

STUDY ON COST DISABILITY IN TSP AREAS OF CHHATTISGARH, JHARKHAND AND ODISHA

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Foreword

The Report on Cost Disability in TSP areas examines factors that are endowed to the state which are beyond its control but it influences on the administrative performance and governance outcomes. These factors are exogenous in character and a state has less or no control over it. These factors create cost disability in extending required facility and services. The TSP areas with high forest coverage and inaccessible pockets create development disadvantage and adversely impact upon providing public services. While it becomes an obligation for the state to nurture and maintain certain endowed and exogenous factors, it impacts on the state financially and overall cost of providing services. Such a situation crates development disadvantage for the state and promote regional development disparity. The expected output per unit of investment also remains low in comparison to other regions that are not disadvantageous in the same sense.

Coupled with public service delivery, cost of infrastructure development also increases substantially due to prolonged duration of projects, higher transportation cost of materials, engagement of manual labour force etc. It can be argued that the additional cost incurred due to endowment factors and maintaining the constitutional and legal obligations could have been less in plain areas in comparison to topographically disadvantaged areas. Regional disparity and underdevelopment of specific regions in a state is primarily due to endowment factors. Inaccessibility coupled with Left Wing Extremism contributes immensely for the underdevelopment of many tribal dominated districts LWE affected states in the country. From time to time states propose to compensate for these factors with additional allocation of resources to come out of these disabilities. According to 14th Finance Commission, a majority of the states favoured retaining area as an indicator in the devolution formula.

The overall objective of this study is to develop understanding on cost disability linked to development disability, factors of cost escalation and its impact on eastern states of India to promote inclusive growth. The study attempted to explore the endowment effect on development / underdevelopment of tribal dominated districts. The study looks at aspects like endowment factors, development disadvantage due to Acts / Policies; unit cost of providing public services in different topographical regions and allied factors of cost disability.

This report aims to help decision makers and other development actors for making appropriate allocation of resources, taking the factors of cost disability in to account and ensure measures that are required for appropriate growth in the tribal regions. I take this opportunity to recommend to conduct similar studies in a scientific manner to understand the ecosystem services and factors of cost disability in other TSP areas of the country.

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Executive Summary

Different endowment factors affect development process and creates development disadvantage. Cost disability is primarily occurring due to exogenous factors. The states that have high percentage of hilly areas and states with high forest area coverage and inaccessible pockets creates development disadvantage which gives rise to regional disparity in development. Inaccessibility coupled with LWE activities contributes immensely for the underdevelopment of many tribal dominated districts. Sizeable proportions of these districts are covered with forest.

The overall objective of this study was to understand the factors that cause cost disability which ultimately results with development disability. The study attempted to develop understanding on the endowment effect (geographical factor like forest coverage) on development / underdevelopment of TSP areas in three study states, namely Chhattisgarh, Jharkhand and Odisha. To understand the cost disability and associated factors, the study approach was exploratory in nature based on empirical evidences and with reference to primary and secondary data. The study by its design was “observational” and “cross sectional” in nature. The overall methodology of the study was based on collection and analysis of available primary and secondary information related to various services / developmental activities and comparative analysis of different development measures taken up in hilly forest and plain areas.

Three states of eastern India were covered in the study, i.e., Jharkhand, Chhattisgarh and Odisha. These states were finalized based on forest area to the geographical area and tribal population in these states. The field study covered 4 districts in each state. To understand the cost disability factors in a comparative manner, both scheduled and non-scheduled districts with high and low forest covered area were selected from all the study states. Different structured and semi-structured schedules / checklists were developed to capture required data / information from different sources. The study instruments that were designed and administered are (1) structured schedule for government departments, (2) structured schedule for contractors, (3) semi-structured FGD checklist for community level discussion and (4) semi-structured observational checklist.

The allocation made by the states to TSP is above the population percentage of tribal to total population of the state. But percentage of expenditure to allocation remains to be around 76 percent in Chhattisgarh and Jharkhand whereas expenditure of TSP fund is about 90 percent in

Odisha during 2011-12. Expenditure to allocation percentage observed increased in Chhattisgarh and Jharkhand during 2012-13 but it was reduced in Odisha during the year.

Compound Annual Growth Rate in flow of funds under Article 275 (1) found to be 0.85 in Chhattisgarh, 0.97 in Jharkhand and 1.55 in Odisha in between 2002-03 to 2014-15. The compound annual growth rate under SCA to TSP, in between 2002-03 to 2014-15, found to be 1.68 in Chhattisgarh, 1.38 in Jharkhand and 1.21 in Odisha.

The correlation of educational factors with other indicators show that the Monthly Per Capita Expenditure (MPCE) in rural is having a negative correlation with ST population percentage and forest coverage. Similarly, Total Literacy Rate reflects a negative correlation with ST population percentage and Forest cover percentage. The key educational indicators like Net Enrolment Ratio and Gross Enrolment Ratio at Primary and Upper Primary Level are not having a correlation with ST population percentage or geographical area under forest cover. More or less similar trend is observed in Chhattisgarh but Net Enrolment Ratio in Upper Primary Level (UP) is negatively correlated with ST population percentage. It can be inferred from the correlation matrix that education has less bearing with tribal population than economic condition. However, total literacy rate found negatively correlated with forest coverage in Odisha and Chhattisgarh whereas no such correlation is observed in Jharkhand.

In Chhattisgarh, ST population is negatively correlated with different facilities and services like mobile phone, common service centre, black top road, all-weather road, availability of Anganwadi Centre and availability of bus service (public and private). Mobile phone coverage and black top road is also negatively correlated with forest area percentage to total geographical area. In Odisha, coverage of ST population percentage with mobile phones and common service centre is negatively correlated. Forest area is also negatively correlated with mobile phone services and availability Anganwadi Centre. So, it can be inferred that forest area in both Chhattisgarh and Odisha are having less accessibility to certain facilities and services than Jharkhand. Secondly, districts with high tribal proportion to total population are also having less accessibility to certain facilities and services.

The study finds that monthly per capita expenditure of families in rural areas is negatively correlated with ST population in all the study states. But in Odisha, along with ST population, it

is also negatively correlated with forest area. The rural poor percentage is having a positive correlation with STs and forest area in Odisha and Chhattisgarh whereas it is only correlated with ST population in Jharkhand. Forest has less bearing on economic indicators in Jharkhand whereas, it has significant importance in Odisha and Chhattisgarh. Further, literacy rate is negatively correlated with forest coverage in Chhattisgarh and Odisha whereas it has no correlation with forest in Jharkhand. The total worker percentage to ST population percentage is positively correlated in all the study states. Further, marginal worker population is related to literate percentage in Chhattisgarh and Odisha whereas in Jharkhand, literacy has no such relation with marginal worker percentage.

Odisha shows an important correlation of forest and ST percentage with work participation rate. Forest area to total geographical area is having a positive correlation with total worker percentage, marginal worker percentage and marginal to total worker percentage among STs. Whereas, geographical area under forest is negatively correlated with literacy, non-worker percentage and ST main worker to total worker percentage. This factor correlation again proves that in Jharkhand, forest has remained a less influential factor with regard to workforce participation in economic activities but in Odisha and Chhattisgarh, it has been an important influential factor as far as workforce participation is concerned. The literacy rate is having a strong bearing on workforce participation rate in all the study states but it is negatively correlated with ST population in Odisha and Chhattisgarh. Further, while forest area to total geographical area is negatively correlated with literacy rate in Odisha and Chhattisgarh, in Jharkhand no such significant relation is observed.

Facility and service index reflects that in Chhattisgarh, the districts that are lowest in the Composite Development Index (CDI) rank are having highest percentage of forest area to the total geographical area and also high percentage of ST population. It is evident that the districts that have a high percentage of forest area are having less facilities in comparison to districts that have less forest cover. It is also pertinent that in the state, the districts that have high tribal concentration with forest cover are having less facilities and services in comparison to districts that have less tribal population and thin forest cover. The trend remains more or less same in Jharkhand like that of Chhattisgarh.

In case of Odisha, the districts that have a better performance and having higher CDI rank are having less forest cover, less tribal concentration and more suitable geographical characteristics.

Certain districts with high tribal concentration and better forest cover also have good facilities like Nabarangpur. So, apart from forest cover and tribal concentration, provisioning of services is also dependent on a number of other factors like population density, financial provision and special focus on local area development etc.

The Accessibility Index reflects more or less similar trend like that of Service and Facility Index. The districts that have high forest cover are having poor accessibility index in comparison to districts that have less forest cover in Chhattisgarh. Trend of similar nature is also observed in Jharkhand. In case of Odisha, the plain districts with less forest covered area and ST population is having better accessibility in comparison to districts with comparatively high forest area and ST concentration. So, geographical area under forest cover and having higher tribal concentration are less advantaged. These factors of cost disability are also having a significant bearing on disproportionate growth and regional disparity. Apart from this, these areas have been the home of Left Wing Extremism (LWE) which further retards the pace of growth of these areas.

The hilly terrain topography and poor accessibility increasing cost of service and there is a cost difference marked in transportation of different materials in hilly and plain areas. Some of the items that found having higher cost in plain areas are like small chips / boulders as it is transported from the hilly areas to the plains. As chips / boulders are major items of construction produced in hilly areas, its cost in production points remain low. But other items like asbestos, bricks, cement etc. having high transportation cost in hilly areas in comparison to plain. The unit cost of construction materials also differs significantly in hilly and plain areas. Excluding chips and medium boulders, unit price of construction items normally remains high in hills. In Chhattisgarh, cost of bricks in hilly areas (including forest areas) increases by about 30.43 percent than the plain and growth in cost is about 16.67 percent and 12.75 percent in Jharkhand and Odisha respectively. Similarly, labour cost in hilly areas is comparatively higher than plain and the cost increases by about 11.0 percent to 11.5 percent.

Time and cost overrun of different projects, implemented in study states is assessed in infrastructure sector. Time and cost overrun is more common in districts that have high forest cover and undulating terrain. Major factors that found responsible for time and cost overrun in these states are non-availability of required materials, high transportation cost, poor skill base of the available work force, high cost of skilled workforce and fear of LWE.

In Chhattisgarh, there is a cost escalation of 7.27 percent due to time overrun in completing different projects. In Jharkhand, there is a cost escalation of about 6.12 percent due to time overrun and in Odisha, a cost escalation of about 1.15 percent in different projects is noted.

The report suggests a resource allocation model for TSP, SCA to TSP and Article 275 (1) based on the factors of cost disability. The allocation model suggests higher allocation to districts that have high cost disability. A model for compensating the state / district based on cost disability prevalence is also suggested so that additional resources can be allotted to such districts to accelerate the pace of growth.

The study recommends to consider geo-physical characteristics of the states that are not recognised as hilly states but having significant percentage of forest and hilly areas. Compensating the states based on the extent of cost disability is important and central government may take a step in this regard with additional allocation or compensating the states with resources. Cost disability could be a factor for making appropriate allocation of resources under TSP, SCA to TSP and Article 275 (1).

Chapter One: Introduction and Study Background

1.1 Introduction

Provisioning of required services is basic to governance performance, but factors that are endowed to a state is impacted on the way of providing such facilities and services to the people. These factors are exogenous in character and a state has less or no control over it. These exogenous factors create cost disability on the part of extending required facility and services. Hilly states, states with high forest area coverage, inaccessible pockets etc. creates development disadvantage and adversely impact upon providing public services. While it becomes an obligation for the state to nurture and maintain certain endowed and exogenous factors, it impacts on the state financially and overall cost of providing services. For example, conservation of forest and its growth and maintenance is binding on a state but at the same time it restricts to a state from taking up any other development activities in these areas due to forest and environmental restrictions. Such a situation crates development disadvantage for the state and promote regional development disparity. Unit cost of providing services goes up in these areas. The expected output per unit of investment also remain low in comparison to other regions that are not disadvantageous in the same sense.

It is argued by many states¹ that the factors that are endowed to a state and exogenous to its control and decision making should be compensated through an additional allocation due to these disabilities. Many states also suggested incorporating these factors in the formulae for finalizing intergovernmental grants. According to 14th Finance Commission (FC XIV), a majority of the states favoured retaining area as an indicator of “need: in the devolution formula and proposed weights varying from 5 percent to 25 percent. The states with hilly terrain suggested to use area as a three-dimensional space instead of two dimensional, since the latter does not capture the undulating topography of the hill states and the cost disability arising as a result. It was also suggested to the FC XIV that in case, if it is not possible to take three-dimensional area as a criterion, then 10 percent weight should be assigned to the proportion of hilly areas in the total area of a state and 5 per cent weight should be given to the two dimensional area. The FC XIV also suggested to consider other indicators like use of cultivable area, international border length and forest area and weight in a range of 5 percent to 10 percent should be given in estimation of allocation.

¹14th Finance Commission Report, Govt. of India.

Regional disparity and underdevelopment of specific regions in a state is primarily due to endowment factors. Inaccessibility coupled with LWE contributes immensely for the underdevelopment of many tribal dominated districts LWE affected states in the country. Sizeable proportion of these districts is covered with forest and dependency of tribal on forest resources is relatively high. On the other word, it can be said that eco-system services remain to be a great livelihoods support option for the tribal of these districts. Protection of these areas for maintaining a sound environmental health affects the infrastructure development process and gives rise to regional disparity in the development of rural infrastructure. Infrastructural disparity and deficiency does not contribute in attracting external investment. This is the reason for which Foreign Direct Investment (FDI) made in India is concentrated more in developed regions rather than underdeveloped pockets. High stock of infrastructure becomes a factor of for attracting investment and physical infrastructure has an edge over social and financial infrastructure². Regional disparity in the stock of rural infrastructure in all the three forms exists in Odisha and many other states of the country.

Because of inaccessibility and difficult terrain and to some extent in order to meet the legal provisions (forest conservation), unit cost of service delivery in hilly districts and forest covered areas remains high in comparison to districts in plan. Coupled with public service delivery in social front, cost of infrastructure development also increases substantially due to prolonged duration of projects (inception to completion), higher transportation cost of materials, engagement of manual labour force etc. Had it been a plain area, the additional cost incurred due to endowment factors and maintaining the constitutional and legal obligations, could have been minimized. Alternatively, with less cost of development, more developmental works could have been taken up and which would have supported the economic growth of the district and State.

Planning Commission provides the rankings of the states based on Geographical Area Disadvantage Index and Infrastructure Deficit Index including Hilly Terrain and Flood Prone Area component. In the Developmental Disability Index-1 & 2, Odisha ranked 15 with a value of 0.73 and 0.72 respectively³. Larger part of the hilly districts in the state remains inaccessible and a significant proportion of available land mass is designated as forest land. As eco-system services are not accounted for in the GDP or SDP, as per the report of the committee, it becomes important to evolve mechanisms that can achieve twin objectives of incentivizing conservation

²Nayak.C, Rural Infrastructure and Cropping Intensity in Odisha, IOSR Journal of Economics and Finance, Volume 2, Issue 6, Feb. 2014

³Report of The committee to study development in hill states arising from management of forest lands with special focus on creation of infrastructure, livelihood and human development; Planning Commission, Government of India, November 2013

alongside meeting developmental objectives of the hilly and forest areas. With appropriate admiration to the prevailing situation, it is viewed that opportunity costs and costs of developmental projects are likely to be higher in hilly and inaccessible forest areas than their corresponding costs in non-forested areas.

1.2 Study Objective

The overall objective of this study was to understand the development disability and factors related to cost disability in three eastern states of India, namely Chhattisgarh, Jharkhand and Odisha. The study attempted to develop understanding on the endowment effect (geographical factor like forest coverage) on development / under-development of tribal dominated districts of three study states. The study objectively looked at following aspects in the study states.

1. Endowment Factors – Attributes of Under Development;
2. Hilly and Forest Regions: Retards the Pace of Development;
3. Forest Eco-System Services: Many are Intangible / Non-Marketed;
4. Development Disadvantage due to Acts / Policies on Forest / Wild life / Conservation of Natural Resources;
5. Unit Cost of Providing Public Services in Hilly / Forest Areas Increases Significantly; It is Termed Cost Disability;
6. Cost Disability is Exogenous to State's Control but affects State Development;
7. It is suggested that States having significant proportion of such geographical area need to be compensated;
8. Cost Escalation Factors need to be Financially Compensated to Augment Inclusive Growth in these States;

1.3 Research Design and Methodology

Cost disability is a consequence of many causes and geographical disadvantage is the prime among them. These geographical / endowed factors cause time and cost overrun and retard the pace of growth of a region to certain degree, if the opportunity costs are estimated. Development disability and associated cost disability affects availability of facilities and services and thereby people's accessibility to the services for their wellbeing. Understanding of the extent of cost disability of different regions and its bearing on the development of the people and region is important for the policy makers. Therefore, it is necessary to identify factors of cost disability from a development perspective. It is also important to understand the factors that causes cost

and time overrun in a disadvantaged geographical set-up in order to address it appropriately. Identification and understanding of impact of cost disability and factors that are key to time and cost overrun will help to determine mitigation measures during planning and shape up the development initiatives accordingly. The research design and methodology adopted in this study is objectively framed to understand these issues from micro (village) and macro (state and national) perspectives. It was also objectively important to capture perception of different stakeholders, associated in the state and district development process and difficulties they face in extending services in such geographically disadvantaged areas. The study also looked at influence of LWE activities on local development process in sample districts of the study states.

To understand the cost disability and associated factors, the study approach was exploratory in nature based on empirical evidences and with reference to primary and secondary data. The study by its design was “observational” and “cross sectional” in nature. The overall methodology of the study was based on collection and analysis of available primary and secondary information related to various services / developmental activities and comparative analysis of different development measures taken up in hilly and plain areas. Apart from analysis of available secondary data, consultation with different departments of Government was undertaken to understand the cost escalation (unit cost) and its implications on different projects, completion status of the initiated projects, cost of providing basic services etc. The local stakeholders in the sample districts were also consulted to understand the duration of the initiated projects in the locality, pace of work, feasibility of the work etc. Observation of different works / services undertaken under different schemes / programmes at the ground level helped to realise the ground reality.

For better understanding of cost disability, require data on unit cost of providing various services along with a measure of gap/deficit at the level of services were collected from primary sources. In case, required information/data is not available from direct sources like Government Departments and / or other sources, in such cases, alternative ways were adopted to estimate cost disability taking similar other indicators.

Different sectors of development, based on its importance for tribal (with reference of policies / act / State priorities), were mapped in quantitative terms and a composite index was prepared to understand the cost disability. The key measurable parameters that were explored in the field study were;

1. Unit cost of services / projects for plain and hilly areas (actual basis);
2. Duration of projects (time factor-inception to completion);

3. Cost of legal adherence (adhering to tribal law, environmental clearance etc.);
4. Infrastructural facility and gap (comparative across districts in a state);
5. Forest area coverage to total geographical area of the district;
6. Barren and uncultivated land to total geographical area of the district;
7. Other factors of importance for estimation of development disability.

The strategy followed in this study was to identify key factors of regional disparity and development disadvantages at national and sample state / sub-state level. In order to have a holistic view on the theme of the study, available literature was reviewed. Discussions were organised with senior faculty members of the research institutions to capture their thinking. Based on the opinion / feedback of faculty members of the institution, the research design was formulated. Then data and information sources were determined based on the formulated research design. On the basis of the data and information sources, the study instruments / tools were decided and available documentary sources relevant to the study were reviewed. The review includes books, journals, internet sources and other documents. After an in-depth literature review and desk study, the study instruments were designed and piloted in one of the forest and tribal dominated district of the state (Mayurbhanj). The piloting of the tool helped to understand the critical information gaps that may pose a threat to the study in terms of capturing field level information. Based on the field findings, i.e., findings of the piloting exercise, the designed study instruments were modified.

A team of researchers were engaged by the research institution, were oriented on the research design, approach and methodology. All the study tools were discussed with them and a simulation exercise was also conducted for better understanding of the researchers on the tools. The researchers were also oriented at the field level with regard to tool administration and data collection process. The study was conducted in three phases and one state was covered in each phase. The research team discussed with different government departments, private agencies / contractors, local PRI members and community to understand the cost disability / development disability aspects. The collected data, data collected from different sources, were reviewed and entered in to software (SPSS) for analysis. A detail analysis frame was designed, as per the objective of the study and collected data were analysed accordingly. The analysis findings were then validated with the overall trend of development of the district and state and different indices were computed. The indices were computed with collected secondary data and the overall trends were discussed based on primary data findings.

1.3.1 Study Sample

Three states of eastern India were finalized for the study, i.e., Jharkhand, Chhattisgarh and Odisha. These states were finalized based on forest area to the geographical area and tribal population in these states. The field study covered different districts, blocks and GPs to understand the cost disability aspects. The detail sample frames by study state are as follows.

Table 1: Coverage of Districts, Blocks, GPs and Villages in Chhattisgarh

State	Districts		Blocks	Gram Panchayats	Villages
Chhattisgarh	Schedule Districts	Dantewada	Dantewada	Chitaloor	Chitaloor
				Motenar	Gudre
			Kuakonda	Palner	Palner
				Hitabar	Hitabar
		Jashpur	Manora	Pandersili	Gutakia
				Khutapani	Chirotoli
			Bagicha	Kutma	Pattakela
				Rengle	Rengle
		Surguja	Mainpart	Supalga	Supalga
				Kakaleswarpur	Kakaleswarpur
	Lundra		Rere	Rere	
			Sapada	Sapada	
	Non-Schedule District	Janjgir-champa	Pamgarh	Pamgarh	Pamgarh
				Sasaha	Sasaha
Nawagarh			Kera	Kera	
			Salkhan	Salkhan	

To understand the cost disability factors in a comparative manner, both scheduled and non-scheduled districts with high and low forest covered area were selected from all the study states. In Chhattisgarh, three districts with high tribal concentration and forest covered area were selected, namely Dantewada, jashpur and Surguja. Janjgir-Champa as non-scheduled and less forest cover district was selected for comparison.

Table 2: Coverage of Districts, Blocks, GPs and Villages in Jharkhand

State	Districts		Blocks	Gram Panchayats	Villages
Jharkhand	Schedule Districts	Gumla	Bharno	Turiamba	Bada Turiamba
				Marasilli	Simroli
			Raidihi	Sursang	Sursang
				Jarjatta	Jarjatta
		Simdega	Bano	Konarooa	Konarooa
				Konsode	Konsode
			Thethaitangar	Kereya	Kereya

	Khunti	Khunti	Tukupani	Tukupani	
			Murihi	Bantoli	
			Birhu	Birhu	
			Udikela	Nichitpur	
	Non-Schedule District	Bokaro	Jaridihi	Baludihi	Baradihi
				Baru	Baru
		Kasmar	Durgapur	Durgapur	
			Panda	Panda	

In Jharkhand, three districts having high tribal concentration and forest coverage were selected for the purpose, namely Gumla, Simdega and Khunti. The district of Bokaro was selected for comparison as it is having less tribal population and less forest covered area. Similar approach was also followed in Odisha in the selection of sample districts. The districts of Malkangiri, Kandhamal and Sundargarh were selected based on high tribal population and forest area to total district geographical area. The district of Bhadrak was considered as non-scheduled district with less forest coverage. Detail sample frame of three districts are presented in the table.

Table 3: Coverage of Districts, Blocks, GPs and Villages in Odisha

State	Districts	Blocks	Gram Panchayats	Villages	
Odisha	Schedule Districts	Malkangiri	Kalimela	Maharajpali	Maharajpali
				Kalimela	Kalimela
		Kandhamal	Korukonda	Tumsapali	Tumsapali
				Tandiki	Tandiki
		Sundargarh	Phirangia	Pabingia	Badudangia
				Bhrungijodi	Bhrungijodi
			Daringbadi	Daringbadi	Plihery
				Partamaha	Partamaha
	Non-Schedule District	Bhadrak	Bali Sankara	Tildega	Tildega
				Deo Bhubanapur	Rasti
			Subdega	Kiralaga	Kiralaga
		Chhata Sargi		Hamirpur	
		Tihidi		Govindpur	Korua
			S. Chudakuti	Bidyadharpur	
Baro	Dahapania				
	Soya	Soya			

In the inception of field study, the team discussed with the officials of State Tribal Research Institute. For conducting the study smoothly, TRI issued letter to the study districts. Different state level departments were covered to collect required secondary information. The team also discussed with different officials to understand the cost disability aspects. Different departments were also covered at the district level along with conducting FGDs in sample

villages. Departments covered at the district level are like PWD, Irrigation, Electricity Board, Agriculture, Animal Husbandry, Transport & Communication, Health and Family Welfare etc.

1.3.2 Study Instruments

As the study is based on both primarily and secondary sources of data, a detail data collection framework / checklist was developed to capture required data / information from different sources. Apart from this, an observational checklist was also prepared to record the field observation of different project progress in different sample districts to understand the cost disability impact at the ground level. Structured schedules were designed to collect information from different government departments and other stakeholders. The study instruments that were designed and administered are;

1. Structured Schedule for Government Departments
2. Structured Schedule for Contractors
3. Semi-structured FGD Checklist for Community Level Discussion
4. Semi-structured Observational Checklist

1.3.3 Sources of Data and Analysis

The study instrument was used to collect data from both government (departments / PRI) and private (contractors / community / private agencies) sources. Data were collected based on the designed structured and semi-structured schedules. Apart from these sources, relevant data were also collected from different reports and publications during literature review and utilised for analysis. Data analysis is basically done taking note of collected data from district and sub-district level, using both primary and secondary data. Different indices were computed to understand the development disability and cost factors. The available data were analysed, primarily using inferential statistics with required application of descriptive statistics.

1.4 Study Limitations

The limitation of the study is mostly related to availability of data from government sources. As required information were not maintained systematically at the department level, in most cases, the officials failed to provide required data in the requested format. For example, departmental fund receipt and utilization figures, extended period of different projects taken up

at district / sub-district level, data on time and cost overrun etc. As these data were no available from the appropriate departmental sources, primary data, collected from other stakeholders and data collected from alternative sources were analysed.

1.5 Report Outline

Chapter 1: This chapter presents an overview of the study and discuss about the study approach and methodology. This chapter also discuss on data sources and its analysis and key limitations of the study.

Chapter 2: This chapter gives an overview of the study states and discuss briefly on the district characteristics. Objective of presenting this section is contextually important to understand the cost disability aspects from the context of state and district development.

Chapter 3: This chapter discuss on development disability in a comparative and comprehensive manner in the study states and its linkage with cost disability. Cost disability as a factor to development disability is discussed in this section.

Chapter 4: This chapter focuses on key cost disability aspects and factors responsible for time and cost overrun. Association of different indicators of cost disability and its impact on local development status is also discussed in this section.

Chapter 5: A model resource allocation approach, with exclusive reference to TSP, SCA to TSP and Article 275 (1) is discussed in this chapter. An intra-state resource sharing formula is suggested for resource allocation based on cost disability factors.

Chapter 6: Conclusion and Recommendation, based on the study findings are presented in this section for the reference and consideration of policy makers.

Chapter Two: Overview of Study Area

2.1 The Study State of Chhattisgarh

Chhattisgarh, the 26th State of India, was carved out of Madhya Pradesh on November 1, 2000. Chhattisgarh is situated between 17 to 23.7 degrees' north latitude and 8.40 to 83.38 east longitude. Chhattisgarh abounds in hilly regions and plains. It is predominantly a tribal state endowed with rich mineral and forest wealth. The state is rich in forest resources. About 43 percent of the total area of the State is under forest cover. Chhattisgarh is famous in the entire country for its Sal forests. In addition, teak, bamboo, saja, sarai and haldi are also found in large numbers. Tendu leaf, which is used in beedi-making, is the principal forest produce of the state. The state also yields a large number of minor forest products seasonally / annually.

Chhattisgarh has been famous for its rice mills, cement and steel plants. Durg, Raipur, Korba and Bilaspur are the leading districts in the field of industrial development in the State. The Bhilai Steel Plant (BSP) in Durg district happens to be the largest integrated steel plant of the country. The establishment of BSP in the 1950's led to the development of a wide range of industries at Raipur and Bhilai. Largest number of big and small-scale cement plants is established in Raipur district. Bilaspur and Durg districts, too, are home to a number of large-scale cement plants. Korba, with a number of power generating units established by NTPC and MPEB, is among the leading power generation centers in the country. Aluminium and explosive plants are also located in Korba district. There are a number of industrial growth centers in the State which host hundreds of industrial units. The principal growth centers in the State are - Urla and Siltara (Raipur); Borai (Durg) and Sirgitti (Bilaspur).

Table 4: Profile of Study State and Districts of Chhattisgarh

State and sample district profile of Chhattisgarh state						
Particulars	Unit	Chhattisgarh	Dantewada	Jashpur	Surguja	Janjgir Champa
Number of districts	Nos.	27	1	1	1	1
Number of blocks	Nos.	146	7	8	19	9
Number of villages (inhabited)	Nos.	19567	609	765	1769	890
Total Geographical Area	Sq.km/ ha	135191	3410.50	6205	16359	446674 (ha.)
Area under Forest Cover	Ha / Sq.km	55674 Sq.km	150005	56552	777526	79328
Total Households	Nos.	5650724	120850	192570	188836	364523
Total Population	Nos.	25545000	533638	851669	840352	1619707
% of SC Population	%	9.47	3.61	5.74	4.77	24.56
% of ST Population	%	25.9	71.07	62.28	57.36	11.56

State and sample district profile of Chhattisgarh state						
Particulars	Unit	Chhattisgarh	Dantewada	Jashpur	Surguja	Janjgir Champa
Sex Ratio	%	991	1016	1004	978	986
Population Density (per sq.km)	Nos	189	45	146	150	420
Literacy rate	%	70.3	41.22	65.99	66.33	73.07
Male Literacy	%	80.27	49.92	76.98	76.06	84.72
Female Literacy	%	60.24	32.71	55.06	56.72	61.31
Anganwadi Centre	Nos.	43763	993	1279	1028	1979
Sub-Centre	Nos.	5161	156	257	592	271
Primary Health Centre (PHC)	Nos.	783	25	33	33	46
Community Health Centre (CHC)	Nos.	155	6		8	10
District Headquarters Hospital (DHH)	Nos.	27	1	1	1	1
Infant Mortality Rate (Per 000' live birth)	Nos.	48	46	48	57	46
Institutional Delivery Rate	%	45	65	50	58	62
No. of hospital Beds	Nos.	10503	394	890	1128	1240

Source: Respective departments of State and Districts, Economic Survey of Chhattisgarh-2014-15, State Focus Papper-2015-16, NABARD, Potential Linked Credit Plan of respective districts.

Chhattisgarh has a population density of 189 persons per Sq. Km. The largest concentration of population in the state is in the districts of the central and north-central parts. The spread of urban population also differs in its level of concentration. Raipur and Durg account for almost half of the total urban population in Chhattisgarh. The scheduled tribes are concentrated in the southern, northern and the north-eastern districts of the State. The highest concentration is in Bastar district. Chhattisgarh has absorbed 25.9 percent of the scheduled tribes and 9.47 percent of the scheduled castes population.

The Gonds at 55.1 percent form the largest proportion within the tribal population. They are distributed almost equally in the urban and rural areas. The Oraons, the Kawars, the Halbis, the Bharias or humiars, the Bhatras and the Napesias also form a substantial portion of the tribal population. Thirty other scheduled tribes have small population residing in various pockets across Chhattisgarh. The Gonds are concentrated in the hilly parts of southern Chhattisgarh but are also spread across most districts whereas the Baigas, Bharias, Korwas and Napesias occupy only specific pockets. The Bhatras, Kolams and Rasjas largely live in Bastar and the Kamars in Raipur. The Halba tribe inhabits parts of Bastar, Raipur and Rajnandgaon. The Oraons live in Surguja and Raigarh districts.

There are 9,500 villages or 48 percent of all inhabited villages, which have more than half their population belonging to the tribal groups. Thirty per cent of all inhabited villages have more than three fourths population from the scheduled tribes. The districts of Raipur, Durg and Janjgir Chhampa have less than twenty per cent tribals. Besides, a large population of Kanwar, Brinjhwar, Bhaina, Bhatra, Oraon, Munda, Kamar, Halba, Baiga, Sanwra, Korwa, Bharia, Nageshia, Manghwar, Kharia and Dhanwar tribe are also found in the State.

2.1.1 Profile of Sample Districts

2.1.1.1 District Dantewada

The district of Dantewada has come into existence in 1998. Previously it was a part of Bastar district; The District has an area of 3,410.50 sq. km. It is bounded on the north and northeast by Bastar District, on the east by Malkangiri District of Odisha state, on the south and southwest by Khammam District of Telangana state, and on the west by the Indravati River, which forms the boundary with Karimnagar District of Andhra Pradesh and Gadchiroli District of Maharashtra. The district is having rich forest with valuable plan species. According to the census, 2011, the district is having a population of 5.34 lakhs. The district has a population density of 45 inhabitants per Sq. Km. and a literacy rate of 41.22%, with male literacy rate of 49.92 percent and female literacy rate of 32.71 percent.

2.1.1.2 District Jashpur

The district is having a total area of about 6,205 sq. km. It lies in the Northern corner of Chhattisgarh state adjoining the border of Bihar, Jharkhand & Odisha in the eastern side. The upper ghat is an extension plateau covering 1,384 Sq. Km, which is about 1,200 meters above sea level and is covered with the dense forest. The elevated plateau called "Pat" Nichghat is plane in general, but it is also having many big mountains. Jashpur district is divided in two parts as per the geographical point of views. The hilly belt, the northern part, running from Loroghat kastura, Narayanpur, Bagicha up to the Surguja district. This belt having forest area. It has a reserve forest also. It covers the Sanna, Bagicha and Narayanpur districts. Of the total geographical area of the district, forest area covers 63.50 percent (56552 ha). As per Census 2011 the district has a population of 8.52 lakhs. The district has a population density of 146 inhabitants per square kilometer. Jashpur has a sex ratio of 1004 females for every 1000 males,

and a literacy rate of the district is 65.99 percent comprising of male and female literacy rate 76.98 percent and 55.06 percent respectively.

2.1.1.3 District Surguja

The district is located in the northern part of Chhattisgarh. Surguja district is surrounded by borders of Uttar Pradesh, Jharkhand, Odisha and Madhya Pradesh States. This district has extension between south-eastern parts of Vindhya-Chal-Baghelkhand region of peninsular India. About 58.0 percent of the area in the district lies under forests. The forests are important from economic point of view as it yields commercial timber and various other forest products of high value.

The high-lands of Surguja district have peculiar 'pat formations' – highlands with small tablelands. The Mainpat, the Jarang pat, the Jonka pat, the Jamira pat and the Lahsunpat are the major parts of the district. The average height of area is above 600 metres (2,000 ft). Some of peaks are - Mailan 1,226 metres (4,022 ft), Jam 1,166 metres (3,825 ft), Parta Gharsa 1,159 metres (3,802 ft), Kanda Dara 1,149 metres (3,770 ft), Chutai 1,131 metres (3,711 ft), and Karo 1,105 metres (3,625 ft). There are a number of other peaks. North-west Surguja is hilly in nature, and moving westwards, three distinct steps may be marked out: the first from Shrinagar on the east to the low-lands of Patna and Khargawan, the second from thence to the uplands around Sonhat and the third beyond Sonhat to above a height of 1,033 metres (3,389 ft). Central Surguja is a low basin through which the Rihand and its tributaries flow. There are three river basins in Surguja district – those of the Hasdeo River, the Rihand River and the Kanhar River.

According to the Census 2011, the district has a population of 8, 40,352. The district has a population density of 150 inhabitants per square kilometer. Its population growth rate over the decade 2001-2011 was 19.74 percent. The sex ratio of the district estimated to be 978 females per 1000 males, and a literacy rate of 66.33 percent. Major population of the district comprises tribal population, about 57.36 percent.

2.1.1.4 District Janjgir Champa

The district Janjgir-Champa is situated in the center of Chhattisgarh and considered as Heart of Chhattisgarh. The district is a major producer of food grains in the state of Chhattisgarh. The Hasdeobango irrigation project has been considered as life supporting as this project covers 3/4th area of the district under irrigation. The district is bounded by Raigarh district in the east, Bilaspur district in the west, Korba and Bilaspur district in the North, and Raipur and Raigarh

district in the south. Height of the district from sea level is 294.4 meter. The geographical area of the district is 4,46,674 hector from which the forest area covers only 79,328 ha (17.76%). As per Census 2011, the district has a population of 16.20 lakh. The district has a population density of 420 inhabitants per square kilometer. The sex ratio of the district estimated to be 986 females for 1000 male and a literacy rate of the district is 73.07 percent, which is above the state average. The male and female literacy rate of the district is 84.72 percent and 61.31 percent respectively.

2.2 The Study State of Jharkhand

The state of Jharkhand was carved out of the relatively backward southern part of undivided Bihar, sharing borders with the states of Bihar to the north, Uttar Pradesh and Chhattisgarh to the west, Orissa to the south, and West Bengal to the east. The state comprises of 24 districts and with an area of 79,714 Sq Km, the state has about 3.30 crore population. The state comprises 39.85 lakh (12.08%) SC and 86.45 lakh (26.21%) ST population. The literacy rate has increased from 54.13% to 70.3% from 2001 census to 2011 census. Male literacy rate of the state is 80.27% and the female literacy rate is 60.24%. The sex ratio of the state is 954 females per 1000 male. Compare to the literacy rate of 27.50 percent in 1991 it has increased up to 40.70 percent in 2001 among the ST population of the State. The literacy rate of ST has increased to 57.10 in 2011 Census. It is significantly lower than the average national literacy rate.

Santhal, Oraon, Munda, Ho, Kharia, Bhumji, Lohra, Kharwar, Chero, Bedia, Mal Paharia and Mahli are the main tribes of the state. The majority of the ST population lives in rural and forest areas. Gumla, Purbi Singhbhum, Lohardaga, Pashchimi Singhbhum, Dumka, Giridih, Khunti, Sahibganj, Gumla, Simdega and Pakur are the main districts with higher concentration of the Scheduled Tribe population.

Table 5: Profile of Jharkhand and Study Districts

State and sample district profile of Jharkhand state						
Particulars	Unit	Jharkhand	Gumla	Simdega	Khunti	Bokaro
Number of districts	Nos.	24	1	1	1	1
Number of blocks	Nos.	259	12	10	6	9
Number of villages (inhabited)	Nos.	29492	948	454	754	692
Total Geographical Area	Ha/Sq.km	79714 (SK)	512400	371711.7	251830.3	278520.9
Area under Forest Cover	Ha/Sq.km	2239000	135600	100884.25	987(Sq.km)	53243.03
Total Households	Nos.	6221931	153420	118288	103700	237407
Total Population	Nos.	32966238	1025656	599578	530299	2062330
% of SC Population	%	39.85	3.3	7.45	4.52	14.51

State and sample district profile of Jharkhand state						
Particulars	Unit	Jharkhand	Gumla	Simdega	Khunti	Bokaro
% of ST Population	%	86.45	67.2	70.78	73.25	12.4
BPL households	%	36.51	87546	65060	43.64	26.59
Sex Ratio	%	954	993	997	997	916
Population Density Population per sq.km)	Nos.	414	193	160	210	716
Literacy rate	%	67.63	66.92	67.59	64.51	72.01
Male Literacy	%	78.45	76.87	75.84	75.33	82.51
Female Literacy	%	56.21	56.97	59.38	53.71	60.63
Anganwadi centre	Nos.	38.432	1670	965	840	2256
Sub-Centre	Nos.	3958	270	155	109	116
Primary Health Centre (PHC)	Nos.	330	13	7	4	16
Community Health Centre (CHC)	Nos.	188	11	7	6	8
District Headquarters Hospital (DHH)	Nos.	24	1	1	1	1
Infant Mortality Rate (Per 000' live birth)	Nos.	36	45	45	35	28
Maternal Mortality Rate		208	244	244	244	
Institutional Delivery Rate			49	78	47	54
Under Five Mortality Rate		48	70	70		43
Neo-Natal Mortality Rate		23	34	34		21

Source: Respective departments of State and Districts, Economic Survey of Jharkhand-2014-15, State Focus Paper-2015-16, NABARD, Potential Linked Credit Plan of respective districts.

2.2.1 Profile of Sample Districts

2.2.1.1 District Gumla

Gumla is one of the backward districts of Jharkhand and situated in the Southern part of the Chhota Nagpur Plateau. Gumla consist of a number of plateaus, hills, rivers and a lush green forest cover within the territory. An estimated geographical area of the district is 5,327 Sq. Km. The district has 12 CD blocks having 948 inhabited villages. Topography of Gumla District is highly undulating and there is existence of several rivers, and streams. Forests cover around 27 percent of the total area of the district. The district has important minerals like Bauxite and Laterite (Aluminium ore). As per Census 2011, the district has a population of 10.26 lakh covering 1, 53,420 households. Population density of the district is 193 and sex ratio is at 993 females per 1000 male. The district is having a literacy rate of 66.92 percent with male literacy is at 76.87 percent and female literacy is at 56.97.

2.2.1.2 District Simdega

Simdega is situated in the southwestern part of the state of Jharkhand. It is surrounded by Gumla district in the North, Ranchi and West Singhbhum in the east, Jashpur district of Chhattisgarh in the west and district Sundargarh of Odisha in the South. Total geographical area of the district is 3, 71,711.7 ha from which forest area covers 10, 089 ha. (1194.50 sq. km). The population of Simdega district is about six lakhs as per 2011 Census and residing in 1, 18, 288 households. The district is primarily settled by the Scheduled Tribes with 70.78 percent population. About 8 percent of the population consists of Scheduled Castes (SC) and the remaining population constitutes other castes. Major tribal groups in the district are Oraons, Kharia, and Mundas etc. A few families belonging to the Primitive Tribal group like Asur, Birhoretc. are also living in the district. Population density of the district is 160 and the sex ratio is 997. The total literacy rate of Simdega district is 67.59%. The male and female literacy rate of the district is 75.84 percent and 59.38 percent respectively.

2.2.1.3 District Khunti

The district is bounded by West Singhbhum in south, Ranchi in the north east, Saraikela Kharsawan in south east & Simdega district in the west. The district is located 611 metres above the mean sea level. The geographical area of the district is 2,51,830.3 ha and the area under forest is estimated at 987 sq. km. As per Census 2011, Khunti district has a population of 5.30 lakhs. The district has a population density of 210 inhabitants per Sq. Km. The district has a sex ratio of 997 females for every 1000 males, and the literacy rate is 64.51 percent, comprising male literacy rate 75.33 percent and female literacy rate of 53.71 percent.

2.2.1.4 District Bokaro

The Geographical area of the District is 3, 00,466.37 hectares. The district is surrounded by North-Giridih and Hazaribagh district, South- Purulia district of West Bengal State, East-Dhanbad district, West- Hazaribagh district. As per Census 2011, Bokaro district has a population of 20.62 lakh. The district has a population density of 716 inhabitants per Sq. Km. The district has a sex ratio of 916 females for every 1000 males, and the literacy rate is 72.01%, comprising male and female literacy rate 82.51% and 60.63 respectively.

2.3 The Study State of Odisha

Orissa is located on the eastern coast, surrounded by West Bengal in the north-east, Jharkhand in the north, Chhattisgarh in the west, Andhra Pradesh in the south and the Bay of Bengal in the east. The state has an area about 155,707 Sq. Km. It possesses a varied physiography, extensive ranges of hills clad with forests, rolling uplands, a long stretch of coastline, extensive river systems, brackish waters, mangroves and coastal plains. It is endowed with very diverse ecological habitats and is rich in flora and fauna. On the basis of physical features, the state can be divided into four major morphological zones, i.e. the Orissa Coastal Plains, the Middle Mountainous and Highlands Region, the Central Plateaus and the Western Rolling Uplands. The State is divided into ten agro-climatic zones on the basis of soil, weather and other relevant characteristics. Its land can be classified into three categories, low (25.25%), medium (31.04%) and up-lands (43.69%).

According to the Census 2011, Orissa is the 10th most populous State having a population of 4, 19, 74, 218, of which 2, 12, 12, 136 (50.54%) are male and 20762082 (49.46%) are female. The sex ratio of the state has increased from 972 to 979 from 2001 to 2011.

Table 6: Profile of Odisha and Study Districts

State and sample district profile of Odisha state						
Particulars	Unit	Odisha	Malkangiri	Kandhamal	Sundergarh	Bhadrak
Number of districts	Nos.	30	1	1	1	1
Number of blocks	Nos.	314	7	12	17	7
Number of villages (inhabited)	Nos.	47529	1045	2379	1688	1311
Total Geographical Area	Sq.kms.	155707	5791	8021	9712	2505
Area under Forest Cover	Sq.kms.	58135.47	3355.88	5709.83	4957.32	97.07
Total Households	Nos.	8144012	137599	155335	479109	322509
Total Population	Nos.	41974218	613192	733110	2093437	1506337
% of SC Population	%	17.1	22.55	17.01	8.16	22.2
% of ST Population	%	22.85	57.83	53.58	50.21	2.02
BPL households	%	37	82.00		45.23	42.44
Sex Ratio	%	979	1020	1037	973	981
Population Density (Population per sq.km)	Nos.	270	106	91	216	601
Literacy rate	%	72.9	48.5	64.1	73.3	82.8
Male Literacy	%	81.6	59.1	76.9	81.0	89.6
Female Literacy	%	64.0	38.3	51.9	65.5	75.8
Anganwadi centre	Nos.	60918	1250	2102	3706	2435
Sub-Centre	Nos.	6688	158	172	390	178
Primary Health Centre (PHC)	Nos.	1227	24	36	57	50
Community Health Centre (CHC)	Nos.	378	8	14	20	7
District Headquarters Hospital	Nos.	32	1	1	1	1

State and sample district profile of Odisha state						
Particulars	Unit	Odisha	Malkangiri	Kandhamal	Sundergarh	Bhadrak
(DHH)						
Infant Mortality Rate (Per 000' live birth)	Nos.	73	49	42	49	13
Maternal Mortality Rate	Nos.	235	265	245	199	
Institutional Delivery Rate	%		62	69	93	95.9
No. of hospital Beds	Nos.	16537	1992	80		
Under Five Mortality Rate	%	72	77	139		14
Neo-Natal Mortality Rate	%	39	33	41	34	46
<i>Source: Respective departments of State and Districts, Odisha Economic Survey -2014-15, State Focus Papper-2015-16, NABARD, Potential Linked Credit Plan of respective districts and District Statistical Hand book of four districts.</i>						

Odisha has the third largest concentration of tribal population in the country. The state comprises 9.66% of the total tribal population of the country. The ST population of Odisha increased from 42.24 lakh in 2001 census to 95.91 lakh in 2011. However, their proportion in the total population decreased from 24.07 percent in 1961 to 22.85 percent in 2011. Mayurbhanj district has maximum ST population (14.80 lakh) as the highest proportion (58.7 %) in the state. The sex ratio of ST stood at 1029 which is higher not only than the total sex ratio of the state (979) but also over the national average. The literacy rate of Scheduled Tribes has been increasing since 1961. As per census 2011, the literacy rate of STs are 52.24 percent where the male and female literacy rate is 63.70 percent and 41.20 percent respectively.

2.3.1 Profile of Sample Districts

2.3.1.1 District Malkangiri

The district is located in the South-West corner of Odisha and is surrounded by Koraput and Vishakhapatnam in the North-East, Bastar district in the West and Khammam district in the South. Malkangiri district is cut-off from Andhra Pradesh by Sileru river and also from Chhattisgarh by Saberi river. Such isolation is the primary cause of backwardness of the district. The geographical area of the district is 5791 sq. kms. The district is a part of the Eastern Ghat and is characterized by undulating topography. It has both hilly & flat terrain. The hilly terrains are mostly located in the North East part, in the borders of Koraput, Bastar, Vishakhapatnam and Andhra Pradesh. According to the 2011 Census, the district has a population of 6.13 lakh. Population density of the district is 106 and the sex ratio is 1020. The literacy rate of the district is 48.50 percent, with male literacy rate of 59.10 percent and female literacy rate of 38.30 percent.

2.3.1.2 District Kandhamal

The district is bounded by Boudh district on north, Koraput District on the south, Nayagarh & Ganjam at the east and Kalahandi at the West. The district is ranked 6th among the district of Odisha. The district has 12 Community Development Blocks, 153 Gram Panchayats and 2379 inhabited villages. Of the total geographical area of 8,021 Sq. Km, forest area covers 5,709.83 Sq. Km, which is 71 percent of the total geographical area of the district. Forest produce of economic importance of the district mainly consists of Bamboo, Kendu Leaf, Tamarind, Mahua Flower and Seeds, Sal Seeds etc. As per Census 2011, the district has a population of 7.33 lakh with a population density of 91 inhabitants per square kilometer. The district has a sex ratio of 1037 females per 1000 males. The district is having a literacy rate of 64.10%, with male and female literacy rate of 76.90 percent and 51.90 percent respectively.

2.3.1.3 District Sundergarh

Sundargarh is one of the border districts of Western Odisha. Geographically extends over the North Western portion of the state. It is bounded in the North by the district of Ranchi and Singhbhum of Jharkhand, in the South by Sambalpur, in the west by Raigarh district of Chhattisgarh and in the East by Keonjhar district. The district is having geographical area of 9,712 Sq. Km. The district has 6.24 percent of the state area and 4.97 percent of state population. The district has 3 Sub-divisions, 9 Tehsils, 17 CD Blocks, 4 Municipality and 262 Gram Panchayats with 1688 inhabited villages. As per Census 2011 the district has a population of 2093437. The district has a population density of 216 inhabitants per square kilometer and the sex ratio of 973 females for every 1000 males, and a literacy rate of 73.30 percent which is above the state average. The male and female literacy rate of the district is 81.0 percent and 65.50 percent respectively.

2.3.1.4 District Bhadrak

This district is bounded by Balasore district in the north, Jajpur district and river Baitarani is in the south, Keonjhar district is in the west and Bay of Bengal and Kendrapada district in the east. The district has an area of 2,505 sq.km and 15.06 lakhs population as per Census 2011. The district accounts for 1.61 percent of the state's territory and shares 3.59 percent of the state population. The geographical area of the district is 2505 sq.km. For administrative purpose, the district has been divided into 1 Sub-Division, 7 Tehsils and 7 CD Blocks. Population density of the district is 601 with a sex ratio of 981. Literacy rate of Bhadrak district is 82.80 percent which is above the state average of 72.90 percent. The male and female literacy rate of the district is 89.60 percent and 75.80 percent respectively.

Chapter Three: Development Disability

3.1 Demographic Composition

Population plays a critical role in development measures and one of the key determinants of fund allocation norms of the Central Government to the States under different schemes. The tribal planning process and allocation of funds to TSP is also guided by the population norm, i.e., population proportion of tribals to the state population. Gadgil-Mukherjee formula for fund allocation still remain valid which is time tested and takes population in to account for allocation of funds, contrary to status of development as suggested by Rghuram Rajan Committee.

Table 7: Tribal Population in the Study States and Share to National ST Population

State	Tribal Population to Total Population (%)		Decadal Growth Rate	Share in National ST Population (%)
	2001	2011		
Chhattisgarh	31.8	30.62	18.23	7.50
Jharkhand	26.3	26.21	21.98	8.29
Odisha	22.1	22.8	17.75	9.20
India	8.4	10.4	23.66	-

In the demographic composition, Scheduled Tribes comprise 10.4 percent⁴ of the total population of the country. Tribal population recorded a growth of two percentage point over a decade, i.e. from 8.4 percent⁵ in 2001 to 10.4 percent in 2011. Change in percentage of ST population to total population within 0.2 percentage point, during the period 2001 to 2011, is observed in the study state of Jharkhand. Whereas, the state of Chhattisgarh reports decrease in tribal population by more than 0.2 percentage point during the same period of time. The state of Odisha reports a positive growth in tribal population during the decade by 0.2 to 1.0 percentage point.

Table 8: Distribution of ST Population by Rural & Urban and Growth Trend

State	Percentage of STs (2001)			Percentage of STs (2011)		
	Total	Rural	Urban	Total	Rural	Urban
Chhattisgarh	31.8	37.6	8.4	30.6	36.9	10
Jharkhand	26.3	31.0	9.8	26.2	31.4	9.8
Odisha	22.1	24.6	8.1	22.8	25.7	8.5
India	8.4	10.4	2.4	10.4	11.3	2.8

⁴Census 2011, Government of India.

⁵Census 2001, Government of India

Decadal change in tribal population, in between 2001 to 2011, reflects that the change is much larger in urban areas of the states in comparison to rural. At the national level, there is a change of 49.7 percent in urban areas in comparison to 21.3 percent change in rural areas. Chhattisgarh recorded a decadal change of 68.2 percent in urban and 15.4 percent in rural during the same period. The state of Jharkhand recorded a decadal population change of 32.3 percent in urban area and 21.0 percent in rural area. Odisha also have the same standing with national trend, i.e., 33.4 percent change in urban and 16.8 percent in rural. When tribal population is more concentrated in rural areas, their demographic change in urban is more prominent. This indicates that there is high rate of migration of tribals from rural to urban at national and state level during the decade.

Rural urban migration of tribals may be attributed to a number of factors, but importantly, it signals out that their economic and social development requirements are changing rapidly and they are also in the process of mainstreaming themselves. It is further confirmed by looking at composition of tribals in rural and urban areas. At the national level, tribal population in rural area was 10.4 percent and 2.4 percent in urban which increased to 11.3 percent and 2.8 percent in rural and urban respectively. In Chhattisgarh, it increased from 8.4 percent to 10 percent in urban and reduced from 37.6 percent to 36.9 percent in rural. In case of Jharkhand, ST population in urban more or less remains unchanged with a marginal increase from 31.0 percent to 31.4 percent in rural. In case of Odisha, the urban population of tribal increased from 8.1 percent to 8.5 percent with a change from 24.6 percent to 25.7 percent in rural.

Table 9: Tribal Population in its Distribution by Area

State	ST Population (%)	Tribal Population in Tribal Areas (%)	Tribal Population in Non-Tribal Areas (%)	No. of Districts with more than 50 % ST Population	No. of Districts with 25 % to 50 % ST Population
Chhattisgarh	30.6	49.9	50.1	7	6
Jharkhand	26.2	32.3	67.7	5	8
Odisha	22.8	57.6	42.4	8	6
India	8.6	32.0	68.0	90	62

Source: Census 2011, Government of Odisha

It is apparent from demographic analysis that percentage of tribal living out of tribal area is more than two times to tribals living in tribal areas (TSP areas). Percentage of tribal population in tribal areas is 32.0 percent whereas in non-tribal areas, their population is 68 percent. In

Chhattisgarh, about 49.9 percent tribals live in tribal areas whereas remaining 50.1 percent out of the tribal areas. Similar trend is observed in case of Jharkhand where 67.7 percent tribals live out of tribal area and 32.3 percent reside in the tribal area. However, the trend is marginally different in Odisha where more tribals live in tribal areas (57.6 percent) rather than out of the tribal areas (42.4 percent).

3.2 Tribal Sub-Plan Approach

Component Plans have been designed for Scheduled Tribes and Scheduled Castes in the 5th and 6th Five Year Plan respectively. The sub-plan approach mandated allocation of proportionate funds from the total plan ceiling pertaining to the tribal and scheduled castes population of the country as a whole and state in specific. This plan also ensures non-divertibility and non-lapsability of the funds fixed for the development of STs and SCs. The Tribal Sub-Plan (TSP) approach envisages integrated development of the tribal areas, wherein all programmes, irrespective of their sources of funding operate in unison to achieve the common goal of bringing the area at par with the rest of the state and to improve the quality of life of the tribes. The original strategy was oriented towards taking-up family oriented income generating schemes in the sphere of agriculture, horticulture, animal husbandry, elimination of exploitation and human resources development. The objectives of adoption of TSP strategy can be categorised in to two, i.e. (i) Socio- economic development of the Scheduled Tribes and their habitats, and (ii) Protection of tribal from exploitation. It is envisaged to enhance the level of development of the Scheduled Tribes by adopting a multi-pronged strategy so as to minimize the gap that exists between tribal and the rest of the society.

3.2.1 TSP Allocation and Expenditure

The allocation made by the states to TSP is above the population percentage of tribal to total population of the state. But percentage of expenditure to allocation remains to be around 76 percent in Chhattisgarh and Jharkhand whereas expenditure of TSP fund is about 90 percent in Odisha during 2011-12. Expenditure to allocation percentage observed increased in Chhattisgarh and Jharkhand during 2012-13 but it was reduced in Odisha during the year. Total Plan outlay, allocation of funds to TSP and expenditure is presented in the table.

Table 10: Funds Allocation to TSP and Expenditure, 2011-12

State	ST Population Percent	Total State Plan Outplay	TSP Allocation	TSP Allocation Percentage	TSP Actual Expenditure	Expenditure to Allocation Percentage
Chhattisgarh	30.62	16710.00	5561.44	33.28	4229.53	76.05
Jharkhand	26.21	15322.75	7501.39	48.96	5749.39	76.64
Odisha	22.85	15200.00	3603.44	23.71	3282.63	91.10
India		425901.54	44772.42	10.51	38532.26	86.06

Source: Tribal Welfare and Development, Ministry of Tribal Affairs, Government of India

Table 11: Funds Allocation to TSP and Expenditure, 2012-13

State	Total State Plan Outplay	TSP Allocation	TSP Allocation Percentage	TSP Actual Expenditure	Expenditure to Allocation Percentage
Chhattisgarh	23480	7356	31.33	6177.65	83.98
Jharkhand	16300	8199.4	50.30	4458.06	54.37
Odisha	17250	4316.4	25.02	3741.8	86.69
India	505601.69	54689.85	10.82	43376.91	79.31

3.2.2 SCA to TSP and Article 275 (1)

Allocation under SCA to TSP and Article 275 (1) is presented in the table below. As the trend shows, of the total allocation made under Article 275 (1) in 2002-03, the state of Chhattisgarh received 8.97 percent of the total funds, whereas Jharkhand and Odisha received 9.36 percent and 12.14 percent of the total national allocation. The allocation increased marginally to 11.66 percent for Chhattisgarh and 10.68 percent for Jharkhand whereas allocation to Odisha reduced to 8.61 percent during 2014-15.

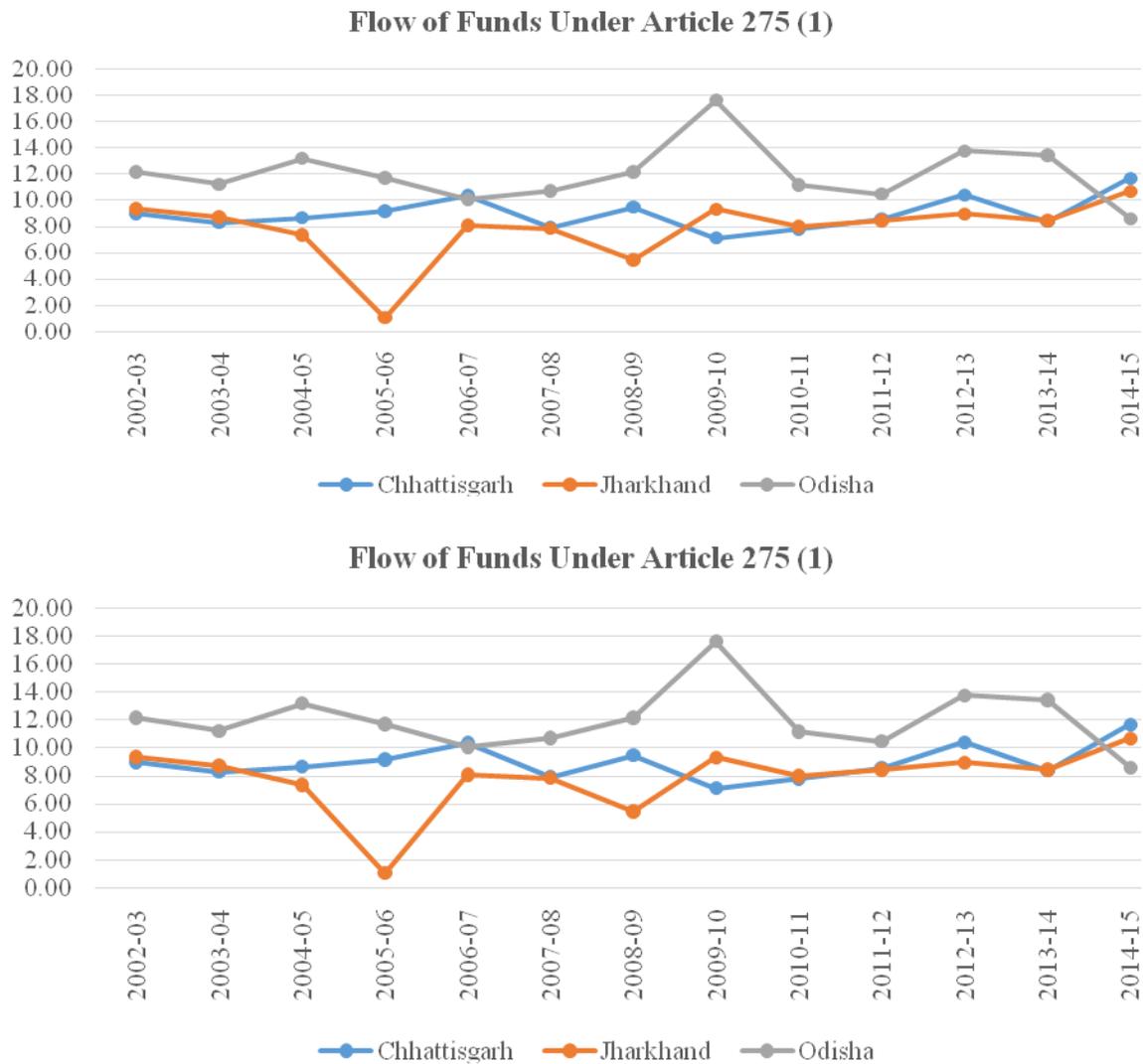


Figure 1: Flow of Funds under Article 275 (1), 2002-03 to 2014-15
Source: Annual Reports, Ministry of Tribal Affairs, Government of India.

Of the total national allocation under SCA to TSP, Chhattisgarh was having a share of 9.31 percent during 2002-03 which reduced to 6.31 percent during 2014-15. The share of Jharkhand was also reduced from 11.81 percent in 2002-03 to 9.41 percent during 2014-15. The same trend continued in Odisha where allocation reduced from 13.07 percent in 2002-03 to 11.69 percent during 2014-15. While the tribal development requirements are going up and allocation to TSP by states are increasing, allocation under SCA to TSP and Article 275 (1) shows a decreasing trend.

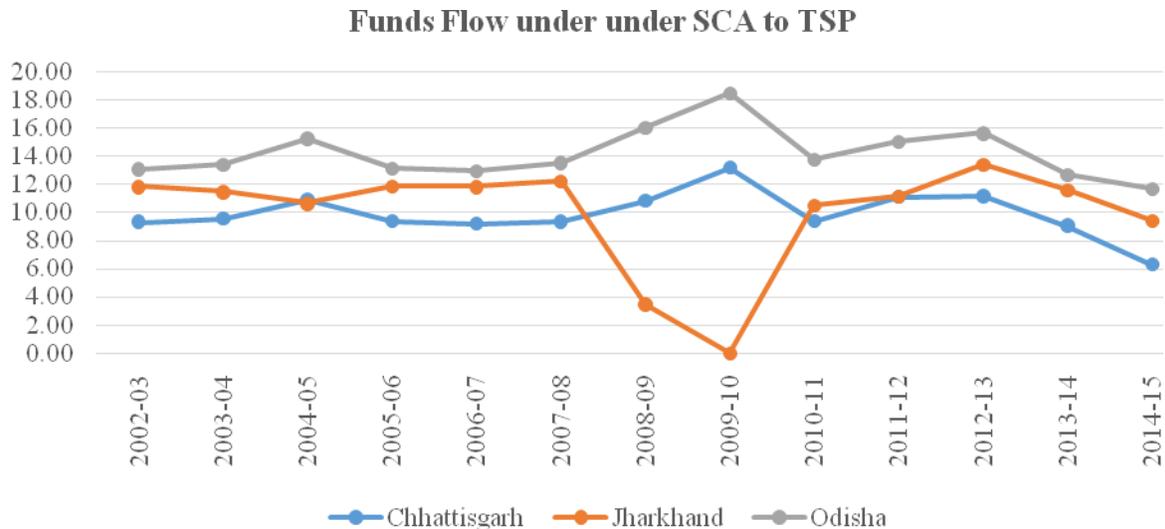


Figure 2: Flow of Funds under SCA to TSP, 2002-03 to 2014-15
Source: Annual Reports, Ministry of Tribal Affairs, Government of India.

The Compound Annual Growth Rate (CAGR) in flow of funds under Article 275 (1) found to be 0.85 in Chhattisgarh, 0.97 in Jharkhand and 1.55 in Odisha in between 2002-03 to 2014-15. The compound annual growth rate under SCA to TSP, in between 2002-03 to 2014-15, found to be 1.68 in Chhattisgarh, 1.38 in Jharkhand and 1.21 in Odisha.

Table 12: Compound Annual Growth Rate of Funds under Article 275 (1) and SCA to TSP

State	Year	CAGR Article 275 (1)	CAGR SCA to TSP
Chhattisgarh	2002-03 to 2014-15	0.85	1.68
Jharkhand	2002-03 to 2014-15	0.97	1.38
Odisha	2002-03 to 2014-15	1.55	1.21

Data Source: Annual Reports, Ministry of Tribal Affairs, Government of India.

3.3 Educational Disability

Importance of education for tribal development is realized and given important during different plan periods. Importance of education is perceived as a catalyst, not only to improve the quality of human resources but also bringing economic development and thereby greater socio-cultural assimilation. The policy and schematic focus helped to augment the status of education of tribals from 8.54 percent in 1961 to 63.1 percent by 2011. While the male literacy rate increased from

13.83 percent (census 1961) to 71.70 percent (census 2011), female literacy rate increased from 3.16 percent in 1961 (census 1961) to 54.4 percent in 2011 (census 2011).

Table 13: Literacy Rate of Tribals in India

Year	Literacy Rate – Scheduled Tribes					
	Male		Female		Total	
	Literacy Rate	Growth	Literacy Rate	Growth	Literacy Rate	Growth
1961	13.83		3.16		8.54	
1971	17.63	27.48	4.85	53.48	11.39	33.37
1981	24.52	39.08	8.05	65.98	16.35	43.55
1991	40.65	65.78	18.19	125.96	29.60	81.04
2001	59.17	45.56	34.76	91.09	47.10	59.12
2011	71.70	21.18	54.4	56.50	63.1	33.97

Source: Census of India, Different Years; Growth is in Percentage Points

In comparison to growth of literacy rate in all social groups, the rate of growth is relatively high among the tribals. Rate of growth also recorded to be high in case of tribals in both male and female, in comparison to all social groups in different census periods. Still, overall literacy rate among the tribals remain low in comparison to all social groups. Further, in spite of high rate of growth in literacy rate among the females, the female literacy rate still remains low among the tribals in comparison to their male counterpart. So, while literacy rate among the tribals remain low in comparison to all social groups, female literacy rate is further low among the tribals in comparison to male.

Table 14: Literacy Rate of Tribal Male and Female

Year	All Social Groups					
	Male		Female		Total	
	Literacy Rate	Growth	Literacy Rate	Growth	Literacy Rate	Growth
1961	40.40		15.35		28.3	
1971	45.96	13.76	21.97	43.13	34.45	21.73
1981	56.38	22.67	29.76	35.46	43.57	26.47
1991	64.13	13.75	39.29	32.02	52.21	19.83
2001	75.26	17.36	53.67	36.60	64.84	24.19
2011	80.89	7.48	64.64	20.44	72.99	12.57

Source: Census of India, Different Years; Growth is in Percentage Points

Among the study states, literacy rate in Chhattisgarh is relatively higher than Jharkhand and Odisha and almost at par with the national average. Literacy rate of tribals in Odisha is the lowest among the study states and remain below the national average. In all the study states, literacy rate of tribals in urban is higher than rural, including at the national level. It can be analysed in two ways, i.e., firstly, either educated tribals moves to urban areas for better social and economic pursuit and/or secondly, tribals living in urban areas have a better scope of education than the rural for which literacy rate among the tribals in urban is higher.

Table 15: Literacy Rate of Tribal in Rural and Urban

State	Total			Rural			Urban		
	Person	Male	Female	Person	Male	Female	Person	Male	Female
Chhattisgarh	59.1	69.7	48.8	57.6	68.4	47.1	76.9	84.9	69.0
Jharkhand	57.1	68.2	46.2	55.2	66.6	43.9	75.4	83.2	67.8
Odisha	52.2	63.7	41.2	51.1	62.7	39.9	69.1	77.7	60.5
India	59.0	68.5	49.4	56.9	66.8	46.9	76.8	83.2	70.3

Source: Census of India, 2011.

Gap in literacy rate in 1991 was 22.6 percentage point at the national level which reduced to 17.7 percentage point in 2001 and reduced further to 14.0 percentage point in 2011. Gap in literacy rate observed highest in Odisha (20.6 percent) and lowest in Jharkhand (9.3 percent) among the study states.

Table 16: Literacy Rate of STs and All Social Groups in Study States

State	Literacy Rate, 1991			Literacy Rate, 2001			Literacy Rate, 2011		
	Total Literacy Rate	ST Literacy Rate	Gap in Literacy Rate	Total Literacy Rate	ST Literacy Rate	Gap in Literacy Rate	Total Literacy Rate	ST Literacy Rate	Gap in Literacy Rate
Chhattisgarh	42.9	26.7	16.2	64.7	52.1	12.6	70.3	59.1	11.2
Jharkhand	41.4	27.5	13.9	53.6	40.7	12.9	66.4	57.1	9.3
Odisha	49.1	22.3	26.8	63.1	37.4	25.7	72.9	52.2	20.6
India	52.2	29.6	22.6	64.8	47.1	17.7	73.0	59.0	14.0

Source: Statistics of School Education of Different Years, MHRD

3.3.1 Gross Enrolment Ratio

The Gross Enrolment Ratio (GER) remains more than 100.0 percent, in case of both boys and girls in class I-V (6-10 years' age group) in all the study states. But GER remains below 90.0 percent in all the study states. The study state of Odisha is having the lowest GER in class VI-VIII among all the study states and it is also below the national average. Less enrolment in upper primary classes, in comparison to primary might be due to less pass out rate in primary and/or dropout of students from educational institutions after primary

Table 17: Gross Enrolment Ratio of Tribals in Elementary Education in Different Years

State	Class I-V (6-10 Years)			Class VI-VIII (11-13 Years)		
	Boys	Girls	Total	Boys	Girls	Total
Chhattisgarh	116.7	111.3	114.0	83.9	75.7	79.8
Jharkhand	164.9	164.1	164.5	84.0	80.8	82.4
Odisha	132.7	137.4	135.0	77.1	72.5	74.9
India	137.2	136.7	137.0	90.7	87.0	88.9

Source: Statistics of School Education of Different Years, MHRD

Further, gross enrolment in the age group 14-15 years, i.e., enrolment in class IX and X remain comparatively low in comparison to classes from I-VIII. Low gross enrolment remains low in class IX-X in case of both boys and girls.

Table 18: Gross Enrolment Ratio of Tribals in Elementary and Secondary Education by Study States

State	Class I-VIII (6-13 Years)			Class IX-X (14-15 Years)			Class I-X (6-15 Years)		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Chhattisgarh	104.8	98.4	101.6	58.0	55.2	56.7	95.6	90.0	92.8
Jharkhand	134.1	131.6	132.8	42.7	39.0	40.9	115.5	112.4	114.0
Odisha	113.5	114.8	114.1	43.2	40.7	42.1	100.3	101.0	100.6
India	120.5	118.7	119.7	57.1	49.1	53.3	108.2	105.3	106.8

Source: Statistics of School Education of Different Years, MHRD

The gross enrolment further reduces in class XI-XII in comparison to class IX-X and it is observed in both boys and girls, in all the study states. The state of Jharkhand is having lowest gross enrolment ratio in class XI-XII in comparison to other study states.

Table 19: Gross Enrolment Ratio of Tribals in High School and Higher Secondary Education

State	Class XI-XII (16-17 Years)			Class IX-XII (14-17 Years)			Class I-XII (6-17 Years)		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Chhattisgarh	32.6	24.7	28.6	45.9	40.3	43.1	85.9	79.7	82.9
Jharkhand	11.1	9.1	10.1	27.6	24.5	26.0	99.0	95.5	97.3
Odisha	20.1	14.2	17.2	32.6	28.1	30.4	89.1	88.5	88.8
India	32.7	24.8	28.8	45.4	37.3	41.5	96.8	92.8	94.8

Source: Statistics of School Education of Different Years, MHRD

3.3.2 Enrolment in Higher Classes

Gross enrolment in higher classes is low in case of STs in comparison to all categories. In standard IX-X, gross enrolment, in 2011-12 was 66.6 percent whereas in case of STs, it remains to be 53.8. Whereas, overall from class I-X, gross enrolment of tribals remain at par with all categories. In Standard XI-XII, when the gross enrolment of all categories remain 45.9 percent, in case of STs, it was 32.3 percent. Comparing the gross enrolment from standard IX-XII, gross enrolment of ST students was 43.9 percent whereas gross enrolment of all categories was 56.8 percent.

Table 20: Gross Enrolment in Higher Classes

All Categories															
Year	Classes IX-X (14-15 Years)			Classes I-X (6-15 Years)			Classes XI-XII (16-17 Years)			Classes IX-XII (14-17 Years)			Classes I-XII (6-17 Years)		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
2004-05	57.4	45.3	51.7				30.8	24.5	27.8	44.3	35.1	39.9	79.8	72.3	76.2
2005-06	57.6	46.2	52.2				31.4	25.2	28.5	44.6	35.8	40.4	80.6	73.0	77.0
2006-07	58.6	47.4	53.3				31.5	26.1	29.0	45.0	36.8	41.1	81.8	74.8	78.4
2007-08	62.6	53.2	58.2				36.3	30.4	33.5	49.4	41.9	45.8	84.5	79.3	82.0
2008-09	64.8	55.5	60.4	94.8	90.7	92.9	37.2	31.6	34.5	51.0	43.5	47.4	85.0	80.8	83.0
2009-10	66.7	58.7	62.9	95.2	91.9	93.6	38.5	33.5	36.1	52.5	46.1	49.4	85.5	82.0	83.8
2010-11	69.2	60.9	65.2	97.2	94.6	96.0	42.3	36.2	39.4	55.7	48.5	52.2	87.8	84.5	86.2
2011-12	69.0	63.9	66.6	91.6	91.0	91.3	47.6	43.9	45.9	58.8	54.5	56.8	84.9	84.1	84.5
Scheduled Tribe Category															
2004-05	43.3	30.5	37.2	-	-	-	21.5	12.6	17.2	33.0	22.0	27.7	85.6	73.7	79.9
2005-06	44.7	33.0	39.1	-	-	-	21.7	13.1	17.5	33.7	23.4	28.7	87.9	77.2	82.7
2006-07	47.5	35.5	41.8	-	-	-	23.4	14.7	19.2	35.9	25.3	30.8	90.2	80.0	85.2
2007-08	48.8	37.2	43.3	-	-	-	24.3	16.2	20.3	36.9	26.9	32.1	91.3	83.3	87.4
2008-09	51.7	40.7	46.4	106.0	99.6	102.9	27.7	19.4	23.6	40.3	30.3	35.4	94.3	87.4	91.0
2009-10	55.3	45.8	50.7	106.7	102.1	104.5	31.3	22.6	27.0	43.8	34.6	39.3	95.4	90.0	92.8
2010-11	57.1	49.1	53.3	108.2	105.3	106.8	32.7	24.8	28.8	45.4	37.3	41.5	96.8	92.8	94.8
2011-12	56.7	50.6	53.8	94.3	91.4	92.8	35.4	29	32.3	46.9	40.7	43.9	86.1	82.9	84.5

Source: Statistics of School Education, 2011-12

3.3.3 Gender Parity Index

The gender parity index of tribals in elementary education shows an increasing trend from 0.60 in 1990-91 to 0.98 in 2011-12. The increasing trend in gender parity is observed in students of all categories. Gender parity in ST students remain marginally less than that of students of all categories in standard I-V and also in standard VI-VIII. The trend of growth in gender parity for all classes and STs is presented in the table.

Table 21: Gender Parity Index

Year	Classes I-V (6-10 Years)			Classes VI-VIII (11-13 Years)			Classes I-VIII (6-13 Years)		
	All	SC	ST	All	SC	ST	All	SC	ST
1990-91	0.76	0.69	0.65	0.65	0.52	0.50	0.73	0.63	0.60
1991-92	0.77	0.69	0.66	0.68	0.52	0.50	0.75	0.65	0.63
1992-93	0.77	0.72	0.70	0.67	0.59	0.55	0.75	0.69	0.67
1993-94	0.87	0.74	0.72	0.74	0.61	0.58	0.79	0.71	0.69
1994-95	0.81	0.75	0.68	0.73	0.61	0.67	0.79	0.71	0.70
1995-96	0.82	0.76	0.70	0.73	0.62	0.61	0.80	0.72	0.71
1996-97	0.83	0.77	0.69	0.75	0.68	0.63	0.81	0.74	0.70
1997-98	0.83	0.78	0.73	0.75	0.67	0.64	0.81	0.75	0.73
1998-99	0.83	0.79	0.72	0.76	0.71	0.64	0.82	0.77	0.70
1999-00	0.83	0.78	0.72	0.76	0.72	0.64	0.82	0.77	0.71
2000-01	0.82	0.80	0.73	0.75	0.70	0.66	0.80	0.78	0.72
2001-02	0.83	0.80	0.80	0.77	0.72	0.70	0.81	0.78	0.77

Year	Classes I-V (6-10 Years)			Classes VI-VIII (11-13 Years)			Classes I-VIII (6-13 Years)		
	All	SC	ST	All	SC	ST	All	SC	ST
2002-03	0.95	0.88	0.88	0.86	0.77	0.74	0.93	0.85	0.85
2003-04	0.95	0.89	0.93	0.86	0.80	0.79	0.93	0.87	0.90
2004-05	0.95	0.86	0.90	0.88	0.79	0.81	0.93	0.85	0.88
2005-06	0.94	0.87	0.91	0.88	0.80	0.84	0.92	0.86	0.90
2006-07	0.94	0.88	0.92	0.90	0.76	0.85	0.93	0.86	0.91
2007-08	0.98	0.99	0.96	0.91	0.95	0.87	0.96	0.98	0.94
2008-09	0.99	0.99	0.97	0.93	0.96	0.89	0.97	0.98	0.95
2009-10	1.00	1.00	0.98	0.94	0.97	0.93	0.98	0.99	0.97
2010-11	1.01	1.01	1.00	0.95	0.96	0.96	0.99	1.00	0.99
2011-12	1.01	1.02	0.98	0.99	1.02	0.96	1.00	1.05	0.98

Source: Statistics of School Education, 2011-12

The GPI in higher classes is comparatively low in case of tribals in class IX-X and class XI-XII. In 2011-12, gender parity index of STs was 0.89 against 0.93 for all classes. Similarly, GPI of STs in class XI-XII as 0.82 in 2011-12 whereas it was 0.92 in case of all categories.

Table 22: Gender Parity Index in Higher Classes

Year	Classes IX-X (14-15 Years)			Classes I-X (6-15 Years)			Classes XI-XII (16-17 Years)			Classes IX-XII (14-17 Years)			Classes I-XII (6-17 Years)		
	All	SC	ST	All	SC	ST	All	SC	ST	All	SC	ST	All	SC	ST
2004-05	0.79	0.72	0.70	-	-	-	0.79	0.72	0.59	0.79	0.72	0.67	0.91	0.84	0.86
2005-06	0.80	0.74	0.74	-	-	-	0.80	0.75	0.61	0.80	0.74	0.69	0.91	0.85	0.88
2006-07	0.81	0.76	0.75	-	-	-	0.83	0.75	0.63	0.82	0.76	0.71	0.91	0.85	0.89
2007-08	0.85	0.88	0.76	-	-	-	0.84	0.84	0.67	0.85	0.87	0.73	0.94	0.98	0.91
2008-09	0.86	0.89	0.79	0.96	0.97	0.94	0.85	0.86	0.70	0.85	0.88	0.75	0.95	0.97	0.93
2009-10	0.88	0.90	0.83	0.96	0.98	0.96	0.87	0.90	0.72	0.88	0.90	0.79	0.96	0.98	0.94
2010-11	0.88	0.91	0.86	0.97	0.99	0.97	0.86	0.90	0.76	0.87	0.91	0.82	0.96	0.99	0.96
2011-12	0.93	0.98	0.89	0.99	1.04	0.97	0.92	1.00	0.82	0.93	0.99	0.87	0.99	1.02	0.96

Source: Statistics of School Education, 2011-12

Gender parity in study states reflects more or less a similar trend. In standard IX-X, GPI of tribals is comparatively low (0.89) than all categories (0.93). In class Xi-XII, GPI of tribals remain to be 0.82 whereas in all categories, it was 0.92. It reflects that education of tribal girls has been remaining low in higher education in the study states. In spite of a number of education promotion measures, enrolment of tribal girls in higher education is still low.

Table 23: Gender Parity Index in Study States

State	Classes IV	Classes VI-VIII	Classes I-VIII	Classes IX-X	Classes I-X	Classes XI-XII	Classes IX-XII	Classes I-XII
Chhattisgarh	0.97	0.95	0.96	0.95	0.96	0.87	0.93	0.96
Jharkhand	1.02	1.02	1.02	0.96	1.02	0.99	0.98	1.03
Odisha	0.98	0.98	0.98	0.92	0.97	0.67	0.84	0.95

India	1.01	0.99	1.00	0.93	0.99	0.92	0.93	0.99
STs								
Chhattisgarh	0.96	0.91	0.95	0.97	0.95	0.83	0.92	0.94
Jharkhand	0.98	0.99	0.98	0.96	0.99	0.91	0.96	0.99
Odisha	0.94	0.91	0.94	0.89	0.93	0.66	0.82	0.92
India	0.98	0.96	0.98	0.89	0.97	0.82	0.87	0.96

Source: Statistics of School Education, 2011-12

Number of girls per 100 boys in higher classes, i.e., class IX-XII is marginally low in case of tribals than the overall situation but it remains marginally higher when all enrolments from class I-XII is considered. Number of girls per 100 boys is higher in Jharkhand (95) in comparison to other two study states, followed by Odisha (93) and Chhattisgarh (92) in class I-XII. However, in class XI-XII, number of girls is comparatively low than boys in Odisha (67), whereas, in Chhattisgarh and Jharkhand, number of girls per 100 boys is more or less same to that of all categories.

Table 24: Number of Girls per 100 Boys

State	Classes IV	Classes VI-VIII	Classes I-VIII	Classes IX-X	Classes I-X	Classes XI-XII	Classes IX-XII	Classes I-XII
ALL								
Chhattisgarh	94	93	93	93	93	85	90	93
Jharkhand	97	96	97	87	96	84	86	96
Odisha	94	95	94	92	94	67	83	92
India	93	90	92	84	91	81	83	90
STs								
Chhattisgarh	94	90	93	95	93	83	91	92
Jharkhand	95	96	96	91	95	84	89	95
Odisha	95	91	94	90	93	67	83	93
India	94	93	94	84	93	76	81	92

Source: Statistics of School Education, 2011-12

The gender parity index in class I-V observed low in Chhattisgarh in comparison to other study states. It also remains low in comparison to national average. Accessibility of girls in class VI-VII remains low in comparison to their boy counterparts which again reflects that dropout of girls from the educational system during this stage of education. At the national level, accessibility of tribal girls to higher education remains further less in class IX-X, at the national level. However, in study states, girl's accessibility remains higher than national average. Overall, accessibility to education by girls in Chhattisgarh remain below the national average in class I-XII in comparison to study state of Jharkhand and Odisha.

Table 25: Gender Parity Index, 2010-11

State	Class I-V	Class VI-VIII	Class I-VIII	Class IX-X	Class I-XII
Chhattisgarh	0.95	0.90	0.94	0.95	0.93
Jharkhand	1.00	0.96	0.98	0.91	0.97
Odisha	1.04	0.94	1.01	0.94	0.99
India	1.00	0.96	0.99	0.86	0.96

Source: Statistics of School Education of Different Years, MHRD, 2010-11

3.3.4 Educational Dropouts

Dropout might be one of the reasons for low gross enrolment which can be observed from the dropout rate in different classes in the study states. Dropout rate in class IX-XII is higher than XI-XII in both boys and girls. The dropout rate remains 55.0 at the national level in class IX-XII whereas it remains 35.6 in class XI-XII. Similar trend also observed in all the study states in class IX-XII. However, dropout rate of ST students in Odisha remain highest in classes IX-XII whereas dropout rate in class XI-XII remain high in Chhattisgarh. Overall, in class I-XII, dropout rate remains high in Odisha (85.6 percent) followed by Jharkhand (79.8 percent). Chhattisgarh is having the lowest dropout rate which is even below the national average.

Table 26: Dropout Rate of STs in Study States

State	Class XI-XII (16-17 Years)			Class IX-XII (14-17 Years)			Class I-XII (6-17 Years)		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Chhattisgarh	38.4	42.1	40.3	45.4	49.5	47.4	63.3	62.0	62.7
Jharkhand	39.6	35.0	37.5	60.5	49.4	55.8	80.8	78.5	79.8
Odisha	25.2	18.6	22.1	74.0	75.3	74.6	86.4	84.5	85.6
India	37.2	33.9	35.6	54.7	55.4	55.0	70.6	71.3	70.9

Source: Statistics of School Education of Different Years, MHRD

The rate of dropouts greatly influences educational status of scheduled tribes. However, there are different attributes that are responsible to this situation. Dropout of tribal students from educational institutions is the outcome rather than the cause. The causes could have more related to family economy, language of imparting education, inadequate government support, interest to continue education etc.

The dropout rate observed to be higher among the tribals in comparison to the overall dropout rate in study states. Dropout rate of tribal students in class I-X is higher in Jharkhand and Odisha, in comparison to Chhattisgarh. Similar trend observed in elementary classes (I-VIII) where dropout rate of tribal students in Odisha (72.7) is highest followed by Jharkhand (61.4) and Chhattisgarh (54.4)

Table 27: Number of Girls per 100 Boys

State	Class I-V			Class I-VIII			Class I-X		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
ALL	28.8	29.8	29.3	43.6	43.8	43.7	50.2	51.4	50.8
Chhattisgarh	28.8	29.8	29.3	43.6	43.8	43.7	50.2	51.4	50.8
Jharkhand	42.6	43.2	42.9	54.2	49.5	52.0	70.9	70.6	70.7
Odisha	17.4	13.5	15.5	55.8	58.3	57.0	62.3	61.6	61.9
India	23.44	21.0	22.3	41.5	40.0	40.8	48.6	52.2	50.3
STs									
Chhattisgarh	37.7	34.6	36.3	53.2	55.7	54.4	53.5	53.7	53.6
Jharkhand	48.5	50.4	49.4	63.9	58.4	61.4	79.3	77.0	78.3
Odisha	26.9	30.1	28.5	72.2	73.4	72.7	77.0	77.0	77.0
India	36.1	34.4	35.3	57.3	57.1	57.2	64.4	67.6	65.9

Source: Statistics of School Education, 2011-12

3.3.5 Educational Factor Correlation

To understand the relation of educational indicators with population proportion of STs and area under forest, a correlation matrix was computed. Odisha shows a trend where Monthly Per Capita Expenditure (MPCE) in rural is having a negative correlation with ST population percentage and forest coverage. Similarly, Total Literacy Rate reflects a negative correlation with ST population percentage and Forest cover percentage. The key educational indicators like Net Enrolment Ratio and Gross Enrolment Ratio at Primary and Upper Primary Level are not having a correlation with ST population percentage or geographical area under forest cover.

Table 28: Correlation of Education Indicators with ST and Forest Percentage in Study States

Odisha	ST %	Forest %
ST %	1.000	
Forest %	0.637	1.000
MPCE Rural	-0.585	-0.576
Poor % Rural	0.710	0.624
Total Literacy Rate	-0.611	-0.523
NER (P)	0.363	0.335
NER (UP)	-0.389	-0.193
GER (P)	0.288	0.267
GER (UP)	-0.489	-0.348
Chhattisgarh	ST %	Forest %

ST %	1.000	
Forest %	0.734	1.000
MPCE Rural	-0.587	-0.411
Poor % Rural	0.647	0.547
Total Literacy Rate	-0.756	-0.551
NER (P)	-0.141	-0.149
NER (UP)	-0.352	-0.229
GER (P)	-0.129	-0.123
GER (UP)	-0.268	-0.156
Jharkhand		
	ST %	Forest %
ST %	1.000	
Forest %	-0.025	1.000
MPCE Rural	-0.515	-0.298
Poor % Rural	0.553	0.143
Total Literacy Rate	-0.209	-0.017
NER (P)	0.109	-0.161
NER (UP)	-0.707	-0.233
GER (P)	0.315	0.039
GER (UP)	-0.461	-0.123

More or less similar trend is observed in Chhattisgarh but Net Enrolment Ratio in Upper Primary Level (UP) is negatively correlated with ST population percentage. It can be inferred from the correlation matrix that education has less bearing with tribal population than economic condition. However, total literacy rate found negatively correlated with forest coverage in Odisha and Chhattisgarh whereas no such correlation is observed in Jharkhand. Rank of educational indicators by district in study states are presented in the tables below.

Table 29: Rank of Educational Performance Indicators of Chhattisgarh

Sl. No.	Districts	Literacy Rate	Male Literacy Rate (%)	Female Literacy Rate (%)	NER (P)	NER (UP)	GER (P)	GER (UP)
Chhattisgarh								
1	Balod	3	2	3	-	-	-	-
2	Baloda Bazar	12	9	14	-	-	-	-
3	Balrampur	21	21	21	-	-	-	-
4	Bastar	23	23	23	15	14	14	14
5	Bemetara	14	12	15	19	19	19	19
6	Bijapur	26	26	26	12	16	12	15
7	Bilaspur	8	8	7	13	12	13	12
8	Dantewada	24	24	25	16	18	16	17
9	Dhamtari	4	4	4	7	2	7	1
10	Durg	1	1	1	17	15	17	16
11	Gariyaband	15	13	16	-	-	-	-
12	Janjgir-Champa	7	6	9	2	1	2	5
13	Jashpur	16	16	13	3	8	5	7
14	Kanker	13	15	10	6	6	8	2
15	Kawardha	20	18	20	11	11	11	10
16	Kondagaon	22	22	22	-	-	-	-

Sl. No.	Districts	Literacy Rate	Male Literacy Rate (%)	Female Literacy Rate (%)	NER (P)	NER (UP)	GER (P)	GER (UP)
17	Korba	9	10	8	5	9	3	9
18	Koriya	11	14	11	4	5	6	6
19	Mahasamund	10	11	12	1	3	1	3
20	Mungeli	17	17	17	-	-	-	-
21	Narayanpur	25	25	24	9	13	4	13
22	Raigarh	6	7	6	10	7	10	8
23	Raipur	2	3	2	14	10	15	11
24	Rajnandagon	5	5	5	8	4	9	4
25	Sukma	27	27	27	-	-	-	-
26	Surajpur	18	19	19	-	-	-	-
27	Surguja	19	20	18	18	17	18	18

Source: DISE

Note: NER: Net Enrolment Ratio, GER: Gross Enrolment Ratio; P: Primary, UP: Upper Primary

Table 30: Rank of Educational Performance Indicators of Jharkhand

Sl. No.	Districts	Literacy Rate	Male Literacy Rate (%)	Female Literacy Rate (%)	NER (P)	NER (UP)	GER (P)	GER (UP)
Jharkhand		RANK	RANK	RANK	RANK	RANK	RANK	RANK
1	Bokaro	5	4	5	23	9	21	9
2	Chatra	19	20	15	1	16	5	16
3	Deoghar	12	9	14	8	5	9	8
4	Dhanbad	3	1	3	7	2	10	3
5	Dumka	17	17	19	3	15	6	12
6	Garhwa	18	18	20	2	3	15	5
7	Giridih	14	10	16	21	17	18	20
8	Godda	22	22	22	6	8	11	11
9	Gumla	11	12	9	16	24	3	21
10	Hazaribag	6	7	7	22	6	23	18
11	Jamtara	16	13	18	4	1	22	2
12	Khuti	15	16	13	15	14	16	17
13	Koderma	8	6	11	24	18	20	13
14	Latehar	20	21	17	12	11	14	6
15	Lohardaga	9	11	8	19	21	8	14
16	Pakur	24	24	24	17	23	17	23
17	Palamu	13	14	12	5	12	1	1
18	Paschim Singhbhum	21	19	21	13	22	12	22
19	Purbi Singhbhum	2	3	2	18	7	19	4
20	Ramgarh	4	5	4	20	13	13	7
21	Ranchi	1	2	1	14	10	7	10
22	Sahibganj	23	23	23	9	20	4	19
23	Sareikela & Kharsawan	7	8	10	11	4	24	24
24	Simdega	10	15	6	10	19	2	15

Source: DISE

Note: NER: Net Enrolment Ratio, GER: Gross Enrolment Ratio; P: Primary, UP: Upper Primary

Table 31: Rank of Educational Performance Indicators of Odisha

Sl. No.	Districts	Literacy Rate	Male Literacy Rate (%)	Female Literacy Rate (%)	NER (P)	NER (UP)	GER (P)	GER (UP)
Odisha								
1	Angul	12	12	12	26	21	12	19
2	Balangir	21	22	22	9	9	5	11
3	Balasure	9	8	8	22	22	18	21
4	Bargarh	14	15	13	19	18	10	12
5	Bhadrak	6	6	6	3	3	6	4
6	Boudh	18	16	17	13	8	21	17
7	Cuttack	3	4	4	30	26	30	22
8	Debagarh	17	17	16	4	7	16	15
9	Dhenkanal	11	11	10	27	14	28	14
10	Gajapati	26	26	26	5	25	7	26
11	Ganjam	19	19	19	25	12	27	13
12	Jagatsinghapur	2	1	1	21	4	17	3
13	Jajpur	8	9	7	10	19	9	9
14	Jharsuguda	10	10	11	16	16	11	18
15	Kalahandi	24	24	24	7	15	4	20
16	Kandhamal	22	21	23	8	23	3	23
17	Kendrapara	4	3	2	14	5	20	10
18	Kendujhar	20	20	20	11	24	15	25
19	Khurda	1	2	5	29	17	19	5
20	Koraput	28	28	30	18	29	22	28
21	Malkangiri	29	29	27	6	28	8	29
22	Mayurbhanj	23	23	21	1	1	1	1
23	Nabarangapur	30	30	29	12	27	23	27
24	Nayagarh	7	7	9	28	13	29	6
25	Nuapada	25	25	25	2	2	2	2
26	Puri	5	5	3	20	10	24	8
27	Rayagada	27	27	28	17	30	13	30
28	Sambalpur	13	14	14	15	11	14	16
29	Subarnapur	15	13	15	24	6	26	7
30	Sundargarh	16	18	18	23	20	25	24

Source: DISE

Note: NER: Net Enrolment Ratio, GER: Gross Enrolment Ratio; P: Primary, UP: Upper Primary

3.3.6 Educational Infrastructure

Infrastructural facility plays an important role in the promotion of education. Infrastructural facilities available in study states for the promotion of education is presented in the table.

Table 32: Educational Infrastructure in Study States

State	Number of Senior Secondary/ Secondary Education Board	Intermediate / Senior Secondary Schools	High/ Secondary Schools	Upper Primary Schools	Primary Schools	Total	Pre-Primary Schools
Chhattisgarh	4	2947	2806	15883	35352	56988	957
Jharkhand	1	1118	4225	14863	26731	46937	95
Odisha	2	51	7974	22649	54150	84824	-
India	48	84133	128321	474294	712437	1399185	61499

Source: Statistics of School Education, 2011-12

Rank of educational infrastructures of the study states reflects that most of the districts having high tribal concentration and forest coverage are having less infrastructural facilities. State wise rank of infrastructural facilities of the districts are presented below.

Table 33: Rank of Educational Infrastructure Indicators of Chhattisgarh

Sl. No.	Districts	No. of Primary School (P)	No. of Upper Primary School (UP)	Student Classroom Ratio (P)	Student Classroom Ratio (UP)	Student Classroom Ratio (P+UP)	Single Classroom School (%) (P)	Single Classroom School (%) (UP)
Chhattisgarh								
1	Balod	20	17	9	15	4	6	-
2	Baloda Bazar	14	6	25	22	22	14	-
3	Balrampur	9	7	17	10	24	22	24
4	Bastar	5	4	10	6	4	25	15
5	Bemetara	22	19	26	25	9	6	11
6	Bijapur	21	24	4	2	18	27	26
7	Bilaspur	3	3	23	22	18	5	11
8	Dantewada	26	22	1	2	9	11	18
9	Dhamtari	19	16	10	18	9	12	4
10	Durg	23	20	20	24	18	3	11
11	Gariyaband	16	27	8	9	14	16	17
12	Janjgir-Champa	6	2	20	17	26	2	3
13	Jashpur	4	10	6	12	16	17	4
14	Kanker	8	9	2	8	4	12	8
15	Kawardha	15	12	22	15	1	20	15
16	Kondagaon	13	5	6	4	4	4	22
17	Korba	7	13	17	19	9	21	20
18	Koriya	18	18	10	7	2	6	6
19	Mahasamund	12	14	17	20	18	24	8
20	Mungeli	24	21	27	26	27	6	1
21	Narayanpur	27	25	4	5	14	26	27
22	Raigarh	1	26	13	10	16	15	18
23	Raipur	17	15	23	27	8	1	14
24	Rajnandagon	2	1	14	20	9	6	8
25	Sukma	25	23	2	1	23	19	20
26	Surajpur	11	11	14	12	25	23	24
27	Surguja	10	8	14	14	2	18	23

Source: DISE

Note: P: Primary, UP: Upper Primary

Table 34: Rank of Educational Infrastructure Indicators of Jharkhand

Sl. No.	Districts	No. of Primary School (P)	No. of Upper Primary School (UP)	Student Classroom Ratio (P)	Student Classroom Ratio (P+UP)	Student Classroom Ratio (High School)	Single Classroom School (%) (P)	Single Classroom School (%) (P+UP)
JHARKHAND								
1	Bokaro	9	14	10	14	6	10	15
2	Chatra	10	5	7	13	20	8	13
3	Deoghar	5	7	18	19	19	4	3
4	Dhanbad	8	11	18	21	9	17	20
5	Dumka	2	4	12	9	15	17	12
6	Garhwa	13	16	24	24	11	4	5

Sl. No.	Districts	No. of Primary School (P)	No. of Upper Primary School (UP)	Student Classroom Ratio (P)	Student Classroom Ratio (P+UP)	Student Classroom Ratio (High School)	Single Classroom School (%) (P)	Single Classroom School (%) (P+UP)
7	Giridih	1	2	16	16	21	8	9
8	Godda	12	10	22	23	17	21	24
9	Gumla	15	12	12	5	7	19	17
10	Hazaribag	14	13	12	15	16	1	4
11	Jamtara	18	17	7	11	10	4	11
12	Khuti	19	22	7	2	12	14	8
13	Koderma	23	21	2	10	8	1	
14	Latehar	17	18	3	8	23	4	7
15	Lohardaga	24	24	1	4	14	1	
16	Pakur	20	19	16	12	5	24	19
17	Palamu	6	1	18	20	22	13	16
18	Paschim Singhbhum	4	6	18	17	13	16	18
19	Purbi Singhbhum	7	8	3	6	3	20	21
20	Ramgarh	22	23	15	18	18	12	10
21	Ranchi	3	3	10	7	1	22	23
22	Sahibganj	16	15	23	22	24	15	6
23	Sareikela & Kharsawan	11	9	3	3	4	23	22
24	Simdega	21	20	3	1	2	10	14

Source: DISE

Note: P: Primary, UP: Upper Primary

Table 35: Rank of Educational Infrastructure Indicators of Odisha

Sl. No.	Districts	No. of Primary School (P)	No. of Upper Primary School (UP)	Student Classroom Ratio (P)	Student Classroom Ratio (UP)	Student Classroom Ratio (P+UP)	Single Classroom School (%) (P)	Single Classroom School (%) (UP)	Single Classroom School (%) (P+UP)
Odisha									
1	Angul	19	16	12	15	11	5	10	14
2	Balangir	9	8	24	20	23	28	9	26
3	Balasore	8	3	30	18	25	9	23	12
4	Bargarh	18	14	10	10	7	7	21	8
5	Bhadrak	17	15	24	21	28	1	6	1
6	Boudh	28	29	6	26	19	20	1	25
7	Cuttack	7	4	6	7	7	12	8	17
8	Debagarh	30	30	3	5	1	22	12	8
9	Dhenkanal	21	20	10	5	7	8	7	8
10	Gajapati	23	25	4	30	3	23	1	28
11	Ganjam	2	2	18	27	29	13	19	3
12	Jagatsinghapur	20	19	1	1	2	3	14	17
13	Jajpur	11	7	24	4	17	10	25	7
14	Jharsuguda	29	28	12	2	3	29	26	21
15	Kalahandi	6	12	27	27	25	16	18	6
16	Kandhamal	12	18	1	10	3	25	27	21
17	Kendrapara	15	12	22	10	11	19	23	3
18	Kendujhar	5	6	28	7	23	13	22	17
19	Khurda	16	9	16	10	20	11	10	23
20	Koraput	4	10	22	21	20	27	17	30
21	Malkangiri	24	26	18	3	25	24	1	27
22	Mayurbhanj	1	1	18	17	17	6	15	12
23	Nabarangapur	14	17	28	29	30	21	19	24
24	Nayagarh	25	23	6	16	7	2	1	1
25	Nuapada	26	24	18	18	20	13	28	3

Sl. No.	Districts	No. of Primary School (P)	No. of Upper Primary School (UP)	Student Classroom Ratio (P)	Student Classroom Ratio (UP)	Student Classroom Ratio (P+UP)	Single Classroom School (%) (P)	Single Classroom School (%) (UP)	Single Classroom School (%) (P+UP)
26	Puri	13	11	12	7	11	17	30	15
27	Rayagada	10	21	12	21	15	30	29	29
28	Sambalpur	22	22	4	25	6	4	12	16
29	Subarnapur	27	27	6	10	11	26	1	20
30	Sundargarh	3	5	16	21	15	17	16	8

Source: DISE; Note: P: Primary, UP: Upper Primary

3.3.7 Educational Facilities and Services

For the promotion of education, educational facilities available at school level is considered important. Government has been giving emphasis on creating such facilities which will attract students to public schools and will help to improve enrolment. Status of educational facilities and services available at districts of study states at primary and upper primary level area presented in the following tables. The parameters that are computed and ranked are;

1. Pupil Teacher Ratio (Primary and Upper Primary);
2. Percentage of Single Teacher Schools (Primary and Upper Primary);
3. Percentage of Schools with Girls Toilet (Primary and Upper Primary);
4. Percentage of Schools with Boys Toilet (Primary and Upper Primary);
5. Percentage of Schools with Drinking Water Facility (Primary and Upper Primary);
6. Percentage of School with Electricity (Primary and Upper Primary);
7. Percentage of Schools with Computer Facility (Primary and Upper Primary);

Table 36: Rank of Districts on Educational Facilities & Services, Chhattisgarh

Districts	PTR			Single Teacher School			School with Girls Toilet (%)			School with Boys Toilet (%)			School with Drinking Water Facility			School with Electricity			School with Computers			
	P	UP	P+UP	P	UP	P+UP	P	UP	P+UP	P	UP	P+UP	P	UP	P+UP	P	UP	P+UP	P	UP	P+UP	
Chhattisgarh																						
Balod	9	13	3	7	2	21	2	5	1	8	5	9	2	1	18	1	1	4	8	15	16	
Baloda Bazar	22	22	16	4	9	1	20	21	21	24	22	26	6	8	1	10	14	13	22	24	17	
Balrampur	17	19	20	18	22	1	2	4	1	14	12	7	19	21	1	26	27	21	14	27	21	
Bastar	9	4	12	22	24	1	21	23	24	15	18	19	22	19	27	20	19	25	18	26	4	
Bemetara	26	25	7	5	10	1	23	24	1	18	20	22	15	5	21	4	5	9	20	11	9	
Bijapur	7	3	27	27	27	27	26	26	15	25	24	13	27	27	13	19	20	22	9	8	2	
Bilaspur	24	20	14	11	13	16	1	1	11	7	1	10	8	13	10	14	11	10	4	14	10	
Dantewada	1	2	24	25	15	25	11	16	1	12	13	6	4	17	1	24	23	12	7	13	13	
Dhamtari	9	13	9	14	3	20	24	17	24	20	19	25	23	22	1	5	4	5	2	1	11	
Durg	22	21	14	13	3	22	12	9	9	16	14	5	5	3	12	3	2	2	4	16	5	
Gariyaband	12	13	9	19	23	1	27	27	17	13	15	16	3	4	20	8	9	7	22	19	20	
Janjgir-Champa	19	17	21	10	8	19	10	10	23	6	7	15	14	14	17	13	13	16	24	21	25	
Jashpur	3	8	18	17	11	1	16	6	18	4	8	1	11	8	1	25	21	24	25	6	19	
Kanker	1	7	1	8	15	1	16	18	27	11	10	14	13	16	24	9	10	23	14	9	27	
Kawardha	21	17	1	12	12	23	4	12	1	5	6	1	9	6	1	7	7	3	3	7	6	
Kondagaon	12	8	3	24	25	26	7	7	1	2	4	1	18	22	1	18	18	20	27	25	18	
Korba	19	10	16	21	5	18	18	20	13	19	17	11	24	19	22	17	17	14	6	12	7	
Koriya	16	10	3	20	18	1	6	1	1	3	1	1	11	10	1	15	12	5	11	2	23	
Mahasamund	17	22	19	16	13	1	14	14	22	9	9	21	9	12	15	6	6	15	11	4	8	
Mungeli	27	26	24	15	17	1	9	13	19	21	23	23	21	25	25	16	16	11	21	17	26	
Narayanpur	7	4	12	23	21	1	13	10	1	10	11	17	25	7	25	27	22	27	25	3	1	
Raigarh	4	10	21	1	6	16	8	7	11	23	21	12	16	22	15	12	15	17	11	22	14	
Raipur	24	27	3	5	7	15	15	19	10	17	16	20	7	11	1	2	3	1	1	10	3	
Rajnandgaon	12	24	7	2	19	1	4	1	14	1	1	7	1	1	14	11	8	8	9	5	15	
Sukma	4	1	26	26	26	23	25	25	26	22	25	24	26	25	23	21	24	19	14	18	22	
Surajpur	12	13	23	9	20	1	22	22	16	27	27	27	20	14	11	23	26	25	18	23	24	
Surguja	4	4	9	3	1	1	19	15	20	26	26	18	17	18	19	22	25	18	17	20	12	

Table 37: Rank of Districts on Educational Facilities & Services, Jharkhand

Districts	PTR			Single Teacher School (%)	School with Girls Toilet (%)			School with Boys Toilet (%)			School with Drinking Water Facility (%)		School with Electricity (%)		School with Computer (%) (P)	
	P	UP	P+UP		P	P	UP	P	UP	P	P+UP	P	P+UP	P	P+UP	
Jharkhand																
Bokaro	5	14	9	4	17	14	19	18	3	3	6	11	15	9		
Chatra	13	3	13	2	18	17	15	14	6	8	19	21	6	6		
Deoghar	15	23	14	11	22	24	24	22	10	12	10	6	20	17		
Dhanbad	14	20	15	7	3	11	3	11	15	19	3	3	6	11		
Dumka	7	8	7	16	11	10	10	12	6	11	14	17	23	10		
Garhwa	23	21	24	20	3	3	6	3	1	1	24	22	18	22		
Giridih	20	16	19	3	13	9	11	8	4	5	11	4	14	12		
Godda	21	15	21	21	10	12	13	23	24	24	23	13	21	21		
Gumla	9	2	4	12	9	5	9	5	14	18	13	16	6	18		
Hazaribag	11	22	8	1	24	21	23	20	11	10	7	7	24	15		
Jamtara	10	19	11	12	2	22	1	17	2	2	2	1	15	7		
Khuti	8	18	2	23	15	15	14	13	22	23	12	15	17	4		
Koderma	16	10	17	5	14	19	17	19	18	13	20	10	5	5		
Latehar	17	17	20	15	7	2	5	1	19	14	20	20	4	23		
Lohardaga	12	11	12	10	6	4	8	4	15	16	20	24	22	13		
Pakur	18	13	16	8	1	1	2	2	17	17	8	9	11	1		
Palamu	22	12	22	9	16	13	21	16	13	15	17	18	12	2		
Paschim Singhbhum	19	9	18	24	23	23	22	24	20	20	15	19	6	24		
Purbi Singhbhum	2	7	3	14	12	6	12	10	9	4	5	5	6	8		
Ramgarh	6	6	10	6	20	20	19	21	5	6	1	2	1	3		
Ranchi	4	4	6	19	8	7	7	7	8	7	4	12	2	14		
Sahibganj	24	24	23	22	19	18	16	15	23	22	16	14	18	20		
Sareikela & Kharsawan	3	5	5	18	5	8	4	6	12	9	9	8	12	19		
Simdega	1	1	1	17	21	16	18	9	21	21	17	23	3	16		

Table 38: Rank of Districts on Educational Facilities & Services, Odisha

Districts	Pupil Teacher Ratio			Single Teacher School (%)			School with Girls Toilet (%)			School with Boys Toilet (%)			School with Drinking Water Facility (%)			School with Electricity (%)			School with Computer (%)			
	P	UP	P+UP	P	UP	P+UP	P	UP	P+UP	P	UP	P+UP	P	UP	P+UP	P	UP	P+UP	P	UP	P+UP	
Odisha																						
Angul	12	14	5	10	24	13	14	12	9	25	28	28	17	22	16	13	19	21	5	9	12	
Balangir	26	25	27	27	15	22	11	14	11	30	30	30	1	1	1	24	14	29	23	8	29	
Balasore	30	14	16	4	13	12	4	1	1	4	1	7	1	17	1	2	16	4	1	19	18	
Bargarh	14	18	23	19	29	23	15	15	15	26	26	26	23	27	24	14	21	17	19	23	25	
Bhadrak	19	21	18	5	21	1	1	1	1	1	1	1	1	1	1	1	4	2	16	30	19	
Boudh	6	28	20	2	1	1	1	1	1	6	1	1	1	1	13	20	9	23	3	6	8	
Cuttack	6	6	5	12	19	15	8	13	12	8	8	9	12	1	12	7	15	6	6	20	6	
Debagarh	1	2	3	16	10	1	23	24	24	20	20	18	20	1	14	19	6	9	29	1	4	
Dhenkanal	9	10	12	6	20	1	22	27	25	17	15	13	1	1	1	17	28	22	23	29	11	
Gajapati	4	30	13	28	28	30	13	1	6	23	19	24	16	1	1	26	1	28	10	2	27	
Ganjam	19	27	23	18	25	13	26	26	26	22	22	23	14	1	17	4	10	6	22	21	17	
Jagatsinghapur	1	1	1	3	14	1	9	8	1	10	1	1	21	24	22	9	23	8	17	24	3	
Jajpur	19	4	13	7	17	1	28	30	27	18	18	17	1	1	1	16	30	13	20	26	15	
Jharsuguda	4	3	1	13	22	1	25	22	23	16	23	16	27	29	28	8	12	5	15	13	1	
Kalahandi	26	26	27	26	18	23	27	27	27	3	1	1	25	21	26	27	22	26	30	17	28	
Kandhamal	1	6	5	22	1	19	16	17	18	9	12	12	1	1	1	30	13	24	21	14	16	
Kendrapara	19	12	11	23	23	21	7	9	10	21	21	21	13	18	14	9	27	10	10	27	9	
Kendujhar	26	6	20	20	7	1	24	25	20	15	17	20	1	1	1	22	25	20	8	25	23	
Khurda	14	14	20	7	12	26	21	23	21	19	16	19	1	1	1	3	8	3	9	11	2	
Koraput	19	18	23	25	1	27	6	1	12	1	9	1	26	28	29	23	11	30	2	2	20	
Malkangiri	25	12	27	29	30	28	5	1	6	7	1	8	28	1	25	11	3	18	17	2	20	
Mayurbhanj	14	10	13	1	6	1	17	18	17	11	13	11	24	26	23	25	18	19	4	12	13	
Nabarangapur	29	24	30	14	1	18	29	20	29	28	27	27	22	1	21	29	26	1	27	28	30	
Nayagarh	9	4	5	9	5	1	19	21	15	13	14	14	11	1	1	18	20	11	10	10	5	
Nuapada	19	21	26	11	8	1	30	29	30	29	29	29	18	25	19	28	29	27	23	16	26	
Puri	12	6	5	17	16	1	1	1	1	4	1	1	29	30	27	5	24	12	27	22	14	
Rayagada	14	23	19	30	27	29	10	16	14	14	10	10	30	23	30	21	2	25	13	5	24	
Sambalpur	6	28	4	15	9	19	20	19	22	24	24	22	15	19	17	12	5	15	6	7	7	
Subarnapur	9	14	16	24	26	25	18	10	19	12	11	15	19	20	19	15	17	14	26	15	10	
Sundargarh	14	18	5	21	11	17	12	11	8	27	25	25	1	1	1	5	7	16	14	18	20	

3.3.8 Initiatives for Tribal Education

In order to promote education among the scheduled tribes, a number of education promotion measures have been initiated, both at national and state level. The tribal sub-plan approach is the main strategy that have been taken from the Fifth Five Year Plan. Along with core economic sectors, elementary education has been accorded priority in the tribal sub-Plan approach. Another important development in the policy towards education of tribals came with recommendations of the National Policy on Education (NPE) in 1986. The policy prescribed (1) according priority to open primary schools in tribal areas, (2) need of developing curricula and devise instructional material in tribal language at the initial stages with arrangements for switchover to regional languages, (3) encouraging ST youths to take up teaching in tribal areas, (4) establishing Ashram schools/residential schools on a large scale in tribal areas, (5) implementing schemes that give incentive to tribal children.

Apart from recognizing heterogeneity and diversity of tribal areas, the policy also proposed the transformation of the structure of primary education with special emphasis on improving access in tribal areas. The policy also underlined the importance of instruction through the mother tongue for effective teaching and encouraged incorporating locally relevant content and curriculum, besides emphasizing the localized production of textbooks in local dialects. Based on these considerations, the norms for establishing primary schools were relaxed to suit tribal areas in order to improve access to education. The prescription of NPE is further strengthened by the Right to Education Act. Different schemes that are under implementation for strengthening education of tribals are discussed below.

3.3.8.1 Construction of Hostels for ST Girls and Boys

The objective of the scheme is to promote literacy among tribal students by providing hostel accommodation to such ST students who would otherwise have been unable to continue their education because of their poor economic condition, and the remote location of their villages. The Scheme was revised and made effective from 2008. The scheme covers the entire ST population in the country and is not area-specific. However, the hostels under the scheme would be sanctioned as far as possible as a part of the established educational institutions or in the close vicinity of such institutions/ Vocational Training Centres.

3.3.8.2 Establishment of Ashram Schools in Tribal Sub-Plan Areas

The objective of the scheme is to promote expansion of educational facilities for Scheduled Tribe students including PVTGs. Ashram Schools provide education with residential facilities in an environment conducive to learning. The Scheme has been revised with effect from the financial year 2008-09. The scheme covers all the Tribal Sub-plan areas of the country spread over 22 States and 2 Union Territories.

Table 39: Amount Released and Ashram Schools Established in Study States

State	2012-13			2013-14			2014-15		
	Amount	School	Seat	Amount	School	Seat	Amount	School	Seat
Chhattisgarh	530.36	12	600	0.0	0.0	0.0	0.0	0.0	0.0
Odisha	2458.90	-	0.0	2091.10	15	4500	0.0	0.0	0.0
India	6100.0	40	3800	7217.00	30	10260	3569.48	0.0	0.0

Source: Ministry of Tribal Affairs, Government of India

3.3.8.3 Post Matric Scholarships

The objective of the scheme is to provide financial assistance to the Scheduled Tribe students studying at post-matriculation or post-secondary levels to enable them to complete their education. The scheme has been revised with effect from the year 2010. Post-matric scholarship in shape of maintenance allowance for hostellers is provided from Rs.380/- to Rs. 1200/- per month and for day scholars from Rs.230/- to Rs.550/- per month, along with reimbursement of compulsory non-refundable fees. It has been upgraded recently.

Table 40: Amount Released and Beneficiary Covered under Post-Matric Scholarship

Post-Matric Scholarship	2012-13		2013-14		2014-15	
	Amount	Beneficiaries	Amount	Beneficiaries	Amount	Beneficiaries
Chhattisgarh	3150.31	122597	1341.47	106231	4066.75	139447
Jharkhand	1344.21	53032	3267.40	72878	4927.23	81768
Odisha	5405.95	69605	3459.87	89115	4512.00	130960
India	73074.35	1867067	74839.41	2034563	58784.09	2106403

Source: Ministry of Tribal Affairs, Government of India

3.3.8.4 Top-Class Education Scholarship Scheme

The scheme provides full tuition fee for government institutions, & non-refundable dues for private institutions, with a ceiling of Rs.4.50 lakh per student per annum along with applicable other allowances.

3.3.8.5 Construction of Hostels

Centre provides 100.0 percent central assistance to states for construction of Girls' hostels as well as Boys' hostel in LWE affected districts identified by the Ministry of Home Affairs.

3.3.8.6 Book Bank

Many ST students selected in professional courses find it difficult to continue their education for want of books on their subjects, as these are often expensive. In order to reduce the dropout rate of ST students from professional institutes/universities, funds are provided for purchase of books under this scheme. The scheme is open to all ST students pursuing medical (including Indian Systems of Medicine & Homeopathy) engineering, agriculture, veterinary, polytechnic, law, chartered accountancy, business management, bio-science subjects, who are receiving Post-Matric Scholarships.

3.3.8.7 Upgradation of Merit

The objective of the scheme is to upgrade the merit of Scheduled Tribe including PVTG students in classes IX to XII by providing them with facilities for all round development through education in residential schools so that they can compete with other students for admission to higher education courses and for senior administrative and technical occupations. The scheme has been functioning only as a sub-scheme of the PMS. The Scheme was revised with effect from the financial year 2008-09.

3.3.8.8 National Overseas Scholarship Scheme for Higher Studies Abroad

The objective of the scheme is to provide financial assistance to students selected for pursuing higher studies abroad for Post-Graduation, Ph. D and Post-Doctoral research programmes. Ministry has revised some of its provisions to make it more beneficial for ST students in terms of increasing their employability and for their socio-economic development. The Ministry has approved the revised scheme of National Overseas Scholarships (NOS) for ST

candidates by the Competent Authority for implementation during the 12th Five Year Plan period (2013-14 to 2016-17). The scheme extends financial support to students for overseas study in shape of maintenance allowance of US\$ 15,400 and UK Pounds 9,900/- per annum along with other applicable allowances.

3.3.8.9 Rajiv Gandhi National Fellowship (RGNF)

The objective of the scheme is to provide fellowships in the form of financial assistance to students belonging to the Scheduled Tribes to pursue higher studies such as M. Phil and Ph.D. The Scheme has been started from the year 2005-06. The fellowship programme support Junior Research Fellowship at Rs.16, 000/- per month for 2 years and Senior Research Fellowship at Rs.18, 000/- per month for remaining tenure

3.3.8.10 Scheme of Top Class Education for ST Students

The objective of the scheme is to encourage meritorious ST students for pursuing studies at degree and post degree level in any of the selected list of institutes, in which the scholarship scheme would be operative. The Scheme has been started from 2007-08.

3.3.8.11 Vocational Training in Tribal Areas (VTC)

The main aim of this scheme is to upgrade the skills of the tribal youth in various traditional/ modern vocations depending upon their educational qualification, present economic trends and the market potential, which would enable them to gain suitable employment or enable them to become self- employed. The scheme has been revised with effect from 1.4.2009 and is being implemented through the State Governments/UT Administrations, Institutions or Organizations set up by Government as autonomous bodies, educational and other institutions like local bodies and cooperative societies and Non-Governmental Organizations etc.

3.3.8.12 Pre-Matric Scholarship for STs (Classes IX & X)

The objectives of the Scheme are to: (i) support parents of ST students for education of their wards studying in Classes IX and X so that the incidence of dropout, especially in transition from the elementary to secondary and during secondary stage of education, is minimized, and (ii) improve participation of ST students in Classes IX and X of Pre-Matric stage, so that they perform well and have a better chance of progressing to Post - Matric stages of education. The scheme is having provision of scholarships for hostellers and day scholars at Rs.350/- and

Rs.150/- per month. The scheme also provides books & adhoc grant at Rs.1, 000/- and Rs.750/- per annum respectively.

Table 41: Amount Released and Beneficiary Covered under Pre-Matric Scholarship

State	2012-13		2013-14		2014-15	
	Amount	Beneficiaries	Amount	Beneficiaries	Amount	Beneficiaries
Chhattisgarh	593.00	267910	0.0	0.0	3718.00	228626
Jharkhand	1472.00	119936	0.0	0.0	1613.00	93533
Odisha	3128.00	204958	5601.08	221709	4511.00	203301
India	11173.00	2012145	21943.19	2123512	19305.533	1118608

Source: Ministry of Tribal Affairs, Government of India.

3.4 Health Disability

In spite of all round efforts, health condition of tribals still remain a concern. The neonatal mortality in case of scheduled tribe remain to be 39.9, which is below scheduled caste (46.3) but relatively high from other backward classes (38.3) and people of other communities (34.5). Both in urban and rural areas, neonatal mortality among STs is second highest after scheduled castes. Post-natal mortality among the STs observed to be relatively high (22.3) in comparison to SCs (20.1) and other backward classes (18.3).

Table 42: Key Health Indicators of Tribals and Other Communities, 2005

Caste / Tribe	Neonatal Mortality			Post-Neonatal Mortality			Infant Mortality		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
SCs	35	49.6	46.3	15.7	21.4	20.1	50.7	71	66.4
STs	29	40.9	39.9	14.8	23	22.3	43.8	63.9	62.1
OBCs	26.4	42.1	38.3	15.8	19.1	18.3	42.2	61.1	56.6
Other	27.5	38.1	34.5	8.6	17.5	14.5	36.1	55.7	48.9
Total	28.5	42.5	39	13	19.7	18	41.5	62.2	57

The infant mortality among the STs estimated to be 62.1 whereas it is 66.4 in SCs and 56.6 in other backward classes. Further, child mortality among STs remain high (35.8) in comparison to SCs (23.2) and other backward classes (17.3). Under five mortality rate is also high among the STs (95.7) in comparison to SCs (88.1) and other backward classes (72.8).

Table 43: Health Indicators of Different Communities

Caste / Tribe	Child Mortality			Under 5 Mortality			No. of Still Births	No. of Early Neo-natal deaths	Perinatal Mortality Rate
	Urban	Rural	Total	Urban	Rural	Total			
SCs	15.5	25.6	23.2	65.4	94.7	88.1	247	409	55.0
STs	10.4	38.3	35.8	53.8	99.8	95.7	70	153	40.6
OBCs	12.9	18.7	17.3	54.5	78.7	72.8	467	676	49.3
Other	6.2	13.3	10.8	42.1	68.2	59.2	309	438	45.3
Total	10.6	21	18.4	51.7	82	74.3	1105	1686	48.5

Source: Status of Tribal, Ministry of Tribal Affairs, Govt. of India

Among the study states, neonatal mortality in Chhattisgarh is the lowest (44.0) along with other critical health indicators like post-neonatal mortality rate (22.8), infant mortality (66.8) and under 5 mortality rate (97.6). Odisha has been high in these indicators in comparison to Jharkhand and Chhattisgarh apart from under 5 mortality rate which is highest in Jharkhand.

Table 44: Child Mortality Rate among STs in Study States, 2005

State	Neonatal Mortality Rate	Post Neonatal Mortality Rate	Infant Mortality Rate	Under 5 Mortality Rate
Chhattisgarh	44	22.8	66.8	97.6
Jharkhand	52.1	25.3	77.4	120.4
Odisha	52.2	28.0	80.2	119.4

Table 45: Immunisation Coverage of ST Children, 1993 to 2006.

Year	Urban			Rural			Overall		
	ST	Other	Total	ST	Other	Total	ST	Other	Total
All Basic Vaccinations (Intensity %)									
1992-93	36	51	51	24	32	31	25	37	35
1998-99	43	57	57	22	39	37	25	43	41
2005-06	52	58	58	30	40	39	32	45	44
Change %	45	13	13	27	25	25	30	22	23
Any of the Basic Vaccinations (Breadth %)									
1992-93	79	84	84	56	67	66	58	71	70
1998-99	85	95	95	75	86	85	76	88	87
2005-06	94	97	97	89	95	94	89	95	95
Change %	19	15	15	57	41	43	53	34	35

Source: NFHS Different Rounds; Basic Vaccinations include three rounds of Polio, DPT, BCG and Measles

Table 46: Infant Mortality Rate (2001)

State	Male			Female			Persons		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Chhattisgarh	97	66	96	97	72	95	97	69	95
Jharkhand	75	55	74	83	59	81	79	57	77
Odisha	94	73	93	92	77	92	93	75	92
India	84	58	82	88	64	86	85	61	84

The health status of the study states reflects a positive change. There is a reduction of about 3 percentage point in Infant Mortality Rate (IMR), about 1 percentage point change in Neonatal Mortality Rate in Chhattisgarh and Odisha whereas, in Jharkhand the reduction in Neonatal Mortality Rate is 2 percentage points. Under 5 Mortality Rate also reduced by 4 percentage point in Chhattisgarh and Jharkhand whereas it has reduced by 3 points in Odisha. Major declining in Maternal Mortality Rate (MMR) is recorded in Odisha during the period under reference whereas, it has reduced 12 points and 11 points in Chhattisgarh and Jharkhand Respectively.

Table 47: Health Indicators of Study States

State / District	IMR			Neo- natal Mortality Rate			Under Five Mortality Rate			MMR		
	2010-11	2011-12	Change	2010-11	2011-12	Change	2010-11	2011-12	Change	2010-11	2011-12	Change
Chhattisgarh	53	50	-3.0	36	35	-1.0	70	66	-4.0	275	263	-12.0
Jharkhand	41	38	-3.0	26	24	-2.0	59	55	-4.0	278	267	-11.0
Odisha	62	59	-3.0	40	39	-1.0	82	79	-3.0	277	237	-40.0

Source: Annual Health Survey, 2010-11 and 2011-12.

It can be assumed that health interventions during this period of time has contributed in improving health indicators, irrespective of forest and less / no forest region and scheduled / non-scheduled areas. The relation of health indicators with ST population and forest coverage can be better understood from a correlation matrix. In Chhattisgarh, ST population percentage is having a correlation with Maternal Mortality Rate whereas, IMR and Neo-natal Mortality Rate along with Under 5 Mortality Rate is correlated with ST population percentage in Jharkhand. In Odisha, the correlation of health indicators is not significant with ST population percentage (Refer Table).

Table 48: Correlation Matrix Focusing on ST Population, Forest Coverage and Health

<i>Chhattisgarh</i>	<i>ST %</i>	<i>Forest %</i>	<i>IMR</i>	<i>Neo- natal Mortality Rate</i>	<i>Under Five Mortality Rate</i>	<i>MMR</i>
ST %	1.000					
Forest %	0.734	1.000				
IMR	0.149	0.114	1.000			
Neo- natal Mortality Rate	-0.210	0.049	0.837	1.000		
Under Five Mortality Rate	0.465	0.222	0.760	0.362	1.000	
MMR	0.749	0.456	-0.117	-0.395	0.231	1.000
<i>Jharkhand</i>	<i>ST %</i>	<i>Forest %</i>	<i>IMR</i>	<i>Neo- natal Mortality Rate</i>	<i>Under Five Mortality Rate</i>	<i>MMR</i>
ST %	1.000					
Forest %	-0.025	1.000				
IMR	0.525	0.134	1.000			
Neo- natal Mortality Rate	0.689	0.065	0.918	1.000		
Under Five Mortality Rate	0.628	0.090	0.964	0.891	1.000	
MMR	0.401	-0.200	0.556	0.461	0.561	1.000
<i>Odisha</i>	<i>ST %</i>	<i>Forest %</i>	<i>IMR</i>	<i>Neo- natal Mortality Rate</i>	<i>Under Five Mortality Rate</i>	<i>MMR</i>
ST %	1.000					
Forest %	0.637	1.000				
IMR	-0.101	-0.073	1.000			
Neo- natal Mortality Rate	-0.267	-0.373	0.756	1.000		
Under Five Mortality Rate	0.121	0.187	0.826	0.395	1.000	
MMR	0.341	0.358	-0.004	-0.364	0.349	1.000

According to Annul Health Survey, infant mortality rate in Chhattisgarh has reduced by three percentage points in 2011-12, in comparison to 2010-11. The state of Jharkhand and

Chhattisgarh also recorded the same percentage of reduction in IMR during the period. However, IMR is still high in these three tribal dominated states, in comparison to national average. Among these three states, Odisha is having the highest IMR (59) followed by Chhattisgarh (50) and Jharkhand (38). Looking by study district, Kandhamal is having the highest IMR (86) followed by Jashpur and Surguja. All these three districts are scheduled districts with more than 50 percent tribal concentration.

Table 49: Health Indicators of Study States

State / District	IMR			Neo- natal Mortality Rate			Under Five Mortality Rate			MMR		
	2010-11	2011-12	Change in points	2010-11	2011-12	Change in points	2010-11	2011-12	Change in points	2010-11	2011-12	Change in points
Chhattisgarh	53	50	-3.0	36	35	-1.0	70	66	-4.0	275	263	-12.0
Dantewada	54	48	-6.0	31	31	0.0	72	66	-6.0	312	291	-21.0
J-Champa	53	51	-2.0	37	34	-3.0	67	64	-3.0	293	277	-16.0
Jashpur	64	62	-2.0	40	39	-1.0	100	92	-8.0	286	282	-4.0
Surguja	57	55	-2.0	31	31	0.0	103	96	-7.0	286	282	-4.0
Jharkhand	41	38	-3.0	26	24	-2.0	59	55	-4.0	278	267	-11.0
Bokaro	29	28	-1.0	21	20	-1.0	43	41	-2.0	208	197	-11.0
Gumla	48	45	-3.0	33	31	-2.0	75	72	-3.0	294	270	-24.0
Odisha	62	59	-3.0	40	39	-1.0	82	79	-3.0	277	237	-40.0
Bhadrak	55	51	-4.0	35	34	-1.0	66	61	-5.0	276	222	-54.0
Kandhamal	88	86	-2.0	43	41	-2.0	145	142	-3.0	311	297	-14.0
Malkangiri	55	52	-3.0	33	33	0.0	79	77	-2.0	311	297	-14.0
Sundargarh	55	49	-6.0	39	34	-5.0	65	58	-7.0	253	212	-41.0

Source: Annual Health Survey, 2010-11 2011-12.

3.5 Facility & Service Disability

Different facilities at household and community level, including infrastructural and service delivery facilities, have a significant relation to overall development outcomes. This section looks in to prevalence of such facilities at the household level in three study states. Highest percentage of households having tap water observed in Chhattisgarh along with provision of drinking water facility through hand pumps. Whereas provisioning of drinking water facility through well is more prominent in Jharkhand. Drinking water accessibility from tube well, spring, river/canal and tank/pond is more prominent in Odisha in comparison to Jharkhand and Chhattisgarh. Availability of drinking water facility away from the house premises found to be highest in Odisha, followed by Chhattisgarh and Jharkhand.

Table 50: Facilities Available in Study States

Particulars	Specification	Chhattisgarh	Jharkhand	Odisha	India
Population Density	2001	154	338	236	325
	2011	189	414	270	382
ST % (2011)		30.624	26.207	22.849	8.614
Literacy Rate (2011)		70.28	66.41	72.87	72.99
Drinking Water Facility	Tap Water				
	Total	20.7	12.9	13.8	43.5

Particulars	Specification	Chhattisgarh	Jharkhand	Odisha	India
	Treated Source	12.3	10	10	32.0
	Untreated Source	8.4	2.9	3.9	11.6
	Well				
	Total	11.4	36.5	19.5	11.0
	Covered Well	0.8	1.9	2.2	1.6
	Uncovered Well	10.6	34.6	17.3	9.4
	Hand Pump	58.4	43.8	41.5	33.5
	Tube Well	7.2	3.5	20	8.5
	Spring	0.7	0.8	1.8	0.5
	River / Canal	0.9	1.6	1.7	0.6
	Tank/Pond	0.2	0.2	0.9	0.8
	Drinking Water Source				
	Within Premise	19.0	23.2	22.4	46.6
	Near the Premises	54.5	44.9	42.2	35.8
Away	26.5	31.9	35.4	17.6	
Latrine Facility Available Within Premises		24.6	22.0	22.0	46.9
Latrine not Available Within Premises	Total	75.4	78.0	78.0	53.1
	Public Latrine	1.4	1.0	1.4	3.2
	Open	74	77.0	76.6	49.8
Source of Lighting	Electricity	75.3	45.8	43	67.3
	Kerosene	23.2	53.1	55.3	31.4
	Solar Energy	0.9	0.7	0.4	0.4
	Other Oil	0.2	0.2	0.1	0.2
	No Lighting	0.3	0.1	1.1	0.5
Banking Services	HH Availing Banking Service	48.8	54.0	45.0	58.7
Fuel Used for Cooking	Firewood	80.8	57.6	65	49
	Kerosene	0.5	0.2	1.1	2.9
	LPG	11.2	11.7	9.8	28.6
	Electricity	0.1	0.3	0.4	0.1
	Biogas	0.2	0.1	0.2	0.4
Household Having Asset	Radio	11	17.5	11.4	19.9
	TV	31.3	26.8	26.7	47.2
	Computer	4.6	6.9	5.1	9.5
	Telephone	30.7	48.0	39.8	63.2
	Bicycle	61.0	58.8	61.0	44.8
	Two Wheeler	15.6	16.1	14.5	21.0
	Four Wheeler	2.3	2.8	1.8	4.7
	None of these Assets	27.1	21.0	25.5	17.8

Source: NSSO, 69th Round.

Availability of latrine facility within the premises of the household is highest in Chhattisgarh and open defecation is common in all these states. Chhattisgarh is having a good coverage of electricity as 75.3 percent families use this conventional source of energy for lighting. Odisha with high potential for electricity generation is having the lowest coverage and majority use Kerosene for lighting. Percentage of households having no lighting facility is also higher in Odisha in comparison to two other states. Percentage of households accessing banking services found to be highest in Jharkhand in comparison to two other study states. High cost assets like computer, two-wheeler and four wheeler found to be with less percentage of families but with a difference among the study states.

Availability of different facilities and services are key to development of an area, more particularly the tribal habitations and people living in forest areas. Attempt is made to understand the relation between facilities and services in forest areas and areas that have higher tribal population proportion. In Chhattisgarh, ST population is negatively correlated with different facilities and services like mobile phone, common service centre, black top road, all-weather road, availability of Anganwadi Centre and availability of bus service (public and private). Mobile phone coverage and black top road is also negatively correlated with forest area percentage to total geographical area.

Table 51: Village Level Facilities in Study Areas

Chhattisgarh	ST %	Forest %
ST %	1.000	
Forest %	0.734	1.000
Villages Covered Under TSC (%)	-0.120	0.160
Post Office Facility Available in Villages (%)	-0.378	-0.340
Villages Coverage under Mobile Phone (%)	-0.695	-0.517
Facility of Internet Cafes / Common Service Centre (CSC) (% Villages)	-0.500	-0.414
Available of Pucca (Black Topped) Road (% Villages)	-0.755	-0.534
All Weather Road Availability (% Villages)	-0.667	-0.437
Availability of Anganwadi Centre (% Villages)	-0.571	-0.471
Facility of Bus Services (Public + Private) (% Villages)	-0.544	-0.406
Jharkhand	ST %	Forest %
ST %	1.000	
Forest %	-0.025	1.000
Villages Covered Under TSC (%)	0.327	0.297
Post Office Facility Available in Villages (%)	-0.110	-0.025
Villages Coverage under Mobile Phone (%)	-0.049	-0.082
Facility of Internet Cafes / Common Service Centre (CSC) (% Villages)	-0.260	-0.275
Available of Pucca (Black Topped) Road (% Villages)	0.128	0.233
All Weather Road Availability (% Villages)	0.112	0.105
Availability of Anganwadi Centre (% Villages)	0.360	0.031
Facility of Bus Services (Public + Private) (% Villages)	0.097	0.316
Odisha	ST %	Forest %
ST %	1.000	
Forest %	0.637	1.000
Villages Covered Under TSC (%)	-0.076	-0.171
Post Office Facility Available in Villages (%)	0.086	-0.009
Villages Coverage under Mobile Phone (%)	-0.661	-0.592
Facility of Internet Cafes / Common Service Centre (CSC) (% Villages)	-0.516	-0.422
Available of Pucca (Black Topped) Road (% Villages)	-0.477	-0.359
All Weather Road Availability (% Villages)	-0.388	-0.293
Availability of Anganwadi Centre (% Villages)	-0.446	-0.579
Facility of Bus Services (Public + Private) (% Villages)	-0.032	0.015

However, no such correlation is observed with regard to facilities and services in forest and tribal populated areas. But in case of Odisha, coverage of ST percentage with mobile phones and common service centre is negatively correlated. Forest area is also negatively correlated with mobile phone services and availability Anganwadi Centre. So, it can be inferred that forest area in both Chhattisgarh and Odisha are having less accessibility to certain facilities and services than Jharkhand. Secondly, districts with high tribal proportion to total population is also having less accessibility to certain facilities and services.

3.6 Economic Disability

Participation of tribals in economic activities or work participation of tribals is 52.8 percent in Chhattisgarh. Main worker to total worker population is higher (60.3 percent) than marginal worker to total worker population (39.7 percent) in the state. Work participation rate of tribals show a different trend in Odisha. About 49.7 percent tribals are in the workforce and marginal worker (51.1 percent) population is higher than main worker (48.9 percent). The state of Jharkhand is having similar trend like Odisha, where work participation rate of tribals in the state workforce is 46.9 percent. The main worker to total worker population in the state is 46.2 percent whereas marginal worker to total worker population is 53.8 percent. Marginal worker to total worker is higher than main worker in Jharkhand and Odisha whereas main worker population is higher than marginal worker in Chhattisgarh.

Table 52: Work Participation Rate of Tribals in Study States.

State	Work Participation Rate	Main Worker to Total Worker (%)	Marginal Worker to Total Worker (%)
Chhattisgarh	52.8	60.3	39.7
Jharkhand	46.9	46.2	53.8
Odisha	49.7	48.9	51.1

Source: Tribal Welfare and Development, Ministry of Tribal Affairs, Government of India

Though a number of factors are attributed to work participation rate, like demographic composition, percentage of able bodied persons available for participation in the work force etc., opportunity of employment is also an important attribute in high work participation. Available skill base of the population available for employment is also another key determinant in this regard for participating in economic activities. High main worker population percentage in comparison to marginal worker in the total work force / work participation rate reflects that scope of employment is favourable and/or employability of tribals in the state is relatively high. Adhering to this principle, available statistics reveals that the state of Chhattisgarh is in advantageous position in comparison to Odisha and Jharkhand in terms of high work

participation rate of tribals in the state along with higher main worker in the total workforce in comparison to marginal worker.

Growth of different sectors from 2005-06 to 2013-14 is presented in the Table. The average growth of agriculture and allied sector during this period recorded highest in Jharkhand in comparison to other study states. While the average growth of primary sector of agriculture and allied at the national level remain to be 3.97 percent, Chhattisgarh and Jharkhand reflect a higher growth than national average. Whereas agriculture sector growth in Odisha during this period remain below the national average. Agriculture sector alone reflects a negative growth trend in Chhattisgarh and rate of growth in Odisha remains below the national average.

Table 53: Economic Growth Rate of Study States (2004-05 Price)

Growth Rate	Annual Growth Rate (%)									Average 2005-06 to 2013-14
	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	
Ag. & Allied										
Chhattisgarh	12.75	4.48	9.32	-9.95	8.5	21.48	2.96	9.33	2.28	6.8
Jharkhand	3.65	12.58	5.61	16.57	-6.21	4.46	26.23	6.15	8.3	8.59
Odisha	3.34	1.94	4.66	1.87	7.74	1.9	-4.46	11.01	-3.25	2.75
India	5.14	4.16	5.8	0.09	0.81	8.6	5.02	1.42	4.71	3.97
Agriculture										
Chhattisgarh	3.58	-0.52	0.28	6.4	-14.62	-3.66	-17.64	-7.21	-0.27	-3.74
Jharkhand	3.36	13.83	5.84	20.51	-9.28	5.09	31.88	7.25	9.21	9.74
Odisha	3.47	1.59	5.33	1.74	9.48	2.3	-5.72	12.72	-3.53	3.04
India	5.6	4.13	6.34	-0.27	0.41	9.54	5.34	0.91	4.93	4.1
Industry										
Chhattisgarh	-3.81	32.73	7.38	14.19	-2.79	2.36	9.97	2.96	6.42	7.71
Jharkhand	8.13	8.86	12.28	8.78	21.05	14.93	2.4	11.53	11.62	11.06
Odisha	2.63	21.39	17.43	5.25	-2.65	8.1	4.94	9.48	5.74	8.04
India	9.72	12.17	9.67	4.44	9.16	7.55	7.81	0.96	0.35	6.87
Industry (04-05 Price)										
Chhattisgarh	-3.81	32.73	7.38	14.19	-2.79	2.36	9.97	2.96	6.42	7.71
Jharkhand	8.13	8.86	12.28	8.78	21.05	14.93	2.4	11.53	11.62	11.06
Odisha	2.63	21.39	17.43	5.25	-2.65	8.1	4.94	9.48	5.74	8.04
India	9.72	12.17	9.67	4.44	9.16	7.55	7.81	0.96	0.35	6.87
Manufacturing (04-05 Price)										
Chhattisgarh	-18.39	50.9	12.65	2.43	-10.86	-5.14	-7.62	1.28	5.31	3.39
Jharkhand	3.21	-7.25	0.84	23.38	7.26	29.54	17.27	-1.81	8.39	8.98
Odisha	2.53	26.62	33.04	13.36	-6.74	5.3	12.44	10.97	7.1	11.62
India	10.1	14.32	10.28	4.33	11.3	8.86	7.41	1.14	-0.71	7.45
Service (04-05 Price)										
Chhattisgarh	6.42	11.38	9.88	11.7	9.53	15.43	5.77	6.27	8.13	9.39
Jharkhand	-22.52	-12.46	61.03	-31.78	5.17	22.3	-13.47	6.69	3.2	2.02
Odisha	9.43	12.11	8.63	12.65	9.16	10.45	6.06	6.1	8.65	9.25
India	10.91	10.06	10.27	9.98	10.5	9.67	6.57	6.96	6.78	9.07

Source: Economic Survey of India, Different Years

Jharkhand along with all other study states having higher industrial growth during this period in comparison to national average. Negative growth is recorded in some years but overall growth remains positive. With average growth of 11.06 percent, Jharkhand has recorded a higher growth in comparison to Chhattisgarh and Odisha.

The rate of growth in manufacturing sector remain highest in Odisha followed by Jharkhand and Chhattisgarh. Performance of Jharkhand and Odisha in manufacturing remain higher than national average. On the other hand, service sector growth is more or less in the similar pace with national average in Chhattisgarh and Odisha but sector growth in Jharkhand remain below the national average.

Table 54: Per Capita GSDP at Current Price (2004-05) (Amount in Rs.)

Per Capita GSDP at Current Price (2004-05) (Rs.)							
State	1983	1987-88	1993-94	1999-2000	2004-05	2009-10	2011-12
Chhattisgarh	2,332	3,788	9,400	14,209	21,636	42,868	52,893
Jharkhand	1,387	2,354	9,439	14,963	19,757	33,156	44,020
Odisha	2,258	3,554	6,892	12,597	19,907	41,467	52,991

Source: Sacchidananda Mukherjee, Debashis Chakraborty & Satadru Sikdar, NIPFP; Human Development Index of Indian States

Per capita Gross State Domestic Product (GSDP) shows an increasing trend from 1983 to 2011-12 in all the study states, though the rate of growth differs by year and state. Per capita GSDP of Chhattisgarh and Odisha remain more or less same by 2011-12 whereas Jharkhand remain comparatively low. The average per capita GSDP in between 2010-11 to 2012-13 in Chhattisgarh remain to be Rs.58, 130/- whereas, it remains Rs.44, 028/- in Jharkhand and Rs.54, 877/- in Odisha and all these states are below the national average of Rs.64, 290/-⁶.

A correlation matrix was computed to understand the relation between poverty indicators and ST population and geographical area under forest in districts of the study states. The monthly per capita expenditure of families in rural areas is negatively correlated with ST population in all the study states. But in Odisha, along with ST population, it is also negatively correlated with forest area. The rural poor percentage is having a positive correlation with STs and forest area in Odisha and Chhattisgarh whereas it is only correlated with ST population in Jharkhand. As the matrix of correlation shows, forest has less bearing on economic indicators in Jharkhand whereas, it has significant importance in Odisha and Chhattisgarh.

⁶14th Finance Commission Report

Table 55: Correlation Matrix of Economic Indicators, ST Population & Forest Coverage

Parameters	Odisha		Chhattisgarh		Jharkhand	
	ST %	Forest %	ST %	Forest %	ST %	Forest %
ST %	1.000		1.000		1.000	
Forest %	0.637	1.000	0.734	1.000	-0.025	1.000
MPCE Rural	-0.585	-0.576	-0.587	-0.411	-0.515	-0.298
MPCE Urban	0.019	-0.213	-0.233	-0.253	-0.379	-0.079
Lorenz Ratio Rural	0.507	0.123	-0.310	-0.069	-0.161	-0.320
Lorenz Ratio Urban	0.337	-0.094	-0.149	-0.078	-0.270	0.499
Poor % Rural	0.710	0.624	0.647	0.547	0.553	0.143
Poor % Urban	0.150	0.029	0.225	0.368	0.281	0.338

From economic point of view, it is also equally important to understand the worker population and its relation with forest, ST population and literacy rate. It is observed that literacy rate is negatively correlated with forest coverage in Chhattisgarh and Odisha whereas it has no correlation with forest in Jharkhand. The total worker percentage to ST population percentage is positively correlated in all the study states. Further, marginal worker population is related to literate percentage in Chhattisgarh and Odisha whereas in Jharkhand, literacy has no such relation with marginal worker percentage.

Table 56: Correlation of Worker to ST Population & Forest Area

<i>Chhattisgarh</i>	Forest %	Literate %	ST Population %
Forest %	1.000		
Literate %	-0.536	1.000	
ST Population %	0.740	-0.823	1.000
Total Worker %	0.129	-0.464	0.560
Main Worker %	-0.076	0.353	-0.317
Marginal Worker %	0.166	-0.629	0.665
Non-Worker %	-0.129	0.464	-0.560
ST Literate %	-0.571	0.978	-0.762
ST-Total Worker %	0.107	-0.019	0.226
ST Main to Total Worker	-0.077	0.438	-0.413
ST Marginal to Total Worker	0.077	-0.438	0.413
<i>Jharkhand</i>	Forest %	Literate %	ST Population %
Forest %	1.000		
Literate %	-0.018	1.000	
ST Population %	-0.025	-0.140	1.000
Total Worker %	0.008	-0.508	0.810
Main Worker %	-0.054	-0.014	0.587
Marginal Worker %	0.049	-0.455	0.274
Non-Worker %	-0.008	0.508	-0.810
ST Literate %	0.114	0.668	0.447
ST-Total Worker %	-0.299	-0.595	0.582
ST Main to Total Worker	0.226	0.154	0.360
ST Marginal to Total Worker	-0.226	-0.154	-0.360

<i>Odisha</i>	<i>Forest %</i>	<i>Literate %</i>	<i>ST Population %</i>
Forest %	1.000		
Literate %	-0.523	1.000	
ST Population %	0.694	-0.829	1.000
Total Worker %	0.573	-0.758	0.720
Main Worker %	-0.013	0.000	0.053
Marginal Worker %	0.636	-0.833	0.767
Non-Worker %	-0.573	0.758	-0.720
ST Literate %	-0.252	0.727	-0.499
ST-Total Worker %	0.563	-0.683	0.613
ST Main to Total Worker	-0.626	0.654	-0.612
ST Marginal to Total Worker	0.626	-0.654	0.612

Odisha shows an important correlation of forest and ST percentage with work participation rate. Forest area to total geographical area is having a positive correlation with total worker percentage, marginal worker percentage and marginal to total worker percentage among STs. Whereas, geographical area under forest is negatively correlated with literacy, non-worker percentage and ST main worker to total worker percentage. This factor correlation again proves that in Jharkhand, forest has remained a non-influential factor with regard to workforce participation in economic activities but in Odisha and Chhattisgarh, it has been an important influential factor as far as workforce participation is concerned. The literacy rate is having a strong bearing on workforce participation rate in all the study states but it is negatively correlated with ST population in Odisha and Chhattisgarh. Further, while forest area to total geographical area is negatively correlated with literacy rate in Odisha and Chhattisgarh, in Jharkhand no such significant relation is observed.

3.7 Infrastructure Disability

Infrastructure play an important role in the development process. Different services are delivered effectively and also it improves service accessibility of the people. Both state and central governments have been giving emphasis for infrastructure development in different plan periods. This section highlights such infrastructural facilities that are key to boost state economy.

The total road length of the country has increased significantly from 3.99 lakh kms as on 31st March, 1951 to 48.65 lakh Km as on 31st March 2012, growing at a Compound Annual Growth Rate (CAGR) of 4.2%. The National Highway recorded a growth of 25.80 percent in between 2000 to 2004 but the rate of growth reduced substantially in the later years.

Table 57: Growth in Road Infrastructure (in Km)

Category of Road	2000	2004	2005	2006	2007	2008
National Highways (NH)	51952	65358	65358	66590	66590	66754
State Highways (SH)	130592	131262	142898	146325	150713	152738
Other PWD Roads (OPWD)	601512	597866	643705	664652	689935	719383
Rural Roads	545378	678533	681761	714326	761429	810258
Other Roads	244366	287749	261576	266791	276091	286930
India Total	1573800	1760768	1846629	1910792	1997323	2036063

Source: Road Statistics of India, 2004 to 2008 Note: Rural Roads include Panchayat Raj roads and roads constructed under Jawahar Rozgar Yojana (JRY) as of 31.3.1996 & Roads constructed under Pradhan Mantri Gram Sadak Yojana (PMGSY) since 2000. Other Roads include Urban Roads and Project Roads. As on 31.3.2010, the total road length under National Highways is 70,934 km.

Table 58: Length of Different Roads and its Growth in India

Category of Road	1951	1961	1971	1981	1991	2001	2004	2008	2011	2012	2013
National Highways (NH)	19,811 (4.95)	23,798 (4.54)	23,838 (2.61)	31,671 (2.13)	33,650 (1.45)	57,737 (1.71)	65,569 (1.8)	66,754 (1.6)	70,934 (1.52)	76,818 (1.58)	79,116 (1.51)
State Highways (SH)	*	*	56,765 (6.20)	94,359 (6.35)	1,27,311 (5.47)	1,32,100 (3.92)	1,33,177 (3.7)	1,54,522 (3.8)	1,63,898 (3.50)	1,64,360 (3.38)	1,69,227 (3.24)
Other PWD Roads (OPWD)	1,73,723 (43.44)	257,125 (49.02)	2,76,833 (30.26)	4,21,895 (28.40)	5,09,435 (21.89)	7,36,001 (21.82)	7,19,257 (19.9)	8,63,241 (21.0)	9,98,895 (21.36)	10,22,287 (21.01)	10,66,747 (20.39)
Rural Roads	2,06,408 (51.61)	1,97,194 (37.60)	3,54,530 (38.75)	6,28,865 (42.34)	12,60,430 (54.15)	19,72,016 (58.46)	21,40,569 (59.1)	24,50,559 (59.6)	27,49,804 (58.80)	28,38,220 (58.33)	31,59,639 (60.39)
Urban Roads	0 (0.00)	46,361 (8.84)	72,120 (7.88)	1,23,120 (8.29)	1,86,799 (8.03)	2,52,001 (7.47)	3,62,935 (15.5)*	5,74,516 (14.0)*	4,11,679 (8.80)	4,64,294 (9.54)	4,46,238 (8.53)
Project Roads	0 (0.00)	0 (0.00)	1,30,893 (14.31)	1,85,511 (12.49)	2,09,737 (9.01)	2,23,665 (6.63)			2,81,628 (6.02)	2,99,415 (6.15)	3,10,955 (5.94)
Total	3,99,942	5,24,478	9,14,979	14,85,421	23,27,362	46,90,342	36,21,507	41,09,592	46,76,838	48,65,394	52,31,922

Source: Road Statistics of India, 2011-12 Note: Figures within parentheses indicate percent to total road length in each road category; * Included in OPWD roads; * Indicate Project and Urban Roads

In the past decade, 2002-03 to 2011-12, the length of urban roads recorded the fastest growth with a CAGR of 6.4%, followed by SH and OPWD roads (3.6%), rural roads (3.3%), project roads (2.9%) and NH (2.8%). The largest share in the road network as on 31st March 2012 was that of rural roads (58.33%). OPWD Roads accounted for the second highest share (21.01%), followed by Urban Roads (9.54%), Project Roads (6.15%), SHs (3.38%) and NHs (1.58%). The five states with the largest road networks (excluding Jawahar Rozgar Yojana roads), viz. Uttar Pradesh, Maharashtra, West Bengal, Karnataka and Assam, accounted for about 42.9 % of the total road length of the country. As on 31st March 2012, India's road density was at 1.48 kms/sq. km of area.

Table 59: Length of Different

State	National Highway (Length in KM)	National Highway (Length in KM) As on 31 st March 2012	National Highway (Length in KM) As on 31 st March 2013	State Highway (Length in KM) As on 31 st March 2012	State Highway (Length in KM) As on 31 st March 2013
Chhattisgarh	2184	2289	2,289	5011	5018
Jharkhand	1805	2170	2,374	1886	1948
Odisha	3704	3704	4,416	3595	3547
India	66590	76818	79,116	162950	167219

Source: Road Statistics of India, Different Years; India Book, A Reference Manual

The state of Chhattisgarh is having 2289 Km of National Highway with no growth from 2012 to 2013. But Jharkhand and Odisha recorded a growth of 9.40 percent (204 Km) and 19.22 percent (712 Km) respectively during this period while at the national level, growth in national highway (Km) remain 2.99 percent (2298 Km). Growth in State highway recorded to be 0.14 percent (7 Km) in Chhattisgarh, 3.29 percent (62 Km) in Jharkhand and overall 2.62 percent (4269 Km) at the national level. Odisha reflect a negative growth trend during this period due to conversion of road category from one to other type of road. Surface length of road (in Km) in all road category and National Highways (in Km) is presented in the table.

Table 60: Surface Road Length in Study States

State	Surfaced Length of Road (in KM) All Road Types					Surfaced Length of Road (in KM) National Highways				
	2004	2005	2006	2007	2008	2004	2005	2006	2007	2008
Chhattisgarh	39160	40676	42110	41984	43528	2184	2184	2184	2184	2184
Jharkhand	3817	10053	10052	10050	10037	1805	1805	1805	1805	1805
Odisha	32670	30331	30143	30504	30645	3704	3704	3704	3704	3704
India	1526055	1545119	1585614	1640935	1691051	65358	65358	66590	66590	66754

Table 61: Surface Road Length in Study States (Cont.)

State	Surfaced Length of Road (in KM) All Road Types			Surfaced Length of National Highways Only (in KM)			Surfaced Length of State Highways Only (in KM)		
	2009	2010	2011	2009	2010	2011	2009	2010	2011
Chhattisgarh	57,843	61,769	64,078	2,184	2,184	2,184	3,174	4,974	4,974
Jharkhand	13,249	14,779	16,379	1,805	1,805	1,805	1,886	1,886	1,886
Odisha	42,659	46,767	58,719	3,704	3,704	3,704	3,792	3,701	3,571
India	2,141,302	2,249,611	2,341,480	70,548	70,934	70,934	156,715	158,202	161,920

Source: Road Statistics of India, Different Years; This is excluding JSY Roads

The outlay (state sector) on road and bridges is presented in the Table below. In 2008-09, the outlay in the state sector increased by 7.35 percent in Chhattisgarh whereas, it increased by 17.01 percent and 133.30 percent in Jharkhand and Odisha with national level growth rate of 18.65

percent. The outlay for road and bridges reduced by 22.94 percent and 7.75 percent during 2009-10 in Chhattisgarh and Odisha respectively during 2009-10. In 2010-11, there is a reduction of 3.67 percent in the plan outlay for this sector in Chhattisgarh but outlay increased by 10.16 percent and 37.86 percent in Jharkhand and Odisha during 2010-11 respectively.

Table 62: Outlay and Expenditure on Roads and Bridges (State Sector, Rs. in Lakh)

State	2007-08		2008-09		2009-10		2010-11	
	Approved Outlay	Expenditure						
Chhattisgarh	134,275.05	102,991.29	144,146.03	100,351.86	111,083.83	88,205.78	107,008.85	107,008.85
Jharkhand	54,696.00	30,051.00	64,000.00	54,353.00	64,000.00	51,352.00	70,500.00	70,500.00
Odisha	41,953.00	39,873.99	97,875.00	91,027.37	90,292.00	93,636.12	124,475.00	117,119.00
India	2,546,316.24	2,576,448.67	3,021,328.04	3,164,829.25	3,366,882.09	3,449,705.76	3,520,874.14	3,694,123.62

Note: Outlay & Expenditure on Roads & Bridges (State Sector)

Odisha recorded a highest percentage of expenditure (95.04 percent) of the total outlay during 2007-08, followed by Chhattisgarh (76.70 percent) and Jharkhand (54.94 percent). But in 2008-09 and 2009-10, better expenditure is recorded in Jharkhand in comparison to Chhattisgarh. Performance of states in 2010-11 with regard to achieving the expenditure target is much better in all the states in comparison to previous years.

Table 63: Road Length in Relation to Area and Population (As on 31st March 2008)

State	Total Road Length (in Km)	Area (Km ²)	Population (2008) (in thousands)	Road Length (in Km)	
				Per 100 Sq. Km. of Area	Per one lakh of population
Chhattisgarh	74434	135191	23269	55.06	319.88
Jharkhand	17531	79714	30181	21.99	58.09
Odisha	215404	155707	39655	138.34	543.20
India*	4109592	3287240	1144737	125.02	359.00

Source: Road Statistics of India, Different Years; Figures as on 31st March 2008; * Includes roads reported as constructed under JRY and PMGSY; Population figures as estimated by o/o Registrar General of India, M/O Home Affairs.

In the year 2008, the road length per 100 Sq. Km area was highest in Odisha (138.34 Km) followed by Chhattisgarh with 55.06 Km and road length per one lakh of population was 543.20 Km in Odisha and 319.88 Km in Chhattisgarh. By 2011, the road length per 100 Sq. Km in Odisha increased to 166.23 Sq. Km and per one lakh of population the road length increased to 617.05 Km. Other two states also reflect an increased trend in road length per 100 Sq. Km and length of road per one lakh population.

Table 64: Road Length in Relation to Area and Population (As on 31st March 2011)

State	Total Road Length (in Km)	Area (Km ²)	Population (2011) (in thousands)	Road Length (in Km)		Total Length of National Highways (in Km)	National Highways (in Km)	
				Per 100 Sq. Km. of Area	Per one lakh of population		Per 100 Sq. Km. of Area	Per one lakh of population
Chhattisgarh	93,965	135,191	25,540	69.51	367.91	2,184	1.62	8.55
Jharkhand	23,903	79,714	32,966	29.99	72.51	1,805	2.26	5.48
Odisha	258,836	155,707	41,947	166.23	617.05	3,704	2.38	8.83
India	4,690,342	3,287,240	1,210,193	142.68	387.57	70,934	2.16	5.86

Source: Road Statistics of India, Different Years; Figures as on 31st March 2011

3.8 Tele-Density

The tele-density is estimated taking number of telephones per 100 populations. By 2008, Chhattisgarh was having a tele-density of 4.38 with urban tele-density of 14.87 and 1.39 in rural. By 2014 (December), it increased to 58.77 with 123.01 in urban and 34.77 in rural. Tele-density in Jharkhand also shows an increasing trend from 3.6 in 2008 to 48.28 in 2014. In case of Odisha, it increased from 15 in 2008 to 65.24 in 2014. Growth in Tele-density index in study states is presented in the table.

Table 65: Teledensity in Study States

Tele Density (Tel/100 Pop)	Overall				Urban				Rural				Rural Phone to Overall			
	2008	Mar-09	Mar. 10	Dec. 10	2008	Mar-09	Mar. 10	Dec. 10	2008	Mar-09	Mar. 10	Dec. 10	2008	Mar-09	Mar. 10	Dec. 10
Chhattisgarh (in MP)	4.38	5.15	5.74%	5.94%	14.87	16.69	17.31%	16.83%	1.39	1.81	2.32%	2.69%	24.68%	27.18%	31.26%	34.78%
Jharkhand (in Bihar)	3.6	4.11	5.54%	6.00%	11.67	13.02	16.79%	18.12%	1.19	1.44	2.14%	2.32%	25.41%	26.96%	29.69%	29.71%
Odisha	15	23.3	39.30%	52.31%	55.59	78.09	133.25%	179.24%	7.14	12.55	20.61%	26.80%	39.85%	45.01%	43.74%	42.66%
India	26.22	36.98	52.74%	66.17%	66.39	88.84	119.45%	147.52%	9.46	15.11	24.31%	31.22%	25.46%	28.74%	32.32%	33.00%
State																
	Overall				Urban				Rural				Rural Phone to Overall			
	Dec. 12	Mar. 13	March' 14	Dec.' 14	Dec. 12	Mar. 13	March' 14	Dec.' 14	Dec. 12	Mar. 13	March' 14	Dec.' 14	Dec. 12	Mar. 13	March' 14	Dec.' 14
Chhattisgarh (in MP)	52.23	53.55	56.04	58.77	114.15	115.09	116.34	123.01	29.51	30.91	33.67	34.77	41.33%	42.21%	43.81%	43.07%
Jharkhand (in Bihar)	46.53	45.72	46.1	48.28	170.32	160.28	150.96	160.14	26.9	27.54	29.41	30.43	49.90%	51.98%	55.03%	54.37%
Odisha	59.7	60.21	60.9	65.24	167.62	164.01	161.16	171.17	37.43	38.72	39.87	42.78	51.96%	53.27%	54.11%	54.11%
India	73.34	73.32	75.23	77.59	149.55	146.64	145.46	147.75	39.9	41.05	44.01	46.14	37.81%	38.89%	40.49%	41.06%

Source: Annual Report 2014-15; Department of Telecommunications; Ministry of Communications & Information Technology, Government of India

Chapter Four: Cost Disability, Time & Cost Overrun

The 14th Finance Commission take in to account the need to balance management of ecology, environment and climate change consistent with sustainable economic development. The commission recognise that States have an additional responsibility towards management of environment and climate change, while creating conditions for sustainable economic growth and development. The commission included forest cover, in its devolution formula. The report states that a large forest cover provides huge ecological benefits, but there is also an opportunity cost in terms of area not available for other economic activities and this also serves as an important indicator of fiscal disability. We have assigned 7.5 per cent weight to the forest cover.

The regional disparity, among and within the state, has remained a concern for the policy makers and executing agencies. The available resource base and its utilisation for economic growth remain key to bringing similar pattern of growth across districts. But the factors that are endowed to the state, which are out of the control of the state, influence the growth pattern. One of the reasons why centralised planning was advocated earlier was that it could restrain the regional disparity⁷. In spite of planning, however, the regional disparity still continues at national and state level. Odisha as a case may be considered where the districts in the southern region / KBK districts remain backward in comparison to central and coastal districts. But the question remains whether growth rates and standard of living in different regions would eventually maintain an equilibrium and underdeveloped regions would come at par with development regions.

The convergence theorem⁸ postulates that when the growth rate of an economy accelerates, initially some regions with better resources would grow faster than others. But after sometime, when the law of diminishing marginal returns set in, first growth rates would converge, due to differential marginal productivity of capital (higher in poorer regions and lower in richer regions), and this in turn would bridge the gaps in the levels of income across regions. However, demonstrated evidences on this concept of convergence across the country still remain inadequate. In India, it was expected that the economic reform would bring a balanced, inclusive and high growth across the country. However, the economic liberalisation could able to bring certain degree of economic growth in the regions that are having high resource base and infrastructural facilities. Certain regions, that have resource base were exploited and utilised for development in other part of the state / district rather than the local development. So, economic

⁷Bhattacharya B.B., Sakthivel S.; Regional Growth and Disparity in India, A Comparison of Pre and Post-Reform Decades, Institute of Economic Growth, University of Delhi Enclave.

⁸Barro Rober J., Human Capital and Economic Growth, 1991

liberalisation proved to be less fruitful in bridging the critical gaps that exists among different regions.

Table 66: Per Capita GSDP in Study States.

State	1983	1987-88	Growth (%)	1993-94	Growth (%)	1999-2000	Growth (%)	2004-05	Growth (%)	2009-10	Growth (%)	2011-12	Growth (%)
Chhattisgarh	2,332	3,788	62.44	9,400	148.15	14,209	51.16	21,636	52.27	42,868	98.13	52,893	23.39
Jharkhand	1,387	2,354	69.72	9,439	300.98	14,963	58.52	19,757	32.04	33,156	67.82	44,020	32.77
Odisha	2,258	3,554	57.40	6,892	93.92	12,597	82.78	19,907	58.03	41,467	108.30	52,991	27.79

Source: Economic Survey of India, State Economic Survey & other State Documents

In the context of the study states, there is a quantum jump in the per capita Gross State Domestic Product (GSDP). In the pre-reform era, the per capita GSDP (at 2004-05 price) during 1983 was Rs.2, 332 in Chhattisgarh which increased to Rs.3, 788 during 1987-88, i.e. about 62.44 percent. Jharkhand and Odisha also recorded a growth of 69.72 percent and 57.40 percent in the per capita GSDP during this period. But immediately after reform in 1991, a quantum jump in per capita income is recorded in all these states. The state of Jharkhand recorded a highest per capita growth followed by Chhattisgarh in 1993-94. The positive growth trend continued till 2011-12, though the rate of growth declined during 2011-12 in all these states in comparison to previous growth trend.

Table 67: Growth Rate of Different Sectors, 2004-05 Price

States	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Average 2005-06 to 2013-14
Agriculture										
Chhattisgarh	3.58	-0.52	0.28	6.4	-14.62	-3.66	-17.64	-7.21	-0.27	-3.74
Jharkhand	3.36	13.83	5.84	20.51	-9.28	5.09	31.88	7.25	9.21	9.74
Odisha	3.47	1.59	5.33	1.74	9.48	2.3	-5.72	12.72	-3.53	3.04
India	5.6	4.13	6.34	-0.27	0.41	9.54	5.34	0.91	4.93	4.1
Ag. & Allied										
Chhattisgarh	12.75	4.48	9.32	-9.95	8.5	21.48	2.96	9.33	2.28	6.8
Jharkhand	3.65	12.58	5.61	16.57	-6.21	4.46	26.23	6.15	8.3	8.59
Odisha	3.34	1.94	4.66	1.87	7.74	1.9	-4.46	11.01	-3.25	2.75
India	5.14	4.16	5.8	0.09	0.81	8.6	5.02	1.42	4.71	3.97
Industry										
Chhattisgarh	-3.81	32.73	7.38	14.19	-2.79	2.36	9.97	2.96	6.42	7.71
Jharkhand	8.13	8.86	12.28	8.78	21.05	14.93	2.4	11.53	11.62	11.06
Odisha	2.63	21.39	17.43	5.25	-2.65	8.1	4.94	9.48	5.74	8.04
India	9.72	12.17	9.67	4.44	9.16	7.55	7.81	0.96	0.35	6.87
Manufacturing										
Chhattisgarh	-18.39	50.9	12.65	2.43	-10.86	-5.14	-7.62	1.28	5.31	3.39
Jharkhand	3.21	-7.25	0.84	23.38	7.26	29.54	17.27	-1.81	8.39	8.98
Odisha	2.53	26.62	33.04	13.36	-6.74	5.3	12.44	10.97	7.1	11.62
India	10.1	14.32	10.28	4.33	11.3	8.86	7.41	1.14	-0.71	7.45
Service										
Chhattisgarh	6.42	11.38	9.88	11.7	9.53	15.43	5.77	6.27	8.13	9.39
Jharkhand	-22.52	-12.46	61.03	-31.78	5.17	22.3	-13.47	6.69	3.2	2.02
Odisha	9.43	12.11	8.63	12.65	9.16	10.45	6.06	6.1	8.65	9.25
India	10.91	10.06	10.27	9.98	10.5	9.67	6.57	6.96	6.78	9.07

Source: Economic Survey

The growth pattern of different sectors shows a mixed trend in between 2005-06 and 2013-14. While the average growth of agriculture sector in Chhattisgarh remain negative (-3.74), highest positive growth is recorded in Jharkhand which is much higher than the national average growth. All the states mark a positive growth in industry, manufacturing and service sector during this period with a differential growth trend by state.

Table 68: Reduction of Poverty among STs and Total Poverty Reduction

Category	1993-94		2004-05		Decrease Percentage	
	Rural	Urban	Rural	Urban	Rural	Urban
Scheduled Tribes (STs)	51.94	41.14	47.3	33.3	4.64	7.84
Scheduled Caste (SCs)	48.11	49.48	36.8	39.9	11.31	9.50
All Groups	37.3	32.4	28.3	25.7	9.00	6.70
Gap in Poverty Reduction (ST & All)	14.64	9.76	19.0	7.6	4.36	2.16

Source: Planning Commission, Govt. of India

In-spite of all the sector growth and per capita growth in GSDP, poverty still continue to remain high in some of the states and districts. In the early period of economic reform, the poverty ratio in India was 37.3 percent in rural and 32.4 percent in urban area. By 2004-05, the poverty ratio reduced to 28.3 percent in rural and 25.7 percent in urban, i.e., a reduction of 9.0 percent in rural and 6.70 percent in urban.

Though reduction in rate of poverty is noticed in almost all the states at the national level, but it's acquit prevalence continue to remain in some parts of the country with minor reduction. Further, the rate of reduction in poverty has not been uniform across different communities / social groups. While the families below the poverty line reduced by 11.31 percent in rural and 9.5 percent in urban area in case of Scheduled Castes (SCs), in case of Scheduled Tribes, it reduced by 4.64 percent in rural and 7.84 percent in urban areas. So, the gap in poverty reduction in case of STs in comparison to total poverty reduced during the period remain 4.36 percent in rural. Reduction of poverty among STs in the urban was marginally higher than the total poverty reduced in urban during the period.

Table 69: Poverty Ratio among STs

State	1993-94			2004-05				
	SC	ST	All	SC	ST	OBC	Others	Total
Chhattisgarh	-	-	-	32.7	54.7	33.9	29.2	40.9
Jharkhand	-	-	-	57.9	54.2	40.2	37.1	46.3
Odisha	48.95	71.26	49.72	50.2	75.6	36.9	23.4	46.4
India	48.11	51.94	37.27	36.8	47.2	26.7	16.1	27.5

Source: Planning Commission, Govt. of India

Contrary to the national trend, Odisha reflects a growth in poverty among STs during 2004-05 in comparison to 1993-94, i.e., from 71.26 percent to 75.6 percent. Looking at the rate of prevalence of poverty, it can be said that the benefit of economic reform is not harvested by all the sections of the society in a uniform manner. On the other hand, it can also be argued that the benefit of economic growth could not be able to reach to the most marginalised segment of the society, i.e. STs, the way it was desired. Bringing economic growth equally across all the regions of the country and making every community equally benefitted, though preferred but remain a challenge and will continue to remain so, provided additional provisions are not made, based on the current status of development.

4.1 Development Disparity and Endowment Factors

A study on regional disparity in India (Chowdhury, 2014) reveals that per capita income differences across states have increased over time with a corresponding increase in the mean real per capita income by almost three fold between 1980-81 and 2009-10. The most important aspect of the fast growth trajectory of Indian economy is that the lagging regions of the country have started growing at a faster rate during the decade of 2000 compared to the first decade of economic reform. However regional inequality has increased over the period despite some of the poorer states registering higher growth rates post 2003-04. This is true for the post-reform period and more so for the high growth period. Sectoral growth analysis also reveals that the major driver of growth is the service sector whereas primary sector demonstrates the highest variability in growth rates across states, followed by the secondary and tertiary sectors.

The inter-state inequality in per capita income and consumption expenditure show a clear increasing trend during the first and second phase of reform. However, the strategy of inclusive growth and balanced regional development launched since 2003-04, has led to acceleration in the average growth in the less developed states. But this has made only a marginal impact in bringing balanced economic and human growth. Further, poverty reduction has been relatively less in less developed compared to developed states, resulting in concentration of poverty in a few backward states. The composite indices of economic development (Kundu & Varghese, 2010), constructed based on a select set of indicators exhibit high correlations with that of social development. The correlation of economic development with amenities, although statistically significant, is relatively low, which suggests that the problems pertaining to health, education, and access to other amenities cannot be effectively addressed just by focusing on economic development⁹.

⁹Kundu A, Varghese K.; Regional Inequality and Inclusive Growth in India under Globalisation, Oxfam India working papers series, September 2010.

While India has lower spatial income disparities in the post reform periods than some of the other developing countries, these disparities have grown. The gap between rural and urban areas also widened despite average growth in both. The contribution of rural-urban disparities to overall inequality has grown correspondingly. A remarkable feature of Indian spatial disparities is the presence of backward areas even within states that have grown fast and are at relatively high income levels on average. A contiguous corridor with deprived areas of Andhra Pradesh, Orissa, Chhattisgarh, Jharkhand and Bihar persists at the national level which has been lagging behind and not benefitted much from economic reform. Globally, opening up of an economy appears to be correlated with rising spatial inequality. High and rising inequality in general dissipates the impact of growth on poverty reduction. Spatial inequality contributes to overall inequality. The regional policy debate has been between location-blind and location-sensitive approaches (Kanbur, 2010). The former encourage current locational comparative advantage and tolerate rising regional inequality with a view to relying on the eventual movement of people from lagging to growing regions. The latter attempt to (i) equalize comparative advantage by investing in lagging regions, and (ii) directly redistribute the gains of growth to the lagging regions. A combination of both the two approaches could be the strategy to deal with the existing development disparity. Higher allocation of resources to less developed regions can boost the local development process and thereby minimise locational blindness and reduce development gap and improve the socio-economic status of people.

Table 70: GINI Coefficient for Per Capita Consumption Expenditure

State	1973-74		1977-78		1983		1993-94		1999-2000		2004-05 (URP)		2004-05 (MRP)	
	R	U	R	U	R	U	R	U	R	U	R	U	R	U
Chhattisgarh											0.29	0.43	0.24	0.35
Jharkhand											0.22	0.35	0.20	0.33
Odisha	0.26	0.34	0.3	0.32	0.27	0.29	0.24	0.3	0.24	0.29	0.28	0.35	0.25	0.33
India	0.28	0.3	0.34	0.34	0.3	0.33	0.28	0.34	0.26	0.34	0.3	0.37	0.25	0.35

Source: Reserve bank of India, Occasional Papers, Inclusive Growth and its Regional Dimension, P. K. Nayak, Sadhan Kumar Chattopadhyay, Arun Vishnu Kumar and V. Dhanya. R-Rural, U-Urban

The endowment factors remain a bottleneck in the way of balanced growth and causes regional disparity. The hilly and forest regions with educationally backward population and poor marketable skill base are such endowed factors which can be considered as development hindrances. While ecological benefits and ecosystem services from the hilly forest areas remain crucial for the state and the country, at the same time it also hinders the economic growth process. Substantial land mass of a state falling under such region are barred from required development interventions. While in one hand forest regulations for preservation / conservation of natural resource base do not promote any such development measures, on the other hand, the people living in these regions, mostly tribals, fail to access various services.

Table 71: Correlation of Endowment Factors with Poverty, Facilities and Services

Particulars		ST	Forest	MPCE Rural	BPL % Rural	BPL Urban	Village Having Mobile Coverage	Village Having PDS Shop	Village Having Power Supply	Accessibility	Village Having Bus Service	Other Transport Services
ST	Correlation	1	.539**	-.500**	.581**	.181	-.286*	-.192	-.363**	-.319*	-.005	-.524**
	Sig. (2-tailed)		.000	.000	.000	.153	.022	.129	.003	.010	.968	.000
Forest	Correlation	.539**	1	-.402**	.424**	.173	-.340**	-.280*	-.196	-.321**	.100	-.347**
	Sig. (2-tailed)	.000		.001	.000	.171	.006	.025	.121	.010	.432	.005
MPCE Rural	Correlation	-.500**	-.402**	1	-.882**	-.324**	.002	.383**	.298*	.291*	.119	.419**
	Sig. (2-tailed)	.000	.001		.000	.009	.989	.002	.017	.019	.349	.001
BPL (%) Rural	Correlation	.581**	.424**	-.882**	1	.270*	-.154	-.394**	-.422**	-.210	-.240	-.532**
	Sig. (2-tailed)	.000	.000	.000		.031	.224	.001	.001	.096	.056	.000
BPL (%) Urban	Correlation	.181	.173	-.324**	.270*	1	.333**	-.185	.167	-.539**	.154	.100
	Sig. (2-tailed)	.153	.171	.009	.031		.007	.144	.188	.000	.224	.429
Mobile Coverage	Correlation	-.286*	-.340**	.002	-.154	.333**	1	.038	.565**	-.267*	.458**	.377**
	Sig. (2-tailed)	.022	.006	.989	.224	.007		.763	.000	.033	.000	.002
PDS Shop	Correlation	-.192	-.280*	.383**	-.394**	-.185	.038	1	.498**	.350**	.336**	.459**
	Sig. (2-tailed)	.129	.025	.002	.001	.144	.763		.000	.005	.007	.000
Power Supply	Correlation	-.363**	-.196	.298*	-.422**	.167	.565**	.498**	1	-.113	.666**	.560**
	Sig. (2-tailed)	.003	.121	.017	.001	.188	.000	.000		.372	.000	.000
Accessibility	Correlation	-.319*	-.321**	.291*	-.210	-.539**	-.267*	.350**	-.113	1	-.211	.212
	Sig. (2-tailed)	.010	.010	.019	.096	.000	.033	.005	.372		.093	.092
Bus Service	Correlation	-.005	.100	.119	-.240	.154	.458**	.336**	.666**	-.211	1	.287*
	Sig. (2-tailed)	.968	.432	.349	.056	.224	.000	.007	.000	.093		.021
Other Transport Services	Correlation	-.524**	-.347**	.419**	-.532**	.100	.377**	.459**	.560**	.212	.287*	1
	Sig. (2-tailed)	.000	.005	.001	.000	.429	.002	.000	.000	.092	.021	

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Note: The Matrix covers 64 districts of three study states.

Attempt is made in the current study to understand the importance of the endowment factors (endowment factors that are specified here) in the development disparity and escalation of cost of provisioning / providing services. The correlation matrix is computed to understand the different endowment factors, i.e., percentage of forest to total geographical area of the district (districts of study states) and ST population percentage to total population of the district and its relation to facility and services. While forest percentage to the total geographical area is strongly correlated to ST population percentage, Monthly Per Capita Expenditure is negatively correlated with ST population proportion and forest coverage. Percentage of BPL families in rural areas of the district is also strongly correlated with ST population percentage and area under forest. The districts having ST concentration and forest coverage also shows a negative correlation (sig. at 0.01 or 0.05 level) with mobile coverage, accessibility (road connectivity) and private carrier services. Forest coverage also shows a negative correlation with PDS shop.

4.2 Facility and Services Index

Further to understand the importance of these endowment factors in state economy and development, Facility Index was computed taking available facilities at the village level and endowment parameters. The index is computed separately for each study state to understand the rank of different districts at the state level with reference to the ST concentration and forest area coverage. The parameters that are used to compute the indices are as follows.

1. Percentage of village having Primary School
2. Percentage of village having Primary Health Sub-Centre
3. Percentage of village with Portable Drinking Water (Hand Pump)
4. Percentage of village under Mobile Phone Coverage
5. Percentage of village having PDS Shop
6. Percentage of village having Power Supply (Electrified)

Table 72: Facility Index Ranks: Chhattisgarh

District	Primary School		Health Sub-Centre		Drinking Water Facility		Mobile Phone Coverage		PDS Shop		Electrified		CDI	
	W	UW	W	UW	W	UW	W	UW	W	UW	W	UW	W	UW
Bastar	5	5	1	1	14	14	12	12	7	7	11	11	4	4
Bijapur	18	18	18	18	17	17	18	18	17	17	18	18	17	17
Bilaspur	13	13	11	11	8	8	3	3	3	3	5	5	6	6
Dantewada	16	16	15	15	12	12	16	16	11	11	16	16	16	16
Dhamtari	9	9	6	6	13	13	7	7	12	12	8	8	8	8
Durg	8	8	8	8	10	10	1	1	6	6	3	3	5	5
J-Champa	1	1	5	5	5	5	8	8	2	2	4	4	2	2
Jashpur	3	3	2	2	1	1	9	9	4	4	14	14	3	3
Kabeergham	14	14	17	17	9	9	2	2	15	15	9	9	14	14
Kanker	11	11	13	13	16	16	14	14	16	16	10	10	15	15
Korba	6	6	4	4	7	7	15	15	5	5	12	12	9	9
Koriya	15	15	10	10	2	2	6	6	13	13	15	15	13	13
Mahasamund	12	12	14	14	4	4	10	10	14	14	1	1	12	12
Narayanpur	17	17	16	16	18	18	17	17	18	18	17	17	18	18
Raigarh	7	7	9	9	3	3	11	11	8	8	2	2	7	7
Raipur	4	4	7	7	15	15	13	13	10	10	7	7	10	10
Rajnandgaon	10	10	12	12	6	6	5	5	9	9	6	6	11	11
Surguja	2	2	3	3	11	11	4	4	1	1	13	13	1	1

Data Source: Census of India, 2011,

Note: Rank 1 refers highest order of facility and coverage of villages.

CDI: Composite Development Index; W-Weighted Rank, UW-Unweighted Rank

In Chhattisgarh, the districts that are lowest in the Composite Development Index (CDI) rank are having highest percentage of forest area to the total geographical area and also high percentage of ST population. For Example, Dantewada with 64.18 percent forest area to the total geographical area and 71.07 percent ST population ranks 16 in the order. Similarly, the district of

Koriya with 62.19 percent forest area and 46.18 percent ST population is having a rank of 13 among all the districts of the state. On the other hand, the district of Hajangir Champa, which is having 4.02 percent forest area and 11.56 percent ST population is having a CDI rank of 2. Similarly, the district of Durg, with 9.11 percent forest cover and 5.88 percent tribal population is having a CDI rank of 5. So, it is evident that the districts that have a high percentage of forest area are having less facilities in comparison to districts that have less forest cover. It is also pertinent that in the state, the districts that have high tribal concentration with forest cover are having less facilities and services in comparison to districts that have less tribal population and thin forest cover.

Table 73: Facility Index Ranks: Jharkhand

District	Primary School		Health Sub-Centre		Drinking Water Facility		Mobile Phone Coverage		PDS Shop		Electrified		CDI	
	W	UW	W	UW	W	UW	W	UW	W	UW	W	UW	W	UW
Bokaro	3	3	9	9	9	9	5	5	6	6	8	8	5	3
Chatra	17	17	15	15	3	3	22	22	15	15	18	18	21	21
Deoghar	22	22	24	24	18	18	17	17	22	22	4	4	20	18
Dhanbad	13	13	13	13	16	16	2	2	1	1	2	2	1	1
Dumka	18	18	17	17	6	6	18	18	21	21	15	15	19	19
Garwa	9	9	8	8	5	5	3	3	8	8	9	9	7	4
Giridih	14	14	19	19	15	15	10	10	18	18	16	16	16	16
Godda	23	23	20	20	23	23	21	21	12	12	17	17	22	22
Gumla	2	2	5	5	2	2	16	16	11	11	20	20	12	13
Hazaribagh	15	15	12	12	7	7	7	7	9	9	6	6	9	9
Jamtara	12	12	16	16	4	4	9	9	17	17	10	10	14	14
Khunti	20	20	10	10	10	10	20	20	5	5	22	22	17	20
Kodarma	11	11	6	6	12	12	15	15	16	16	5	5	10	10
Latehar	6	6	11	11	1	1	14	14	13	13	12	12	11	11
Lohardaga	1	1	3	3	11	11	12	12	4	4	14	14	6	7
Pakur	21	21	18	18	20	20	24	24	20	20	23	23	23	23
Palamu	16	16	22	22	22	22	13	13	10	10	11	11	15	15
Pa-Singhbhum	8	8	1	1	17	17	19	19	14	14	13	13	3	5
Pu-Singhbhum	19	19	21	21	14	14	11	11	2	2	1	1	8	8
Ramgarh	5	5	4	4	13	13	4	4	7	7	3	3	2	2
Ranchi	7	7	7	7	21	21	6	6	24	24	19	19	18	17
Sahibganj	24	24	23	23	24	24	23	23	23	23	24	24	24	24
Sa-Kharsawan	10	10	14	14	19	19	8	8	19	19	7	7	13	12
Simdega	4	4	2	2	8	8	1	1	3	3	21	21	4	6

Data Source: Census of India, 2011,

Note: Rank 1 refers highest order of facility and coverage of villages.

CDI: Composite Development Index; W-Weighted Rank, UW-Unweighted Rank

The districts of Jharkhand are also ranked for the same parameters like that of other study states. The trend remains more or less same like that of Chhattisgarh. The district of Dhanbad with 6.74 percent forest coverage and 8.68 percent ST population is having Rank 1 with better facilities in comparison to districts like Sahibganj, Chatra etc. where forest area is relatively higher and/or tribal population proportion to the total population is higher. However, in comparison to Chhattisgarh, the districts of Jharkhand show less forest area to total geographical area in most of

the districts. The state also reflects better availability of facilities in different districts, irrespective of tribal concentration. So, the districts that have less forest cover but having significant tribal population reflects having better facility and services in comparison to Chhattisgarh. It can be inferred with reference to Jharkhand that in order to provision facilities and extension of services, forest area and inaccessibility play a critical role rather than concentration of tribal population. So, better provision of facilities is more linked to means of provisioning, i.e., accessibility.

Table 74: Facility Index Ranks: Odisha

District	Primary School		Health Sub-Centre		Drinking Water Facility		Mobile Phone Coverage		PDS Shop		Electrified		CDI	
	W	UW	W	UW	W	UW	W	UW	W	UW	W	UW	W	UW
Anugul	16	16	22	22	20	20	19	19	8	8	10	10	16	14
Balanagir	2	2	17	17	3	3	5	5	13	13	20	20	8	7
Baleshwar	26	26	27	27	26	26	10	10	12	12	13	13	21	21
Bargarh	1	1	6	6	13	13	12	12	18	18	7	7	4	4
Bhadrak	8	8	18	18	6	6	3	3	7	7	14	14	7	6
Boudh	30	30	30	30	8	8	23	23	28	28	28	28	27	27
Cuttack	21	21	4	4	30	30	11	11	5	5	8	8	19	19
Debagarh	24	24	29	29	24	24	22	22	17	17	19	19	23	22
Dhenkanal	11	11	10	10	5	5	21	21	2	2	12	12	5	5
Gajapati	23	23	25	25	29	29	27	27	27	27	23	23	28	28
Ganjam	14	14	9	9	19	19	20	20	15	15	11	11	15	16
Jagatsingpur	15	15	12	12	12	12	2	2	11	11	4	4	9	8
Jajpur	12	12	14	14	27	27	9	9	3	3	6	6	18	17
Jharsuguda	5	5	3	3	4	4	4	4	1	1	2	2	2	1
Kalahandi	27	27	20	20	28	28	24	24	21	21	25	25	26	26
Kandhamal	29	29	28	28	25	25	30	30	30	30	27	27	30	30
Kendrapara	9	9	8	8	11	11	1	1	4	4	1	1	3	3
Kendujhar	7	7	5	5	16	16	13	13	19	19	24	24	12	12
Khordha	22	22	15	15	14	14	8	8	10	10	16	16	13	13
Koraput	19	19	13	13	17	17	25	25	24	24	26	26	22	24
Malkangiri	17	17	21	21	1	1	28	28	26	26	30	30	25	25
Mayurbhanj	20	20	7	7	18	18	15	15	14	14	22	22	17	18
Nabarangpur	3	3	1	1	7	7	6	6	9	9	18	18	1	2
Nayagarh	28	28	23	23	15	15	26	26	23	23	5	5	24	23
Nuapada	4	4	11	11	21	21	14	14	16	16	21	21	11	11
Puri	18	18	19	19	9	9	7	7	6	6	3	3	10	9
Rayagada	25	25	26	26	22	22	29	29	29	29	29	29	29	29
Sambalpur	13	13	16	16	1	1	17	17	22	22	9	9	14	15
Subarnapur	10	10	24	24	23	23	18	18	25	25	15	15	20	20
Sundargarh	6	6	2	2	10	10	16	16	20	20	17	17	6	10

Data Source: Census of India, 2011,

Note: Rank 1 refers highest order of facility and coverage of villages.

CDI: Composite Development Index; W-Weighted Rank, UW-Unweighted Rank

In case of Odisha, inaccessibility factor remains one of the important contributors in extending facilities and services to people, mostly tribal in forest and hilly areas. The districts that have a better performance and having higher CDI rank are having less forest cover, less tribal concentration and more suitable geophysical characteristics, for example, districts like Bargarh, Puri, Jagatsingpur etc. Analysis of Odisha also reveals that certain districts with high tribal

concentration and better forest cover also has good facilities like Nawarangpur. So, apart from forest cover and tribal concentration, provisioning of services is also dependent on a number of other factors like population density, financial provision and special focus on local area development etc.

4.3 Accessibility Index

Accessibility Index refers to approachability to the villages in different districts of the study state. Three important parameters of accessibility are used to compute this index, namely (1) Percentage of villages having Pucca Road, (2) Percentage of villages having bus service (public/private), and (3) Percentage of villages having other transportation services like taxi / vans. While availability of pucca road to the village ensures approachability, transportation services looks in to communication means of people and thereby easy accessibility to the village. The index is computed separately for all the study states to understand the rank of different districts with regard to accessibility. It also reflects the inaccessibility of the districts alternatively in case of districts that fall lower in rank.

Table 75: Accessibility Index Ranks: Chhattisgarh

District	Village Connected with Pucca Road		Village Having Bus Service (Public / Private)		Village Having Other Communication Means (Taxi Etc.)		CDI	
	W	UW	W	UW	W	UW	W	UW
Bastar	7	7	6	6	4	4	5	5
Bijapur	18	18	16	16	17	17	17	17
Bilaspur	8	8	9	9	9	9	8	9
Dantewada	16	16	18	18	11	11	16	16
Dhamtari	2	2	12	12	1	1	2	2
Durg	1	1	2	2	6	6	1	1
J-Champa	3	3	5	5	8	8	3	3
Jashpur	14	14	4	4	12	12	13	12
Kabeerdham	13	13	13	13	13	13	15	15
Kanker	15	15	15	15	5	5	11	10
Korba	11	11	11	11	15	15	14	14
Koriya	12	12	3	3	14	14	10	11
Mahasamund	6	6	10	10	7	7	6	6
Narayanpur	17	17	17	17	18	18	18	18
Raigarh	5	5	7	7	2	2	4	4
Raipur	9	9	14	14	3	3	9	8
Rajnandgaon	4	4	8	8	10	10	7	7
Surguja	10	10	1	1	16	16	12	13

Data Source: Census of India, 2011,

Note: Rank 1 refers highest order of facility and coverage of villages.

CDI: Composite Development Index; W-Weighted Rank, UW-Unweighted Rank

Like Services and Facility Index, Accessibility Index also reflects more or less similar trend. The district of Durg with less forest cover (9.11 percent) and less ST population (5.88 percent) is having better accessibility (Rank 1) than Dantewada (forest cover: 64.18 percent, ST Population: 71.07 percent) and Kawardha (Kabeerdham) (forest cover: 37.39 percent, ST Population: 20.31 percent). So the districts that have high forest cover are having poor accessibility index in comparison to districts that have less forest cover. Trend of similar nature can also be observed in Jharkhand.

Table 76: Accessibility Index Ranks: Jharkhand

District	Village Connected with Pucca Road		Village Having Bus Service (Public / Private)		Village Having Other Communication Means (Taxi Etc.)		CDI	
	W	UW	W	UW	W	UW	W	UW
Bokaro	6	6	8	8	9	9	6	6
Chatra	14	14	17	17	10	10	13	13
Deoghar	21	21	20	20	19	19	22	22
Dhanbad	18	18	14	14	3	3	8	10
Dumka	17	17	18	18	24	24	19	19
Garwa	9	9	2	2	2	2	2	2
Giridih	11	11	15	15	12	12	12	12
Godda	24	24	19	19	23	23	24	24
Gumla	1	1	5	5	15	15	10	9
Hazaribagh	13	13	13	13	5	5	9	8
Jamtara	10	10	16	16	22	22	17	17
Khunti	4	4	12	12	21	21	16	16
Kodarma	15	15	10	10	8	8	7	7
Latehar	7	7	6	6	11	11	5	5
Lohardaga	1	1	23	23	7	7	15	15
Pakur	20	20	21	21	18	18	21	21
Palamu	16	16	4	4	4	4	4	4
Pa-Singhbhum	5	5	7	7	17	17	11	11
Pu-Singhbhum	12	12	11	11	16	16	14	14
Ramgarh	1	1	3	3	1	1	1	1
Ranchi	22	22	9	9	14	14	20	20
Sahibganj	23	23	24	24	13	13	23	23
Sa-Kharsawan	8	8	22	22	20	20	18	18
Simdega	19	19	1	1	6	6	3	3

Data Source: Census of India, 2011,

Note: Rank 1 refers highest order of facility and coverage of villages.

CDI: Composite Development Index; W-Weighted Rank, UW-Unweighted Rank

The situation in Odisha is not much different from other two states. The plain districts like Jagatsingpur with forest covered area of 7.97 percent and 0.69 percent ST population is having better accessibility (Rank 1) in comparison to districts like Malkangiri and Koraput in the southern region of the state where poverty percentage is also high.

Table 77: Accessibility Index Ranks: Odisha

District	Village Connected with Pucca Road		Village Having Bus Service (Public / Private)		Village Having Other Communication Means (Taxi Etc.)		CDI	
	W	UW	W	UW	W	UW	W	UW
Anugul	24	24	21	21	13	13	23	23
Balanagir	20	20	16	16	20	20	20	20
Baleshwar	13	13	20	20	11	11	17	17
Bargarh	22	22	25	25	10	10	21	21
Bhadrak	4	4	14	14	6	6	5	5
Boudh	19	19	23	23	25	25	24	24
Cuttack	8	8	18	18	3	3	7	7
Debagarh	11	11	2	2	28	28	15	15
Dhenkanal	12	12	4	4	8	8	4	4
Gajapati	28	28	24	24	17	17	25	25
Ganjam	17	17	3	3	12	12	9	8
Jagatsingpur	2	2	8	8	2	2	1	1
Jajpur	6	6	28	28	4	4	13	14
Jharsuguda	9	9	7	7	15	15	11	11
Kalahandi	23	23	19	19	16	16	22	22
Kandhamal	29	29	26	26	29	29	29	29
Kendrapara	5	5	12	12	1	1	2	3
Kendujhar	7	7	1	1	7	7	3	2
Khordha	15	15	17	17	5	5	10	10
Koraput	27	27	29	29	26	26	28	28
Malkangiri	30	30	30	30	27	27	30	30
Mayurbhanj	14	14	11	11	21	21	19	18
Nabarangpur	16	16	10	10	19	19	16	16
Nayagarh	21	21	5	5	14	14	12	12
Nuapada	10	10	15	15	23	23	18	19
Puri	3	3	13	13	9	9	6	6
Rayagada	26	26	22	22	30	30	27	27
Sambalpur	1	1	9	9	22	22	8	9
Subarnapur	25	25	27	27	24	24	26	26
Sundargarh	18	18	6	6	18	18	14	13

Data Source: Census of India, 2011,

Note: Rank 1 refers highest order of facility and coverage of villages.

CDI: Composite Development Index; W-Weighted Rank, UW-Unweighted Rank

So, looking at both the related indices, i.e. Facility and Services Index and Accessibility Index, it can be deduced that geographical area under forest cover and having higher tribal concentration are less advantaged. Secondly, it is also having a significant bearing on the status of development of the state and responsible for disproportionate growth trend and regional disparity. The inaccessibility factor also imposes substantial financial burden on the state in terms of provisioning of services to the people living in these inaccessible pockets. In one hand while areas with forest cover are to be maintained by the state to get environmental benefits, on the other hand it has been a factor of concern with regard to development of such regions. Apart from this, these areas have been the home of Left Wing Extremism (LWE) which further retard the pace of growth of these areas.

4.4 Left Wing Extremism and Development

A number of Left Wing Extremist outfits have been operating in certain remote and poorly connected pockets of the country for a few decades now. The study states have been the major part of their operation. Though, initial ideology of this movement was to foster inclusive growth, in the later part, the movement itself become an obstacle in the way of local development. The economic and social disadvantage of certain category of people, within the community have been fuelling the movement. While regional development disparity and inequality (refer table) is attributed in general for such movement, the political solution to respond the situation has remained critical, especially in the study states.

Table 78: Inequality among Different Communities

Parameters	SC	ST	OC	All
Poverty				
Poverty - percentage of poor (Rural)	36	46	21	27
Poverty - percentage of poor (Urban)	38	35	21	24
Poverty of Agricultural Labour (Rural)	46	61	39	45
Poverty of Casual Labour (Urban)	58	64	45	49
Mortality and Under Nutrition				
Infant Mortality (per 1,000 live births), 2005/6	51	44	36	NA
Under five mortality, 2005/6	88	96	59	NA
Proportion (%) of Children with Anaemia	78	79	72	NA
Proportion (%) of Underweight Children	21	26	14	NA
Access to Agricultural Land & Capital Assets				
Value of Assets per Household in Rupees (1992)	49,189	52,660	134,500	107,007
Percentage of Self-Employed Cultivators	16	48	41	NA
Percentage of Wage Labour (Rural)	61	49	25	NA
Percentage of Casual Labour (Urban)	26	26	7	NA
Unemployment Rate (Rural) (Current Daily Status) %				
<i>Non-Agriculture Wages of Rural Labour (in Rupees)</i>	5.5	3.0	3.4	NA
	61.06	54.38	64.9	NA

Source: Development Challenges in Extremist Affected Areas, Export Group Report, Planning Commission, Govt. of India, 2008

As per the Govt. of India list¹⁰, a total of 82 districts at the national level are affected by LWE and highest number of districts (18 districts) that are effected is in Odisha. A total of 10 districts in Chhattisgarh and 17 districts of Jharkhand are affected due to LWE. Some of these districts and its development characteristics are presented in the table. Majority of these LWE affected districts have high poverty ratio, significant percentage of population are tribal and area covered

¹⁰Ministry of Drinking Water and Sanitation, Govt. of India

under forest is also relatively high. Apart from this, most of these districts having high inaccessible pockets. On the other hand, it can be argued that the areas that have better accessibility, less forest coverage and less concentration of BPL families have not been or less affected by LWE extremism.

Table 79: Indicators of LWE Districts in Study States

Districts	Forest % to Total Geographical Area	ST %	BPL %	Village (%) not Having Connectivity (Pucca Road)
Odisha				
Balangir	14.69	11.88	61.06	39.06
Debagarh	46.77	35.33	78.79	34.12
Gajapati	57.13	54.29	61.38	62.37
Ganjam	25.59	3.37	55.00	37.12
Jajpur	10.21	8.29	60.4	23.47
Kalahandi	30.39	28.50	62.71	46.60
Kandhamal	66.96	53.58	59.89	67.85
Kendujhar	38.67	45.45	59.17	23.64
Koraput	21.89	50.56	81.88	59.61
Malkangiri	40.08	57.83	77.74	70.75
Mayurbhanj	38.6	58.72	73.66	34.39
Nabarangapur	21.26	33.80	85.7	34.68
Nayagarh	43.24	55.79	67.91	39.33
Nuapada	32.19	6.10	78.42	29.57
Rayagada	44.3	55.99	72.03	54.17
Sambalpur	50.44	34.12	59.78	4.39
Subarnapur	14.12	9.37	73.02	52.45
Sundargarh	42.71	50.75	65.22	38.00
Chhattisgarh				
Bastar	53.37	62.42	14974	33.78
Dantewada	64.18	71.07	17634	65.59
Jashpur	37.07	62.28	5838.0	45.49
Kanker	47.42	55.38	6506	45.53
Kawardha	37.39	20.31	4223	45.04
Koriya	62.19	46.18	6604	37.08
Rajnandagon	31.21	26.36	8068	30.63
Surguja	45.31	57.36	15731	36.77
Jharkhand				
Bokaro	29.39	12.40	52.4	0.49
Chatra	47.7	4.37	55.2	2.25
Garhwa	33.97	15.56	38.6	1.07
Giridih	18.72	9.74	30.5	1.41
Gumla	29.28	68.94	68.6	0.00
Hazaribag	34.91	7.02	28.3	2.10
Koderma	41.67	0.96	38.1	2.43
Lohardaga	33.47	56.89	81.6	0.00
Palamu	41.42	9.34	54.3	2.51
Paschim Singhbhum	39.75	67.31	53.8	0.24
Purbi Singhbhum	31.56	28.51	58.4	1.68
Ranchi	28.42	35.76	23.2	16.74

Source: Ministry of Drinking Water and Sanitation, Govt. of India (LWE Districts in States)

The LWE extremism has been a retarding factor for improved facility and services in the affected areas. Apart from that, field level study in sample districts of these states reveals that different development facilitating agencies, mostly in the industry, infrastructure and manufacturing sector, are reluctant to work in these areas. A number of factors that influence the decision of these agencies are mostly related to LWE activities. Increasing cost of operation in these areas is a reality which is attributed to non-availability of raw materials in these areas, high cost of materials, increasing transportation cost and demand for financial support to LWE movement by their cadres. As per the information of different agencies, about 25 percent to 30 percent of the project cost is demanded by different LWE groups during the life of the project and in lieu of that they allow the agency / contractor to work on the project. As budgetary scope of each project is limited, these agencies do not intend to operate / execute projects in LWE areas. In one hand Govt. agencies are deficient in human resources and it is not feasible to take up numbers of projects at the same time in different locations. Whereas, in other hand, the intermediary path (private agencies / contractors) of execution is also not available due to the LWE fear factor. In such a situation, people of these regions / districts remain deprived of infrastructural facilities and services. It results with poor rate of growth of the region and less investment from external sources.

The growing regional disparity in the post reform period is evident from the growth trend of states. The growth performance of Indian states in the last two decades reveals that the development process has been uneven across states. While some of the states have progressed well, other states have lagged behind. The backward states are not able to attract investment due to poor infrastructure coupled with anti-industry movement by locals and lack of required government support. The regional disparity in the growth rates becomes sharper in terms of per capita income. According to Bhattacharya & Sakthival, there is a sharp deceleration in public investment in India due to fiscal constraint in the post reform period. Although, there is very little information on investment at the regional level, the available indicators suggest that more and more investments are now taking place in richer states. The RBI data on capital flows show that four/five developed states have cornered the major chunk of foreign direct investment in India. The poorer states with inadequate infrastructure are not able to attract foreign investment. The poorer states are also investing less because historically they mobilised resources for public investment mainly through grants and assistance from the Centre, which are now declining due to fiscal constraints¹¹. So, in such a situation, it is highly essential that more investment may be made in the backward states, either through public investment or through fiscal incentives.

¹¹Bhattacharya & Sakthival, *Regional Growth and Disparity in India: A comparison of Pre and Post-Reform Decades*, Institute of Economic Growth, University of Delhi Enclave

4.5 Inaccessibility and Cost Escalation

4.5.1 Transportation of Construction Materials

There is a cost difference marked in transportation of different materials in hilly and plain areas. Some of the items that found having higher cost in plain areas are like small chips / boulders as it is transported from the hilly areas to the planes. As chips / boulders are major items of construction produced in hilly areas, its cost in production points remain low. But other items like asbestos, bricks, cement etc. having high transportation cost in hilly areas in comparison to plain.

Table 80: Difference in Transportation Cost of Civil Materials

Items	Chhattisgarh			Jharkhand			Odisha		
	Hilly	Plane	Cost Difference between Hilly and Plane Areas	Hilly	Plane	Cost Difference between Hilly and Plane Areas	Hilly	Plane	Cost Difference between Hilly and Plane Areas
Asbestos	261	60	201	391	94	297	250	125	125
Bricks	243	91	152	375	350	25	610	520	90
Cement	217	104	114	131	288	-157	590	167	423
Medium Boulders	230	233	-3	178	188	-10	215	235	-20
Sand	673	149	524	215	103	113	425	46	379
Small Chips	249	278	-29	168	132	36	249	265	-16
Tiles	272	60	212	387	175	212	540	333	207

Source: District and sub-district level Information at hilly and plain areas.

4.5.2 Unit Cost of Construction Materials

The unit cost of construction materials also differs significantly in hilly and plain areas. Excluding chips and medium boulders, unit price of construction items normally remains high in hills. In Chhattisgarh, cost of bricks in hilly areas (including forest areas) increases by about 30.43 percent than the plain and growth in cost is about 16.67 percent and 12.75 percent in Jharkhand and Odisha respectively. Similarly, labour cost in hilly areas is comparatively higher than plain and the cost increases by about 11.0 percent to 11.5 percent. State wise cost difference of different construction items are presented in the table.

Table 81: Unit Cost of Civil Materials

Unit Cost of Civil Materials (Rate per Unit in Rs.)										
Items	Per Unit	Chhattisgarh			Jharkhand			Odisha		
		Price in Hilly Areas	Price in Plane Areas	Cost Difference between Hilly and Plane Areas	Price in Hilly Areas	Price in Plane Areas	Cost Difference between Hilly and Plane Areas	Price in Hilly Areas	Price in Plane Areas	Cost Difference between Hilly and Plane Areas
Bricks	1000 Nos.	1500	1150	350	1400	1200	200	4074	3613	461
CEMENT	Per bag	275	255	20	300	270	30	360	340	20
Medium Boulders	Cum	530	610	-80	490	540	-50	762	733	29
SAND	Cum	340	315	25	265	254	11	290	267	22
Small Chip	Cum	710	790	-80	689	755	-66	1115	1190	-75
ROD	Qtl	5400	5100	300	4900	4650	250	5000	4660	340
MANDAYS	No.	290	260	30	240	215	25	200	180	20

4.5.3 Scheduled Rate and Cost Adjustment

Every state is having a Schedule of Rates (SOR) which prescribe different specification for different type of works. The SOR highlights different rates by construction typology taking a number of parameters in to account. Apart from that, at the execution level, there is also a disaggregation of rates by hilly and plain area, prescribed by different departments of the state. The objective of such differentiated cost prescription is to take care of the factors that escalate the unit cost which normally occurs in the hilly / undulating topographical areas. In all the states, these practices are observed with major departments engaged with infrastructure construction. In Jharkhand major infrastructure development / construction works are delegated to works department and in Chhattisgarh, departments delegate such works to PHED. These departments execute the works as per the prescribed norms. A comparative unit cost of Hilly and plain area is presented in the table below for different states.

Table 82: Cost Difference in Hilly and Plain Areas of Study States.

Cost Items	Unit	Cost in Hilly Area	Cost in Plain Area	Difference in Cost (in Rs.)	Difference %
Odisha					
40 mm size HG Metal (HB)	Cum	874.4	874.4	0	0.00
Granite Stone	Cum	483.4	483.4	0	0.00
12 mm size CB	Cum	1161.4	1161.4	0	0.00
12 mm size CB	Cum	2710.4	2470	240.4	9.73
10 mm size CB	Cum	1501.4	1178.4	323	27.41
6mm size CB	Cum	1839.4	1016.4	823	80.97
Sand for filling	Cum	350.4	304.4	46	15.11

Cost Items	Unit	Cost in Hilly Area	Cost in Plain Area	Difference in Cost (in Rs.)	Difference %
Sand for Mortar	Cum	750	694.4	55.6	8.01
Brick	1000 nos	4501.52	3839.12	662.4	17.25
Cement	Qtl	741.52	737.12	4.4	0.60
NPS_NUS	16.35	16.35	16.35	0	0.00
ACR		5.65	5.65	0	0.00
Drinking Water		1.2	1.2	0	0.00
Ramps		0.07	0.07	0	0.00
Cement	Qtl	700	660	40	6.06
Bricks	nos	3870	3500	370	10.57
Metal	cum	650	592	58	9.80
Sand	cum	61	56	5	8.93
Rod	Qtl	5000	4695	305	6.50
Chips	cum	1300	1185	115	9.70
IHHL	1	12000	11500	500	4.35
Earth work hard soil	Cum	85.21	77.4	7.81	10.09
Cost of Cement	Qntl	704	640	64	10.00
Sand	Cum	58	52	6	11.54
12 mm Chips	Cum	1140	1031	109	10.57
Mason 1 st class	1 no	230	207.5	22.5	10.84
Unskilled Mulia	1 No	170	152.5	17.5	11.48
Tiles	Sqmt	435	395.88	39.12	9.88
CC(1:3:6)	Cum	3600	3262.37	337.63	10.35
CP with neat cement puning(1:4)	Sqmt	100	92.92	7.08	7.62
12.AS flooring (1;2:4)	Cum	190	171.88	18.12	10.54
Roof Slab	1 Cum	12280.51	7856.01	4424.5	56.32
Back Window Chajja	1 Cum	890.54	639.05	251.49	39.35
Lintel	1 Cum	9380	7792	1588	20.38
Grade Beam	1 Cum	6227.15	5442.21	784.94	14.42
Column above Plinth	1 Cum	9819.24	8265.65	1553.59	18.80
Column Base	1 Cum	6201.96	5134.42	1067.54	20.79
CB Brick Masonary	1 Cum	5130.21	2926.42	2203.79	75.31
RRHG Stone Masonary	1 Cum	3215.96	2115.24	1100.72	52.04
PCC 1:4:8	1 Cum	5042.24	3092.4	1949.84	63.05
Earth Work	cum	154	145	9	6.21
Sinking of Tube well	each	110923	73260	37663	51.41
Sinking of Tube well	each	110923	73260	37663	51.41
WBM (Metalling)	cum	2460	2400	60	2.50
Const. of ESR	Ltr.	40	38	2	5.26
Const. of ESR	Ltr.	40	38	2	5.26
BT	SQM	350	300	50	16.67
Laying PVC Pipe 90 mm dia	1 km	292395	272349	20046	7.36
Laying PVC Pipe 90 mm dia	1 km	292395	272349	20046	7.36
Road Work	km	45	40	5	12.50
Laying PVC Pipe 110mm dia		396770	373912	22858	6.11
Laying PVC Pipe 110mm dia		396770	373912	22858	6.11
Brick	cum	3850	3500	350	10.00
Laying HDPE Pipe 90 mm dia	1 km	426280	398953	27327	6.85
Laying HDPE Pipe 90 mm dia	1 km	426280	398953	27327	6.85
Cement	Qtl	750	700	50	7.14
Laying HDPE Pipe 110mm dia	1 km	607214	568797	38417	6.75
Laying HDPE Pipe 110mm dia	1 km	607214	568797	38417	6.75

Cost Items	Unit	Cost in Hilly Area	Cost in Plain Area	Difference in Cost (in Rs.)	Difference %
Steel	Qtl	5000	4600	400	8.70
Laying GI Pipe 80 mm dia	1 km	707568	654990	52578	8.03
Laying GI Pipe 80 mm dia	1 km	707568	654990	52578	8.03
Building Work	Sqft	1200	1100	100	9.09
Laying GI Pipe 100mm dia	1 km	1012159	997327	14832	1.49
Laying GI Pipe 100mm dia	1 km	1012159	997327	14832	1.49
Chhattisgarh					
Tube wells	p/m	90680	86850	3830	4.41
Construction of RCC OHT	P/L	13	13	0	0.00
Jharkhand					
Sand	M3	265	254	11.19	4.41
Chip	M3	689.1	630	59.1	9.38
Cement	M3	1250.54	1190	60.54	5.09
Rod	MT	136.54	125	11.54	9.23
Bricks	1000 nos	709.27	645	64.27	9.96

Source: Different Departments at Study District Level, Odisha, Chhattisgarh & Jharkhand.

4.6 Time and Cost Overrun

Cost is the budgeted expenditure, which the client has agreed to commit for creating/acquiring the desired construction facility (Chitkara, 2011). Cost overrun is defined as the difference between the actual and estimated costs as a percentage of the estimated cost, with all costs calculated in constant prices. Actual costs are defined as the accounted costs actually spent, as determined at the time of project completion. Estimated costs are defined as the budgeted or forecasted costs at the time of project approval, which are typically similar to costs presented in the business case for a project (Lee, 2008). Time overruns is defined as the extension of time beyond planned completion dates traceable to the contractors (Kaming et al 1997). Choudhry (2004) and Chan (2001), defined time overruns as the difference between the actual completion time and the estimated completion time.

Time and cost overrun is a common phenomenon in the study states. Primarily, it is attributed to the infrastructure sector. But the study states are not the solitary cases of cost escalation and time overrun, rather it is a national phenomenon. Time and cost overrun is majorly reported in districts that have high forest cover and undulating terrain (see table below). Major factors that found responsible for time and cost overrun in these states are non-availability of required materials, high transportation cost, poor skill base of the available work force, high cost of skilled workforce (if hired from the plain) and most importantly impact of LWE.

The time and cost overrun of national projects from 2010-11 to 2014-15 is presented in the table. Number of projects that have time and cost overrun observed in key sectors of development like coal, steel, petroleum, power and railway etc. Cost overrun across sectors estimated to be varying between 0.10 percent to 38.80 percent and time overrun in between 1 month to 120 months.

Table 83: Time and Cost Overrun of National Projects

Sector	Year	No. of Projects	Total Cost			Projects with Time Overrun				
			Original	Anticipated Cost	Cost Overrun (%)	No.	Original	Anticipated Cost	Cost Overrun (%)	Range (Months)
Atomic Energy	2010-11	4	21982.29	24167.29	9.94	3	20876	23061		12 – 36
	2011-12	4	29,228.30	34,066.30	16.6	3	28,122.00	32,960.00		11-44
	2012-13	5	41,548.30	47,832.30	15.1	5	41,548.30	47,832.30	15.10	3 – 51
	2013-14	4	40,442.00	46,726.00	15.5	4	40,442.00	46,726.00	15.50	3 to 72
Civil Aviation	2014-15	4	40,442.00	46,726.00	15.5	4	40,442.00	46,726.00		17 to 71
	2010-11	8	4812.4	4812.4	0	2	2155.86	2155.86		3 – 5
	2011-12	5	4,123.20	5,435.00	31.8	3	3,524.90	4,604.30		10 – 23
	2012-13	6	5,473.60	6,063.10	10.8	4	4,395.60	4,985.10	13.40	7 – 27
	2013-14	8	6,035.50	6,946.00	15.1	4	2,931.90	3,635.40	24.00	7 to 50
Coal	2014-15	6	2,284.95	2,337.87	2.32	4	1,206.95	1,259.87		10 to 17
	2010-11	44	25210.2	28547.29	13.24	19	13439.8	16616.47		3 – 64
	2011-12	48	27,241.50	30,628.50	12.4	17	11,824.70	14,752.20		9 – 48
	2012-13	51	36,056.50	37,312.30	3.5	21	18,020.00	19,695.30	9.30	19 – 60
	2013-14	56	38,737.40	48,559.50	25.4	30	26,241.10	36,434.60	38.80	12 to 120
Fertilizers	2014-15	64	46,558.77	56,675.18	21.73	38	29,523.97	40,059.98		1 to 120
	2010-11	6	5317.41	5317.41	0	0	0	0		-
	2011-12	6	5,317.40	5,317.40	0	3	2,241.60	2,241.60		1 – 8
	2012-13	5	4,828.70	4,828.70	0	2	763	763	0	9 – 12
Mines	2010-11	1	4091.51	4401.76	7.58	1	4091.51	4401.76		27 – 27
	2011-12	1	4,091.50	4,401.80	7.6	1	4,091.50	4,401.80		30 – 30
	2012-13									
Steel	2010-11	19	43780.53	65379.56	49.33	11	31356.04	37455.14		6 – 36
	2011-12	15	41,398.40	68,455.60	65.4	4	15,498.70	24,776.70		17 – 36
	2012-13	18	65,786.80	71,944.30	9.4	9	33,708.90	39,866.40	18.30	2 to 41
	2013-14	20	65,959.30	72,188.60	9.4	15	64,670.30	70,855.50	9.60	10 to 67
	2014-15	20	66,395.10	72,349.06	8.97	16	64,938.54	70,892.50		3 to 73
Petrochemicals	2010-11									
	2011-12	1	5,460.60	5,460.60	0	0	0	0		-
	2012-13	1	5,460.60	8,920.00	63.4	1	5,460.60	8,920.00	63.40	20 - 20
	2013-14	1	5,460.60	8,920.00	63.4	0	0	0	0	0
	2014-15	1	5,460.61	8,920.00	63.35	0	0	0		
Petroleum	2010-11	70	142330.59	155206.1	9.05	31	39019.62	56326.32		1 – 74
	2011-12	75	1,61,799.30	1,69,936.20	5	37	80,276.20	89,718.30		2 - 120
	2012-13	72	1,75,107.20	1,83,946.70	5	43	1,14,545.60	1,23,233.20	7.60	1 - 120
	2013-14	85	1,88,165.10	2,04,662.30	8.8	60	1,45,769.70	1,62,258.50	11.30	3 to 122
	2014-15	78	1,78,906.90	1,95,033.69	9.01	48	1,20,041.33	1,33,821.78		2 to 110
Power	2010-11	83	179759.57	185289.32	3.08	41	105637.36	110079.48		1 – 83
	2011-12	84	1,80,274.30	1,86,358.40	3.4	47	1,10,322.90	1,16,120.00		2 – 90
	2012-13	104	2,44,913.30	2,58,911.80	5.7	55	1,39,690.70	1,53,076.10	9.60	4 to 99
	2013-14	104	2,51,025.20	2,70,400.20	7.7	53	1,49,329.50	1,68,293.80	12.70	1 to 113
	2014-15	102	2,44,305.12	2,59,040.96	6.03	56	1,86,803.25	2,01,159.31		1 to 106
Railways	2010-11	147	68578.35	126174.41	83.99	26	17681.46	39580.32		3 – 225
	2011-12	136	66,510.00	1,33,785.10	101.2	29	23,316.50	53,539.90		2 – 213
	2012-13	128	64,715.70	1,47,707.80	128.2	46	30,152.30	74,618.90	147.50	1 - 216
	2013-14	284	1,48,717.50	2,57,761.90	73.3	46	30,057.80	77,232.70	156.90	2 to 240
	2014-15	291	1,63,873.51	2,74,821.46	67.7	32	28,509.69	76,350.68		3 to 247

Sector	Year	No. of Projects	Total Cost			Projects with Time Overrun				
			Original	Anticipated Cost	Cost Overrun (%)	No.	Original	Anticipated Cost	Cost Overrun (%)	Range (Months)
Road, Transport & Highways	2011-12	136	73,440.50	75,245.70	2.5	94	32,978.90	35,144.20		4 - 106
	2012-13	149	94,673.90	96,225.70	1.6	88	40,302.50	42,214.30	4.70	2 - 106
	2013-14	152	1,06,312.40	1,08,365.20	1.9	27	9,981.80	10,797.80	8.20	2 to 114
	2014-15	136	1,02,321.44	1,04,388.44	2.02	96	67,308.76	69,375.76		2 to 120
Shipping and port	2010-11	22	16082.62	16926.26	5.25	11	6224.59	6880.29		3 - 78
	2011-12	26	18,451.40	19,434.90	5.3	14	9,045.30	9,965.50		2 - 93
	2012-13	19	16,242.50	18,554.10	14.2	10	8,446.10	10,038.70	18.90	5 to 87
	2013-14	19	15,617.10	18,600.60	19.1	8	7,891.50	9,923.70	25.80	2 to 99
	2014-15	18	12,117.12	14,390.98	18.77	2	2,194.46	3,093.38		11 to 51
Telecommunication	2010-11	42	20234.49	20696.79	2.28	38	18186.25	18711.63		3 - 58
	2011-12	41	20,026.00	20,650.70	3.1	21	9,475.00	9,782.90		4 - 72
	2012-13	15	6,161.00	6,101.80	(-) 1.0	9	3,163.30	3,167.10	0.10	25 - 83
	2013-14	10	5,079.30	4,982.90	(-) 1.9	6	3,263.00	3,166.60	(-) 3.0	34 to 65
	2014-15	4	2,018.15	1,843.90	(-) 8.63	3	869.96	879.53		53 to 71
Urban Development	2010-11	2	15071	30503.36	102.4	2	15071	30503.36		6 - 15
	2011-12	5	52,921.20	68,412.40	29.3	2	15,071.00	30,503.40		12 - 15
	2012-13	4	44,245.20	49,518.10	11.9	1	6,395.00	11,609.00	81.50	21 - 21
	2013-14	5	73,993.30	79,266.20	7.1	2	8,889.00	14,103.00	58.70	8 to 21
	2014-15	25	82,686.31	87,959.21	6.38	13	8,545.42	8,545.42		2 to 55
Water Resources	2010-11	1	542.9	1187	118.64	1	542.9	1187		60 - 60
	2011-12	1	542.9	1,187.00	118.6	1	542.9	1,187.00		60 - 60
	2012-13	1	542.9	1,187.00	118.6	1	542.9	1,187.00	118.60	60 - 60
	2013-14	1	542.9	1,187.00	118.6	0	0	0.00	0.00	
	2014-15	1	542.9	1,187.00	118.64	0	0	0.00	0.00	
Total/Overall	2010-11	572	592196.97	714713.86	20.7	299	309140.38	382338.42		-
	2011-12	584	6,90,826.40	8,28,775.50	20	276	3,46,332.30	4,29,697.70		-
	2012-13	578	8,05,756.00	9,39,053.50	16.5	295	4,47,134.80	5,41,206.40	21.00	-
	2013-14	749	9,46,087.60	11,28,566.40	19.3	255	4,89,467.60	6,03,427.50	23.30	
	2014-15	750	9,47,912.88	11,25,673.75	18.75	312	5,50,384.33	6,52,164.21		

Source: Ministry of Statistics and Program Implementation, Govt. of India

Cost overrun is also observed in different projects being implemented by the state through state agencies, including private sector players. All these projects that have time and cost overrun are in construction sector. Though government departments were of the opinion that there is no cost overrun and different projects are implement as per the budgeted estimate (BE), but in many cases they agree that there is time overrun in completing the projects. In case of time extension, there is no escalation in cost of the projects. However, interaction with private agencies / contractors reveals that there is both cost and time overrun in different projects implemented by them across different sectors. The projects that are implemented by the contracts and other private agencies in different study districts and cost overrun is presented in the table by number of projects they handled in different years.

Table 84: Cost Overrun in Sample Study Areas (In Lakh)

State / District	2014-15			2013-14			2012-13		
	Project	BE	RE	Project	BE	RE	Project	BE	RE
Chhattisgarh									
Dantewada	5	170.00	186.00	6	170	177	2	20	22
Janjgir-champa	6	185.50	206.50	8	62.7	66.2	2	45	48

State / District	2014-15			2013-14			2012-13		
	Project	BE	RE	Project	BE	RE	Project	BE	RE
Jashpur	10	106.31	113.92	5	38.8	38.8		0	0
Sarjuga	3	9.00	9.00	3	5	5	2	14.8	14.8
Chhattisgarh Total	24	470.81	515.42	22	276.5	287	6	79.8	84.8
Jharkhand									
Semdega				3	34.1	40.1	3	16.63	16.63
Khunti	8	48.86	56.30	7	39.98	40.48	6	33.28	33.6
Bokaro	10	85.78	92.98	12	75.36	78.18	9	68	70
Jharkhand Total	18	134.64	149.28	22	149.44	158.76	18	117.91	120.23
Odisha									
Kandhamal	4	14.50	18.00	3	10	10	1	15	16
Malkangiri		0.00	0.00	2	16.5	16.5	3	18	18
Bhadrak	2	42.00	44.00	2	25	25	1	32.5	32.5
Sundargarh	7	297.00	304.00	6	205	205	7	339.1	339.1
Odisha Total	13	353.50	366.00	13	256.5	256.5	12	404.6	405.6

In Chhattisgarh, there is a cost escalation of 7.27 percent due to time overrun in completing the projects. Cost escalation in Janjir-Champa with number of projects found highest followed by Dantewada. Similarly, in Jharkhand, there is a cost escalation of about 6.12 percent due to time overrun and Bokaro with highest number of projects having highest amount of cost escalation in comparison to Simdega and Khunti. Like other states, Odisha also recorded a cost escalation of about 1.15 percent in different projects taken up at the district level.

Table 85: Cost Overrun in Sample Study Areas (Cont.)

State / District	2011-12			2010-11			Total Projects	Total Projects cost (Actual)	Total Revised project cost	Total Revised amount (revised cost - actual project cost)
	Project	BE	RE	Project	BE	RE				
Chhattisgarh										
Dantewada							13	360	385	20.82
Janjgir-champa							16	293.2	320.7	38.16
Jashpur							15	145.11	152.72	25.67
Sarjuga							8	28.8	28.8	0.00
Chhattisgarh Total							52	827.11	887.22	84.65
Jharkhand										
Semdega	3	31.1	37.1	2	15.28	18	11	97.11	108.83	16.49
Khunti	5	27.4	33.2	6	27.85	28.35	32	177.37	186.93	16.53
Bokaro	8	56.5	50	5	25	26	44	310.64	325.16	19.78
Jharkhand Total	16	115	120.3	13	68.13	72.35	87	585.12	620.92	52.80
Odisha										
Kandhamal	1	12	13	1	5.5	5.5	10	57	61.5	22.11
Malkangiri	2	11	13	3	22	22	10	67.5	67.5	0.00
Bhadrak	3	42	40	1	23	23	9	164.5	166.5	1.22
Sundargarh	6	318.2	330.5	6	277	277	32	1436.3	1449.6	3.34
Odisha Total	12	383.2	396.5	11	327.5	327.5	61	1725.3	1745.1	26.66

Apart from high forest cover and LWE impact, delayed implementation and related cost escalation is also observed in districts that have relatively plain topography or substantial part of the district is plain. So, it may not be always true that only time overrun is a factor to forest coverage rather it is also related to a number of other factors. The time overrun is attributed to factors like (1) low per labour output (poor labour productivity), (2) lack of required planning in implementation, (3) shortage of materials in the construction site, (4) inappropriate estimation of labour and material (5) non-availability of skilled labour in the construction sites and (6) high transportation cost of materials to the construction site. Poor site management and supervision, unforeseen ground conditions, delay in decision making and variations in design changes are also associated factors in time overrun and cost escalation.

Table 86: Factors for Time Overrun and Cost Escalation (Site Specific)

	Labour Availability	Labour Cost Per Day	Labour Output Per Day	Material Availability at Site	Quantity of Material Availability	Availability of Skilled Labour	Transportation Cost	LWE Impact
Chhattisgarh								
Dantewada	High	Medium	Low	Low	Low	Low	High	High
Janjgir-champa	Medium	Medium	Low	Low	Low	Low	Medium	No
Jashpur	High	Medium	Low	Low	Low	Low	High	High
Sarjuga	High	Medium	Low	Low	Low	Low	High	High
Jharkhand								
Gumla	High	Medium	Medium	Medium	Low	Low	High	High
Semdega	High	Medium	Low	Low	Low	Low	High	No
Khunti	Medium	High	Medium	High	High	Medium	Medium	No
Bokaro	Medium	High	Medium	High	High	Medium	Medium	High
Odisha								
Kandhamal	High	Medium	Low	Low	Low	Low	High	High
Malkangiri	High	Medium	Low	Low	Low	Low	High	High
Bhadrak	Low	High	Low	High	High	High	Medium	No
Sundargarh	Medium	High	Low	Medium	Medium	Medium	Medium	High

Note: Mapped factors are District and Construction Location Specific.

4.6.1 Causes of Cost Overrun

Time and cost overrun generally result from different factors that occur at various phases of the project life cycle. These factors include increase in project scope, design error, mistakes in soil investigation, difficulty in getting work permit from government, bureaucracy in bidding/tendering method. There are four major reasons of cost overrun (Chitkara, 2011), i.e. (1) **Inadequate project formulation**: Poor field investigation, inadequate project information, bad cost estimates, lack of experience, inadequate project formulation and feasibility analysis, poor project appraisal leading to incorrect investment decisions. (2) **Poor planning for implementation**: Inadequate time plan, inadequate resource plan, inadequate equipment supply plan, inter-linking not anticipated, poor organisation poor cost planning, (3) **Lack of proper**

contract planning and management: Improper pre-contract actions, poor post-award contract management and (4) **Lack of project management during execution:** Insufficient and ineffective working, delays, changes in scope of work and location, law and order (LWE impact in current case).

Delays in completion of construction projects and making it functional become expensive in nature with lapse of time. The cost of the project escalates further as most of these projects are associated with credit from different sources which is payable with interest. Apart from this, cost of staff management and site management also increases the cost of the project. Inflation in wage and material prices further add to the overall cost of the project. In case of public infrastructure, where loan fund is used for construction through private agencies, some of these risks gets passed to the private agency.

Delay in completion of a project is a situation when the contractor and the project owner jointly or severally contribute to the non-completion of the project within the agreed contract period (Aibinu and Odeyinka, 2006). Chan and Kumaraswamy (1997) indicate client initiated variations of works as the main causes of time and cost overruns (case of Hong Kong). According to Mansfield et al. (1994), important factors responsible for delays and cost overruns in construction projects (highway) are like poor contract management, material shortages, inaccurate estimation and overall price fluctuations. It is suggested by Trigunarsyah (2004) that the involvement of contractor in pre-construction phases could reduce time and cost issues in site operation and management. Identification of the existence and influence of cost overrun risk factors in a project can lead to a better control on project cost overrun and also can help in proposing solutions to avoid future overruns (Creedy, 2004). It is also observed that a cost overrun rate of 1 to 11% is more likely to occur on larger projects compared to amount of overruns on smaller projects (Jahren and Ashe, 1990).

4.6.2 Causes of Time Overrun

Time overrun in projects implemented in forest and inaccessible pockets happens due to factors that are associated internal to the project and/or external to the project. The factors that are internal to the project which causes time overrun again may be due to implementing agency (contractor / private agency) or due to the financing agency (government or similar agencies) or due to both. Majid and McCaffer has defined 12 main causes for which time overrun takes

place. Current study identified different critical factors that are attributed to time overrun of different projects. The assessed projects are small in nature and mostly implemented in rural areas through independent contractors or construction agencies empanelled by different departments.

1. Materials-related delays;
2. Labour-related delays;
3. Equipment-related delays;
4. Financial delays;
5. Improper planning;
6. Subcontractor delays;
7. Poor coordination;
8. Inadequate supervision;
9. Technical personnel shortages; and
10. Poor communication

Materials-related delays include late delivery, damage, or poor quality of materials. In hilly area, availability of materials as per the recommended / prescribed standard / norms observed to be a major issue. Non-availability of required quality and quantum of materials in a hilly forest region is observed in most of the tribal dominated hilly forest areas like Dantewada, Gumla, Malkangiri etc. Labour-related delays are attributed to non-availability of skilled labour and on time availability of labour on the construction site in forest areas.

Normally the mobilised labour force from other parts of the locality does not reach on time due to communication problem. Apart from that they also leave the construction site early so that before evening they can reach to their place. So, output per labour force remains low which causes delay. Absenteeism of engaged labour force also remain a reality in such a situation. Equipment-related delays are mostly attributed to availability of construction equipment like mixer / grinder, transporting trucks etc. at the construction sites. In forest hilly areas, normally such instruments are not available and it is generally borrowed from the nearby townships where it is available. Delay in financial payment, i.e. payment made by the financing agency (Government) to the contractor / construction agency delay payment to suppliers and labour also delay the projects. Poor coordination, technical personnel shortage and poor communication are also responsible for time overrun of different projects.

Chapter Five: Resource Allocation Model

The 14th finance commission report highlights concern of different states on horizontal sharing of resources. As per the report, some states suggested higher weight allocation to SC & ST population to promote inclusive growth and equity. Some states also suggested to the commission to include area as an indicator of “need” taking hilly and terrain area. It was suggested to assign 5 to 25 percent weight to such states. The commission was also suggested to include social and economic backwardness and allocate 10 percent weight to poverty ratio. Some states also suggested considering infrastructural availability as an indicator for horizontal resource sharing.

The model suggested here for resource allocation looks in to apportioning the available resources based on certain parameters that are unique to each district and comparable with other districts of the corresponding state. As 14th finance commission has already approved the resource sharing and allocation norms, it is expected that devolution of resources would be according to the approved prescription. Here, the approach is to allocate available state resources to the districts based on its development parameters with exclusive reference to state resources under tribal sub-plan (TSP) and funds received from Ministry of Tribal Affairs (MOTA) under SCA to TSP and Article 275 (1). As all these sources of funds are meant for the development of tribals, district level allocation is also expected to be based on proportion of tribal population to the total population of the district.

Apart from that, forest base of the districts is also taken in to account in resource allocation as it has been one of the important attributes of cost disability. The correlation matrix also indicates that forest areas in a district is positively correlated tribals. For the similar reason, percentage of families below the poverty line is also considered as an important parameter for allocation of resources to districts. As inaccessibility increases cost disability, it is also factored in to the allocation norm. So, the approach to allocate resources under TSP, SCA to TSP and Article 275 (1) entails the parameters that are critical for development of tribals and area of their habitation. The resource allocation approach takes in to account factors of cost disability in terms of forest area and inaccessibility along with tribal development. The indicators that are considered for computation of allocation norm are;

1. Percentage of Forest Area to the Total Geographical Area of the District;
2. ST Population Proportion to the Total Population of the District;
3. Percentage of Families below the Poverty Line; and
4. Percentage of Inaccessible Village in the District (not connected with Pucca Road)

In computing the resource allocation norm, forest area to total geographical area of a district is given 35 percent weight as it majorly contributes to cost disability. Apart from this, allocation of high percentage to forest is also because provisioning of services in such area is less cost effective which need to be compensated. Along with this, it is also important to nurture the forest cover for sustaining the local environment and continuing with improved availability of ecosystem services to the people living in these areas. Inaccessibility as an important attribute to cost disability is given 25 percent weight in allocation norm. As escalation in the cost of provisioning services and facility is dependent on accessibility, higher weight to this factor will help to compensate the cost disability arising due to inaccessibility. Weight of 20 percent is given to each of the remaining indicators, i.e., BPL percentage to total population and ST population proportion to the total population.

Table 87: Resource Allocation Parameters and Weighting Criteria

In Accessibility (Villages Connected with Pucca Road)			Criteria	Weight	Percent
State	Average Villages Connected	Av. Villages Not Connected	< 10%	2.50	10
Chhattisgarh	63.22	36.78	10 to 15 %	3.75	15
Jharkhand	94.54	5.46	15 to 25 %	5.00	20
Odisha	62.96	37.04	25 to 35 %	6.25	25
			> 35 %	7.50	30
			Total Score	25	100
Forest Cover to Total Geographical Area					
State	Percentage of Forest	No Forest Area	Criteria	Weight	Percent
Chhattisgarh	38.23	61.77	< 10%	3.50	10
Jharkhand	28.17	71.83	10 to 15 %	5.25	15
Odisha	28.55	71.45	15 to 20 %	7.00	20
			20 to 25 %	8.75	25
			> 25 %	10.50	30
			Total Score	35	100
BPL % to Total Population					
State	BPL Percentage	Non-BPL Percentage	Criteria	Weight	Percent
Chhattisgarh (04-05 Estimate)	40.9	59.1	< 25%	2.00	10
Jharkhand (04-05 Estimate)	46.3	53.7	25 to 30 %	3.00	15
Odisha (04-05 Estimate)	46.4	53.6	30 to 35 %	4.00	20
			35 to 40 %	5.00	25
			> 40 %	6.00	30
			Total Score	20	100
ST % to Total Population					
State	ST %	Non-ST	Criteria	Weight	Percent
Chhattisgarh	30.62	69.38	< 5%	2.00	10
Jharkhand	26.21	73.79	5 to 10 %	3.00	15
Odisha	22.85	77.15	10 to 15 %	4.00	20
			15 to 25 %	5.00	25
			> 25 %	6.00	30
			Total Score	20	100

Each broad parameter is again segregated into five sub-criteria for distribution of weight so that each district, based on these criteria and sub-criteria can be segregated further and represented appropriately. For example, inaccessibility criteria are having five sub-criteria, i.e., (1) less than 10 percent villages are inaccessible in the district, (2) 10-15 percent villages are inaccessible, (3) 15-25 percent villages are inaccessible, (4) 25-35 percent villages are inaccessible and (5) percentage of villages inaccessible in a district is greater than 35 percent. The total weight is segregated accordingly and distributed among the sub-criteria, again giving higher weightage to districts that have high inaccessibility within the inaccessibility parameter (refer table). Accordingly, all the weighted scores are distributed among the sub-criteria in each indicator category. Value of each district under each of the parameters are weighted accordingly and composite score is deduced for each district in a state. Proportional representation of a district to the total score is estimated and allocation of resources to each district is computed. The suggested allocation of resources under TSP, SCA to TSP and Article 275 (1), taking cost disability and development parameters into account is as follows.

Table 88: Suggested Allocation of Resources under TSP, SCA to TSP and Article 275 (1), Odisha

Sl. No.	Districts	Weighted Score for Forest Area Coverage	Weighted Score for ST Population	Weighted Score for BPL	Weighted Score for Inaccessibility	Total Weighted Score	Rank	Fund Allocation (Rs./100)
Odisha								
1	Angul	444.99	56.40	356.16	355.50	1213.05	12	3.748
2	Balangir	77.12	47.52	366.36	292.98	783.98	22	2.422
3	Balasore	31.99	94.90	442.32	213.95	783.15	23	2.420
4	Bargarh	113.12	4.04	362.28	331.42	810.86	21	2.505
5	Bhadrak	8.68	105.27	400.2	102.40	616.55	27	1.905
6	Boudh	428.09	50.20	481.2	287.38	1246.86	10	3.852
7	Cuttack	137.27	7.14	314.28	159.62	618.31	26	1.910
8	Debagarh	491.09	211.95	472.74	213.27	1389.05	9	4.292
9	Dhenkanal	329.91	54.34	375.78	213.92	973.96	17	3.009
10	Gajapati	599.87	325.76	368.28	467.81	1761.71	3	5.443
11	Ganjam	268.70	6.74	330	278.39	883.82	19	2.731
12	Jagatsinghapur	27.90	1.38	316.5	52.74	398.52	30	1.231
13	Jajpur	53.60	24.86	362.4	117.33	558.20	28	1.725
14	Jharsuguda	78.44	183.01	294.12	181.92	737.48	24	2.279
15	Kalahandi	319.10	171.02	376.26	349.48	1215.85	11	3.757
16	Kandhamal	703.08	321.50	359.34	508.90	1892.81	1	5.848
17	Kendrapara	53.39	1.32	461.76	106.71	623.18	25	1.925
18	Kendujhar	406.04	272.70	355.02	118.22	1151.97	13	3.559
19	Khurda	113.47	15.33	502.86	215.25	846.91	20	2.617
20	Koraput	191.54	303.37	491.28	447.06	1433.26	6	4.428
21	Malkangiri	420.84	346.98	466.44	530.65	1764.92	2	5.453
22	Mayurbhanj	405.30	352.32	441.96	214.94	1414.52	8	4.370
23	Nabarangapur	186.03	202.82	514.2	216.73	1119.78	14	3.460
24	Nayagarh	454.02	334.74	407.46	294.94	1491.16	5	4.607
25	Nuapada	338.00	18.29	470.52	184.83	1011.64	16	3.126
26	Puri	20.83	0.72	414.78	81.56	517.89	29	1.600

Sl. No.	Districts	Weighted Score for Forest Area Coverage	Weighted Score for ST Population	Weighted Score for BPL	Weighted Score for Inaccessibility	Total Weighted Score	Rank	Fund Allocation (Rs./100)
27	Rayagada	465.15	335.92	432.18	406.30	1639.55	4	5.066
28	Sambalpur	529.62	204.74	358.68	10.98	1104.03	15	3.411
29	Subarnapur	74.13	28.12	438.12	393.40	933.77	18	2.885
30	Sundargarh	448.46	304.48	391.32	285.03	1429.28	7	4.416

Note: Rank 1 represents district with High Cost Disability and Development Disability

Among the 30 districts of Odisha, Kandhamal observed to be the lowest in composite weighted score and having Rank 1 followed by Malkangiri and Rayagada. In terms of allocation of resources under TSP, SCA to TSP and Article 275 (1), highest proportion of resources are to be allocated to these districts in order to address the factors of underdevelopment like cost disability and development disability. Similarly, the districts like Jagatsingpur (rank 30), Puri (rank 29) and Jajpur (rank 28) who are having a higher rank should have less proportion of resources under TSP, SCA to TSP and Article 275 (1). So, the departmental allocation to TSP (flow to TSP) should be utilised accordingly.

Table 89: Suggested Allocation of Resources under TSP, SCA to TSP and Article 275 (1), Chhattisgarh

Sl. No.	Districts	Weighted Score for Forest Area Coverage	Weighted Score for ST Population	Weighted Score for BPL	Weighted Score for Inaccessibility	Total Weighted Score	Rank	Fund Allocation (Rs./100)
Chhattisgarh								
1	Bastar	560.39	374.49	483.6	211.10	1629.58	2	10.173
2	Bilaspur	316.05	108.49	139.2	270.59	834.33	10	5.209
3	Dantewada	673.89	426.40	529.2	491.95	2121.44	1	13.244
4	Durg	31.89	17.63	177.5	106.76	333.77	14	2.084
5	Janjgir-Champa	14.07	46.23	89.4	183.03	332.73	15	2.077
6	Jashpur	389.24	373.65	140	341.18	1244.07	6	7.766
7	Kanker	497.91	332.29	318.6	341.49	1490.28	4	9.303
8	Kawardha	392.60	101.54	33.8	337.77	865.71	9	5.404
9	Korba	532.25	245.42	45.4	276.87	1099.94	7	6.867
10	Koriya	653.00	277.07	298.2	278.09	1506.36	3	9.404
11	Mahasamund	140.00	162.61	42.8	209.08	554.49	13	3.462
12	Raigarh	376.95	203.06	47.2	202.49	829.70	11	5.180
13	Raipur	348.18	8.61	124.8	271.85	753.44	12	4.704
14	Rajnandagon	327.71	158.16	351.6	191.41	1028.87	8	6.423
15	Surguja	475.76	344.15	298.2	275.77	1393.87	5	8.702

Note: The districts created newly are not included due to non-availability of segregated data.

The districts that area having lower rank in Chhattisgarh for which high proportion of resource allocation is suggested under TSP, SCA to TSP and Article 275 (1) are Dantewada (rank 1), Bastar (rank 2) and Koriya (rank 3). Similarly, low proportion of resource allocation suggested for high rank districts are Jangir-Champa (rank 15), Durg (rank 14) and Mahasamud (rank 13).

Table 90: Suggested Allocation of Resources under TSP, SCA to TSP and Article 275 (1), Jharkhand

Sl. No.	Districts	Weighted Score for Forest Area Coverage	Weighted Score for ST Population	Weighted Score for BPL	Weighted Score for Inaccessibility	Total Weighted Score	Rank	Fund Allocation (Rs./100)
Jharkhand								
1	Bokaro	308.60	49.58	314.4	1.23	673.80	9	5.198
2	Chatra	500.85	8.74	331.2	5.63	846.42	7	6.530
3	Deoghar	32.06	48.51	352.2	20.82	453.59	16	3.499
4	Dhanbad	23.59	26.05	38.6	11.40	99.64	18	0.769
5	Dumka	56.86	259.30	332.4	6.32	654.88	10	5.052
6	Garhwa	356.69	77.82	193	2.67	630.17	13	4.862
7	Giridih	131.04	29.22	122	3.52	285.78	17	2.205
8	Godda	135.38	106.28	247.8	114.63	604.09	14	4.661
9	Gumla	307.44	413.62	411.6	0.00	1132.66	3	8.739
10	Hazaribag	366.56	21.06	84.9	5.24	477.76	15	3.686
11	Koderma	437.54	1.93	190.5	6.07	636.03	12	4.907
12	Lohardaga	351.44	341.37	489.6	0.00	1182.40	1	9.122
13	Pakur	128.31	252.58	453.6	17.31	851.80	6	6.572
14	Palamu	434.91	28.02	325.8	6.28	795.02	8	6.134
15	Paschim Singhbhum	417.38	403.89	322.8	0.61	1144.67	2	8.831
16	Purbi Singhbhum	331.38	171.04	350.4	4.20	857.02	5	6.612
17	Ranchi	298.41	214.54	46.4	83.72	643.06	11	4.961
18	Sahibganj	339.47	160.80	382.2	110.45	992.91	4	7.660

In Jharkhand, the districts that are lower in rank and suggested for higher allocation under TSP, SCA to TSP and Article 275 (1) are Lohardaga (rank 1), Paschim Singhbhum (rank 2) and Gumla (rank 3). Whereas, the districts that are having higher rank and less allocation of resources is suggested are Dhanbad (rank 18), Giridih (rank 17) and Deoghar (rank 16).

Chapter Six: Conclusion and Recommendations

6.1 Conclusion

Cost disability is not a solitary phenomenon of tribal population proportion to total population of the district / state, rather it is a cofactor to forest and hilly terrine geography which exhibits cost disability. The cost disability parameters are having a significant correlation with the development disability indicators and thereby regional development disparity. Normally the regional variations (within a district and state) in macro development planning is not captured adequately, apart from provisioning of special central assistance for development of backward regions. Even at the state level, the resource allocation norms based on these regional variations within a district geography is not considered in a required manner. Development indicator based allocation of resources is yet to become a reality and inclusive growth initiatives are yet to meet the challenges of regional development disparity within a particular geographical set-up. The cost of development in hilly and forest regions though attempted to address with increased unit cost provision, but factors exogenous to government control is yet to be examined appropriately. The 14th Finance Commission has recently taken a view of this and made it a part of resource sharing norm. But, at the state level, it is equally important to take a note of this dissimilarity and geographical constraints.

The study finds high degree of relation between cost disability parameters and socio-economic development of people living in underdeveloped hilly terrine and forest regions. The geographical disadvantage retards the pace of development of infrastructure in these regions and also impact upon education and health indicators. Economic opportunities get restricted with limited accessibility and thereby desired economic growth and accessibility to the growth benefits remain out of the reach of people of these regions. Unfortunately, all such regions are having significant tribal population who remain less benefitted from the national and state level economic growth.

6.2 Recommendations

It may not be true to conclude that non-hilly states do not suffer from cost disability in comparison to hilly states. Within a state, like the study states here, and also within a district there are geographical variations. Undulating topography is a common characteristic of these states along with prevalence of plain regions. Such a situation possesses a different nature of

development challenges for the government and development agencies. So, it is important for both state and national government to recognise this micro level spatial variation and make it a part of resource devolution and allocation norm. Such regions (part of a state having such topography) may also be treated at par with hilly states and required development measures may be initiated accordingly.

While the benefits of ecosystem services are well recognised, the additional cost being incurred by the states because of this endowment factor is to be compensated either through fiscal devolution or through financial compensation. It will help the states to have higher resources for investment in geographically difficult areas for bringing equitable and inclusive growth.

The key issue of cost disability is inaccessibility and is attributed to cost escalation and time overrun. Under rural connectivity and similar other initiatives like PMGSY, attempt could be made to connect each and every habitation in these difficult regions on priority basis. A better infrastructure and road networks will be helpful to promote local and regional economy and a base will be created for additional external investment in the region.

The utilisation of funds by departments, allocated to TSP and utilisation of SCA to TSP and funds provided to the states under Article 275 (1) could be based on underdevelopment criteria, taking geographical characteristics in to consideration along with population proportion of tribal and their socio-economic characteristics. It will help to have a better resource base at the scheduled districts, i.e. the districts which are having significant tribal population and major forest and hilly terrain region for investment.

Going beyond resources and its allocation parameters, current tribal development initiatives should be re-examined, considering the cost disability factors by regions of tribal concentration. It appears that current investment in development of infrastructure and facilities are not adequate to meet the emerging development requirement of hilly and forest regions. A separate funding window is suggested here at the Ministry level, to promote external investment in tribal dominated hilly and forest regions, focusing more on SMEs. This may also take up required measures for higher infrastructural investment in these regions.

Cost overrun and time escalation in public infrastructure projects is not systematically recorded and analysed. As a result, it becomes difficult on the part of the policy makers to take well informed and appropriate decision on different projects that suffer from time and cost overrun. So, during management evaluation of different infrastructure projects, these aspects may be examined at the district and state level.

Annexure

Infrastructure Development Index of Districts of Odisha, 2000-01

Name of District	Transport	Energy	Irrigation	Banking	Communi cation	Education	Health	Weighted IDI value	Rank
Angul	99.46	105.31	54.97	100.17	121.64	82.71	71.28	90.68	18
Baleswar	127.72	133.47	102.57	95.54	98.30	127.24	128.62	118.46	8
Bargarh	83.30	133.62	175.30	87.27	68.84	91.54	85.58	114.01	11
Bhadrak	108.38	111.32	174.59	75.70	87.96	131.97	128.41	119.80	5
Bolangir	115.03	115.09	71.87	90.41	84.20	117.41	90.08	100.24	15
Boudh	86.42	75.85	92.24	97.52	94.00	100.28	64.66	86.34	21
Cuttack	126.37	131.20	153.11	120.00	125.25	142.89	157.06	134.87	4
Deogarh	106.85	46.10	98.32	120.66	53.06	93.38	79.81	86.55	20
Dhenkanal	102.77	119.71	66.58	97.85	88.85	91.90	92.15	96.88	16
Gajapati	96.37	65.67	100.11	89.42	87.05	118.84	92.14	89.45	19
Ganjam	124.53	116.13	137.92	99.67	98.30	106.92	117.56	119.15	6
Jagatsinghpur	191.29	126.22	114.76	111.06	84.51	179.32	137.62	140.40	3
Jajpur	145.88	124.36	82.84	80.64	67.66	137.40	125.03	114.19	10
Jharsuguda	131.16	133.65	61.76	107.11	112.84	106.57	84.23	109.59	12
Kalahandi	75.89	77.29	70.62	96.69	79.86	95.46	87.16	79.75	25
Kandhamal	53.84	63.08	42.89	99.67	125.54	137.26	120.44	73.28	29
Kendrapara	71.37	118.89	142.46	85.12	64.06	147.88	117.02	105.52	13
Kendujhar	56.72	111.37	68.13	92.07	80.65	90.66	94.25	82.09	24
Khurda	245.37	124.27	94.64	161.49	205.34	112.28	150.76	160.04	1
Koraput	119.64	68.82	106.65	84.30	100.99	107.48	93.95	95.93	17
Malkaniri	53.22	55.27	117.23	65.45	51.55	110.14	125.80	75.65	27
Mayurbhanj	81.16	87.40	70.23	98.18	95.81	109.86	101.00	86.31	22
Nabarangpur	60.95	101.22	42.17	47.11	51.99	97.08	48.34	66.06	30
Nayagarh	63.28	93.94	46.60	101.49	69.11	81.00	130.92	77.36	26
Nuapada	61.99	82.23	58.01	87.27	72.68	95.15	123.31	75.39	28
Puri	163.29	130.22	184.31	113.72	102.33	117.74	276.99	154.04	2
Rayagada	106.58	51.68	75.05	94.38	89.93	117.02)	84.37	23
Sambalpur	142.21	88.61	105.72	139.01	143.98	75.16	(5.50)	119.01	7
Sonepur	78.69	104.70	219.19	85.79	58.11	121.59	(9.80)	115.82	9
Sundargarh	118.50	116.13	69.37	107.60	136.54	88.62	(5.31)	104.17	14