INDICATIVE PLAN

DISTRICT MINERAL FOUNDATION

WEST SINGHBHUM, JHARKHAND

Centre for Science and Environment

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Contents

Preface

District Mineral Foundation (DMF) Rules of various states as well as Pradhan Mantri Khanij Khestra Kalyan Yojana (PMKKKY) specify that DMFs in every district should go through an annual planning exercise for identifying and prioritizing projects and works to be undertaken with DMF funds. Two clear issues have been underscored for DMF planning: districts should practice a bottom-up planning approach involving Gram Sabhas, and intervention should focus on certain "high priority" issues in mining-affected areas to maximize the welfare and benefit of the affected people.

Both of these specifications are given to ensure optimal deployment of financial resources available with DMFs for the "interest and benefit" of people affected by mining-related operations. For this, districts need to develop DMF plans adopting a systematic approach. This will also help to reduce ad hoc and reactive planning, poor investments and chances of special-interest interference.

To this effect, an indicative DMF plan for West Singhbhum district is proposed. The purpose of this exercise is to provide a template for identifying priorities and setting plan targets by DMFs based on an output-outcome oriented approach, which can be considered by the district in line with its annual district and DMF budgets. It is also as an attempt to enable more stable investments, as the indicative plan takes into account the opinions people from mining-affected areas, members of Gram Panchayats/wards, civil society representatives and officials at the block and district levels, the stakeholders who are in direct charge of the various bits of the economy.

Section 1: Introduction and overview

1.1 Context of indicative District Mineral Foundation plan

Planning and budget allocation of DMFs should happen as per provisions of the Mines and Minerals (Development and Regulation) Act (MMDR), 1957, as amended in 2015, and the Jharkhand DMF (Trust) Rules, 2016. The provisions under both of these emphasize on developing human capital, making people employable, and providing security for the future. The state DMF Rules also specify the requirement of a planning exercise that DMFs in every district should go through for identifying and investing on works and schemes that will benefit the people and areas affected by mining related operations. Districts should practice a bottom-up planning approach to understand people's needs and include such considerations in the DMF plan. There are also some clear directions in the state DMF Rules, aligned with the Government of India (GOI) scheme, the Pradhan Mantri Khanij Khestra Kalyan Yojana (PMKKKY) guidelines, which all DMFs are required to follow while developing plans and preparing budgets. These include:

- Undertaking a bottom-up planning approach involving Gram- Sabhas of mining-affected areas.
- Focusing on certain "high priority areas" such as, drinking water supply, sanitation, health, education, welfare of women and children, welfare of aged and disabled, skill development, environment preservation and pollution control measures.
- It has been specified that at least 60 per cent of the DMF budget should be earmarked towards addressing and mitigating the "high priority" issues.
- Limiting allocation on physical infrastructure and other big projects which already have funds from the state coffers: The Rules clarify that for areas such as physical infrastructure, irrigation, energy, watershed development etc, no more than 40 per cent of the money should be used.

Besides outlining the intervention issues, the DMF Rules and PMKKKY also emphasize on certain important factors that should be considered in DMF budgets:

- In the case of schemes or projects which already enjoy financial support from the Central or the state government, the developmental and welfare activities to be taken up by the DMF should complement those schemes and projects. This means there is a clear need to review the status of, and the gaps in, the Central/state schemes and projects which are operational in the districts.
- It has been clearly mentioned that a reasonable sum of the annual receipts should be kept as endowment fund for providing sustainable livelihood.

The indicative DMF plan as proposed for West Singhbhum district, takes all of these into consideration to provide a template for identifying issues and prioritizing investments that can serve the best interest of the people and areas affected by mining.

1.2 Planning approach

An 'output and outcome' oriented approach has been followed for developing the indicative DMF plan. In this approach, outputs are time-bound measurable products of investments and activities that can often be expressed in physical terms or units. The intended outcomes are collective results of the measurable outputs, which are qualitative improvements and sustainable over long-term. The merit of an output and outcome oriented approach is that is ensures "accountable, pro-active and purposeful" planning as per the defined objective of a particular scheme. For DMF planning, this means fulfilling the objectives of the DMF law, as well as PMKKKY, which has been aligned to DMF.

The GOI has also emphasized on such approach in the latest budget of 2017-18. The GOI has noted that budget outlays need to be presented along with outputs and outcomes in measurable terms, to bring in greater accountability for the agencies involved in the execution of the schemes and projects[1].

1.3 Method

The method followed for developing the indicative plan involved the following two major steps:

i. Gap analysis of key socio-economic, human development and environmental parameters.
ii. Prioritizing issues and identifying approaches for intervention based on DMF objectives.

For both of these steps a bottom-up approach has been followed alongside evaluating factual and recorded information by the government.

i. **Gap analysis**: The deficiencies in intervention on the priority socio economic, human development and environmental issues in the district has been determined through gap analysis, taking into account quantitative and qualitative information, as well as resources. The gap analysis for various parameters was done through the following steps:

    a. **Collecting data/information:** Collecting data and information on various parameters constitute of both quantitative and qualitative components.
        - The quantitative part is based on a stock-taking exercise on information pertaining to various socio-economic, human development and environmental parameters for the district, and specifically for mining-affected areas.
        - The qualitative part is based on the approach of participatory rural appraisal (PRA), to capture people's perception and aspiration. The main PRA methods used for this exercise are focus

group discussions (FGD), and semi structured interviews (SSI). For the purpose of this study, FGDs have been conducted through randomized sampling in village(s)/ settlements, particularly in the mining-affected areas. With respect to SSI, discussions/ interviews were held with district and block officials and people in the mining-affected areas (*Refer to section 4 for detail on FGD and SSI process and observations*).

b. Data collation and processing: The quantitative and qualitative data/ information collected is collated and compiled in a prescribed format. The data has also to be checked for accuracy, errors, incompleteness and gaps.

Once the data is collated, it is important to analyze the situation. The collated data (both quantitative and qualitative) is thus used to describe the basic characteristics/features (descriptive statistics), and to draw broader inferences (inferential statistics).

c. Resource mapping: This involved identifying the resource envelop(s) to address the priority issues of the district. Since districts have budgets and allocations for every financial year, therefore the finances and allocations for only the last financial (2016-17) has been considered to understand the investments.

ii. Prioritizing issues and identifying approaches for intervention based on DMF objectives: Based on the gap-analysis, finally priority issues have been determined that DMFs need to focus on for intervention through a perspective planning approach. This will help to address issues immediately as well as plan for long-term investments.

Considering the output-outcome approach, a framework has been developed as the final step of the indicative planning exercise. In the framework, against each of the intended outcomes, a number of output factors have been identified which are considered to be crucial for achieving the target outcomes. It is intended that these outputs will be met through short-term, medium-term and long-term investments to achieve the final outcome.

Section 2: Background of the district

2.1 Location and geographical area

West Singhbhum district, located in the south part of Jharkhand, is the largest district in the state in terms of geographic area. As per Census 2011, the district covers an area of 7,224 square kilometers (or 722,400 ha)[2]. It lies between 21 º 58" and 23 º 36" north latitude and 85 º 0" and 86 º 54" east longitude and situated at a height of 244 Meter above the sea level. The district is surrounded by Khunti district and Saraikela-Kharsawan in the north, state of Odisha in the south, Saraikela-Kharsawan district and state of Odisha in the east and Khunti, Simdega districts and state of Odisha in the west.

There are 38 rivers and rivulets passing through West Singhbhum. Koel, Karo-Koina, Kharkai, Sanjai, Raro, Deo and Baitarni are some of the major ones. The district has three major watersheds covering an area over 6,941 square kilometers. These include the Baitarni sub basin, the Brahmani sub basin and the Subernarekha sub basin[3].

2.2 Administrative areas

The administrative headquarters of the West Singhbhum district is located in Chaibasa town. The district has two sub-divisions namely Chaibasa sadar and Chakradharpur. There are a total of 18 blocks in the district (*See figure 1: Administrative map of West Singhbhum district*). These include Sonua, Gudri, Bandgaon, Chakradharpur, Khuntpani, Goilkera, Anandpur, Manoharpur, Noamundi, Tonto, Hat Gamharia, Chaibasa, Tantnagar, Manjhari, Jhinkpani, Jagannathpur, Kumardungi and Manjhgaon.

Besides the blocks, the district has two municipalities – Chaibasa Nagar Parishad and Chakradharpur Nagar Parishad and nine census towns. There are a total of 1673 villages out of which 31 are uninhabited villages.

2.3 Land Use/ Land Cover

West Singhbhum district can be broadly categorized into three geographic terrains- plain lands, open valleys and hill ranges. Forests and agricultural land each account for over 23 per cent of the total land use/land cover in the district. However, a huge tract of area falls under the category of barren land (*See table 1: Land use/ land cover in West Singhbhum district and figure 2: Land use/land cover map of West Singhbhum district)*[4].

Figure 1: Administrative map of West Singhbhum district

Source: District Census Handbook (2011), West Singhbhum

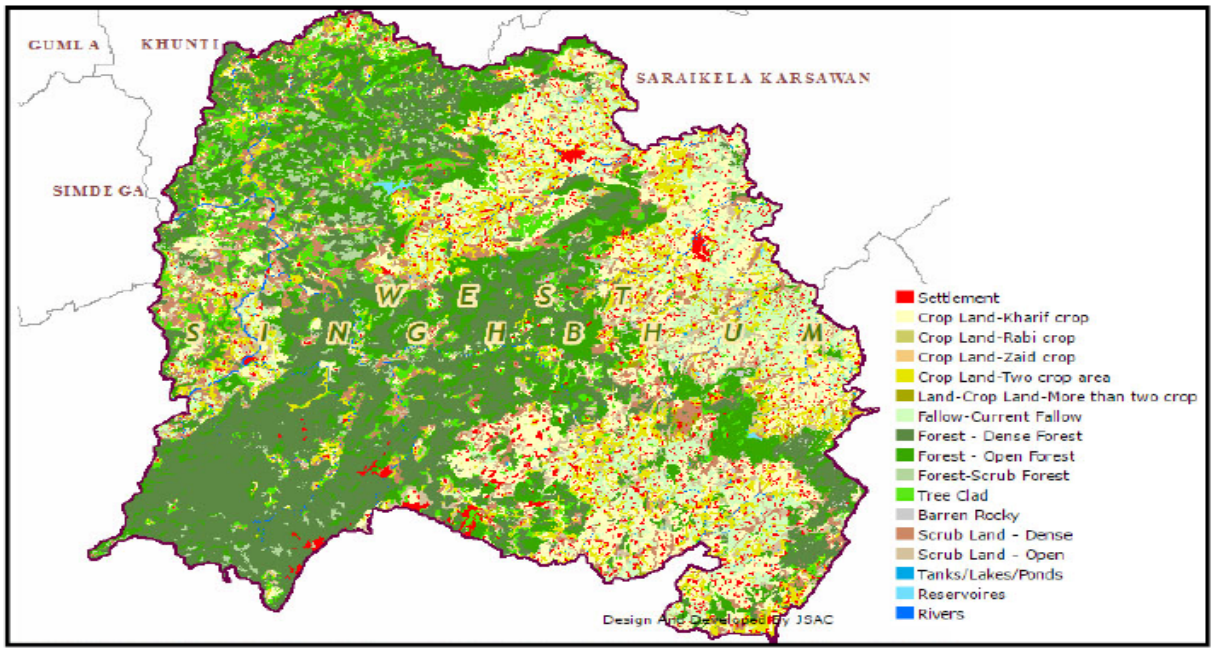
Table 1: Land use/ land cover in West Singhbhum district

Land use/land cover category	Total area (%)
Forest land	23.4
Agricultural land (gross cropped area)	23.1
Barren land	29.5
Area under wasteland	6.8
Area under other uses	17.3

Source: Source: District Irrigation Plan (2015-20)

The land use/ land cover pattern in the mining-affected blocks shows that most of the blocks have significant amount of barren land. The most significant proportion is in Jhinkpani block, which is about 46.5 per cent.

Figure 2: Land use/land cover map of West Singhbhum district



Source: District Irrigation Plan (2015-20)

Table 2: Land use pattern of mining-affected areas

Block/municipality name	Gross cropped area (%)	Forest area (%)	Waste land (%)	Barren land (%)	Area under other land uses (%)
Noamundi	7.4	38.5	5.0	24.7	24.3
Manoharpur	20.0	36.7	6.6	13.7	23.0
Jhinkpani	36.8	5.4	5.4	46.5	5.9
Manjhari	27.6	26.5	2.7	36.0	7.3
Chaibasa	40.6	4.1	8.4	23.0	23.9
Jagganathpur	22.3	12.3	8.4	41.2	15.8

Source: District Irrigation Plan (2015-20)

However, the key mining areas, such as Noamundi and Manoharpur, have significant natural resource potential. In both these areas forest land is nearly 37 to 38 per cent of the total land use area. In Jhinkpani and Chaibasa, there is much potential for agriculture. As per the district irrigation plan, the gross cropped area in Jhinkpani and Chaibasa blocks is nearly 36.8 per cent and 40.6 per cent respectively *(See table 2: Land use pattern of mining-affected areas).*

2.4 Mining activities and mining-affected areas

Jharkhand accounted for about 12 per cent of India's total iron ore production in 2015-16, as per the Indian Bureau of Mines. West Singhbhum is the key iron ore producing district of the state producing about 19 million tonnes (MT) of iron ore during that period[5]. Apart from iron ore, the district is also rich in minerals such as manganese, lime stone, apatite, asbestos, chromite, and kyanite.

As per latest information obtained from the district mining department, in 2016-17, the total mineral production in the district was about 17.4 MT, out of which 16.3 MT was iron ore (*See table 3: Mineral production in West Singhbhum district)*. Further, mining is slated to expand significantly in the coming years, with Steel Authority of India Limited (SAIL) –the key player in the district, planning expansion in Chiria mines (up to 15 MT per annum production expansion in two phases) [6].

Table 3: Mineral production in West Singhbhum district (2016-2017)

Name of mine/Company	Production (MT)
SAIL Gua	4.015
SAIL Manoharpur	0.568
SAIL Megahatuburu	3.812
SAIL Kiruburu	2.388
Usha Martin	1.496
Shah brothers	0.195
Tata Steel Limited	3.424
Anil Khirwal	0.013
Vijay Kr Ojha	0.001
RML Ghatkuri	0.234
Anindita Traders	0.113
ACC	1.146
Total	17.404

Source: District mines department, West Singhbhum

The iron ore mines in the district are particularly located in Noamundi area which also has the rich Saranda forest area (*See figure 3: Iron ore deposits in Saranda*). Besides, Manoharpur, Jhinkpani, Jagganathpur, Chaibasa,and Manjhari areas also have several iron ore mines. All mining activities are open cast *(See table 4: Location of mines in West Singhbhum district)*.

Table 4: Location of mines in West Singhbhum district

Location of mines	Number of mines
Noamundi	42
Manoharpur	6
Jhikpani	16
Jagganthapur	8
Chaibasa sadar	8
Tonto	1
Haatgamharia	3
Kumardungi	11
Majhgaon	4
Sonua	1
Aabru	1

Source: District Mines Department, West Singhbhum

Figure 3: Iron ore deposits in Saranda

Source: Down to Earth, Centre for Science and Environment

As per the district mines department, Noamundi , Manoharpur and Jhikpani are the most extensively mining-affected areas of the district *(See table 5: Mining-affected blocks and panchayats in West Singhbhum district).*

While this document analyzes all the data as available for socio-economic, human development and environmental parameters of the mining-affected areas, ground level observations (through FGDs) have been particularly recorded for villages in Noamundi and Manoharpur blocks after discussions with concerned stake-holders including district officials.

Table 5: Mining-affected blocks and panchayats in West Singhbhum district

Block name	Area affected (%)	Total number of affected panchayats
Noamundi	67	12
Manoharpur	58	11
Jagganathpur	6	1
Jhikpani	43	3
Chaibasa	14	2
Manjhari	20	2

Source: District mines department, West Singhbhum

2.5 Demographic profile

As per Census of India 2011, the population of West Singhbhum district is about 15 lakhs, of which about 49.8 per cent is male and 50 per cent is female. A decadal growth of nearly 22 per cent has been observed for the district's population in 2011 as compared to 2001.

The demographic distribution reveals that the district has high concentration of people living in rural areas which is about 85 per cent of the total population; rest 15 per cent live in urban areas of the district**.** The population density of the district is 208 per sq km which is low when compared to India's population density of 328 and state's population density of 414 per sq km. More than 67 per cent of the population belong to Scheduled Tribes (ST) category (*See table 6: Overall demographic profile of West Singhbhum district*).

Table 6: Overall demographic profile of West Singhbhum district

Total district population	Male (%)	Female (%)	Urban (%)	Rural (%)	SC (%)	ST (%)
15,02,338	**49.8**	**50.2**	**14.5**	**85.4**	**3.8**	**67.3**
Sex ratio	1,005 (Rural- 1,014; Urban- 951)					
Population density (per sq.km)	208					
Decadal population growth (%)	21.75					
Total households	302,046 (Rural- 85.2%; Urban- 14.8%)					
Below Poverty Line Population (%)	65.72					
Households in rural areas with highest earning heads getting below Rs. 5,000 per month (%)	53.7					

Source: Census of India (2011) and SECC (2011)

The block-wise demographic distribution reveals that all of the mining-affected areas have very high proportion of tribal population, ranging from 55 to 75 per cent. Most of these areas, except for Noamundi and Chaibasa, are predominantly rural and remote *(See table 7: Population distribution)*.

Table 7: Population distribution

Block/municipality name	Total population	Rural population (%)	Urban population (%)	SC population (%)	ST population (%)
Noamundi	113,333	51.91	48.09	7.07	58.14
Manoharpur	90,142	86.19	13.81	2.85	67.37
Jhinkpani	53,792	75.71	24.29	5.27	59.8
Manjhari	68,450	100	0	1.42	76.75
Chaibasa*	155,954	55.39	44.61	3.86	55.73
Jagganathpur	99,169	87.98	12.02	5.42	59.62
Tonto	59,918	100	0	2.28	80.82
Hat Gamharia	67,226	100	0	2.44	73.91
Tantnagar	63,910	100	0	1.2	76.37
Majhgaon	72,616	100	0	2.75	73.28
Sonua	77,697	100	0	5.79	61.21
Gudri	38,282	100	0	0.96	91.01
Kumardungi	55,352	100	0	2.22	75.75
Bandgaon	87,072	100	0	4.05	79.97
Chakradharpur*	197,953	71.44	28.56	6.24	48.88
Khuntpani	83,047	100	0	1.45	83.47
Goilkera	74,019	100	0	1.68	85.39
Anandpur	44,406	100	0	2.28	68.81

*Chaibasa includes Chaibasa block and Chaibasa Nagar Parishad, and Chakradharpur includes Chakradharpur block and Chakradharpur Nagar Parishad, and has been referred likewise in this document
Source: Census of India (2011)

Section 3: Situation analysis through stock-taking

The stock-taking exercise of various socio-economic, human development and environmental parameters has been done by analyzing district and block level data/information pertaining to these. The main sources of the data, including contextual information, include various Government documents and reports as published by accredited agencies. Some key sources from where data has been obtained include-

- Census of India reports- District Census handbook, West Singhbhum, 2011.
- National Sample Survey (NSS) data, Ministry of Statistics and Program Implementation.
- Socio Economic Caste Census data, Ministry of Rural Development.
- Rural Health Statistics Report (2014-15), Ministry of Health and Family Welfare.
- District Information System for Education (DISE): School Reports maintained by National University of Educational Planning and Administration (NUEPA).
- Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) MIS Reports for districts, Ministry of Rural Development.
- District level authorities and departments- such as District Rural Development Agency, health department, education department, water supply and sanitation department, social welfare department etc.
- Reports prepared by Government, accredited institutions/ agencies (latest ones).
    - National Family Health Survey of India.
    - Census of India, Annual Health Survey.
    - Ministry of Drinking Water and Sanitation, reports on Swachh Bharat Mission.
    - Central Ground Water Board (CGWB), District ground water brochures.

3.1 Analysis of human development parameters

Human development indicators typically reflect average achievement with respect to three key dimensions of human development[7]. These include:

- A long and healthy life.
- Having education and being knowledgeable.
- Having a decent standard of living.

Therefore, for a district, the key parameters of measure of human-development include the status of public health, nutrition and concerns of food security

and livelihood of people. To ascertain the status of each of these a situation analysis was done through stocking-taking of data/information at the district and the block/ municipality levels.

3.1.1 Public Health

The public health and healthcare status of West Singhbhum district and particularly the mining-affected areas has been reviewed on the basis of the following key parameters:

a. Disease prevalence.
b. Existing healthcare infrastructure- primary and secondary facilities.
c. Status of available healthcare staff – doctors, health workers etc.

Based on the situation on each of these, the overall gaps in the public healthcare sector have been identified.

A. Review of healthcare parameters

a. Disease prevalence

The data of disease prevalence at the district-level and particularly at the block-level is poor. The situation has been largely captured through interviews with health officials, health centre visits and interaction with communities in mining-affected areas.

According to Annual Health Survey (2012-2013) of the GOI, West Singhbhum has very high prevalence of chronic diseases such as tuberculosis (TB), diabetes, hypertension, when compared to even the state average *(See table 8: Persons suffering from various illness in Jharkhand and West Singhbhum)*. For instance, in West Singhbhum the TB prevalence is 443 per one lakh population, which is nearly 2.5 times the average prevalence level of India[8] which is 195. It is to be noted here, that the India average is itself problematic as the country has been identified as one of the countries with a high TB burden and has a target of eradicating TB by 2030 under the Sustainable Development Goals (SDG)[9]. Besides, given the high air pollution in the region resulting from opencast mining, the population is particularly vulnerable to respiratory illnesses such as acute respiratory infection (ARI).

During ground interactions, people in the mining-affected areas also reported suffering from such conditions, besides reporting prevalence of malaria, typhoid and diarrhoea.

Table 8: Persons suffering from various illness in Jharkhand and West Singhbhum

Illnesses	Person in Jharkhand state (per lakh people)			Person in West Singhbhum district (per lakh people)		
	Total	Rural	Urban	Total	Rural	Urban
Acute Respiratory Infection (ARI)	3,320	3,129	3,851	6,390	6,086	7,246
Diabetes	802	383	1,970	608	329	1,915
Hypertension	839	453	1,916	953	534	2,915
Tuberculosis	307	348	192	443	502	169

Source: Annual Health Survey (2012-2013)

Table 9: Percentage of diarrhoea, dehydration and malaria in children 0-5 years of age to total reported childhood diseases of that age (2016-2017)

Block/ municipality name	Diarrhoea and Dehydration (%)	Malaria (%)
Noamundi	NA*	NA*
Manoharpur	4.3	93.3
Jhinkpani	51.1	48.9
Manjhari	40	59.4
Chaibasa	NA*	NA*
Jagganathpur	29.7	60.3
Tonto	10.6	88.3
Hat Gamharia	NA*	NA*
Tantnagar	89.6	10
Majhgaon	0	100
Sonua	0	100
Gudri	NA*	NA*
Kumardungi	11.3	88.7
Bandgaon	7.2	89
Chakradharpur	19.8	76.2
Khuntpani	28.6	42.9
Goilkera	16.9	81.5
Anandpur	NA*	NA*
Chaibasa Sadar	45.6	40.4

*NA represents data which was not available at the time of this compilation.
Source: Ministry of Health and Family Welfare (January 2018)

Incidences of water and vector-borne diseases such as diarrhoea and malaria are particularly high amongst children. Data of the Ministry of Health and Family Welfare (2017), indicates that children below the age of five years are particularly vulnerable to these[10] *(See table 9: Percentage of diarrhoea, dehydration and malaria in children 0-5 years of age to total reported childhood diseases of that age)*. A primary reason for such illnesses is unavailability of clean drinking water and poor sanitation. These conditions also have a strong bearing on the development of children, as also identified in the Global Hunger Index Report (2017), that has identified lack of proper sanitation has a strong effect on child health and their nutrition absorption capacity[11].

b. Existing healthcare infrastructure– Primary and secondary facilities

Given the severity of pollution and poor health conditions of people as reported, the availability of health infrastructure, along with qualified health staff at the facilities is critical. Considering these factors, in this section review has been done separately for primary and secondary healthcare facilities.

Health facilities have been particularly analyzed in the rural context, since 85.5 per cent of the district's population lives in rural areas. Additionally, according to information provided by officials in civil surgeon's office, the

Table 10: Primary healthcare facilities and staff in West Singhbhum district

Block/ municipality name	HSCs		PHCs			CHCs		
	Number	Number of staff	Number of PHCs	Number of doctors/medical officers	Number of other staff	Number	Number of doctors	Number of other staff
Noamundi	22	12	2	2	2	1	5	6
Manoharpur	20	11	2	3	3	1	2	10
Jhinkpani	9	8	0	0	0	1	5	11
Manjhari	21	17	0	0	0	1	3	3
Chaibasa	22	26	0	0	0	1	1	7
Jagganathpur	23	17	1	1	4	1	2	8
Tonto	17	6	3	2	1	1	4	11
Hat Gamharia	19	4	1	1	4	0	0	0
Tantnagar	18	6	1	1	1	1	3	7
Majhgaon	22	6	0	0	0	1	3	10
Sonua	23	19	1	0	0	1	4	5
Gudri	7	3	0	0	0	0	0	0
Kumardungi	13	6	0	0	0	1	3	0
Bandgaon	27	21	2	1	4	1	3	5
Chakradharpur	31	31	1	0	1	1	0	7
Khuntpani	17	9	0	0	0	1	3	5
Goilkera	24	16	0	0	0	1	2	11
Anandpur	7	3	1	0	1	0	0	0

Source: Office of Civil Surgeon, District health department, West Singhbhum

district does not have any separate primary and community health centres in the municipalities. These areas rely on the primary healthcare facilities as available in various blocks, the sub-divisional hospitals and the district hospital.

Primary healthcare: Health Sub Centres (HSC), Primary Health Centres (PHC) and Community Health Centres (CHC), together constitute primary healthcare facilities in the district. Data as obtained from district and block levels (including municipal areas) gives an overall understanding of the number of available facilities *(See table 10: Primary healthcare facilities and staff in West Singhbhum district).*

The Indian Public Health Standard (IPHS), as provided under the National Health Mission (NHM), stipulates the minimum requirements of public healthcare facilities in rural areas. Considering that West Singhbhum district is primarily rural in nature, the IPHS norm has been considered as the overall benchmark. According to IPHS, in the rural areas, there should be at least one sub-centre for every 5000 people, one PHC per 30,000 people, and one CHC per 1,20,000 people[12]. Further for tribal areas, predominant in West Singhbhum district, the requirements are further stringent. For these areas, there should be at least one sub centre for every 3,000 people, one PHC per 20,000 people, and one CHC per 80,000 people[13].

In West Singhbhum, the primary healthcare infrastructure has serious deficits including in the mining-affected areas. For example, out of the six mining-affected blocks identified by the district, there is no PHC in three of them (Jhinkpani, Manjhari, Chaibasa). Moreover, in most areas are stretched to their capacity. For example, considering the rural population of the district, on an average, there is just one PHC per 100,156 people. In mining-affected areas where PHCs are present, they are serving two to three times their capacity. Apart from shortage of number of facilities, the other major issue is with respect to the status of the basic amenities in these facilities. For example, 68.5 per cent of HSCs lack water supply and about 80.7 per cent of HSCs do not have any access to electricity[14]. Accessibility of primary healthcare facilities such as PHCs and CHCs is a serious concern and has been observed through FGDs and SSIs (*Refer to section 4*). According to the Brookings India Health Monitor, only about 14 per cent of villages have PHCs within a 5 km radius and about 36 per cent of villages have CHCs within a 10 km radius[15].

Services such as mobile medical units (MMUs) and ambulances also constitute important resources of the healthcare infrastructure. According to district officials, there is one ambulance per block available in seven blocks and three ambulances each in Chaibasa and Manoharpur blocks. With respect to MMUs, the district has one each in Manoharpur, Noamundi, Manjhari and Jagannathpur blocks. MMU service also rotates in Sonua, Bandhgaon, Goilkera, Tonto, Jinkpani, Kumardungi and Majhgaon blocks.

Secondary healthcare: The secondary healthcare system constitutes of sub-district/sub-divisional hospitals and district hospital. They both are important components of more specialized and comprehensive healthcare facilities for a district's rural as well as the urban population.

The sub-district/ sub-divisional hospitals form an important link between HSC, PHC and CHC on one end and district hospitals on other end, and are the first referral units for the tehsil/block population in which they are located. The NHM also identifies these units to be significant for bringing down the maternal mortality and infant mortality as these facilities are meant to provide emergency obstetrics care and neonatal care[16].

The district hospital on the other hand functions as a secondary level referral centre for the public health institutions below the district level such as sub-divisional hospitals, CHC, PHC and HSC. While all district hospitals are required to be equipped to provide all basic specialty services, but they should also be developed into super-specialty services gradually, particularly for bigger districts identified in the NHM[17].

West Singhbhum district has one sub-divisional hospital in Chakradharpur block and one district hospital in Chaibasa, the district head quarter. However, the man-power and resources in the hospitals is a concern and needs to be strengthened as discussed in the following section. One of the key concerns for these facilities is also the number of available beds. As per the information available from the Civil Surgeon's office, there are around 100 beds in the district hospital and 60 beds available in the sub-divisional hospital. District

health officials have further informed that the district hospital has been under renovation for a long time which has limited its scope of operation.

c. Healthcare staff

Information on healthcare staff as obtained from official sources include overall numbers of medical officers/doctors, staff nurses, auxiliary nurse midwives (ANM's), laboratory technicians, X-ray technicians, pharmacists and other supporting staff with various technical competence, as available at various primary and secondary facilities in the district.

Primary healthcare: The poor status of primary healthcare in the district becomes much more pronounced when healthcare staff is considered besides the available healthcare facilities. For example, according to IPHS, there should be at least ("essential") three health workers in sub centres, 15 to 20 health staff at PHCs (depending on the PHC type A or B), and 35 to 40 health staff of various competence, specializations and responsibilities at CHCs[18].

Taking this as a benchmark, if the overall number of health workers and health staff as made available for various primary healthcare facilities are considered, there is nearly 90 per cent deficit in the required number of medical staff in most areas. For example, in Noamundi and Manoharpur, on an average there is only one doctor/medical officer and one other staff in each of the PHCs, as opposed to the requirement of 15 to 20 health staff per PHC. The same deficit is there with respect to doctors and medical staff at CHCs. For example, in both Noamundi and Manoharpur, on an average each of the CHCs has a total of 10 health staff (including doctors), as opposed to the requirement of 35 to 40 health staff per CHC.

Secondary healthcare: Considering the staff strength at secondary healthcare facilities such as the sub-divisional and district hospital, currently there are only 18 doctors available in these hospitals. The situation is similar regarding availability of other trained healthcare personnel such as nurses, laboratory technicians etc. For example, in the sub-divisional hospital, there are only seven other health staff besides two doctors. In the district hospital also, the strength of health staff other than doctors is only 33.

When compared to the district population, number of people residing in each of these blocks, dispersed and remoteness of habitation in many areas, it is evident that this is grossly inadequate. Moreover, a large number of the posts are vacant informed officials.

B. Gaps in the public health sector

The public health sector in West Singhbhum district, including the mining-affected areas, has huge deficit both in infrastructure as well as resources. The key deficits include:

a. Inadequate number of primary healthcare facilities, particularly PHCs.
b. Gross deficit in human resources – doctors, nurses and other health staff.
c. Lack of supporting infrastructure in hospitals.

a. Inadequate number of primary healthcare facilities, particularly PHCs

Considering the total population of about 15 lakh in West Singhbhum district, the primary healthcare infrastructure, specifically the PHCs and CHCs is sub-optimal. Such facilities are important as they are the first point of health contact, specifically for those in the rural parts of the district. These are also important for referral services.

While there are no PHCs in many blocks, including mining-affected areas such as Jhinkpani, Manjhari and Chaibasa, in areas where PHCs are present, they are serving two to three time of more their capacity. This also stretches the support available at these facilities and practically renders them ineffective for people as captured through ground interactions. For CHCs three blocks do not have them *(See table 11: Deficits in number of primary healthcare facilities)*.

Table 11: Deficits in number of primary healthcare facilities

Block/municipality name	Average people served per HSC	Serving over IPHS norms (1 HSC/5,000 people)	Average people served per PHC	Serving over IPHS norms (1 PHC/30,000 people)	Average people served per CHC	Serving over IPHS norms (1CHC/1,20,000 people)
Noamundi	5,152	1.03	56,667	1.9	113,333	-
Manoharpur	4,507	-	45,071	1.5	90,142	-
Jhinkpani	5,977	1.2	No PHC	No PHC	53,792	-
Manjhari	3,260	-	No PHC	No PHC	68,450	-
Chaibasa	7,089	1.41	No PHC	No PHC	155,954	1.3
Jagganathpur	4,312	-	99,169	3.3	99,169	-
Tonto	3,525	-	19,973	0.7	59,918	-
Hat Gamharia	3,538	-	67,226	2.2	No CHC	No CHC
Tantnagar	3,551	-	63,910	2.1	63,910	-
Majhgaon	3,301	-	No PHC	No PHC	72,616	-
Sonua	3,378	-	77,697	2.6	77,697	-
Gudri	5,469	1.09	No PHC	No PHC	No CHC	No CHC
Kumardungi	4,258	-	No PHC	No PHC	55,352	-
Bandgaon	3,225	-	43,536	1.5	87,072	-
Chakradharpur	6,386	1.28	197,953	6.6	197,953	1.6
Khuntpani	4,885	-	No PHC	No PHC	83,047	-
Goilkera	3,084	-	No PHC	No PHC	74,019	-
Anandpur	6,344	1.27	44,406	1.5	No CHC	No CHC

Source: Office of Civil Surgeon, District health department, West Singhbhum

b. Gross deficit in human resources – doctors, nurses and health staff

The biggest challenge with public health care in the district, including all mining-affected areas, is the critical deficit of doctors and health staff. As analyzed earlier, the situation is equally stark at both primary and secondary facilities.

For example, when compared to the sanctioned positions for doctors and staff in PHCs and CHCs, there is an overall deficit of 60 per cent doctors and nearly 75 to 80 per cent of other staff capacity. In the sub-divisional and district hospitals, the average deficit for doctors is about 82 per cent and 55 per cent respectively. The other health staff deficit is also at similar proportions in the hospitals (*See table 12: Deficits in health staff at primary healthcare facilities)*.

Table 12: Deficits in health staff at primary healthcare facilities

Type of healthcare personnel as per facility	Sanctioned	In-position	Deficit (%)
Total number of staff at HSC	544	221	59.4
Total number of staff at PHCs	99	21	78.8
Total number of doctors at PHCs	30	11	63.3
Total number of staff at CHCs	455	106	76.7
Total number of doctors at CHCs	112	43	61.6
Total number of staff at Sub-divisional hospital	34	7	79.4
Total number of doctors at Sub-Divisional Hospital	11	2	81.8
Total number of staff at District Hospital	84	33	60.7
Total number of doctors at District Hospital	40	18	55.0

ource: Office of Civil Surgeon, District health department, West Singhbhum Staff number indicates all other staff at these facilities excluding doctors/medical officers

c. Lack of supporting infrastructure in hospitals

When compared against the IPHS norms, the beds at these various hospitals are also grossly inadequate. As a thumb-rule in IPHS, it is estimated that the number of beds required at a district hospital for a district with 10 lakh population will be around 300. This is based on the general assumption of the average annual rate of admission as one per 50 people, and the average length of stay in a hospital- five days for a person[19]. Given the vulnerability of population living in mining areas to various diseases due to poor environmental and socio-economic conditions, these estimations will more stringent for a district like West Singhbhum. However, going by the thumb-rule, for West Singhbhum district with a population of 15 lakhs, the total number of beds required at the district hospital should be around 400. The current availability of 100 beds is therefore only about one-fourth of the requirement.

Besides, there is also problems of medicines and other resources at the hospitals as informed by respondents during ground level interaction *(Refer to section 4)*.

3.1.2 Nutrition and food security

With respect to nutrition and food security, the primary parameters looked at include:

a. Infant mortality, under five mortality and malnourishment.
b. Coverage under Integrated Child Development Services.
c. Coverage under National Food Security Act.

Based on the situation on each of these, the overall gaps with respect to nutrition and food security have been identified.

A. Review of nutrition and food security parameters

a. Infant mortality, under five mortality and malnourishment

In West Singhbhum district, the average infant mortality rate (IMR) is 53 and the under five mortality rate (U5MR) is 87 *(See table 13: Mortality rates in West Singhbhum district*). However, both of these indicators are worse for the rural parts of the districts which are 57 and 96 respectively. In fact, the district has the highest U5MR in comparison to other districts in the state. Both these indicators fall far short of what is envisioned under the Sustainable Development Goals (SDG) necessitating serious intervention[20]. Under SDG, the target for U5MR is 25 by the year 2030.

Table 13: Mortality rates in West Singhbhum district

Indicators	Total	Rural	Urban
IMR	53	57	28
U5MR	87	96	38

Source: Annual Health Survey Factsheet (2012-2013), West Singhbhum district

Besides, mortality indicators, growth and weight indicators are also critical for good health. Various malnutrition symptoms are important in this respect. The most prominent symptoms of malnutrition that children in West Singhbhum district suffer from include stunted growth and underweight. On an average more than 46 per cent of children below five years in rural areas are severely stunted and more than 33 per cent of them are underweight *(See table 14: Symptoms of malnutrition below five years of age)*. According to Jharkhand Vision and Action Plan, the state has identified 12 nutritionally high burden districts which includes West Singhbhum[21].

b. Coverage under Integrated Child Development Services

The primary goal of the Integrated Child Development Services (ICDS) as identified by the GOI is to reduce malnutrition, morbidity and mortality caused by nutritional deficiencies. To achieve this, the government identifies six services that must be assured. These include- supplementary nutrition, health education, non- formal pre-school education, immunization, health check-up and monitoring, and referral services. Among these the former three are required to be provided and supported by the network of AWCs, while the latter three are designed to be delivered through the primary healthcare infrastructure[22].

Table 14: Symptoms of malnutrition below five years of age

Nutritional status	Male	Female	Rural
Below -2 SD Wasting (%)	24.6	26.1	29
Below -3 SD Wasting (%)	10.2	13.5	13.9
Below -2 SD Stunting (%)	69.5	58.5	63.7
Below -3 SD Stunting (%)	51.4	40.5	45.6
Below -2 SD Underweight (%)	66.8	53.4	64.3
Below -3 SD Underweight (%)	32.8	30	32.5
Below -2 SD Undernourished (%)	24.7	31.7	31.7
Below -3 SD Undernourished (%)	15.1	21.8	20.8

Source: Annual Health Survey, 2012-2013, Clinical, Anthropometric and Biochemical (2014)

All children below six years of age constitute the target group of ICDS. Further the government has stipulated coverage norms for ICDS for this age group. This requires that in non-tribal areas each AWC should cover 40 beneficiaries, and in tribal areas each AWC should cover 42 beneficiaries[23].

The status of ICDS coverage and AWCs has been looked into through four parameters – the coverage of beneficiaries under ICDS, adequacy of AWCs and availability of basic infrastructure and facilities such as AWCs with permanent structure, drinking water and toilet facilities within premises. Overall coverage of ICDS beneficiaries considering children below six years of age is fairly low in various parts of the district. This also includes all the mining-affected areas where the coverage on an average is less than 70 per cent in all areas except Manoharpur.

When analyzed against the ICDS benchmark with respect to the required number of AWCs, all the mining-affected areas appear to have inadequate number of AWCs, showing poor implementation of ICDS. In all areas the AWCs are catering to almost three times the number of children they are equipped to support. For instance, in Noamundi, there are around 145 children presumably covered by one AWC. The situation in similar in Jhikpani, Manjhari, Chaibasa and Jagganathpur, the other mining-affected areas *(See table 15: Coverage of children through ICDS and status of existing AWCs).*

The problem is compounded by the lack of proper infrastructure at these facilities. Two particular aspects include, lack of permanent structures (such as pucca building), and lack of public amenities such as toilets, drinking water and electricity. For example, in Noamundi and Manoharpur, only half of the existing AWCs have permanent structures, about 22 per cent of AWCs have toilet facilities, and no AWCs have drinking water facilities within premises *(See table 16: Status of infrastructure at AWCs).*

Table 15: Coverage of children through ICDS and status of existing AWCs*

Block/ municipality name	No of working AWCs	Total number of children below 6 years	Coverage of children below 6 years through ICDS	Coverage of children below 6 years through ICDS (%)	Average number of children presumably covered by one AWC
Noamundi	135	19,603	12,781	65.2	145
Manoharpur	222	15,056	13218	87.8	68
Jhinkpani	77	9,163	5,858	63.9	119
Manjhari	99	12,473	8,390	67.3	126
Chaibasa	168	22,497	12,267	54.5	134
Jagganathpur	165	17,734	12,367	69.7	107
Tonto	101	11,814	10,162	86.0	117
Hat Gamharia	100	13,230	9,022	68.2	132
Tantnagar	107	11,133	6,123	55.0	104
Majhgaon	112	13,704	8,906	65.0	122
Sonua	176	20,996	12,656	60.3	119
Kumardungi	87	10,653	7,139	67.0	122
Bandgaon	176	15,816	11,569	73.1	89
Chakradharpur	298	30,487	18,074	59.3	102
Khuntpani	137	15,288	8,450	55.3	112
Goilkera	170	14,541	12,750	87.7	86

*Since Anandpur and Gudri blocks have been recently delineated from Manoharpur and Sonua blocks respectively, the AWCs of these two blocks were not separately available and is part of Manoharpur and Sonua blocks in this section.
Source: District rural development department, West Singhbhum and Census of India (2011)

Table 16: Status of infrastructure at AWCs

Block/municipality name	Total number of AWCs	Number of AWCs with permanent structures	Number of AWCs with toilet facilities	Number of AWCs with drinking water facilities
Noamundi	135	73	30	0
Manoharpur	222	163	131	68
Jhinkpani	77	76	63	14
Manjhari	99	76	69	48
Chaibasa	168	75	63	93
Jagganathpur	165	105	95	72
Tonto	101	76	53	54
Hat Gamharia	100	87	43	39
Tantnagar	107	88	66	43
Majhgaon	112	107	93	31
Sonua	176	97	76	74
Kumardungi	87	81	58	33
Bandgaon	176	103	60	48
Chakradharpur	298	129	85	69
Khuntpani	137	109	93	73
Goilkera	170	90	82	63

Source: District rural development department, West Singhbhum

c. Coverage under National Food Security Act

The National Food Security Act (NFSA), 2013, aims to ensure people's access to adequate quantity of quality food at affordable prices through public distribution system[24]. In Jharkhand, The NFSA implementation has been made more targeted through an "inclusion and exclusion" criteria notified by the Jharkhand Food, Public Distribution and Consumer Affairs Department in January, 2017.

The notification particularly specifies two categories as beneficiaries to cover the vulnerable section through the targeted public distribution system (TPDS). These include priority households and the Antyodaya Anna Yojana (AAY) households. Further there can be some other (which the notification does not elaborate on) as identified by the state government[25].

While the AAY category includes the already defined, poorest of the poor, the notification provides detailed criteria to identify priority households. The "priority households" include those living on alms, households without shelter, and households of Primitive Tribal Groups (PTG). The criteria also includes all people with 40 per cent or more disability, those suffering from incurable diseases like AIDS, cancer, leprosy etc, widows, people above 60 years of age. All these beneficiaries must not be employed or retired as an employee of Central or state government, public sector undertakings (PSU), government aided autonomous and local bodies. For urban areas, the notification specifically includes people of certain low earning/wage professions such as, those engaged in rag-picking, sweeping, domestic work, unskilled labour, rickshaw-puller, painter, mechanic, mason, plumber, tailor, security guard etc.

The notification also clarifies on who are excluded as being beneficiaries. The exclusion criteria includes households owning a motorized four wheeler/heavy vehicle like tractor, households with any member who is a regular employee of Central or state government, PSU, government aided autonomous bodies and local bodies, household with any member owning or managing a government registered business, households with any member paying income tax/service tax/occupational tax, households with any member owning five acres of more of irrigated land or land more than 10 acres, households that have an air-conditioner, refrigerator, washing machine etc., or own a pucca house with three or more rooms.

In West Singhbhum, there are a total of 12.3 lakh people covered under priority and AAY households. This is essentially about 82 per cent of the total district population (*See table 17: Coverage under TPDS in West Singhbhum district).* This suggests that there is a huge section of people in the district who are economically vulnerable and need proper social and welfare support to secure the basics.

Table 17: Coverage under TPDS in West Singhbhum district

Block / municipality name	No. of beneficiaries under priority households	No. of beneficiaries under AAY
Noamundi	66,222	14,226
Manoharpur	41,705	25,143
Jhinkpani	34,986	11,745
Manjhari	36,476	21,870
Chaibasa	43,420	17,160
Jagganathpur	60,373	24,996
Tonto	43,246	13,507
Hat Gamharia	36,427	23,593
Tantnagar	39,969	19,453
Majhgaon	49,549	17,502
Sonua	55,302	18,033
Gudri	16,621	10,650
Kumardungi	37,505	11,781
Bandgaon	56,773	22,588
Chakradharpur	1,03,787	30,431
Khuntpani	56,699	12,137
Goilkera	41,658	20,981
Anandpur	24,229	9,648
Chaibasa nagar parishad	30,310	7,109
Chakradharpur nagar parishad	26,390	2,747

Source: Department of food, public distribution and public affairs, Jharkhand (January, 2017)

B. Gaps in nutrition and food security

The gaps or deficits with respect to nutrition related issues in the mining-affected areas as identified from analysis of the official data shows deficits both in infrastructure as well as resources. The key deficits include:

a. Inadequate number of AWCs as compared to the population to be served.
b. AWCs lacking drinking water and toilet facilities.
c. AWCs not having a permanent structure.

Considering the absolute number of AWCs, as well as availability of basic infrastructure and facilities, there is a clear deficit in every aspect *(See table 18: Overall gaps in AWCs in West Singhbhum)*.

Table 18: Overall gaps in AWCs in West Singhbhum

Block/ municipality name	Total AWCs	Coverage of children exceeding capacity	AWCs lacking permanent structure (%)	AWCs lacking toilets (%)	AWCs lacking drinking water facilities (%)
Noamundi	135	3.5 times	45.9	77.8	100.0
Manoharpur	222	1.6 times	26.6	41.0	69.4
Jhinkpani	77	2.8 times	1.3	18.2	81.8
Manjhari	99	3 times	23.2	30.3	51.5
Chaibasa	168	3.2 times	55.4	62.5	44.6
Jagganathpur	165	2.5 times	36.4	42.4	56.4
Tonto	101	2.8 times	24.8	47.5	46.5
Hat Gamharia	100	3 times	13.0	57.0	61.0
Tantnagar	107	2.5 times	17.8	38.3	59.8
Majhgaon	112	3 times	4.5	17.0	72.3
Sonua	176	2.8 times	44.9	56.8	58.0
Kumardungi	87	3 times	6.9	33.3	62.1
Bandgaon	176	2 times	41.5	65.9	72.7
Chakradharpur	298	2.4 times	56.7	71.5	76.8
Khuntpani	137	2.7 times	20.4	32.1	46.7
Goilkera	170	2 times	47.1	51.8	62.9

a. Inadequate number of AWCs as compared to the population to be served

As analyzed, on an average, AWCs in all mining-affected areas are serving almost three times the stipulated capacity. The fairly low coverage under ICDS also falls in line with such deficit in number of AWCs as discussed earlier. The coverage in most areas is around 50 per cent or less which needs to be scaled up significantly.

b. AWCs lacking drinking water and toilet facilities

Child health is closely related to the facilities available at AWCs, particularly considering clean water and sanitation. However, in all mining areas and the district overall, a large number of AWCs lack these within premises.

For example, in Noamundi, the most mining-affected area, none of the AWCs have drinking water facilities within premises. Besides, 78 per cent of AWCs here do not have toilet facilities. In Manoharpur and Jhinkpani too, 70 to 80 per cent AWCs lack drinking water facilities within premises. In other parts too, the deficit is on an average about 50 per cent.

c. AWCs not having a permanent structure

The data also clearly reveals that not only the number of AWCs is of concern, but even the existing ones do not have permanent structures. In Noamundi, about 46 per cent AWCs lack permanent structures. Also in other mining-affected areas, such as Manoharpur, Manjhari and Jagganathpur, categorically more than 25 per cent of the AWCs lack permanent structure.

3.1.3 Education

The education status of West Singhbhum district, particularly of the mining-affected areas has been reviewed on the basis of the following parameters:

a. Status of literacy and level of education.
b. Educational infrastructure- number of schools for various grades, Student Classroom Ratio (SCR), residential facilities.
c. Availability of basic amenities in schools-drinking water, toilets and electricity.
d. Current enrolment status.
e. Pupil teacher ratio (PTR).

Based on the situation on each of these, the overall gaps in the education sector have been identified.

A. Review of educational parameters

a. Status of literacy and level of education

The literacy rate of West Singhbhum district is 58.6 per cent, which is lower than the state's average of 66.4 per cent. Among the literate population, male literacy (nearly 71 per cent) is better than the female literacy (about 46.2 per cent). However, for the marginalized sections the literacy rate is poor. Literacy rate is about 63.7 per cent for SC and about 53.4 per cent for ST population *(See table 19: Overall literacy in West Singhbhum district)*.

Table 19: Overall literacy in West Singhbhum district

Category	Total literates (%)	SC literates (%)	ST literates (%)
Total	58.6	63.7	53.4
Male	71.1	59.4	61.3
Female	46.2	40.6	38.7

Source: Census of India (2011)

Among the mining-affected areas, Chaibasa (including municipality area) and Noamundi have the highest literacy rate, more than 62 per cent. Gudri has the lowest literacy rate which is about 40.3 per cent. It is to be noted that Gudri block also has the highest share of ST population which is about 91 per cent. This is commensurate with the trend noted above for comparatively poor literacy rates among ST population in the district *(See table 20: Area-wise literacy)*.

While the percentage of literate population is high, the education level that is required for securing a decent employment (such as at least higher secondary or graduate level education) is far from impressive. For example, among the 20-39 years age group, which is the most employable age, while the proportion of literates is nearly 57 per cent, only 13 per cent have completed higher secondary education, and about nine per cent have completed graduation.

Table 20: Area-wise literacy

Block/municipality name	Literate population (%)
Noamundi	63.4
Manoharpur	58.6
Jhinkpani	58.2
Manjhari	47.8
Chaibasa	75.5
Jagganathpur	60.7
Tonto	45.0
Hat Gamharia	48.8
Tantnagar	58.6
Majhgaon	52.0
Sonua	59.2
Gudri	40.3
Kumardungi	50.1
Bandgaon	54.5
Chakradharpur	67.2
Khuntpani	55.3
Goilkera	46.9
Anandpur	59.1

Source: Census of India (2011)

However, the trend is improving slightly over time, though far from what is necessary. For example, considering the age-group of 18-19 during the same enumeration period, the proportion of people completing higher secondary education is 21 per cent, better than what is observed among older age groups *(See table 21: Level of education in West Sighbhum district).*

Table 21: Level of education in West Singhbhum district

Age Group	18-19	20-39	40-59
Illiterates (%)	31	43	59
Literates (%)	69	57	41
Literates without education level (%)	6	9	10
Below primary (%)	7	7	8
Primary (%)	22	21	25
Middle (%)	21	22	20
Matric/ Secondary (%)	22	18	19
Higher Secondary (%)	21	13	7
Graduate and above (%)	0	9	11

Source: Census of India, 2011

b. Educational infrastructure

The educational infrastructure has been evaluated with respect to number of schools of various grades, student classroom ratio (SCR), availability of residential facilities in schools, and schools with basic amenities such as tap water supply, toilet facilities and electricity.

Number of schools for various grades: Official statistics show the presence of all levels of schools for elementary, secondary and higher secondary education. However, the numbers of schools for various levels vary *(See table 22: Distribution of schools)*.

Table 22: Distribution of schools

Block/ municipality name*	Pr.	Pr. + UP	Pr. + UP +Sec. + HS	UP	Pr. + UP + Sec.	UP + Sec.	UP + Sec. + HS	Sec.	Sec. + HS	HS	Total
Noamundi	93	36	4	0	8	3	1	4	1	3	153
Manoharpur	124	60	0	0	12	2	2	2	1	0	203
Jhinkpani	27	20	0	0	2	0	3	2	1	0	55
Manjhari	62	25	0	0	2	1	1	2	1	0	94
Chaibasa sadar	91	51	3	0	5	8	1	2	2	5	168
Jagganathpur	109	50	0	0	5	1	2	3	1	1	172
Tonto	80	36	1	0	4	2	3	0	0	0	126
Hat Gamharia	80	29	0	0	6	1	0	2	0	0	118
Tantnagar	72	23	0	1	3	1	2	2	1	0	105
Majhgaon	65	37	0	0	3	1	1	3	1	1	112
Sonua	114	29	0	0	7	0	2	2	1	0	155
Gudri	58	25	0	0	1	0	0	2	0	0	86
Kumardungi	54	18	0	0	2	0	1	2	1	0	78
Bandgaon	144	53	0	0	9	2	1	1	1	0	211
Chakradharpur	202	76	4	1	12	4	1	6	1	3	310
Khuntpani	86	37	0	0	7	0	2	3	1	0	136
Goilkera	130	32	0	0	3	1	1	1	1	0	169
Anandpur	72	29	0	0	3	0	0	2	0	0	106

*Block/municipality names in this section are as per the DISE website
Source: DISE report (2015-2016)

In all blocks, including mining-affected areas, the number of schools providing elementary education (primary and upper primary levels) is considerably more than the number of secondary and higher secondary schools. During ground level interaction as well *(Refer to section 4)*, most people pointed out the shortage of secondary and higher secondary schools, including their proximity to their residences, citing it as one of the reasons as an impediment for attending these schools.

Besides regular schools (government and private aided), there are some schools exclusively for SC/ST students in the district which are funded by the centre and the state governments. According to the district website, there are

a total of seven state funded schools is Chaibasa sadar, Goelkera, Manoharpur and Bandgaon blocks. Apart from these, there are two other schools which are funded by the central government exclusively for the tribal population in the district[26]. One of them is the Eklavya Model residential school for girls in Khutpani block which provides education from 6th to 12th standard. The other school is the 'ashram' residential school in Jhinkpani block which provides education from 6th to 10th grades. However, blocks with more than 90 per cent tribal population like Goelkera in the district do not have any Ashram or Eklavya schools.

Student classroom ratio and availability of residential facilities: The SCR is the ratio of number of students studying per classroom in a school[27]. It is used as a benchmark for ensuring quality education under Right to Education (RTE) Act, 2009 for elementary schools[28], and under Rashtriya Madhyamik Shiksha Abhiyan (RMSA) for secondary schools[29]. As per RTE, the SCR at primary school should not be more than 30:1, and that for upper primary should not be more than 35:1. RMSA stipulates a SCR of 40:1 for secondary schools.

For the purpose of this analysis, 30:1 has been taken as a uniform benchmark of SCR across elementary and secondary schools considering global standards. In most countries across Europe, Latin America and also the United States of America, SCR is much lower than 30. This is even true for most comparable economies such as Mexico, Brazil, and Indonesia[30].

A block wise analysis shows that less than 50 per cent secondary schools across all the blocks have the required number of classrooms. In mining-affected areas such as Noamundi and Manjhari, only about 40 per cent of schools have SCR less than 30. In Jhinkpani the situation is particularly stack, where only 12.5 per cent of secondary schools meet the SCR benchmark *(See table 23: Status of SCR and residential facilities in schools)*.

Besides, number of schools and classrooms, residential facilities are an important for secondary and higher level schools to ensure student enrolment and education completion. This is particularly considering dispersed habitation in many parts of the district. However, the data shows very few secondary schools have residential facilities. In mining-affected areas such as Noamundi and Manoharpur, about 22 per cent and 33 per cent higher secondary schools have such facilities.

c. Availability of basic amenities in schools - drinking water, toilet, electricity

Both RTE and RMSA guidelines stipulate the need for infrastructure support to enhance access and provide quality education. Supporting infrastructure include, having separate toilets for boys and girls at all levels of education, availability of clean drinking water at premises and electricity supply in schools[31].

The data on these basic amenities shows that while toilets are present in most of the schools across the district, the access to tap water and the coverage of

Table 23: Status of SCR and residential facilities in schools

Block/municipality name	Secondary schools with SCR less than 30 (%)	Secondary schools with residential facilities (%)	Higher secondary schools with residential facilities (%)
Noamundi	38.1	4.8	22.2
Manoharpur	21.1	10.5	33.3
Jhinkpani	12.5	37.5	50.0
Manjhari	42.9	14.3	50.0
Chaibasa sadar	14.3	28.6	27.3
Jagganathpur	16.7	16.7	25.0
Tonto	40.0	20.0	50.0
Hat Gamharia	33.3	0.0	0.0
Tantnagar	22.2	11.1	33.3
Majhgaon	33.3	11.1	33.3
Sonua	33.3	8.3	33.3
Gudri	33.3	0.0	0.0
Kumardungi	0.0	16.7	50.0
Bandgaon	57.1	28.6	50.0
Chakradharpur	10.7	14.3	22.2
Khuntpani	15.4	15.4	66.7
Goilkera	14.3	14.3	50.0
Anandpur	60.0	0.0	0.0

Source: DISE report (2015-2016)

electricity is very limited. The coverage of tap water facilities in schools in most rural mining-affected areas is merely around two per cent, a key concern for children's health. In Jhinkpani and Manjhari, none of the schools have tap water facilities *(See table 24: Status of basic amenities - tap water, toilets and electricity)*.

Reliable supply of electricity is also a major challenge in the schools. An average of about 30 per cent of the schools have access to electricity in urbanized parts of the district, in rural areas, the coverage is only about 10 per cent.

Table 24: Status of basic amenities - tap water, toilets and electricity

Block/ municipality name	Total no of schools	Schools with tap water facility (%)	Schools with toilets (%)	Schools with electricity (%)
Noamundi	153	15.7	95.4	23.5
Manoharpur	203	2.5	74.9	5.9
Jhinkpani	55	0.0	85.5	9.1
Manjhari	94	0.0	79.8	9.6
Chaibasa sadar	168	2.4	79.2	31.0
Jagganathpur	172	1.7	82.6	15.7
Tonto	126	1.6	84.1	2.4
Hat Gamharia	118	0.0	89.0	3.4
Tantnagar	105	0.0	66.7	1.0
Majhgaon	112	0.9	77.7	7.1
Sonua	155	0.0	61.3	5.2
Gudri	86	0.0	37.2	0.0
Kumardungi	78	0.0	88.5	2.6
Bandgaon	211	0.5	73.5	4.3
Chakradharpur	310	2.3	74.8	16.8
Khuntpani	136	0.7	87.5	4.4
Goilkera	169	0.6	66.9	6.5
Anandpur	106	0.0	80.2	5.7

Source: DISE report (2015-2016)

d. Current enrolment status

The assessment of student enrolment is done through Gross Enrolment Ratio (GER) and Net Enrolment Ratio (NER) which are two key indicators for the number of children attending school.

GER is the number of children enrolled (irrespective of the age) at a particular level (elementary or secondary school), in comparison to the population of the age group who should "officially" be studying at that level. NER on the other hand records age and education level specific enrolment. It is the number of children enrolled belonging to a particular age group at a particular level (elementary or secondary), in comparison to the population of the age group who should "officially" be studying at that level.

At the elementary level, the GER and NER data shows high enrolment in all blocks, GER on an average being nearly 95 per cent and NER 80 per cent. However, both these indicators drop significantly at the secondary level and higher secondary level. Except for Chaibasa sadar and Jagganathpur, on an average the GER ranges between 35 to 55 per cent at the secondary level in all other mining-affected areas. The declining trend further continues for GER observed at higher secondary level. At this level except for Chaibasa sadar and Chakdradharpur blocks, the GER on an average is around 20-30 per cent *(See table 25: GER and NER at various school levels)*.

Table 25: GER and NER at various school levels

Block/ municipality name	Elementary schools		Secondary schools		Higher secondary schools	
	GER	NER	GER	NER	GER	NER
Noamundi	89.6	84.1	48.8	41.6	24.2	26.7
Manoharpur	93.5	84.5	54.2	51.4	38.1	21.9
Jhinkpani	93.0	85.8	46.2	50.6	20.3	6.7
Manjhari	93.4	85.5	36.2	33.2	19.5	12.4
Chaibasa sadar	89.7	81.6	69.3	71.2	66.4	63.4
Jagganathpur	92.6	83.4	59.1	55.5	39.5	32.0
Tonto	92.6	84.6	33.2	24.2	14.7	4.5
Hat Gamharia*	95.5	88.4	32.8	27.7	0.0	0.0
Tantnagar	90.8	77.6	55.3	52.9	17.4	4.5
Majhgaon	88.6	79.9	51.6	50.9	30.7	18.1
Sonua	88.9	80.4	50.0	45.4	22.7	15.6
Gudri*	91.1	84.5	19.0	12.2	0.0	0.0
Kumardungi	92.4	83.1	37.4	33.6	21.7	13.1
Bandgaon	95.0	84.4	33.1	32.5	10.0	3.2
Chakradharpur	92.4	84.4	56.3	55.3	54.8	45.5
Khuntpani	95.1	87.7	38.3	35.2	16.9	9.2
Goilkera	92.4	82.3	37.1	29.9	23.8	15.7
Anandpur*	93.7	84.1	33.1	29.5	0.0	0.0

*Hat Gamharia, Gudri and Anandpur blocks have 0.0 GER and NER because currently there are no high schools in these blocks.
Source: District education department, West Singhbhum

Interactions with the community suggests that distance to schools, poor quality of education, shortage of teachers etc. as well as financial situation of the family are big contributors to poor enrolment and dropouts in secondary and higher secondary education *(Refer to section 4)*. At this level, this also indicates that there is a serious deficit in creating an educated workforce for procuring employment and livelihood opportunities.

e. Pupil teacher Ratio

Pupil teacher ratio (PTR) is described as average number of pupils/students per teacher at a given level of education, based on headcounts of both pupils and teachers[32]. As per standards (RTE for elementary and RMSA for secondary), the PTR for lower primary level and secondary level should not exceed 30:1 and it is 35:1 for upper primary[33].

For the purpose of this analysis, PTR of 30:1 has been taken as a uniform benchmark for both elementary and secondary education. Less than 50 per cent of elementary schools in the district meet the benchmark. The situation is even poorer at the secondary level with only about 25 per cent secondary schools meeting the benchmark in Noamundi and Manoharpur blocks. In Jhainkpani and Manjhari the situation is further worse, with only 12 to 14 per cent schools having the required number of teachers *(See table 26: Status of PTR at elementary and secondary schools)*.

A high PTR or shortage of teachers affects quality education and learning outcomes in the district including the mining-affected areas[34]. It also has bearing on enrolment and dropouts.

Table 26: Status of PTR at elementary and secondary schools

Block/municipality name	Elementary schools with PTR less than 30 (%)	Secondary schools with PTR less than 30 (%)
Noamundi	43.7	28.6
Manoharpur	48.5	26.3
Jhinkpani	41.7	12.5
Manjhari	49.3	14.3
Chaibasa sadar	49.5	4.8
Jagganathpur	48.3	25.0
Tonto	47.6	20.0
Hat Gamharia	49.5	11.1
Tantnagar	50.0	0.0
Majhgaon	42.9	22.2
Sonua	48.4	25.0
Gudri	50.0	0.0
Kumardungi	43.2	33.3
Bandgaon	48.2	50.0
Chakradharpur	47.3	28.6
Khuntpani	45.1	23.1
Goilkera	47.5	42.9
Anandpur	50.0	0.0

Source: DISE report (2015-2016)

B. Gaps in the education sector

The gaps or deficits in the education sector in West Singhbhum district as identified from analysis of the official data shows both infrastructure and resource deficit. The key shortfalls include:

a. Inadequate secondary and higher secondary level schools.
b. Lack of clean drinking water (tap water) and electricity in schools.
c. Poor enrolment in secondary and higher secondary level schools as compared to elementary level.
d. Inadequacy of teachers.

a. Inadequate secondary and higher secondary level schools

The comparative account between facilities providing elementary versus secondary and higher secondary education, clearly shows that secondary and higher secondary schools are very few in number *(See table 27: Comparison of educational facilities offering various grades of education)*. In most areas number of secondary schooling facilities is only 10 to 15 per cent of elementary schooling facilities. For higher secondary it is further low, only about five to

10 per cent. The shortage is also heavily emphasized by the members of the community as well as district officials during ground interactions *(Refer to section 4)*.

Table 27: Comparison of educational facilities offering various grades of education

Block/municipality name	Schools providing elementary education	Schools providing secondary education	Schools providing higher secondary education
Noamundi	145	21	9
Manoharpur	200	19	3
Jhinkpani	52	8	4
Manjhari	91	7	2
Chaibasa	159	21	11
Jagganathpur	167	12	4
Tonto	126	10	4
Hat Gamharia	116	9	0
Tantnagar	102	9	3
Majhgaon	107	9	3
Sonua	152	12	3
Gudri	84	3	0
Kumardungi	75	6	2
Bandgaon	209	14	2
Chakradharpur	300	28	9
Khuntpani	132	13	3
Goilkera	167	7	2
Anandpur	104	5	0

Source: DISE report (2015-16)

According to the minutes of the RMSA Project Approval Board (PAB) meeting for 2017-18, some schools in West Singhbhum district have been approved under information and communication technology (ICT) and vocational education. There are 23 schools in the district out of a total of 449 schools in the state which have been approved under ICT. Similarly, 2 schools in the district out of a total of 55 schools in the state have been approved under vocational education specifically for domestic data entry operators for tourism and hospitality sectors[35]. Given the few number of secondary schools in comparison to elementary schools, it can be concluded that more secondary schools should be included in the centrally sponsored scheme of RMSA funded projects in the district.

b. Lack of clean drinking water (tap water) and electricity in schools

On an average 95 per cent of schools in the district do not have tap water facility. The situation holds for all mining-affected areas, with Jhinkpani and Manjhari having no schools at all with tap water facility *(See table 28: Deficit in basic amenities)*.

The same trend is evident with respect to electricity access. In all rural mining-affected areas on an average 90 per cent of schools do not have electricity. In Chaibasa sadar and Noamundi on an average 70 per cent of schools do not have electricity.

Table 28: Deficit in basic amenities

Block/municipality name	Schools without tap water facility (%)	Schools without electricity (%)
Noamundi	84.3	76.5
Manoharpur	97.5	94.1
Jhinkpani	100.0	90.9
Manjhari	100.0	90.4
Chaibasa sadar	97.6	69.0
Jagganathpur	98.3	84.3
Tonto	98.4	97.6
Hat Gamharia	100.0	96.6
Tantnagar	100.0	99.0
Majhgaon	99.1	92.9
Sonua	100.0	94.8
Gudri	100.0	100.0
Kumardungi	100.0	97.4
Bandgaon	99.5	95.7
Chakradharpur	97.7	83.2
Khuntpani	99.3	95.6
Goilkera	99.4	93.5
Anandpur	100.0	94.3

Source: DISE report (2015-16)

c. Poor enrolment in secondary level schools as compared to elementary level

An analysis of the enrolment ratio shows a clear drop in enrolment for secondary level education as compared to elementary. The GER for elementary school in all blocks is more than 90 per cent. However, the ratio drops drastically at secondary level. Except for Chaibasa sadar, the drop in GER ranges between 35 to 60 per cent at the secondary level in all other mining-affected areas *(See table 29: Gap in GER at elementary and secondary level of education)*. Evidently, this translates into a much poorer enrolment at higher secondary level as indicated earlier in the analysis.

d. Inadequacy of teachers

On an average half of the elementary schools in the district do not have the required proportion of teachers (PTR 30:1), as per the RTE Act. The situation worsens for secondary schools where on an average more than 70 per cent of the schools do not have adequate teachers *(See table 30: Schools not having the required PTR)*.

Table 29: Gap in GER at elementary and secondary level of education

Block/municipality name	GER for elementary schools	GER for secondary schools	Drop in GER at secondary level
Noamundi	89.6	48.8	40.8
Manoharpur	93.5	54.2	39.3
Jhinkpani	93.0	46.2	46.8
Manjhari	93.4	36.2	57.2
Chaibasa sadar	89.7	69.3	20.4
Jagganathpur	92.6	59.1	33.5
Tonto	92.6	33.2	59.4
Hat Gamharia	95.5	32.8	62.7
Tantnagar	90.8	55.3	35.5
Majhgaon	88.6	51.6	37.0
Sonua	88.9	50.0	38.9
Gudri	91.1	19.0	72.1
Kumardungi	92.4	37.4	55.0
Bandgaon	95.0	33.1	62.0
Chakradharpur	92.4	56.3	36.2
Khuntpani	95.1	38.3	56.8
Goilkera	92.4	37.1	55.3
Anandpur	93.7	33.1	60.6

Source: District education department, West Singhbhum

Table 30: Schools not having the required PTR

Block/municipality name	Elementary schools with PTR more than 30 (%)	Secondary schools with PTR more than 30 (%)
Noamundi	56.3	71.4
Manoharpur	51.5	73.7
Jhinkpani	58.3	87.5
Manjhari	50.7	85.7
Chaibasa sadar	50.5	95.2
Jagganathpur	51.7	75.0
Tonto	52.4	80.0
Hat Gamharia	50.5	88.9
Tantnagar	50.0	100.0
Majhgaon	57.1	77.8
Sonua	51.6	75.0
Gudri	50.0	100.0
Kumardungi	56.8	66.7
Bandgaon	51.8	50.0
Chakradharpur	52.7	71.4
Khuntpani	54.9	76.9
Goilkera	52.5	57.1
Anandpur	50.0	100.0

Source: DISE report (2015-16)

3.1.4 Employment and Livelihood

Employment and livelihood is a key factor that is often related to the well-being of a population. A significant population being engaged in secure and safe livelihood is therefore important. In West Singhbhum district, the employment and livelihood situation has been analyzed on basis of the following:

a. Distribution of population employment wise.
b. Income distribution.
c. Key sources of employment and livelihood.
d. Intervention through other schemes- Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), Self Help Groups (SHGs) as promoted under National Rural Livelihoods Mission (NRLM).

A. Review of employment and livelihood parameters

a. Distribution of population employment wise

In West Singhbhum district, the proportion of working population constitutes about 46 per cent of the total population, while about 54 per cent fall under the non-working category. Among the total working population, about 23 per cent are main workers, and nearly 23 per cent are marginal workers. Therefore, considering the proportion of non-working population and marginal workers, income uncertainty is high among a significant section.

The proportion of non-working population drops by about 26 per cent, when people falling within the working age group are considered (15-59 years). As per Census (2011), among this age group, the proportion of non-working population is about 27 per cent *(See table 31: Distribution of working and non-working population in West Singhbhum district)*.

Table 31: Distribution of working and non-working population in West Singhbhum district

Category	Total workers (% of total population)	Main workers (%)	Marginal workers (%)	Non-worker (%)	Non-workers 15-59 years (%)
Total	46.3	22.8	23.4	53.8	27.3
Male	26.1	32.0	20.4	47.6	31.5
Female	2.0	13.7	26.4	59.9	68.4

Source: Census of India (2011)

The employment ratio is further highly skewed between sexes. The female participation in the workforce is extremely less, only about two per cent considering the total population. The same trend is also evident in the high proportion of women non-workers in the working age group (15-59 years).

Table 32: Area-wise distribution of working and non-working population

Block/municipality name	Total working population (%)	Main workers (%)	Marginal workers (%)	Total non-working population (%)
Noamundi	38.08	22.36	15.72	61.92
Manoharpur	48.51	15.81	32.70	51.49
Jhinkpani	41.53	22.00	19.53	58.47
Manjhari	47.77	21.76	26.02	52.23
Chaibasa	35.90	29.47	6.43	64.10
Jagganathpur	45.13	16.83	28.30	54.87
Tonto	50.17	19.07	31.10	49.83
Hat Gamharia	48.05	16.32	31.73	51.95
Tantnagar	51.13	27.77	23.35	48.87
Majhgaon	54.64	20.56	34.07	45.36
Sonua	53.12	27.64	25.48	46.88
Gudri	54.92	33.84	21.08	45.08
Kumardungi	50.04	18.28	31.76	49.96
Bandgaon	49.14	16.73	32.41	50.86
Chakradharpur	43.13	22.94	20.20	56.87
Khuntpani	43.86	30.95	12.91	56.14
Goilkera	53.43	25.02	28.40	46.57
Anandpur	52.60	23.01	29.59	47.40

Source: Census of India (2011)

Considering the mining-affected areas, in Noamundi which is the most significantly affected area, the proportion non-working population is about 62 per cent, which is more than 1.5 times the working population. In Manoharpur, another key mining-affected area, the non-working population is about 51 per cent. Therefore, it is clear that mining activities have not been able to provide livelihoods and secured employment to people living in those areas. *(See table 32: Area-wise distribution of working and non-working population).*

b. Income distribution

West Singhbhum has been recorded as a district in Jharkhand having high concentration of people living in rural areas. As per Census 2011, about 85 per cent of the population still resides in the rural areas.

Since, rural households constitute a majority of total households in the district, and also reflect a major proportion of mining-affected people, therefore for this study the income distribution among this population has been evaluated. As per the Socio Economic Caste Census (2011), in rural areas of the district, about 54 per cent of households have highest earning heads who earn less than Rs. 5000 per month, an extremely low earning *(See table 33: Income distribution in rural areas of West Singhbhum district).*

Table 33: Income distribution in rural areas of West Singhbhum district

Income/Earnings	Proportion of households earning (with highest earning heads) (%)
With salaried job	7.9
Earning less than Rs 5,000 per month	53.7
Earning Rs 5,000 to Rs 10,000 per month	37.3
Earning more than Rs 10,000 per month	8.8

Source: Socio Economic Caste Census (2011)

Further, a majority of the rural households (50.6 per cent) are dependent on manual or casual labor for earning a living, reflecting income uncertainty and instability *(See table 34: Main sources of income for households in rural areas of West Singhbhum district.)* Therefore, securing a stable and decent livelihood for people in rural areas is of utmost importance.

Table 34: Main sources of income for households in rural areas of West Singhbhum district

Main source of income	Proportion of dependent households (%)
Cultivation	24.6
Manual/casual labor	50.6
Domestic service, part time/ full time	9.1
Non-agricultural own account enterprise	0.8
Begging/alms collection/ charity support	0.3
Foraging/rag picking	1.9
Other (unspecified) sources	12.7

Source: Socio Economic Caste Census (2011)

c. Key sources of employment and livelihood

Considering sector-wise distribution of working population, specifically main workers, it can be seen that there is a clear distinction between predominantly rural areas of the districts and areas with municipalities and urban population. In areas with considerable proportion of urban population such as Chaibasa, about 60 per cent of the main workers fall under the category "other workers". This category includes employments related to construction, mining, trade, government workers, teachers etc. However, many people reported income uncertainty during FGDs and SSIs. Migration of workers has been reported to other cities and states, particularly as casual labourers, which often do not guarantee a regular income *(Refer to section 4)*.

In rural areas, including mining-affected areas, a high proportion is dependent on agriculture related activities. For example, in Manoharpur about 72 per cent of the main workers are dependent on agriculture related activities (combining cultivators and agricultural labourers). In Manjhari, this proportion is about 86 per cent *(See table 35: Categorization of main workers)*.

Table 35: Categorization of main workers

Block/municipality name	Proportion of main workers among total workers (%)	Categories of main workers			
		Cultivators (%)	Agricultural laborers (%)	Household industry (%)	Other workers (%)
Noamundi	58.7	17.9	24.2	1.5	56.4
Manoharpur	32.6	29.3	42.8	2.6	25.3
Jhinkpani	53.0	29.5	32.1	4.8	33.6
Manjhari	45.5	36.3	49.3	2.2	12.3
Chaibasa	82.1	22.9	13.3	3.5	60.4
Jagganathpur	37.3	28.1	45.9	3.3	22.7
Tonto	38.0	44.5	39.9	2.5	13.1
Hat Gamharia	34.0	35.5	49.5	2.7	12.3
Tantnagar	54.3	53.1	38.1	1.9	6.9
Majhgaon	37.6	30.9	61.1	1.9	6.1
Sonua	52.0	37.6	46.1	6.7	9.6
Gudri	61.6	71.1	23.3	0.9	4.7
Kumardungi	36.5	32.8	56.9	2.8	7.5
Bandgaon	34.0	48.9	37.5	4.6	8.9
Chakradharpur	53.2	26.8	29.1	7.9	36.1
Khuntpani	70.6	44.6	30.7	2.9	21.9
Goilkera	46.8	38.9	49.1	2.3	9.7
Anandpur	43.7	44.1	48.1	1.6	6.2

Source: Census of India (2011)

Industries related employment: West Singhbhum is part of the eight major zones based on raw material deposits and industrialisation as categorized by the state government. It is part of Singhbhum industrial area (Jamshedpur and Adityapur) and Singhbhum, Kolhan division, with industries such as iron and steel, automobile and auto components, cement, uranium, information technology based etc. Besides there are also some industrial activities related to available forest products, horticultural, food processing, silk and textile[36].

As discussed earlier, mining constitutes one of the key industrial activities in the district owing to the rich mineral resources. Some of the key companies include SAIL, Usha Martin, Tata Steel, RML. Besides mining, other large industrial establishments of the district include South Eastern Railway Engineering workshop located at Sini, ACC cement plant at Jhinkpani and the Seraikela Glass works Private Limirted located at Kandra.

Besides these, there are some other important industries/industrial activities on which a significant proportion of people depend. These include, *biri* making and manufacturing of tobacco products, flour mills, rice mills, saw mills, etc., which are present in both rural and urban areas. There are also various micro and small scale enterprises related to agro based, chemical based products and handicrafts, wood based furniture etc. *(See table 36: Micro and small scale industries and employment).*

Table 36: Micro and small scale industries and employment

Types of Industry	No. of units	No. of people employed
Agro based	125	488
Soda water	09	278
Ready-made garments and embroidery	53	196
Wood/wooden furniture	185	589
Paper and paper products	48	300
Leather based	42	73
Chemical/chemical based	60	800
Rubber, plastic and petro based	51	250
Mineral based	43	378
Metal based	97	273
Engineering units	568	3000
Electrical machinery and transport equipment	31	1200
Repairing and servicing	25	234
	123	759

Source: MSME report for West Singhbhum (2016-17)

Agriculture-related livelihood: In West Singhbhum district overall, about 23 per cent of the land use comes under gross cropped area. In many of the rural parts of the district, including in some of the mining-affected blocks such as Jhinkpani and Chaibasa, the gross cropped area is about 37 per cent to 40 per cent.

The district has a cropping intensity of about 116 per cent. Jhinkpani and and Manjahri blocks have the highest cropping intensity of nearly 146 per cent and 133 per cent respectively[37]. The major crops cultivated in the district are cereals (paddy, wheat, maize), pulses, oilseeds (groundnut, mustard and rapeseed) and various vegetables.

A significant proportion of the district's population, particularly in the rural areas, is dependent on agriculture for livelihood. For example, in areas such as Tantnagar, Majhari, Tonto, Hat Gamharia Majhgaon, Gudri, Kumardungi, Bandgaon, Golkera, Anandpur, Sonua and Khuntpani, the per cent of main workers who are dependent on agriculture-related activities ranges from 75 per cent to 95 per cent. Such reliance on agriculture to earn a living is also visible in some mining-affected areas. For example, in Manjhari with 100 per cent rural population, more than 86 per cent of main workers are reliant

on agriculture-related activities (combining cultivators and agricultural labourers). In Manoharpur, which has more than 86 per cent rural population, about 72 per cent of main workers are agriculture dependent.

However, mining activities in these areas have affected agricultural productivity over years, reducing the proportion of people who can depend on it for livelihood. The major reasons include shrinking of agricultural land and pollution of water and soil. This has particularly been captured through FGDs and SSIs *(Refer to section 4)*.

A majority of the farming community constitutes of small and marginal farmers. As noted in the district irrigation plan, out of the total cropped area, 75 per cent belong to small and marginal farmers. However, the average operational land holding for this category is only about 0.85 ha[38].

Forest-based livelihood: There is significant forest cover in the mining-affected areas of West Singhbhum district, indicating the potential of forest resources for livelihood enhancement in these areas. The two most mining-affected areas of the district Manoharpur and Noamundi, has about 37 per cent and 39 per cent of forest cover respectively. The two areas also have significant proportion of ST communities, about 67.4 per cent in Manoharpur, and 58 per cent in Noamundi.

The district holds significant scope of forest based livelihood and ownership opportunities as provided under Forest Rights Act (FRA, 2006). The FRA recognizes and emphasizes community-based governance of forests. The Act specifically provides for the recognition of forestlands as community forest resource areas and exercising community rights over it. This offers two crucial benefits for the forest-dwelling communities. First it gives communities the right to manage forest resources, and secondly to secure livelihoods from such resources. The recognition CFR rights thus have enormous potential for decentralized management of forest resources and improvement of ecological and economic services in CFR areas, contributing to well-being of communities, particularly marginalized groups.

While, forest based resources are potentially a key source of livelihood for a significant part of the population, the enumeration of livelihoods based on forest resources is poor. The situation can be somewhat on the basis of data obtained (which is not comprehensive) on forest rights settlement from district officials and as captured through ground interaction with people. The data as obtained suggest that for community forest rights (CFR), out of 88 claims received till April 2017, all were settled with a land extent of 2083 ha. For individual forest rights (IFR), of the 7,624 claims made by Gram Sabhas, 6186 claims were. The extent of land for which IFR titles deeds were issued was about 10,621 ha.

However, during ground interactions, people's perspective differed and they expressed concern with respect to settlement of rights. Also, the need of support for improved market linkages and get better pricing for forest products (non timber forest products) was repeatedly brought up *(Refer to section 4)*.

d. Intervention through other schemes

The MGNREGS is aimed at improving livelihood security of the rural and ensure wage employment of at least 100 days per household annually. However, MGNREGS has not been very successful in securing wage employment in the mining-affected areas. The viability of this scheme is largely compromised by the availability of land in the mining areas. Additionally, there have been challenges of sufficiently available works, availability of work as per skills of people, accessibility/ distance to work, timely payment of wages etc.

In the mining-affected areas of the district- Manoharpur, Noamundi, Jhinkpani, Manjhari, Chaibasa and Jagganathpur, only a fraction of the households who had taken up work under MGNREGS in 2016-17, has completed 100 days of employment. The proportion in most areas is less than one per cent *(See table 37: Average days of employment generated and completed under MGNREGS).*

Table 37: Average days of employment generated and completed under MGNREGS

Block name	Person days of employment provided per household	Total no. of households worked	Total no. of households completed 100 days of wage employment
Noamundi	33	5,142	54
Manoharpur	40	5,980	280
Jhinkpani	30	2,732	16
Manjhari	28	4,406	29
Chaibasa	31	4,545	27
Jagganathpur	34	8,954	32
Tonto	24	6,134	12
Hat Gamharia	34	5,284	70
Tantnagar	27	4,664	12
Majhgaon	36	5,718	47
Sonua	35	7,549	38
Gudri	31	1,978	16
Kumardungi	34	3,967	76
Bandgaon	33	7,083	124
Chakradharpur	25	8,007	57
Khuntpani	25	4,792	26
Goilkera	34	6,484	71
Anandpur	41	3,708	18

Source: MGNREGA MIS report (2016-2017)

However, work taken up under MGNREGS if envisioned well, and converged with the prospects of other schemes, can create better earning opportunities and also create sustainable assets. For example, in mining-affected blocks such as Manoharpur, Noamundi, Manjhari, Jagganathpur, Chaibasa and Jhinkpanir, rural drinking water projects can be a key area to focus on. Also increasing scope of micro irrigation works, renovation of traditional water bodies etc., can help to secure agriculture-based livelihoods in these areas *(See table 38: Type of work generated under MGNREGS in mining-affected areas).*

To harness, conserve and develop degraded natural resources such as water, soil and vegetation cover, the Ministry of Rural Development is implementing Prime Minister Krishi Sinchayee Yojna - watershed development component (WDC-PMKSY) - across various districts of India including West Singhbhum. The intervention in watershed development has multipronged benefits which includes prevention of soil erosion, regeneration of natural vegetation, rain water harvesting and recharging of the ground water table. This in turn will benefit agro-based activities and can provide sustainable livelihoods to the people residing in the watershed area. Further, Agriculture Technology Management Agency (ATMA) focuses on awareness generation and capacity building of the beneficiary farmers on water distribution, efficient use of water and water saving technologies etc. Thus, a convergence of MGNREGS with integrated watershed development approaches can enhance the livelihood opportunities of people in the district.

Table 38: Type of work generated under MGNREGS in mining-affected areas

Work types	No. of works/ projects in various areas					
	Noamundi	Manoharpur	Jhinkpani	Manjhari	Chaibasa	Jagganathpur
Anganwadi/other rural infrastructure	0	1	0	0	0	0
Bharat Nirman Rajeev Gandhi Sewa Kendra	0	0	0	1	0	0
Drought proofing	0	15	2	0	11	8
Flood control	0	4	0	0	0	0
Land development	8	5	78	10	117	2
Micro irrigation	27	0	29	98	69	115
Other works	2	2	0	0	3	0
Renovation of traditional water bodies	12	1	3	0	2	0
Rural connectivity	225	107	119	146	138	278
Rural sanitation	102	0	42	7	9	12
Water conservation and water harvesting	358	599	251	540	589	608
Works on Individuals land	180	391	179	9	123	176

Source: MGNREGA MIS report (2016-2017)

Besides MGNREGS, the NRLM aims at reducing rural poverty by enabling poor households to access gainful self-employment and skilled wage employment opportunities through women self help groups (SHGs). The mission has been designed to bring about a sustainable improvement in the livelihoods of the poor through building strong community institutions. A central objective of the mission is to establish efficient and effective institutional platforms of the rural poor that can enable them to increase household incomes through livelihood enhancements and improved access to financial and public services.

In West Singhbhum, as per official data available from district authorities, there are about 10,365 women SHGs in the district with an average of 12 members. Among these, nearly 46 per cent SHGs have been provided with revolving fund. For others loans have been approved or are pending. Further only about 20 per cent of the SHGs are engaged in income generation livelihood activities *(See table 39: SHGs in various blocks of West Singhbhum district)*.

Table 39: SHGs in various blocks in West Singhbhum district (covered only under NRLM)

Block name	No. of SHGs	No. of SHGs provided revolving fund	Average no. of members in a SHG	No. of SHGs engaged in income generation livelihood activities
Noamundi	763	218	12	152
Manoharpur	1048	910	12	209
Jhinkpani	400	140	12	80
Manjhari	788	137	12	157
Chaibasa	222	0	12	44
Jagnathpur	1090	606	12	218
Tonto	33	0	12	6
Hatgamharia	695	365	12	139
Tantnagar	758	435	12	151
Majhgaon	328	0	12	65
Sonua	33	0	12	6
Gudri	14	0	12	2
Kumardungi	388	0	12	77
Bandgaon	0	0	0	0
Chakradharpur	1486	167	12	297
Khuntpani	1124	973	12	224
Goilkera	842	770	12	168
Anandpur	353	0	12	70

Source: District rural development agency, West Singhbhum

B. Gaps in employment and livelihood

Considering the overall employment situation and livelihood opportunities in the district, the following outstanding issues emerge which needs attention:

a. About 54 per cent of people are non-workers; within the working age group the proportion is more than 27 per cent.
b. Earnings are significantly low in rural areas, about 54 per cent of rural households have highest earning member getting less than Rs. 5,000 per month.
c. The potential of livelihood around local resources, such as forest-based resources is undermined.
d. Agriculture based livelihoods has been affected due to mining-related pollution and land availability issues.
e. Rural livelihood schemes ineffective in enhancing earnings. Schemes such as MGNREGS are limited due to poor land availability, inadequate work, wage payment issues. For women SHGs under the NRLM, having loan support and training and capacity building for livelihood generating activities emerged as key issue.
f. Out migration is a challenge for the tribal people of the region, who migrate to other states in search of work. However, most of the migrants end up being casual laborers.

3.2 Public amenities and infrastructure

The status of basic public amenities in West Singhbhum district, including the mining-affected areas, has been reviewed on the basis of the following key parameters:

a. Access of households to clean drinking water.
b. Sanitation/latrine facilities.
c. Access to electricity.
d. Road connectivity.

Based on the situation on each of these, the overall gaps in basic amenities have been identified.

A. Review of public amenities and infrastructure

a. Access of households to clean drinking water

Availability of clean drinking water is a major challenge in the district, particularly in the mining areas. Given the high levels of pollution, only treated tap water can be assumed to be relatively safe.

However, most households rely heavily on untreated groundwater sourced through hand pumps or uncovered wells. The proportion of households using treated tap water is extremely low in rural parts of the districts including the mining-affected blocks of Manoharpur, Jhinkpani, Manjhari, Chaibasa and Jagganathpur. In Noamundi, which is highly affected, though the situation is comparatively better, but considering the pollution in this area, treated tap water access for only 32 per cent households is a serious concern *(See table 40: Percentage of households by main source of drinking water).*

Table 40: Percentage of households by main source of drinking water

Block/municipality name	Hand pumps (%)	Boreholes (%)	Un-covered well (%)	Covered well (%)	Treated tap water (%)	Other sources (%)
Noamundi	40.6	2.3	8.4	0.8	32.2	0.4
Manoharpur	39.1	1.1	25.0	1.3	7.4	1.6
Jhinkpani	67.7	0.2	15.2	2.0	7.8	1.1
Manjhari	61.3	1.2	24.7	0.4	3.2	0.3
Chaibasa	72.3	4	5.0	0.8	13.6	0.2
Jagganathpur	48.0	9.0	27.3	0.5	7.2	1.2
Tonto	77.3	0.5	5.4	0.2	0.9	0.5
Hat Gamharia	54.6	1.4	30.9	0.4	3.3	3.6
Tantnagar	80.6	2.5	12.0	0.4	3.2	0.1
Majhgaon	46.3	2.6	26.8	1.6	3.3	0.9
Sonua	78.9	1.5	11.6	0.6	0.5	0.1
Gudri	6.34	0.9	26.8	0.2	1.2	3.2
Kumardungi	67.6	1.2	21.5	0.4	1.2	1.3
Bandgaon	42.3	0.1	33.0	0.8	1.9	4.5
Chakradharpur	64.8	3.5	13.9	0.7	8.8	1.3
Khuntpani	85.1	0.1	6.4	0.3	1.1	0.9
Goilkera	61.0	1.3	7.6	0.5	1.8	2.3
Anandpur	17.6	0.5	70.3	0.8	1.4	1.7

Source: Census of India (2011)

b. Sanitation/ latrine facilities

Open defecation has been observed to be very high particularly in the rural areas of West Singhbhum district *(See table 41: Percentage of households by type of latrine facilities)*. However, there has been considerable progress in the district for making villages and towns open defecation free (ODF) through funds available under Swachh Bharat Mission (SBM). As per latest statistics, the district has individual household latrine (IHHL) coverage of 85.84 per cent[39].

However, the responses of communities captured through FGDs has typically brought out that there are still a number of households in the district that either are not in use or have dysfunctional toilets without water supply and proper drainage (*Refer to section 4*). A particular concern also remains with useable toilets in schools and AWCs as reviewed earlier.

Table 41: Percentage of households by type of latrine facilities

Block/ municipality name	Flush/pour latrine			Pit latrine (%)	Night soil disposed into open drain (%)	Open defecation (%)
	Piped sewer system (%)	Septic tank (%)	Other (%)			
Noamundi	15.3	11.0	0.5	0.5	0.1	71.1
Manoharpur	0.5	6.5	0.5	0.1	0.05	90.8
Jhinkpani	4.0	3.0	0.7	0.7	0.08	88.9
Manjhari	0.07	0.4	0.1	0	0.1	96.8
Chaibasa*	2.3	32.0	1.2	0.8	0.09	62.2
Jagganathpur	0.6	8.5	0.6	1.1	0.08	88.5
Tonto	0.03	0.4	0.1	0.1	0.06	97.3
Hat Gamharia	0.2	1.3	0.2	0.7	0.1	97.0
Tantnagar	0.06	0.6	0.6	0.3	0.03	96.7
Majhgaon	0.4	1.2	0.8	1.3	0.06	94.1
Sonua	0.1	3.2	0.2	0.4	0.08	94.0
Gudri	0.1	0.07	0.1	0	0.1	99.5
Kumardungi	0.1	0.7	0.6	0.9	0.1	96.5
Bandgaon	0.06	1.4	0.2	0.1	0.07	96.7
Chakradharpur*	0.8	18.3	0.8	0.6	0.1	77.6
Khuntpani	0.6	0.6	0.2	1.4	0.05	96.6
Goilkera	0.03	2.2	0.1	0	0.07	96.8
Anandpur	0.07	1.0	0.5	0.2	0.05	96.1

Source: Census of India (2011)

c. Access to electricity

The household electricity access is poor in almost all of the mining-affected areas except Noamundi and Chaibasa (*See table 42: Percentage of households by main source of lighting*). The problem is particularly pronounced in rural areas. For example, in Manjhari, a rural mining-affected block, on about nine per cent of households has electricity supply.

Besides households, reliable availability of electricity at other important public facilities such as healthcare centres and schools remain a concern, as reviewed earlier. As per FGDs and interviews with various stakeholders, power cuts and irregular supply has been captured as key problem with respect to households as well as such public facilities *(Refer to section 4)*.

Table 42: Percentage of households by main source of lighting

Block/municipality name	Electricity (%)	Kerosene (%)
Noamundi	62.6	35.8
Manoharpur	38.1	58.8
Jhinkpani	54.2	44.8
Manjhari	8.9	84.13
Chaibasa	77.8	21.6
Jagganathpur	53.1	44.6
Tonto	14.6	80.3
Hat Gamharia	30.2	68.7
Tantnagar	5.0	93.9
Majhgaon	49.5	45.9
Sonua	53.5	46.2
Gudri	0.1	86.4
Kumardungi	41.7	55.6
Bandgaon	18.2	62.7
Chakradharpur	42.5	56.9
Khuntpani	29.3	62.9
Goilkera	40.2	50.3
Anandpur	10.8	84.0

Source: Census of India (2011)

d. Road connectivity

The district is well connected by a network of roads which are pucca roads and metalled. National Highway 33 runs through the district covering sections on the Chaibasa-Chakradharpur-Ranchi and Chaibasa-Huludpokhar road and stretching about 140 kms. Besides NH 6, Pardinlink and NH 32 also run through the district.

All the mining-affected blocks are almost well connected to the district headquarters by major thoroughfares. However, the problem lies with rural connectivity. The rural road density in Jharkhand is 516 km per 1000 sq. km., while the national average stands at 806.6 km per 1000 sq.km. The fact has also been further supported during ground level interaction, particularly in the rural areas, where it was pointed out that there is lack of all weather roads in Manoharpur and Noamundi blocks. Movement of heavy vehicles in mining areas further worsens the road condition around. This has limited people's access to basic facilities such as healthcare, education, market etc. *(Refer to section 4).*

B. Gaps in access to basic public amenities

The key gaps or deficits with respect to access of basic public amenities in mining-affected areas as identified from analysis of the official data include:

a. Poor access to treated tap water.
b. Usability of toilet facilities.

a. Poor access to treated tap water

Most of the mining areas have very poor access to treated tap water. Household using untreated water in mining-affected blocks such as Monaharpur, Jhinkpani, Jagganathpur and Manjhari is more than 90 per cent. *(See table 43: Overall deficit of basic public amenities)*. This is the one of the most pressing problems as brought out by various constituencies during FGDs and SSIs.

b. Usability of toilet facilities

While under SBM many toilets have been constructed in the district, their usability and proper supporting sanitation infrastructure remains a key challenge. During ground level interactions, people have pointed to lack of water, dysfunctional toilets, half constructed toilets, poor drainage systems as an impediment towards usage of toilets *(Refer to section 4)*.

Table 43: Overall deficit of basic public amenities

Block/municipality name	Households without treated tap water (%)	Households defecating in open (%)
Noamundi	67.8	71.1
Manoharpur	92.6	90.8
Jhinkpani	92.2	88.9
Manjhari	96.8	96.8
Chaibasa*	86.4	62.2
Jagganathpur	92.8	88.5
Tonto	99.1	97.3
Hat Gamharia	96.7	97
Tantnagar	96.8	96.7
Majhgaon	96.7	94.1
Sonua	99.5	94
Gudri	98.8	99.5
Kumardungi	98.8	96.5
Bandgaon	98.1	96.7
Chakradharpur*	91.2	77.6
Khuntpani	98.9	96.6
Goilkera	98.2	96.8
Anandpur	98.6	96.1

Source: Census of India, 2011

3.3 Environmental pollution and degradation

High concentration of iron ore mines and various industrial activities (such iron and steel plants, sponge iron units, cement plants) have been identified as some of the key contributors to the severe pollution in West Singhbhum district. The Jharkhand State Pollution Control Board (JSPCB) has identified a list of 17 "highly polluting" industrial units in Jharkhand, among which three are in West Singhbhum[40]. These constitute two sponge iron plants (located in

Jhinkpani and Noamundi blocks) and one cement plant (located in Jhinkpani block).

However, the availability of environmental data has been a challenge for gauging the level of pollution in the district and mining areas. Community interactions during FGDs and SSIs have been relied on to highlight some of the environmental problems of the area in terms of ambient air, water and soil pollution *(Refer to section 4)*.

The two factors considered for gauging the status of environmental pollution and degradation in the mining-affected areas are:

a. Air pollution/ Ambient air quality (AAQ).
b. Water pollution and groundwater depletion.

a. Air pollution/ Ambient air quality

The poor air quality around the mining areas is visible to the naked eye from the red iron ore dust. Opencast mining activities, transportation of mined minerals, drilling, blasting, crushing activities, poorly maintained roads etc., all contribute to such pollution[41]. However, the recorded data on air- quality captures little of the perceived situation.

The Ministry of Environment, Forest and Climate Change (MoEF&CC), provides some information on air pollution levels in West Singhbhum as recorded for the years 2011, 2012 and 2015. As per the Union environment ministry's submission in the Rajya Sabha, the level of PM10 ranges between was 111 μg/ m^3 to 231 μg/m^3, which exceeds the prescribed average of 60 μg/ m^3 *(See table 44: Air quality status of West Singhbhum for 2011, 2012 and 2015)*.

While the recorded data speaks little, the pollution burden in the area was heavily emphasized by communities during FGDs and SSI's particularly in Noamundi and Manoharpur blocks. It has not only been detrimental for health particularly for people around mining areas, but also has reduced agricultural productivity in the region *(Refer to section 4)*.

Table 44: Air quality status of West Singhbhum for 2011, 2012 and 2015 (Annual average (μg/ m^3)

Data recorded for the year	Parameters		
	PM10	SO_2	NO_2
2011	231	24	34
2012	153	19	27
2015	111	18	23

Source: MoEF&CC, Rajya Sabha questionnaire dated Nov 26, 2016 and National Ambient Air Quality Status and Trends report for 2011, 2012

b. Water pollution and groundwater depletion

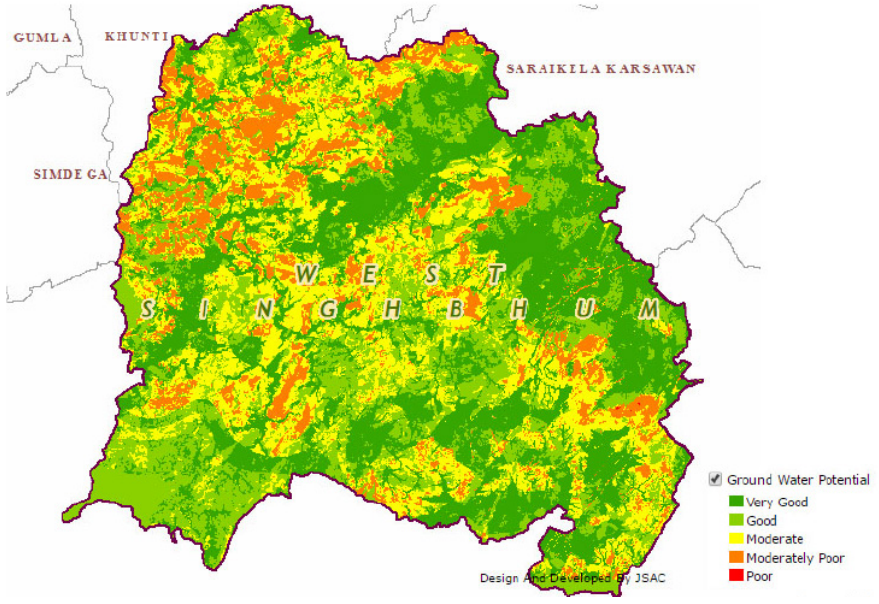
West Singhbhum district, including the mining-affected areas, has serious problem of ground and surface water pollution resulting from mining and other industrial activities. Clean drinking water is a key challenge in the

district, which is also well recognized in the district's latest irrigation plan. It has been noted that effluents discharged from the mining sites have seriously polluted the streams and underground water table in many areas which has contributed to major drinking water problem[42].

The leachate generated from mine waste contains heavy metals which pollute the surrounding surface and ground water resources and directly affect the water quality of the district. Scientific studies on water pollution in West Singhbhum district (including sampling areas around the mines) have shown the presence high concentrations of iron (above 1.0 mg/l) and nitrate (above 45 mg/l), exceeding the prescribed Bureau of Indian Standard (BIS) norms[43]. Other scientific studies conducted in Noamundi block also indicate high iron content in some areas of the block which is more than three to four times the permissible limit[44].

Besides water pollution, water potential and availability is also a concern for the district. An overall analysis of the existing water availability against the current and future water demand indicates water stress[45]. As per the analysis, the existing water availability combining surface and ground water sources is about 1.17 billion cubic meter (BCM). However, the current water demand is 1.71 BCM, and is projected to be about 1.97 BCM by 2020. Therefore, the water gap will also increase from current 0.54 BCM to 0.79 BCM by 2020. A mapping of the ground water potential in the district also shows that in various parts of the mining-affected blocks of Manoharpur, Noamundi, Jagganathpur, Manjhari and Jhinkpani, it is moderate to moderately poor *(See figure 4: Groundwater potential in West Singhbhum district)*.

Figure 4: Groundwater potential in West Singhbhum district



Source: District Irrigation Plan (2015-20)

Section 4: Situation analysis through participatory rural appraisal

To complement the quantitative data and to understand the status of various socio-economic, human development issues further by engaging with concerned stakeholders a process of participatory rural appraisal (PRA) was followed by engaging with concerned stakeholders. This constituted of conducting focus group discussions (FGD) with various demographic groups and holding semi-structured interviews (SSI).

Focus group discussion (FGD): FGD is a 'structured group review' process, conducted to stimulate participants to reveal their views, beliefs, perceptions about particular issue(s) and capture their understanding and opinion objectively.

For the purpose of this study, FGDs has been conducted through randomized sampling of representative population in two village(s) of two mining-affected blocks – Noamundi and Manoharpur, along with block panchayat functionaries and block development officials. *(See table 45: FGDs in mining-affected areas)*. The total number of sample size considering all FGDs is about 162.

To capture the maximum possible diversity in people's perceptions and needs, the following types of FGDs were conducted in each mining-affected block:

1. **FGD of various demographic groups-** This was held with two constituencies, including:
    i. **General populace FGD -** This included representative population-both male and female, from various demographic groups including, Scheduled Castes (SC), Scheduled Tribes (ST) and Other Backward Classes (OBC).
    ii. **Women FGD** – FGD were help with women separately to understand their specific issues. This had representation from teachers, self-help group (SHG) representatives, various frontline workers like ASHAs and Anganwadi workers.

2. **Block panchayat FGD-** This was held with block panchayat functionaries of the mining-affected blocks.

3. **Block development official FGD-** This was held with various block development officials of the mining-affected blocks.

Semi structured interviews (SSI): SSI is a method of social evaluation and collecting information which is done on the basis of predetermined but open-ended questions. It provides an opportunity to receive information from (as well as give information to) the interviewees in a conversational but focused manner. For the purpose of this exercise, SSI was particularly held with communities during site visits in mining-affected areas including tribal hamlets of those areas, civil society organization (CSO) representatives, and concerned district and block officials. The total sample consulted through SSIs was about 45. Therefore between all FGDs and SSIs held in the mining-affected areas, a total of 207 people have been consulted through the process of PRA.

Table 45: FGDs in mining-affected areas

Name of block	Place where focus group was held	Type of focus group	Total no. of participants	Composition of participants
Noamundi	Sarbil village, Mahudi panchayat	General	32	M: 11; F: 21
	Sarbil village, Mahudi panchayat_	Women	18	
	Mundasai tola, Mahudi panchayat	ST group	30	M: 14; F: 16
		Block development officials	3	
Manoharpur	Ankua village	General	24	M:10; F: 14
	Chiriya village	Women	21	
	Panchayat bhavan, Munda tola, Chiriya village	ST group	26	M:15; F: 11
		Block development officials	8	

4.2 Observations from focus group discussions

The FGDs as held with various socio-demographic groups in the mining-affected areas bring out the key challenges with respect to various socio-economic, human-development and environmental conditions as perceived by the communities. It also provides an understanding on the key issues that DMFs should consider for intervention so that the needs of the people are appropriately addressed.

For the purpose of concise representation, the key issues/ problems identified by the people and those need to be addressed have been highlighted (*See table 46: Key issues highlighted by communities in mining-affected areas)*. The issues also capture the opinion of the majority, representing the observation and opinion of at least 50 per cent or more of the representative sample. However, in most cases the majority opinion reflects the response of 70-90

per cent of participants/ respondents. The majority response is denoted as "Very poor" as applicable for respective mining-affected blocks. A mid range response of 50 to 70 per cent of participants is denoted as "Poor" and a response of less than 50 per cent is denoted as "not significant". Absence of a response by the participants has been denoted as "No response".

Table 46: Key issues highlighted by the community groups in mining-affected areas

Block name	Constituency	Key issues
Noamundi	General	Clean drinking water Deforestation due to mining Pollution – air, water and soil Quality healthcare Quality education
	Women	Clean drinking water Health-chronic diseases Reduction in forest produce Education Skill development
	Schedule tribe	Clean drinking water Deforestation Air pollution Livelihood
	Block	Health Pollution- air, water and soil Education Employment
Manoharpur	General	Water quality availability for drinking, agriculture and daily use Unemployment Electricity Health Pollution-water
	Women	Lack of clean drinking water Sanitation Unemployment Education-particularly about high dropout post primary level
	Schedule Tribe	Lack of clean drinking water Health Pollution-air and water Deforestation
	Block	Unemployment Electricity availability Drinking water Pollution

4.3 Perception on issues sector-wise

a. Perception on health and public healthcare system

Most of the villagers reported poor presence of health facilities and prevalence of diseases such as tuberculosis, malaria, jaundice, typhoid, and diarrhea. For example respondents of Chiriya village complained high prevalence of diseases such as malaria (80 per cent), TB (80 per cent) and jaundice, typhoid, diarrhea (90 per cent).

Availability of health facilities were reported to be poor and respondents highlighted lack of adequate beds, equipments, irregular ambulance service, medicines at health facilities. Poor availability of doctors and nurses at the health centres were noted as a major problem by most *(See table 47: Key concerns and factors for improvement in public health).*

Table 47: Key concerns and factors for improvement in public health

Issues	Key challenges and factors identified	Block name	
		Noamundi	Manoharpur
Disease burden	Respiratory/lung problems	High	Moderate
	Tuberculosis	High	High
	Skin problems – allergies and infections	High	Moderate
	Kidney stones	Not significant	Not significant
Infrastructure	Number of primary healthcare facilities	Very poor	Poor
	Poor health infrastructure- beds, ambulances, medicines	Very poor	Very poor
Resources and access	Lack of paramedical staff including full time doctors	Very poor	Very poor
	Poor access to nearest health facility (average distance travelled about 5-10 kms)	Very poor	Poor
	No or inadequate health coverage	Very poor	Very poor

b. Perception on nutrition and food security

The concerns regarding nutrition are primarily focused on availability of various services as available through AWCs resources. Majority of the respondents pointed that while they receive some nutrition support-*Punjeri* (ready to eat nutritious food packet) at AWCs, but other issues such as health monitoring, health education are poor *(See table 48: Key concerns and factors for improvement in nutrition and food security).*

Concerns were also raised about food security. For example, in Noamundi, coverage of PDS was reported to be unsatisfactory as people typically receive low ration. Similarly, in Manoharpur, people reported that though they have ration cards but the supply of ration is inadequate and insufficient for a family of five or more members.

Table 48: Key concerns and factors for improvement in nutrition and food security

Issues	Key challenges and factors identified	Block name	
		Noamundi	Manoharpur
ICDS related	Nutrition support from AWCs	Poor	Not significant
	Adequacy of nutrition provided	Not significant	Not significant
	Nutrition education	Poor	Poor
	Nutrition and health monitoring	Poor	Poor
PDS related	Timely ration	Not significant	Poor

c. Perception on education

In both the blocks, the main issues highlighted by respondents were related to quality of education and lack of resources and infrastructure *(See table 49: Key concerns and factors for improvement in education)*. Access to higher education was a major concern in the studied blocks. While there are elementary schools in and around the villages, distance to secondary schools has been noted as a major concern, more so for the girl child. Some of the villagers were not willing to send their girl child because of lack of transportation and concerns of their safety. In the absence of schools buses, people are forced to either use private vans which add to the expense, or drop-out from the school. Lack of hostels further compounds this problem. Economic issues also emerged as a key concern for continuing education through secondary levels and beyond

Apart from infrastructure, most of the villagers expressed their concerns over non availability of adequate teachers and irregular attendance of existing teachers. In cases where teachers are present, they pointed that teachers are preoccupied with other tasks (like preparing schools for various government run programmes, elections etc.) or do not take classes regularly.

Table 49: Key concerns and factors for improvements in education

Issues	Key challenges and factors identified	Block name	
		Noamundi	Manoharpur
Infrastructure	Inadequate schools for elementary education	Not significant	Poor
	Inadequate schools for secondary education	Poor	Very poor
	Basic infrastructure in schools, particularly toilet and electricity	Poor	Poor
Resources and access	Quality of teachers	Poor	Poor
	Inadequate teachers in school	Poor	Poor
	Access to schools (particularly secondary level)	Poor	Poor
Financial assistance	Scholarships	Poor	Poor

d. Perception on employment and livelihood opportunities

Lack of employment opportunities and adequate livelihood options is one the most pressing concerns reported by almost all respondents *(See table 50: Key concerns and factors for improvement in employment and livelihood)*. In both mining-affected blocks, most people are working are casual labourers.

Among females, majority of them are engaged in collection of non timber forest produce (NTFP) and firewood to meet their livelihood needs. However, villagers expressed that over the years due to mining, the forest area has reduced in their region putting pressure on the availability of NTFP. Respondents said that the available forest produce is used by them on subsistence basis. They lack the knowledge or support for marketing/selling NTFP and related products.

Settlement of CFR and IFR under FRA was also reported to be poor in both the blocks. The respondents said that ownership of the land could help in afforestation activities by community and help to generate income through forest produce.

Mining has also affected agricultural productivity in the region. Lack of income security has prompted out migration. People migrate to other states such as Tamil Nadu, Mumbai, Andhra Pradesh etc. for casual labour work.

Respondents of both the blocks reported having job cards under MGNREGA. However, they complained about unavailability of regular work and delay in payments. Most of the MGNREGA work is concentrated around construction of *Dobhas* and wells etc.

Respondents, particularly young people, noted the need of placement based skill training. Members of SHG groups expressed the need for training and loan support for income generation activities such as sericulture, lac cultivation, horticulture, handicraft, beekeeping, sewing, plate making, candle making etc.

Table 50: Key concerns and factors for improvement in employment and livelihood

Issues	Key challenges and factors identified	Block name	
		Noamundi	Manoharpur
Employment	Status of full-time employment	Very poor	Very Poor
	Work training that provides job	Poor	Very Poor
	Availability of loan support	Poor	Poor
	Support for small businesses	Poor	Poor
Livelihood around local resources	Support for agriculture based livelihoods	Very poor	Very poor
	Support for forest based livelihoods	Very poor	Very poor
Government schemes	Work availability under MGNREGA	Very Poor	Poor

e. Perception on welfare support available for vulnerable groups

In Manoharpur block, most respondents reported poor welfare support and pension for elderly, disabled and widows. People also raised concerns over inadequate coverage and low amount of pension support they receive under government pension scheme. For the identification of genuine beneficiaries, respondents expressed the need for devolution of more power to gram sabhas. It was also expressed that regular and timely pension to the elderly, disabled and the widows should be ensured. (*See table 51: Key concerns and factors for improvement of welfare support to vulnerable groups).*

Table 51: Key concerns and factors for improvement of welfare support to vulnerable groups

Issues	Key challenges and factors identified	Block name	
		Noamundi	Manoharpur
Pension funds and delivery	Adequate pension	Very poor	Poor
	Delayed pension	Poor	No response
	Difficulty in receiving pension due to access issues, no doorstep delivery of pension	Very poor	No response

f. Perception on supply of and access to public amenities

The most pressing concerns with regard to public amenities were related to unavailability of clean drinking water, proper sanitation and irregular supply of electricity. *(See Table 52: Key concerns and factors for improvement in public amenities).*

Clean water availability: The primary source of water as reported in both the blocks was hand pumps, wells and river. Respondents of Noamundi block reported hand pumps and wells as their major source for water while people of Manoharpur reported local river along with hand pumps and wells. Respondents of Noamundi block expressed that they many of them have to travel long distances to fetch water for drinking purpose. To address the problem of water, *Jal Minaar* was being constructed by district administration to cover cluster of three to four panchayats.

Contamination of water due to mining was reported in both blocks and people pointed that the water usually red. They also reported acute shortage of water during summer as wells and hand pumps dry up. The interventions demanded by respondents were related to providing treated piped water supply, building of check dams and watershed management for water preservation.

Sanitation: Most respondents reported construction of toilets under the Swachh Bharat Mission. However, fewer toilets were reported to be in use due to lack of water. Respondents also pointed to incomplete construction, lack of drainage systems and poor sewage management.

Electricity: Respondents of both the blocks reported presence of electricity under rural electrification scheme. However, unreliable power supply was highlighted as a major problem.

Table 52: Key concerns and factors for improvement in public amenities

Issues	Key challenges and factors identified	Block name	
		Noamundi	Manoharpur
Clean drinking water	Availability of treated clean water	Very poor	Very poor
	Reliable and adequate supply	Very poor	Only for township area by company
	Delivery by government intervention/ schemes	Construction of Jal Minaar in progress	Poor
Sanitation	Toilet facilities with water supply	Poor	Very poor
	Drainage	Very poor	Very poor
Electricity	Electricity supply specially at night	Poor	Poor

g. Perception on environmental pollution

The key environmental pollution issues highlighted by communities included air, water and soil pollution *(See table 53: Key concerns and factors for improvement in environmental pollution)*

All respondents reported heavy air pollution due to iron ore dust from mining operations in the region. This has resulted in prevalence of respiratory ailments. The air pollution (coupled also with soil pollution) had also affected the agricultural productivity as well as has affected forest produces.

Water, as reported by respondents, is contaminated and there is acute shortage of clean drinking water. They also feel that this is one of the key reasons behind high prevalence of water borne diseases. People also reported that high prevalence of diseases has affected their working ability.

Table 53: Key concerns and factors for improvement in environmental pollution

Issues	Key challenges and factors identified	Block name	
		Noamundi	Manoharpur
Air pollution	Pollution related health problems	Very poor	Very poor
Water pollution and water resource depletion	Water availability for drinking	Very poor	Very poor
Soil pollution	Agricultural productivity and livelihood	Very poor	Very poor

Section 5: Prioritizing issues and approaches for intervention through an outcome-output framework

The MMDR Act (1957), under which DMF has been instituted through an amendment in 2015, specifies that the objective of the DMF is to "work for the interest and benefit of persons and areas affected by mining related operations".

The PMKKKY, a scheme launched in September 2015 by the GOI to for the welfare of people in mining-affected areas, and aligned to DMF funds for implementation, also outlines three objectives to guide the appropriate use of DMF funds. These include:

- To implement various developmental and welfare projects/programs in mining-affected areas that complement the existing ongoing schemes/ projects of State and Central Government.
- To minimize/mitigate the adverse impacts, during and after mining, on the environment, health and socio-economics of people in mining districts.
- To ensure long-term sustainable livelihoods for the affected people in mining areas.

The sector and issues that have been analyzed in this document for identifying the critical gaps and capturing the need of the people are corresponding to the objectives of the DMF law and the PMKKKY objectives. Based on such analysis and observation, priority issues have been identified for DMF investments for effective intervention.

5.1. Identifying priority issues

The priority issue for DMF investments is determined on the basis of a participatory approach, as well as through analysis of baseline information. Considering the qualitative and the quantitative information together, helps to capture the complete perspective on issues. It also makes the planning exercise purposeful, optimizes allocations, and can ensure that critical issues are addressed in the most effective manner.

5.2. Output-outcome framework for investments

As noted, the indicative planning exercise is based on an output and outcome oriented approach. In the proposed framework based on this approach, the intended outcomes have been determined on the basis of the following:

- Critical needs as identified through participatory approach.
- Government and scientific information as analyzed.
- With reference to government and internationally accepted benchmarks as appropriate.

The outputs against each outcome had been chosen on the basis of the following:

- Are related to and representative of the condition(s) in question.
- Are based on the best available information of acceptable quality, and that can be collected or monitored with a reasonable time.
- Relevant for policy and planning purposes.
- Easily understood and applied by potential users.
- Acceptable by stakeholders.

5.3. Priority sectors for DMF investments in West Singhbhum district

The sectors that DMF should focus on for investments in West Singhbhum district over the next five years have been determined on the basis of deficits in these sectors, their contribution in human development and creating long-term development dividend and sustainable assets. The deficits in each of these sector takes into consideration the observations based on official data/ information, as well as people's perception as captured through the process of PRA (*Refer to sections 3 and 4*).

For each of these priority sectors/issues, some target outcomes has been identified that DMF should aim to achieve. A number of intermediary outputs have also been identified that can help to achieve the target outcome. The outputs have been given against specific timeframes to ensure time-bound results and improve on intervention mechanisms. The framework also takes into consideration investments in simultaneous/parallel sectors that will help optimize the outcome for a specific issue.

The sectors/issues as prioritized for intervention include:

a. Nutrition and public health.
b. Clean drinking water supply.
c. Education, particularly post elementary level.
d. Employment and livelihood enhancement.

5.4. Current availability of funds and considerations for investments

The funds accrued to DMF and that estimated to be coming per year in the near future is substantial. The estimated accrual per year is about 165 crore. The broad heads that the use of the funds should focus on are also clearly outlined. However, many of the sectors that DMF should focus on, are also the

ones which are supported by the districts own financial resources, as well as through Centre and state government schemes. In many aspects, thus DMF funds are potentially add-ons to the various socio-economic and human-development works that are undertaken by the district.

For identifying the issues for which DMF funds must be directed and to what extent, a review of the existing resource envelope(s) is therefore important. For the purpose of this exercise, the financial grants available through various flagship schemes and for specific sectors to address various socio-economic and human development issues (which have been reviewed through gap analysis) are considered. These are also the ones which are priority areas under the DMF law, such as, water supply, sanitation, public health, nutrition, education and livelihood.

Given the unavailability of a comprehensive district budget, the resources under the schemes and specific heads have been considered individually. As per available information from the district, funds received during the financial year 2016-17 has been reviewed *(See table 54: Funds available through key schemes/sectors for socio-economic and human development purposes)*.This will help to provide an understanding where DMF funds can be effectively used to address the most pressing issues.

Some of the key schemes reviewed include, ICDS for addressing issues of nutrition; NRHM for health issues; Sarva Siksha Abhiyan (SSA) and Mid Day Meal for education, Swami Vivekananda Nisshakta Svawalamban Protsahan Yojana (SVNSPY) to support education for disabled, Mukhyamantri Ladli Laxmi Yojna (MLLY) for girl education; MGNREGS, NRLM, National Rural Livelihoods Project (NRLP), Start-up Village Entrepreneurship Program (SVEP) and Sanjivaini for livelihood enhancement; National Rural Drinking Water Programme (NRDWP) for water supply; Swachh Bharat Mission (SBM) for sanitation and Pradhan Mantri Awas Yojana (PMAY) for housing.

The review shows that the sectors which are receiving a significant amount include livelihood (in terms of MGNREGS), sanitation, elementary education and housing. The gap analysis also indicates that, except for MGNREGA implementation, these are the sectors where the district has also made progress. However, the sectors that the district needs to focus on through targeted intervention are also the ones where fund availability is grossly insufficient in comparison to the gravity of the problem. For example, the fund available through ICDS is merely Rs. 6 crore, which is grossly inadequate considering the high IMR an U5MR of the district. Similarly, for rural healthcare the Rs. 19 crore available through NRHM is clearly inadequate to address the deficits in healthcare infrastructure and resources. Similar attention through DMF is required for ensuring treated water supply, improvement of education status post elementary levels and enhancement of sustainable livelihood opportunities harnessing potential of local resources. DMF investments must be prioritized for these issues through convergence (building up on the existing schemes) or standalone investments.

Table 54: Funds available through key schemes/sectors for socio-economic and human development purposes (2016-17)

Sector	Name of the scheme	Total funds received (Rs. crore)
Drinking water	NRDWP	12.07
Sanitation	SBM-Gramin	28.50
Nutrition	ICDS	6.04
Health	NRHM	19.20
	NUHM	0.57
Education	Mid Day Meal	41.35
	SSA	43.10
Social Welfare (Other)	SVNSPY	2.94
	PMJJBY	0.14
	Mukyamantri Kanyadan Yojna	1.23
Social welfare (Girl education and development)	Rajiv Gandhi Yojna Sabla Poshan	5.98
	MLLY	8.27
Welfare	Scholarships, residential school and others	44.18
Agriculture and allied	Agriculture	13.49
	Fisheries	2.18
	Horticulture	2.85
	Animal Husbandry	1.12
Livelihood	MGNREGS	71.85
	NRLM	0.05
	NRLP	20.46
	SVEP	1.00
	Sanjivani	0.15
Housing	PMAY (Gramin)	92.48
	Baba Bhimrao Ambedkar	0.62

Source: Respective district departments, West Singhbhum

5.5. Sectors and approaches for DMF investments

The sectors/issues as prioritized for DMF fund use need targeted investments over the next five years. Depending upon progress over this time, further investments can be planned. Many of the issues also need to be addressed simultaneously to achieve the desired results. This following section provides a framework of some investment approaches for the priority sectors/issues and target outcomes in a time-bound manner.

a. Nutrition and public health

Improving nutrition and public health status are crucial for maximizing demographic dividend and increasing economic productivity of a population. The two need to be considered simultaneously for effective investments and achieving desired outcomes.

In West Singhbhum, both IMR and U5MR are alarmingly high and this area needs urgent intervention. Also the public healthcare infrastructure and availability of staff and other resources are grossly sub-optimal considering the disease burden and vulnerability of people to poor health in the region. Affordability of decent healthcare offered by private facilities is not a viable option for the poor as observed during ground interactions.

Investments in nutrition and healthcare need to consider all of these collectively. Also simultaneous investments will be necessary in areas of clean drinking water, sanitation and hygiene, which influence health in a number of direct and indirect ways as has been suggested in various epidemiological and scientific studies on effective health investments[46].

Given the ground situation, there can be three effective mechanisms to improve nutrition status and healthcare delivery and access. These include:

- Building on existing government programmes/schemes.
- Adopting a public private partnership (PPP) model to improve and augment resources and delivery of services.
- Support 'demand side financing' to improve access to and utilization of health services, particularly for the poor.

Outcome (projected)	Output	
	1-3 years	3-5 years
Reduction of neonatal and IMR to 12 by 2030, and U5MR to 12 by 2030, following targets of SDG	a. Add on financial grant for ICDS to improve intervention- 1. Provide permanent structures to 205 AWCs in the mining-affected blocks which do not have it. Treated drinking water and functional toilet should be simultaneously provided in all these facilities. 2. Ensure treated drinking water in all other AWCs as well. 3. Fill in food supply and supplementary nutrition gaps through proper assessment and considering locally available nutritious food resources. 4. Improve nutrition education, health monitoring by capacity building of AWC workers as per the required skills. Support of the district health department should be considered for improved monitoring. In the initial phase a PPP model can be adopted by 'contracting in' private parties/CSOs working on health and nutrition for such services. b. Invest in crèches for children of six months to three years of age- At least one crèches per village in mining-affected areas should be provided. The crèches can be run by women selected from local community, one woman for 10 children/per creche.	a. Increase the number of AWCs to at least twice the existing numbers to meet the stipulated government standards, which is one AWC per 40 children (in rural areas). Investments shall be continued building upon achievements of the previous three years. b. Investments in crèches and healthcare support to be continued building upon achievements of the previous three years. c. Direct transfer of stipend to women/ mothers of BPL households, who area widows or living without family support to improve nutrition and health of child and mother.

	For implementation support, the NGOs/CSOs working in the sectors can be contracted in. c. Augment primary healthcare services with focus on neonatal and pediatric care- 1. A PPP model can be adopted to improve and augment resources at primary health care facilities. This should focus on adequate numbers of trained healthcare personnel, scientific diagnosis and health monitoring, providing ambulances and mobile healthcare infrastructure. 2. Provide 'health vouchers' to women/ mothers to avail treatments and check-ups at both public and private facilities. Improve on the existing service as availed under Janani Suraksha Yojana and Janani Shishu Suraksha Karyakram.	
Primary and secondary healthcare infrastructure/ resources as per IPHS norms and affordable healthcare for vulnerable sections	a. Increase primary and secondary healthcare facilities to meet at least IPHS norms- 1. Increase PHC capacity- Develop two PHCs in each of Noamundi, Manoharpur, Jhinkpani, Manjhari, Chaibasa and Jagganathpur. Further, HSCs can be upgraded to fill the deficits. 2. In areas where private clinics already exist, the district could also contract with those clinics (through PPP) in a way that allows them to expand capacity to provide more primary care in the mining-affected areas. 3. The bed capacity in the sub-district and district hospitals should be made at least as per IPHS norms. b. Fill in deficits of healthcare personnel and improve delivery of services- 1. Doctors and trained healthcare staff need to be recruited through competitive salary. 2. 'Contracting-in' can be done to fill the vacant positions in health units. Particularly doctors, nurses, and technicians can be recruited on contracts for a stipulated time period. A weekly visit by specialists, can be arranged in initial phases to bridge the huge staff deficit. 3. A 'management contract' can be arranged to expand health services. In this, obligation for service provision will remain with the public sector, while daily management and delivery will be the responsibility of the private partner. Public institutions will also be responsible for establishing performance standards and ensuring compliance.	a. Investments shall be continued building upon achievements of the previous there years in all areas, with specific focus on medical staff and resources. b. Build on coverage of national and state health insurance schemes for people in mining-affected areas. These include schemes such as Rashtriya Swasthiya Bima Yojana (RSBY) providing coverage to BPL families, Aam Aadmi Bima Yojana (AABY) providing coverage for rural landless households. Further, mine workers can be covered by building on the proposed state health insurance scheme Mukhya Mantri Swasthya Bima Yojana (Chief Minister Health Insurance Scheme), which has been aligned with the NFSA, to cover the same set of beneficiaries under it.

	c. Improve health access through demand side financing- 1. A 'voucher system' can be introduced to improve health access at public as well as private facilities. The voucher can be exchanged for a set of services as a token of payment. Vouchers can be provided against health packages for various common ailments / conditions, which can be bought by the people at specific intervals (two or three times a year). These vouchers can then be redeemed for receiving a set of services such as consultations, lab tests, and procedures, from accredited hospitals / partner clinics. 2. For treatments that entail higher costs, a standard deductable can be stipulated (payable by the voucher user/patient), to cover part of the extra cost.	

b. Clean drinking water supply and enhancement of water quality

Drinking water is closely related to the health and well-being of people. The outstanding concerns with respect to clean drinking water supply and availability include high percentages of households without treated tap water access, lack of tap water/treated water within premises of majority AWCs, schools and also health care facilities.

Outcome (projected)	Output	
	1-3 years	3-5 years
Safe and adequate drinking water for all households and key public facilities in mining-affected areas	a. Ensure treated clean water supply in all panchayats in the mining-affected areas. The focus should be also on AWCs (and also schools), particularly the poor health status and vulnerability of children. b. A mechanism of PPP can be adopted in the first phase. In this phase the contracted enterprise can be the technology provider and the management body for the delivery of services. The public partner can provide the infrastructure component such as land and any construction work that is required to be undertaken.	Investments to be continued building upon achievements of the previous three years.

c. Education

Continuation of education beyond the elementary level is a challenge in the district. There exists significant disparity in terms of number of schools offering elementary and secondary education (secondary schools being about 10 to 15 per cent of elementary education facilities, and higher secondary about one to two per cent of elementary). Schools across all levels also lack basic amenities such as tap water within premises/treated water and electricity. There is also concern of adequate number of teachers in elementary and secondary level schools as well as the quality of teachers. Also given that a majority of people in the district belong to ST category, local language teaching is crucial for improving early childhood learnings.

Financial constraints of families in the mining areas further restrict many children from continuing with higher education. These all need to be addressed through targeted investments in education that will contribute to completion of secondary and higher secondary education, improve employability, empower the vulnerable sections such as girls and women, and reduce overall financial insecurity.

Outcome (projected)	Output	
	1-3 years	**3-5 years**
Improvement of gross enrollment and completion for secondary education as per RMSA goals (a target GER of at least 75 per cent in all mining-affected areas)	a. Increase secondary schools as per RMSA standards. This can be done by up gradation of at least 50 per cent of the existing primary + upper primary, and upper primary school facilities in the mining-affected blocks. b. Strengthen staff capacity in existing secondary education facilities to meet the stipulated PTR requirement of 30:1. Competitive remunerations need to be provided particularly for rural/distressed areas. c. Build on Mid Day Meal scheme to increase its coverage for children at least till 10th standard.	a. Investments to be continued building upon achievements of the previous three years to fill infrastructure and resource gaps in secondary secondary education. b. Build on scholarships for higher education, including for women and disabled to make education accessible for all. Considerations include- 1. To reduce overall dropout: National Means-cum-Merit Scholarship Scheme (NMMSS). 2. To improve girl education- National Scheme of Incentives to Girls for Secondary Education, MLLY. 3. To support education for children with disability between 8th to 12th grade- Inclusive Education for Disabled at Secondary Stage, SVNSPY. 4. Pre-matric scholarships for ST children.

Improvement in learning outcomes up to secondary level through	a. Focus on local language teaching- Train and recruit teacher (particularly women) from local communities for pre-primary and primary education in tribal areas. b. Strengthen staff capacity in all levels of schools. 1. For all elementary level schools, the stipulated PTR requirement (30:1 for primary and 35:1 for upper primary), as specified under RTE (2009) should be fulfilled. For secondary level schools, the stipulated PTR requirement (30:1) as specified under RMSA should be fulfilled (as discussed above). 2. Salaries of teachers should be improved at competitive rates to attract and retain qualified teachers. 3. Train and recruit local people particularly women for providing education till secondary schools.	Investments to be continued building upon achievements of the previous three years.

d. Employment and Livelihood

Improving the status of employment and livelihood in West Singhbhum district will require a multi-pronged approach considering education and skill levels among young people within employable age, providing support to small businesses including for women, harnessing the potential of local resources (such as agricultural land and forest resources) and the traditional knowledge of the local communities.

For agriculture sector, the focus should be on water and soil conservation and enhancement of their quality. The issue needs to be tackled with a long-term focus adopting a watershed based approach for improving agricultural productivity, which the state also identifies the need of as reflected in the initiative Jharkhand State Watershed Mission (JSWM).

With respect to livelihoods around forest based resources supporting implementation of Minimum Support Price for Minor Forest Produce Scheme (MSP for MFP), can be of significance to help communities procure a better price for their products, as also suggested by the Ministry of Tribal Affairs (October 2016)[47]. Further providing and supporting forward and backward market linkages for forest based products will be important.

Outcome (projected)	Output	
	1-3 years	**3-5 years**
Progress towards universal livelihood within employment age of 15-59 years, with focus on women and ST	a. Education support -For completing secondary and higher secondary to ensure eligibility for secured wage employment. Special education support should be provided for women (Refer to recommendation on education section). b. Skill development 1. Increase placement related skill training for unemployed people/ non-workers falling within working age group of 15-39. A focus of skill development/ training should be the vulnerable sections, 50 per cent of trained people should be women and ST. 2. Given the local resources and socio-economic profile of West Singhbhum district, training can be focused around sectors such as forest based products, agriculture, horticulture, food-processing, healthcare, tourism and hospitality (and also identified sectors by the Jharkhand Skill Development Mission Society).	a. Improve on education support to increase people's employment from building on previous years. b. Roll out scholarships for meritorious students for higher education and business entrepreneurship (Refer to recommendation on education section). c. Increase the number of people trained and areas requiring skill development based on assessment of previous years. d. Provide capital subsidy/interest-free loans to for start-ups and micro, small and medium enterprises.
Enhancement of forest-based livelihood particularly for ST communities	a. Augment implementation of Minimum Support Price for Minor Forest Produce Scheme (MSP for MFP), by increasing the MSP by 10 per cent (in line with the guidelines provided by the Ministry of Tribal Affairs). b. Provide market linkages for forest based products/ handicrafts to facilitate trading/ selling of products in the external market and to ensure better economic value for the goods. This can be done by building on support provided by organizations such as the Tribal Cooperative Marketing Development Federation of India, Jharcraft etc.	Improve support of minor forest products and market linkages by developing on investments from previous three years.
Enhancement of agriculture-based livelihood and income	a. Build on programs of watershed management (such as Jharkhand state watershed mission, Pradhan Mantri Krishi Sinchayee Yojana) in convergence with various concerned departments. The focus of investment should be around works to improve water and soil conditions. b. Watershed management projects should also have components of livelihood creation. In line with the district irrigation plan, 9 to 10 per cent of the project investments should be for livelihood of assetless people.	Build on investments from previous three years.

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