Tobacco vs Development
Private Spending on Tobacco in Gadchiroli District

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Globally, tobacco consumption is one of the most important preventable causes of mortality. While tobacco's ill effects on health are well studied, private expenditure on tobacco remains hidden and neglected. This study shows that personal as well as government efforts towards development have been more than neutralised by the free reign of tobacco in Gadchiroli district, Maharashtra. Since the expenditure on tobacco is likely to result in worsening of poverty in addition to adverse health consequences, the government should strongly consider stricter implementation of the tobacco control policy as an important strategy.

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India is the second largest producer and consumer of tobacco in the world, next only to China (Reddy and Gupta 2004). According to the Global Adult Tobacco Survey (GATS) conducted in India in 2009-10, 35% of adults used tobacco in some form.[1] This is a serious situation as tobacco significantly increases the risk of tuberculosis and other respiratory diseases, cancers and cardiovascular diseases. Tobacco is responsible for one in 10 adult deaths in the world and the World Health Organisation (WHO) recognises tobacco as one of the most important preventable causes of mortality world over.[2] Tobacco use is associated with high mortality in India. According to a recent study, about one million people were expected to die in India in 2010 due to tobacco use (Jha et al 2008), and the projected tobacco deaths in India may exceed 1.5 million annually by 2020 (Murray and Lopez 1996).

In addition to its ill-effects on health, tobacco use causes significant economic loss. The economic cost of tobacco to a family is in the form of (a) expenditure on tobacco products by the consumers, (b) cost of treatment of the diseases associated with tobacco, (c) lost wages due to morbidity, and (d) lost years of life due to mortality from these diseases. In a country where 30% of the population lives below the poverty line,[3] the economic cost of tobacco can further perpetuate poverty. Using data from the 2004 National Sample Survey (NSS), John et al (2011) estimated that direct expenditure on tobacco would increase the poor population by 1.5% in rural and 0.7% in urban areas. Furthermore, it is possible that efforts of the government to improve the economic condition and health of people could be undermined by private expenditure on tobacco.

The present study aims to explore the link between tobacco and development, more specifically to (a) estimate the prevalence of tobacco consumption, (b) estimate private expenditure on purchasing tobacco, and (c) compare private expenditure on tobacco with the central government's expenditure on selected important nutrition, health and development schemes in Gadchiroli, the least developed district in Maharashtra.

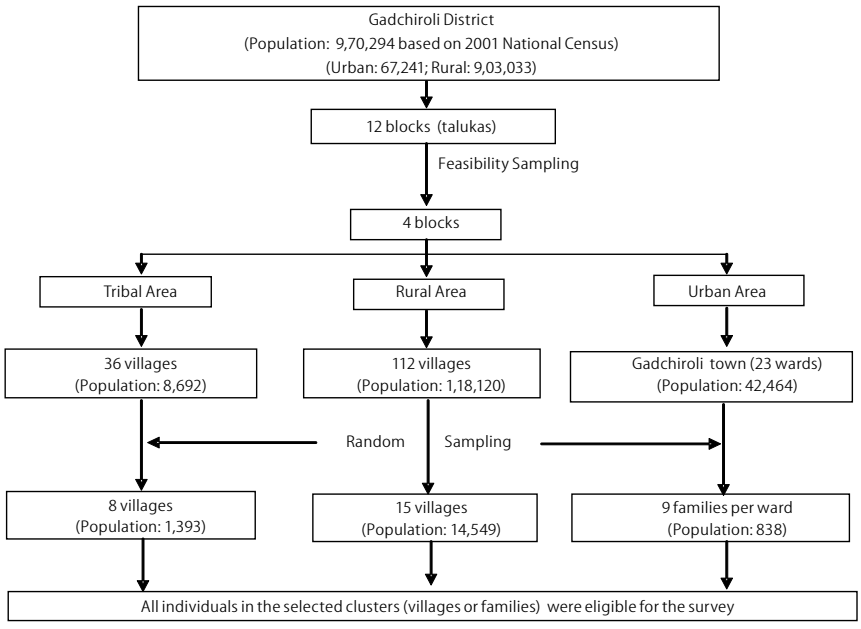
Method

(a) Study Area: The study was conducted in Gadchiroli district, which is located in the eastern-most part of Maharashtra adjoining the states of Chhattisgarh and Andhra Pradesh. Ninety-three per cent of the district's population lives in rural and tribal areas.[4] The district has been seriously affected by Maoist activities for the past 25 years.

The Society for Education, Action and Research in Community Health (SEARCH) is a non-governmental organisation based in this district. SEARCH provides healthcare and has a field programme area with a population register and a network of community health workers (CHWs) who regularly collect population-based information on births and deaths and other information on health through house-to-house surveys and also provide basic healthcare.

(b) Study Design and Sample Selection: The study was a cross-sectional survey of the sampled population in the district selected by a multistage sampling method (Figure 1, p 20). For reasons of feasibility, we first selected four out of 12 blocks (talukas) of the district where SEARCH has a field presence. The field area of SEARCH has three rural and one tribal cluster. We included the town of Gadchiroli as the urban cluster. The updated population registers of SEARCH provided the sampling frame for the population living in these five clusters. Random sampling was used with village as the unit of randomisation in each rural and tribal cluster, and family as the unit of randomisation in each of the 23 urban wards to select the population to be surveyed. All families in the 23

Figure 1: The Sampling Scheme



villages selected, and nine families from each of the urban wards were surveyed. This sample size allowed us to estimate the true prevalence of tobacco use with a level of precision at 0.007 with a hypothesised prevalence of 50% for the district of Gadchiroli, which was based on a prior pilot study conducted by SEARCH in a village in Gadchiroli district.

(c) Data Collection, Quality Control and Analysis: The CHWs of SEARCH were trained for two days on the use of questionnaires, record-keeping and maintaining confidentiality. The CHWs then visited all the selected villages and urban families between October 2008 and February 2009, and after obtaining verbal consent conducted face-to-face interviews using a pre-piloted survey questionnaire in Marathi. The information about the use of tobacco products for every individual in the family was obtained by talking to that individual personally. Information on the use of tobacco products by children was obtained from parents. Those who reported active tobacco use at the time of the survey were defined as tobacco consumers. Tobacco consumers were asked about the amount spent on tobacco in the 24 hours preceding the survey. In the event of family members sharing a packet of tobacco product, the cost was distributed equally amongst the consuming members. If a particular individual was unavailable during the initial visit, the house was visited a second time, and if the individual was not available during this visit, the information about the individual was collected from the family head. During the survey, supervisors checked the questionnaires for completeness and independently surveyed 15% of the respondents to confirm the accuracy of the information.

The statistical analyses were performed using Stata 10.0 (College Station, TX, USA) statistical software.

(d) Expenditure on Central Government's Schemes and Price of Tobacco Products: The information on the expenditure in the district on the National Rural Employment Guarantee Act (NREGA) scheme, the National Rural Health Mission (NRHM) and the Integrated Child Development Services (ICDS) was obtained from the zilla parishad of Gadchiroli under the Right to Information (RTI) Act. The information on the daily cost of supplementary nutrition for the beneficiaries of the ICDS scheme was obtained from the website of the organisation.[5]

Information about the price of tobacco products was obtained by checking the maximum retail price written on the packets of tobacco products available with the vendors in the survey area. For products prepared by vendors, such as *kharra*, the cost was enquired from the vendors.

Results

Demographic Characteristics: All the 16,780 individuals eligible for the survey from 3,768 families were surveyed in the study, with 15,942 individuals (95%) from rural and tribal areas and 838 (5%) from the urban area. The mean age of the study population was 29.5 (Standard Deviation (SD) 18.7) years. Among the surveyed population, 48.9% were females and 67.3% were literate (Table 1).

Prevalence of Tobacco Use: The overall prevalence of tobacco use in the study population was 50.43% with highest prevalence in tribal (59.2%) and lowest prevalence in urban areas (26.73%) (Table 2). The estimated population of Gadchiroli in 2009 was calculated to be 10.9 lakh (1.09 million) considering the population of the district in 2001 to be 9.7 lakh (0.97 million),[6] and a conservative

Table 1: Demographic Characteristics of the Study Population

	Rural Area	Tribal Area	Urban Area	Total
Population studied, n (row %)	14,549 (86.7)	1,393 (8.3)	838(5)	16,780
Total families studied	3,323	232	213	3,768
Mean age in years (SD)	29.9 (18.7)	25.5 (18.1)	30.9 (19.0)	29.5 (18.7)
Population below 18 years, n (column %)	4,833 (33)	623 (45)	271 (32)	5,727 (34)
Female, n (column %)	7,082 (48.7)	712 (51.1)	422 (50.4)	8,216 (48.19)
Literate, column %	67	56	85	67.3

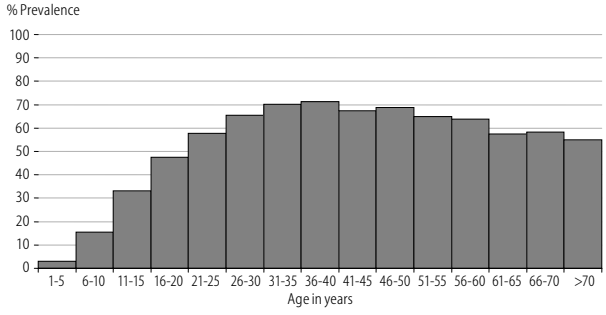
SD: Standard deviation.

Table 2: Estimated Number of Tobacco Users in Gadchiroli District

	Rural Area	Tribal Area	Urban Area	Total
Per cent prevalence of tobacco use in the study population (95% CI)	50.95 (50.1 to 51.2)	59.2 (56.6 to 61.8)	26.73 (23.7 to 29.7)	50.43 (49.7 to 51.2)
Total population in the district (2001 National Census) (%)	5,38,485 (55.5)	3,64,548 (37.6)	67,261 (6.9)	9,70,294
Estimated district population in 2009	6,06,596	4,10,656	75,764	10,93,016
Estimated number of tobacco users in the district in 2009	3,09,060	2,43,108	20,251	5,72,419

CI: Confidence Interval.

Figure 2: Age-specific Prevalence of Tobacco Use in the Study Population



estimate of an annual growth rate of 1.5% instead of 2.2% for the state of Maharashtra.[7] Using the stratum-specific prevalence of tobacco use in rural, tribal and urban areas in the surveyed population, the number of total tobacco users in Gadchiroli district in 2009 was estimated to be 5,72,419 (Table 2).

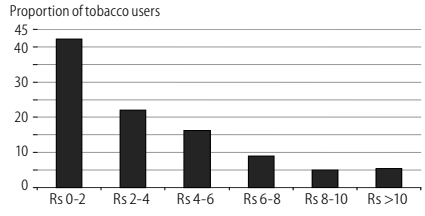
The prevalence of tobacco use in different age groups revealed some disturbing findings (Figure 2), which include, (a) early onset of tobacco use as evident by consumption of tobacco by a small percentage of children under five years of age, (b) half of the youth using tobacco by the age of 20 years, and (c) 70% of the adults in the age group 30-50 years using tobacco – an age group with a high risk of cardiovascular diseases in India.

Private Spending on Tobacco: Of the 8,462 tobacco users, data on expenditure could be obtained from 7,449 users (88.03%) (Table 3). The mean daily expenditure per person on tobacco products was Rs 4.17 (SD 3.4). The daily expenditure on tobacco was Rs 8.2 per family (users plus non-users). The estimated daily expenditure on tobacco products in the district was around Rs 20 lakh, and the yearly spending was Rs 73.4 crore (Rs 734 million).

The variation in the mean daily expenditure on tobacco per user is shown in Figure 3. While the largest proportion (about 40%) spent less than Rs 2 per day, nearly 5% spent Rs 8, and another 5% spent more than Rs 10 per day.

Types of Tobacco Product Used: Smokeless tobacco was the predominant mode of tobacco consumption and kharra was the commonest tobacco product used (45% of tobacco consumers) (Figure 4). Out of the total money spent on tobacco, 64% was spent on kharra. Less than 5% consumers smoked tobacco.

Figure 3: Distribution of Daily Expenditure on Tobacco Per User (%)



Private Spending on Tobacco versus Government Spending on National Schemes: The estimated yearly expenditure on tobacco of Rs 73.4 crore by the population of Gadchiroli district was 1.5 times more than the combined annual (2008-09) expenditure in the district on three national schemes to improve health, nutrition and rural employment (Rs 47.32 crore). These comprise the NREGA scheme (Rs 22 crore), ICDS (Rs 14.94 crore) and NRHM (Rs 10.4 crore) (Figure 5, p 22).

Price of Tobacco Products and Family Expenditure on Tobacco Compared to Women's Savings and ICDS Expenditure on Child Nutrition: In the study area, the usual monthly contribution

Figure 4: Proportion of Users and the Expenditure on Various Types of Tobacco Products in the Study Population (%)

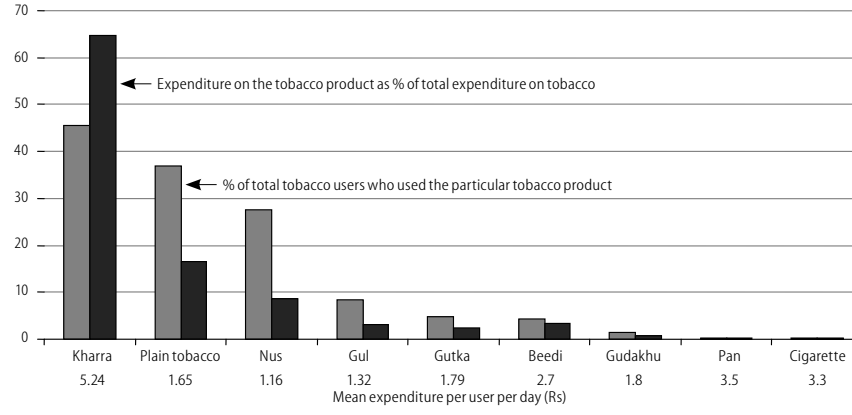
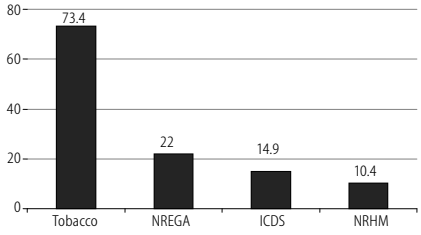


Table 3: Expenditure on Tobacco

	Rural Area	Tribal Area	Urban Area	Total
Tobacco consumers in the study population	7,413	825	224	8,462
Consumers on whom expenditure data was available (%)	6,587 (88.86)	639 (77.45)	223 (99.55)	7,449 (88.03)
Total expenditure per day on tobacco by the study population (Rs)	28,434	1,508	1,130	31,072
Mean daily per consumer expenditure on tobacco in Rs (SD)	4.32 (3.4)	2.36 (2.3)	5.07 (5.2)	4.17 (3.4)
Male	5,19 (3.59)	2.86 (2.61)	6.17 (5.63)	5.05 (3.67)
Female	2.51 (2.23)	1.65 (1.39)	2.25 (2.21)	2.41 (2.17)
Mean daily expenditure per family (users and non-users combined) in the study population (Rs) (95% CI)	8.6 (8.4 to 8.7)	6.5 (6.0 to 6.9)	5.3 (4.6 to 6.0)	8.2 (8.1 to 8.4)
Mean annual expenditure (Rs) on tobacco per user (95% CI)	1,554 (1,524 to 1,583)	849 (785 to 912)	1,824 (1,576 to 2,071)	1,502 (1,473 to 1,530)
Per family (user + non-users) (95% CI)	3,078 (2,966 to 3,188)	2,340 (2,247 to 2,437)	1,908 (1,824 to 1,995)	2,966 (2,856 to 3,071)
Estimated expenditure on tobacco in Rs by the total population of Gadchiroli district in 2009				
Daily expenditure (Rs)	13,35,139	5,73,734	1,02,672	20,11,545
(95% CI)	(13,32,836 to13,37,222)	(5,72,116 to 5,75,048)	(1,02,045 to 1,03,281)	(20,08,075 to 20,13,949)
Annual expenditure (Rs)	48,73,25,735	20,94,12,910	3,74,75,280	73,42,13,925
(95% CI)	(48,64,85,140 to 48,80,86,030)	(20,88,22,340 to 20,98,92,520)	(3,72,46,425 to 3,76,97,565)	73,29,47,375 to 73,50,91,385)

CI: Confidence Interval; SD: Standard deviation.

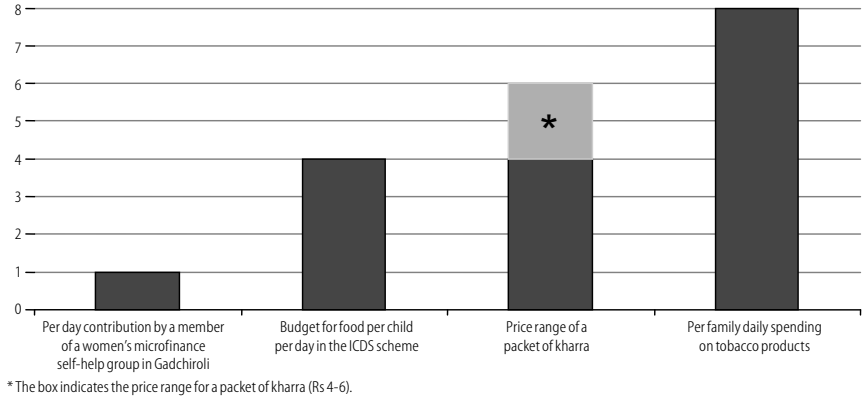
Figure 5: Private Expenditure on Tobacco versus Central Government's Annual Expenditure on Three National Schemes in Gadchiroli District
(2008-09, Rs crore)



NREGA- National Rural Employment Gurantee Act, ICDS- Integrated Child Development Services, NRHM- National Rural Health Mission.

by women in the self-help groups (SHGs) is Rs 30. Thus, a daily saving of Re 1 per day by the members of women's SHGs and a daily expenditure of Rs 4 on the nutrition of a child in the ICDS scheme are both less than the mean daily expenditure per family on tobacco (Rs 8.2) found in this study (Figure 6). The market price of one packet of kharra (Rs 4-6) was more than the cost of the daily nutrition supplement for a child.

Figure 6: Comparison of Women's Savings and Expenditure on Nutrition for a Child in the ICDS Scheme with the Unit Price of a Tobacco Product and Daily Per Family Expenditure on Tobacco (Rs)



* The box indicates the price range for a packet of kharra (Rs 4-6).

High Prevalence of Tobacco Use

This study found that half of the population is consuming tobacco products and its people are spending more money on tobacco products than the government's combined expenditure in the district on three important national schemes.

As indicated by our study, 50% of the population used tobacco, which is higher than what is reported in national samples such as the GATS that showed 35% prevalence of tobacco use in Indian adults.[8] It is known that tobacco use tends to be more in rural and economically impoverished areas (Efroymson et al 2001). High prevalence of tobacco use in Gadchiroli district, which has the lowest human development index in the state (0.21)[9] as well as the gradient of prevalence in our study where tobacco consumption progressively increases from urban to tribal population corroborate this. Is tobacco partly contributing to poverty and backwardness?

Impact of Tobacco Expenditure

In our study, the mean daily expenditure on tobacco per user (Rs 4.17) was more than the money allocated by the government to purchase daily food for children in the ICDS scheme (Rs 4) (Figure 6), which is expected to provide 500 calories a day to children between the ages of three and six years.[10] Thus, in a country where malnutrition is responsible for half of all childhood deaths,[11] by quitting tobacco, a single tobacco user can purchase food equivalent to the food supplement for a child in ICDS.

SHGs in rural and urban India promote small-scale savings and can be of significant help towards alleviating poverty. The individual member's monthly contributions to these groups in Gadchiroli are generally around Rs 30 for women and Rs 50 for men. By quitting tobacco, a man can potentially save more than twice, while a woman would be able to save four times the current contribution resulting in significant improvement in their economic condition.

At the national level, a study by John et al (2011) estimated that an average household in rural India spent 2.3% of its income on tobacco in 2004. In our study, considering the yearly per capita income for the district of Gadchiroli as Rs 27,209 in 2008,[12] an average tobacco user spent about 5.5% of their annual per capita income on tobacco. This indicates that in a predominantly rural and backward setting, the proportional cost of tobacco could be higher due to lower per capita income and higher prevalence of tobacco use in backward areas as compared to urban areas. The consumption of tobacco, therefore, seems to compound the problem of poverty.

Stricter Tobacco Control?

The higher use of tobacco in poor and rural populations, along with the disproportionately higher economic impact in these populations has important implications for policymakers in India as rapid alleviation of poverty is one of the important goals under the Eleventh Five-Year Plan.[13] As a general strategy, poverty alleviation measures include increasing the earnings of the poor and decreasing the burden of private expenses. Given that tobacco use has been associated with increased poverty in India and in other developing nations (John et al 2011; de Beyer, Lovelace and Yürekli 2001), a stricter tobacco control policy by the government could be a potential strategy to decrease public expenditure. Such a policy, theoretically, can help alleviate poverty in addition to improving public health and reducing healthcare expenditure.

A counterargument sometimes made is that the tobacco industry is a source of revenue for the government and provides employment. However, Jha and Chaloupka (2000) found that a 10% increase in tobacco taxation is likely to increase government revenues by 7%. Similarly, job losses from stricter tobacco control can be countered by new job opportunities in other industries as tobacco users would be able to spend the saved money on other goods. More importantly, the key political and ethical question is, should the government earn income by putting the health and lives of people at risk?

Strengths and Limitations of the Study

While our study has several strengths such as large sample size, random selection of participants from three population

strata and data collection by well-trained workers, there are also some limitations, which include possible under-reporting of tobacco use due to hesitancy to disclose information, resulting in underestimation of the prevalence of and the costs associated with tobacco. Also, information on the expenditure on tobacco could not be obtained from all users, though it was obtained from a sizeable proportion (88.03%) of the users. Moreover, the situation in Gadchiroli may not be completely representative of India as a whole. Hence, any generalisation must be made with caution. However, the general picture of high prevalence of and huge private spending on tobacco, the total amount of which counterbalances the government spending on some vital schemes, is likely to be a reality elsewhere as well. This would necessarily need similar micro-level estimates elsewhere.

Conclusions

Our study shows that at present, personal as well as government efforts towards development have been more than neutralised by the free reign of tobacco in Gadchiroli. Population in this underdeveloped district spends significant amount of money on tobacco – about 1.5 times more than the central government's total expenditure on three key development schemes. An average family daily spends nearly eight times more money on buying tobacco than the average daily contribution by a woman in a self-help group. The expenditure on tobacco is likely to result in worsening of poverty in addition to adverse health consequences. The government should strongly consider stricter implementation of the tobacco control policy as an important strategy to improve the economic status as well as the health of the population. People should not only be educated about the ill-effects of tobacco on health but also about financial losses arising from tobacco use. Most importantly, they should be protected from tobacco.

NOTES

1 "Global Adult Tobacco Survey, India 2009-2010", Ministry of Health and Family Welfare, Government of India, New Delhi, viewed on 26 December 2012, http://www.searo.who.int/entity/tobacco/data/gats_india_2009.pdf

2 "Why Tobacco Is a Public Health Priority?", World Health Organisation, viewed on 9 January 2012, http://www.who.int/tobacco/health_priority/en/

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4 "Demography", Web Site for Collectorate, Gadchiroli, viewed on 26 December 2012, http://gadchiroli.gov.in/demogad13.htm

5 "Integrated Child Development Services Scheme", Ministry of Women and Child Development, Government of India, viewed on 9 January 2012, http://wcd.nic.in/icds.htm

6 See note 4.

7 "Economic Survey of Maharashtra 2008-09", Directorate of Economics and Statistics, Government of Maharashtra, p 13, viewed on 22 July 2012, http://mahades.maharashtra.gov.in/files/publication/eco_srurvy_2008-09_English.pdf

8 See note 1.

9 "Human Development Report Maharashtra 2002", Government of Maharashtra, viewed on 17 January 2012, http://planningcommission.nic.in/plans/stateplan/sdr_pdf/shdr_maha02.pdf

10 See note 5.

11 "The Children – Nutrition", UNICEF India, viewed on 11 January 2012, http://www.unicef.org/india/children_2356.htm

12 "District Socio-Economic Review of Gadchiroli – 2009", Directorate of Economics and Statistics, Government of Maharashtra, viewed on 26 December 2012, http://mahades.maharashtra.gov.in/files/publication/dsa_gadchiroli_2009.pdf

13 "Eleventh Five-Year Plan 2007-12: Rapid Poverty Reduction", Planning Commission, Government of India, viewed on 19 November 2011, http://planningcommission.nic.in/plans/planrel/fiveyr/11th/11_v3/11v3_ch4.pdf

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