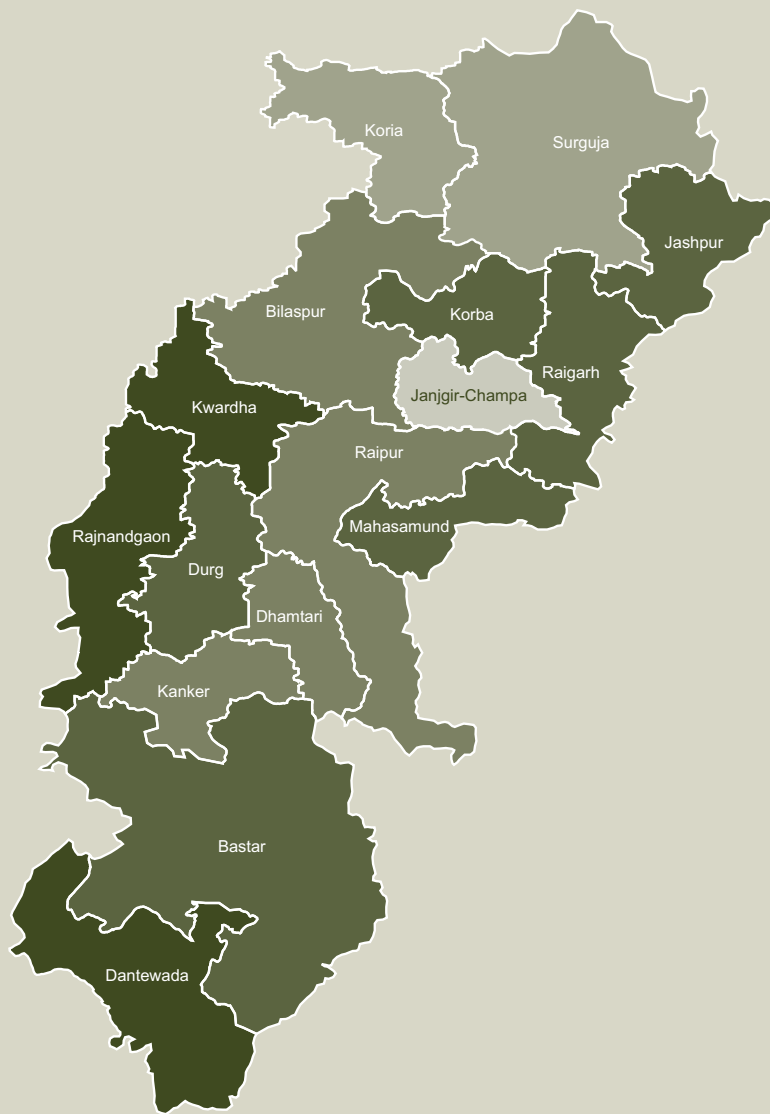


# Food Security Atlas of RURAL CHATTISGARH



UN World Food Programme



Institute for Human Development

# **Food Security Atlas** **Of RURAL CHHATTISGARH**



UN World Food Programme  
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## FOREWORD

Food Security has now taken centre stage in policy discussions around the world. Along with issues of food production there are also clearly issues of access of the poor to food. In India, despite high GDP growth rates over the past decade or so, the record in reducing hunger is not so impressive. This brings to the fore the question of inclusive growth, particularly the inclusion of the most deprived sections of our society and regions of our country into benefiting from the growth process. Increased access to food comes forward as a basic component of inclusive growth.

It is apt that at such a time the Institute for Human Development (IHD) and the UN's World Food Programme (WFP) have produced this set of Rural Food Security Atlases for 8 States of India.

Constructing a Food Security Index (FSI) the authors have tried to identify the districts that fare particularly badly and the factors behind the poor performance of these districts in each of the States. The identification of regions and social groups that are most food insecure should help to draw attention to the regions and social groups that require most attention in order to reduce food insecurity. At the same time, analysis of factors behind poor food security should help direct district-level interventions towards dealing with the factors that seem to be behind poor food security in these districts.

The authors argue while paying attention to increasing food supply, it is critical to pay attention to improving the access of the poor to adequate food. They identify improvements in infrastructure and in the position of women as central to improving food security.

I hope the Atlases will stimulate discussion among policy makers and social analysts on ways of designing district-level interventions that would enable India to reduce hunger as part of inclusive growth.

*Abhijit Sen*  
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## Preface

India is home to more than a quarter of the hungry people in the world. The effect of climate change on agriculture will adversely affect Indian agriculture, thereby making food availability scarce. The existing production levels barely manage to keep pace with the growing population, a problem that is aggravated by high disparities in resources and purchasing power.

The changing scenario of rising food prices has raised new concerns about food security. It has been estimated that globally 130 million more people have become food insecure due to high food prices, in addition to the existing 850 million. Soaring prices would require providing top priority to ensuring access to food by the most vulnerable, which can be achieved through expanded safety net programmes such as the PDS, and those programmes which address the nutritional status of pregnant and lactating women, and children of less than five years of age.

The prevalence of underweight children in India is among the highest in the world. Over 50 million children under five years are malnourished. There are multiple causes of this phenomenon. Looking at the problem spatially, a relatively small number of states, districts, and villages account for a large share of the problem – 5 states and 50 percent of villages account for about 80 percent of the malnutrition cases.

Therefore, the need of the hour is a comprehensive strategy to tackle the growing menace of food and nutritional insecurity. In a country of continental dimensions with vast disparities, it is pertinent that developmental efforts be directed in specific directions and in specific areas for optimum utilization of resources.

To map food insecurity in the country, the World Food Programme had come out with a series of food insecurity atlases in collaboration with the M.S. Swaminathan Research Foundation. The most significant contribution of these atlases was to mainstream the issue of food security, besides identifying their incidence among the major states.

As a corollary to these atlases, on behalf of the WFP, the Institute for Human Development has prepared state-specific atlases with comprehensive analysis at district and regional levels. Looking through the child nutrition lens in view of prevalence of underweight children, and under-five mortality, these atlases help in identifying the districts at various levels of food security within the most food insecure states. This will help in convergence of complementary programmes of the government in addressing undernutrition and child mortality in the country.

We are deeply indebted to all the members of the Technical Advisory Group (TAG), constituted to provide direction and technical inputs to the report. We would like to express our sincere gratitude to the TAG chairperson Prof. Abhijit Sen, Member, Planning Commission for his encouragement and deep involvement in this project.

Much of the credit for bringing out this publication goes to Dr. Dev Nathan, Professor, and Dr. Preet Rustagi, Senior Fellow, who coordinated the study from IHD; Dr. Sandip Sarkar, who provided the technical advice, especially the construction of the indices; and Dr. Sunil Mishra and Ms. Payel Dutta Majumder who executed the work of calculation of indices and analyzing the data. We would also like to express our gratitude to Dr. Minnie Mathew, Head of Programme Unit, WFP-India for providing her guidance to the study; Dr. Nisha Srivastava, who led the project in WFP; and Mr. Bal Paritosh Dash and Mr. Animesh Kumar for providing their critical inputs.

We hope that the atlases will serve as a tool for the government and policymakers to target interventions more effectively and fine-tune assistance strategies to target the most vulnerable groups and areas. An important outcome of this exercise is a systematic and integrated food security information system located within the state governments. Finally, it will enhance advocacy at the state level so as to direct policy focus, resources and initiatives to the most food insecure.

**Alakh N. Sharma**  
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The preparation of the food security atlases for eight states would not have been possible without the joint efforts of various organizations, individuals and government officials. The primary input for construction of indices as well as formulation of appropriate indicators is reliable disaggregated sub-state level data, which was collected, collated and mined from secondary sources as well as based on information made available by various state departments and ministries. We wish to thank all of them for their support and assistance. We are grateful to DFID for funding the project through the Global Institutional Support Grant to WFP.

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The Chhattisgarh state report was prepared with the inputs of numerous resource persons and regional institutions, who also helped in the organization of state consultations. We acknowledge the contribution of Dr. Ilina Sen and Mr. Suresh Kumar Sahu of Rupantar, Raipur who helped us in the collection and collation of state specific resource material and data; as well as Dr. Harishwar Dayal, Director and Mr. Ashwani Kumar of IHD Eastern Regional Centre, Ranchi who helped in the organization of the state consultation.

A preparatory workshop was organized on 31st July, 2007 in Raipur. This was chaired by Dr. Alok Shukla, Secretary, Food, Civil Supplies and Consumer Protection, Revenue, Government of Chhattisgarh, and was attended by experts from the state government, academia, and civil society organizations. The insights and active participation of a few experts deserves special mention – Ms. Indu Netam, Adivasi Samta Manch; Prof. J.L. Bharadwaj, Pandit Ravi Shankar Sukla University, Raipur; Dr. S. Srivastava, Unit Manager, AFPRO (Action for food Production); Mr. Bhaskar Dwivedi, Training Coordinator, Chhattisgarh Tribal Development Programme; Dr. Alok Panday, State Coordinator, PRIA; Dr. Bhag Chandra Jain, Associate Professor (Agricultural Economics), Indira Gandhi Agricultural University, Raipur; Mr. Ravi Manav, Director, Vardan; Mr. D.N. Sharma, Secretary, Sandhan Sansthan; Mr. Murlidhar Chandram, Srijan Kendra; Mr. Jacob Nellithanam, Programme Co-Coordinator, Jan Swasthaya Sahyog; Mr. Himanshu Kumar, Director, Vannvasi Chetna Ashram; Mr. Moin Jafar Khan, Programme Co-Coordinator, Aastha Sikshan Samiti; Mr. Kasi Ram Verma, President, Gramodaya Kendra; Mr. Daulat Ram Kashyal, President, Astha Samiti; Mr. Chandan Kumar Mishra, Programme Coordinator, Samarthan - Centre for Development Support; Mr. Sourav Bhattacharjee, Nutrition Officer, UNICEF; and Mr. Gautam Bandyopadhyay, Secretary, Chhattisgarh Action Research Team, among many others.

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## List of Abbreviations

ADAPT	Area Development Approach for Poverty Termination
AIDIS	All-India Debt and Investment Survey
APL	Above Poverty Line
ARWSP	Accelerated Rural Water Supply Programme
BMI	Body Mass Index
BPL	Below Poverty Line
CMR	Child Mortality Rate
CSO	Central Statistical Organization
DLHS	District-level Household Survey
DPAP	Drought Prone Area Programme
FAO	Food and Agriculture Organization
FCI	Food Corporation of India
FFS	Farmers' Field School
FSI	Food Security Index
FSO	Food Security Outcome
FSOI	Food Security Outcome Index
GSDP	Gross State Domestic Product
HYV	High Yielding Variety
ICDS	Integrated Child Development Services
ICT	Information and Communication Technology
IFAD	International Fund for Agricultural Development
IHD	Institute for Human Development
IIPS	International Institute for Population Sciences
IMR	Infant Mortality Rate
LTAP	Long Term Action Plan
MDGs	Millennium Development Goals
MDM	Mid-Day Meal
MMS	Mid-Day Meal Scheme
MPCE	Monthly Per Capita Expenditure
MSSRF	M S Swaminathan Research Foundation
NCEUS	National Commission for Enterprises in the Unorganized Sector
NCRL	National Commission on Rural Labour
NFHS	National Family Health Survey
NFSM	National Food Security Mission
NREGA	National Rural Employment Guarantee Act
NREGS	National Rural Employment Guarantee Scheme
NSDP	Net State Domestic Product
NSS	National Sample Survey
NTFP	Non-Timber Forest Product



OBC	Other Backward Class
PDS	Public Distribution System
PESA	The Panchayats (Extension To Scheduled Areas) Act
PHC	Primary Health Centre
PMGSY	Pradhan Mantri Gram Sadak Yojana
RLTAP	Revised Long Term Action Plan
RTI	Right to Information Act
SC	Scheduled Caste
SCA	Special Central Assistance
SCP	Special Component Plan
SHG	Self-Help Group
ST	Scheduled Tribe
TE	Triennium Ending
TSP	Tribal Sub Plan
UNICEF	United Nations' Children Fund
WFP	World Food Programme
WFS	World Food Summit
WHO	World Health Organization
WFS	World Food Summit
WHO	World Health Organization

# Executive Summary

Food security is not just a matter of the availability of food, but even more of the access of households and individuals to sufficient nutritious food. The nutritional status of an individual is also influenced by access to safe drinking water, facilities for hygiene and sanitation. Consequently, food security is analyzed along the axes of availability, access and absorption. The importance of entitlements in food security is underlined by the Supreme Court's judgments validating the Right to Food. As a signatory to the UN's Millennium Development Goals (MDGs), the Government of India and all state governments have an obligation to reduce by half the proportion of people suffering from hunger by 2015.

To contribute to reaching the above goals, the Institute for Human Development (IHD) on behalf of UN World Food Programme (WFP) has undertaken an analysis of the dimensions of food security at the sub-state or district level for 8 states of India – Orissa, Jharkhand, Chhattisgarh, Madhya Pradesh, Rajasthan, Bihar, Uttar Pradesh and Maharashtra. The purpose of this exercise is to:

- **Identify the regions and social groups most affected by food insecurity;** and,
- **Suggest policy interventions appropriate to improving food security for those regions and social groups.**

Recognizing that reduction of acute poverty is the key to reducing hunger, the analysis began by choosing the likely variables that affect food security along the three axes of availability, access and absorption. The composite index is based on 12 identified indicators which reflect these three dimensions. The availability-related variables considered here are agricultural production in per capita value terms, proportion of forest area, extent of irrigation and rural connectivity in terms of villages with access to paved roads. The six variables considered for the access-to-food dimension include proportion of agricultural labourers, ratio of working age population, monthly per capita consumption expenditure, casual wage rate of rural persons and female literacy rate. Access to safe drinking water and primary health services are the two variables considered for the absorption index.

The values of districts on each of these 12 variables were combined to develop a Food Security Index (FSI), on the basis of which each district was ranked. A Food Security Outcome Index (FSOI) was also developed based on two indicators – under-five mortality and proportion of underweight children. Districts were also ranked on the basis of this index. The FSOI allows us to rank districts on the basis of nutrition performance, with the caveat that on the whole, nutritional status in India is poor, and therefore, the variation between districts may not be very much. The FSI, on the other hand, also allows us to judge the relative importance of variables in the differences between districts. Thus, the FSI can be understood to be an explanatory index computed to explain the outcomes of food security, as suggested by the FSOI.

The analysis of this report has yielded the following districts as requiring special attention for food security interventions in Chhattisgarh:



### *Priority Districts for Intervention*

District	FSO Rank	FSI Rank
<b>Southern (Bastar) Plateau</b>		
Dantewada	15	12
Bastar	11	14
<b>Northern Region</b>		
Korba	13	15
Jashpur	12	10
Raigarh	9	7
Surguja	3	16
Koriya	2	13
<b>Central Plains</b>		
Rajnandgaon	15	4
Kwardha	16	9
Mahasamund	8	8

In general, however, the districts of Chhattisgarh fare poorly on nutritional outcomes, with only the more urbanized and industrialized districts doing better. Thus, ensuring food security and improving the nutritional status is a challenge for the state of Chhattisgarh as a whole. The identification of certain districts for priority action does not mean that either resources or efforts to bring up all districts can slacken, but only draws attention to the need for more inclusive growth efforts and the special efforts needed to bridge the divides between different regions and districts of the state. At the same time, it is also necessary to pay special attention to the food security needs of the so-called primitive tribes, such as Pahari Korwa, Kamar, Baiga and Birhor.

Access to roads and irrigation are two areas in which the state considerably lags behind the country, while the Southern Plateau, in addition, has very low rates of adult female literacy. Low per capita agricultural productivity is the feature of the state's rain-fed agriculture. **Rural connectivity and small-scale irrigation in a manner appropriate to hill and plateau regions, along with improving female literacy**, should form the core of efforts to reduce extreme poverty, and thus hunger, in Chhattisgarh.

Along with this, special efforts are needed for development of livelihoods of forest-based populations. This itself comprises a number of measures, including:

- Implementation of the Forest Rights Protection Act so as to provide security of tenure
- Investment to enable a shift to production of high value crops



- Shortening of the chain of intermediaries and promoting value-added processing in non-timber forest products (NTFP)

The changes in production that would reduce food insecurity require not just improved access, but also enhanced capabilities, through extension and technological development, building on local capacities and knowledge.

Measures to increase household and individual incomes need to be supplemented by Community Forest Management (CFM), which can enable communities to balance production and local environmental concerns.

Complementary steps need to be taken to enhance women's agency in the household and community, through:

- literacy and education, and
- women's land rights

Enhancing women's capabilities could, among other benefits, also lead to the adoption of improved nutritional practices, such as exclusive breast-feeding of infants till six months of age.

Micro-finance, through self-help groups (SHGs) supported by NGOs, could help

- reduce the incidence of inter-linked transactions, which result in very low net income,
- improve the food security situation by enabling borrowing for critical needs, and
- also increase the share of household income under the control of women.

In Chhattisgarh, there are four issues of land reform that need to be tackled in order to improve food security:

- Restoration of illegally-acquired tribal lands
- Distribution of land to the landless, largely Scheduled Castes (SCs)
- Security of tenure of Scheduled Tribes (STs) in forest areas
- Women's land rights

Chhattisgarh has a specific requirement – to design **policies for industrialization that do not increase the number of the displaced refugees**, but enable them to secure improved livelihoods in the course of industrialization. This is a matter of intense debate, even confrontation. One way, could



be by **combining mineral-based with labour-intensive industrialization** (e.g. textiles and garments) that can absorb the poorly educated labour that is likely to be displaced by mineral-based industrialization.

Employment-based programmes (e.g. NREGA schemes) can themselves be planned to improve infrastructure to provide needed public goods (roads), or quasi-public goods (irrigation) for the area.

Improvement in the implementation of these government schemes depends, at one level, on improvement in administration and governance systems. But more important is the role of the people who are to benefit from the schemes, whether organized through CBOs, NGOs or traditional tribal bodies – in both **demanding and monitoring implementation** of the numerous schemes. The innovative *mithanin* system can be extended to support better implementation of all government schemes.

Enhancing capabilities, through rights, access to resources and training, will clear the road for building the **capacity** to aspire – the aspirations for a better life exist, but the means or capacity to realize those aspirations are lacking.

# 1. Introduction

India has an impressive recent record of relatively rapid growth. GDP growth over the last decade has averaged more than 7 per cent per annum. But despite this rapid growth India is still home to more than a quarter of the hungry people in the world. Rapid growth has not translated into a commensurate reduction in poverty and hunger. The recent turmoil in world food markets, with sharp rises in food prices, and the current global economic downturn together threaten to make the food security situation in India even worse. A few years ago food stocks were piling up, even while millions continued to go hungry. Now government food stocks are at all time lows. The recent good harvest has made it possible to replenish these stocks. But the problem of high incidence of hunger and under nutrition continue to plague the country.

These vicissitudes bring home the stark truth that food security is a critical and continuing challenge and there is no place for complacency on this front. In 1996, the World Food Summit (WFS) and subsequently the Millennium Development Goals (MDGs) adopted at the UN recognized the importance of achieving food security or, putting it in a more traditional way, eliminating hunger as a goal of the international system. Not quite eliminating hunger, but at least reducing its proportion by half by the year 2015 is now accepted as one of the MDGs.

A 2002 assessment by the follow-up to the WFS, 'World Food Summit – *Five Years Later*', as it was called, pointed out that, using the incidence of malnutrition as the measure of the incidence of hunger, there has been a decrease in hunger at the rate of 8 million people per year across the world. But in order to even achieve the goal of reducing world hunger by half by 2015, it is necessary to reduce the incidence of malnutrition by 15 million per year. What this shows is that continuing to implement the economic, political and social policies now in place will not enable the world to reach the goal by 2015. A mid-course correction in economic, political and social policies is needed in order to achieve the stated goals.

Despite India's recent record of high rates of economic growth, there is a major concern with the failure of that growth to translate into a somewhat proportionate reduction in poverty and malnutrition. The problem of large-scale famine-related starvation deaths seems to have been largely resolved, due partly to a combination of a vigilant civil society and press. Nonetheless, there are periodic reports of malnutrition and starvation from different parts of the country; particularly affected are the politically marginal social groups, the Scheduled Tribes (STs) and Scheduled Castes. Besides this problem of hunger among the STs, there is the pervasive incidence of malnutrition, particularly of children and women. Even sustained increases in income have not resulted in commensurate improvements in nutritional status.

The persistence of malnutrition and the reported occurrence of starvation deaths together define the nature of the current problem of food insecurity within a situation of overall adequate availability of foodgrains. The fact that they occur within a situation of adequate foodgrain availability (domestic foodgrain production plus amounts released from government stocks plus imports made possible by India's burgeoning foreign exchange reserves), serves to underline the importance of framing adequate



policies and interventions to secure food security, or access to food, for not just households, but also individuals. It also provides the rationale for this report, prepared by the Institute for Human Development (IHD), on behalf of the United Nations' World Food Programme (WFP).

The UN World Food Programme and the MS Swaminathan Research Foundation (MSSRF) earlier collaborated in analyzing the food insecurity situation in different states in the country. Using chosen indicators to map the relative standing of states with regard to food security, MSSRF and WFP prepared the *Food Insecurity Atlas of Rural India* in 2001. This was followed by the *Food Insecurity Atlas of Urban India* in 2002. The third in the series, the *Atlas of Sustainability of Food Security* was launched in 2004. The atlases raised the bar in the analysis and understanding of food security across states. At the same time, the Atlases posed fresh challenges. They brought into focus the need for analysis at the sub-state level. States in India are typically large and diverse. Intra-state disparities in socio-economic development impact on the food security status of households. For effective policy and focused intervention, identifying and mapping the worst-off areas is important. Following the path-breaking national-level atlases, it was decided to extend the analysis to the district level, the level at which food security interventions are implemented.

The need for such disaggregated analysis is only matched by the dearth of data at such levels. To take only one example, we do not have estimates of an important indicator like poverty for a district. Strengthening planning and performance requires that more data is available at the district level. In this regard, the District Level Household Surveys (DLHS) show welcome progress. These surveys provide valuable demographic data and information relating to reproductive and child health.

The main objectives of this report are to analyze the nature and dynamics of the food security situation at the sub-state level and suggest disaggregated strategies. It is hoped that this Atlas will stimulate action and further analysis. Food security must be brought to the forefront of the development and political agenda not only at the Centre, but in a vibrant federal structure like India's, in the states as well.

## 1.1 What Is Food Security?

What constitutes food security has gone through two phases of understanding or definition. In the 1970s, food security was understood as the 'availability at all times of adequate world food supply of basic foodstuffs...' (UN, 1975). But the 1981 publication of Amartya Sen's *Poverty and Famines: An Essay on Entitlement and Deprivation* brought forward a new understanding of the problem of hunger or food security. Rather than just the 'availability' of food, Sen emphasized 'access' to food through what he called 'entitlements' – a combination of what one can produce, exchange in the market plus state or other socially provided supplies.

What Sen posited is that availability or supply of food does not itself create entitlements for food. In a sense, Sen's emphasis on entitlements is similar to Keynes' notion of 'effective demand'. Both entitlement and effective demand are quite different from need. Since Keynes was dealing with a



fully capitalist market economy, with only two classes, employers and workers, all effective demand was related to monetary income. But Sen is dealing with a 'mixed economy' with at least three classes, employers, workers and peasants or other own-account producers. For those who produce food, part, if not all, of their entitlement is due to their own production. This portion of the consumption of food is not mediated by the market. Consequently, this is not captured by the market-based notion of effective demand.

What an individual or household can consume or access depends on the individual's or household's entitlements. Entitlements draw attention to the conditions under which people access food, whether from direct production (or exchange with nature), market exchange (income from either goods produced or wage labour) and social security measures. Entitlements also draw attention to the rules that govern intra-household allocation, as a result of which women and girls may face hunger or deprivation even though they are part of households whose general entitlements are sufficient.

Food, of course, is not an end in itself. Food is consumed for nutrition. Instead of focusing attention on the commodity, one can look at the objective for which food is consumed, that is providing nutrition for the body. The purpose of nutrition itself is not just to survive, but to lead a healthy and meaningful life – to be in the state one wants to be (well-being) and to do the various things one wants to do.

At one level, some health questions, like the prevalence of intestinal parasites, affect the very ability of the human body to absorb nutrients. Thus, health concerns, focused on the availability of clean water and access to health facilities, are very much part of the very concept of food security itself. At another level, some health questions, like AIDS most dramatically but also endemic malaria, affect the ability of the individual/household to engage in those livelihood activities that could ensure food security. Consequently, in order to deal with food security, it is not sufficient to pay attention to food alone, but also access to, at least, clean water and sanitation, which affect the ability to absorb food, or turn consumption of food into nutrition. It may thus be seen that all these factors affect food security in one way or the other. Hence, they can be used as components of elementary well-being needed to lead a healthy and meaningful life.

Entitlements point to the fact that hunger is situated within poverty, rather associated with extreme poverty, as a result of which households and individuals do not have adequate entitlements to food. Thus, the elimination of hunger is the first landmark in reducing poverty.

Capabilities are a combination of two factors – states of well-being (like being well nourished, being healthy, and so on) and activities (achieving self-respect, or being socially integrated). Self-respect and social integration are in themselves goals of a meaningful life. But they are also instrumentally important, in that those without self-respect or the socially marginalized may not be able to achieve food security. Consequently, achieving self-respect or playing a meaningful part in social life may both be necessary to achieve food security. This leads to the proposition that food security is not just a matter of some external organization, whether the state or society, providing food, but of the





enhancement of the agency of the hungry or poor. Thus, some level of complex capabilities, like agency, becomes necessary to reach adequate levels of primary well-being.

Given women's general responsibility for food security in rural areas of developing countries, and given the pervasive gender bias in these societies, enhancement of the agency of the poor translates particularly into the enhancement of the agency of poor women. Consequently, food security approaches increasingly pay attention to the elimination of gender inequality and women's empowerment as important preconditions for food security.

Agency of poor women, or of the poor as a whole, is not only a matter of individual agency (which itself might be dependent on collective mobilization) but also of the poor putting their stamp on economic policies. This is necessary in order to bring about the much-needed political will that is often referred to as missing, in order to bring about adequate attention to food security policies. Without adequate political pressure for reform, proper food security policies are unlikely to be adopted. There can be no question that the political mobilization of the poor is required for such a food security policy to be implemented.

All of the above changes in understanding and context meant that 20 years after the 1975 World Food Summit, there was a substantial shift in understanding the meaning of food security. From the 1975 emphasis on adequate food supply, the 1995 World Food Summit declared '... food security, at the individual, household, national, regional and global levels ... exists when all people, at all times, have *physical and economic access* to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.' (FAO, 1996, 3, emphasis added). The declaration further recognizes that 'poverty eradication is essential to improve access to food.'

The international discourse on food security has further developed along the lines of the right to food. This right to food (as discussed in greater detail in the Appendix on Right to Food) derives from the 1948 UN Declaration on Universal Human Rights. Through subsequent instruments, the meaning of the right to food has been spelt out. In particular, the 1999 International Covenant on Economic, Social and Cultural Rights clarified the obligations of states in the context of the realization of the right to food. As put forward in General Comment 12, the right to food identifies three kinds of obligations of states: not to adopt measures that would prevent access to food; to adopt measures to ensure that no individuals are deprived of access to adequate food; and to proactively engage in activities that strengthen people's access to food, including means to ensure their livelihood and food security. There is also an obligation of states to fulfil that right directly, when people cannot obtain adequate food through the means at their disposal (or, normal entitlements) (Charlotte McClain Nhalpo, 2004.)

In India, following the case filed by the People's Union for Civil Liberties (PUCL), the Supreme Court has passed a number of judgments and orders on realizing the right to food (see Appendix on Right to Food for details). These include orders to implement the Mid-Day Meals Scheme (MMS) in primary



schools in all states, the provision of work, etc. Consequently, it is in the context of the international and national obligations, following the acceptance of the right to food, that this Report looks at the ways to realize food security.

## 1.2 Position of Chhattisgarh in the Food Insecurity Atlas of Rural India

At the time of the preparation of the Food Insecurity Atlas of Rural India (2001), Chhattisgarh was not a separate state. Consequently, there is no separate analysis of Chhattisgarh in that Atlas. Chhattisgarh formed part of Madhya Pradesh (MP), and was amongst the severely food insecure states. However, looking at the latest (2004-05) NSS data Chhattisgarh was not one of the worst performing NSS regions of MP. The NSS regions of MP 1, 2 and 4, i.e. Vindhya, Central and Southern region with poverty incidence in excess of 48 per cent, are all worse off compared to Chhattisgarh with a poverty incidence of 40 per cent.

Given Chhattisgarh's low position, the task of this report is to identify (1) the regional pattern, if any, of food insecurity within Chhattisgarh; and (2) to identify the social groups, by caste, ethnicity and gender that require special attention. Following this identification of regions and social groups, is the next step of identifying the major correlates of food insecurity, and then an analysis of the factors that contribute to food insecurity.

Finally, the goal of the report is to identify crucial policy interventions that need to be undertaken to improve food security in the state, particularly in its worst regions.

## 1.3 Overview of the Report

This report is an effort to provide a district level profile of food security in Chhattisgarh. As the country moves towards greater devolution and decentralization, data at disaggregated levels remains a stumbling block. District level data is notoriously inadequate and this report urges that greater attention be paid to data collection and dissemination at sub-state levels. After the introduction, the next chapter – Chapter 2 – provides an overview of the state and places it in the context of other states in the country. In line with the current – and correct – approach that emphasizes outcomes rather than inputs, Chapter 3 derives a composite index of food security outcomes and provides a brief methodological note. It draws a distinction between the Food Security Outcome Index (FSOI) that is based on outcome measures on the one hand, and the Food Security Index (FSI) that is a composite index of the factors that are critical to food security on the other hand. Chapters 4 to 6 analyze the food security situation along the dimensions of availability, access and absorption. The most food insecure districts both in terms of outcomes and in terms of the factors that contribute to it are given in Chapter 7. This chapter also discusses strategies for action that emerge from our analysis, in the context of the broader state and national strategic interventions already in place. This is most significant from the perspective of policy. Chapter 8 wraps up with the final conclusions.

## 2. A Profile of the State of Chhattisgarh

An overview of the socio-economic profile of the state and the important changes that have taken place in its economy are important to understand and map the multiple dimensions of food security in Chhattisgarh. This chapter highlights the geographical features of the state, and discusses its relative position in key areas of the economy.

### 2.1 Agro-Ecological Regions

Chhattisgarh is one of the youngest states of India. Constituted on 1st November, 2000, Chhattisgarh is located in the heart of India. The geographical area of the state covers over 135,000 square kilometres and the total population in 2001 was 20,833,803. The state can be divided into three agro-ecological regions:

- **The Northern Region**, comprises the districts of Koriya, Surguja, Jashpur, Raigarh and Korba. This is an area of forests, hills and water sources. It is agriculturally and culturally similar to the adjoining region of Jharkhand.
- **The Central Plains**, comprises the districts of Raipur, Bilaspur, Janjgir-Champa, Kwardha, Rajnandgaon, Durg, Dhamtari and Mahasamund. The river Mahanadi flows through the area and the region is known as the “rice bowl” of Central India, being home to many varieties of rice.
- **The Southern Region**, comprises the districts of Kanker, Bastar and Dantewada. Geographically this is the Bastar Plateau, with a forest-based economy complementing rice production.

The whole of Chhattisgarh forms a single NSS region, thus, making it difficult to utilize region-wise data, as is possible with most other states. The state has sixteen districts (see Map 2.1).

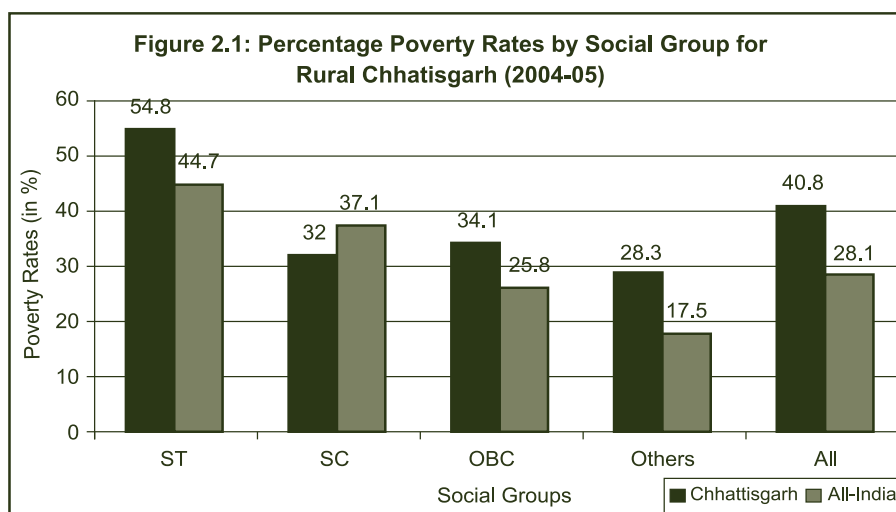
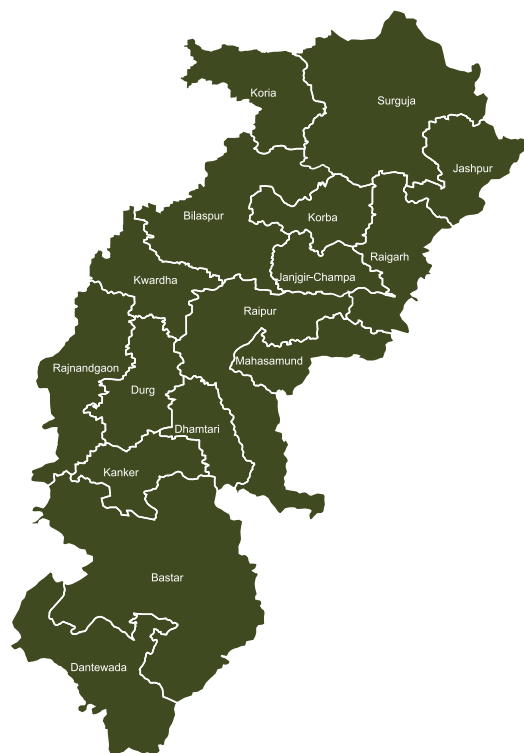
### 2.2 Poverty

Chhattisgarh is one of the new and large states of the country. It is also one of the poorer states, ranking 14th in poverty status terms. In terms of net state domestic product, Chhattisgarh ranks 15th among the seventeen major states of the country. The net state domestic product during 2004-05 was Rs. 309,000 million. Per capita income of Chhattisgarh during 2004-05 was Rs. 7678, which ranks 12th among the seventeen major states of the country (Table 2.1).

Rural poverty in Chhattisgarh is at 40.8 per cent, which is much higher than the All-India incidence of 28.1 per cent. Only among the SCs is the incidence of poverty in Chhattisgarh lower than the All-India level. However, for STs, again, there is a substantially higher incidence of poverty in Chhattisgarh (54.8 per cent) than the all-India figure of 44.7 per cent (Table 2.2).



**Map 2.1: Chhattisgarh: Administrative Divisions**



Source: Calculated from NSS, 61<sup>st</sup> Round, 2004-05 based on URP.



**Table 2.1: Net State Domestic Product and Poverty Status, 2004-05**

State	NSDP		Per Capita Income		Poverty Ratio	
	('000 Million Rs.)	Rank	(Rs.)	Rank		Rank
Andhra Pradesh	911	5	11080	8	11.2	2
Assam	181	17	6281	15	22.3	8
Bihar	320	14	3609	17	42.1	15
<b>Chhattisgarh</b>	<b>309</b>	<b>15</b>	<b>7678</b>	<b>12</b>	<b>40.8</b>	<b>14</b>
Gujarat	835	7	14850	4	19.1	6
Haryana	349	13	14897	3	13.6	4
Jharkhand	218	16	7273	14	46.3	16
Karnataka	703	11	12563	6	20.8	7
Kerala	811	9	11565	7	13.2	3
Madhya Pradesh	835	7	7666	13	36.9	13
Maharashtra	2,951	1	15567	2	29.6	11
Orissa	461	12	5985	16	46.8	17
Punjab	723	10	15611	1	9.1	1
Rajasthan	888	6	8788	11	18.7	5
Tamil Nadu	1,511	4	12719	5	22.8	9
Uttar Pradesh	1,876	2	8809	10	33.4	12
W. Bengal	1,705	3	10992	9	28.6	10

Source: NSDP and Per capita Income – Computed from CSO, Various years; Poverty Ratio and BPL Population – Planning Commission Poverty Estimates, Computed from NSS 61st Round, 2004-05.

**Table 2.2: Percentage Share of Poor and All Households by Social Group for Rural Chhattisgarh (2004-05)**

State	ST	SC	OBC	Others	All*
<b>Poor Households</b>					
Chhattisgarh	50.3	11.5	35.0	3.2	100.0
All-India	18.1	28.4	38.0	15.4	99.9
<b>All Households</b>					
Chhattisgarh	37.7	13.7	43.3	5.3	100.0
All-India	10.9	21.4	42.0	25.6	100.0

Source: Schedule 1.0, NSS 61st Round, 2004-05 based on URP.

Note: As \* includes not reported cases, % shares do not always add upto 100.0



In line with the above, rural STs who are 37.7 per cent of the rural population, account for half the rural poor in the state.

For agricultural labourers, their share among the rural poor is more than their share of the population. For all other occupational categories, it is less than their respective shares in the population, except that for “Self-employed in non-agriculture” category for which it is just a little above their share of the population (Table 2.3).

**Table 2.3: Percentage Share of Poor and All Households by Household Type for Rural Chhattisgarh (2004-05)**

Region	Self-employed in non-agriculture	Agricultural labour	Other labour	Self-employed in agriculture	Others	Total
<b>Poor Households</b>						
Chhattisgarh	7.1	53.8	3.8	31.4	3.9	100.0
All-India	12.8	41.5	12.1	26.5	7.1	100.0
<b>All Households</b>						
Chhattisgarh	6.9	39.1	6.4	38.6	8.9	100.0
All-India	15.6	26.7	10.7	35.5	11.4	100.0

Source: NSS 61st Round, 2004-05 based on URP.

What is interesting is that the proportion of agriculturists cultivating more than 0.41 hectares of land is higher than at the All-India level and, at the same time, the incidence of poverty among these larger land cultivating agriculturists is also higher than at the All-India level (see Table 2.4). What this points to is the lower productivity of agriculture in Chhattisgarh compared to the All-India averages.

**Table 2.4: Percentage Share of Poor and All Households by Land Cultivation Categories for Rural Chhattisgarh (2004-05)**

Region	0.000-0.004	0.005-0.40	0.41-1.00	1.01-2.00	2.01-4.00	4.01 & above	Total
<b>Poor Households</b>							
Chhattisgarh	22.6	17.4	27.4	16.3	15.3	1.0	100.0
All-India	46.1	23.7	16.9	8.6	3.8	0.9	100.0
<b>All Households</b>							
Chhattisgarh	25.0	13.0	21.7	18.8	17.8	3.7	100.0
All-India	41.7	19.4	17.7	11.6	6.7	2.9	100.0

Source: NSS 61st Round, 2004-05 based on URP.



## 2.3 Economic Growth

The sectoral composition of the economy is a valid indicator of the level of economic development of the state. The performance of the secondary sector of Chhattisgarh is quite fair and it draws almost a quarter of its income from this sector, lying just above the national average. However, it lags far behind in the tertiary sector ranking only above Jharkhand, and lies almost 13 per cent points below the national average. As in most underdeveloped economies, the bulk of its production takes place in the primary sector that employs almost two-thirds of the total workers of the state, either as cultivators or agricultural labourers.

In an aggregated form, the secondary and tertiary sector combined contribute about 63 per cent of the total NSDP of Chhattisgarh, while the figure is more than 85 per cent for states like Maharashtra and Tamil Nadu, with the national average exceeding 75 per cent (Table 2.5).

In line with the trends in other states, there has been a decline in the contribution of agriculture to GSDP from 27.8 per cent in 1993-94 to almost half of that- 14.43 per cent - in 2004-05. The contribution of the secondary sector, including manufacturing, and mining too are quite high – almost 45 per cent of GSDP (Table 2.6).

**Table 2.5: Sectoral Composition of NSDP\* (TE 2004-05)**

State	Primary	Rank	Secondary	Rank	Tertiary	Rank
<b>India</b>	<b>23.33</b>		<b>23.61</b>		<b>53.06</b>	
Andhra Pradesh	28.31	11	20.3	11	51.39	6
Assam	39.27	3	12.57	16	48.16	7
Bihar	43.19	1	9.55	17	47.26	8
<b>Chhattisgarh</b>	<b>35.37</b>	<b>7</b>	<b>24.97</b>	<b>8</b>	<b>39.66</b>	<b>15</b>
Gujarat	20.45	14	34.15	1	45.41	12
Haryana	28.96	10	25.04	7	46.01	10
Jharkhand	39.67	2	32.26	2	28.07	17
Karnataka	21.11	13	25.56	4	53.33	5
Kerala	17.55	15	19.44	13	63.01	1
Madhya Pradesh	34.23	8	23.25	9	42.52	14
Maharashtra	14.27	17	25.31	6	60.42	2
Orissa	38.8	5	14.01	15	47.19	9
Punjab	39.01	4	21.5	10	39.49	16
Rajasthan	29.11	9	25.4	5	45.49	11
Tamil Nadu	14.85	16	28.64	3	56.51	3
Uttar Pradesh	36.86	6	19.56	12	43.59	13
West Bengal	25.36	12	19.09	14	55.55	4

Source: Computed from Central Statistical Organization (Various Years).

\* NSDP at Factor Cost at 1993-94 prices.



**Table 2.6: Percentage Share of GSDP by Sub-Sector in Chhattisgarh at 1993-94 Prices**

S.no	Sectors	Per cent GSDP Share		
		1993-94	1999-00	2004-05
1.	Agriculture	27.83	18.62	14.43
2.	Forestry & logging	2.84	2.82	2.74
3.	Fishing	0.44	0.95	1.12
4.	Mining & quarrying	9.22	12.04	13.88
	<b>A. Sub Total of Primary</b>	<b>40.33</b>	<b>34.43</b>	<b>32.16</b>
5	Manufacturing	19.78	18.21	20.00
	<b>B. Sub Total of Secondary</b>	<b>30.23</b>	<b>30.35</b>	<b>30.18</b>
	<b>c. Sub Total of Tertiary</b>	<b>29.44</b>	<b>35.22</b>	<b>37.65</b>

Source: CSO, various years.

But the percentage of workers in these sectors shows the very uneven nature of development. Fully 77 per cent of workers are in agriculture, while the secondary sector and mining account for less than 10 per cent of the workers in the state (Table 2.7). Further, it is expected that even the 10 per cent of workers in these modern sectors are largely migrants from outside the state (Government of Chhattisgarh, 2006, p. 58).

The growth rate of agriculture in Chhattisgarh only reiterates this story of stagnation in production. In the period 1994-2005, agriculture grew at just 1.64 per cent (Figure 2.2). The agricultural sub-sectors that grew faster were forestry at 3.94 per cent and fishing at 14.34 per cent. But the latter grew from a very low base and its contribution to GSDP was just over 1 per cent in 2004-05.

The sectors of the state economy that grew substantially were mining in the primary sector, and the secondary and tertiary sectors. However, this growth is concentrated in urban areas. There would, of course, be spill-offs from this urban development, both in terms of remittances by workers of rural origin, and in terms of increasing employment opportunities and thus also overall wages. But, as pointed out above, a large part of employment (at least, permanent employment) in both mining and manufacturing are accounted for by out-of-state migrants.

Thus, there has been little structural change in the rural economy. The population dependant on agriculture has decreased very slightly. Further, there is a social dimension to this transition: There is a lower proportion of rural persons from the SCs and STs, particularly the STs, with non-agricultural sources of income.

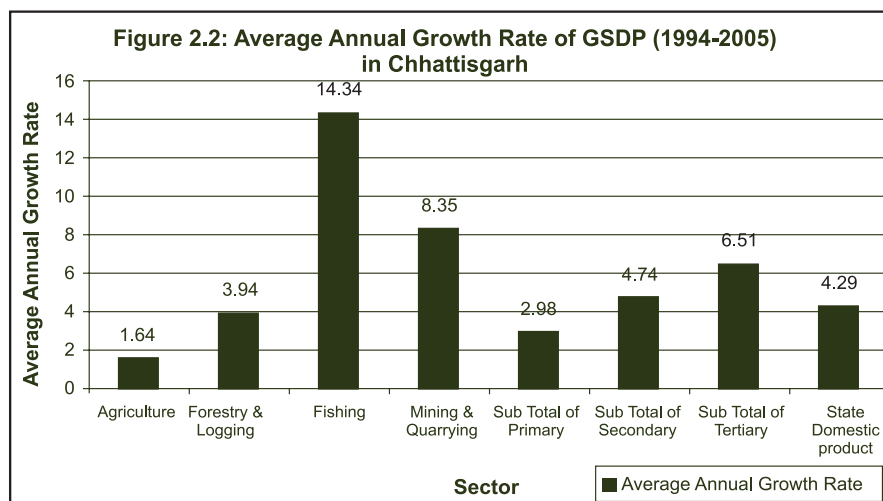
**Table 2.7: Percentage Distribution of Workers and GSDP by Sector in Chhattisgarh, 2004-05**

Sector	Workers* (per cent)	GSDP (per cent)
Agriculture and allied		
Mining & quarrying	0.63	13.88
<b>Sub total Primary</b>	<b>77.77</b>	<b>32.16</b>
Manufacturing	4.93	20.00
<b>Sub total secondary</b>	<b>9.27</b>	<b>30.18</b>
<b>Sub total Tertiary</b>	<b>12.96</b>	<b>37.65</b>

Source: Workers: NSS 61<sup>st</sup> Round and GSDP:CSO.

\* Workers are defined as those in Principal Status. Taking both Principal and Subsidiary status does not make any difference to the calculation.





Source: Calculated from CSO, Various years.

## 2.4 Health and Nutritional Status

Given the fact that a healthy person has a higher capacity to work, the former also has a direct bearing on the latter. The goal of economic activity is human well-being, an important, even elementary, component of which is health. Health and nutritional status can be measured through a number of indicators. While mortality under age one [infant mortality] is an indicator of poor reproductive health facilities and antenatal care, mortality under age five is closely linked with health services including immunization and overall poverty levels. The latter is also useful for assessing both social practices and public policy and can be taken as a comprehensive indicator for the overall quality of life.

The Table 2.8 shows comparative mortality as well as nutritional status of children for the states with an under-five mortality figure higher than 80 per 1000 live births. While UP shows the highest figure (96) in terms of under-five mortality, Chhattisgarh closely follows with 90, with only MP, Jharkhand and Orissa in between. For all the nutritional indicators, the figures for Chhattisgarh remain consistently high, though not very different from other tribe-dominated states like MP and Jharkhand.

High malnutrition levels, coupled with high mortality among children also possibly point towards poor feeding practices. Poor access to food emanating from grave economic conditions, as already seen earlier, is the prime reason for such a situation.

In the case of nutritional status of children, the condition in rural Chhattisgarh is much worse than at the all-India level. The percentage of underweight children below the age of three at 54.6 per cent is 5.6 percentage points above the all-India level, and for stunted children below the age of three at 47.9 per cent, it is 7.2 percentage points above the all-India level. Only the wasting percentage, which shows seasonal malnutrition, is a little below the all-India figure (Table 2.9).



**Table 2.8: Mortality and Nutritional Status of Children and Women\* (2005-06)**

	<b>Under-five mortality</b>	<b>Infant Mortality</b>	<b>Under-weight Children</b>	<b>Wasted Children</b>	<b>Stunted Children</b>	<b>Anemic Children</b>	<b>Thin Women</b>
India	74.3	57	42.5	19.8	48.0	69.5	35.6
Uttar Pradesh	96.4	72.7	42.4	14.8	56.8	73.9	36.0
Madhya Pradesh	94.2	69.5	60.0	35.0	50.0	74.1	41.7
Jharkhand	93.0	68.7	56.5	32.3	49.8	70.3	43.0
Orissa	90.6	64.7	40.7	19.5	45.0	65.0	41.4
<b>Chhattisgarh</b>	<b>90.3</b>	<b>70.8</b>	<b>47.1</b>	<b>19.5</b>	<b>52.9</b>	<b>71.2</b>	<b>43.4</b>
Rajasthan	85.4	65.3	39.9	20.4	43.7	69.7	36.7
Assam	85.0	66.1	36.4	13.7	46.5	69.6	36.5
Bihar	84.8	61.7	55.9	27.1	55.6	78.0	45.1
<b>Best State</b>	<b>16.3</b> <i>(Kerala)</i>	<b>15.3</b> <i>(Kerala)</i>	<b>22.9</b> <i>(Kerala)</i>	<b>9.2</b> <i>(Kerala)</i>	<b>24.5</b> <i>(Kerala)</i>	<b>44.5</b> <i>(Kerala)</i>	<b>18.0</b> <i>(Kerala)</i>
<b>Worst State</b>	<b>96.4</b> <i>(UP)</i>	<b>72.7</b> <i>(UP)</i>	<b>60</b> <i>(MP)</i>	<b>35.0</b> <i>(MP)</i>	<b>56.8</b> <i>(UP)</i>	<b>78.0</b> <i>(Bihar)</i>	<b>45.1</b> <i>(Bihar)</i>

Source: National Family Health Survey, 2005-06

\* Only those states selected that have under-five mortality higher than 80 per thousand live births.

A brief look at the same states in terms of consumption levels does not give a different picture for Chhattisgarh. It lies below the national average in all consumption indicators of calories, proteins, and Vitamin A and iron supplements (Table 2.10). Public intervention for mitigating undernutrition among children, in terms of food supplements under the Integrated Child Development Services (ICDS) programme, is the highest of all the states. Yet, in food security outcomes, in child mortality in particular, it lies well below the national average.

As seen earlier, there is a high proportion of ST population in the state. Further, Chhattisgarh also has a higher proportion of agricultural labourers in the rural population and, with high levels of single-cropping and low agricultural wages, this would lead to a poor nutrition outcome for the agricultural labourers. This highlights the importance of paying attention to the condition of the STs and agricultural labourers, many of whom would be SCs, when dealing with ways to improve food /nutrition outcomes in Chhattisgarh.

This needs to be combined with gender considerations in order to strengthen women's agency in dealing with food security. Taking women's literacy rate as an indicator of gender-related considerations, rural Chhattisgarh as a whole, is on par with the all-India level for rural women's literacy rate. But the rural women's literacy rate in Chhattisgarh, as we will see later, hides high regional differences.

Rural literacy rates in Chhattisgarh are in line with All-India rates, except that they are about 2 percentage points lower than the All-India figures. Table 2.11 shows that the literacy rate for all persons



**Table 2.9: Nutritional Status of Children, 2005-06**

Variable	NFHS III			NFHS II	NFHS I
	Total	Urban	Rural	Total	Total
<b>Chhattisgarh</b>					
Stunted (per cent)	45.4	32.8	47.9	57.9	-
Wasted (per cent)	17.9	17.7	17.9	18.5	-
Underweight (per cent)	52.1	38.9	54.6	60.8	-
<b>India</b>					
Stunted (per cent)	38.4	31.1	40.7	45.5	na
Wasted (per cent)	19.1	16.9	19.8	15.5	na
Underweight (per cent)	45.9	36.4	49	47	51.5
<b>Point Gap</b>					
Stunted (per cent)	7.0	1.7	7.2	12.4	-
Wasted (per cent)	-1.2	0.8	-1.9	3.0	-
Underweight (per cent)	6.2	2.5	5.6	13.8	-

Source: NFHS III; 2005-06.

**Table 2.10: Status of Consumption**

	Per Capita per Day Intake of Calorie (kcal)	Per Capita per Day Intake of Protein (gm)	Per cent given Vitamin A supplements in last 6 month (Children < 5yrs)	Per cent given iron supplements in last 7 days (Children < 5yrs)	Per cent Received food supplements under ICDS Programme
<b>India</b>	2047	57.0	18.2	4.7	26.3
Uttar Pradesh	2200	65.9	6.1	1.5	14.7
Madhya Pradesh	1929	58.8	14.1	3.5	36.4
Jharkhand	1961	51.2	20.1	3.5	36.5
Orissa	2023	48.3	21.9	5.2	52.5
<b>Chhattisgarh</b>	<b>1942</b>	<b>47.4</b>	<b>9.1</b>	<b>3.1</b>	<b>58.4</b>
Rajasthan	2180	69.6	10.0	1.0	17.3
Assam	2067	52.7	12.9	0.8	28.0
Bihar	2049	57.8	26.4	2.9	4.2
<i>Best State</i>	<i>2240 (Punjab)</i>	<i>69.6 (Haryana)</i>	<i>38.5 (TN)</i>	<i>12.5 (Karnataka)</i>	<i>58.4 (Chhattisgarh)</i>
<i>Worst State</i>	<i>1842 (TN)</i>	<i>44.9 (TN)</i>	<i>6.1 (UP)</i>	<i>0.8 (Assam)</i>	<i>4.2 (Bihar)</i>

Source: Calorie and Protein intake from NSSO, 61<sup>st</sup> Round (2004-05); Rest – National Family Health Survey, 2005-06.



**Table 2.11: Literacy Rate for Individuals from Poor and All Categories by Gender for Rural Chhattisgarh 2004-05**

Region	Male		Female		Person	
	Poor	All	Poor	All	Poor	All
Chhattisgarh	65.3	75.4	40.7	49.2	53.0	62.4
All-India	65.3	76.4	42.2	53.2	53.7	65.1

Source: NSS 61<sup>st</sup> Round, 2004-05.

**Table 2.12: Socio-Economic Status of Major States (%)**

	Level of Urbanization		Rural Female Literacy		Proportion of Rural Scheduled Castes		Proportion of Rural Scheduled Tribes		Proportion of Total Agricultural Labourers	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
India	27.8	-	46.1	-	17.9	-	10.4	-	26.5	-
Andhra Pradesh	27.3	8	43.5	12	18.4	11	8.4	8	39.6	16
Assam	12.9	16	50.7	6	6.7	1	13.6	11	13.2	2
Bihar	10.5	17	29.6	17	16.4	8	1.0	4	48	17
<b>Chhattisgarh</b>	<b>20.1</b>	<b>14</b>	<b>47.0</b>	<b>10</b>	<b>11.4</b>	<b>5</b>	<b>37.6</b>	<b>17</b>	<b>31.9</b>	<b>14</b>
Gujarat	37.4	3	47.8	9	6.9	2	21.6	13	24.3	6
Haryana	28.9	6	49.3	7	21.4	13	0	1	15.3	3
Jharkhand	22.2	12	29.9	16	12.4	6	31.0	16	28.2	11
Karnataka	34.0	4	48.0	8	18.4	11	8.4	8	26.5	10
Kerala	26.0	10	86.7	1	10.8	3	1.5	5	15.8	4
Madhya Pradesh	26.5	9	42.8	13	15.6	7	25.8	15	28.7	12
Maharashtra	42.4	2	58.4	2	10.9	4	13.4	10	26.3	9
Orissa	15.0	15	46.7	11	17.2	9	24.6	14	35	15
Punjab	33.9	5	57.7	3	33.0	17	0	1	16.3	5
Rajasthan	23.4	11	37.3	14	17.9	10	15.5	12	10.6	1
Tamil Nadu	44.0	1	55.3	4	23.8	15	1.6	6	31	13
Uttar Pradesh	20.8	13	36.9	15	23.4	14	0.1	3	24.8	7
West Bengal	28.0	7	53.2	5	26.9	16	7.2	7	25	8

Source: Census of India, 2001.

in Chhattisgarh is 62.4 whereas for the poor it is 53 per cent. The literacy rate also shows a wide gap between males and females.



## 2.5 Regional Structure of the State

### 2.5.1 Socio-Economic Structure

Different socio-economic parameters have been presented for all the states in Table 2.12. The level of urbanization in Chhattisgarh is low at 20.1 per cent, which is almost seven points lower than the national average. The rural female literacy on the other hand shows a marginal edge over the national average for the same. Chhattisgarh has the highest proportion of Scheduled Tribes to total population, higher than even neighbouring Jharkhand. The proportion of rural Scheduled Castes is also the highest in the country. In the case of proportion of agricultural labourers too, Chhattisgarh (31.9 per cent) is above the national average (26.5 per cent).

### 2.5.2 Urbanization

The level of urbanization in different districts of Chhattisgarh has been categorized in five groups and presented in table 2.13. The Table shows that Durg followed by Korba are the most urbanized districts in the state. The Bhilai Steel and Korba Aluminium plants and various ancillaries are located here. There would certainly be a flow of workers from rural areas to these urban centres, with the attendant benefits of remittances to bolster rural consumption. At the same time, it is also possible that large numbers of workers come from outside the district, even outside the state, with consequent little positive impact of urbanization on rural conditions. As a result, even a highly urbanized district could end up with very poor rural food security outcomes.

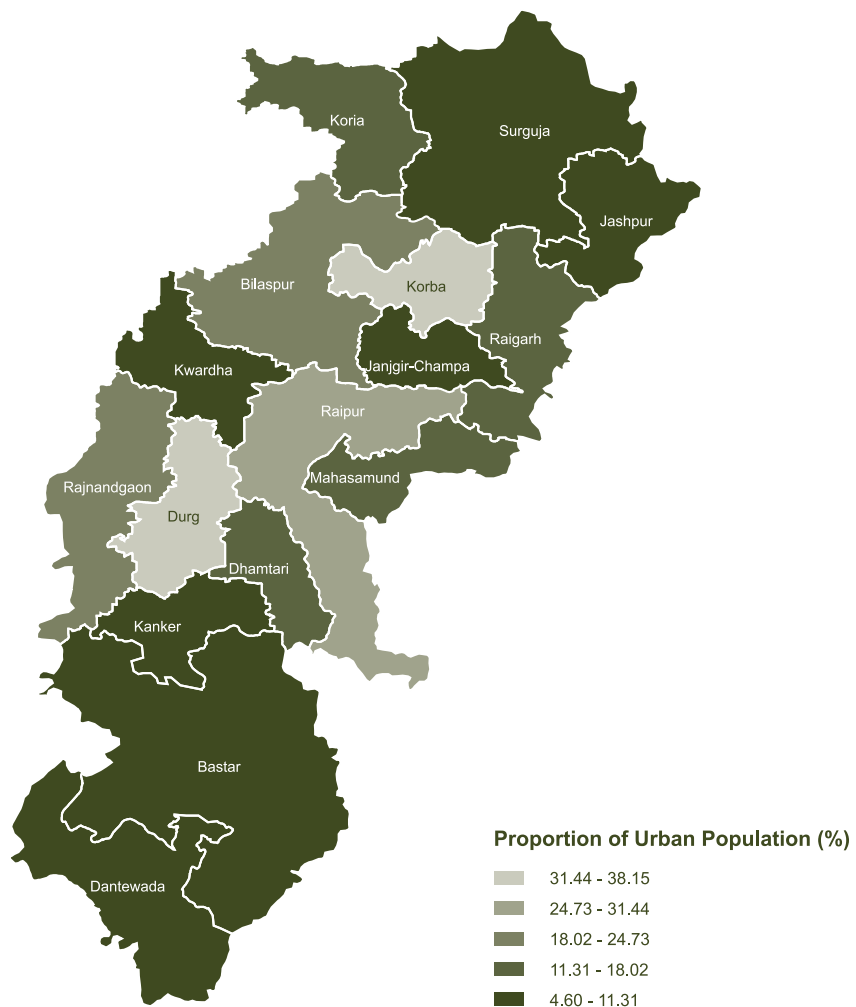
*Table 2.13: Percentage of Urban Population in Chhattisgarh, 2001*

High		Moderate		Low		Very Low		Extremely Low	
District	Value	District	Value	District	Value	District	Value	District	Value
Durg	38.15	Raipur	30.42	Bilaspur	24.35	Raigarh	13.39	Janjgir-Champa	11.03
Korba	36.27	Koriya	29.81	Rajnandgaon	18.05	Dhamtari	13.24	Bastar	9.95
						Mahasamund	11.35	Kwardha	7.68
								Dantewada	7.23
								Surguja	6.96
								Kanker	4.82
								Jashpur	4.60

The central plains (see Map 2.2) are more urbanized. The Bastar Plateau and the Northern districts of the state are the least urbanized parts of the state.



**Map 2.2: Level of Urbanization**



# 3. Analysis of Food Security

Food security is the condition of sufficient nutrition, which is due to a combination of food access of the household and the individual, and of the ability of the body to absorb nutrients. In more detail, food security of an individual is the result of:

1. Food availability, which refers to the quantity of food available, whether through own production or from the market and government programmes. In India food availability is usually measured with respect to food grains, which are the chief source of energy, particularly of the poor.
2. The food access by the household through own production, market purchase and government entitlements and distributed among household members on the basis of various social norms and bargaining positions, including gender relations among the household members.
3. The food consumed by an individual translated into nutrition on the basis of access to safe water, the absence of parasitic diseases, and the overall health status, all of which would affect the body's capacity to absorb consumed food.

## 3.1 Measuring Food Security Status

Given this definition of food security, how can its attainment be measured? Food security is a combination of access to food and its absorption by the body, which depends on a number of non-food factors such as sanitation, access to clean drinking water, access to health facilities, and so on. The outcome of food security can be taken to be the nutritional status of the individual, with the understanding that food intake is the basic, though not the only factor that affects nutritional status.

In developing countries, the rural population, particularly children, are vulnerable to malnutrition because of low dietary intake, poor quality of diet, lack of appropriate care and inequitable distribution of food within the household. The measurement of the nutritional status of children is done through anthropometric methods; these include weight-for-age, height-for-age and weight-for-height. Each of these indices provides somewhat different information about the nutritional status of children. The height-for-age index measures linear growth retardation. Children who are more than two standard deviations below the median of the reference population in terms of height-for-age are considered short for their age or 'stunted'. The proportion in this category indicates the prevalence of 'chronic under-nutrition', which often results from a failure to receive adequate nutrition over a long period of time or from chronic or recurrent diarrhoea (NFHS, 2007).

The weight-for-height index examines body mass in relation to body length. Children who are more than two standard deviations below the median of the reference population for the same index are considered too thin or 'wasted' and this indicates prevalence of acute under-nutrition. Wasting is associated with the failure to receive adequate nutrition in the period immediately before the survey and may be the result of seasonal variations in food supply or recent episodes of illness (NFHS, *op cit*).



Children who are more than two standard deviations below the reference median on the index of weight-for-age are considered to be 'underweight'. We have opted for the proportion of underweight children as the indicator for capturing malnutrition among children. The primary reason being that weight-for-age is a composite measure that takes into account both chronic and acute under-nutrition. Secondly, while information on stunting and wasting are available at the state-level from the NFHS, the same is not available at the district-level. The Reproductive and Child Health Survey through its District Level Household Survey (DLHS) does give information at the district level but only for the index on weight-for-age. Therefore, we have selected this index as one of the two indicators for measuring food insecurity status.

Malnutrition in children weakens their immune system, making them more susceptible to disease and less able to fight off infection. It has been estimated that a child is almost ten times more likely to die from key diseases if he/she is severely underweight, and two and a half times more likely to die if he/she is moderately underweight, as compared to an average weight child (Black et al., 2008). Given the fact that more than 3.5 million children die globally on account of under-nutrition, it emerges as a major factor leading to child deaths.

Therefore, under-five mortality has been taken as the second indicator for measuring food insecurity. The under-five mortality rate indicates the probability of dying between birth and five years of age, expressed per thousand live births. There are a number of advantages of using the under-five mortality ratio as an indicator of food insecurity. Mortality among children is the 'outcome' of the development process rather than an 'input', such as per capita calorie or protein consumption or access to medical facilities which are means to an end. Child mortality is known to be the outcome of a wide variety of factors, for instance, nutritional status of the child and its mother, food availability in the family, level of immunization, availability of maternal and child health services, economic status, availability of safe drinking water, basic sanitation, and so on (UNICEF, 2005). Thus, under-five mortality encompasses a number of facets, most of which have been used as explanatory indicators, as already enumerated and as discussed later.

The significance of under-five mortality as an indicator lies in the fact that it is less susceptible to the fallacy of averages than, for instance, per capita income. This is because the natural scale does not allow children of the rich to be 1000 times as likely to survive, even if the human-made scale does permit them to have 1000 times as much income. To put it simply, it is much more difficult for a wealthy minority to affect a region's child mortality ratio, and therefore it puts forward a more accurate picture of the health and nutritional status of the children of that region (UNICEF, 2007a).

The UN explicitly mentions reduction of under-five mortality by two-thirds by 2015 as one of its primary MDGs (MDG-4). The interrelation between nutritional status and child mortality can be gauged from the fact that under-nutrition contributes up to 50 per cent of all child deaths (WHO and UNICEF, 2006). Improving nutrition and achieving MDG-1 (eradicate extreme poverty and hunger) would substantially





### Box 3.1: Towards MDG - 4

India accounts for 2.1 million (21 per cent) of a total of 9.7 million children dying globally before they reach the age of five. This is despite the fact that child mortality has declined by 34 per cent between 1990 and 2006. A study conducted by Save the Children, which compares child mortality in a country to its per capita income, shows that India lags far behind its poorer neighbours like Bangladesh and Nepal, when it comes to reducing child deaths. A new Wealth and Survival Index, which is part of the study, has ranked 41 countries on the criterion of how well they use their resources to boost child survival rates. While Bangladesh and Nepal are listed in the top ten performers, India stands at a low 16<sup>th</sup> in the index.

This can be elucidated by comparing India and Bangladesh. While India's per capita income (GNI) increased by 82 per cent from 2000 to 2006, its child mortality rate declined from 94 to 76 per 1000 live births. As against that, over the same period, Bangladesh saw a much smaller increase in per capita income – only 23 per cent – but its child mortality dropped from 92 to 69.

As per the estimates of the Inter-Agency Group for Child Mortality Estimation, only seven of the 60 priority countries with high child mortality can be considered to be on track to achieve the MDG-4 (Bangladesh, Brazil, Egypt, Indonesia, Mexico, Nepal and the Philippines). Thus, the global progress made so far has been found to be insufficient to achieve the goal. To actually achieve the goal, most of the remaining countries have to progress at an average annual rate of reduction of at least 10 per cent till 2015. Given the fact that the global rate so far (1990-2006) has just been a little over 1.5 per cent, the achievement of this goal seems to be unrealistic.

The *State of the World's Children-2008* suggests early and exclusive breastfeeding for the first six months, appropriate complementary feeding from six months to two years, skilled care at birth and special care for low-birth weight babies as key preventive measures to reduce child mortality. Thus, adequate food security of the child is necessary for its survival beyond the age of five.

*Ref: UNICEF (2007b), Save the Children (2008).*

help avert child deaths from diarrhoea, pneumonia, malaria, HIV, or measles. Thus, improving nutritional status is a prerequisite for achieving MDG-4 (UNICEF, 2006).

As many as 60 countries across the globe have been prioritized for urgent action, based on two criteria: countries with more than 50,000 deaths of children under five and countries with an annual child mortality of at least 90 per 1000 live births. In 2005, these 60 countries accounted for 93 per cent of all deaths of children under five. India figures prominently among these countries along with four other South Asian countries. Regrettably, India does not appear to be on track to achieve the MDG-4 (UNICEF, 2006) (See Box 3.1).

A statistical analysis of the NFHS-3 data across states reveals a significant negative correlation between micro-nutrient intake and proportion of underweight children and under-five mortality, implying thereby that an increased intake of micronutrient, significantly reduces the risk of under-nutrition, which in turn, as discussed, contributes to reduction in child mortality (Table 3.1).



**Table 3.1: Correlation between Micronutrient Intake and Under-nutrition and Mortality Status**

	Under 5 Mortality	Underweight Children	Vitamin Intake	Iron Intake
Under 5 Mortality	1.00	0.714**	- 0.501**	- 0.523**
Underweight Children		1.00	- 0.227	- 0.450*
Vitamin Intake			1.00	0.555**
Iron Intake				1.00

\*\* Correlation significant at 0.01 level.

\* Correlation is significant at 0.05 level.

### 3.2 The Food Security Outcome Index

It follows from the preceding discussions, that child under-nutrition status and mortality appear to be an overall outcome of nutritional and food insecurity. It, therefore, makes sense to form a combined index of these two indicators to compute an overall index of food security outcome in Chhattisgarh (Table 3.2). Districts have been divided into five groups on the basis of this index – extremely insecure, severely insecure, moderately insecure, moderately secure and secure – each category representing the relative severity of outcome of food insecurity (Table 3.3).

**Table 3.2: District-wise Under-Five Mortality Rate and Underweight in Chhattisgarh (2004-05)**

District	Under-Five Mortality		Underweight Children		Outcome Index	
	Value	Rank	Value	Rank	Index	Rank
Bastar	137.4	12	51.1	11	0.482	11
Bilaspur	136.2	11	36.4	3	0.580	5
Dantewada	169.3	16	38.1	5	0.418	15
Dhamtari	121.8	4	48.5	9	0.569	7
Durg	112.7	2	69.0	16	0.483	10
Janjgir - Champa	112.4	1	25.3	2	0.757	1
Jashpur	145.4	13	48.0	8	0.465	12
Kanker	132.4	8	36.9	4	0.594	4
Kwardha	156.2	15	56.1	12	0.366	16
Korba	134.9	10	57.7	14	0.452	13
Koriya	133.4	9	23.0	1	0.676	2
Mahasamund	122.5	5	58.3	15	0.505	8
Raigarh	126.2	6	56.5	13	0.499	9
Raipur	130.9	7	41.1	6	0.574	6
Rajnandgaon	152.2	14	48.6	10	0.431	14
Surguja	118.1	3	45.9	7	0.602	3

Source: RCH-DLHS (2004-05): Under Five Mortality Rate computed from Census (1991 and 2001) by F. Ram, Usha Ram and Chander Shekhar for "Strengthening State Plans for Human Development", IIPS.



The districts that perform poorly (extremely or severely insecure) lie in two belts of the Southern and Northern Plateaus. Most of the Central Plains are better off. There, are however some exceptions: Surguja and Koriya in the Northern Plateau fall in the moderately secure category; while Durg in the Central Plains falls in the moderately insecure category (see Map 3.1).

**Table 3.3: Status of Food Security Outcome (FSO) Index in Chhattisgarh**

Secure		Moderately Secure		Moderately Insecure		Severely Insecure		Extremely Insecure	
District	Index	District	Index	District	Index	District	Index	District	Index
Janjgir – Champa	0.757	Koriya	0.676	Kanker	0.594	Mahasamund	0.505	Rajnandgaon	0.431
		Surguja	0.602	Bilaspur	0.580	Raigarh	0.499	Dantewada	0.418
				Raipur	0.574	Durg	0.483	Kwardha	0.366
				Dhamtari	0.569	Bastar	0.482		
						Jashpur	0.465		
						Korba	0.452		

In interpreting nutritional indicators, it should be noted that in India they do not vary much between districts and even with per capita outcome. Why nutritional outcomes in India are responding very little to increases in income is a matter of intense debate, debate on which the conclusions are not yet very clear.

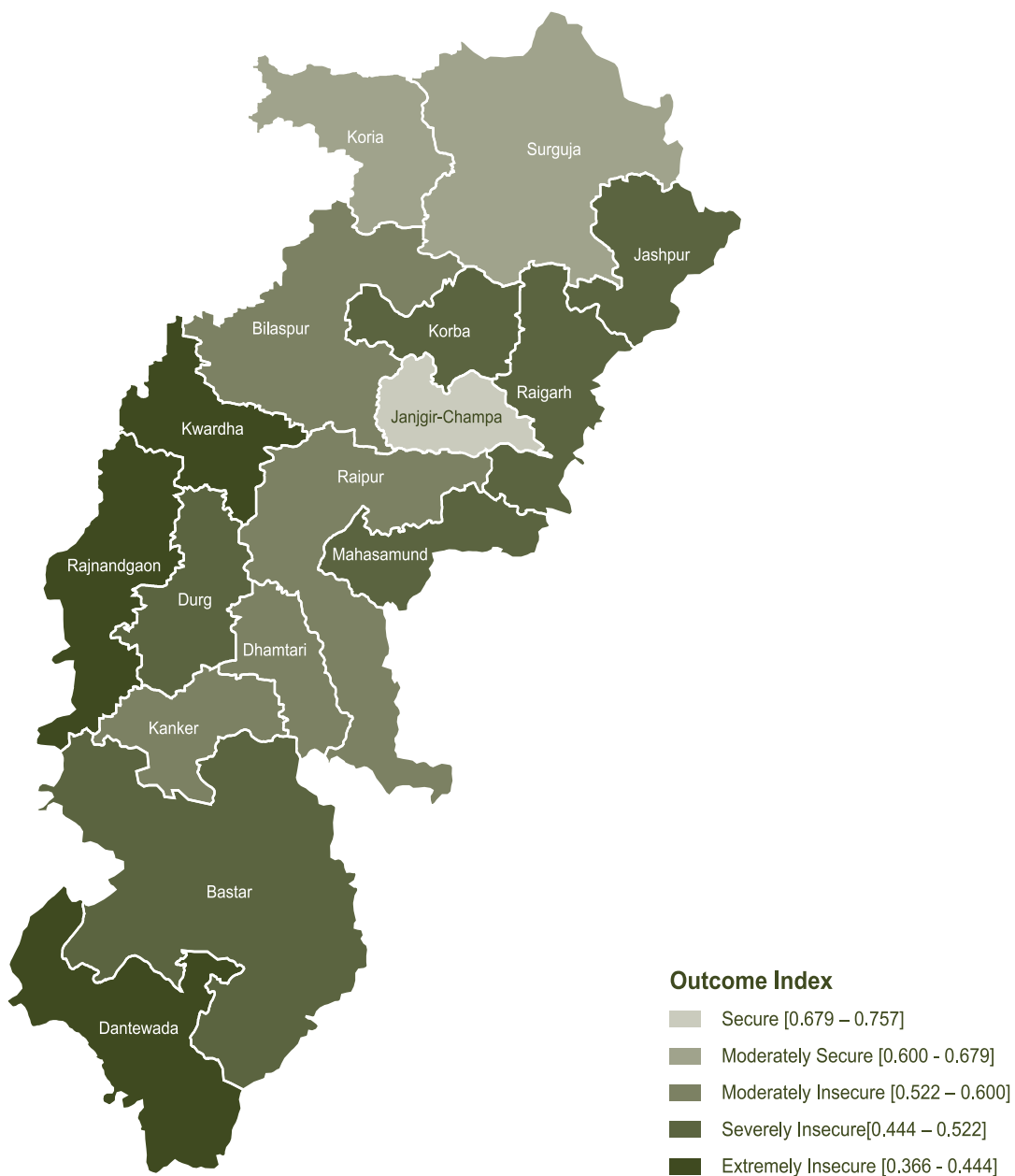
Besides poorly-performing districts, there are also particularly deprived sections of the population. These are the so-called primitive tribes, such as the Kamar of Raipur and Dhamtari Districts. In fact, their numbers are so small that their status might not affect district-level indicators. A study of the nutritional status of Kamar children (M. Mitra et al, 2007) points to the very high prevalence of underweight, stunting, and wasting, and low dietary intake (energy and protein). The population of the Kamar is almost stagnant since 1944 (*ibid*). Special attention needs to be paid to these tribal groups, which include the Birhor, Baiga and Pahari Korwa (see Samir Garg, 2006 for a report on the nutritional status of these communities), besides Kamar, whose very existence is under threat due to sustained malnutrition.

### 3.3 Explaining Food Security

Taking the under-five mortality and child malnutrition rates as the outcomes of food security, one could rank districts on the basis of this index, as done above. If the objective of the exercise were merely to decide on the districts in which to concentrate food security interventions, then such a ranking would be sufficient. But this would say nothing about the *types* of interventions that should be undertaken in order to improve food security, which is one of the key objectives of the study.



**Map 3.1: Food Security Outcome Map of Chhattisgarh**





Food security indicators, however, can draw attention to the factors that distinguish the food secure from the food insecure districts. These indicators can point out the specific areas in which the food insecure districts differ the most from food secure districts. Of course, such association between indicators in an index cannot tell us what the causal relation between them and food security is. For instance, if we find that adult female literacy is consistently higher in food secure districts and consistently lower in food insecure districts that only shows a correlation between adult female literacy and food security. Why such a relation holds is something that is a matter for analysis. Whether it is due to an enhanced women's agency contributing to a better utilization of household income, or through literate women having a better knowledge of improved nutritional practices, or some other relation, it is for analysis to bring out these relations. But the indicators can draw attention to the issues for which significant differences exist. It would even be possible to rank these variables, a rank that would point to the extent to which these variables are different between districts. Such an analysis could also point to variations between food insecure districts – the same variables may not contribute the most to the low index in all districts, or some of them may even move in opposite directions.

Food security is the ability of a household to command food (its food entitlements), generally acquired through the net result of its livelihood activities (plus any other non-livelihood-based entitlements), that is crucial in determining food security of the household. These livelihood activities, from the point of view of food security, are valued not only for the food they might directly produce, if at all they produce food, but also from the point of the command over food that they give to the household. It is at this level of effective demand for food (both consumed out of self-production and purchased) that market failures take place, requiring public intervention of different kinds. Food production, or agricultural production more broadly, then enters as a part, even the main part, of rural livelihood activities that provide command over food.

Within a household, it is known that there are gender differences in entitlements. Consequently, it is necessary to deal with not just factors influencing household entitlements, but also those influencing individual entitlements within the household. Factors of gender differentiation and discrimination come into the picture in influencing individual entitlements of women and men, girls and boys. Further, there could be a substantial imbalance between the use of energy and its replacement through food. Given that women generally work longer hours than men and that women also get less nutrition than men, this imbalance could itself be a factor in nutritional shortfalls for women.

Entitlements are not only based on an individual's or household's own economic attainments. There are also government – or community-based – entitlements. Government-organized entitlements have been gaining in importance, while community-based entitlements have been in decline, even among *adivasis*. The operation of various schemes, such as the Mid-Day Meal Scheme in schools, do have some, even substantial, impact on the access of children, girls and boys, to food. The performance of these schemes depends very substantially on demand from below for provision of these services, and also on the involvement of women in local governance. But, the entitlements that come through



### Box 3.2: Agricultural Production and Food Security

It is commonly believed that agricultural production directly affects food security. However, there is more to it than a mere direct link. Rising agricultural productivity increases rural incomes and lowers food prices, making food more accessible to the poor. Improving irrigational facilities and growing drought-tolerant crops reduce income variability by mitigating the impact of drought. Productivity enhancements are key to greater food security for households with limited access to food markets. Nutritionally enriched crops give access to better diets, particularly through biofortification that substantially improves the nutrient content of the crop.

Thus investments in agriculture are important to ensure food security. However, there is an increasing concern about global food security in future, largely consequent upon growing resource scarcity and climate change. In the present world, many countries have diversified their export base, and trade at large stabilizes food availability. However, food availability is still a concern in many agriculture-based countries. Many countries have declining per capita production of food staples. Further, staple crop production in most of these countries is rain-fed and experiences large fluctuations caused by climatic variability.

The increase or even sustenance of the present level of production is limited by a number of factors – land constraints, water scarcity, high energy prices – along with the uncertain effects of climate change, which has been considered to be one of the areas of greatest uncertainties for agriculture. The combined effects of higher average temperatures, greater variability of temperature and precipitation, more frequent and intense droughts and floods and reduced availability of water for irrigation can be devastating for agriculture, particularly in the tropical regions. It has been predicted that agricultural GDP in Sub-Saharan Africa could contract by anywhere from 2 to 9 per cent.

*Source: World Development Report, 2008*

special interventions have been separated in our analysis from those that provide the ‘normal’ entitlements to food. Of course, we also try to see whether there is a connection, as there ought to be, between the food security status of a district and the public interventions in that district.

It therefore emerges that there are a number of indicators that influence food insecurity in one way or the other. We have combined these indicators into a set of three broad food security indices:

1. Production factors (at the district level) influencing **availability**;
2. Household and individual **access** to food; and
3. Ability to **absorb** food.

#### 3.3.1 Food Availability

The concern for food availability stems from production and related aspects that sustain a desired level of food production. Foodgrains are considered to be of paramount significance for household food and nutritional security, the reason being that cereals and pulses are staple foods and there are no perfect substitutes for them (Chand, 2007). Foodgrains are also the cheapest source of energy compared to other foods and are indispensable for the food security of low income classes (Chand and Kumar, 2006).



In our analysis, the following indicators have been chosen to determine a broad picture of food availability:

- 1. *Per Capita Value of Agricultural Production:*** Agricultural output is an indicator reflecting availability of food. Since agriculture is dependent on climate, it is advisable to take an average of three to five years' data of agricultural production to take into account the variability of production. Food and non-food production both would be included since non-food production would contribute to the income of households and therefore have an impact on food security. To account for variations in population across districts, the per capita value of agricultural production has been used.
- 2. *Proportion of Forests:*** Forests are a form of common property resource. Availability of forest area can affect food security as access to forest products provides income and supports nutrition, depending on the type and magnitude of the produce. But there are both legal and geographical restrictions on developing production in forest areas. Thus, it can be assumed that forest area is negatively associated with food security, since it limits the extension of agricultural production.
- 3. *Irrigation Extent:*** Irrigation has a key role in both stabilizing agricultural production and, through an increase in cropping intensity and an associated increase in productivity, improving a district's food security position. It would also provide a better prospect in terms of rural employment.
- 4. *Rural Connectivity:*** Access to paved roads has a big role in development. It reduces transport costs and can reduce transaction costs, with possible positive results on the prices realized by farmers. By improving communication, roads can increase the options available to rural producers, connecting them with larger national, regional and even international markets. Studies of rural roads have shown that they raise the productivity and value of land for poor farmers (Jacoby 2000). It has been found that government spending on rural infrastructure, besides agricultural research and development, irrigation and rural development programmes targeted to the rural poor, have all contributed to reductions in rural poverty and increases in agricultural productivity. Marginal government expenditure on roads, in particular, has been found to have the largest positive impact on productivity growth (Fan, et al., 1999).

### **3.3.2 Food Access**

Access to food or food distribution has been regarded to be the most important factor determining food security. A household's access to food depends on its own production of food and the food it can acquire through sale of labour power or commodities produced by it. These are linked to what Amartya Sen calls endowment and exchange entitlements.

The following indicators have been considered in order to take into account the aspect of food accessibility.



- 1. Proportion of Agricultural Labourers:** The total number of agricultural workers in the country has been estimated at 259 million as of 2004–05. Of these, more than one-third are wage workers and almost all of these are casual labourers. Agricultural labourers are characterized by extremely poor physical and human capital and also the highest poverty levels (NCEUS, 2007). Thus, it is expected that the proportion of agricultural labourers will be negatively related to food security, i.e., the more the agricultural labourers in a district, the worse will be the food security situation.
- 2. Proportion of Scheduled Tribes and Scheduled Castes:** The ST and SC households are known to be generally more food insecure, largely on account of their economic and social deprivation – the former on account of geographical marginalization and the latter due to historical deprivation and exclusion from mainstream – all resulting in political marginalization. The proportion of ST and SC population in a district has been taken as an indicator of this marginalization. The assumption is that the greater the ST and SC population in a district the less it will be associated with food security.
- 3. Proportion of Working Age Population:** The ratio between the productive section of the population to the economically dependent part is a valid demographic indicator at the household level. A ratio higher than unity represents a positive scenario, with more productive population compared to the dependent population.<sup>1</sup> This ‘demographic dividend’, if effectively harnessed, leads to prosperity and hence food security (Chandrasekhar, et al. 2006).
- 4. Per Capita Consumption Expenditure:** The NSS estimates of per capita consumption expenditure, adjusted for inequality, is a proxy for per capita income reflecting a significant dimension of access to food. This variable accounts for all sources of income, including those which are depicted through availability of food as measured in terms of value of agricultural output. For instance, a district with low value of agricultural output along with a high value of consumption would mean that non-agricultural income, including remittances from migrants, plays a role in enabling consumption to be higher than agricultural production. This is the only way in which we can indirectly bring migration, which is such a crucial component of households’ food security strategies, into the picture.
- 5. Rural Female Literacy:** It is well-known that there are gender-based inequalities in food consumption within a household. Consequently, mere household consumption data or per capita household consumption data would not tell us the story of intra-household distribution of food and related facilities, such as access to medical services, which would affect the nutritional status of females, women and girls. That such gender-based inequalities in household consumption exist is attested to by numerous case studies (see those reviewed in Bina Agarwal, 1994). Further, very high incidence of anaemia among women and girls shows that females are nutritionally

1. One of the traits of any developed economy is a lower fertility rate, which leads to a ‘bulge’ in the working age group, thus improving the dependency ratio (reverse of working age group ratio), making it less than unity.





deficient even in households that are not otherwise poor or nutritionally deficient. We have used the rural female literacy rate as the variable to represent gender-based inequality in household consumption. The argument is that a higher literacy rate for women is more likely to enable women to enhance their roles in family decision-making and increase their share of household consumption. At the same time, higher women's literacy is also likely to lead to better knowledge of nutritional systems and improved health practices in the household.

- 6. Wage Rate of Rural Persons:** Casual wage workers constitute about one-fifth of the workers in the unorganized non-agricultural sector while almost all agricultural labourers are casual workers (NCEUS, 2007). Casual workers tend to be the least protected and have the lowest level of earnings. The understanding is that agricultural labour, without the backing of self-produced food, is particularly vulnerable to food insecurity. There is, therefore, a particular concern with the earnings of agricultural labour.

### 3.3.3 Food Absorption

The ability of the body to translate food intake into nutritional status is mediated by a number of factors, some genetic and others related to hygiene and morbidity.

The following indicators have been chosen to determine a broad picture of food absorption:

- 1. Access to Safe Drinking Water:** Reduction of the proportion of people without access to safe drinking water by half has been mentioned as part of the seventh Millennium Development Goal. Polluted and contaminated water undermines the safety and the nutritional well-being of individuals. Studies have shown that water and sanitation accounts for a substantial portion of the difference in infant and child mortality rates experienced by the rich and the poor (Leipziger, et al. 2003). Clean and safe water supply is an essential element for achieving food security and good nutrition.

Though India has taken huge strides in terms of provision of safe drinking water since Independence, the fact remains that more people in India lack this basic minimum necessity now than 50 years ago. This is besides the fact that more people are vulnerable to water-borne diseases (Gujja & Shaik, 2005). Empirical studies have shown that water quality is a big problem in rural areas (Krishnan, et al. 2003). Almost two million children die each year because of lack of clean water and lack of sanitation (UNICEF, 2007c). The availability and quality of potable water is a big factor that affects food insecurity. As there is no direct method for calculating access to safe drinking water, we have considered access to a tubewell, tap and handpump as three ways of acquiring safe drinking water.

- 2. Access to Primary Health Services:** Public health services, which reduce a population's exposure to disease through such measures as sanitation and vector control, are an essential



part of a country's development infrastructure. The health infrastructure prevents the local inhabitants from exposure to diseases, for instance, through assuring food safety, vector control and health education to improve personal health behaviour (Gupta, 2005). In rural areas, all the health services are pivoted around the PHCs, hence we have taken access to them as an indicator determining food absorption.

### 3.4 Food Security Index (FSI)

The FSI is a composite index covering three dimensions, i.e., Availability, Access, and Absorption factors. Districts having higher index value are considered relatively more food secure compared to

**Table 3.4: Chhattisgarh – Indicators Used to Analyze Food Security**

Name of Variable	Sources	Ref. Year
<b>(a) Availability</b>		
1. Proportion of net irrigated area to net sown area	<a href="http://chhattisgarh.nic.in/download/agri.pdf">http://chhattisgarh.nic.in/download/agri.pdf</a>	30 June 2005
2. Per capita value of agricultural output	<a href="http://agridept.cg.gov.in">http://agridept.cg.gov.in</a>	2001-02 to 2003-04
3. Percentage of inhabited villages having access to paved road.	Census of India, 2001	2001
4. Percentage of forest area to total geographical area*	<a href="http://chhattisgarh.nic.in/download/agri.pdf">http://chhattisgarh.nic.in/download/agri.pdf</a>	30 June 2005
<b>(b) Access</b>		
1. Percentage of agricultural labour to total workers.*	Census of India, 2001	2001
2. Proportion of ST and SC population to total population*	Census of India, 2001	2001
3. Share of working age population	Census of India, 2001	2001
4. Per capita monthly consumption expenditure (inequality adjusted)	61 <sup>st</sup> NSS round	2004-05
5. Rural casual wage rate	61 <sup>st</sup> NSS round	2004-05
6. Women's literacy rate (7+)	Census of India, 2001	2001
<b>(c) Utilization</b>		
1. Percentage of households having access to safe drinking water.	Census of India, 2001	2001
2. Percentage of inhabited villages having access to PHC	Census of India, 2001	2001
<b>(d) Public Entitlement</b>		
1. Percentage of ICDS beneficiaries to total project population	Directorate of Women & Child Welfare, Government of Chhattisgarh	March 2007

\*The direction of these variables has been reversed to have a positive association with food security.

Note: (d) pertaining to Public Entitlement variables have been analysed but not included in the construction of the Index.



districts with lower index values. All variables included in the index are for rural areas, unless otherwise specified.

Besides these three groups of factors, an additional component, i.e. public entitlement, has been used to explain how this influences food security. But the public entitlement factor is not included in the index of food security. The reason is that public entitlements enter to make up for deficiencies in normal, private entitlements. The lower the level of food security, the greater should be public entitlement.

For each of the dimensions, as discussed earlier, some relevant variables have been chosen. All indicators used to calculate the composite index should be positively related to the index. In order to do that, some of the variables have been reversed. Table 3.4 gives the indicators, source of information and the reference year. (See Appendix 2 Table A2.1 for a description of the variables).

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# 4. Food Availability

This chapter analyses food availability across a number of component dimensions. Broadly, these dimensions are production and productivity, extent of irrigation, proportion of forests, and road connectivity. The effort is to compare the overall situation in Chhattisgarh vis-à-vis other States, and then analyze and map the inter-district disparities. The chapter also shows the position of each district with respect to the selected indicators and the composite index and map of availability.

## 4.1 Production

A brief comparison with the major agricultural states of the country<sup>1</sup> sheds light on the poor state of agricultural development in Chhattisgarh. There is an overall low cropping intensity; the state contributes only a small portion of aggregate national production, which in turn is a pointer towards the low productivity levels of total foodgrains. The yield levels of total foodgrains (1107 kgs/ha) is quite low (Table 4.1), lying far below the national average (1714 kgs/ha).

The rainfall is quite erratic and unevenly distributed leading to crop failures, which in the absence of adequate state intervention, results in frequent famine or famine-like situations. This is more than exemplified in the highly unstable growth of foodgrain production in the state over the last one and a half decades. While other mainly rain-fed states such as West Bengal, Bihar and Assam have lower instability, Chhattisgarh has much higher instability. The extent of irrigation is found to be very low – just about 23 per cent – which is more than 15 per cent points below the national average. Even this small figure is concentrated in one part of the state, as would be discussed in the district level analyses later.

The fact that Chhattisgarh has no noticeable production of commercial crops (it produces small quantities of sugarcane), throws further light on the poor agricultural development of the state.

This lower productivity of agriculture, however, is not uniformly so across the state. There is a clear difference between agriculture in the Central Plains and that in both the Northern and Southern Hill-plateau regions. As the Human Development Report points out, “Only 1.5 per cent of farmers are familiar with modern agricultural practices like the use of modern equipment, chemical fertilizers and HYV seeds; and *most of these farmers belong to the central plains region*” (Government of Chhattisgarh, 2006, p. 48, emphasis added). Agriculture in the Central Plains is largely commercial, with high levels of irrigation, including through tube-wells.

In the Northern region, 22 per cent of the farmers were familiar with these higher productivity practices, while this figure was just 6 per cent for the Southern Region; while it was as high as 71 per cent for the Central Plains (Government of Chhattisgarh, 2006, Table 2.6, p. 49).

Other than in the Central Plains, the agricultural base is one of single-cropped, rain-fed, *kharif* rice. The *rabi* crop is that of some pulses and oilseeds. But only in the central districts of Durg, Raipur,

1. States contributing at least one per cent to aggregate national production have been considered. All the states with population above 20 mn except Kerala are included.



**Table 4.1: Level of Agricultural Development**

State	% of National Production		Yield (TE 2005–06)		Instability in Production <sup>*</sup>		Cropping Intensity <sup>^</sup>		Irrigation Extent <sup>+</sup>	
	(TE 2005–06)	Rank	kg/ha	Rank	(1991–2005)	Rank	(%)	Rank	(%)	Rank
<b>India</b>	<b>100</b>		<b>1714</b>		<b>9.4</b>		<b>134.4</b>		<b>39.6</b>	
Andhra Pradesh	7.1	4	2155	4	18.9	7	121.7	11	38.1	7
Assam	1.8	15	1437	9	6.2	2	143.1	6	6.2	16
Bihar	4.5	9	1498	8	17.1	6	138.8	7	60.6	4
<b>Chhattisgarh</b>	<b>2.8</b>	<b>14</b>	<b>1107</b>	<b>14</b>	<b>66.6</b>	<b>14</b>	<b>116.9</b>	<b>13</b>	<b>23.1</b>	<b>12</b>
Gujarat	2.9	12	1554	7	43.6	13	113.8	16	31.6	10
Haryana	6.3	7	3087	2	6.5	3	177.5	2	84	2
Jharkhand	1.8	16	1265	12	122.4	15	120.3	12	9.3	15
Karnataka	3.6	10	1275	11	28.7	11	116.6	14	24.9	11
Madhya Pradesh	7.1	5	1184	13	23.9	9	128.4	8	33.5	8
Maharashtra	5.4	8	909	16	25	10	127.2	9	16.9	14
Orissa	3.4	11	1334	10	38.5	12	146	5	22.9	13
Punjab	12.2	2	3996	1	5.8	1	185.9	1	95.4	1
Rajasthan	6.6	6	1053	15	229.6	16	123.8	10	33.4	9
Tamil Nadu	2.9	13	1806	6	20.8	8	115.8	15	50.2	6
Uttar Pradesh	19.7	1	2119	5	9	5	153.4	4	73.7	3
West Bengal	7.8	3	2464	3	6.6	4	176.5	3	54.5	5

Source: Ministry of Agriculture, Govt. of India (Various Years)

Notes: \* Instability in production = standard deviation of growth rates of total food grain production (1991-2005)

^ Cropping Intensity = Gross Area Sown / Net Area Sown (expressed as percentage)

+ Irrigation Extent = Net Area Irrigated / Net Area Sown (expressed as percentage)

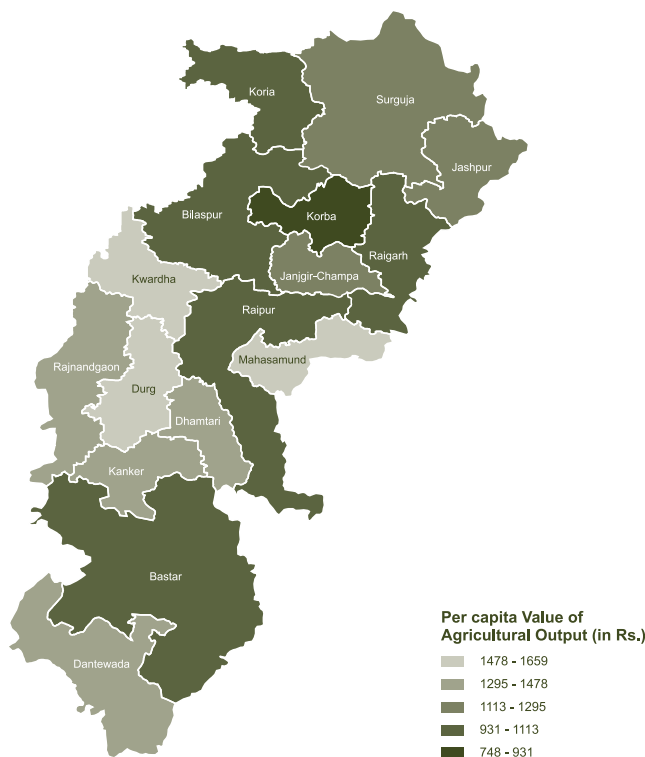
Bilaspur and Rajnandgaon, is there significant double-cropping. The first three are also the districts that are more urbanized, with major industrial zones.

## 4.2 Status of Agricultural Production

The districts of Raipur and Bilaspur with relatively high proportion of irrigated area, 51 per cent and 39 per cent respectively, and also high rates of urbanization, somewhat surprisingly fall within the low category in per capita value of agricultural output. They are matched in this by Bastar. However Dantewada, which is otherwise in extremely low categories in many indicators, is in the moderate or low category with regard to agricultural production in the State. Dantewada has a reasonably high value of agricultural output, when compared to other districts in the State (see Map 4.1 and Table 4.2).



**Map 4.1: Status of Agricultural Production**



**Table 4.2: Per Capita value of Agricultural Output (in Rs.) in Chhattisgarh**

District	Value	Rank	District	Value	Rank
Bastar	1103	12	Kwardha	1660	1
Bilaspur	1062	14	Korba	748	16
Dantewada	1471	5	Koriya	1020	15
Dhamtari	1446	6	Mahasamund	1593	3
Durg	1598	2	Raigarh	1105	11
Janjgir - Champa	1168	9	Raipur	1086	13
Jashpur	1259	8	Rajnandgaon	1476	4
Kanker	1306	7	Surguja	1132	10

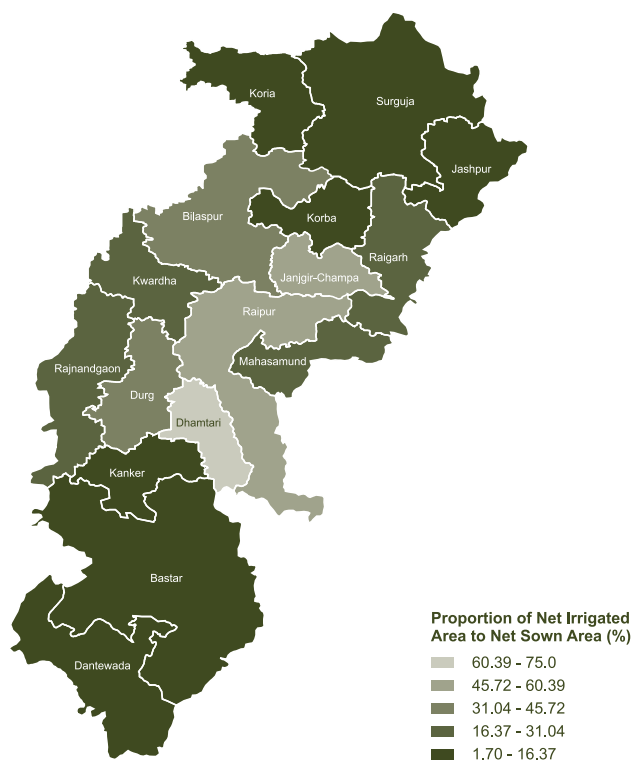
Source: As stated in Table 3.4, Variable a2.

### 4.3 The Extent of Irrigation

The extent of irrigation, represented by the percentage of the net area irrigated to the net area sown, is low in Chhattisgarh – around 23 per cent. This is more than 17 percentage points below the national average of around 40 per cent.



**Map 4.2: Share of Irrigated Area**



The low irrigation districts (net irrigated area less than 10 per cent of net sown area) all fall in the Northern and Southern regions. Only Raigarh in the Northern region is somewhat better with 19 per cent irrigation. There is marked difference between the Central Plains and the two plateaus in the South and the North (see Map 4.2 and Table 4.3).

**Table 4.3: Share of Net Irrigated Area (NIA) in Chhattisgarh, 2005**

District	Value	Rank	District	Value	Rank
Bastar	1.98	15	Kwardha	20.35	7
Bilaspur	38.7	5	Korba	5.41	13
Dantewada	1.7	16	Koriya	6.41	12
Dhamtari	75.06	1	Mahasamund	25.11	6
Durg	39.1	4	Raigarh	19.3	8
Janjgir - Champa	58.13	2	Raipur	51.2	3
Jashpur	3.22	14	Rajnandgaon	18.87	9
Kanker	9.5	10	Surguja	7.62	11

Source: As Stated in Table 3.4, Variable a1.



## 4.4 Forests

The state has a high coverage of forests, more than 40 per cent of its area is occupied by forests. At the same time, the wastelands cover more than 5 per cent of total area (Table 4.4). The extent of net area cultivated is only slightly above one-third of the total reporting area of the state, which is far below the national average of 45 per cent. This is definitely a constraint on the increase of cultivation of the subsistence, extensive type. It also points to the necessity of switching from extensive to intensive methods of cultivation. This is important in determining access to food. In agricultural productivity Chhattisgarh lags considerably behind the all-India situation.

**Table 4.4: Environmental Limitations to Agricultural Development**

	Per cent of Wastelands to total area		Rainfall Deviation from Norm		Forest Area (per cent)		Agricultural Extent* (per cent)	
	2003	Rank	TE 2004-05	Rank	2003	Rank	TE 2001-04	Rank
Andhra Pradesh	16.46	14	-8.3	11	16.2	9	36.62	13
Assam	17.89	15	6.7	1	35.5	15	35.34	14
Bihar	5.78	5	3.0	3	5.9	5	60.90	5
<b>Chhattisgarh</b>	<b>5.61</b>	<b>4</b>	<b>-1.0</b>	<b>4</b>	<b>41.4</b>	<b>17</b>	<b>34.69</b>	<b>15</b>
Gujarat	10.4	9	-4.3	7	7.6	6	50.83	9
Haryana	7.39	8	-6.0	9	3.4	2	80.48	2
Jharkhand	14.01	12	-5.7	8	28.5	13	22.20	17
Karnataka	7.06	7	-16.0	14	19.0	11	52.00	8
Kerala	4.6	2	-18.0	15	40.1	16	56.37	7
Madhya Pradesh	18.53	16	-8.3	11	24.8	12	33.31	16
Maharashtra	16.01	13	-13.7	13	15.3	8	57.04	6
Orissa	12.17	10	-3.0	6	31.1	14	37.08	11
Punjab	2.33	1	-24.3	16	3.1	1	84.38	1
Rajasthan	29.64	17	-27.0	17	4.6	3	43.74	10
Tamil Nadu	13.3	11	-2.0	5	17.4	10	37.05	12
Uttar Pradesh	7.05	6	-8.0	10	5.9	4	68.97	3
West Bengal	4.95	3	6.0	2	13.9	7	62.50	4
<b>Total</b>	<b>17.45</b>		<b>-7.7</b>		<b>20.6</b>		<b>45.30</b>	

Source: Wasteland – Wasteland Atlas, 2003; Forest – State of Forest Report, 2003; Rainfall and NAS – Ministry of Agriculture.

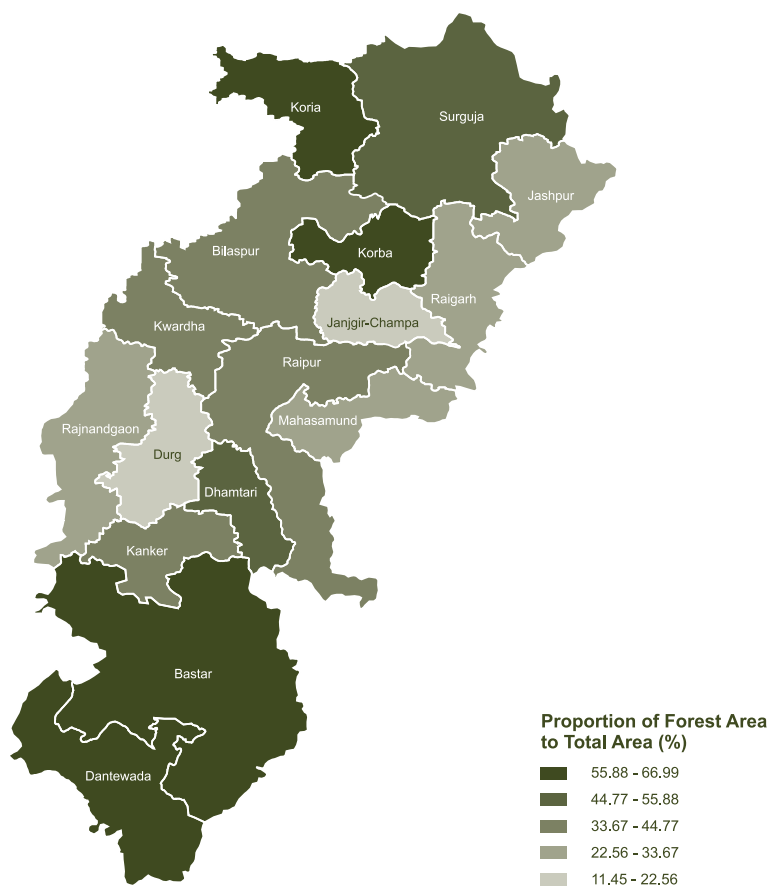
\* Agricultural Extent = Net area sown / Total Reporting Area x 100.

The districts with forest cover over 60 per cent are Bastar and Dantewda (both in the Bastar Plateau), and Koriya and Korba (both in the Northern Plateau). Such a high share of forests is a constraint on agricultural production, whatever ecological benefits it might otherwise have. On the other hand, Durg, Janjgir-Champa, Jashpur etc. have a low share of forest area to total area (see Table 4.5 and Map 4.3).





**Map 4.3: Share of Area under Forests**



**Table 4.5: Share of Forest Area in Chhattisgarh, 2005**

District	Value	Rank	District	Value	Rank
Bastar	66.83	2	Kwardha	42.6	8
Bilaspur	38.78	10	Korba	66.21	3
Dantewada	63.67	4	Koriya	66.99	1
Dhamtari	54.21	5	Mahasamund	28.33	13
Durg	11.45	16	Raigarh	31.86	12
Janjgir - Champa	19.95	15	Raipur	39.14	9
Jashpur	27.44	14	Rajnandgaon	32.34	11
Kanker	43.6	7	Surguja	48.13	6

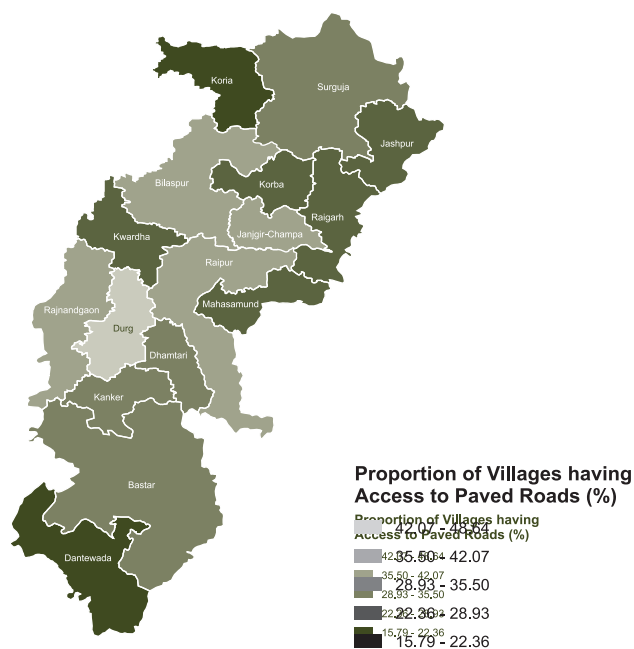
Source: As stated in Table 3.4, Variable a4.



## 4.5 Status of Rural Connectivity in Rural Chhattisgarh

The Southern districts of Bastar, Dhamtari and Kanker all fall within the medium or low category in proportion of villages having access to paved roads (see Map 4.4). But the economy of these districts remains largely of a subsistence nature. The relatively high access to paved roads, possibly due to military requirements, however, has not translated into higher utilization of markets and commercialization. Dantewada, as expected, is in the extremely low category, matched however by Koriya. Like Dantewada, Koriya also has a high proportion of area under forestry and low irrigation levels.

**Map 4.4: Status of Rural Connectivity**



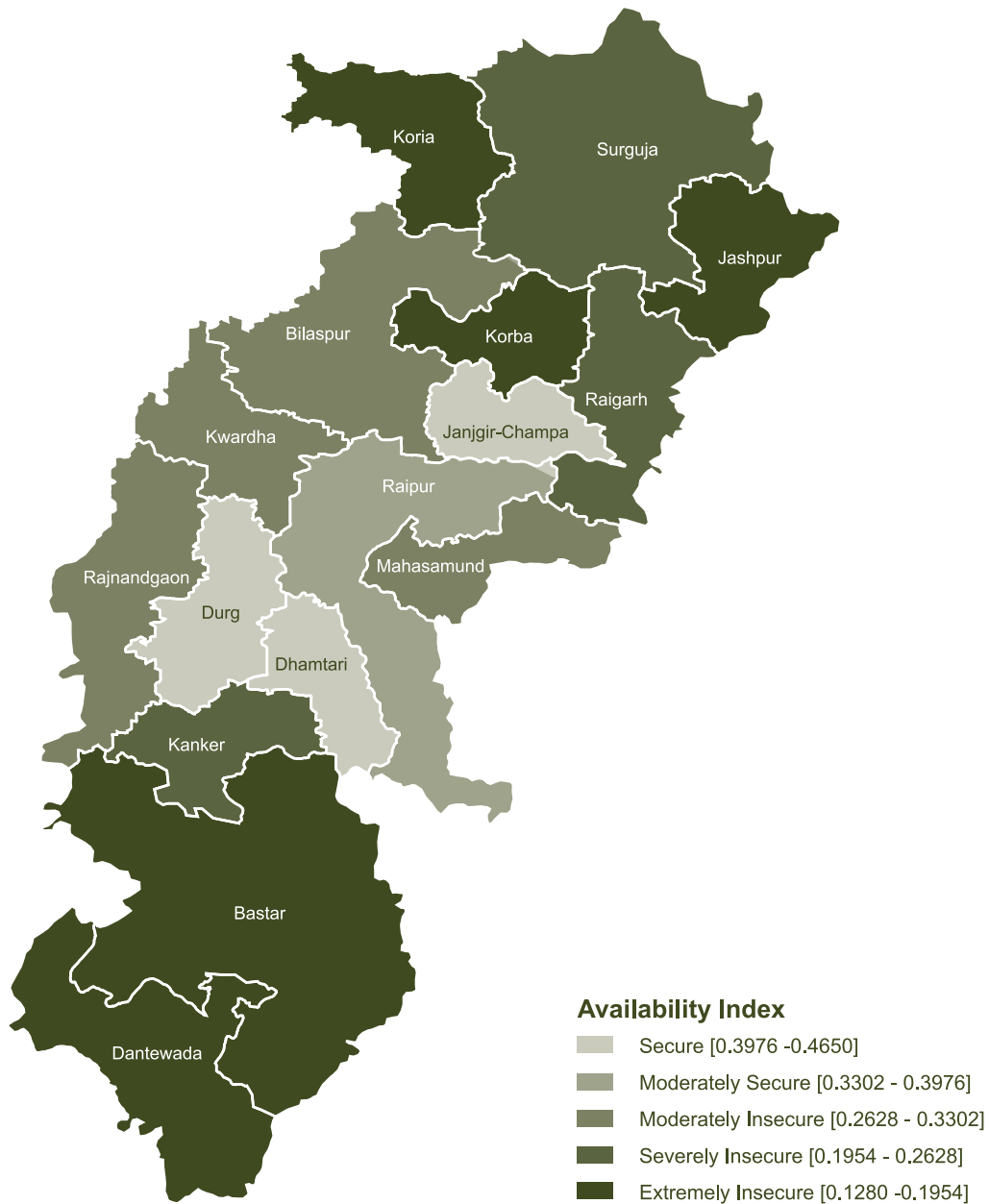
**Table 4.6: Rural Connectivity (in per cent) in Chhattisgarh, 2001**

District	Value	Rank	District	Value	Rank
Bastar	33.12	6	Kwardha	27.39	12
Bilaspur	39.53	4	Korba	28.51	10
Dantewada	15.79	16	Koriya	20.64	15
Dhamtari	31.23	7	Mahasamund	27.55	11
Durg	48.64	1	Raigarh	25.9	13
Janjgir - Champa	38.44	5	Raipur	40.56	2
Jashpur	22.44	14	Rajnandgaon	39.58	3
Kanker	31.03	8	Surguja	30.65	9

Source: As stated in Table 3.4, Variable a3.



**Map 4.5: Food Availability Map of Rural Chhattisgarh**





## 4.6 Food Availability Status

All the districts of the Central Plains are in the moderate to high category of food availability. On the other hand, none of the districts of the Bastar Plateau and the Northern Plateau fall in these top two categories of food availability. The extremely low to very low districts with regard to availability (or

**Table 4.7: Status of Districts in Availability Index in Chhattisgarh**

Secure	Moderately Secure	Moderately Insecure	Severely Insecure	Extremely Insecure
Dhamtari	Raipur	Bilaspur	Kanker	Bastar
Durg		Rajnandgaon	Raigarh	Jashpur
Janjgir - Champa		Mahasamund	Surguja	Dantewada
		Kawardha		Koriya
				Korba

production potential) fall in parts of two geographical areas: the Southern and Northern regions. Further, in these two regions, only Raigarh is slightly better off in the middle or low category (see Table 4.7 and Map 4.5).

\*\*\*\*\*

# 5. Access to Food

The critical significance of access to food has been famously imprinted on the public mind by Sen's description of the Bengal famine, where people went hungry and starved, not because food was not available, but because they could not afford it (Sen, 1981). He linked the issue of access to a person's 'entitlements'. Broadly, entitlements refer to the bundle of goods and services a person can acquire, based on his or her endowments such as wealth and assets, skills, knowledge, status and so on. Thus, availability of food is important to food security but it is not enough; it should also be affordable and people should be able to access it. Access is tied up with people's capacity to buy, their earnings, livelihoods and other socio-economic factors.

Access of those who may individually lack the ability to secure enough food is often bolstered through unions, community groups and self-help groups (SHGs). Thus, the ability to form and take action in groups is also a part of one's entitlements.

Historic injustice and discrimination faced by the Scheduled Castes and Tribes and by women and other marginalized groups are well-documented. This discrimination permeates all aspects of life including their livelihoods, education, health, participation in political life and access to food and the benefits of government programmes. Access to food thus depends both on the availability of economic opportunities and the social inclusion of the population in availing those opportunities.

The indicators that have been taken to discuss food access are rural wages, monthly per capita expenditure, agricultural labourers, proportion of Scheduled Castes and Scheduled Tribes, ratio of working age proportion, rural female literacy, women's workforce participation and urbanization. The overall status of Chhattisgarh in relation to other states is presented first and thereafter we discuss the disparities across districts. Finally, we present the overall index of food access across districts and map food access.

## 5.1 Rural wages

Casual workers tend to be the least protected and have the lowest level of earnings. The NSS defines the casual wage worker as one who was casually engaged in others' farm or non-farm enterprises (both

**Table 5.1: Wage Rate of Casual Workers, 2005**

	Average Casual Rural Wage	
	Value (Rs.)	Rank
<b>India</b>	<b>48.89</b>	<b>-</b>
Andhra Pradesh	42.13	12
Assam	60.18	5
Bihar	43.95	11
<b>Chhattisgarh</b>	<b>34.07</b>	<b>17</b>
Gujarat	49.72	8
Haryana	72.2	3
Jharkhand	48.07	10
Karnataka	41.32	13
Kerala	119.51	1
Madhya Pradesh	35.76	16
Maharashtra	38.58	14
Orissa	38.45	15
Punjab	73.12	2
Rajasthan	62.12	4
Tamil Nadu	56.48	6
Uttar Pradesh	51.25	7
West Bengal	48.38	9

Source: NSS 59th Round – Situation Assessment Survey of Farmers, 2005.



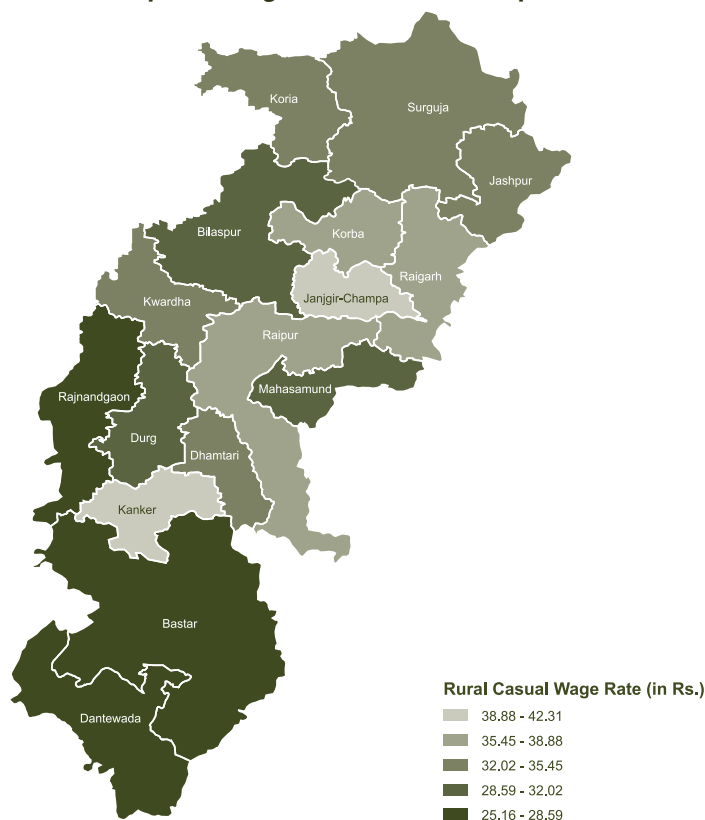
**Table 5.2: Rural Casual Wage Rate in Chhattisgarh, 2004-05**

District	Value	Rank	District	Value	Rank
Bastar	27.93	14	Kwardha	34.69	6
Bilaspur	31.24	11	Korba	37.07	4
Dantewada	27.22	15	Koriya	34.46	7
Dhamtari	33.62	10	Mahasamund	28.77	13
Durg	30.42	12	Raigarh	36.36	5
Janjgir - Champa	42.03	2	Raipur	37.56	3
Jashpur	34.44	9	Rajnandgaon	25.16	16
Kanker	42.31	1	Surguja	34.46	7

Source: As stated in Table 3.4, Variable b5.

household and non-household) and, in return, received wages according to the terms of the daily or periodic work contract. As can be seen from table 5.1, Chhattisgarh has the lowest average casual wage rate among the seventeen major states of the country. It is nearly Rs. 15 lower than the national average.

**Map 5.1: Wage Rates of Rural Population**





In Chhattisgarh wage rates are the lowest in most of the Bastar Plateau and adjoining Rajnandgaon. Kanker District, however, is in the highest category for wage rates. But, Kanker, where the average rural wage rate is the highest in Chhattisgarh, is also quite low compared to the national average (see table 5.2 and Map 5.1).

## 5.2 Monthly Per Capita Expenditure

Low wage levels directly affect consumption patterns. Per capita consumption expenditure is a good indicator of food security in rural areas. Table 5.3 indicates that monthly per capita expenditure on food of Chhattisgarh is among the lowest (Rs. 239.08) in India. It is Rs. 68.52 lower than the national average of Rs. 307.6.

**Table 5.3: Monthly Per Capita Expenditure on Food, 2004-05**

India/States	Value (Rs.)	Rank	States	Value (Rs.)	Rank
<b>India</b>	<b>307.60</b>	<b>–</b>	Andhra Pradesh	323.15	9
Assam	358.44	4	Bihar	270.26	13
<b>Chhattisgarh</b>	<b>239.08</b>	<b>16</b>	Gujarat	345.46	6
Haryana	419.34	2	Jharkhand	263.22	14
Karnataka	283.04	12	Kerala	455.64	1
Madhya Pradesh	232.17	17	Maharashtra	293.29	11
Orissa	245.58	15	Punjab	416.45	3
Rajasthan	323.97	8	Tamil Nadu	315.49	10
Uttar Pradesh	345.88	5	West Bengal	329.93	7

Source: NSS, 61<sup>st</sup> Round, 2004-05.

Per capita monthly consumption expenditure is lowest in Dantewada and Bastar, followed by Surguja and Koriya. The districts of the Central Plains are in the high to moderate categories, with Raigarh, Jashpur and Korba also falling in these categories (see Table 5.4 and Map 5.2).

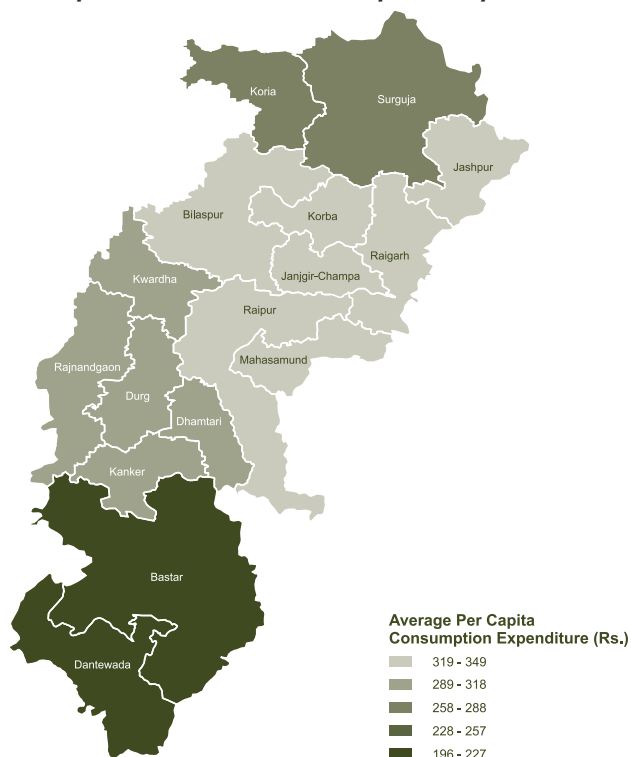
**Table 5.4: Monthly Per Capita Consumption Expenditure in Chhattisgarh, 2004-05**

District	Value	Rank	District	Value	Rank
Bastar	196	15	Kwardha	300	11
Bilaspur	322	7	Korba	349	1
Dantewada	196	15	Koriya	283	13
Dhamtari	306	9	Mahasamund	347	4
Durg	314	8	Raigarh	349	1
Janjgir - Champa	345	6	Raipur	347	4
Jashpur	349	1	Rajnandgaon	300	11
Kanker	306	9	Surguja	283	13

Source: As stated in Table 3.4, Variable b4.



**Map 5.2: Status of Consumption Expenditure**



### 5.3. Agricultural Labourers

In terms of proportion of agricultural labourers in the workforce, Chhattisgarh ranks 12 among the major 17 states of India. The proportion of agricultural labourers in the state is 36.1 per cent, which is more than the national average of 33 per cent (see Table 5.5).

**Table 5.5: Proportion of Agricultural Labourers in Workforce by State, 2001**

Area Name	Value (%)	Rank	Area Name	Value (%)	Rank
India	33	-	Andhra Pradesh	47.5	16
Assam	14.9	2	Bihar	51	17
Chhattisgarh	36.1	12	Gujarat	33.2	9
Haryana	19	3	Jharkhand	32.8	7
Karnataka	34.5	11	Kerala	19.6	4
Madhya Pradesh	34.1	10	Maharashtra	37.8	13
Orissa	39.1	14	Punjab	21.9	5
Rajasthan	12.3	1	Tamil Nadu	42.9	15
Uttar Pradesh	28.9	6	West Bengal	33.1	8

Source: As stated in table 3.4, Variable b1.





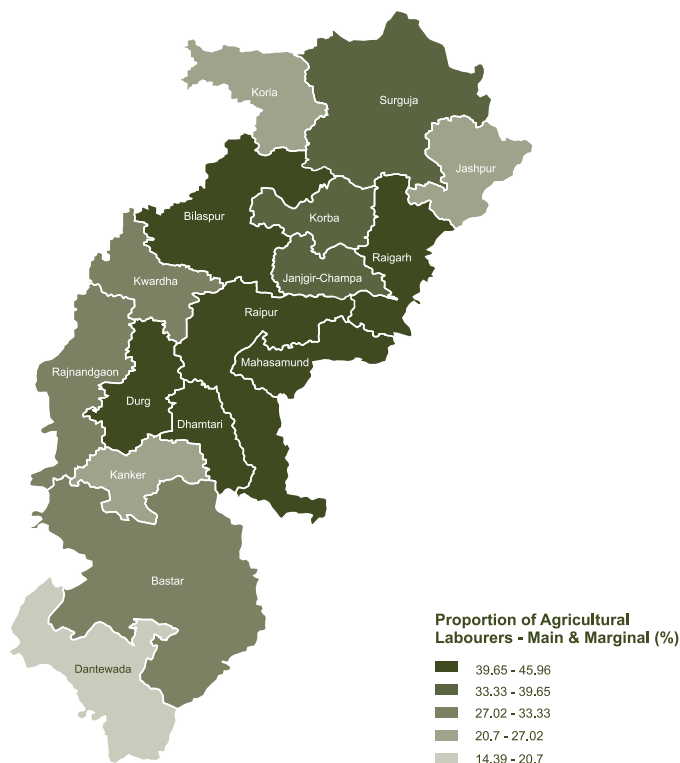
**Table 5.6: Share of Agricultural Labourers in Chhattisgarh, 2001**

District	Value	Rank	District	Value	Rank
Bastar	32.4	6	Kwardha	32.94	7
Bilaspur	45.96	16	Korba	39.29	9
Dantewada	14.39	1	Koriya	26	4
Dhamtari	43.61	14	Mahasamund	45.09	15
Durg	39.66	11	Raigarh	42.07	13
Janjgir - Champa	39.51	10	Raipur	40.38	12
Jashpur	25.64	3	Rajnandgaon	27.73	5
Kanker	24.54	2	Surguja	36.13	8

Source: As stated in table 3.4, Variable b1.

A district-level analysis shows that Dantewada has the lowest proportion of agricultural labourers to total workers, or the highest proportion of cultivators to total workers. Most of the Central Plains have a high proportion of agricultural labourers, as would be expected in non-tribal areas with generally higher inequality in landholdings (see Table 5.6 and Map 5.3).

**Map 5.3: Share of Agricultural Labourers in Total Working Population**





## 5.4 Proportion of Scheduled Tribes and Scheduled Castes

Table 5.7 shows the proportion of Scheduled Tribes and Scheduled Castes in the rural population by state. Chhattisgarh has the highest proportion (37.6 per cent) of Scheduled Tribes among the 17 major states in the country. Hence, it is a tribal-dominated state of India. The proportion of Scheduled Castes is 11.4 per cent.

**Table 5.7: Proportion of Scheduled Tribes and Scheduled Castes in the Rural Population, 2001**

	Proportion of Rural Scheduled Castes		Proportion of Rural Scheduled Tribes	
	Value	Rank	Value	Rank
<b>India</b>	<b>17.9</b>	<b>–</b>	<b>10.4</b>	<b>–</b>
Andhra Pradesh	18.4	11	8.4	8
Assam	6.7	1	13.6	11
Bihar	16.4	8	1.0	4
<b>Chhattisgarh</b>	<b>11.4</b>	<b>5</b>	<b>37.6</b>	<b>17</b>
Gujarat	6.9	2	21.6	13
Haryana	21.4	13	0	1
Jharkhand	12.4	6	31.0	16
Karnataka	18.4	11	8.4	8
Kerala	10.8	3	1.5	5
Madhya Pradesh	15.6	7	25.8	15
Maharashtra	10.9	4	13.4	10
Orissa	17.2	9	24.6	14
Punjab	33.0	17	0	1
Rajasthan	17.9	10	15.5	12
Tamil Nadu	23.8	15	1.6	6
Uttar Pradesh	23.4	14	0.1	3
West Bengal	26.9	16	7.2	7

Source: As stated in table 3.4, Variable b2.

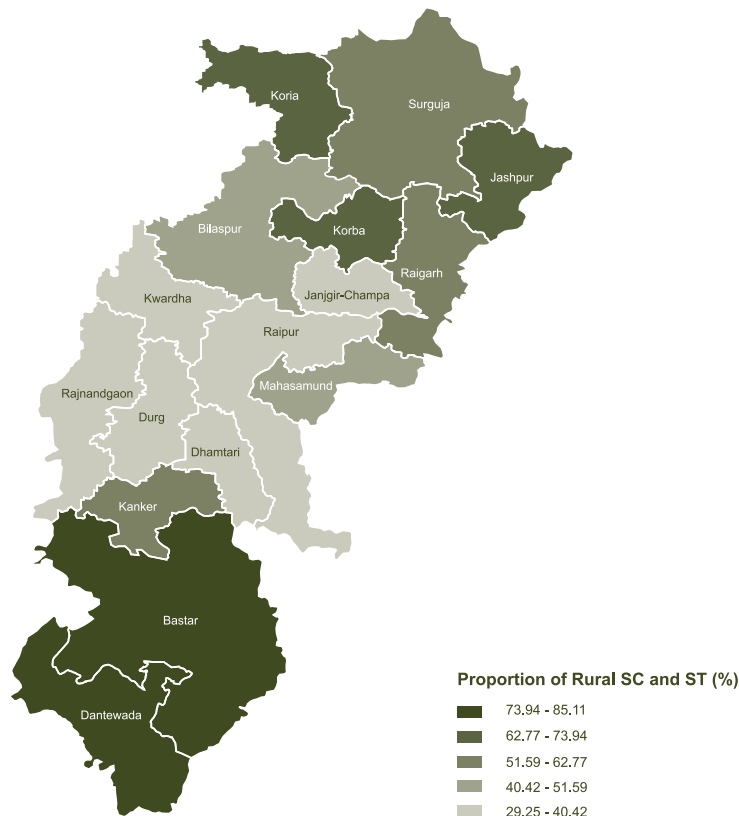
**Table 5.8: Share of SC/ST Population to Total Population in Chhattisgarh, 2001**

District	Value	Rank	District	Value	Rank
Bastar	74.15	15	Kwardha	34.53	3
Bilaspur	44.59	8	Korba	65.45	13
Dantewada	85.11	16	Koriya	64.05	12
Dhamtari	35.41	4	Mahasamund	41.36	7
Durg	29.25	1	Raigarh	53.19	9
Janjgir - Champa	35.89	5	Raipur	33.18	2
Jashpur	69.16	14	Rajnandgaon	40.06	6
Kanker	61.89	10	Surguja	62.2	11

Source: As stated in table 3.4, Variable b2.



**Map 5.4: Proportion of Scheduled Castes and Scheduled Tribes**



The non-ST/SC population is high in the Central Plains, while the two plateaus in the North and South, both have a higher proportion of ST and SC population. Dantewada, Bastar, Jashpur, Korba etc. have a high share of SC and ST population, whereas Durg, Raipur, Kwardha etc. have a low share (see Table 5.8 and Map 5.4).

## 5.5 Ratio of Working Age Population

The proportion of working age population has varied implications for the food security situation in a region. The working age ratio is the ratio between the working age population (15-59 years) and the dependent population (less than 15 years and more than 59 years of age). With development, and fertility rates decline the proportion of population in the working age group increases, resulting in a 'bulge' in the working age group. This leads to the hypothesis that the 'demographic dividend' derived from this gain would accelerate economic growth with a more productive population (Chandrasekhar, et al, 2006).<sup>1</sup>

1. Chandrasekhar and others have shown through employment figures that the absorption of the Indian youth into the labour force is not as high as one would expect. This is perhaps due to the poor employability of the workforce, which is severely affected by a deficit in educational attainment and health.



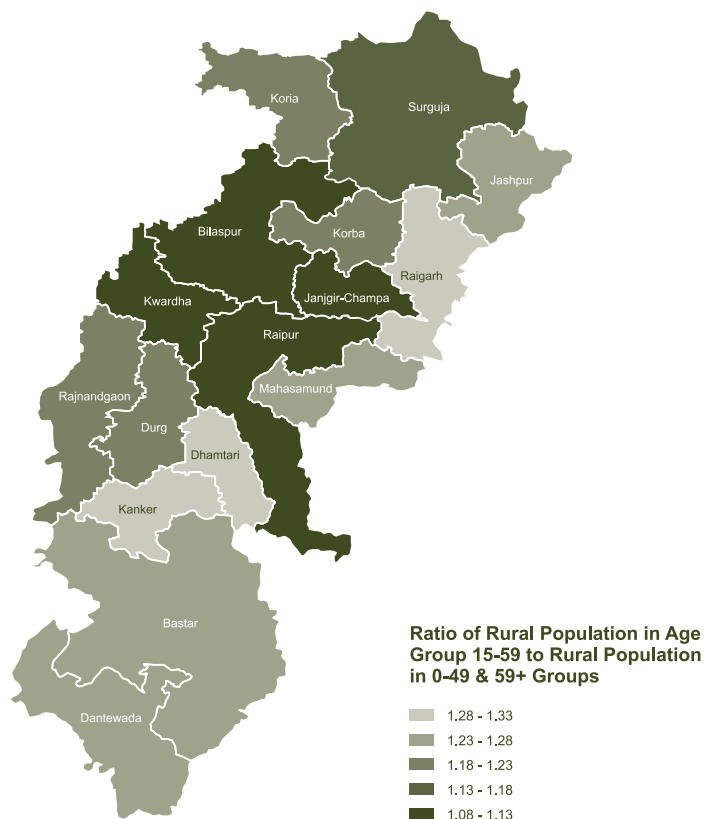
**Table 5.9: Ratio of Working Age Population, 2001**

	Value	Rank		Value	Rank
<b>India</b>	<b>1.22</b>	<b>-</b>	Andhra Pradesh	1.44	3
Assam	1.24	10	Bihar	1.03	16
<b>Chhattisgarh</b>	<b>1.19</b>	<b>12</b>	Gujarat	1.38	5
Haryana	1.21	11	Jharkhand	1.11	13
Karnataka	1.41	4	Kerala	1.70	1
Madhya Pradesh	1.10	14	Maharashtra	1.26	9
Orissa	1.35	7	Punjab	1.37	6
Rajasthan	1.06	15	Tamil Nadu	1.67	2
Uttar Pradesh	1.02	17	West Bengal	1.34	8

Source: Calculated from Census of India, 2001.

Chhattisgarh ranks quite low, 12th out of 17 major states (Table 5.9). This low ratio of working people to population means that per capita consumption becomes low, though production per worker may not be so low.

**Map 5.5: Share of Rural Working Age Group Population**





**Table 5.10: Share of Working Age Population in Chhattisgarh, 2001**

District	Value	Rank	District	Value	Rank
Bastar	1.24	6	Kwardha	1.08	16
Bilaspur	1.11	14	Korba	1.19	11
Dantewada	1.27	5	Koriya	1.2	9
Dhamtari	1.29	3	Mahasamund	1.28	4
Durg	1.2	9	Raigarh	1.33	1
Janjgir - Champa	1.11	14	Raipur	1.13	13
Jashpur	1.24	6	Rajnandgaon	1.23	8
Kanker	1.32	2	Surguja	1.15	12

Source: As Stated in table 3.4, Variable b3.

The more rural and forested districts (Raigarh, Kanker, Dhamtari, Dantewada, Bastar and Jashpur) are also districts with a low share of working age population. These would all definitely contribute to lowering food security, unless it is accompanied by higher migration (see Table 5.10 and Map 5.5).

The people who migrate due to lack of employment opportunities are stuck between the devil and the deep sea. They have little food security in their villages but are just as vulnerable in the destination areas. Several studies have shown the situation of migrant workers within and outside the state to be quite deplorable (Jha, 2005). The in-migrants in the destination area suffer from exploitation of different kinds at the hands of their employers who rarely provide anything apart from wages, and the labourers have to fend for themselves to meet their basic requirements (Srivastava & Sasikumar, 2003).

## 5.6 Rural Female Literacy

Enhancing female literacy has been recognized as the single most important factor contributing to increase in food security and decline in malnutrition and mortality levels (Save the Children, 2008).

**Table 5.11: Rural Female Literacy (in per cent), 2001**

India/States	Value	Rank	States	Value	Rank
<b>India</b>	<b>46.1</b>	<b>-</b>	Andhra Pradesh	43.5	12
Assam	50.7	6	Bihar	29.6	17
<b>Chhattisgarh</b>	<b>47.0</b>	<b>10</b>	Gujarat	47.8	9
Haryana	49.3	7	Jharkhand	29.9	16
Karnataka	48.0	8	Kerala	86.7	1
Madhya Pradesh	42.8	13	Maharashtra	58.4	2
Orissa	46.7	11	Punjab	57.7	3
Rajasthan	37.3	14	Tamil Nadu	55.3	4
Uttar Pradesh	36.9	15	West Bengal	53.2	5

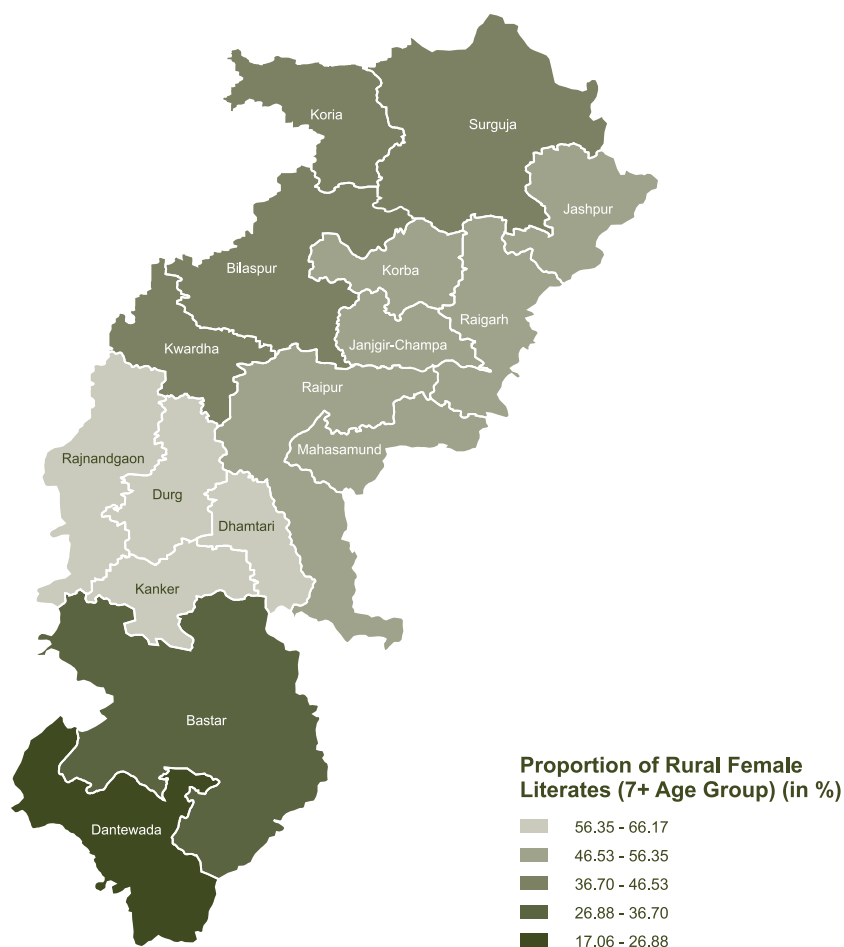
Source: Census of India, 2001.



Chhattisgarh ranks 10th among the major states of the country in terms of rural female literacy rate. The rural female literacy rate of Chhattisgarh is 47 per cent, which is nearly one per cent above the national average (Table 5.11).

Women's literacy is lowest in Dantewada, Bastar and Korba. It is generally high in the Central Plain and in the Northern Region, where Jashpur and Raigarh both have more than 50 per cent female literacy – this could be due to the long-standing missionary activity in the area. But there is a clear pattern in the distribution of female literacy – the Central Plains and adjoining districts of the Northeast are better-off; the South is the worst-off and the Northwest lies in between (see Table 5.12 and Map 5.6).

**Map 5.6: Status of Rural Female Literacy**





**Table 5.12: Rural Female Literacy in Chhattisgarh (in per cent), 2001**

District	Value	Rank	District	Value	Rank
Bastar	26.98	15	Kwardha	37.54	13
Bilaspur	40.55	11	Korba	35.01	14
Dantewada	17.06	16	Koriya	42.42	10
Dhamtari	62.43	3	Mahasamund	51.57	6
Durg	59.27	4	Raigarh	55.69	5
Janjgir - Champa	48.13	8	Raipur	48.11	9
Jashpur	51.33	7	Rajnandgaon	66.17	1
Kanker	62.5	2	Surguja	38.83	12

Source: As stated in table 3.4, Variable b6.

## 5.7 Women's Workforce Participation

Women's workforce participation improves the household's access to food, and is also likely to improve the woman's own access to food – following Amartya Sen's argument that women's independent income would increase their bargaining power within the household. At the same time, women's participation in the rural workforce is likely to be negatively related to a household's food security situation. It would be highest among agricultural labourers and go down as one moved up land cultivating categories. Women's workforce participation is also likely to be related to caste and ethnicity – it is higher among STs and lower as one goes up the caste ladder. Thus, one can expect a negative relation between women's workforce participation and the household's food security in a rural situation. It is in urban households that the relationship between food security and women's workforce participation may go both ways. For rural food security, we can continue to use women's workforce participation as being negatively related to the food security situation, with high participation being associated with a poor food security situation. In Chhattisgarh, the female workforce participation is usually high both in less

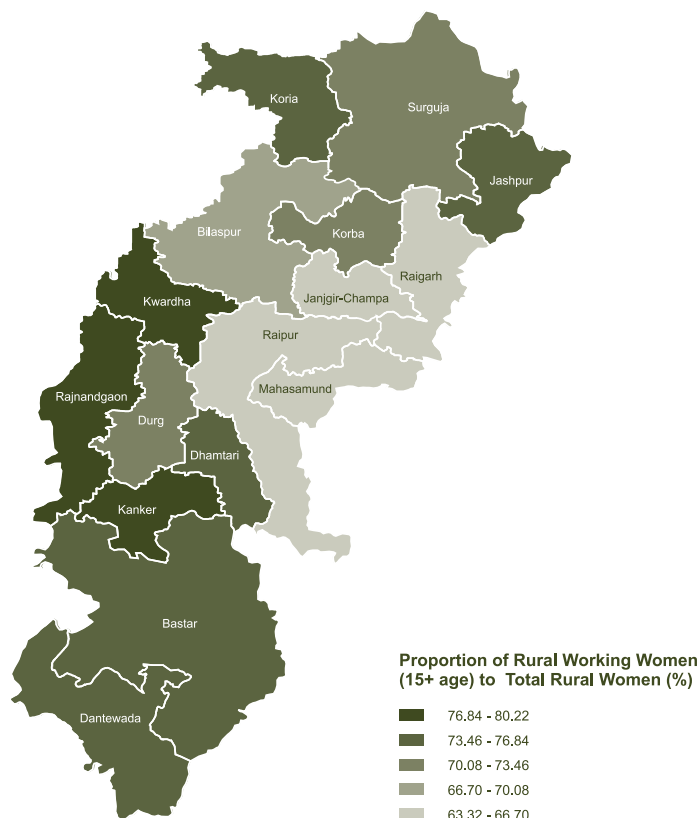
**Table 5.13: Women's Work Participation Rate in Chhattisgarh, 2001**

District	Value	Rank	District	Value	Rank
Bastar	76.25	5	Kwardha	78.59	2
Bilaspur	67.73	12	Korba	70.15	11
Dantewada	75.89	6	Koriya	76.75	4
Dhamtari	74.27	8	Mahasamund	64.3	14
Durg	70.76	10	Raigarh	63.32	16
Janjgir - Champa	63.45	15	Raipur	65.62	13
Jashpur	74.4	7	Rajnandgaon	80.22	1
Kanker	77.01	3	Surguja	71.02	9

Source: Census of India, 2001.



**Map 5.7: Women Workforce Participation Rate**



food secure districts and in those where the proportion of tribal population is very high (See Table 5.13 and Map 5.7).

Women's workforce participation is also intrinsically related to migration. The nature of migration largely reflects household subsistence strategies in the face of social, cultural, demographic and other constraints. It is generally males who predominate in the streams of labour migration, but in the case of tribals and lower economic strata, both men and women migrate together for work. This is because in these populations, the constraints on women's participation in non-household activities are fewer. In some sectors, like construction, brick kilns, sowing, transplanting and harvesting of wheat and paddy and sugarcane-cutting, family migration is common as it is more economical for employers (Srivastava & Sasikumar, 2003).

In a more general sense, what can be said is that women's empowerment is directly related to improved food security. One key factor in empowerment can be the acquiring of land rights.





## 5.8 Urbanization

The low economic development of a state is also reflected in the extent of urbanization. Among all major states, Chhattisgarh lies among the bottom in terms of urbanization levels, with only Bihar, Assam and Orissa lying slightly below it. There is a seven per cent difference from the national average in the level of urbanization (Table 5.14).

**Table 5.14: Level of Urbanization in Major States, 2001**

	Value (%)	Rank		Value (%)	Rank
<b>India</b>	<b>27.8</b>	<b>–</b>	Andhra Pradesh	27.3	8
Assam	12.9	16	Bihar	10.5	17
<b>Chhattisgarh</b>	<b>20.1</b>	<b>14</b>	Gujarat	37.4	3
Haryana	28.9	6	Jharkhand	22.2	12
Karnataka	34.0	4	Kerala	26.0	10
Madhya Pradesh	26.5	9	Maharashtra	42.4	2
Orissa	15.0	15	Punjab	33.9	5
Rajasthan	23.4	11	Tamil Nadu	44.0	1
Uttar Pradesh	20.8	13	West Bengal	28.0	7

Source: Census of India, 2001.

Durg is the most urbanized district in the state. The Bhilai Steel Plant and the various ancillaries that grew up around it are located here. Yet in terms of nutritional outcome – (the FSO) – it ranks very low, 10th out of 16 districts. It is likely that there is a low circulation of population from the rural areas of this district to the urban centres themselves. Instead large numbers of the workers in these urban centres could be from outside the district, with consequently little positive impact of urbanization on rural conditions. As a result, a highly urbanized district could end up having a very low rural nutritional outcome.

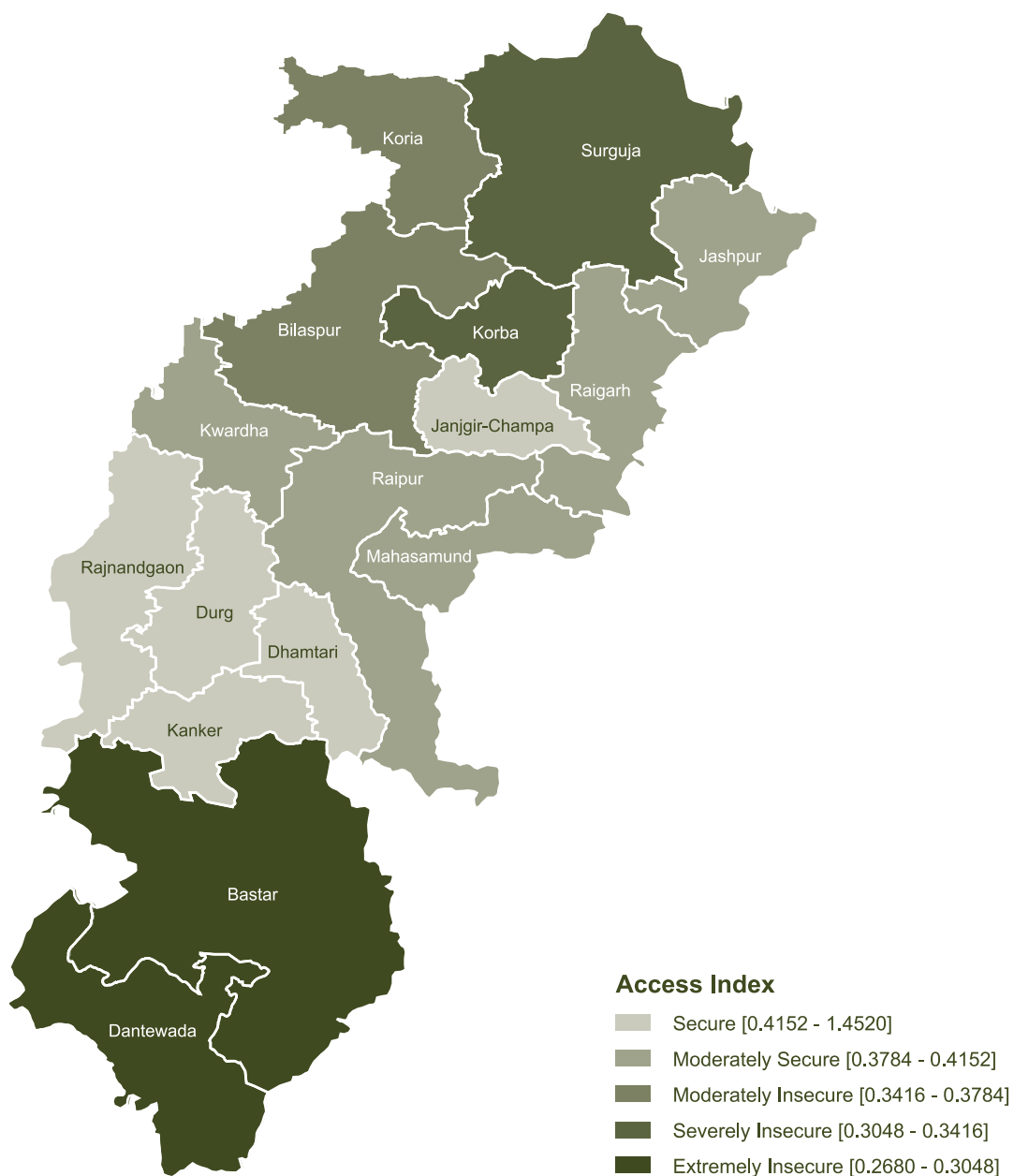
**Table 5.15: Level of Urbanization by Districts in Chhattisgarh (in per cent), 2001**

District	Value	Rank	District	Value	Rank
Bastar	9.95	11	Kwardha	7.68	12
Bilaspur	24.35	5	Korba	36.27	2
Dantewada	7.23	13	Koriya	29.81	4
Dhamtari	13.24	8	Mahasamund	11.35	9
Durg	38.15	1	Raigarh	13.39	7
Janjgir-Champa	11.03	10	Raipur	30.42	3
Jashpur	4.6	16	Rajnandgaon	18.05	6
Kanker	4.82	15	Surguja	6.96	14

Source: Census of India, 2001.



**Map 5.8: Food Access Map of Rural Chhattisgarh**





The Bastar Plateau is, of course, poorly urbanized, as also Surguja and Jashpur in the North. In the Central Plains, Kwardha is the only district in the lowest level of urbanization (see Table 5.15 and Map 2.2).

Migration may be influenced by the extent of urbanization. Larger urban populations increase opportunities for a variety of livelihood options. But the livelihoods one can engage in depend very much on the person's literacy and skills. Unskilled, illiterate persons can only take up low income and energy-demanding options such as rickshaw pulling or vegetable selling; or work as contract labour in mines and factories, or in brick-kilns and in other construction work. These would reduce the burden on feeding in the village household, but are likely to yield very little in terms of remittances.

Urbanization offers opportunities for a variety of livelihood options. Migration is also influenced by the extent of urbanization. Households which have temporary or seasonal access to work in nearby towns have higher incomes than those which lack that access (World Bank, 2007).<sup>2</sup>

## 5.9 Food Access Status

The Extremely Insecure districts with regard to the Access Index are Bastar and Dantewada, followed by Surguja, Korba and Bilaspur in the North. The groups of districts with Extremely Insecure or Severely Insecure index for Availability and Access are almost the same. Low current production potential is combined with a low Access Index (see Map 5.8).

**Table 5.16: Status of Districts in Access Index**

Secure	Moderately Secure	Moderately Insecure	Severely Insecure	Extremely Insecure
Kanker	Raipur	Koriya	Korba	Dantewada
Rajnandgaon	Raigarh	Bilaspur	Surguja	Bastar
Dhamtari	Jashpur			
Durg	Mahasamund			
Janjgir - Champa	Kwardha			

The only district that goes against this pattern is Kanker, in the southern region, just north of Bastar. It ranks highest in the access index but is low in availability. The reason for this could be, as seen earlier, a high rural wage rate and a high adult women's literacy rate.

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2. It has been estimated from NSS 55th round by the World Bank (2007) that migrant workers' households average monthly expenditure is 17 per cent higher than that of non-migrants.

## 6. Food Absorption

It has been estimated that in developing countries, one out of five people do not use safe water, and roughly half are without adequate sanitation (WHO, 2007). Primary health services in the country as a whole are utterly inadequate, particularly in rural areas. There are persistent gaps in human resources and infrastructure, disproportionately affecting the less developed rural areas. A significant proportion of hospitals do not have adequate personnel, diagnostic and therapeutic services and drugs. In a state like Chhattisgarh, with a high burden of communicable and non-communicable diseases because of persisting poverty, primary health infrastructure at the village level assumes huge significance. However, a good number of villages in the state are not adequately covered by a Primary Health Centre (PHC), the most critical health facility in rural areas. Only one PHC has been provided for as many as 39 villages, which hardly serves the purpose in the light of the high pressure on the limited resources. This compares poorly to a state like Kerala that has excellent health infrastructure in the rural areas (one PHC for every one and half villages). Lack of primary public health facilities (Table 6.1) forces the vulnerable populations to depend on private health services, often leading to indebtedness in rural areas.

**Table 6.1: Factors Determining Status of Absorption**

	Households Having Safe Drinking Water		No. of Villages per PHC		Households Having Toilet Facility	
	Value (%)	Rank	Value (no.)	Rank	Value (%)	Rank
India	78	–	27.6	–	21.9	–
Andhra Pradesh	80.1	9	18.9	6	18.1	9
Assam	58.8	15	43.1	15	59.6	2
Bihar	86.6	4	27.4	10	13.9	13
<b>Chhattisgarh</b>	<b>70.5</b>	<b>11</b>	<b>39.4</b>	<b>13</b>	<b>5.2</b>	<b>17</b>
Gujarat	84.1	8	17.3	4	21.7	6
Haryana	86	5	17.0	3	28.7	4
Jharkhand	42.7	16	58.1	17	6.6	16
Karnataka	84.6	7	17.5	5	17.4	10
Kerala	23.4	17	1.5	1	81.3	1
Madhya Pradesh	68.4	12	46.4	16	8.9	14
Maharashtra	79.8	10	24.6	7	18.2	8
Orissa	64.2	14	40.1	14	7.7	15
Punjab	97.6	1	26.2	9	40.9	3
Rajasthan	68.3	13	24.7	8	14.6	11
Tamilnadu	85.5	6	11.8	2	14.4	12
Uttar Pradesh	87.8	3	29.5	11	19.2	7
West Bengal	88.5	2	34.8	12	26.9	5

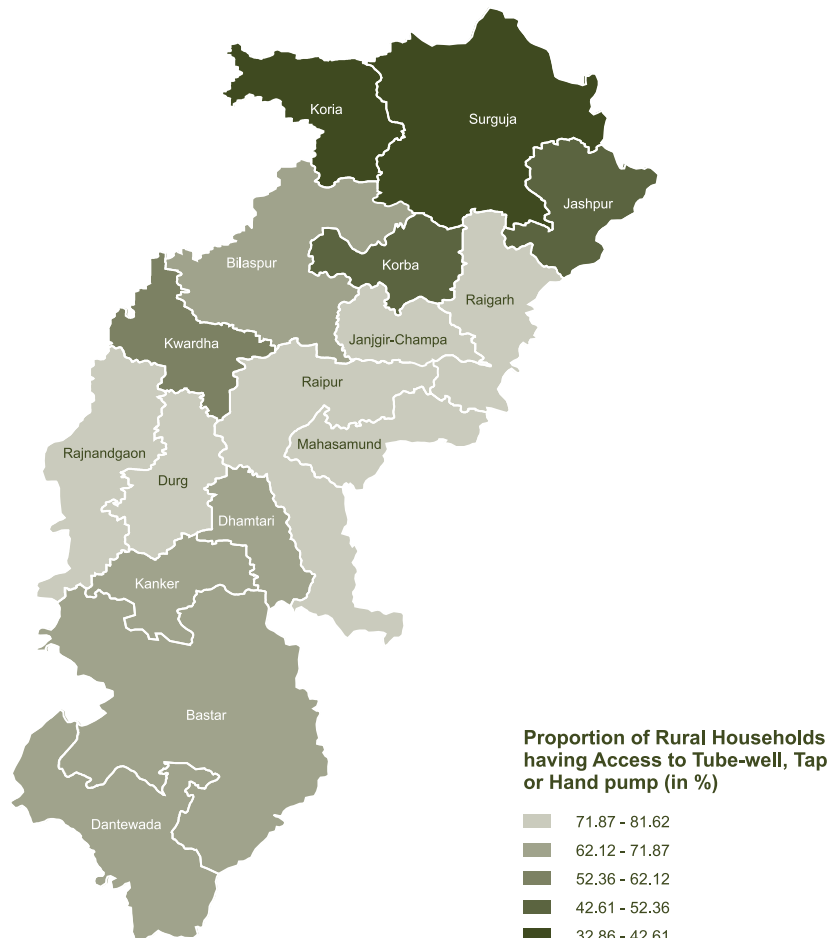
Source: Census of India, 2001 and Health Information of India, 2005.



Access to safe drinking water and sanitation is another indicator of the health status of a population. Provision of safe drinking water (calculated in terms of availability of a tubewell, handpump or tap) reduces the occurrence of a number of diseases and, at the same time, ensures effective absorption of food, ultimately leading to improved nutrition. In Chhattisgarh, little more than two-thirds of the households in the rural areas have access to safe drinking water. However, mere availability of physical infrastructure in the form of a tubewell, handpump or tap does not suffice. The quality and quantity of water being used is a matter for further examination.

Sanitation status, analyzed here in terms of existence of a toilet facility in the house, is poorest in Chhattisgarh. Only 5.2 per cent of the households in rural areas have a toilet in their house, which is far below the national average of 21.9 per cent. Inadequate integration of public interventions in the area of drinking water and sanitation with public health programmes shows a failure to exploit potential synergies that reinforce health attainments of people (Table 6.1).

**Map 6.1: Access to Safe Drinking Water**



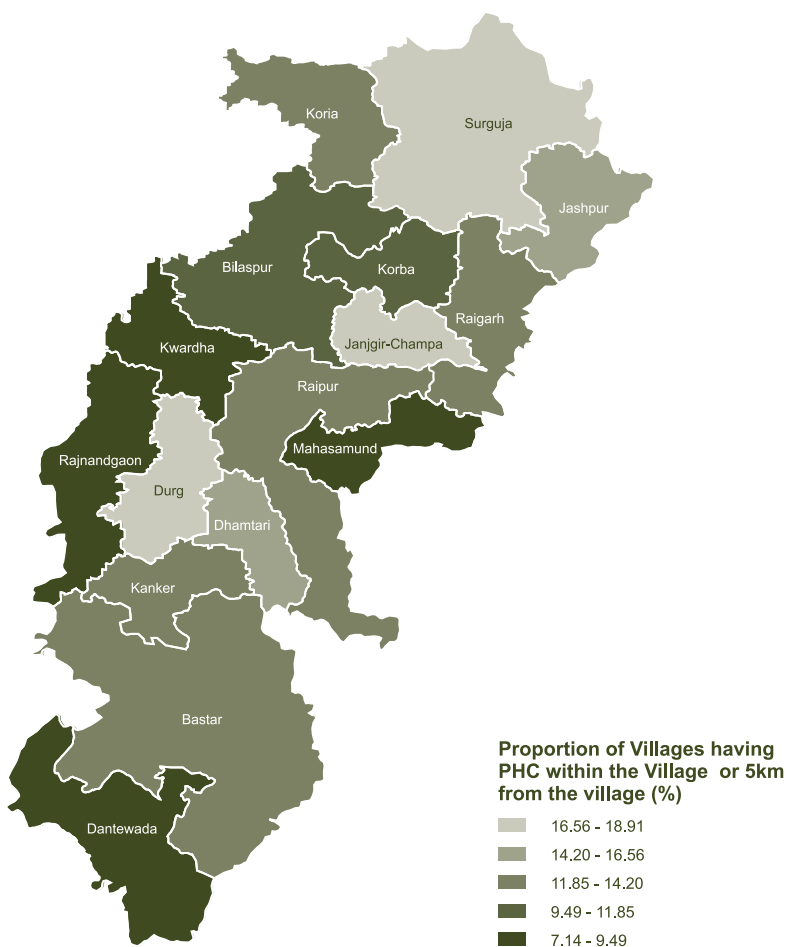


**Table 6.2: Households with Access to Safe Drinking Water in Chhattisgarh (%), 2001**

District	Value	Rank	District	Value	Rank
Bastar	71.22	8	Kwardha	64.94	12
Bilaspur	65.2	11	Korba	43.75	14
Dantewada	71.28	7	Koriya	33.87	15
Dhamtari	71.05	9	Mahasamund	74.05	5
Durg	80.47	2	Raigarh	77.67	3
Janjgir - Champa	81.62	1	Raipur	75.36	4
Jashpur	47.85	13	Rajnandgaon	72.61	6
Kanker	69.06	10	Surguja	32.86	16

Source: As stated in Table 3.4 Variable c1.

**Map 6.2: Access to Health Services**





**Table 6.3: Access to Health Services in Rural Chhattisgarh\*, 2001**

District	Value	Rank	District	Value	Rank
Bastar	11.87	10	Kwardha	9.22	14
Bilaspur	11.52	11	Korba	9.93	12
Dantewada	7.14	16	Koriya	12.12	9
Dhamtari	15.86	4	Mahasamund	8.58	15
Durg	17.03	2	Raigarh	12.74	7
Janjgir - Champa	18.91	1	Raipur	12.17	8
Jashpur	15.47	5	Rajnandgaon	9.47	13
Kanker	12.92	6	Surguja	16.95	3

Source: As stated in Table 3.4, Variable c2.

\*PHCs within the range of 5 km of the villages have been taken.

The more urbanized districts in the state, such as Durg and Raipur, do have higher access to safe drinking water. But what is surprising is that forested districts, such as Dhamtari and Bastar, rank quite high in access to safe drinking water (see Map 6.1 and Table 6.2).

Further, districts such as Raigarh, Surguja, and, in particular, Kanker and Bastar, do well in access to both safe drinking water and PHCs. Whether the safe drinking water sources and PHCs actually

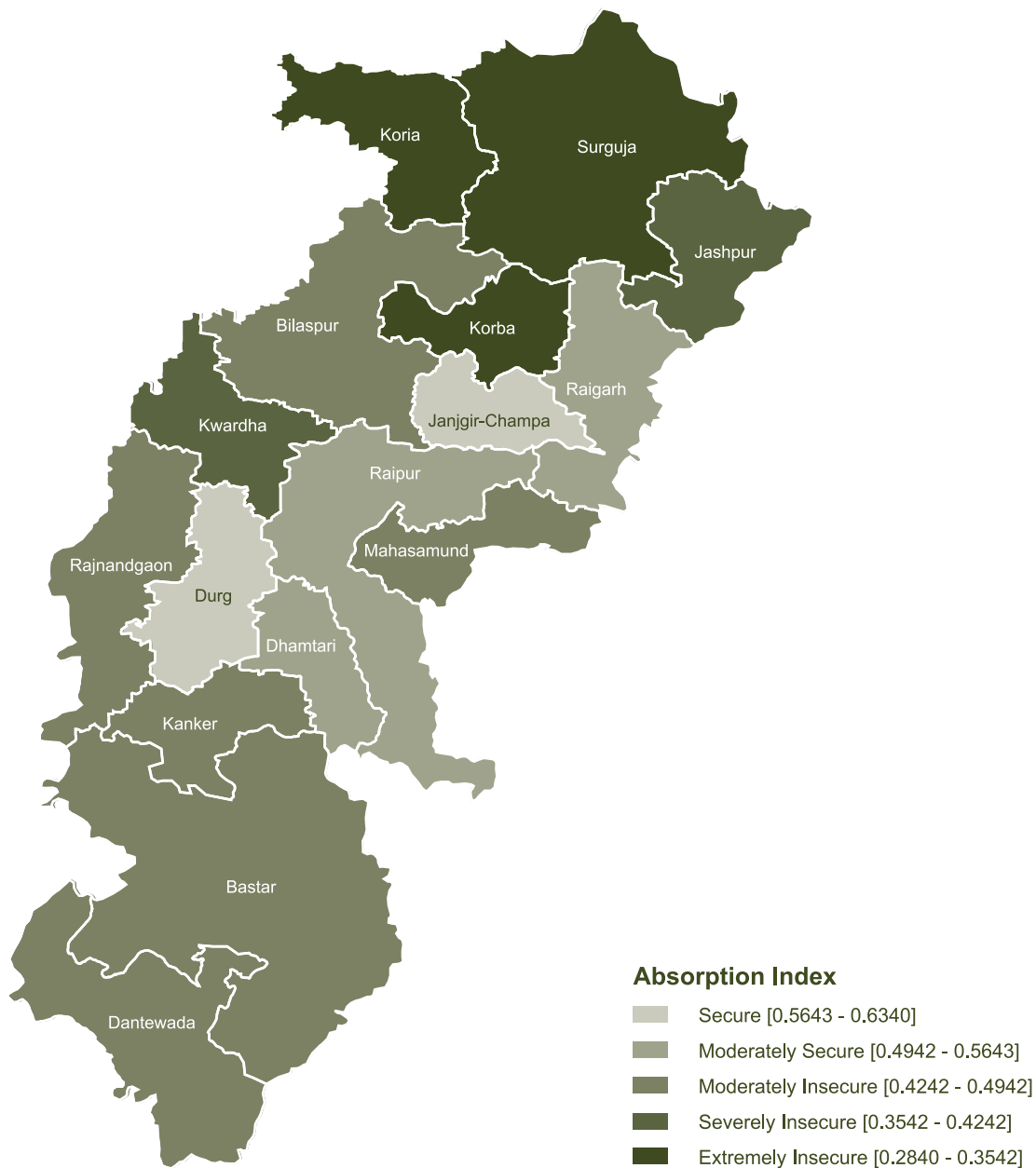
**Table 6.4: Indicators Used to Compute Absorption Index**

Dist	Access to Safe Drinking Water	Rank	Access to PHC	Rank	Absorption Index	Rank
Bastar	71.22	8	11.87	10	0.488	7
Bilaspur	65.2	11	11.52	11	0.451	10
Dantewada	71.28	7	7.14	16	0.430	11
Dhamtari	71.05	9	15.86	4	0.537	3
Durg	80.47	2	17.03	2	0.604	2
Janjgir - Champa	81.62	1	18.91	1	0.634	1
Jashpur	47.85	13	15.47	5	0.404	13
Kanker	69.06	10	12.92	6	0.490	6
Kawardha	64.94	12	9.22	14	0.420	12
Korba	43.75	14	9.93	12	0.312	15
Koriya	33.87	15	12.12	9	0.284	16
Mahasamund	74.05	5	8.58	15	0.463	9
Raigarh	77.67	3	12.74	7	0.535	4
Raipur	75.36	4	12.17	8	0.515	5
Rajnandgaon	72.61	6	9.47	13	0.466	8
Surguja	32.86	16	16.95	3	0.339	14

Source: As stated in Table 3.4, Variable C1 and C2.



**Map 6.3: Food Absorption Map of Rural Chhattisgarh**







**Table 6.5: Status of Districts in Absorption Index**

Secure	Moderately Secure	Moderately Insecure	Severely Insecure	Extremely Insecure
Durg	Raipur	Dantewada	Jashpur	Koriya
Janjgir - Champa	Raigarh	Bilaspur	Kwardha	Korba
	Dhamtari	Mahasamund		Surguja
		Rajnandgaon		
		Bastar		
		Kanker		

*Note: The variables included in construction of the Absorption Index are access to safe drinking water and PHCs.*

function is another matter. The data used here are based on the existence of these facilities, and not on their actual functioning (see Map 6.2 and Table 6.3).

The distribution of districts according to the Absorption Index (see Map 6.3 and Table 6.5) is somewhat different from the Availability and Access Indices. While in the latter two indices, the Bastar Plateau fares the worst, in the case of the former, the Northern Region districts of Surguja and Koriya, along with Korba, fare the worst; while the districts of the Bastar Plateau lie in the middle or low categories. Absorption, however, is something that comes into play after access. Very poor access may be mitigated by better absorption, just as higher access may be negated by very poor absorption. What matters in food security is the combination of these factors.

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## 7. Addressing Food Insecurity in Chhattisgarh

Chapter 3 developed an index to show the ranks of districts by outcomes of food insecurity. The next logical step was to look at factors that contribute to making these districts so prone to food insecurity. These factors were analyzed in terms of the Availability, Access and Absorption framework in chapters 4 to 6. In this chapter, all these factors that are taken to explain food security across districts are combined to form a single index, called the Food Security Index (FSI). Map 7.1 gives districts by their rank on the FSI and Table 7.2 gives the corresponding table. The critical question is: Is there an overlap between the ranks of districts on the food security outcome index and the ranks on the food security index? That is, do the districts that have poor outcomes (in terms of under-five mortality and underweight children) also have low availability, access and absorption? If indeed there is an overlap, and we show that there is, it means that the factors or indicators that are included in the composite FSI do, indeed, contribute to food insecurity, and any strategy to improve the food security status must address them (Table 7.1).

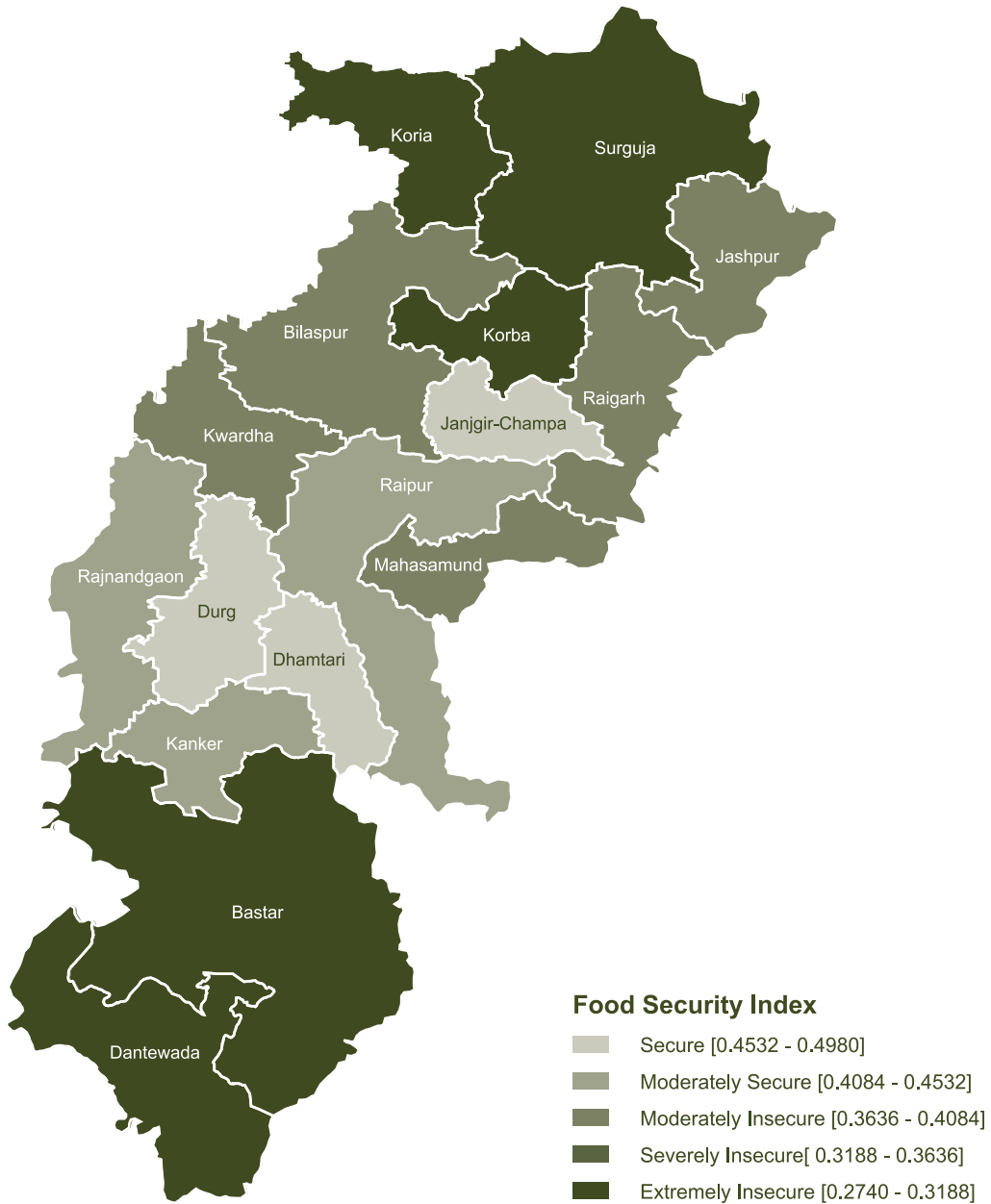
**Table 7.1: Ranks of Districts on Composite Food Security Index, its Components and FSOI**

District	Availability		Access		Absorption		FSI		FSOI	
	Index	Rank	Index	Rank	Index	Rank	Index	Rank	Index	Rank
Bastar	0.183	12	0.268	16	0.488	7	0.286	14	0.482	11
Bilaspur	0.327	5	0.342	12	0.451	10	0.377	10	0.580	5
Dantewada	0.159	14	0.271	15	0.430	11	0.274	16	0.418	15
Dhamtari	0.465	1	0.429	3	0.537	3	0.456	3	0.569	7
Durg	0.438	2	0.428	4	0.604	2	0.498	1	0.483	10
Janjgir-Champa	0.401	3	0.419	5	0.634	1	0.481	2	0.757	1
Jashpur	0.164	13	0.400	8	0.404	13	0.367	11	0.465	12
Kanker	0.227	9	0.452	1	0.490	6	0.409	6	0.594	4
Kwardha	0.295	8	0.382	10	0.420	12	0.381	9	0.366	16
Korba	0.128	16	0.338	13	0.312	15	0.279	15	0.452	13
Koriya	0.135	15	0.367	11	0.284	16	0.289	13	0.676	2
Mahasamund	0.303	7	0.391	9	0.463	9	0.407	7	0.505	8
Raigarh	0.211	10	0.408	7	0.535	4	0.402	8	0.499	9
Raipur	0.376	4	0.414	6	0.515	5	0.436	4	0.574	6
Rajnandgaon	0.316	6	0.441	2	0.466	8	0.432	5	0.431	14
Surguja	0.196	11	0.333	14	0.339	14	0.313	12	0.602	3

There exist a large number of programmes dealing with food security, for all three components of Availability, Access and Absorption. What the analysis in this atlas can do is to help prioritize the geographical targeting of these programmes and to suggest interventions that could improve food security by linking short-term access measures with longer-term development measures.



**Map 7.1: Food Security Map of Chhattisgarh**





## 7.1 Food Security Index (FSI)

In this section we bring together all the indicators chosen to explain food insecurity. The indicators hitherto clubbed into three sets – Availability, Access and Absorption – have now been individually clubbed together into one index, called the Food Security Index (FSI). This index shows the combined effect of all the indicators. Further, comparison with the individual sets of indices would reveal the relative significance of these indicators in the overall FSI (Table 7.1).

*Table 7.2: Status of Districts in Food Security Index*

Extremely Insecure	Moderately Insecure	Moderately Secure	Secure
Surguja	Mahasamund	Raipur	Durg
Koriya	Raigarh	Rajnandgaon	Janjgir - Champa
Bastar	Kwardha	Kanker	Dhamtari
Korba	Bilaspur		
Dantewada	Jashpur		

The FSI gives two contiguous areas of extreme food insecurity – Bastar and Dantewada in the South, and Surguja, Koriya and Korba in the North. The rest of North Chhattisgarh (Jashpur, Raigarh and Bilaspur) is in the next category of Severely Insecure. Kanker in the South is well within the Moderately Secure districts. The real difference in the above table is between the Secure and Extremely Insecure districts. Those at the bottom of the middle group, such as Jashpur, could as well be in the insecure group (Table 7.2 and Map 7.1).

The region that is clearly out of the food insecure category is that of the Central Plains. None of the districts in the Central Plains fall in the lowest two categories of food insecurity. Not only is irrigation and the adoption of HYV cultivation quite high, it is also the centre of industry in the state, with all its benefits of higher migration possibilities and remittances.

## 7.2 Identifying Priority Districts

The food insecurity outcome index described earlier provides the option of prioritizing the developmental efforts in the most food insecure districts. The districts with extremely and severe food insecurity status should be prioritized for developmental intervention for enhancing food security. These include districts in southern (Bastar) plateau, three districts in central plains, and five districts from the northern region (Table 7.3).



**Table 7.3: Priority Districts for Food Security Intervention**

Southern (Bastar) Plateau	Central Plains	Northern Region
Dantewala	Rajnandgaon	Korba
Bastar	Kwardha	Jashpur
	Mahasamund	Raigarh
		Koriya
		Surguja

Table 7.4 compares the priority districts in the FSO Index and FSI. These districts not only have high under-five mortality and under-nutrition but also rank poorly in terms of availability, access and absorption indicators. They need the urgent attention of government and policymakers.

**Table 7.4: Priority Districts**

District	Ranks of districts that fare poorly on the Food Security Outcome (FSOI) Index and the Food Security Index (FSI)	
	FSOI Rank	FSI Rank
Dantewada	15	16
Bastar	11	14
Rajnandgaon	14	5
Kwardha	16	9
Koriya	2	13
Mahasamund	8	7
Korba	13	15
Jashpur	12	11
Raigarh	9	8
Surguja	3	16

The ten worst districts – two falling in the Southern Plateau, five in the Northern Region, and three in the Central Plains – are then identified as districts for priority intervention (see Table 7.4 and Map 8.1).

### 7.3 Strategies for Promoting Food Security

The districts most beset by hunger and food insecurity have been identified in the earlier section. These are also the districts that call for priority intervention. The analysis of the earlier chapters suggests the measures and strategies that are needed for enhancing food security. Broadly, measures to improve availability must include improving irrigation and agricultural productivity. Farm incomes can be improved through better rural connectivity. Access should be improved by policies for enhancing rural wages and thereby spending on food, improving the lot of agricultural labour, land re-distribution,



and enhancing the status of women. There can be no two opinions on the need to expand the reach of public interventions.

The central and state governments have launched a number of schemes and programmes that are aimed at enhancing food security in the state. Some of them are recent and it is too early to see their impact, while some have been under implementation for some time. This section discusses food security interventions.

### **7.3.1 Enhancing Availability**

The purpose of the current exercise is to inform policy at the below-state level. At the national level, it is necessary to pay attention to the overall availability of food in the national market(s). This is necessary for food management purposes. It may even be necessary at the state level, if there are some restrictions on inter-state movement of foodgrains. But at the district or regional levels there are no such restrictions. If there are reasonably functioning food markets, then any shortage of food supply over demand will lead to a rise in prices and a movement of supplies into the deficit areas. Or, if there is a local collapse of some incomes, then despite an adequate production of foodgrains in the district, there may well be a movement of foodgrains out of these areas into areas where incomes have not collapsed.

In the country as a whole, more than a decade of low investment in agriculture including agriculture research and infrastructure has resulted in a very low growth in food output. However, in recent years increasing foodgrain production has acquired importance.

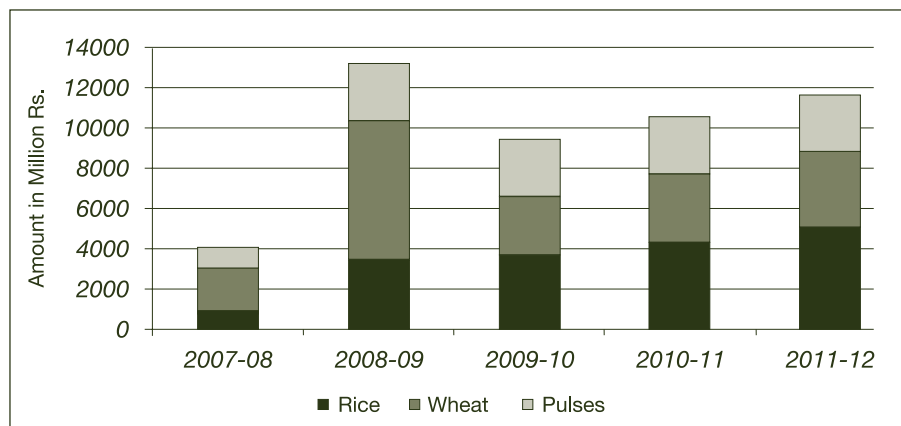
#### **7.3.1.1 Increasing Food Production: The National Food Security Mission**

The dismal rate of growth in the agricultural sector has been a cause for concern – the sector grew at a meagre rate of 1.8 per cent per annum during the nineties. This has been coupled with rising international prices as well as occasional wheat imports, bringing into question the food security of the country. With a view to increasing the rate of agricultural growth to 4 per cent, the government has launched the National Food Security Mission (NFSM) entirely funded by the central government, with a total estimated outlay of over Rs. 50,000 million. The programme specifically aims at increasing the production and productivity of three crops: rice, wheat and pulses. Ongoing related schemes like the Integrated Cereal Development Programme (ICDP Rice/Wheat) and the Integrated Scheme on Pulses, Oilseeds and Maize (ISOPOM Pulse) would cease to operate in the identified districts once the relevant component of the NFSM comes into execution in the district.

The objective of the mission is to increase the production of rice by 10 million tons, wheat by 8 million tons and pulses by 2 million tons, by the end of the 11<sup>th</sup> Plan. The targets are to be achieved by restoring soil fertility and hence productivity, which would be complemented by increasing employment opportunities.



**Fig 7.1: Allocation Proposed under NFSM**



Source: Economic Survey, 2007-08

The mission would operate at multiple levels from the national level, to state and district levels. At the grass root level, the Panchayati Raj Institutions (PRIs) would have an active role and would be involved in the selection of beneficiaries and identification of priority areas and local initiatives.

The mission would be implemented in 133 districts for the rice component, 138 districts for wheat and 168 districts for the pulse component – all in identified districts of different states. In terms of target beneficiaries, 16 per cent of the total allocation would be earmarked for Scheduled Castes under the Special Component Plan (SCP) and 8 per cent would be earmarked for the Scheduled Tribes under the Tribal Sub-Plan (TSP). At least 33 per cent of the fund would be utilized for small, marginal and women farmers. Further, the allocation to the SC/ST farmers would be made in proportion to their population in the district.

The modality of implementation of the mission would be in the form of demonstration of an improved package at farmers' fields, assistance for production of hybrid rice, nutrient management for all the three crops, mechanization for sowing and weeding, and assistance for purchase of pump sets and sprinkler sets. Several capacity-building initiatives would also be undertaken which would be in the form of farmers' training in Farmers' Field Schools (FFS) and exposure visits to international organizations. For efficient information dissemination, help from print and e-media and other methods would be taken as required. All these would be followed by rewarding the best performing districts on a set of indicators.

In the state of Chhattisgarh, the following districts have been identified for development under the NFSM under the rice and pulses components:



**Table 7.5: Districts under NFSM in Chhattisgarh**

<b>Rice (10)</b>		
Dantewara	Korba	Raipur
Janjgir-Champa	Koriya	Sarguja
Jashpur	Raigarh	
Kwardha	Rajnandgaon	
<b>Pulses (8)</b>		
Bilaspur	Kwardha	Rajnandgaon
Durg	Raigarh	Sarguja
Jashpur	Raipur	

Source: Government of India (2007b).

The NFSM concentrates on irrigated foodgrains, wheat and rice, and pulses. Other than for pulses, non-irrigated crops have been ignored. The NFSM is aimed at revitalizing fertility in lands which have deteriorated. But rainfed crops, such as the various millets that are grown on hills and other drylands, do not come under its purview. In the context of the plateauing (and even decline) of yields in irrigated crops, it becomes even more important to pay attention to these rainfed crops and to increase productivity in currently rainfed areas. These are also areas of higher food insecurity. An increase in agricultural productivity in rainfed areas will substantially reduce the incidence of hunger in these areas. Along with an extra emphasis on rainfed crops, there is also need to address issues of shrinking diversity of rice cultivars. Chhattisgarh's rice bowl was once known for its wide variety of rice, but this diversity is now under threat (Meena Menon, 2001), and this could have an impact on future rice production.

### 7.3.1.2 Improving Connectivity

The rate of growth of rural incomes and reduction in rural poverty are strongly influenced by the provision of rural and district road connectivity. There is a close link between rural connectivity and growth, be it in the area of trade, employment, education or healthcare. States with poor connectivity are also states that report poor socio-economic indices. Improved connectivity between the growth production centres and the collection centres is vital for livelihood enhancements and that is possible only through the development of roads in remote areas.

While over the last five decades the length of rural roads has been increasing, there are still more than 250,000 villages (40 per cent) which remain unconnected. Other forms of rural infrastructure are also important as they help in widening the opportunities and choice of alternatives. Research into rural road investments suggests that the construction of a new road in a village raised the per capita income of households by 30 per cent over a half-decade, after controlling for factors like household size and education (Deolalikar, 2001).





### **Box 7.1: National Policy for Farmers, 2007**

The National Policy for Farmers is intended to help in rejuvenating the farm sector and bringing about lasting improvement in the economic condition of farmers. The Government had constituted the National Commission on Farmers in 2004 under the chairmanship of Dr. M.S. Swaminathan. Based on the recommendations made by the Commission in its Revised Draft National Policy for Farmers and the comments/suggestions received from various Central Ministries and Departments and State Governments, the 'National Policy for Farmers, 2007' has been formulated and approved by the Government of India. The policy, among other things, aims to improve the economic viability of farming by substantially improving the net income of farmers in addition to improving productivity, profitability, land, water and support services and providing appropriate price policy, risk management measures.

The recommendations include:

- a. Human Dimension: In addition to production and productivity, the economic well-being of the farmers to be given prime importance.
- b. Asset Reforms: To ensure that every man and woman, particularly the poor, in villages either possesses or has access to a productive asset.
- c. Water use efficiency: The concept of maximizing yield and income per unit of water to be adopted in all crop production programmes, with stress on awareness and efficiency of water use.
- d. Use of Technology: New technologies which can help enhance productivity per unit of land and water are needed. Biotechnology, information and communication technology (ICT), renewable energy technology, space applications and nano-technology to provide opportunities for launching an 'Evergreen Revolution' capable of improving productivity in perpetuity without harming the ecology to be developed.
- e. Inputs and services - soil Health: Good quality seeds, disease-free planting material, including in-vitro cultured propagules and soil health enhancement hold the key to raising small farm productivity. Every farm family to be issued with a Soil Health Passbook. Food security basket to be enlarged to include nutritious millets mostly grown in dryland farming areas.
- f. Credit & Insurance: The financial services to be galvanized for timely, adequate and easy reach to the farmers at reasonable interest rates.
- g. Single National Market: A Single National Market to be developed by relaxing internal restrictions and controls.

An Inter-Ministerial Committee has been set up to operationalize the implementation of the policy.

### **Pradhan Mantri Gram Sadak Yojana (PMGSY)**

In an impact evaluation the following effects of the PMGSY have been observed (Ministry of Rural Development, Government of India):

1. Use of chemical fertilizers and HYV seeds has increased considerably on account of their decreased transportation cost that formed a fair portion of their total cost.
2. An increase in the ownership and use of farm implements by the people has been observed.
3. The farmers get a higher price for their products due to better access to the wholesale market.



4. There has been substantial increase in dairy and poultry production in the villages which are located in close proximity to the newly constructed roads.
5. There has been substantial increase in employment opportunities both in agricultural and non-agricultural sectors in villages located close to the roads constructed under PMGSY.
6. Substantial achievements have also been made on the health front. The frequency of health workers visiting the village has increased, as have institutional deliveries, and villagers have better access to health facilities.
7. The enrolment rate has increased due to better accessibility to educational institutions.
8. An increase in land prices has been observed and many petty shops have come up on the road side.

### **Bharat Nirman: Rural Roads**

Bharat Nirman is a plan for action in rural infrastructure that started in 2005 and will end in 2009. Under the scheme, action is proposed in the areas of irrigation, roads, rural housing, rural water supply, rural electrification and rural telecommunication connectivity, in partnership with the state governments and the PRIs.

As part of the programme, the government intends that by end of financial year 2008-2009, every village of over 1000 population, or over 500 in hilly and tribal areas, has an all-weather road. To achieve the targets of Bharat Nirman, 1,46,185 kms of road length are proposed to be constructed by 2009. This will benefit 66,802 unconnected eligible habitations in the country. To ensure full farm-to-market connectivity, it is also proposed to upgrade 1,94,132 kms of the existing associated through routes. Strenuous efforts are needed for Chhattisgarh to more beyond the 50 per cent achievement seen below (Table 7.6).

**Table 7.6: Total Habitations Covered Under Rural Roads Programme under Bharat Nirman Programme in Chhattisgarh: Targets and Achievements – 2005-07**

	2005-06	2006-07	2007-08*
Target	478	1,310	2,007
Achievement	479	632	654

Source: Ministry of Rural Development, Government of India.  
\* Figures upto January, 2008.



### 7.3.2 Improving Access to Food

The measures for improving access to food in Chhattisgarh, as in other states of India, have been along the following lines:

1. The provision of low-priced foodgrains, as a method of subsidizing the consumption of the poor. This, done through the Public Distribution System (PDS) has undergone some changes with the current Targeted PDS, where low prices are charged only for Below Poverty Line (BPL) households.
2. Food for Work schemes now carried out under the National Rural Employment Guarantee Act (NREGA).
3. The mother and infant supplementary feeding programme through the ICDS.
4. The Mid-day Meal Scheme for children in government-run schools.

A policy implication emerging from the indicators used for enhancing food security is the need for betterment of the plight of the vulnerable populations, particularly the Scheduled Tribes and Scheduled Castes. Most of the food insecure districts in Chhattisgarh are dominated by districts with a higher

**Table 7.7: Status of Public Interventions in Chhattisgarh**

High	Medium	Low	Very Low	Extremely Low
Jashpur	Surguja	Dhamtari	Dantewada	Durg
Kanker	Mahasamund	Janjgir - Champa	Raipur	
Koriya		Bastar	Kwardha	
Bilaspur		Korba		
Raigarh				
Rajnandgaon				

**Table 7.8: Index of Public Intervention**

District	Index	Rank	District	Index	Rank
Bastar	0.796	11	Kwardha	0.737	15
Bilaspur	0.870	4	Korba	0.781	12
Dantewada	0.771	13	Koriya	0.876	3
Dhamtari	0.803	9	Mahasamund	0.829	8
Durg	0.697	16	Raigarh	0.860	5
Janjgir - Champa	0.796	10	Raipur	0.764	14
Jashpur	0.888	1	Rajnandgaon	0.856	6
Kanker	0.883	2	Surguja	0.843	7

Source: As stated in Table 3.4, Variable d1.



### Box 7.2: Improved Targeting in the Public Distribution System

The Targeted Public Distribution System (TPDS) is perhaps the largest food safety net in the world. Yet, as surveys have revealed, its success is tarnished by several shortcomings. A pilot project launched by WFP in collaboration with the state government seeks to address these through the use of new technologies. The project aims to strengthen the identification and verification process and comprehensively plug the loopholes in the TPDS. The project is being implemented in Rayagada district of Orissa.

The project involves the following: -

- **Biometric ration cards (iris and finger print):** to ensure that all ghost and duplicate cards are removed from the system.
- **Distribution of new ration cards against biometric validation:** to remove the problem of shadow ownership at the ration card distribution stage.
- **Bar-coded coupons:** to prevent recording of off-take without the beneficiary's agreement and also to check shadow ownership of coupons.
- **Smart cards installed with a point of sale device (PoS):** to prevent incorrect off-take recording and shadow ownership of ration cards.
- **Strong management information system:** to improve governance and enhance effectiveness of monitoring by providing more relevant and real-time information.
- **Web based interface:** to track and monitor progress.

proportion of Scheduled Tribes and Scheduled Castes who suffer from geographical and social marginality. The STs are vulnerable due to their location specificity and remoteness from mainstream facilities and amenities, and the SCs because of social discrimination. Even within food secure districts, the agricultural labourers, many of who would be SCs, have low food security.

The relatively low reach of food-based programmes to the poor, as revealed by the NSSO figures, should be contrasted with the generally high reach shown by official government figures. The reach of the ICDS and mid-day meals in schools is routinely reported by government agencies to be close to 100 per cent.

Table 7.7 and 7.8 present the status and Index of public intervention in Chhattisgarh state. The table is based on percentage of ICDS beneficiaries to total project population. The table based on

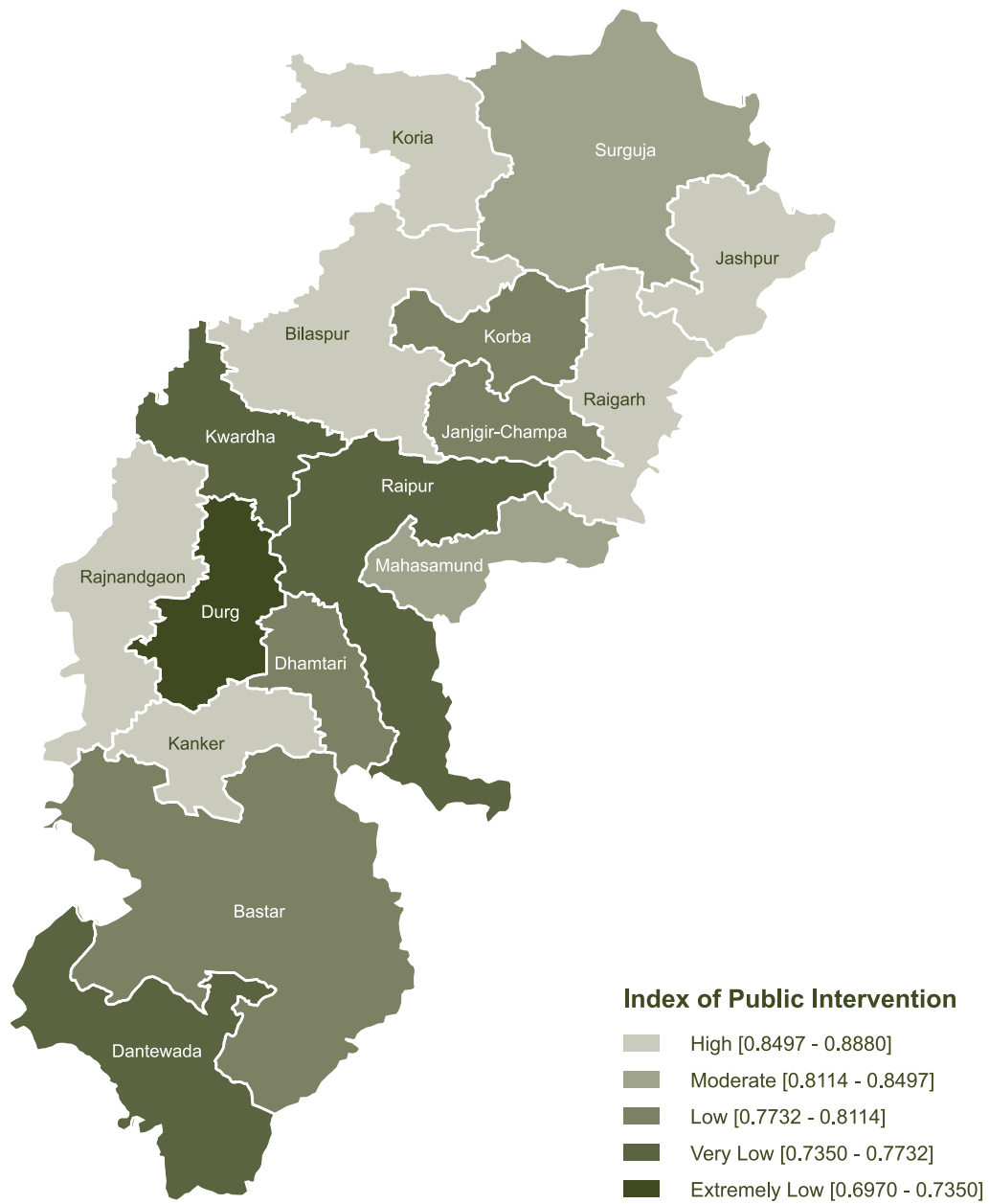
**Table 7.9: Percentage Share of Poor and Nearly Poor Households who have Ration Cards or Benefited from Various Schemes in Rural Chhattisgarh (2004-05)**

Region	Ration card	Food for work	Annapoorna	ICDS	Midday meal
<b>Poor Households</b>					
Chhattisgarh	75.8	7.3	1.5	20.5	55.5
All-India	80.0	4.2	1.2	8.8	33.2
<b>Nearly Poor Households</b>					
Chhattisgarh	70.9	3.1	0.0	15.8	43.3
All-India	82.9	2.8	1.1	6.7	29.5

Source: Calculated from NSS 61<sup>st</sup> Round, 2004-05 Unit Level Data.



**Map 7.2: Status of Public Interventions in Chhattisgarh**





government figures shows a high ICDS coverage for the Food Insecure districts – generally from 69 to 88 per cent. This figure is much higher than what the NSS reveals. The table shows that the status of public interventions in Durg district is extremely low. Dantewada, Rajpura, Kwardha also have very low levels of public interventions (Map 7.2).

### 7.3.2.1 Improving Performance

The latest (2004-05) NSS Round gives information on the extent to which these schemes reach the poor in Chhattisgarh, and thus contribute something to food security, though it does not show us how much they add to food entitlements.

In table 7.9 we have also separately included “nearly poor” households, i.e. those whose per capita consumption level is within 10 per cent above the poverty line. In both ICDS and the Mid-Day Meal Scheme, the performance in rural Chhattisgarh is better than in rural India as a whole. Nevertheless, the lower reach of food-based programmes to the poor, as revealed by NSSO figures, should be contrasted with the generally high reach shown by official government figures.

In Rajasthan, the Right-to-Food movement has used the Right to Information Act (RTI) for bringing into the open information about government programs. In what are called *Jan Sunvais* (public hearings) with the slogan “*Hamara Paisa, Hamara Hisaab*” (Our Money, Our Account), details of the schemes have been brought into the open. This can be useful in building public opinion and mobilizing the community against corruption in government schemes.

There is an important role for political mobilization of the poor in improving implementation of the ICDS, MMS, NREGS and other such schemes. Implementation of these schemes has generally been decentralized down to the panchayat level. But panchayats can be corrupt and dominated by the local power-brokers. A pilot social audit held in Bolangir in November 2001 showed substantial and relatively open corruption at panchayat level (de Haan and Dubey 2005, fn. 39, p. 2329) Studies in other States have shown that when women are in panchayats, or lead panchayats, the panchayats perform better in administering food-related interventions. In IFAD projects in Andhra Pradesh too, it was observed that women’s SHGs performed better in undertaking small infrastructure projects than those managed by men and saved more money for the community than the latter.

The contribution of the PDS in promoting food security is well covered in the extensive literature on the subject. But a study by Jos Mooij points out that the supply of cheap grain for below BPL households has made running a PDS highly profitable, as cheap grain can easily be diverted into the open market or sold to APL (above poverty-line) households. More recently, the Central government is reported to have pointed out to the West Bengal government that there has been diversion of cheap PDS grain to the Bangladesh market. Many newspaper reports point out that even in the midst of starvation, the Food Corporation of India’s godowns remain full of grains. If there is insufficient purchasing power with the poor in a district, even the supply of grain at subsidized prices is unlikely to be accessed by



the poor, and there will inevitably be a tendency for this grain to flow to markets, whether within the locality or outside, where prices are higher (Jos Mooij, 2001).

The problem of diversion of foodgrains increases when there is a partial subsidy, such as with the PDS. Grain is supplied at a lower than market price, but the buyer has to have the money to buy the lower-priced grain. If the person just does not have the required money, or does not have it at the time the grain is made available, the person cannot benefit from the subsidy.

The above points to two critical points in the functioning of the PDS: First, the dual price system that it brings about, encouraging diversion of foodgrain from the lower BPL price to the higher open market price. Second, the inability of many poor households to utilize their quotas because of inadequate purchasing power.

The abolition of dual pricing would reduce the usual diversion problems, but there would still be the problem that now exists of the poor not being able to utilize the subsidy. A direct transfer would make sure that the person/household actually benefited, since it is not conditional on the beneficiary having to provide some collateral amount.

Another way of enabling the poor to acquire their public entitlement of grain would be provide work, such as through NREGS, which allows the poor to acquire the money needed for purchase of food. A combination of a coupon system with NREGS could improve the functioning of the PDS system. Such a system would have the added benefit of increasing the monetization of the rural economy and improving the functioning of the bank and/or post office systems.

The above-mentioned food-based schemes are meant to meet the needs of shorter-term or even transient (seasonal) food insecurity. By increasing the quantities of public entitlements to food they can deal, to an extent, with immediate problems of hunger. If these foods are fortified, or supplements given as in the ICDS schemes, some nutritional gaps can be addressed. But any solution to food insecurity requires an increase in the regular access to food in sufficient quantity and quality. This requires an increase in the production and earning capacity of the households and individuals too, given that there are gender-based discriminations in the distribution of food and allied health-care services within households. It is important, therefore, that food schemes be linked with development activities.

### *7.3.2.2 Increasing Wages and Employment*

The critical importance of wage incomes in ensuring access to food is demonstrated dramatically through the experience of Kalahandi. The district of Kalahandi in Orissa, notorious for persistent and acute hunger, was a net exporter of paddy all through the 1980s and 1990s (Bob Currie 2000), as people were too poor to afford to purchase it. Another study shows that Uttar Pradesh is a food surplus state, but malnutrition rates are high. The abundance of food does not translate into access to food



for all, because widespread poverty constrains the purchasing power of the poor and other vulnerable sections (Srivastava, N., 2003:257).

Provided areas are not cut off from the markets, the supply of food grains, even in deficit areas, can be taken care of by market forces, supplemented by the PDS. What are needed are interventions to reduce transport and other transaction costs, and thus improve the functioning of markets and the PDS and, most of all, measures to increase incomes. In particular, the food insecure often have to operate in inter-linked markets (e.g., selling in advance in order to secure grain on credit), and intervention is needed to help the poor break the inter-linking of the credit and product markets.

A large part of the food-insecure areas of Chhattisgarh are dominated by production for self-consumption. But they do also sell some agricultural products and NTFP (Non-Timber Forest Products). The terms on which they exchange these products for their consumption needs will have an impact on their food security. Access to markets will enable producers to utilize the scope for more intensive production, rather than the extensive methods that they are currently engaged in. But such shifts from production for self-consumption to production for the market require changes in technology, and the organization and management and overall capabilities of the producers.

The central plains' districts have high proportion of agricultural labourers and Scheduled Castes. Acquisition of even a small plot, including homestead land, would increase the food access of agricultural labourers. Such distribution of land to the landless could have a positive incentive effect on productivity. Unlike land reform schemes in the past, it is necessary to include women's land rights in such schemes for distribution of land to the landless.

### 7.3.2.3 National Rural Employment Guarantee Scheme (NREGS)

The National Rural Employment Guarantee Scheme (NREGS) has been devised as a public work program and has a key role to play in providing assured employment to one person in each household for 100

**Table 7.10: NREGS Performance – All India, April 2008**

National Bulletin	
Households demanded Employment	31.1 million
Households provided employment:	30.8 million
Persondays [in Million]:	
Total	1268.5
SCs	334.0 [26.33 %]
STs	367.4 [28.96 %]
Women	879.7 [69.35 %]
Others	567.1 [44.71 %]

Source: <http://nrega.nic.in>, 3 April, 2008.





days per year. The major objectives of this scheme are to provide income security through employment guarantee; reduce/check distress migration from rural to urban areas; and, in this process, also to create durable assets in villages, leading to overall development of the rural economy; and empowerment of rural women through the opportunity to earn income independently and to participate in social groups.

NREGS is based on the National Rural Employment Guarantee Act (NREGA). The Act came into effect in 200 selected (backward) districts of the country on February 2, 2006 and was extended to 130 more districts from April 1, 2007. Now (April 1, 2008) the Government of India has decided to extend NREGA to all rural areas of all districts of the country. The Act provides a legal guarantee of 100 days of wage employment in a financial year to one person of every rural household whose adult members volunteer to do unskilled manual work at the minimum wage rate notified for agricultural labour prescribed in the state or, in the event that employment is not provided, to give the person an unemployment allowance.

The overall performance of NREGA is quite impressive. Of the 31.1 million job card holders who demanded work under the scheme, 30.8 million have been provided employment (Table 7.10). As per the information reported on the government website, the scheme has therefore been able to provide employment to almost all the people among the job card holders who demanded work. Under this scheme, people are mainly provided with work related to creating or improving rural connectivity, water conservation, land development, drought proofing, micro-irrigation, renovation of traditional water bodies, land development, etc.

### Box 7.3: NREGA and Food Security

A recent study done by the Institute for Human Development to evaluate NREGA's performance in Bihar and Jharkhand indicates that beneficiaries of the scheme are spending a major part of their earnings from NREGA on food-related consumption items. In Bihar, 67 per cent of the earnings from NREGA is being spent on food while in Jharkhand, the percentage is 71. However in case of Scheduled Tribes and Scheduled Castes, who are generally more vulnerable to food insecurity because of low and irregular income, the spending on food from earnings received for NREGS work is more than the state average. Given the findings of the study, one can suggest that NREGA can be a safety net for the food insecure population.

#### Percentage of Income from NREGA Spent on Food and Related Items

	Bihar	Jharkhand	Total
Upper Caste	51.29	89.16	73.31
OBC I	62.62	68.13	63.64
OBC II	72.62	68.69	71.28
SC	68.7	75.68	69.65
ST	84.94	66.24	66.85
Total	67.3	71.31	68.6

Source: Understanding the Process, Institutions and Mechanism of Implementation and Impact Assessment of NREGA in Bihar and Jharkhand, *Institute for Human Development, Delhi, March 2008.*



A large number of the beneficiaries under the scheme are women: close to 69 per cent of them as on 3 April, 2008. As pointed out elsewhere in the report, women spend more of their income than men on essential consumption needs of the family, education of children and health care requirements, all of which are supportive of improving the nutritional status of their households.

It is worthwhile noting that a large share of the earning received from the NREGS works have been utilized for food-related expenses. A study undertaken by the IHD has actually documented this finding regarding the contributions from the NREGS being expended by the villagers on food related consumption needs (see Box 7.3).

### **NREGS: Chhattisgarh**

The performance of the state is quite impressive. Almost all the persons who demanded jobs, got job. The participation of STs is quite high, higher than the all India average. But, the proportion of women in employment is lower than overall India. Relaxing the rule, or changing it to acknowledge each individual and not just household, as requiring work and income, is likely to increase the proportion of women seeking employment. But the large proportion of men seeking NREGS employment here certainly shows that the scheme must have had a substantial impact on distress migration (since it is unlikely that women would migrate, leaving men and children behind).

**Table 7.11: NREGS Performance in Chhattisgarh, April 2008**

Households demanding employment:	2.106 million
Households provided employment:	2.099 million
Persondays [in million]:	
Total	113.6
SCs	17[14.97%]
STs	47.4 [41.8%]
Women	47.13 [41.49%]
Others (non-SC/ST)	49.12 [43.23%]
Expenditure	12115.5million

Source:<http://nrega.nic.in>.

Reports show, as will be expected, that there is corruption in the running of NREGS (see, for example, CSE, 2008) this could be reduced through organization of the workers in these schemes, use of the Right to Information (RTI), etc. Such measures will increase the impact of the scheme on incomes and food security. Nevertheless, there can be no doubt that NREGS, by increasing the incomes of the poorest, is already having a major impact on food security.



#### **Box 7.4: Female Literacy: The Pivot for reducing Food Insecurity and Child Mortality**

Recent research findings from 35 demographic and health surveys have brought out that children of mothers with no education are more than twice as likely to die or to be malnourished compared with children of mothers who have secondary or higher education. Further, mothers with limited literacy and educational skills are much less likely to receive trained support during pregnancy and childbirth. In Nigeria, for instance, only 15 per cent of births amongst uneducated women are assisted by trained medical personnel, compared to 56 per cent of births among women with primary education and 88 per cent among women with higher education.

*Source: UNICEF, 2007a.*

#### **7.3.2.4 Improving Gender Relations**

The results of our analysis show that female literacy in rural areas is the most significant factor determining food security of the rural population. This can be corroborated by the fact that most of the districts in the most food insecure category rank very poorly in terms of rural female literacy. Thus, it is imperative that girls' literacy be prioritized and all barriers to their access to education be effectively tackled, taking care to see that girls from the poorest and most marginalized communities get priority treatment. This should be coupled with the provision of quality education.

Another policy implication from the indicators is the need for reducing the dependency ratio in order to improve food security. All the food insecure district in terms of outcome indicators and ten out of eleven food insecure districts in terms of overall indicators have a high dependency ratio. Improvement in female literacy no doubt will reduce this ratio as both are closely related, but a conscious effort to propagate a small family norm should also be made.

The food insecure are usually thought to be non-bankable or not credit-worthy. But they do access credit from moneylenders, at what are very high effective rates of interest of above 10 per cent per month. They frequently end up in inter-linked market transactions, selling their advance labour or non-timber forest products (NTFP) for much less than market prices, with implicit interest rates for credit far above those in the credit market alone. Such inter-linked market transactions often occur at times of acute distress, such as when medical emergencies require immediate credit, or when drastic falls in the ability to acquire food lead to a need for credit. In such situations, if credit were available, these inter-linked market transactions could be avoided.

It hardly needs to be repeated that financial services for the poor, both savings and credit, are required, both to enable consumption smoothening and to utilize market opportunities. Whether through the Indian Self Help Group (SHG) model or the Bangladesh Grameen Bank model, micro-financial services need to be provided. Through an increased use of educational facilities and credit to utilize growing market opportunities, micro-finance programs can link increased food security with development. The food security impact of micro-finance is also increased by its contributing to enhancing women's agency in the household.



### **Box 7.5: Innovative Food Security Initiatives: The Food for Work Programme in Tribal Development Projects**

Blessed with bountiful natural wealth and rich in human resources, the forested and tribal-dominated areas in the country are, nonetheless, among the poorest and severely food insecure areas. They are characterized by degraded natural resources, stark poverty, chronic hunger, high indebtedness and heavy out-migration. For the sustainable development of some of these regions, Tribal Development Programmes are being implemented in the states of Chhattisgarh, Jharkhand and Orissa. These were launched by the state government with the objective of ensuring household food security and improving livelihood opportunities based on the sustainable and equitable development of natural resources. The programmes are supported by the International Fund for Agricultural Development (IFAD) and the World Food Programme. The latter provides food assistance for a food for work component.

Given the abysmal poverty in the area, it is no surprise that the Food For Work (FFW) activity has become enormously popular. Payment for FFW includes a cash component and 3 kgs of grains (earlier pulses were also included). The programme, based on the performance of manual labour, is self-targeting towards the poor. It provides 70 days of work in the lean season when food insecurity is high.

#### **Participatory Processes And Community Ownership**

The point of departure in this programme, compared to other government programmes is the philosophy that the poor should be enabled to overcome their own poverty. This principle is woven intrinsically into all processes. To this end the project stresses the participation of the poor, community ownership and capacity building. Food is given to the community and they take the decisions. Inclusion of the most marginalized begins with the planning. All activities are discussed in the Gram Sabha. What activity should be taken up? What are the likely benefits? Who will benefit from the creation of the asset? How many people will get work? All these questions are debated and decided by the community. The project facilitates them in prioritizing, planning and implementing the plans.

The project shows how a simple activity like providing food as wages for work can become a kaleidoscope reflecting all the pulls, pressures, and dynamics of village life. This would not have been the case had it been a top-down programme where people had little or no role in decision-making. That not being the case, and all decisions now being taken in the Gram Sabhas, they have become sites of deep contestation. Valuable lessons in collective decision-making, negotiating, handling conflicts and targeting are being learnt.

The most marginalized are for the first time in their lives finding a platform for articulating their views. It is for this reason, that most community assets created under the programme are located so as to benefit poor hamlets and households and there is a significant impact on the food security of a desperately poor population living in remote and inaccessible areas.

#### **Food for Work Activities**

Tribal communities share a symbiotic relationship with forests that are a major source of food, nutrition and livelihoods. Empowering the community to engage in forestry-related activities has led to increase in yields of NTFPs and enhanced food availability.

The list of activities taken up under FFW is very long and, *inter alia*, includes land development, earth-bunding, stone-bunding, gully-plugging, pond construction and restoration, backyard plantations, plant nurseries, digging wells and building canals, trenches and check dams. These activities have helped to irrigate large areas. For the first time people have been able to get a second crop of wheat apart from the single rain-fed crop of rice that they used to harvest earlier. Many farmers have cultivated vegetables for the first time in generations. '*Neither our fathers nor our grandfathers ever cultivated these crops*' they say with obvious pride.

In some villages, as for instance in Semra in Chhattisgarh, under the food for work programme, villagers have almost literally moved mountains: They dug a well that has been lined with massive boulders they hauled from nearby hills. Apart from providing work and food for a large number of the poorest, it has helped ease the problem of drinking water for them and their livestock.



### Enhanced Production and Productivity

There has been a big boost in production in many villages. In village Sagasai in Jharkhand for instance, paddy production takes place by the traditional 'broadcast' method. However, as a result of new sources of irrigation and water-harvesting, paddy production through transplantation has become possible. This has doubled yields, enhanced incomes and ensured food security.

Demand-driven approaches that give play to people's initiatives throw up as many diverse ways of doing an activity as the activities themselves. They draw on people's intuitive knowledge of local conditions, their creative urges and their innate skills in a way no top-down programme can. In village Ghangari, in Chhattisgarh, bunding was taken up around fields of the poor. In addition, they had the innovative idea of planting *arhar* (a pulse rich in protein) on the bunding. This not only utilized the land which would otherwise have gone waste, but the roots of the plant also strengthened the bunding which often gets washed off in the rains, because the fields are situated on a slope.

### Impact on Migration and Indebtedness

Ask anyone what has been the impact of the Food For Work programme, and if the first answer is 'people do not go hungry anymore', the second will certainly be, 'people have stopped migrating for work'. Migration has stopped almost totally, particularly distress migration to far-off areas. In Ranchi, the capital city of Jharkhand, it is tragic, if common, to see hordes of adolescent tribal girls standing by the main square, waiting for labour contractors who entice them with promises of employment. In project areas, migration of adolescent girls from the Ho tribe used to be a common phenomenon. This has almost stopped now. The impact has not been even across the project areas, but there is little doubt that it is one of the most important positive outcomes of the programme.

The other significant impact has been on indebtedness. In fact, the main 'casualty' of the project has been the moneylender. Self-help groups (SHGs) have mushroomed in the project areas and as their lending operations expand, the business of the moneylender has been shrinking.

### Strengthening of Local Institutions

The most intangible, but the most critical impact of the Food For Work programme, and one that holds the promise of sustainability, has been the strengthening of people's grass root level institutions; particularly the Gram Sabha and SHGs. As one young man in a village in Ranchi said: '*Earlier our village assembly used to meet only for settling disputes between families, or for religious purposes, but never to discuss development issues. Now we regularly meet to discuss what we should do for the progress of the village. Very often women outnumber men in the meetings.*'

A woman in Kalahandi district of Orissa said, '*Initially, few people would come to the project meetings; in fact meetings frequently had to be adjourned for lack of a quorum. Now that people are seeing the benefits of the programme, the attendance has swelled.*'

The lessons learnt by the village community in decision-making, handling, distributing and monitoring the food for work activity has had visible positive spin-offs on other programmes. The impact on improved functioning of the ICDS and schools, for example is in evidence in several villages. In a village in Koraput district in Orissa, the women say, '*the anganwadi worker used to come to the centre only once a week. Now since the OTELP (Orissa Tribal Empowerment and Livelihood Project) started, she has been coming regularly because she knows she is accountable to the Gram Sabha.*'

Women's SHGs have become vibrant vehicles of change. They are empowering women in many remarkable ways. For one, they are helping women to become financially sound through income generating activities. The enhanced availability of water as a result of FFW activities has enabled them to take up diverse income-generating projects. Some women have taken up vegetable cultivation; others are engaged in aquaculture. At the same time, SHGs have helped women develop confidence to challenge regressive social norms and attitudes.

Source: Srivastava, N. (2006).



In a more general sense, what can be said is that women's empowerment is directly related to improved food security. One key factor in empowerment can be the acquiring of land rights supplemented by access to training for new technologies, crops and finance.

#### 7.3.2.5 Scheduled Tribes

Another policy implication from the indicators used for enhancing food security is the betterment of the plight of the vulnerable populations, the Scheduled Tribes and Scheduled Castes. All the food insecure districts in Chhattisgarh are dominated by a higher proportion of Scheduled Tribes who form the most vulnerable section due to their location specificity and remoteness from facilities and amenities.

It will be observed that like most states, the tribal population in Chhattisgarh also has a close spatial correlation with the forests. These Scheduled Tribes, particularly the primitive tribal groups, have faced

#### **Box 7.6: The Forest Rights Act**

The Scheduled Tribes and Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 was promulgated towards the end of 2006 with a view to correcting the injustices done to the forest dwelling Scheduled Tribes. The Act recognizes and vests forest rights and occupation in forest land in forest-dwellers who have been residing in such forests for generations but whose rights could not be recorded. It also provides for recognition of forest rights of other traditional forest-dwellers provided they have primarily resided in and have depended on the forest or forest land for *bona fide* livelihood needs for at least three generations (25 years each) prior to 13 December 2005.

The Act has a number of significant provisions in the interest of the tribals and forest-dwellers. For the purpose of recognition of forest rights, the Act provides for a ceiling on occupation of forest land to the area under actual occupation not exceeding an area of four hectares. Importantly, no member of a forest-dwelling tribe or traditional forest-dwellers shall be evicted or removed from forest land under one's occupation until the recognition and verification process is completed. Besides, right of ownership-access to minor forest produce which has been traditionally collected within or outside village boundaries has been recognized. With implications on Rehabilitation and Resettlement (R&R) issues, the Act recognizes the right to *in-situ* rehabilitation, including alternative land in cases where the dwellers have been illegally evicted or displaced from forest land of any description without granting their legal entitlement to rehabilitation, prior to 13 December 2005. The Gram Sabhas have been designated as the competent authority for initiating the process of determining the nature and extent of individual or community forest rights (Government of India, 2007a).

The Act should go a long way in protecting the rights of the forest dwellers, particularly the tribal population and help in building up their livelihood, at the same time contributing in terms of conservation of forest resources. However, it has been criticized on a number of grounds. One, the Act requires the target population to live 'in' the forests, which could be interpreted in terms of areas 'recorded' as forests. This deems to exclude a vast majority of those forest-dwellers who live in areas recorded as revenue lands but cultivate forest lands and use forest resources. Secondly, investing Gram Sabhas with the power to decide the rights and grant permits may open the doors for corruption and abuse of power, as landownership rights are seldom documented in such areas. Importantly, the Act does not adequately answer how the vital balance between tribes and forest systems will be maintained. There are also concerns of the Act's impact on the Wildlife Protection Act, passed in the same year.

Despite these criticisms, the very fact that the intent is to provide landownership to the original inhabitants means that the equity issue gets addressed to a great extent. It is expected that the ownership will lead to better forest conservation and hence more environmental sustainability.



a history of discrimination, and due to their locational disadvantage, they have remained deprived of facilities. The Forest Rights Act seeks to address such groups (see Box 7.6).

The high level of forest areas in most food insecure districts shows the importance of a proper development policy for forest-dwellers. The Forest-Dwellers' Rights Act, granting tenurial security, in conjunction with the Panchayats (Extension To The Scheduled Areas) Act (PESA), and accepting the role of Gram Sabhas and Gram Panchayats in managing forest resources, should help in framing and implementing appropriate development policies in the food insecure forest areas of the state.

### **7.3.3 Enhancing Absorption**

Increasing the nutrient intake of the poor is not the end of the story of food security. It is also necessary that the body be able to utilize the increased intake of nutrients. This depends closely on complementary measures, such as access to safe drinking water and hygienic sanitation. These two inputs would substantially reduce exposure to water-borne and gastro-intestinal diseases, such as diarrhoea and cholera, which often destroy the benefits of food consumed. We discuss below measures to improve access to clean drinking water and promote hygiene and sanitation.

#### **7.3.3.1 Clean Drinking Water: Rural Water Supply**

##### **Accelerated Rural Water Supply Programme (ARWSP)**

The main objective of the ARWSP is to provide potable drinking water by way of installing tube wells, sanitary wells and piped water supply projects in rural areas. For implementation of Rural Water Supply Schemes, the Government of India provides funds under the ARWSP.

##### ***Swajaladhara:***

The Rural Drinking Water Supply Programme was launched in the State on 25 December 2002. The purpose of this scheme is to ensure community participation and to shift from a supply-driven to a demand-driven approach. The scheme envisages 10 per cent of the capital cost of the project to be borne by the community, along with the responsibility for the operation and maintenance of the water supply projects, and 90 per cent of the capital cost to be borne by the Central Government through the District Water Supply and Sanitation Mission.

##### ***Bharat Nirman: Rural Water Supply***

Rural water supply is one of the six components of Bharat Nirman.

The norms for coverage under Rural Drinking Water supply are:

1. 40 litres per capita per day of safe drinking water for human beings.
2. One hand pump or stand post for every 250 persons.





**Table 7.12: Total Habitations Covered Under Rural Drinking Water Supply under Bharat Nirman Programme in Chhattisgarh**

	2005-06	2006-07	2007-08
Target	4,000	4,800	3,714
Achievement	10,329	8,230	3,696

Source: Ministry of Rural Development, Government of India.

3. The water source should exist within 1.6 km in the plains and within 100 meters elevation in the hilly areas.

One factor in food absorption, besides the above-mentioned factors of improved water and health facilities, is that of nutritional practices. Nutritional practices here refer to those inputs (e.g. proteins or micro-nutrients) that are both available and accessible, but not consumed in desirable quantities; it also refers to behavioural practices (e.g. breastfeeding) that are not practiced as required. But as the widespread problem of under-nourishment in India shows, nutritional problems affect not just the category of those with severe problems of food security, but also those with reasonable levels of food security, in terms of their consumption of adequate food and sufficient nutrition. The Indian experience of the last 15 years shows that despite the reduction in the incidence of poverty, there may not be a corresponding improvement in the nutritional indicators of a large section of the population.

#### **Box 7.7: Innovative Schemes for Ensuring Nutritional Security**

The Department of Women and Child Development is the nodal agency for the formulation and execution of programmes directed towards the holistic development of women and children. The department also aims at implementing different social welfare schemes meant for persons with disabilities, the old, infirm and indigent persons. Within the purview of the Department, a number of innovative schemes are being executed under the larger aegis of the Integrated Child Development Services programme:

1. *Kishori Shakti Yojana*: The scheme aims at improving the nutritional, health and development status of adolescent girls (11-18 years), promote awareness of health, hygiene, nutrition and family care, link them to opportunities for learning life skills, going back to school, help them gain a better understanding of their social environment and take initiatives to become productive members of the society. The scheme is currently being executed in all the states of the country covering a total of 6118 blocks.
2. *Udisha*: In technical collaboration with UNICEF, the scheme envisages a spectrum of locally relevant training interventions for achieving development goals for women and children - rather than training only ICDS functionaries. It lays new emphasis on decentralized quality improvement processes, through state and district training plans of action, guided by inter-sectoral national/state training task forces.
3. *Swayamsiddha*: This is an integrated project for the empowerment and development of women based on the formation of women into Self Help Groups (SHGs) with emphasis on converging services, developing access to micro-credit and promoting micro-enterprises.





### Box 7.8: Meeting the Nutritional Needs of Vulnerable Groups

#### Infants and Young Children

According to the National Family Health Survey 3 (NFHS-3, 2005-06), in India 40.4 per cent and 44.9 per cent of children under 3 years of age are underweight and stunted, respectively. The prevalence of underweight and stunting continually increases up to the age group of 18-23 months. This indicates that there is need for improvement in complementary feeding practices, and in the quality of complementary foods fed to infants and young children. Besides the high rates of malnutrition, the infant mortality rate is also quite high at 57 per 1,000 live births.

During the first two years of life, significant cognitive development and physical growth occurs that requires adequate nutrition as well as good care practices. Damage that may occur at this early age is often irreversible and has lifetime consequences. Therefore, it is of critical importance that children receive proper nutrition in the first few years of life.

In order to address the prevalence of widespread malnutrition and the high infant mortality rate that impede human development, the United Nations World Food Programme (WFP) is developing a low-cost 'ready-to-use supplementary food' (RUSF). The main ingredients in the ready-to-eat food will be cereal, oil, sugar, pulse, peanut paste and milk powder. In addition, the ready-to-eat food will be fortified with an array of micronutrients and will be packaged in individual hygienic serving sachets.

The food will be rigorously tested in a laboratory to ensure that it is compliant with internationally accepted standards. Next, acceptability trials will be carried out to determine how suitable the product is for the targeted beneficiaries. Finally, pilot distribution of the RUSF will be through the Integrated Child Development Services (ICDS) to infants and young children aged 6-24 months living in Nabarangapur District, Orissa. During the pilot distribution, an efficacy study will be conducted to assess the impact on the growth and micronutrient status of children receiving the RUSF compared to children receiving other foods.

It is interesting to note that Vietnam in the period 1992-93 to 1997-98 had a similar experience: a sharp fall in poverty without a corresponding reduction in under-nourishment. This, however, changed in the period 1997-98 to 2003-04, when there were sharp declines in both poverty and under-nourishment. This, as argued in Vinod Mishra and Ranjan Ray (2007), was brought about by a combination of policy intervention through information campaigns to promote desired changes in dietary patterns, and direct nutrient enhancing programs. All this took place in a situation of increasing literacy and educational attainment, which would be expected to generally increase nutritional awareness.

India has programmes of providing nutrition supplements, eg. through ICDS programs of nutritional supplements. Adequate diversification of food to include superior calories such as proteins can be promoted through information campaigns along with providing supplements in processed foods, such as *atta*. Along with this, there is also scope for improving promoting improved nutritional practices, such as exclusive breast-feeding for the first six months, which has been reported to have a major impact in reducing infant mortality (Ejaz Kaiser, 2007) in Chhattisgarh.

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## 8. Conclusion: Towards a Food Secure Chhattisgarh

There are two ways in which one could go about addressing food insecurity, particularly in the context of meeting the MDG goals of reducing by half the incidence of child malnutrition, defined as children under five who are underweight. One could target those who are just below the international weight norm, and undertake special interventions to bring them up to the norm. In this manner the state could meet its MDG target of reducing by half the incidence of child malnutrition.

Another approach would be to target the most severely under-nourished populations, both by region and by social, including gender characteristics. This would be amply justified on moral grounds – that those who are the most deprived should receive the most attention in any use of public money. It would also be justified on economic grounds – that at the lowest levels of nourishment, the very ability to work of adults, and the ability of children to learn are most adversely affected. An improvement in nutritional status would increase the productivity of working adults (or working persons, given that children also work), thus yielding an immediate economic benefit. An improvement in the nutritional status of school-going children would increase their learning capacity and thus be an investment in the future. Finally, an improvement in the nutritional status of the most undernourished mothers is a gain not only for them but would also have inter-generational benefits in reducing the incidence of low-weight births.

The analysis in this report shows that ensuring food security and improving the nutritional status is a challenge for the state as a whole. The identification of certain districts for priority action does not mean that either resources or efforts to bring up all districts can slacken; but only draws attention to the need for more inclusive growth efforts and the special efforts needed to bridge the divides between different regions and districts of the state. In general, the districts of Chhattisgarh fare poorly on nutritional outcomes, with only the more urbanized and industrialized districts doing better.

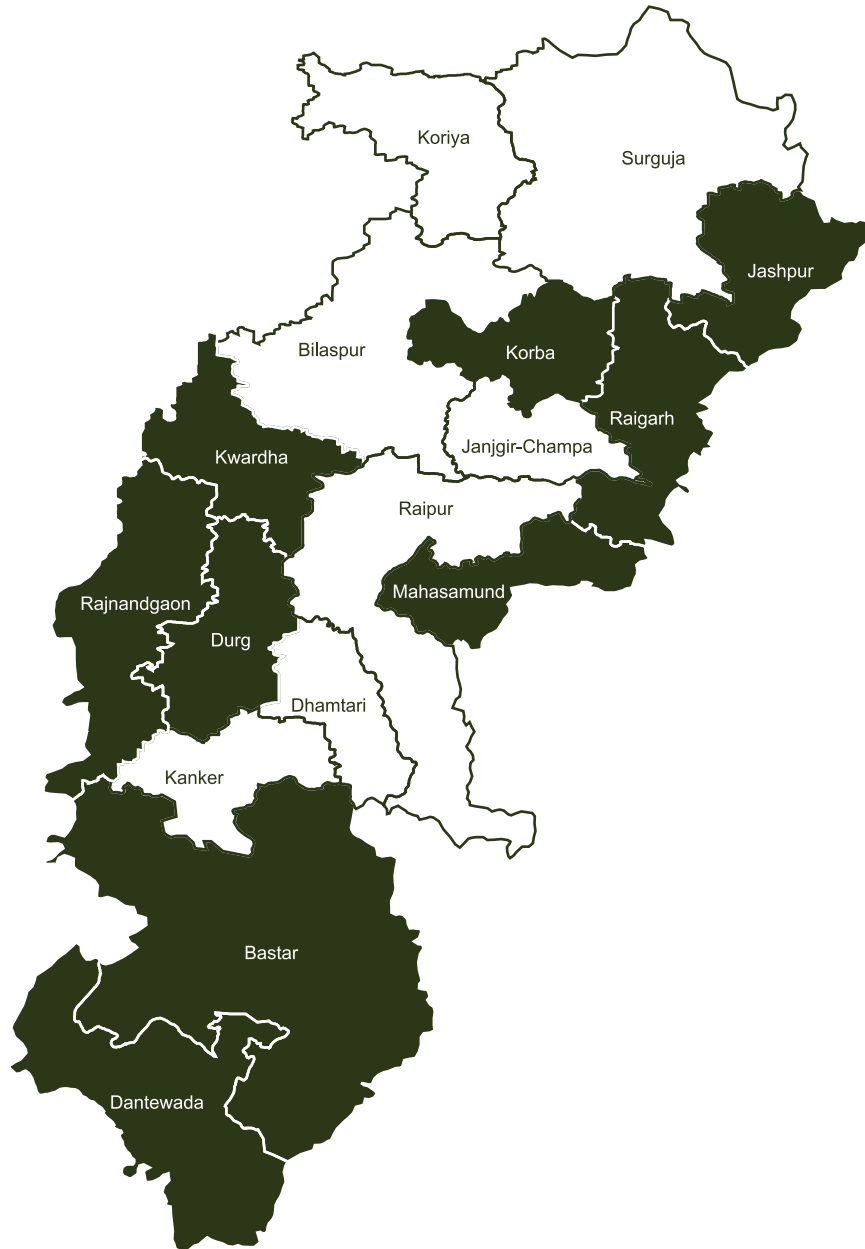
The analysis of this report has yielded the following districts as requiring special attention for food security interventions in Chhattisgarh:

**Table 8.1: Priority Districts for Intervention**

District	FSOI Rank	FSI Rank
<b>Southern (Bastar) Plateau</b>		
Dantewada	15	12
Bastar	11	14
<b>Northern Region</b>		
Korba	13	15
Jashpur	12	10
Raigarh	9	7
Koriya	2	13
Surguja	3	16
<b>Central Plains</b>		
Rajnandgaon	14	4
Kwardha	16	9
Mahasamund	8	8



**Map 8.1: Districts Identified for Priority Intervention in Chhattisgarh**





There are two districts that fare somewhat differently in the FSO and FSI indices. Koriya does poorly in the latter (ranking 13), but well in the former (ranking 2); while Durg does well in the FSI (ranking 1) and poorly in the FSO (ranking 10). Durg is a highly urbanized district, also with a high level of irrigation – for these reasons we have not retained Durg in the list of priority districts. On the other hand, Koriya is part of the Northern Plateau, is very low in urbanization and irrigation – so we have included Koriya in the list of priority districts.

In addition to the above districts, it is necessary to pay attention to special programmes for the so-called primitive tribal groups, such as Pahari Korwa, Kamar, Baiga and Birhor. They are small in numbers, but face the most extreme deprivations.

## Linking Food Programmes and Development

How can food-based schemes be linked with development? In the case of the Mid-Day Meals scheme in schools there is already a link with development. Improved school attendance is of benefit to the individual and her household in terms of an increase in potential future earnings. A reduction in illiteracy also provides a social benefit to the village or relevant area, as the quality of the workforce goes up and the health and hygiene behaviour of the villagers improves causing improvement in absorption of food. Improved school attendance is also beneficial in enabling migration to better urban livelihoods than would be open to illiterates. But these and other economic benefits of education are only manifested at higher educational levels. In order to promote high school education, a scheme to provide stipends for high school education should be considered.

At very low levels of nutrition, any improvement in nutrition would increase the productivity of the individual. With regard to mothers there is the substantial future benefit of reducing the incidence of low birth weight babies. For those with severe malnutrition supplementary feeding programmes have a considerable role in improving production capabilities.

But, as mentioned above, the implementation of such programmes, including issues of reaching those with severe malnutrition, depends very much on the demand from the affected persons for these services. In the absence of such demand from the most malnourished, the benefits of such programmes are very likely to be captured by the better-off in the village. Decentralization of the implementation of programmes has to be combined with enhancing the voice of the malnourished in order for the benefits to reach the desired persons. Chhattisgarh has some innovative schemes (the now nationally adopted *mithanin* scheme) for village-level monitoring of implementation of government schemes.

Securing the “Right to Food” is very much a matter of mobilizing the concerned persons to secure their rights. The RTI provides a means that can be used to reveal corruption at different levels. But what is important is the mobilization and organization of the poor or food insecure themselves. Their voice is necessary to make the ending of hunger a part of the political platforms of various parties



and civil society organizations, NGOs and Community-Based Organizations (CBOs), including traditional tribal organizations.

Food-based and wage programmes can themselves be planned to improve infrastructure to provide needed public goods (roads), or quasi-public goods (irrigation) for the area. As seen earlier, improved access to roads and irrigation are two areas in which the state considerably lags behind the country. Chhattisgarh's irrigated area is 23 per cent, far below the national average of 40 per cent. Further, this irrigation is largely concentrated in the Central Plains. In districts such as Dantewada and Bastar, net irrigated area is as low as 1.7 and 1.98 per cent, and is in single digits in the other districts of the Northern and Southern Plateaus. Rural connectivity is generally poor in the Northern and Southern regions, but better in the South than in the North, possibly due to the security problems in the South.

The importance of expanding irrigation and rural connectivity can be seen in that in the neighbouring state of Jharkhand with similar agro-ecological conditions, adding a unit of land under irrigation increases per capita consumption expenditure by 17 per cent, while all-weather road access conditions increase per capita consumption expenditure by 18 per cent. Direct access to wholesale markets can increase consumption by as much as 40 per cent. (All figures from World Bank, 2007). What this last point shows is that access to roads can also shorten the chain of intermediaries and substantially increase the income of small producers.

NREGA and other food for work schemes can be channelized to improve both of these key areas of village road connectivity and small-scale irrigation. Village approach roads to main roads, and small irrigation schemes (e.g. check dams in valleys, or moisture retention works on sloping lands) can both increase economic opportunities and productivity. Improved roads would also provide better access to both health and educational facilities. Improved roads, including the building of culverts, have a clear impact in improving girls' attendance at school. Post-primary schooling often involves some travel outside the village, and boys seem to be able to overcome communication problems in attending school; but good roads increase girls' attendance at school.

The linking of food schemes with infrastructure works for development, however, can be a two-fold process. The manner of implementation of standard infrastructure schemes by line departments can also be changed so that the benefiting communities are involved in the implementation of these works. Involving SHGs as contractors of small schemes (minor irrigation, school buildings, approach roads) has been found to result in substantial income benefits for the concerned village. There can also be an improvement in quality, as the beneficiaries are themselves the implementers of the construction works. Construction with local labour through SHGs, will provide substantial income from the implementation of small infrastructure works, besides increasing the knowledge and management capabilities of the communities.

The implementation of infrastructure and related schemes (school feeding) through the community could be expected to provide additional income, particularly in lean periods. Some of it could be used



to carry out investments on private lands. Investments in higher-value tree crops (e.g. coffee and pepper, or cashew, pineapples, turmeric, etc.) have been seen to provide substantially higher incomes, in combination with traditional swidden cultivation. But such investments, unlike seasonal swidden crops, are medium- term investments. Households require security to tenure in order to undertake such investments. The recently-passed Forest Dwellers' Rights Act, could provide some security of tenure for these lands.

Forest-based populations are dependent on sale of Non-Timber Forest Products (NTFP) to supplement agriculture. But the returns from NTFP sales are very low. They could be increased both by shortening the chain of intermediaries and by small producers moving up the value chain into forms of processing. The prices of processed materials are both higher and more stable than those of raw materials. Such a transition to shortening the chain of intermediaries and into processing requires forms of facilitation by NGOs and/or CBOS, along with concerned corporations. At the same time, sustained higher production of NTFP also needs domestication and cultivation of the plants, which again would only be possible with security of tenure. Security of tenure for agricultural (for cultivation) and forest lands (for gathering of tree products) for individual and communities needs to be combined with community-based forest management (CBFM) in order to harmonize production with environmental protection.

As mentioned earlier, access to markets will enable producers to utilize the scope for more intensive production, rather than the extensive methods that they are currently engaged in, but will require changes in technology, organization and management and overall capabilities.

While security of tenure and improved access would allow an increase in investments on land and thus higher incomes, complementary steps need to be taken to enhance women's agency in the household and community. The districts of Chhattisgarh that are poor in food security are also very low in adult female literacy, reflecting a low level of agency of women. Besides literacy and education, there is also the matter of women's land rights. Among the food insecure women have high labour force participation rights, but they do not have ownership rights over the lands on which they work. Women's ownership of land could have a double effect. It could lead to greater productivity and investment by women in land improvement. By enhancing their standing in the household, it could also pave the way for women to have more of a say in the disposition of household income – away from wasteful areas (e.g. alcohol and cigarette consumption) towards more expenditure on food.

Rural finance in Chhattisgarh is almost entirely based on money-lending and is very exploitative. The extension of micro-finance, through SHGs supported by NGOs, could help reduce the incidence of inter-linked transactions, which result in very low net income. Micro-finance could improve the food security situation by enabling borrowing for critical needs. It would also be of benefit in improving the share of household income under the control of women.

Improvements in rural connectivity can improve the terms of access to markets. Security of tenure creates conditions favourable for investment to enhance production or to take up new forms of



cultivation. But bringing about changes in production systems also requires an enhancement of capabilities of both women and men. Enhancing capabilities, through rights, access to resources and training will open the road for building capacity to aspire – the aspirations for a better life exist, but the means or capacity to realize those aspirations is lacking.

Improved communication will also enable rural producers to produce for the wider market, whether regional, national or global. In a relatively open economy, there need not be a sole reliance on agriculture as the engine of rural growth. Non-agricultural production for wider markets is also an option. But along with better communications this also requires a more-educated workforce. A higher level of education would both enable producers to take up opportunities available through connections with the wider economy and also improve the types of jobs they can try to get on migrating. As we have seen earlier, consumption in the better-off districts is likely related to income from non-farm development and to migrants' remittances. This is not to deny the importance of increasing farm productivity in the food insecure districts, but to point out that options are not limited to agricultural development.

In the Central Plains of Chhattisgarh, there is a large proportion of Scheduled Castes who are also often landless. Along with the allotment of agricultural land to these landless, there are also other land-related issues that need to be tackled to improve food security. One is that of security of tenure in presently government-owned forest land. This, as mentioned above, is being tackled by the Forest Dwellers' Rights Act. The other question is that of the restitution of illegally-acquired tribal lands. All of these land reform measures would greatly enhance food access of the poorest households, without reducing, in fact, even increasing food production in the process.

Given women's general responsibility for food security in rural areas of developing countries, and given the pervasive gender bias in these societies, the enhancement of agency of the poor, translates particularly into the enhancement of the agency of poor women. Consequently, food security approaches increasingly pay attention to the elimination of gender inequality and women's empowerment as important preconditions. Increased adoption of improved nutritional practices, such as exclusive breast-feeding of infants till six months, also depend on increasing women's capabilities.

Agency of poor women, or of the poor as a whole, is not only a matter of individual agency (which itself might be dependent on collective mobilization) but also of the poor putting their stamp on economic policies. This is necessary in order to bring about the much-needed political will that is often referred to as what is missing in order to bring about adequate attention to food security policies. Without adequate political pressure for reform, proper food security policies are unlikely to be adopted. When at a country level when there are adequate supplies of food to ensure food security for all, why are such policies not implemented? There can be no question that the political mobilization of the poor, through a combination of community-based and civil society organizations, is required for such a food security policy to be adopted and implemented.



Chhattisgarh with its high share of mineral-based industrialization has a specific requirement – that of designing policies for industrialization that do not increase the number of the displaced refugees, but enable them to secure improved livelihoods in the course of industrialization. This can be done by linking mineral-based industrialization with labour-intensive industrialization (e.g. textiles and garments), which can absorb the poorly educated labour that is likely to be displaced by mineral-based industrialization. This would reduce the pressure of destitution and improve rural conditions too. There is an inevitable connection (through reduction in population pressure and increased remittances) between increased absorption in industries and mines and the improvement of food security conditions in rural areas.

Whether or not the goal of improved food security in Chhattisgarh is met in the short-term depends to a great extent on improving the functioning and implementation of various schemes and interventions. It is through these schemes, including the implementation of the Right to Work in the form of NREGA, that the Right to Food is currently realized. Strengthening the reach and scope of such schemes will contribute to improving food security in the state.

Improvement in the implementation of these schemes depends, at one level, on improvement in administration and governance systems. But more important is the role of the people who are to benefit from the schemes, whether organized through CBOs, NGOs or traditional tribal bodies. Only they can insist on and ensure the adequate implementation of these schemes. Framing adequate policies is only the first step. Only with the assertion of their democratic rights by the people themselves can the policies be effectively implemented.

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# Appendix I: The Right to Food

Along with the change in understanding of the meaning of food security, there has been much discussion on whether there is a right to food. The kind of economic growth that the world has been undergoing has been seen to not automatically 'trickle down' in benefits to all. Even a reasonably high rate of growth, like India's 6per cent or so over the period 1995-2004, has been seen to not bring about a commensurate reduction in the proportion of those who are undernourished. The existence or acceptance of a right to food would make the exertion of pressure to adopt and implement a policy that secures this right more likely. But is there a right to food?

The right to food or 'freedom from hunger' figures in the Universal Declaration of Human Rights (1948). Subsequently the UN General Assembly adopted two covenants in 1966, one on Civil and Political Rights and the other on Economic, Social and Cultural Rights. Besides these covenants, the Convention on the Rights of the Child and the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) both considerably strengthened the place of the right to food and adequate nutrition in international law on human rights.

A two-fold distinction is often made between the civil and political rights, on the one hand, and economic, social and cultural rights, on the other (Eide 1999). The first set is said to be 'absolute', and 'immediate', while the second set is considered something relative and to be realized gradually, over time. In a sense this distinction coincides with the Indian constitution's distinction between its 'core' provisions, which are to be realized immediately, and its 'Directive Principles of State Policy', which are programmatic and to be realized over time.

It can well be argued that the civil and political rights are also something that can only be realized over time. Merely putting them into the statute books does not result in their being realized. On the other side, if civil and political rights are held to be the foundation of democracy, one can as well argue that economic and social rights are equally important to democracy. Without economic rights, and not just the right to property, political democracy itself would be a mere shell. The realization of political and economic rights is inter-twined and one set does not have any *a priori* precedence over the other.

A related distinction is between rights that are respected through non-interference and those that require resources to be realized. The first is like the freedom of religion, or of association, while the right to food would require resources to be realized. Jean Zigler, the UN Special Rapporteur on the Right to Food, questioned the whole distinction between those freedoms that require resources to be realized and those freedoms that do not. The whole machinery of the state, of administration, police, courts, etc. all need to set up, and involve costs, to enable citizens to realize the freedom to religion, or freedom of association, and associated rights. *'Even implementing civil and political rights does in fact imply resources. The cost of setting up and training the police force, military and judiciary to implement international human rights law is not insignificant.'* (Jean Zigler, 2002, quoted in FAO, WFS-fyl, Focus on Issues, What is the right to food? [www.fao.org](http://www.fao.org))

Thus, rights require state action with regard to the obligations to respect, protect and fulfil them.(Shue, 1980 in Gaiha 2003), which require setting up of administrative, police, and judicial structures to enable



rights to be realized. Consequently all rights have a cost in their being realized. And the costs of the right to food may not be as much as they seem, since it is only in certain circumstances that it involves state provision of food (Gaiha, 2003, 4270).

What the acceptance of the right to food does is to focus attention on the necessity of economic and social policy paying attention to the poorest and most marginal. It also takes the debate on rights inside the 'private sphere' to raise the question of women's rights in assuring food to themselves and their children and families. 'The "right to adequate food" may be as much a question of the full realization of the rights of women as of ensuring a bundle of nutrients handed over through food supplement schemes.' (Asbjorn Eide, 1999, 'The right to adequate food and to be free from hunger,' Study on the Right to Food submitted to the ECOSOC, Commission on Human Rights, 28 June, United Nations, New York, ([www.unhchr.ch](http://www.unhchr.ch)))

## Right to Food in India

Earlier, we looked at the status of the right to food and its embodiment in various international covenants. Food policies, however, are critically formulated and implemented at the level of the national state. It is, perhaps, only in the case of 'failed states' that the international covenants can themselves be the basis for action by international agencies. For the most part, and certainly in India, it is through the national state that actions on the right to food are carried out. Of course, this does not mean that some actions cannot be carried out at the international level, as, for instance, by groups representing women or indigenous peoples taking their case for redressal of grievances to their respective international forums in the manner that trade unions also take their case to the ILO.

The establishment of a 'right to food' in India was substantially carried forward by the April 2001 petition of the People's Union for Civil Liberties (PUCL), Rajasthan, (PUCL vs Union of India and Others, Writ Petition (Civil) 196 of 2001) and the orders of the Supreme Court of India in response to this and subsequent petitions. In the context of the then-prevailing drought in Rajasthan, the argument of the PUCL<sup>1</sup> was simple – that Article 21 of the Constitution of India guarantees the 'right to life' and imposes on the state the duty to protect this right to life. In elaborating the right to life, the Supreme Court in past decisions had held that this right also includes the right to live with dignity and all that goes to make this up, including the right to food.

The petition argued that in the context of the drought in Rajasthan, the actions or inactions of the Governments of India and of the State of Rajasthan, constituted a violation of this right to food and, thus, of the right to life. Specifically, the violation of the right to food was seen in two aspects. First, was the failure of the Public Distribution System (PDS), in terms of the exclusion of various Below Poverty Line (BPL) households from its scope. Second, was the inadequacy of the quantities delivered through the PDS as the monthly quota could not meet the household's nutritional standards set by the Indian Council of Medical Research (ICMR).

1. This account of the PUCL's petition and related matters is based on *Legal Action for the Right to Food: Supreme Court Orders and Related Documents*, January 2004, downloaded from [www.righttofood.org](http://www.righttofood.org) now replaced by the website [www.righttofoodindia.org](http://www.righttofoodindia.org).



The PUCL petition also pointed to the inadequacy of government relief works in the Rajasthan drought condition. Thus, it linked the right to access relief works in a drought condition as part of the meaning of the right to food. As the Supreme Court pointed out in a later order, while agreeing with the High-Level Committee on Long-Term Grain Policy (Abhijit Sen Committee), employment generation should be distinct from food delivery: 'This should not, however, undermine the importance of employment and income generation in eliminating hunger and malnutrition' (Supreme Court Order of 2 May 2003).

The different orders of the Supreme Court:

- Established a Constitutional basis for the right to food in terms of the right to life;
- Drew attention to the serious plight of the aged, destitute, etc;
- Stated that where the hungry are not able to buy grain, even at the subsidized price, the relevant governments should consider giving them the grain free;
- Pointed out that 'Plenty of food is available, but distribution of the same amongst the very poor and destitute is scarce and non-existent leading to mal-nourishment, starvation and other related problems';
- Identified the various schemes to operationalize the right to food;
- Changed the status of those who received food or income through these schemes from 'beneficiaries' to 'rights-holders';
- Made the Government of India and the State Governments responsible for securing the right to food through these schemes;
- Placed responsibility on specified government officials (Chief Secretary of the State Governments, District Magistrates) as being answerable for the implementation of the schemes that concretize the right to food, and thus being accountable for failures, like starvation deaths; and
- Established Food Commissioners who would report on and monitor implementation of schemes constituting the right to food.

At the level of rights this is a reasonably comprehensive scheme with rights, ways of achieving them, responsibilities for achieving them, all fairly well specified. Given the fact that there is a clear perpetuation of both endemic starvation and frequent bouts of acute starvation, it is necessary to see how to link food security measures with development. Rights are critical in establishing the obligation of the state to provide a means of realizing those rights. But the measures that realize the right to food also need to be connected and contribute to development objectives, such as to improve productive capacities of small and marginal farmers, increase employment opportunities for agricultural labour, and empower women so as to increase the access to food through their normal economic activities. Measures relating to the above have all been discussed in various sections of this report. They need to be drawn together into a comprehensive package.

## Appendix II: Food Security Index (FSI) - A Methodological Note

### Appendix II: Food Security Index (FSI) – A Methodological Note

At the outset we must state that the Food Security Index is calculated for rural areas only. All variables constructed in this section are for rural areas, unless otherwise specified.

Here we have attempted to construct a Food Security Index (FSI) at the sub-state level, that is, the district level. The district having a higher index value is considered as relatively more food secure as compared to a district with a lower index value.

Broadly, we have adopted Max-Min (range equalization method, REM) approach, adopted by UNDP (HDR 2005); and Principal Component Analysis (PCA). One of the objectives of the district FSI is to show the district's position in various dimensions of food security.

The FSI is a composite index covering three dimensions, i.e., Availability factors, Access factors, and Absorption factors. Besides these three groups of factors, an additional component i.e. public entitlement has been used to explain how this influences food security. But the public entitlement factor is not included in the indices of food security. The public entitlement policy is based on various parameters which are supposed to be directly linked with food insecurity; the lower the level of food security, the greater should be public intervention. In such a scenario, the direction of public interventions should run counter to the FSI, though it need not be so.

For each of the dimensions, as discussed earlier, some relevant variables have been chosen.

**Table A 2.1: Choice of Indicators, Sources, Reference Year and Calculating Procedure in Chhattisgarh**

Name of Variable and Description	Sources	Reference Year
<b>(a) Availability</b>		
1. Proportion of net irrigated area to net sown area	<a href="http://chhattisgarh.nic.in/download/agri.pdf">http://chhattisgarh.nic.in/download/agri.pdf</a>	30 June 2005
2. Per capita value of agricultural output In order to take account of the cyclical nature of agricultural production the variable uses an average of three to five years depending on the availability of data. The value of each food and non-food items is derived by multiplying the amount of production with its price obtained from all-India prices of these items at constant 1993-94 prices. Adding the value of each and every food and non-food items, gives the overall value of agricultural output for a year. The per capita value of agricultural output is calculated by dividing the average value of agricultural output by total population in the midpoint year.	<a href="http://agrdept.cg.gov.in">http://agrdept.cg.gov.in</a>	2001-02 to 2003-04
3. Percentage of inhabited villages having access to paved road.	Census of India, 2001	2001





Name of Variable and Description	Sources	Ref. Year
This is calculated as a share of total number of villages in the district		
4. Percentage of forest area to total geographical Area	<a href="http://chhattisgarh.nic.in/download/agri.pdf">http://chhattisgarh.nic.in/download/agri.pdf</a>	30 June 2005
<b>(b) Access</b>		
1. Percentage of agricultural labour to total workers. Agricultural labour comprises both main and marginal workers*	Census of India 2001	2001
2. Proportion of ST and SC population to total population*	Census of India, 2001	2001
3. Dependency ratio This is calculated as rural population in the age group (15-59) divided by the sum of (0-14) child population and 59+ population.	Census of India 2001	2001
4. Per capita monthly consumption expenditure (inequality adjusted) The formula for inequality adjusted monthly per capita consumption expenditure (MPCE) is: $MPCE \times (1 - Gini)$ .	61 <sup>st</sup> NSS round	2004-05
5. Rural casual wage rate This is calculated as average daily wage rate for the age group 15-59	61 <sup>st</sup> NSS round	2004-05
6. Women's literacy rate (7+) Total female literate as a proportion of total female population for the 7 years and above.	Census of India 2001	2001
<b>(c) Utilization</b>		
1. Percentage of households having access to safe drinking water. Here rural households with access to three sources of drinking water, such as tube well, tap and hand pump have been considered.	Census of India 2001	2001
2. Percentage of inhabited villages having access to PHC (PHC facility within the village or within 5 km from the villages)	Census of India, 2001	2001
<b>(d) Public Entitlement</b>		
1. Percentage of ICDS beneficiaries to total project population Here we have taken only the SNP (supplementary nutrition programme) beneficiaries. To find out the value of this variable we have divided the SNP beneficiaries (pregnant and lactating women and child (0-6) age group) by total population covered by the project.	Directorate of Women & Child Welfare, Government of Chhattisgarh	March 2007

\*The direction of these variables has been reversed to have a positive association with food security.





## Max-Min Approach

Using the Max-Min approach an index has been constructed for each variable. This is calculated by applying the following general Range Equalization Method (REM) formula adopted by the UNDP:

$$\text{Variable Index} = \frac{(X_i - \text{min } X)}{(\text{Max } X - \text{Min } X)}$$

where  $X_i$ - Value of the variable

min  $X$ - Minimum value of  $X$  in the scaling

max  $X$ - Maximum value of  $X$  in the scaling

In undertaking the scaling procedure, desirable norms have been adopted for each indicator. In some cases, the scaling of indicators is self-selecting, and for some others there is an element of value judgment.

## Construction of Food Security Index

Different indicators included in the three components of the FSI have been scaled and normalized (to make them unidirectional) to take a value on a scale ranging from 0 to 1. The scaled least achievement corresponds to zero, whereas the best achievement corresponds to 1. For three selected variables, viz., percentage of agricultural labour to all labour and proportion of ST and SC population and percentage of forest area to total geographical area, we have used the reverse figure (per cent of non-agricultural labour to total workers; per cent of non-ST & SC to total population; and per cent of non-forest area to total area). Likewise, the variable dependency ratio has also been reversed.

After calculating the index of each variable, we have averaged them to give each of the three dimensions of food security. The composite Food Security Index is again derived by averaging all the selected indicators.

## Principal Component Analysis (PCA)

The PCA is a data reduction technique. Sometimes there is a high correlation between variables. In such cases, it is useful to transform the original data set into a new set of uncorrelated variables called principal components. It is quite likely that the first few components account for most of the variability in the original data set. The PCA can be applied either to the original values of variables or to the normalized values of the variables. In general, normalization can be done by three methods, i.e., by deviation of the variables from their respective means (i.e.,  $X - \bar{X}$ ); by dividing the actual values by their respective means (i.e.,  $X / \bar{X}$ ) and by the deviation of the value of a variable from the mean



which is then divided by standard deviation (i.e.,  $(X - \bar{X})/\sigma$ ). We have applied the second method. The basic objective of using PCA is to find the factor loading of each and every variable. Factor loading gives us the amount of total variation explained by a particular variable.

We have used PCA in the Food Security Index for those states where the correlation between indices derived through the RE method and PCA method is highly correlated.

### **Food Security Outcome (FSO)**

To crosscheck the validity of the Food Security Index for the three AAA (Availability, Access and Absorption) components, we have used the Food Security Outcome (FSO) index. The nutritional status of an individual can be considered as the outcome of food security. Though intake of food is not the only factor that affects nutritional status, it is definitely the prime one. The outcome index calculated here is based on two child-related variables: child mortality rate (CMR) and child malnutrition (weight for age -2SD). Child malnutrition - 2SD includes children who are below -3SD from the International Reference Population median. The district-wise figure relating to the above two variables are taken from the Reproductive and Child Health (RCH) 2002 Survey.

The food security outcome (FSO) against which the input variables are considered here as explanatory indicators should ideally be a composition of morbidity, mortality and under-nutrition among the entire rural population, which includes adults. However, due to inadequacy of data on adults, especially at the district-level, we have resorted to using the child-related variables to construct the FSO. In order to validate the use of this, we have undertaken a simple correlation exercise at the state level between the Body Mass Index (BMI) for adults and the FSO.

The State-level Body Mass Index for men and women has been used from NFHS III. The NFHS calculates BMI as weight in kilograms divided by the square of height in meters and the resulting value is again divided by the number of men/women in the 15–49 age group. Here we have taken the number of men and women with BMI below 17.0 which tells us the number of men /women moderately and severely thin. The composite adult BMI has been calculated by aggregation of BMI for men and women using the population share of men and women in the sample as weights.

We have calculated the state-level Food Security Outcome index (for 29 states) from DLHS and NFHS child-related variables (the same two variables taken for the district-level FSO). We have adopted the RE method for finding out the state-level FSO. The correlation among the DLHS and NFHS child-related indicators as well as NFHS-based BMI adult indicators shows a very high correlation across 29 states, thereby justifying the use of the child FSO as the outcome measure. However, it can be argued that inter-district variations within different states can be quite dissimilar.



## Grouping of Districts

For each variable, component and index, districts have been divided into five classes: Secure to Moderately Secure, Moderately Insecure, Severely Insecure and Extremely Insecure. The method used for making class intervals is the 'equal intervals' method, i.e. the difference between all upper and lower class intervals for an indicator is the same. This method takes into account the range of the indicator's values and divides the range into five equal classes. The number of districts in different classes can be different.

The **Food Security Atlas of Rural Chhattisgarh** is one of a series of eight Atlases produced by the Institute for Human Development (IHD) and the UN World Food Programme (WFP). The other states covered in this series are: Jharkhand, Orissa, Madhya Pradesh, Maharashtra, Rajasthan, Bihar and Uttar Pradesh. The Atlases carry out a district-level analysis of food security for each of these states.

The purpose of the Atlas is to identify regions and districts within the state that require priority attention in order to improve their food security status. This is followed by an identification of the characteristics that differentiate the better-off from the worse-off districts. These characteristics of food insecure regions and districts are used to put forward a set of recommended interventions that could be expected to improve food security.

It is hoped that the Atlas will stimulate further analysis, action and advocacy for reducing the incidence of hunger.



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