

Impact of MGNREGA on Agriculture and Labour Market in Thiruvallur and Kancheepuram Districts

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ABSTRACT

The natural resources and agriculture farming systems are all subject to degradation and over exploitation, leading to water scarcity, loss of soil fertility, and a reduction in agricultural production, adversely affecting the livelihoods of the rural communities and increasing their vulnerability. The primary objective of MGNREGA is to enhance livelihood security in rural India. It is one of the job providing guarantee schemes which provides at least 100 working days of non-skilled job in their village in a fiscal year. All the works undertaken through MGNREGA aimed at increasing productivity in agriculture and sustaining it for future growth in agriculture sector. However, in real practice, the contribution of works carried out through MGNREGA to agricultural growth depends on the extent to which the public investment of these works have created durable assets which could sustain the productivity in agriculture. The present paper has employed Paired sample t test, multivariate regression, binary logistic regression and ordered logistic regression with link function-PLUM. The paper explores the impact of MGNREGA on agricultural production and labour market in Thiruvallur and Kancheepuram districts in Tamil Nadu. All such activities undertaken by the people who involved in those areas are well taken seriously and consciously then the rural infrastructure of society will improve a lot and ultimately lead to sustainable development.

Keywords: Productivity, growth, sustainability, agriculture and development

1. INTRODUCTION

The National Rural Employment Guarantee Act (NREGA) is one of the employment policies of the rural population of the country which was notified in the gazette by the Government of India on 7th September 2005 and came into the action in 2nd February 2006. The NREGA programme has been renamed as Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) in 2nd October 2009 by the ruling United Progressive Alliance Government. Creating a sustainable economic and better living status among the rural poor is the main objective of this policy implementation. Apart from providing wage employment opportunities, this scheme also aim at creating sustainable rural livelihood through regeneration of natural resource base that is augmenting productivity and supporting creation of durable assets. The present paper explores the impact of MGNREGA on agricultural production and labour market in Thiruvallur and Kancheepuram districts in Tamil Nadu.

2. STATEMENT OF THE PROBLEM

Most of the works carried out under Mahatma Gandhi National Employment Guarantee Act (MGNREGA) aimed at providing assured water supply for irrigation and in retaining the fertility power of the soil. All the works undertaken through MGNREGA aimed at increasing productivity in agriculture and sustaining it for future growth in agriculture sector. However, in real practice, the contribution of works carried out through MGNREGA to agricultural growth depends on the extent to which the public investment of these works have created durable assets which could sustain the productivity in agriculture. Another important problem which hinders agricultural growth is the shortage of labour in rural areas particularly in agriculture sector. The MGNREGA aimed at providing atleast 100 days of guaranteed employment to the rural households when alternative employment opportunities are scarce. But some of the studies have shown that the total number of employment days generated was about 20 per cent of the legally mandated minimum and the days that were created were not generated during agricultural lean season. Of the 165 days of employment during agriculture lean period, 90 per cent was generated from non- MGNREGA source only. Bulk of the MGNREGA projects are to do with excavating or re-excavating ponds and such works cannot be performed during raining season.

3. OBJECTIVES OF THE STUDY

- To analyze the extent to which the MGNREGA was able to create durable assets which contribute to agricultural production.
- To understand the labour utilization in agriculture sector particularly in region where MGNREGA has been implemented.
- To analyze the impact of MGNREGA on the labour market (demand for and supply of labour) and wage rate

4. METHODOLOGY OF THE STUDY

Methodology of the study plays a significant role in the research process. The researcher has employed Paired sample t-test, multivariate regression, binary logistic regression, ordered logistic regression with link function-PLUM to test stated hypotheses and explain the stated objectives of the study.

DEMOGRAPHIC CHARACTERISTICS OF THE STUDY AREA

This section describes the demographic characteristics in terms of location, land area, population, resources, economic status and geographical nature of the area of research, Thiruvallur and Kancheepuram districts in Tamil Nadu. Within the Thiruvallur and Kancheepuram districts the researcher focused on the two blocks Gummidipoondi and Uthiramerur with four villages under each block. The villages are Mannallore, Pudugummidipoondi, Peddikuppam and Elavoor in Thiruvallur district and Arasanimangalam, Kavampair, Sathanjeri and Malayamkulam in Kancheepuram district. The investigation of the research found that the most of people belonging to the schedule caste (SCs) and most backward caste (MBCs) in both the districts. The study area both Thiruvallur and Kancheepuram districts in Tamil Nadu are economically unsound, particularly the economic status of the Thiruvallur district even worse than Kancheepuram district. The major economic activity of the districts is agriculture and other small scale industries work but due to the

undulating terrain, soil conditions, lack of irrigation facilities, dependence on rain-fed agriculture and due to dependence on traditional methods of farming the agriculture productivity of the study area are not very sound. A vast majority of the population either depends upon MGNREGS or they migrate to the neighboring towns during the sowing and harvesting seasons to work as agriculture laborers and to the State capital Chennai for daily wages work like masons, helpers, coolies, etc.

MGNREGA PROJECT DETAILS OF THE STUDY AREA (THIRUVALLUR DISTRICT)

DETAILS OF THE MGNREGA	MAANALLORE			PUDUGUMMIDIPOONDI			PEDDIKUPPAM			ELAVOOR		
	FY 2014 - 2015	FY 2013- 2014	FY 2012- 2013	FY 2014- 2015	FY 2013- 2014	FY 2012- 2013	FY 2014- 2015	FY 2013- 2014	FY 2012- 2013	FY 2014- 2015	FY 2013- 2014	FY 2012- 2013
Total No. of Works Taken up (New + Spill Over)	22	18	17	77	57	12	171	76	13	32	23	14
Number of Ongoing Works	16	12	3	70	55	4	163	71	6	23	18	4
Number of Completed Works	6 (27.28)	6 (33.34)	14 (82.36)	7 (9.09)	2 (3.51)	8 (66.67)	8 (4.68)	5 (6.58)	7 (53.84)	9 (28.12)	5 (21.74)	10 (71.42)
% of Expenditure on Agriculture & Agriculture Allied Works	63.1	94.0	93.4	17.9	96.2	85.8	80.2	78.1	84.9	16.6	71.9	53.7
Wages (Rs. In Lakhs)	24.1	29.3	29.9	24.8	27.8	26.8	25.7	26.8	32.6	28.5	29.1	19.1
Material and skilled Wages (Rs. In Lakhs)	0.7	0.77	0.58	1.5	0.45	0.58	2.03	0.7	0.6	0.66	0.58	0.33
Total Expenditure (Rs. in Lakhs.)	24.8	30.1	30.6	26.3	28.3	27.4	27.7	27.5	33.2	29.2	29.7	19.4
Liability (Wages) (Rs. in Lakhs.)	0.8	0	0	1.06	0	0	0.23	0	0	2.41	0	0
Material (%)	2.62	2.55	1.9	5.71	1.58	2.11	7.32	2.51	1.72	2.25	1.96	1.7

Note: () Per cent Source: MGNREGA

TABLE NO 1

The table – 1 represents the project details of the MGNREGA activities such as total number of works undertaken, number of ongoing and completed works, percentage of agriculture and allied activities, total amount of material cost, wage rate, and liabilities of the study area Maanalore, Pudugummidipoondi, Peddikuppam and Elavoor in Thiruvallur District for the period of 2012-13 to 2014-15 are illustrated. Invariably in all the four villages the total number of works taken up since the financial year 2012- 13 to 2014-15 is being in a progressive manner. Almost in all the four villages of the study areas have shown the works completed status of the financial year 2012 – 13 on an average of more than 65 per cent. That could be considered as one the reasons to increase the amount of works under taken under this plan in the succeeding years 2013 – 14 and 2014 – 15. In the financial year 2014-15, the maximum number of works taken up under MGNREGA is recorded in **Peddikuppam**. The number of

works under taken through MGNREGA in this village was incomparable with its earlier works. But the percentage of work completed in the study area is being in decreasing manner year after year as shown in the table. Insufficient financial resource allocation for the scheme is observed as one the main reasons for not attaining the increasing status on work completed in the study.

EMPIRICAL ANALYSIS OF THE STUDY

The impact on current climate and environmental variability which extremes the situations like deficit rainfall, droughts, and unpredictable temperatures are all exposed by the society, in particular the rural communities in India (MOEF, 2012). The natural resources and agriculture farming systems are all subject to degradation and over exploitation, leading to water scarcity, loss of soil fertility, and a reduction in agricultural production, adversely affecting the livelihoods of the rural communities and increasing their vulnerability. Building up of resilience through conservation and restoration of natural resources is the only way which can reduce the vulnerability of both socio-economic and ecological systems (Tiwari et al 2011). Adaptive and community based resource management builds resilience in both human and ecological systems and is an effective way to cope with environmental change characterized by future climate risks (Tompkins and Adger 2014).

The maximum and significant result for the support of the programme and followed by maybe continued and finally no idea about the impact of the scheme are resulted in Kancheepuram district. But at the same time, the positive impact of the scheme in Kancheepuram district is slightly lower than its counterpart Thiruvallur district. (i.e. an on average 55 – 60 per cent is shown its positive impact in Kancheepuram district whereas it is showing 60 – 70 per cent in Thiruvallur district). As a result, the remaining two categories either or (maybe) and negative (no idea) of the Kancheepuram district is slightly higher than Thiruvallur district.

IMPACT OF MGNREGA ACTIVITIES OF THE STUDY AREA

VARIOUS IMPACT OF MGNREGA PROGRAMME	STUDY AREA	FREQUENCY	RESPONSE		
			MAY BE IMPROVED	IMPROVED	NO IDEA
MGNREGA Impact on Improvement of Irrigation usage	Thiruvallur	250 (100)	35 (14.0)	170 (68.0)	45 (18.0)
	Kancheepuram	250 (100)	56 (22.4)	154 (61.6)	40 (16.0)
MGNREGA Impact on Environment	Thiruvallur	250 (100)	20 (8.0)	182 (72.8)	48 (19.2)
	Kancheepuram	250 (100)	64 (25.6)	150 (60.0)	36 (14.4)
MGNREGA Impact on Employment	Thiruvallur	250 (100)	35 (14.0)	172 (68.8)	43 (17.2)
	Kancheepuram	250 (100)	64 (25.6)	140 (56.0)	46 (18.4)
MGNREGA Impact on Agricultural Production	Thiruvallur	250 (100)	43 (17.2)	162 (64.8)	45 (18.0)
	Kancheepuram	250 (100)	44 (17.6)	164 (65.6)	42 (16.8)
MGNREGA Impact on Health Improvement	Thiruvallur	250 (100)	28 (11.2)	176 (70.4)	46 (18.4)
	Kancheepuram	250 (100)	62 (24.8)	148 (59.2)	40 (16.0)
MGNREGA Impact on Irrigation Improvement	Thiruvallur	250 (100)	32 (12.8)	176 (70.4)	42 (16.8)
	Kancheepuram	250 (100)	76 (30.4)	130 (52.0)	44 (17.6)
MGNREGA Impact on Agriculture Sustainability	Thiruvallur	250 (100)	26 (10.4)	179 (71.6)	45 (18.0)
	Kancheepuram	250 (100)	52 (20.8)	145 (58.0)	53 (21.2)
MGNREGA Impact on Improvement of Economic Status	Thiruvallur	250 (100)	29 (11.6)	179 (71.6)	42 (16.8)
	Kancheepuram	250 (100)	65 (26.0)	135 (54.0)	50 (20.0)

Note: () Percent Source: Primary Data

TABLE NO 2

Table 3 represents the paired samples t –Test values of the MGNREGA activities of study area for the period 2010 and 2015. Here, the variables being compared are identified, the Mean, N, SD, and Std. Error of the Mean for each variable is given. Here the correlation between each of the pairs of variables is also given. Because this is a repeated measures analysis, the same people are measured twice (2010 and 2015). The study expects a high degree of correlation between the two sets of scores. Workers status, types of works carried out, number of days of works, agriculture asset holding, agriculture expenditure, agricultural labour's wage rate, savings, credits, crop intensification, crop production, paddy productivity, sugarcane productivity and groundnut productivity for the comparative period of 2010 and 2015 have been considered as the paired variables of the present paper.

Hypothesis of the impact of MGNREGA Activities in the study area is: $H_0: \mu_d = 0$ (null hypothesis)

$H_a: \mu_d \neq 0$ (alternative hypothesis) The level of Significance is taken when $\alpha = 0.05$ Critical Value(s) and Rejection Region(s) of the intercepts. Since the present table is the paired data and the study don't know the intercept variance of the differences (sd 2), the study can use the paired t-test. Critical Values of the intercepts consider as: $\pm t_{\alpha/2, df = nd - 1} = \pm t_{0.025, df=7} = \pm 2.37$
Reject the null hypothesis if $T \leq -2.37$ or if $T \geq 2.37$

PAIRED SAMPLES T –TEST VALUES OF THE MGNREGA ACTIVITIES OF THE STUDY AREA

		PAIRED DIFFERENCES					T	SIG. (2- TAILED)
	STUDY AREA	MEAN	Σ	STD. ERROR MEAN	95% CONFIDENCE INTERVAL OF THE DIFFERENCE			
					LOWER	UPPER		
Present MGNREGA Workers Status - MGNREGA workers status before 5 yrs.	Thiruvallur	-.30800	.46259	.02926	-.36562	-.25038	-10.53	.000
	K. Puram	-.25600	.43730	.02766	-.31047	-.20153	-9.256	.000
Present Types of Works Carried out under MGNREGA - types of works carried out under MGNREGA before 5 yrs.	Thiruvallur	-1.0480	1.87075	.11832	-1.28103	-.8149	-8.85	.000
	K. Puram	.70800	1.40236	.08869	.53332	.88268	7.983	.000

Present No of days of works under MGNREGA - No of days of works under MGNREGA before 5 yrs.	Thiruvallur	-19.7600	39.0723	2.47115	-24.6270	-14.89	-7.99	.000
	K. Puram	-	36.3285	2.29762	-24.38524	-15.33476	-8.644	.000
asset before MGNREGA - asset after MGNREGA	Thiruvallur	-130800.	107459.	6796.34	-144185.	-117414.4	-19.24	.000
	K. Puram	391700.0	233692.2	14779.99	362590.3	420809.7	26.502	.000
Current Agriculture Expenditure - Agriculture Expenditure before MGNREGA	Thiruvallur	13590.0	9253.51	585.243	12437.3	14742.7	23.221	.000
	K. Puram	14944.00	10122.4	640.1959	13683.11	16204.89	23.343	.000
Present Agricultural Labour Wage Rate - Agriculture Labour Wage Before MGNREGA	Thiruvallur	46.9000	28.3921	1.79568	43.3633	50.437	26.118	.000
	K. Puram	47.70000	29.2512	1.85001	44.05634	51.34366	25.784	.000
Savings - Savings before MGNREGA	Thiruvallur	41037.0	10441.3	660.364	39736.4	42337.6	62.143	.000
	K. Puram	57924.00	22230.0	1405.951	55154.93	60693.07	41.199	.000
Credit - Credit before MGNREGA	Thiruvallur	-24780.0	71803.0	4541.22	-33724.1	-15835.9	-5.457	.000
	K. Puram	-	63255.7	4000.639	-59959.41	-44200.59	-13.02	.000
Current Crop Intensification - Crop Intensification Before MGNREGA	Thiruvallur	.80800	.39466	.02496	.75884	.85716	32.371	.000
	K. Puram	.81600	.38826	.02456	.76764	.86436	33.230	.000
Current Crop Production - Type of Production Before MGNREGA	Thiruvallur	-.18800	.96143	.06081	-.30776	-.06824	-3.092	.002
	K. Puram	-.01200	.77347	.04892	-.10835	.08435	-.245	.806
Present Paddy Production - Paddy Production Before MGNREGA	Thiruvallur	213.80	1024.98	64.8257	86.1234	341.48	3.298	.001
	K. Puram	71.66000	780.897	49.38830	-25.61207	168.9320	1.451	.148
Present Sugarcane Production - Sugarcane Before MGNREGA	Thiruvallur	3.25200	15.6232	.98810	1.30590	5.1981	3.291	.001
	K. Puram	3.19600	13.7577	.87011	1.48228	4.90972	3.673	.000
Present Ground Production - Groundnut Production Before MGNREGA	Thiruvallur	-16.340	161.64	10.223	-36.4745	3.7946	-1.598	.111
	K. Puram	4.72000	146.258	9.25019	-13.49858	22.93858	.510	.610

Source: Primary Data

TABLE NO 3

From the output, T values of the different paired intercepts mentioned in table 3 shows (≤ -2.37 or if $T \geq 2.37$), therefore p - value = Sig. (2 - tailed) = 0.000 as very highly significant. Since, T value of the mentioned paired samples are ≥ 2.37 (p-value $\approx 0.000 \leq 0.05 = \alpha$), the analysis shall reject the null hypothesis.

However, T value of the paired sample of present Groundnut Production - Groundnut Production before MGNREGA is < -2.37 (i.e. -1.598) therefore p - value = Sig. (2 - tailed) $\neq 0.000$ (i.e. .111) as insignificant. Since, T value of the mentioned paired samples are < 2.37 (p-value $\approx 0.000 \leq 0.05 = \alpha$), the analysis shall reject the alternative hypothesis.

As the output resulted in table 5, T values of the different paired intercepts of the Kancheepuram district is:

- Present MGNREGA Workers Status - MGNREGA workers status before 5 years:
- 9.256
- Present Types of Works Carried out under MGNREGA - types of works carried out under MGNREGA before 5 years: 7.983
- Present No of days of works under MGNREGA - No of days of works under MGNREGA before 5 years: -8.644
- Asset before MGNREGA - asset after MGNREGA: 26.502
- Agriculture Income - Agriculture Income: 8.107
- Current Agriculture Expenditure - Agriculture Expenditure before MGNREGA: 23.343
- Present Agricultural Labour Wage Rate - Agriculture Labour Wage before MGNREGA: 25.784
- Savings - Savings before MGNREGA: 41.199
- Credit - Credit before MGNREGA: -13.02
- Current Crop Intensification - Crop Intensification before MGNREGA: 33.230
- Present Sugarcane Production - Sugarcane before MGNREGA: 3.673

Since, in all the above mentioned paired variables the t value is ≤ -2.37 or if $T \geq 2.37$, therefore p - value = Sig. (2 - tailed) = 0.000 as very highly significant. Since, T value of the mentioned paired samples are ≥ 2.37 (p-value $\approx 0.000 \leq 0.05 = \alpha$), the analysis shall reject the null hypothesis.

However, T value of some of the paired samples as listed below are p - value = Sig. (2 - tailed) $\neq 0.000$, which is considered as insignificant.

- Amount of wage received under MGNREGA presently - Amount of wage received under MGNREGA before 5 years: .378
- Current Crop Production - Type of Production before MGNREGA: -.245
- Present Paddy Production - Paddy Production before MGNREGA: 1.451
- Present Ground Production - Groundnut Production before MGNREGA: .510

Since, T value of the mentioned paired samples are < 2.37 (p-value $\approx 0.000 \leq 0.05 = \alpha$), the analysis shall reject the alternative hypothesis.

One of the core objectives of the present paper regarding the asset creation of the study area and Pearson's correlation coefficient of both Thiruvallur and Kancheepuram district is depicted in table 6. Asset value before 2010 and 2015, savings before 2010 and 2015, credit status before 2010 and 2015, and finally agriculture expenditure during 2010 and 2015 are some of the indicators to estimate the MGNREGA impact on asset creation of the study area.

The correlation coefficient of the endogenous variable like value of asset before 2010 is not only positively correlated but also highly significant with the other exogenous variables like present asset value, saving of the respondents before 5 years, agriculture expenditure before 5 years and the present agriculture expenditure, and credit value of the respondent before 5 years are statistically significance at 1 per cent level. Hence, the exogenous variable like credit before 5 years and present credit status of the respondent is statistically significance at 5 per cent level. The present savings value of the respondent in Kancheepuram district is also statistically significance at 1 per cent level and it is not significance in Thiruvallur district.

5. CONCLUSION

As the present study started with the discussion of the sustainability, it could be better to focus once again in the concluding remarks. At the outset the various effective activities intended by the MGNREGA programme in terms of giving rights to rural people, safety net for the unemployed particularly during drought and famine, stopping migration to the cities, helped in handling disguised workers and make them to involve in other non-agricultural work were all highly accepted by every own in the society at the cross route level. All such activities undertaken by the people who involved in those areas are well taken seriously and consciously then the rural infrastructure of our society will improve a lot and ultimately lead to sustainable development.

6. REFERENCES

- [1] Adhikari, A. and Bhatia, K. (2010) NREGA wage payments: Can we bank on banks? Economic and Political Weekly, 42 (1): 30-37.
- [2] Aiyar, Y. and Samji, S. (2006) Improving the effectiveness of National Rural Employment Guarantee Act. Economic and Political Weekly, 41 (4): 320-326.
- [3] Anil, Sharma, Laxmi Joshi & Sahu (2006), Evaluating Performance of National Rural Employment Guarantee Act, Public Interest Foundation, New Delhi.
- [4] Basole A (2007). Agrarian Change in North India: Evidence from Haryana, Sanhati. September 27, 2010 accessed at <http://sanhati.com/excerpted/2750/> access on 23 Feb. 2011.
- [5] Basu, Arnab K, Nancy H. Chau & Ravi Kanbur (2005): "The National Rural Employment Guarantee Act of India, 2005", processed, Department of Applied Economics and Management, Cornell University, Ithaca, NY.
- [6] Census of India (2011). Available at: <http://censusindia.gov.in>
- [7] Central Groundwater Board (CGWB) (2007): "Groundwater Information Booklet, Bhilwara District, Rajasthan", Ministry of Water Resources, Government of India.
- [8] Chakraborty, P. (2007) Implementation of employment guarantee: A preliminary appraisal. Economic and Political Weekly, 42 (7): 548- 551.

- [9] Dutta, P., Murgai, R., Ravallion, M. and Van de Walle, D. (2012) Does India's Employment Guarantee Scheme Guarantee Employment? The World Bank, Washington, USA. Policy Research Working Paper No.6003.
- [10] Fan, S., Hazell, P. and Thorat, S. (1999) Linkages Between Government Spending, Growth and Poverty in Rural India, Research Report No. 110, International Food Policy Research Institute, Washington, U.S.A.
- [11] Gaiha R, Kulkarni VS, Pandey MK, Imai KS (2010) National Rural Employment Guarantee Scheme, Poverty and prices in rural India. Journal of Asian and African Studies 45 (6), 645-69.
- [12] Government of India (2009) Rozgar Jagrookta Puraskar, Excellence in NREGA Administration. Available at: [http://www.nrega.net/pin/reports-and-resources/reports-submitted-to-the-ministry-of-rural-development/reports-28-jan-2010/copy_of_IIT % 20 Chennai.pdf](http://www.nrega.net/pin/reports-and-resources/reports-submitted-to-the-ministry-of-rural-development/reports-28-jan-2010/copy_of_IIT_%20Chennai.pdf) (accessed 5 April 2010).
- [13] Government of Tamilnadu (2011) Rural Development & Panchayat Raj Department. Available at: <http://www.tnrd.gov.in>
- [14] National Sample Survey Office (NSSO) (2011) Level and Pattern of Consumer Expenditure. Survey report. National Sample Survey Office, Government of India, New Delhi.
- [15] Nation Sample Survey Office (NSSO), (2011b) Key Indicators of Employment and Unemployment in India 2009-2010. National Sample Survey Office, Government of India, New Delhi.
- [16] Pankaj A, Tankha R (2010) Empowerment effects of the NREGAS on women workers: a study in four states. Economic and Political Weekly 45 (30), 45-55.
- [17] Ravindranath, N H and I K Murthy (2013): Greening of MGNREGS (New Delhi: United Nations Development Programme).
- [18] Reddy DN, Tankha R, Upendranadh C, Sharma AN (2010) National Rural Employment Guarantee as social protection. IDS Bulletin 41 (4), 63-76.
- [19] Reserve Bank of India (2012) Database on Indian Economy. Available at: <http://dbie.rbi.org.in>.
- [20] The Economist (2012) Rethinking the welfare state: Asia's next revolution. 8 September, 404, 8801, 9-10.
- [21] Tiwari, R, H I Somashekar, VR Parama, I K Murthy, M S M Kumar, B K M Kumar, H Parate, M Varma, S Malaviya, A S Rao, A Sengupta, R Kattumuri and N H Ravindranath (2011): "MGNREGA for Environmental Service Enhancement and Vulnerability Reduction: Rapid Appraisal in Chitradurga District, Karnataka", Economic and Political Weekly, 46 (20): 39-47.
- [22] Verma, S (2011): "MGNREGA Assets and Rural Water Security: Synthesis of Field Studies in Bihar, Gujarat, Kerala and Rajasthan", International Water Management Institute.
- [23] Vermani, R.C.(2006), An Introduction to Political Theory, Gitanjali Publishing House New Delhi ISBN 81-85060-28-2 Printed at Mehra Offset Press, Delhi..