outside the village	0	0	0	108,000	0	0	0	0	0	0	0	0
<b>Total</b>	<b>90,000</b>	<b>721,100</b>	<b>560,000</b>	<b>588,000</b>	<b>408,000</b>	<b>619,000</b>	<b>419,410</b>	<b>2,604,717</b>	<b>1,228,293</b>	<b>2,182,274</b>	<b>2,182,256</b>	<b>9,263,021</b>

	Small farmer	Medium farmer	Large farmer	Self-employed in non-agri.	Labour	Services	All other households	Village panchayat	Capital A/C	Going outside the village	Total
Rice	67,136	28,482	14,576	18,749	193,797	20,842	11,047	0	0	0	428,185
Wheat	138,006	67,993	71,241	26,312	429,923	33,450	19,526	0	0	885,285	2,104,608
Jowar	0	2,433	0	0	0	0	0	0	0	106,475	234,594
Bajra	3,346	1,217	0	0	5,718	0	730	0	0	0	93,504
Maize	42,743	8,342	8,636	9,663	118,032	12,984	4,698	0	0	1,105,109	1,462,967
Tur	29,949	23,818	22,518	13,739	78,174	13,635	3,937	0	0	54,773	245,474
Pulses	23,494	12,593	7,921	6,156	38,021	7,191	1,837	0	0	0	218,084
Castor	0	0	0	0	0	0	0	0	0	175,995	180,895
Groundnut	0	0	0	0	0	0	0	0	0	131,200	132,000
Cotton	0	0	0	0	0	0	0	0	0	0	150,315,585
Fruit and vegetables	79,538	40,500	21,171	24,896	81,143	32,741	18,162	0	0	0	416,844
Other crops	0	0	0	0	0	0	0	0	0	0	805,358
Animal husbandry	272,985	157,899	127,577	120,260	256,306	163,221	51,061	0	0	1,238,029	2,989,812
Wood	38,080	13,200	10,060	12,600	90,380	9,600	7,280	0	0	0	729,200
Kerosene	49,200	16,800	8,400	12,700	106,330	14,400	8,700	0	0	0	254,630
LPG	14,702	4,631	6,768	6,116	7,448	14,444	2,480	0	0	0	58,789
Cooking oil	190,110	80,726	54,628	73,243	285,044	67,586	28,008	0	0	0	780,095
Sugar	73,757	28,275	16,048	20,172	111,649	21,559	13,663	0	0	0	285,284
Tea and coffee	82,831	32,084	22,508	26,365	126,244	26,158	13,067	0	0	0	329,257
Tobacco products	53,327	13,128	5,110	18,007	88,634	5,293	9,125	0	0	0	415,823
Salt	6,661	2,324	1,351	2,287	15,008	2,318	1,539	0	0	0	31,487
Spices	25,343	8,439	4,718	9,155	59,202	6,996	6,047	0	0	0	157,150
Other food products	0	0	0	0	0	0	0	0	0	0	176,130
Cosmetics	16,698	5,701	3,296	5,339	126,621	5,640	4,801	0	0	0	172,121
Fertilizer	0	0	0	0	0	0	0	0	0	0	384,830
Pesticide	0	0	0	0	0	0	0	0	0	0	133,250
Textiles	101,230	35,618	23,613	35,469	164,369	38,552	13,159	0	0	0	812,010
Cotton ginning	0	0	0	0	0	0	0	0	0	167,948,438	167,948,438
Furniture	14,443	27,708	7,636	12,863	35,411	25,668	7,662	0	0	0	172,591
Bicycle	51,100	19,400	11,400	10,900	90,350	13,800	9,700	0	0	0	206,650
Fan	49,950	24,150	13,900	14,100	75,750	23,500	7,900	0	0	0	209,250
Two-wheeler	200,000	147,000	110,000	32,000	49,000	206,000	40,000	0	0	0	784,000
Four-wheeler	300,000	0	370,000	0	0	0	0	0	0	0	753,000
Electronics	107,300	98,200	79,400	50,800	120,300	124,700	26,580	0	0	0	607,280
Bricks	0	0	0	0	0	0	0	0	0	0	756,000
Cement	0	0	0	0	0	0	0	0	0	0	155,400
Sand	0	0	0	0	0	0	0	0	0	0	96,600
Roof metal sheet	0	0	0	0	0	0	0	0	0	0	168,000
Construction	70,950	33,290	20,600	19,750	171,635	37,320	10,730	80,000	1,440,525	0	1,927,027
Electricity	100,420	45,500	29,108	25,800	200,605	40,500	22,000	27,600	0	0	2,143,762
Medical and health	318,140	124,070	27,390	45,150	337,320	80,050	31,780	0	0	0	970,204
Education	185,583	39,750	45,670	40,114	202,590	187,046	12,595	0	0	614,330	1,327,678
Rent	9,000	0	1,200	0	33,600	0	2,400	0	0	0	69,200

Other expenses	0	0	0	0	0	0	0	6,000	0	0	128,850
Equipment and repair	0	0	0	0	0	0	0	15,000	0	0	232,634
Bangle vendor	40,262	13,744	7,947	12,873	12,000	13,597	11,577	0	0	0	112,000
Bangles	0	0	0	0	0	0	0	0	0	0	75,600
Fruit and vegetable vendor	55,536	28,278	14,782	17,383	126,479	22,861	12,681	0	0	0	278,000
Barber	32,210	10,995	6,357	10,298	10,000	10,878	9,262	0	0	0	90,000
Carpenter	100,617	21,012	36,014	20,057	63,869	35,282	11,588	0	0	432,660	721,100
Cloth Shop	122,700	43,172	28,622	42,991	259,836	46,728	15,951	0	0	0	560,000
Pan shop	162,784	40,074	15,599	54,967	270,565	16,156	27,855	0	0	0	588,000
PDS shop	82,725	32,306	28,292	20,813	207,891	23,234	12,739	0	0	0	408,000
Transport	90,169	66,863	50,033	14,555	22,288	68,780	18,194	0	0	0	619,000
Other services	112,969	38,564	22,297	36,119	35,073	38,152	31,593	0	0	0	419,410
Labour M	0	0	0	0	0	0	0	80,146	0	0	2,604,717
Labour F	0	0	0	0	0	0	0	0	0	0	1,228,293
Labour income from outside	0	0	0	0	0	0	0	0	0	0	2,182,274
Labour from outside	0	0	0	0	0	0	0	0	0	554,911	2,182,256
Capital	0	0	0	0	0	0	0	0	0	-14,871,956	9,263,021
Small farmer	0	0	0	0	0	0	0	396,000	0	0	3,879,429
Medium farmer	0	0	0	0	0	0	0	0	0	0	2,043,283
Large farmer	0	0	0	0	0	0	0	0	0	0	2,057,010
Self-employed in non-agriculture	0	0	0	0	0	0	0	180,000	0	0	1,423,202
Labour	0	0	0	0	0	0	0	828,000	0	0	4,744,524
Services	0	0	0	0	0	0	0	72,000	0	0	2,170,760
All other households	0	0	0	0	0	0	0	36,000	0	0	472,098
Village panchayat	70,363	23,122	15,634	10,531	0	9,281	54,069			0	183,000
Capital A/C	293,055	581,882	684,992	489,909	37,920	650,618	-23,622	-1,537,746	0	363,518	1,440,525
From outside the village	0	0	0	0	0	0	0	0	0	0	158,738,767
<b>Total</b>	<b>3,879,411</b>	<b>2,043,283</b>	<b>2,057,010</b>	<b>1,423,202</b>	<b>4,744,524</b>	<b>2,170,760</b>	<b>472,098</b>	<b>183,000</b>	<b>1,440,525</b>	<b>158,738,767</b>	

## APPENDIX B. TECHNICAL NOTE ON THE SOCIAL ACCOUNTING MATRIX

A social accounting matrix (SAM) can be defined as an organized matrix representation of all transactions and transfers between different production activities, factors of production, and institutions (households, corporate sector, and government) within the economy and with respect to the rest of the world. A SAM is thus a comprehensive accounting frame work within which the full circular flow of income from production to factor incomes, household income to household consumption, and back to production is captured. All the transactions in the economy are presented in the form of a matrix in a SAM. Each row of the SAM gives receipts of an account while the column gives the expenditure. The total of each row is supposed to be equal to the total of each corresponding column. An entry in row  $i$  and column  $j$  represents the receipts of account  $i$  from account  $j$ . A SAM can be regarded as an extension of input-output (I-O) tables, a widely used framework to provide detailed information on the flow of goods and services, as well as on the structure of production costs. In this matrix, final consumption expenditure, capital formation, and trade are shown by product or industry of origin and intermediate consumption both by product or industry of origin and destination. Income generation is shown by value-added. However it is worth noting that the symmetric I-O table is based on the absorption (use) matrix and make (supply) matrix. An absorption matrix gives the inputs of the commodities into industries (activities), while each row of the make matrix gives the distribution of the output of different commodities produced by the industry of that row. Each column of this matrix gives the values of output of that commodity produced by different industries. The symmetric I-O table is obtained from these two matrices by making certain mathematical assumptions regarding technologies (CSO 2005). The I-O matrix does not show the interrelationship between value-added and final expenditures. By extending an I-O table and showing an entire circular flow of income at the macro level, one captures the essential features of a SAM.<sup>25</sup>

As shown in the figure below, a village SAM has the following account structure: (1) commodity accounts; (2) factor accounts; (3) institutional accounts; (4) capital accounts; and (5) rest of the world (ROW) accounts. The SAM constructed for this study covers the entire village. The basic structure of this SAM is based on the following transactions and transfers in the economy: Production requires intermediate goods and the primary factors of production, viz. labour and capital. These factor endowments are contributed by institutions (viz. households, firms, and government) that, in turn, receive factor payment as value-added. Apart from the value-added, village institutions get income from other sources, such as transfers from the government and the rest of the world. The income is spent as the consumption expenditure on goods and services and for payment of taxes, and the rest is saved for the future. The total supply in the economy has to be matched by the demand made by the institutions and capital

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<sup>25</sup> Previous attempts to build a SAM for India have been made by Sarkar and Subbarao (1981), Sarkar and Panda (1986), De Janvy and Subbarao (1986), Subramanian (1993), Pradhan and Sahoo (1996), and Pradhan, Saluja, and Singh (2006). At the village level, however, there is only one SAM in India, according to our knowledge. This was constructed by Shankar and Sadoulet (1990) for Kanzara village of Maharashtra state to examine the effects of investments on the village economy. This SAM covered 40 households and, in that sense, it did not cover the entire village.

formation, i.e., purchase of investment goods. In the SAM, an extra breakdown of the household sector is done to reflect the role of people in the economy.

**Appendix Table 2: The Structure of the SAM**

			EXPENDITURES						TOTALS
			ENDOGENOUS			EXOGENOUS			
			FACTORS	HOUSEHOLDS	PRODUCTIVE ACTIVITIES	GOVERNMENT	REST OF THE WORLD	CAPITAL ACCOUNT	
RECEIPTS OR INCOMES	ENDO-GENOUS	FACTORS	0	0	T <sub>13</sub>	X <sub>14</sub>	X <sub>15</sub>	X <sub>16</sub>	Y <sub>1</sub>
		HOUSEHOLDS	T <sub>21</sub>	T <sub>22</sub>	0	X <sub>24</sub>	X <sub>25</sub>	X <sub>26</sub>	Y <sub>2</sub>
		PRODUCT ACTIVITY	0	T <sub>32</sub>	T <sub>33</sub>	X <sub>34</sub>	X <sub>35</sub>	X <sub>36</sub>	Y <sub>3</sub>
	EXO-GENOUS	GOVERNMENT	L <sub>41</sub>	L <sub>42</sub>	L <sub>43</sub>	t <sub>44</sub>	t <sub>45</sub>	t <sub>46</sub>	Y <sub>4</sub>
		REST OF WORLD	L <sub>51</sub>	L <sub>52</sub>	L <sub>53</sub>	t <sub>54</sub>	t <sub>55</sub>	t <sub>56</sub>	Y <sub>5</sub>
		CAPITAL ACCOUNTS	L <sub>61</sub>	L <sub>62</sub>	L <sub>63</sub>	t <sub>44</sub>	t <sub>45</sub>	t <sub>46</sub>	Y <sub>6</sub>
TOTALS		Y <sub>1</sub>	Y <sub>2</sub>	Y <sub>3</sub>	Y <sub>4</sub>	Y <sub>5</sub>	Y <sub>6</sub>		

The village SAM for Nana Kotda consists of the following components:

**Production activities:** The production sectors included in the SAM are: (1) crop husbandry—wheat, jowar, bajra, maize, tur, other pulses, oilseeds, cotton, fruits and vegetables, and other crops (cultivation of these crops is divided for irrigated and rainfed areas, but in SAM we have only one column for each crop); (2) animal husbandry—milk and milk products, wool and meat, cow dung manure, and bullocks; (3) construction; (4) service providers and the self-employed—fruit and vegetable vendor, bangle vendor, cloth shop, pan shop, PDS shop, transport, carpenter, and other services; (5) manufacturing—cotton ginning factory; and (6) services—government services (education, welfare) and private services (petty services).

**Factors of production:** The factors of production included in the SAM are: (1) Labour—males and females (by sex); and (2) capital—capital includes mixed income of the self-employed.

**Institutions:** The institutions covered in the SAM are: (1) households *by* occupation—small farmers, medium farmers, large farmers, labour, self-employed in non-agriculture, service, and other households (the farmers are divided into three categories based on the cultivatable land owned by them—marginal farmers own up to 2.5 acres, small farmers own from 2.5 to 5.0 acres, and large farmers own land above 5.0 acres); and (2) government—only the village Panchayat (local body) is taken as the government. The village Panchayat receives land and house taxes from households as income and government grants from other sources outside the village. It gives grants for the development activities such as house construction, which are treated as an expenditure for the Panchayat along with its other expenditures. Savings in the economy, including depreciation on capital, consist mainly of household savings.

***Outside the village:*** Consists of values of sectors and labour going out of the village and coming into the village

Construction of the SAM for the village of Nana Kotda required data on the output in different sectors, the value-added by these sectors, and sector-wise consumption of different components of final demand. The value-added for each sector is divided into labour income (hired) by gender and capital income (including mixed income). Although the sex-wise value of labour is separately available, for inverting the SAM we have made it a single row for the all hired labour.

In all there are 55 producing sectors. The first 13 sectors (from rice to animal husbandry) correspond to the agricultural sector, where many of the items are produced in the village. For the construction of the SAM, the normal yield for the crops has been taken for the last two years (i.e. 2006–07 and 2007–08), because 2006–07 happened to be a drought year. The sectors 14 to 38 are manufacturing sectors where all the items are brought from outside the village—except for cotton ginning (for which there is only one factory), which produces cotton inside the village and sends the entire production, including that of cotton seed, outside the village. The other remaining sectors are the service-providing sectors in the village. The activities could not be separated from commodities because the data available was directly on a commodity basis, both for inputs as well as outputs. Hence, the SAM is directly in the commodity x commodity form. The commodity x commodity matrix is derived from use and supply matrices.

A complete census of all households in the village was carried out to collect data on all entities and the sector-wise expenditure of different types of households, as well as data about the occupation and education level of all household members. Except for salaried and wage-labour households, the details of costs and revenue earned were collected for all households. For example, data collected from wheat producers included data on the value of the output of wheat produced in the fields (area x yield x price), value of the by-products, and consumption of different inputs like seed, fertilizers, pesticides, etc. For salaried and wage-labour households, the details of their incomes were collected.

In addition, detailed information was collected from all institutions/organizations (like schools, cooperative societies, and Panchayats) about their activities, costs, and revenues. Details were also collected about the working of NREGA in the village.

In the SAM for cultivators there is one row under capital for each crop. This is the total for different categories of cultivators. In the column under capital these values have been given separately for different types of cultivators. The entry in the cell of capital and self-employed row is equal to the total of capital column for all self-employed non-agricultural categories. For all other households the entire earnings are put under “capital.” The earnings under labour consist of those for the labour as well as some helpers getting salaries. There are some labourers who go to nearby villages/Idar town to earn money. The major income from outside the village, however, is from services. The total of their income is put under service households.



For trading activities (like fruit, vegetable, and bangle vendors) income is calculated as net profits earned by deducting the value of inputs from the gross receipts. In the case of fruits and vegetables the expenditure obtained from the census of the household is adjusted for the expenditure by the fruit and vegetable vendor. Similar adjustments have been done in the cases of the cloth shop, the pan shop, and PDS shops.

There are two cooperatives in the village, namely, the milk cooperative and the farmers' service society. The income shown in the column is their profit. This profit is divided among its members who are agriculturists. There is a separate column for this in the SAM in order to show the importance of cooperatives in the village. For the construction of the SAM, as well as for using it for multiplier analysis, we have merged the column with the different columns under crop production (refer to Appendix C).

The SAM is a double-entry table that provides information about the economy. Each row of the table details the receipts of an account, while the columns detail the corresponding expenditure. A SAM is always a square matrix. SAM provides information on interactions between production activities (by sectors), factors of production (capital and labour), institutions (households by occupations, local government), capital accounts, and the rest of the world (imports, exports). These accounts are symmetrically arranged (in rows and columns) forming a square matrix that traces the origin and destinations of expenditure and receipts. A simplified aggregate SAM for the economy of Nana Kotda is given.

The first row gives the income of factors of production. This income consists of the income of male and female labour working in the village, the income of labour working outside the village, and capital income, including the mixed income of the self-employed (e.g., income of the family labour of cultivators). The second row shows the income of the households, which is mainly in the form of the income of the factors of production. It also includes the grants from the government. The corresponding column gives the expenditure of households, taxes paid, and the saving of the household.

The third row gives the income of production activities. This income is in the form of the consumption by households and consumption by the production activities in the form of intermediate consumption and exports. The corresponding column gives the expenditure in the form of payments to factors of production, expenditure on inputs on item produced in the village, and payments to outside world in the form of imports of inputs of materials and labour. The fourth row gives the income of the local government from taxes and the fourth column gives the expenditure of the government. The fifth row, as well as the fifth column, tells about the exports from the village and imports to the village. The last row and last column deal with the capital account, which is in the form of saving of the household, local government, and from outside.

From the perspective of this study, a SAM is a powerful tool in that it can include sufficient details to point out gender differences—and biases—in the division of labour, patterns of income received, and expenditures incurred. In addition to the transparency of income distribution and the labour composition of production (as it emerges from the description of the

productive structure of the economy), it allows one to examine the impact of different NREGA works via simulations of hypothetical policy intervention scenarios.

**APPENDIX C. UNPAID WORK AND ITS IMPLICATIONS FOR PUBLIC WORKS PROGRAMMES**

**Appendix Table 3: Unpaid Work and Its Implications for Public Works Programmes**

Type of Activity	Description of Activities	Implications for EGPs: Works / Assets	Impact
1. Non-market economic activities: acquiring/collecting basic necessities	1. Fetching water	1. Construction of water harvesting structures	1. Public provisioning of necessities
		2. Deepening tank/improving traditional structures	
		3. Organizing distribution of water supply and laying pipelines	
	2. Fetching fuelwood from common lands	1. Regeneration of common lands and plantation: social forestry	1. Access to low cost healthy energy
		2. Regeneration of forest lands	2. Promotion to income-generating activities
		3. Constructing smokeless stoves/improved stoves	3. Improved environmental resources
		4. Constructing of biogas plants running on cow dung, biomass	
		4. Plantation of biofuel trees	
	3. Walking long distance for relieving activities	1. Construction of latrines	1. Improved health facilities
		2. Construction of drainages	
2. Non-market economic activities: collection of raw material for income generating activities	1. Collection of fodder from common lands	1. Regeneration of common lands for fodder crops or fodder farms	1. Improved income/productive employment
	2. Collection of wood/bamboo, etc. for crafts/manufacturing goods	1. Regeneration of common lands: social forestry	1. Improved incomes/productive employment
		2. Regeneration of forest lands	2. Improved environmental resources
		3. Waste land (public) development	

3. Unpaid domestic work: care-related activities	1. Childcare	1. Constructing childcare centres	1. Improved child health
		2. Constructing child development centres for children below 5	2. More time for women to rest or to work in productive employment
		3. Constructing school rooms and school facilities	3. Improved education: more enrolment and less drop out
		4. Construction of midday meal kitchens	
	2. Care of the sick, old and disabled in the household	1. Constructing of health centres/dispensaries	1. Improved health facilities
		2. Improving/repairing expanding existing health facilities	
		3. Constructing facilities for public sanitation and hygiene	
4. Unpaid domestic work: household repair in non durable shelter	1. Repair and maintenance of house: floor, walls, and ceiling	1. Construction of durable housing for the poor	1. Improved homes of people
			2. More time available for rest/work
5. Unpaid work: travelling	1. Travelling for different reasons on foot	1. Construction of roads: approach roads, feeder roads, paving of internal roads	1. Less drudgery of walking
			2. More time for rest / work

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