

INDICATIVE PLAN

**DISTRICT MINERAL FOUNDATION**

**KEONJHAR, ODISHA**



Centre for Science and Environment



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Published by  
Centre for Science and Environment  
41, Tughlakabad Institutional Area  
New Delhi 110 062  
Phones: 91-11-29955124, 29955125, 29953394  
Fax: 91-11-29955879  
E-mail: [cse@cseindia.org](mailto:cse@cseindia.org)  
Website: [www.cseindia.org](http://www.cseindia.org)

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# 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 Keonjhar 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 an attempt to enable more stable investments, as the indicative plan takes into account the opinions of people from mining-affected areas, members of Gram Panchayats/municipal wards, civil society representatives and officials at the block and district levels, all of who are representative stakeholder communities and are in 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 Odisha DMF Rules, 2015 (as amended in February 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 (and its subsequent amendments), also specify the requirement of a perspective and annual 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, and the Government of India (GOI) scheme, the Pradhan Mantri Khanij Khestra Kalyan Yojana (PMKKKY) – a guideline for DMFs, which all DMFs are required to follow while developing plans and preparing budgets. These include:

- Undertaking bottom-up planning by 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, livelihood programs and support, skill development, environment preservation and pollution control measures.
- Earmarking at least 60 per cent of the DMF funds for addressing and mitigating the “high priority” issues and also targeting the directly affected areas.
- 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. Also no more than 40 per cent of the money should be spent on developmental activities and schemes in indirectly affected areas.

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 Keonjhar 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 it 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 to bring in greater accountability for the agencies involved in the execution of the schemes and projects<sup>1</sup>.

## 1.3 Method

The method followed for developing the indicative plan involved the following:

- 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 have 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 (2017-18) has been considered to understand the scope of 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 proposed 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 and are subject to periodic review.

# Section 2: Background of the district

## 2.1 Location and geographical area

Located in the northern part of Odisha, Keonjhar district is bound by Mayurbhanj, Balasore and Bhadrak districts on the east, Jajpur district on the south, Angul and Sundargarh districts on the west, and West Singhbhum district of Jharkhand to the north. The district lies between 21° 1' N to 22° 10' N latitude and 85° 11' E to 86° 22' E longitude, covering a geographical area of 8,303 sq kms or 830,300 hectare (ha)<sup>2</sup>.

Baitarani which is the largest river of the district which rises from the Gonasika in the Guptaganga hills of Keonjhar district<sup>3</sup>. The river flows through Banspal, Joda, Champua, Patna, Ghatagaon, Anandapur, Ghasipura and Hatadihi blocks. Some of the other rivers include, Aradei, Kanjhari, Seeta, Kukurkata, Kusei, Musala, Samakoi, Karo, Salandi and Machhakandana<sup>4</sup>.

## 2.2 Administrative areas

The Administrative headquarters of the district is at Keonjhar town. The district has three sub-divisions – Anandpur, Champua and Keonjhar and 13 tehsils and blocks. The blocks include Anandapur, Banspal, Champua, Ghasipura, Ghatagaon, Harichandanpur, Hatadihi, Jhumpura, Joda, Keonjhar (sadar), Patna, Saharpada, Telkoi (See Figure 1: Administrative map of Keonjhar district). There are a total of 2,128 villages and 287 Gram Panchayats (GPs). Besides, there are four municipal areas – Barbil, Joda, Anandpur and Keonjhar and one Notified Area Council (NAC), Champua<sup>5</sup>.

## 2.3 Land use/land cover

The land use/land cover distribution of Keonjhar shows that significant portion of the district's land area – more than 32 per cent – comes under agricultural uses. The district has also a significant area under forest which is more about 37.5 per cent of the total area (See table 1: Land use/ land cover in Keonjhar district, and figure 2: Land use /land cover map of Keonjhar district).

**Figure 1: Administrative Map of Keonjhar district**



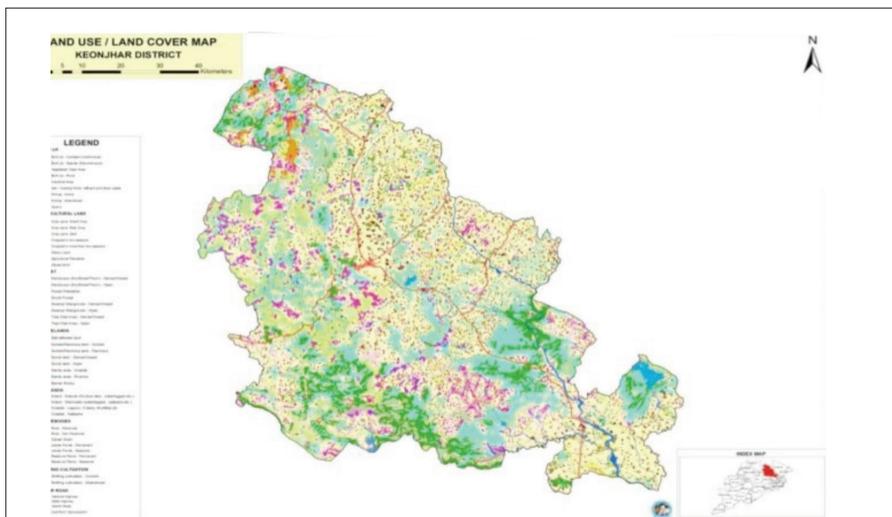
Source: Keonjhar district website, 2018

**Table 1: Land use/ land cover in Keonjhar district**

| Land use/ land cover classes | Area (ha)       | Total area (%) |
|------------------------------|-----------------|----------------|
| Area under forest            | 3,11,717        | 37.5           |
| Net sown area                | 2,72,919        | 32.8           |
| Area sown more than once     | 110,518         | 13.3           |
| Area under wasteland         | 20,096          | 2.4            |
| Area under other uses        | 2,26,268        | 27.2           |
| <b>Total</b>                 | <b>8,31,000</b> |                |

Source: Keonjhar district irrigation plan, 2016

**Figure 2: Land use/land cover map of Keonjhar district**



Source: Keonjhar district irrigation plan, 2016

## 2.4 Mining activities and mining-affected areas

Odisha is one of the most important mining states in India, leading the list of states in production of iron ore and bauxite. Most of these minerals come from Keonjhar, which is known for its iron ore and bauxite deposits<sup>6</sup>. Besides iron ore, some of the other major minerals found in the district include manganese, chromite, quartzite etc<sup>7</sup>.

The district produced about 70.3 million tonnes (MT) of iron ore in 2016-17, accounting for about 68 per cent of the state's total iron ore production. The major players include a number of private companies such as Tata Steel Limited, Rungta Mines Limited and Serajuddin and Company, and the public sector undertaking Odisha Mining Corporation Limited.

Of the total 13 blocks in the district, 473 villages and 18 municipal wards in seven blocks have been identified "directly mining-affected" by district authorities (*See table 2: Directly mining-affected areas in Keonjhar district*). These directly-affected areas fall within 10 kilometer radius from the mines as prescribed under the Odisha DMF Rules, 2015.

Joda, Banspal, Jhampura, Hatadihi are some of the worst-affected areas. Barring Joda, which includes Joda and Barbil municipalities, the others are predominantly rural. In Joda, nearly all villages are directly affected. In Jhampura more than 80 per cent villages are directly-affected, and in Banspal and Champua blocks, nearly 42 per cent are directly-affected.

**Table 2: Directly mining-affected areas in Keonjhar district**

| Block /municipality name | Number of villages | Number of municipal wards |
|--------------------------|--------------------|---------------------------|
| Joda                     | 116                | 17*                       |
| Jhumpura                 | 104                |                           |
| Banspal                  | 69                 |                           |
| Hatadihi                 | 64                 |                           |
| Champua                  | 63                 |                           |
| Keonjhar                 | 49                 | 1**                       |
| Harichandanpur           | 8                  |                           |

\* Includes Joda and Barbil municipal areas; \*\* Includes Keonjhar municipality

Source: District Mineral Foundation portal, Keonjhar, 2018

## 2.5 Overall demographic profile

Keonjhar is the fourth largest district in terms of size and eighth largest in terms of population in Odisha. As per Census of India 2011, the population of Keonjhar district is just a little over 18 lakhs, with a population density of 217 per sq km. The district has observed a decennial population growth of nearly 15.4 per cent in 2011 as compared to 2001.

About 50.3 per cent of the population is male and 49.7 per cent female. The demographic distribution also shows that a majority, about 86 per cent, of the

district's population is rural, and nearly 45.4 per cent of people belong to the Scheduled Tribes (ST) category (See table 3: Overall demographic profile of Keonjhar district).

There is high incidence of poverty in the district. About 69 per cent of the population falls below poverty line (BPL). The economic distress is further evident in the fact that in more than 90 per cent rural households, the highest earning member earns less than Rs. 5,000 per month.

**Table 3: Overall demographic profile of Keonjhar district**

| Total population  | Male (%)                    | Female (%) | Urban (%) | Rural (%) | SC (%) | ST (%) |
|---|-----------------------------|------------|-----------|-----------|--------|--------|
| 18,01,733   | 50.3                        | 49.7       | 14.1      | 85.9      | 11.6   | 45.5   |
| Sex ratio   | 988 (Rural-999 ; Urban-920) |            |           |           |        |        |
| Population density (per sq.km)  | 217                         |            |           |           |        |        |
| Decadal population growth (2001-2011) (%)   | 15.4                        |            |           |           |        |        |
| Total households  | 4,03,869                    |            |           |           |        |        |
| BPL population (%)*   | 69                          |            |           |           |        |        |
| Households in rural areas with highest earning heads earning below Rs.5,000 per month (%) | 90.5                        |            |           |           |        |        |

Source: Census of India, 2011; SECC, 2011, \*District economy profile, Keonjhar, 2018

## 2.6 Demographic distribution of mining-affected areas

The mining-affected areas in Keonjhar comprise both rural areas as well as municipalities. The urban affected area is concentrated in the municipalities of Joda, Barbil and Keonjhar. The other areas, like Banspal, Champua, Jhampura etc. are almost entirely rural.

The proportion of tribal population is also high in these mining-affected areas, particularly in Banspal, Joda, Jhampura and Champua areas (See table 4: Population distribution in mining-affected areas).

**Table 4: Population distribution in mining-affected areas**

| Block/ municipality name | Total population | Urban (%) | Rural (%) | SC (%) | ST (%) |
|--------------------------|------------------|-----------|-----------|--------|--------|
| Joda                     | 1,25,728         | 15.2      | 84.7      | 9.4    | 59.7   |
| Jhumpura                 | 1,13,149         | 5.3       | 94.6      | 7.0    | 50.5   |
| Banspal                  | 1,02,527         | 0         | 100       | 4.3    | 79.6   |
| Champua                  | 1,15,321         | 9.5       | 90.1      | 8.9    | 45.9   |
| Hatadihi                 | 1,64,629         | 0         | 100       | 25.5   | 18.2   |
| Harichandanpur           | 1,42,150         | 2.8       | 97.1      | 7.2    | 56.0   |
| Keonjhar                 | 1,61,931         | 0         | 100       | 9.9    | 50.2   |
| Joda (M)                 | 48,631           | 100       | 0         | 16.6   | 26.5   |
| Barbil (M)               | 66,540           | 100       | 0         | 12.7   | 24.2   |
| Keonjhar (M)             | 60,590           | 100       | 0         | 13.2   | 23.5   |

Source: Census of India, 2011

# Section 3: Situation analysis through stocktaking

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, Keonjhar 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) such as 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. These include:

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

Therefore, for a district, the key measures 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 levels.

### 3.1.1 Public Health

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

- a. Disease prevalence.
- b. Healthcare infrastructure and resources — primary and secondary facilities.

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 the review of the Annual Health Survey (AHS) 2012-13, interviews with health officials, health centre visits and interaction with communities in mining-affected areas.

During interactions with various stakeholders, people reported high prevalence of diseases like tuberculosis, malaria, skin ailments, and respiratory problems. Further, health statistics of the Ministry of Health and Family Welfare indicate that children below the age of five years are particularly vulnerable to waterborne diseases such as diarrhoea and malaria (*See table 5: Percentage of prevalence of diarrhoea, dehydration, and malaria in children 0-5 years of age in Keonjhar district, 2016-17*). A primary reason for such illnesses is unavailability of clean drinking water and sanitation facilities. These conditions also have a strong bearing on the development of children, as identified in the Global Hunger Index Report (2017), which identifies that lack of proper sanitation has a strong effect on the health of children and their capacity to absorb nutrition<sup>8</sup>.

**Table 5: Percentage of prevalence of diarrhoea, dehydration and malaria in children 0-5 years of age in Keonjhar district, 2016-17**

| Block/municipality name | Malaria (%) | Diarrhoea and dehydration (%) |
|-------------------------|-------------|-------------------------------|
| Joda                    | 37.7        | 59.5                          |
| Jhumpura                | 31.4        | 67.6                          |
| Banspal                 | 41.4        | 58.1                          |
| Champua                 | 4.4         | 95.6                          |
| Hatadihi                | 3.6         | 96.3                          |
| Harichandanpur          | 29.8        | 70.1                          |
| Ghatgaon                | 18.9        | 81.1                          |
| Ghasipura               | 4.0         | 95.2                          |
| Anandapur               | 8.6         | 91.1                          |
| Keonjhar                | 12.2        | 84.6                          |
| Patna                   | 20.9        | 76.7                          |
| Saharapada              | 2.5         | 96.9                          |
| Telkoi                  | 40.2        | 58.9                          |

Source: Ministry of Health and Family Welfare, 2016-17

People also suffer from other types of chronic and acute illnesses (See table 6: *Number of persons suffering from various illness in Odisha state and Keonjhar district*). While the data shows the prevalence of these diseases much lower than the state's average, field visit to the blocks worst affected by mining, such as, Banspal and Joda, show many cases of tuberculosis (TB), chronic asthma among people. Many independently reported interviews of doctors in these areas also validate this.

Various epidemiological and scholarly studies have also indicated poor health conditions of people living close to areas where mining is happening. A study of Banspal block indicates that there is very high prevalence of malaria among people in the area, which is more than 40 per cent. Also, nearly 30 per cent of people suffer from various acute respiratory illnesses. The incidence of water borne diseases is also high. What the studies also simultaneously bring out is that more than 64 per cent of people earn only between Rs. 5000 to 10,000 per month (primarily working as mine laborers)<sup>9</sup>. What this situation clearly suggests is that high prevalence of various health conditions coupled with extremely low earnings, create a critical challenge for healthcare affordability.

**Table 6: Number of persons suffering from various illness in Odisha state and Keonjhar district**

| Illnesses (per lakh population)      | Persons in Odisha state |        |       | Persons in Keonjhar district |        |       |
|--------------------------------------|-------------------------|--------|-------|------------------------------|--------|-------|
|                                      | Total                   | Rural  | Urban | Total                        | Rural  | Urban |
| Asthma/ Chronic respiratory diseases | 720                     | 705    | 798   | 156                          | 152    | 170   |
| Hypertension                         | 1,776                   | 1,541  | 2,993 | 740                          | 636    | 1,221 |
| Tuberculosis                         | 185                     | 193    | 141   | 54                           | 54     | 52    |
| Any other type of acute illness      | 10,147                  | 10,662 | 7,480 | 11,033                       | 11,324 | 9,697 |

Source: Annual Health Survey 2012-2013

## **b. Healthcare infrastructure and resources**

Given the severity of poor health conditions of people as reported during ground interaction, as per available Government data and epidemiological studies, the availability of adequate and quality healthcare infrastructure and staff at various facilities is grossly inadequate. Considering these factors, this section reviews the status of primary and secondary healthcare facilities separately.

**Primary healthcare:** Health sub centres, Primary Health Centres (PHC) and Community Health Centres (CHC), together constitute primary healthcare facilities. Besides, mobile medical units also supplement for primary healthcare facilities particularly in rural areas. Data as obtained from district and block levels gives an overall understanding of the number of these (public) facilities in every block and the health staff (includes staff across all levels) available there (See table 7: *Number of primary healthcare facilities and staff strength*).

**Table 7: Number of primary healthcare facilities and staff strength**

| Block / municipality name | Sub centres |                | PHC    |                | CHC    |                | Mobile medical units |
|---------------------------|-------------|----------------|--------|----------------|--------|----------------|----------------------|
|                           | Number      | Staff strength | Number | Staff strength | Number | Staff strength | Number               |
| Joda                      | 34          | 55             | 2      | 9              | 3      | 53             | 1                    |
| Jhumpura                  | 28          | 57             | 4      | 18             | 1      | 34             | 1                    |
| Banspal                   | 25          | 46             | 6      | 28             | 1      | 29             | 1                    |
| Champua                   | 34          | 51             | 6      | 30             | 1      | 26             | 1                    |
| Hatadihi                  | 22          | 52             | 7      | 37             | 1      | 39             | -                    |
| Harichandanpur            | 38          | 66             | 5      | 24             | 2      | 42             | -                    |
| Keonjhar                  | 30          | 62             | 5      | 29             | 1      | 32             | -                    |
| Anandapur                 | 19          | 45             | 6      | 36             | 1      | 24             | -                    |
| Ghasipura                 | 23          | 61             | 7      | 38             | 2      | 46             | -                    |
| Ghatagaon                 | 26          | 52             | 3      | 21             | 1      | 37             | 1                    |
| Patna                     | 25          | 56             | 5      | 27             | 1      | 32             | 1                    |
| Saharpada                 | 23          | 42             | 4      | 21             | 1      | 16             | 1                    |
| Telkoi                    | 24          | 34             | 6      | 28             | 1      | 24             | 1                    |

Source: Health department, Keonjhar district, December 2018

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 Keonjhar 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 5,000 people, one PHC per 30,000 people, and one CHC per 1,20,000 people. For tribal and hilly areas, the norms are more stringent, which requires that there should be at least one sub-centre for every 3,000 people<sup>10</sup>, one PHC per 20,000 people<sup>11</sup> and one CHC per 80,000 people in these areas<sup>12</sup>.

The data with respect to the primary healthcare facilities in Keonjhar shows that the district, particularly the mining-affected areas where nearly 50 to 80 per cent population is tribal, has huge deficit of primary healthcare facilities, when compared to the specified standards for tribal areas. For instance, health sub-centres, which are the first point of health contact in rural areas, are serving about 1.5 times their capacity in almost all mining-affected areas. While there is an overall deficit of PHCs too, those in the worst mining-affected Joda block are serving more than three times the capacity.

The poor status of primary healthcare becomes much more pronounced when availability of healthcare staff is considered. For example, according to IPHS, there should be at least (“essential”) 3 health workers in sub centres, 15-20 health staff at PHCs (depending on the PHC type A or B), and 35-40 health staff of various competence, specializations and responsibilities at CHCs<sup>13</sup>. Against this benchmark, the comparison of the overall number of health workers and health staff as made available for various primary healthcare facilities clearly shows that the average staff strength falls far below that what is required. The

problem is specifically acute in PHCs and CHCs, where deficits range from 30-50 per cent or more in some areas.

**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 also form an important link between health sub centres, PHC and CHC on one end, and district hospitals on other end. These facilities are also the first referral units for the tehsil/ taluk/ block population in which they are located. The National Health Mission (NHM), also identifies sub-divisional hospitals to be significant for bringing down the Maternal Mortality Rate (MMR) and Infant Mortality Rate (IMR) as these facilities are meant to provide emergency obstetrics care and neonatal care<sup>14</sup>.

The district hospital on the other hand functions as a secondary level referral centre. 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, identifies the NHM<sup>15</sup>.

Keonjhar has one district hospital, two sub-divisional hospitals which are located at Anandpur and Champua, and six area hospitals. One of the key concerns for these facilities is the available resources, such as bed capacity, availability of medicines etc. This has also been repeatedly highlighted in the FGDs and SSIs (*Refer to section 4*). As per available information from the district, there are 250 beds in the district headquarter hospital, 88 beds in Anandpur sub-divisional hospital and 70 beds in Champua sub-divisional hospitals. The current bed capacity is inadequate to serve the population dependent on these hospitals.

## B. Gaps in the public healthcare

The status of the healthcare sector in the mining-affected areas as identified from the analysis shows deficits both in infrastructure as well as resources. The key deficits include:

- a. Inadequate number of primary healthcare facilities and access- sub centres, PHC, CHCs.
- b. Inadequate human resource - doctors, health workers, technicians etc.
- c. Lack of resources and supporting infrastructure in hospitals.

### a. Inadequate number of primary healthcare facilities and access

The primary healthcare infrastructure in Keonjhar is short of requirement in most mining-affected areas when compared against IPHS norms (*See table 8: Deficits in primary healthcare facilities and staff capacity in Keonjhar district*). The scarcity is more pronounced in some areas, compared to others. For instance in Joda, PHCs are serving three times the capacity. The shortage of CHCs is also pronounced with most in mining-affected areas serving close to 1.5 times their capacity.

**Table 8: Deficits in primary healthcare facilities and staff capacity in Keonjhar district**

| Sub centre               |   |                        |                                       |   |
|--------------------------|---|------------------------|---------------------------------------|---|
| Block/municipality name  | Average no. of people served per sub-centre | Serving over IPHS norm | Average staff strength per sub centre | Shortfall in no. of health staff compared to IPHS norms (3nos.) |
| Joda                     | 3,697                                       | 1.2                    | 2                                     | 1   |
| Jhumpura                 | 4,041                                       | 1.3                    | 2                                     | 1   |
| Banspal                  | 4,101                                       | 1.3                    | 2                                     | 1   |
| Champua                  | 3,391                                       | 1.1                    | 2                                     | 1   |
| Harichandanpur           | 3,740                                       | 1.2                    | 2                                     | 1   |
| Hatadihi                 | 7,483                                       | 1.4                    | 2                                     | 1   |
| Keonjhar                 | 5,397                                       | 1.7                    | 2                                     | 1   |
| Anandapur                | 5,772                                       | 1.1                    | 2                                     | 1   |
| Ghasipura                | 6,458                                       | 1.2                    | 3                                     | 0   |
| Ghatagaon                | 4,550                                       | 1.5                    | 2                                     | 1   |
| Patna                    | 4,060                                       | 1.3                    | 2                                     | 1   |
| Saharpada                | 3,839                                       | 1.2                    | 2                                     | 1   |
| Telkoi                   | 4,024                                       | 1.3                    | 1                                     | 2   |
| PHC                      |   |                        |                                       |   |
| Block /municipality name | Average no. of people served per PHC        | Serving over IPHS norm | Average staff strength per PHC        | Shortfall in no. of health staff compared to IPHS (15-20 nos.)  |
| Joda                     | 62,864                                      | 3.1                    | 4                                     | 11  |
| Jhumpura                 | 28,287                                      | 1.4                    | 3                                     | 12  |
| Banspal                  | 17,087                                      | 0.8                    | 3                                     | 12  |
| Champua                  | 19,220                                      | 0.9                    | 4                                     | 11  |
| Harichandanpur           | 28,430                                      | 1.4                    | 4                                     | 11  |
| Hatadihi                 | 23,518                                      | 0.7                    | 3                                     | 12  |
| Keonjhar                 | 32,386                                      | 1.6                    | 4                                     | 11  |
| Anandapur                | 18,278                                      | 0.6                    | 5                                     | 10  |
| Ghasipura                | 21,222                                      | 0.7                    | 4                                     | 11  |
| Ghatagaon                | 39,435                                      | 1.9                    | 6                                     | 9   |
| Patna                    | 20,303                                      | 1.01                   | 4                                     | 11  |
| Saharpada                | 22,078                                      | 1.1                    | 4                                     | 11  |
| Telkoi                   | 16,098                                      | 0.8                    | 2                                     | 13  |

| CHC                      |                                      |                        |                                |  |
|--------------------------|--------------------------------------|------------------------|--------------------------------|--|
| Block /municipality name | Average no. of people served per CHC | Serving over IPHS norm | Average Staff strength per CHC | Shortfall in no. of health staff compared to IPHS norms (35-40 nos.) |
| Joda                     | 41,909                               | 0.5                    | 14                             | 21   |
| Jhumpura                 | 113,149                              | 1.4                    | 20                             | 15   |
| Banspal                  | 102,527                              | 1.2                    | 15                             | 20   |
| Champua                  | 115,321                              | 1.4                    | 16                             | 19   |
| Harichandanpur           | 71,075                               | 0.8                    | 13                             | 22   |
| Hatadihi                 | 164,629                              | 1.3                    | 15                             | 20   |
| Keonjhar                 | 161,931                              | 2                      | 17                             | 18   |
| Anandapur                | 109,669                              | 0.9                    | 14                             | 21   |
| Ghasipura                | 74,277                               | 0.6                    | 13                             | 22   |
| Ghatagaon                | 118,307                              | 1.4                    | 19                             | 16   |
| Patna                    | 101,518                              | 1.2                    | 16                             | 19   |
| Saharpada                | 88,314                               | 1.1                    | 12                             | 23   |
| Telkoi                   | 96,590                               | 1.2                    | 14                             | 21   |

Apart from the number of health centres, access to these facilities is also a big concern. Only about 37 per cent villages in the district have a health centre within five kilometer radius and just four per cent villages can access a PHC within the same distance. Only three per cent villages have access to a CHC in the 10 kilometer radius<sup>16</sup>. The problem of access has also been highlighted by the mining-affected communities during FGDs (*Refer to section 4*).

### **b. Inadequate human resource**

The shortage of healthcare facilities is compounded by the lack of adequate number of full time healthcare personnel at these facilities. As per information of the district health department, there is overall 75 per cent deficit of specialists and nearly 40 per cent deficit of doctors at the CHCs, when considered against the sanctioned positions. There is equal deficit of doctors at the sub-divisional and district hospitals too (*Table 9: Overall deficit in healthcare staff in Keonjhar district*).

### **c. Lack of resources and supporting infrastructure in hospitals**

Resource crunch to accommodate patients as well to conduct diagnostics services is a big concern in the district, as indicated by communities during the FGDs (*Refer to section 4*). All hospitals also have a shortage of beds when compared against the IPHS standards. As a thumb-rule in IPHS, it is estimated that the number of beds required at a district hospital for a district having a population of 10 lakhs 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. Similarly for sub-divisional hospitals, it is estimated that the number of beds required at one hospital for a sub-division having a population of five lakhs will be around 100-150.

**Table 9: Overall deficit in healthcare staff in Keonjhar district**

| Type and staff strength at various facilities                   | Sanctioned | In position |
|---|------------|-------------|
| Number of health workers at sub centers - male                  | 245        | 57          |
| Number of health workers at sub centers - female                | 351        | 291         |
| Total number of health workers at PHCs - male)                  | 0          | 0           |
| Total number of health workers at PHCs - female                 | 42         | 38          |
| Total number of specialists at CHCs                             | 44         | 11          |
| Total number of doctors at CHCs                                 | 76         | 46          |
| Total number of staff nurses at CHCs                            | 50         | 32          |
| Total number of doctors in sub divisional and district hospital | 92         | 52          |
| Total number of nurses in sub divisional and district hospital  | 51         | 46          |

Source: Health department, Keonjhar district, December 2018

Given the vulnerability of population to various diseases due to poor environmental and socio-economic conditions, this estimations will however me more stringent for Keonjhar. The current beds at Keonjhar district hospital are 250. In Anandpur and Champua sub-divisional hospitals, there are 88 and 70 beds respectively. However, going by the thumb-rule, for Keonjhar district with a population of little over 18 lakhs, the total number of beds required at the district hospital should be close to 600. Similarly, the sub-divisional hospitals require more than 300 beds to meet the population's requirements. The current availability is therefore less than even half the requirement.

### 3.1.2 Nutrition and food security

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

- Infant mortality, under five mortality and malnourishment.
- Coverage under Integrated Child Development Services.
- Coverage under National Food Security Act (public distribution system).

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 Keonjhar district, the average infant mortality rate (IMR) is 53 and the under five mortality rate (U5MR) is 69. Both of these indicators are worse for the rural parts of the district, where IMR is 54 and U5MR is 70 (*See table 11: Mortality rates among various groups in Keonjhar district*). The indicators fall far short of what is envisioned against international benchmarks, such as the Sustainable Development Goals (SDG) necessitating serious intervention<sup>17</sup>. Under SDG, the target for U5MR is 25 by the year 2030.

**Table 11: Mortality rates among various groups in Keonjhar district**

| Indicators | Total | Rural | Urban |
|------------|-------|-------|-------|
| IMR        | 53    | 54    | 48    |
| U5MR       | 69    | 70    | 65    |

Source: Annual Health Survey, 2012-2013

Besides, mortality indicators, growth and weight indicators are also critical for good health. Various symptoms of malnutrition are important in this respect. The most critical symptoms of malnutrition in Keonjhar district are stunting and underweight prevalence among children below 5 years of age. On an average around 44 per cent of the children below five years of age are stunted and underweight (*See table 12: Symptoms of malnutrition among children below five years of age in Keonjhar district*).

The National Family Health Survey (2015-16) also shows that in Keonjhar, around 32.7 per cent of children between the age of six to 59 months (i.e., about six months to five years age), are anaemic. The anaemic condition can largely be attributed to high prevalence of anaemia among pregnant women, with about 40 per cent of them within the age group of 15-49 years being anaemic.

**Table 12: Symptoms of malnutrition among children below five years of age in Keonjhar district**

| Growth and nutritional status among children below 5 years | Rural (%) | Total (%) |
|--|-----------|-----------|
| Stunted  | 44.2      | 44.6      |
| Underweight  | 42.6      | 44.3      |
| Wasted   | 18.6      | 19.0      |

Source: National Family Health Survey-4, 2015-16

### **b. Coverage under Integrated Child Development Services**

The primary goal of Integrated Child Development Services (ICDS) as identified by the GOI is to reduce malnutrition, and morbidity and mortality caused by nutritional deficiencies. To achieve this, the government has identified six services that must be assured. These include supplementary nutrition, health and nutrition 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 Aanganwadis (AWCs) while the latter three are designed to be delivered through primary healthcare infrastructure<sup>18</sup>.

The status of AWCs has been looked into through three parameters – the adequacy of AWCs, availability of basic infrastructure and facilities within AWC premises such as drinking water and toilets.

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 should cover 42 beneficiaries<sup>19</sup>.

When analyzed against such benchmark, all the mining-affected blocks (and others as well), appear to have inadequate number of AWCs showing poor implementation of ICDS. In each of the mining-affected areas, the AWCs are catering to about twice the number of beneficiaries they should be ideally serving (*See table 13: Status of existing AWCs and average number of children covered*). In Joda and Keonjhar, the situation is worse with the AWCs serving more than 2.4 times their capacity.

**Table 13: Status of existing AWCs and average number of children covered**

| Block/municipality name | Total number of AWCs | Children below 6 yrs | Average number of children presumably covered by one AWC |
|-------------------------|----------------------|----------------------|--|
| Joda                    | 281                  | 28,606               | 102  |
| Jhumpura                | 227                  | 14,766               | 65   |
| Banspal                 | 236                  | 16,526               | 70   |
| Champua                 | 199                  | 13,487               | 68   |
| Hatadihi                | 219                  | 16,911               | 77   |
| Harichandanpur          | 276                  | 19,186               | 70   |
| Keonjhar                | 46                   | 6,082                | 132  |
| Anandpur                | 228                  | 17,476               | 77   |
| Ghasipura               | 256                  | 28,223               | 110  |
| Ghatagaon               | 251                  | 13,816               | 55   |
| Patna                   | 259                  | 22,234               | 86   |
| Saharpada               | 213                  | 9,869                | 46   |
| Telkoi                  | 231                  | 12,358               | 53   |
| <b>Total</b>            | <b>3,257</b>         | <b>2,31,010</b>      | <b>71</b>  |

Source: District Social Welfare Office, Keonjhar, 2017-18

The shortage is further aggravated due to the lack of basic infrastructure such as AWC buildings, supply of clean drinking water and toilets at the existing AWCs. In Keonjhar district, an average of 63 per cent AWCs have permanent structure, leaving about 37 per cent of the AWCs in need of such infrastructure. While drinking water facilities seem to be present at all AWCs, but the quality of potable water remain questionable as observed from ground interactions. Also a large proportion of AWCs lack functional toilets within the premises, a major concern for sanitation (*See table 14: Status of infrastructure at AWCs*).

### 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<sup>20</sup>. In Odisha, implementation of the NFSA has been made more targeted by including 'inclusion and exclusion criteria' for identification of beneficiaries based on economic well being. There are six auto inclusion criteria to cover particularly all vulnerable people. These include, household without shelter, household with destitute who is living on alms, all households of Primitive Tribal Groups (PTG), household having a widow pension holder, household having a person with disabilities of 40 per cent or more and any transgender person.

**Table 14: Status of infrastructure at AWCs**

| Block/municipality name | Total number of AWCs | AWCs with permanent structure | AWCs with drinking water facility | AWCs with toilet facilities |
|-------------------------|----------------------|-------------------------------|-----------------------------------|-----------------------------|
| Joda                    | 281                  | 189                           | 281                               | 43                          |
| Jhumpura                | 227                  | 183                           | 227                               | 107                         |
| Banspal                 | 236                  | 134                           | 236                               | 76                          |
| Champua                 | 199                  | 144                           | 199                               | 89                          |
| Hatadihi                | 219                  | 97                            | 219                               | 29                          |
| Harichandanpur          | 276                  | 167                           | 276                               | 115                         |
| Keonjhar                | 46                   | 39                            | 46                                | 24                          |
| Anandpur                | 228                  | 109                           | 228                               | 22                          |
| Ghasipura               | 256                  | 140                           | 256                               | 99                          |
| Ghatagaon               | 251                  | 161                           | 251                               | 114                         |
| Patna                   | 259                  | 158                           | 259                               | 94                          |
| Saharpada               | 213                  | 177                           | 213                               | 128                         |
| Telkoi                  | 231                  | 132                           | 231                               | 61                          |
| <b>Total</b>            | <b>3,257</b>         | <b>2,041</b>                  | <b>3,257</b>                      | <b>1,149</b>                |

Source: District Social Welfare Office, Keonjhar, 2017-18

On the other hand, nine exclusion criteria have been provided. Families covered under any of these criteria are excluded from being a beneficiary under NFSA. These include, household owning motorized three wheeler (two or more) / a four wheeler/ a heavy vehicle/ a fishing boat (requiring registration), owning mechanized agricultural equipment (such as tractors or harvesters), household with any member who is a regular employee- gazetted or non-gazetted- of Central or State Government, Public Sector Undertaking (PSU), Government aided autonomous bodies and local bodies (excludes incentive and other honorarium based workers), household with any member earning more than Rs. 10,000 per month in rural areas and Rs. 15,000 per month in urban areas, pensioners with monthly income of more than Rs. 10,000 per month in rural areas and Rs. 15,000 per month in urban areas, households with enterprisers (other than micro-enterprisers) registered with the Government for manufacturing and services, households paying income tax or professional tax, household having domestic electric connection with a load of two kilowatt or more and consuming an average of 300 units of energy (kilowatt hour) per month and households with three or more rooms with pucca walls and pucca roof<sup>21</sup>.

In Keonjhar district, the total number of beneficiaries covered under NFSA is nearly 15 lakh, which is about 83 per cent of the total population (*See table 15: Beneficiaries under NFSA*). The coverage in the district, particularly in rural areas is very important considering that in 90.5 per cent of the rural households in Keonjhar, the highest earning member earns less than Rs. 5,000 per month<sup>22</sup>. Moreover, under most Government pension schemes, such as the Indira Gandhi National Old Age Pension and the Indira Gandhi National Disability Pension, the coverage per beneficiary is only Rs. 300 per month.

**Table 15: Beneficiaries under NFSA**

| Block/municipality name | Number of fair price shops | Beneficiaries    |
|-------------------------|----------------------------|------------------|
| Joda                    | 22                         | 96,142           |
| Jhumpura                | 22                         | 97,071           |
| Banspal                 | 25                         | 94,934           |
| Champua                 | 36                         | 93,038           |
| Hatadihi                | 41                         | 146,554          |
| Harichandanpur          | 25                         | 129,264          |
| Keonjhar                | 26                         | 133,118          |
| Anandapur               | 22                         | 98,778           |
| Ghasipura               | 26                         | 131,361          |
| Ghatagaon               | 25                         | 104,992          |
| Patna                   | 21                         | 85,119           |
| Saharapada              | 20                         | 80,174           |
| Telkoi                  | 24                         | 88,382           |
| Anandapur (M)           | 15                         | 24,154           |
| Joda (M)                | 17                         | 28,854           |
| Barbil (M)              | 15                         | 37,936           |
| Keonjhar (M)            | 15                         | 27,951           |
| <b>Total</b>            | <b>397</b>                 | <b>149,78,22</b> |

Source: NFSA database, 2016-17

## B. Gaps in nutrition and food security

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

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

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

On an average, AWCs in the district are serving at least 1.5 times more than as the prescribed norms, in all blocks. In Joda, the AWCs are serving more than double the capacity (*See table 16: Overall infrastructure gap in AWCs in Keonjhar district*).

### b. AWCs not having a permanent structure

The data also clearly reveals that not only the number of AWCs is of concern, but even many of the existing ones do not have permanent structures. Overall, about 37 per cent of the AWCs in the district lack a permanent structure. In some mining-affected areas, the situation is even worse. For instance, in Banspal block, about 43 per cent AWCs lack permanent structures.

### c. AWCs lacking toilet facilities

Proper sanitation facilities, which are critical for children in particular, are a big need for the district when it comes to AWCs. An average of around 65 per cent of the AWCs in the district lack toilet facilities within premises. In mining-affected areas like Joda, about 85 per cent AWCs lack such facilities, in Banspal this is about 68 per cent. In other areas too about half of the existing AWCs do not have a functional toilet.

**Table 16: Overall infrastructure gap in AWCs in Keonjhar district**

| Block/municipality name | Coverage of children exceeding Capacity | Lacking permanent structure (%) | Lacking water facilities (%) | Lacking functional toilet (%) |
|-------------------------|---|---------------------------------|------------------------------|-------------------------------|
| Joda                    | 2.4                                     | 33                              | 0                            | 85                            |
| Jhumpura                | 1.5                                     | 19                              | 0                            | 53                            |
| Banspal                 | 1.7                                     | 43                              | 0                            | 68                            |
| Champua                 | 1.6                                     | 28                              | 0                            | 55                            |
| Hatadihi                | 1.8                                     | 56                              | 0                            | 87                            |
| Harichandanpur          | 1.7                                     | 39                              | 0                            | 58                            |
| Keonjhar                | 3.1                                     | 37                              | 0                            | 56                            |
| Anandpur                | 1.8                                     | 52                              | 0                            | 90                            |
| Ghasipura               | 2.6                                     | 45                              | 0                            | 61                            |
| Ghatagaon               | 1.3                                     | 36                              | 0                            | 55                            |
| Patna                   | 2.0                                     | 39                              | 0                            | 64                            |
| Saharpada               | 1.1                                     | 17                              | 0                            | 40                            |
| Telkoi                  | 1.3                                     | 43                              | 0                            | 74                            |

Source: District Social Welfare Office, Keonjhar, 2017-18

### 3.1.3 Education

The education status of Keonjhar district, including of the mining-affected areas, has been reviewed on the basis of the following parameters:

- Status of literacy and level of education.
- Educational infrastructure — number of schools for various grades, availability of basic amenities in schools such as drinking water, toilets and electricity.
- Enrolment and dropout.
- 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 Keonjhar district is 68.2 per cent, which is lower than the state's average of 72.9 per cent (*See table 17: Literacy levels in Keonjhar district*). Among the literate population, the male literacy (78 per cent) is much higher than the female literacy (58 per cent). Literacy rate is also very low among the tribal population at 53.2 per cent.

Some of the poorest literacy levels are found in the worst affected mining areas. For instance, in Banspal block literacy is as low as 42.4 per cent and in Joda only relatively better at 58 per cent. Other areas like Jhumpura, Harichandanpur etc, also have literacy rates lower than the district average (*See table 18: Block-wise literacy in Keonjhar district*).

**Table 17: Literacy levels in Keonjhar district**

| Category | Total literates (%) | SC literates (%) | ST literates (%) |
|----------|---------------------|------------------|------------------|
| Total    | 68.2                | 73.8             | 53.2             |
| Male     | 78.1                | 83.8             | 65.2             |
| Female   | 58.2                | 63.8             | 41.6             |

Source: Census of India, 2011

**Table 18: Block-wise literacy in Keonjhar district**

| Block/municipality name | Literate population (%) |
|-------------------------|-------------------------|
| Joda                    | 58.2                    |
| Jhumpura                | 63.4                    |
| Banspal                 | 42.4                    |
| Champua                 | 71.1                    |
| Hatadihi                | 80.8                    |
| Harichandanpur          | 62.4                    |
| Keonjhar                | 68.2                    |
| Anandapur               | 64.5                    |
| Ghasipura               | 78.4                    |
| Ghatagaon               | 66.4                    |
| Patna                   | 67.4                    |
| Saharpada               | 65.7                    |
| Telkoi                  | 65.4                    |
| Anandapur (M)           | 84.5                    |
| Barbil (M)              | 72.2                    |
| Joda (M)                | 72.2                    |
| Keonjhar (M)            | 87.2                    |

Source: Odisha Primary Education Programme Authority (OPEPA), 2017-18

Not just the proportion of literate population, the level of education required to secure a decent employment, such as at least higher secondary or graduate level education, is poor. Only about 2.5 per cent of the district's literates have completed graduation and only 3.5 per cent have studied till the higher secondary level (*See table 19: Level of education in Keonjhar district*).

**Table 19: Level of education in Keonjhar district**

| Category               | Percentage of literate population (%) |
|------------------------|---------------------------------------|
| Below primary level    | 12.3                                  |
| Primary level          | 16.2                                  |
| Middle level           | 16.1                                  |
| Secondary level        | 8.3                                   |
| Higher secondary level | 3.5                                   |
| Graduate and above     | 2.6                                   |
| Others                 | 0.5                                   |

Source: Odisha Primary Education Programme Authority (OPEPA), 2017-18

## b. Educational infrastructure

The educational infrastructure has been evaluated with respect to number of schools of various grades (including schools for marginalized groups), 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 20: Distribution of schools in Keonjhar district*).

In all blocks and municipalities, 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, most people pointed out the shortage of secondary and higher secondary schools (including their poor accessibility), often leading to drop-outs (*Refer to section 4*).

Beside the regular schools, there are some schools exclusively for SC/ST students in the district, including mining-affected areas. These are called the ashram and sevashram schools which provide education from primary to class ten levels<sup>23</sup>. As per Keonjhar District Gazetteer (2016-17), there were 12 ashram schools, 1 kanyashram, 14 abasik ashrams, 32 sevashrams and 1 ekalavya model school.

**Availability of basic amenities in schools — drinking water, toilet, electricity:** Guidelines under both Right to Education (RTE) Act (2009) and the Rashtriya Madhyamik Shiksha Abhiyan (RMSA) stipulate the need for infrastructure support to enhance access and provide quality education.

**Table 20: Distribution of schools in Keonjhar district**

| Block/municipality name | Pr.          | Pr. + U.P. + Sec. | Pr. + U.P. | Sec.     | U.P. + Sec. + H.S. | U.P. + Sec. | U.P.       | HS        | Total        |
|-------------------------|--------------|-------------------|------------|----------|--------------------|-------------|------------|-----------|--------------|
| Joda                    | 95           | 3                 | 43         | 1        | 1                  | 5           | 5          | 1         | 154          |
| Jhumpura                | 113          | -                 | 53         | -        | 1                  | 22          | 16         | 1         | 206          |
| Banspal                 | 155          | 8                 | 53         | -        | 1                  | 6           | 1          | 1         | 225          |
| Champua                 | 101          | 1                 | 35         | 1        | -                  | 21          | 23         | 1         | 183          |
| Hatadihi                | 138          | 1                 | 71         | -        | -                  | 24          | 31         | 1         | 266          |
| Harichandanpur          | 162          | -                 | 55         | -        | 1                  | 10          | 7          | 1         | 236          |
| Keonjhar                | 140          | 1                 | 57         | -        | -                  | 18          | 17         | 1         | 234          |
| Anandpur                | 108          | 1                 | 36         | -        | -                  | 9           | 6          | 3         | 163          |
| Ghasipura               | 108          | 1                 | 70         | -        | -                  | 21          | 11         | 3         | 214          |
| Ghatagaon               | 116          | 2                 | 47         | -        | 1                  | 12          | 10         | -         | 188          |
| Patna                   | 113          | -                 | 50         | -        | -                  | 15          | 15         | -         | 193          |
| Saharpada               | 97           | -                 | 45         | -        | 2                  | 10          | 20         | -         | 174          |
| Telkoi                  | 127          | 1                 | 63         | -        | 1                  | 11          | 9          | 1         | 213          |
| Anandpur (M)            | 24           | -                 | 7          | -        | 1                  | 7           | 3          | 2         | 44           |
| Barbil (M)              | 19           | -                 | 3          | -        | 1                  | 4           | 1          | -         | 28           |
| Champua NAC             | 6            | -                 | 4          | 1        | 1                  | 1           | 1          | 1         | 15           |
| Joda (M)                | 14           | -                 | 3          | -        | -                  | 4           | 2          | 1         | 24           |
| Keonjhar (M)            | 23           | -                 | 10         | -        | -                  | 5           | 2          | 3         | 43           |
| <b>Total</b>            | <b>1,659</b> | <b>19</b>         | <b>705</b> | <b>3</b> | <b>11</b>          | <b>205</b>  | <b>180</b> | <b>21</b> | <b>2,803</b> |

Source: Odisha Primary Education Programme Authority (OPEPA), 2017-18

Supporting infrastructure include, having toilets for boys and girls at all levels of education, availability of clean drinking water at premises and electricity supply in schools.

The data on these basic amenities shows that while toilets are present in most of the schools across the district, access to tap water and the coverage of electricity is extremely limited (*See table 21: Schools with tap water, toilet and electricity facilities*). The status of access to clean tap water is particularly alarming considering that ground water in highly polluted in the mining areas<sup>24</sup>.

### c. Enrolment and dropout

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.

**Table 21: Schools with tap water, toilet and electricity facilities**

| Block/municipality name | Total schools | With tap water facility (%) | With toilets (%) | With electricity access (%) |
|-------------------------|---------------|-----------------------------|------------------|-----------------------------|
| Joda                    | 154           | 9.7                         | 100              | 27.3                        |
| Jhumpura                | 206           | 4.4                         | 99.0             | 26.7                        |
| Banspal                 | 225           | 6.2                         | 100              | 20.0                        |
| Champua                 | 183           | 1.6                         | 98.9             | 24.1                        |
| Hatadihi                | 266           | 1.1                         | 99.6             | 32.7                        |
| Harichandanpur          | 236           | 2.9                         | 100              | 12.3                        |
| Keonjhar                | 234           | 1.3                         | 100              | 22.7                        |
| Anandapur               | 163           | 3.7                         | 99.4             | 17.2                        |
| Ghasipura               | 214           | 4.2                         | 99.5             | 24.8                        |
| Ghatagaon               | 188           | 5.9                         | 100              | 21.8                        |
| Patna                   | 193           | 1.6                         | 100              | 26.9                        |
| Saharapada              | 174           | 1.2                         | 100              | 22.9                        |
| Telkoi                  | 213           | 2.4                         | 100              | 21.1                        |
| Anandapur (M)           | 44            | 22.7                        | 100              | 47.7                        |
| Barbil (M)              | 28            | 39.3                        | 100              | 39.0                        |
| Champua NAC             | 15            | 20.0                        | 100              | 46.7                        |
| Joda (M)                | 24            | 45.8                        | 100              | 79.2                        |
| Keonjhar (M)            | 43            | 25.6                        | 97.7             | 46.5                        |

Source: Odisha Primary Education Programme Authority (OPEPA), 2017-18

As per information made available by district officials and reports, the GER at elementary level is about 97.2 per cent, while NER is 90.8 per cent. However, the indicators drop significantly at the secondary level when compared to elementary levels. The GER at the secondary level is about 79.3 per cent, while NER is about 69.7 per cent. Considering the dropout rate, this is also higher at the secondary levels<sup>25</sup> (See table 22: Enrollment and dropout rate at elementary and secondary levels).

Interactions with the mining-affected communities suggest that distance to schools, poor quality of education including shortage of teachers, lack of basic facilities coupled with poor financial status of the households, were found to be strong determinants for poor enrolment and children dropping out of schools (Refer to section 4). This also indicates that there is a serious deficit in creating an educated workforce for procuring decent employment and livelihood opportunities.

**Table 22: Enrollment and dropout rate at elementary and secondary levels**

| Education indicators | Elementary level | Secondary level |
|----------------------|------------------|-----------------|
| GER                  | 97.2             | 79.3            |
| NER                  | 90.8             | 69.7            |
| Dropout rate         | 6.0              | 6.4             |

Source: Odisha Primary Education Programme Authority (OPEPA), 2017-18

#### d. 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<sup>26</sup>. As per standards (RTE for elementary and RMSA for secondary), the PTR for primary level should not exceed 30:1, for upper primary 35:1 and for secondary level 30:1.

For the purpose of this analysis, PTR of 30:1 has been taken as a uniform benchmark for both elementary and secondary education. The availability of adequate teachers at various grades varies significantly (*See table 23: Status of PTR at elementary, secondary and higher secondary schools*). The proportion of secondary level schools with adequate teachers is much lower compared to elementary level. In some mining-affected areas, the PTR in both elementary and secondary level schools is poor.

**Table 23: Status of PTR at elementary, secondary and higher secondary schools**

| Block /municipality name | Elementary schools with PTR less than 30 (%) | Secondary schools with PTR less than 30 (%) | Higher secondary schools with PTR less than 30 (%) |
|--------------------------|--|---|--|
| Joda                     | 40.5   | 50.0  | -  |
| Jhumpura                 | 71.9   | 73.9  | -  |
| Banspal                  | 63.6   | 60.0  | -  |
| Champua                  | 91.1   | 91.3  | 100  |
| Hatadihi                 | 83.3   | 60.0  | -  |
| Harichandanpur           | 76.7   | 45.4  | -  |
| Keonjhar                 | 78.5   | 63.1  | -  |
| Anandpur                 | 88.6   | 60.0  | 33.3   |
| Ghasipura                | 83.5   | 63.6  | -  |
| Ghatagaon                | 80.3   | 73.3  | -  |
| Patna                    | 91.0   | 73.3  | -  |
| Saharpada                | 84.5   | 75.0  | -  |
| Telkoi                   | 83.4   | 53.8  | -  |
| Anandpur (M)             | 94.1   | 62.5  | 100  |
| Barbil (M)               | 13.0   | 40.0  | -  |
| Champua NAC              | 90.9   | 66.6  | -  |
| Joda (M)                 | 42.1   | 75.0  | 100  |
| Keonjhar (M)             | 91.4   | 80.0  | -  |

Source: Odisha Primary Education Programme Authority (OPEPA), 2017-18

#### B. Gaps in the education sector

The gaps or deficits in the education sector in Keonjhar district as identified from analysis of the official data shows deficits both in infrastructure as well as resources. The key deficits include:

- Inadequate number of secondary and higher secondary schools.
- Inadequate teachers in schools, particularly at secondary and higher secondary levels.

- c. Lack of clean drinking water (tap water) and electricity in schools.
- d. Lower enrollment in secondary level schools as compared to elementary level.

### a. Inadequate number of secondary and higher secondary schools

The comparative account between facilities providing elementary education versus facilities providing secondary and higher secondary education clearly shows that secondary and higher secondary schools are much less (*See table 24: Comparison of educational facilities offering various grades of education*). While the number of secondary schooling facilities is quite low, for higher secondary this is even worse. The shortage and consequent poor access to education post elementary level has also been heavily emphasized by the members of the community as well as district officials during ground interactions (*Refer to section 4*).

**Table 24: 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 |
|-------------------------|--|---------------------------------------|--|
| Joda                    | 143                                    | 10                                    | 1  |
| Jhumpura                | 182                                    | 23                                    | 1  |
| Banspal                 | 209                                    | 15                                    | 1  |
| Champua                 | 159                                    | 23                                    | 1  |
| Hatadihi                | 240                                    | 25                                    | 1  |
| Harichandanpur          | 224                                    | 11                                    | 1  |
| Keonjhar                | 214                                    | 19                                    | 1  |
| Anandpur                | 150                                    | 10                                    | 3  |
| Ghasipura               | 189                                    | 22                                    | 3  |
| Ghatagaon               | 173                                    | 15                                    | -  |
| Patna                   | 178                                    | 15                                    | -  |
| Saharpada               | 162                                    | 12                                    | -  |
| Telkoi                  | 199                                    | 13                                    | 1  |
| Anandpur (M)            | 34                                     | 8                                     | 2  |
| Barbil (M)              | 23                                     | 5                                     | -  |
| Champua NAC             | 11                                     | 3                                     | 1  |
| Joda (M)                | 19                                     | 4                                     | 1  |
| Keonjhar (M)            | 35                                     | 5                                     | 3  |
| Total                   | 2, 544                                 | 238                                   | 21   |

Source: Odisha Primary Education Programme Authority (OPEPA), 2017-18

### b. Inadequate teachers in schools, particularly at secondary and higher secondary levels

There is a dearth of teachers across the district when it comes to secondary and higher secondary level education. In mining-affected areas, a large number of secondary level institutions do not have the required number of teacher, i.e.,

not fulfilling the required PTR of 30:1 as stipulated under RMSA (*See table 25: Deficits in human resources*).

**Table 25: Deficits in human resources**

| Block/municipality name | Elementary schools with PTR more than 30 (%) | Secondary schools with PTR more than 30 (%) | Higher secondary schools with PTR more than 30 (%) |
|-------------------------|--|---|--|
| Joda                    | 58.0   | 60.0  | 100  |
| Jhumpura                | 25.8   | 21.7  | 100  |
| Banspal                 | 35.4   | 46.7  | 100  |
| Champua                 | 8.8  | 8.7   | -  |
| Hatadihi                | 16.3   | 40.0  | 100  |
| Harichandanpur          | 22.8   | 54.5  | 100  |
| Keonjhar                | 20.6   | 36.8  | 100  |
| Anandpur                | 11.3   | 40.0  | 66.7   |
| Ghasipura               | 15.3   | 40.9  | 100  |
| Ghatagaon               | 19.1   | 26.7  | -  |
| Patna                   | 9.0  | 26.7  | -  |
| Saharpada               | 14.2   | 25.0  | -  |
| Telkoi                  | 15.6   | 46.2  | 100  |
| Anandpur (M)            | 5.9  | 37.5  | -  |
| Barbil (M)              | 87.0   | 60.0  | -  |
| Champua NAC             | 9.1  | 33.3  | 100  |
| Joda (M)                | 57.9   | 25.0  | -  |
| Keonjhar (M)            | 8.6  | 20.0  | 100  |

Source: Odisha Primary Education Programme Authority (OPEPA), 2017-18

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

Tap water availability in schools is one of the most severe infrastructure deficits all across the district. In most mining-affected areas, more than 90 per cent schools lack tap water facility. In Banspal and Jhampura, for instance, almost all the schools lack tap water.

Besides drinking water, another critical problem is with electricity access. In mining-affected areas, 70 to 80 per cent schools do not have access to electricity. More specifically, more than 80 per cent schools in Banspal and Harichandanpur and more than 72 per cent in Joda and Jhampura areas do not have electricity (*See table 26: Deficit in basic amenities in schools*).

### d. Lower enrolment in secondary level schools as compared to elementary level

Analysis of the enrolment data for the district shows a clear drop in enrolment for secondary level education as compared to elementary. The GER at secondary level drops by nearly 17.9 per cent as compared to elementary levels. The dropout also increases simultaneously at secondary level as indicated earlier.

**Table 26: Deficit in basic amenities in schools**

| Block/municipality name | Schools without tap water facility (%) | Schools without electricity access (%) |
|-------------------------|--|--|
| Joda                    | 90.3                                   | 72.7                                   |
| Jhumpura                | 95.6                                   | 73.3                                   |
| Banspal                 | 93.8                                   | 80.0                                   |
| Champua                 | 98.4                                   | 76.0                                   |
| Hatadihi                | 98.9                                   | 67.3                                   |
| Harichandanpur          | 97.0                                   | 87.7                                   |
| Keonjhar                | 98.7                                   | 77.4                                   |
| Anandpur                | 96.3                                   | 82.8                                   |
| Ghasipura               | 95.8                                   | 75.2                                   |
| Ghatagaon               | 94.2                                   | 78.2                                   |
| Patna                   | 98.5                                   | 73.1                                   |
| Saharpada               | 98.8                                   | 77.0                                   |
| Telkoi                  | 97.7                                   | 78.9                                   |
| Anandpur (M)            | 77.3                                   | 52.3                                   |
| Barbil (M)              | 60.7                                   | 60.7                                   |
| Champua (NAC)           | 80.0                                   | 53.3                                   |
| Joda (M)                | 54.2                                   | 20.8                                   |
| Keonjhar (M)            | 74.4                                   | 53.5                                   |

Source: Odisha Primary Education Programme Authority (OPEPA), 2017-18

## 3.2 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 Keonjhar 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 to ensure livelihoods — 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 Keonjhar district, about 42.5 per cent of the total population is classified as working population. However, when it comes to main workers, i.e, those who have worked for more than six months in a year<sup>27</sup>, the proportion is only 24.5 per cent of the total population. Additionally nearly 18 per cent are marginal workers comprising those who have worked less than six months. A

**Table 27: Distribution of working and non-working population in Keonjhar district**

| Category | Total workers (% of total population) | Main workers (%) | Marginal workers (%) | Non-workers (%) | Non-workers 15-59 years (%) |
|----------|---------------------------------------|------------------|----------------------|-----------------|-----------------------------|
| Total    | 42.5                                  | 24.56            | 17.98                | 57.46           | 35.9                        |
| Male     | 54.6                                  | 40.01            | 14.93                | 45.05           | 24.5                        |
| Female   | 29.9                                  | 8.91             | 21.07                | 70.02           | 75.5                        |

Source: Census of India (2011)

big proportion of the population, 57.4 per cent, falls under the non-workers category (See table 27: *Distribution of working and non-working population in Keonjhar district*).

When only the working age-group of 15-59 years is considered, the proportion of non-workers reduces a little. As per Census, 2011, about 36 per cent people in this age-group fall in the non-working category. The employment ratio is also skewed between the genders. The female participation in the workforce is very low. Among women, only about 30 per cent are part of the working population, compared to more than 54 per cent males. The proportion of non-working women in the working age-group is more than three times higher compared to males. Even those who are working are mostly marginal workers.

The proportion of non-workers and marginal workers in the district indicates income instability among the population. It also indicates high level of dependency on workers, who would by logic need a sustained and well-paying employment to address the needs of the family.

In most mining-affected areas, a similar trend appears (See table 28: *Block-wise distribution of working and non-working population*). There is also a high proportion of marginal workers in these areas, particularly the rural parts. In Banspal, for instance, about 33.3 per cent people are marginal workers, almost twice the number of main workers in the area. The high proportion of non-working population, and a significant number of people engaged in marginal work in mining-affected areas, clearly indicates that mining activities in the region have failed to secure a sustained and well-paying livelihood for people.

## **b. Income distribution**

Keonjhar is one of the most economically distressed districts of Odisha. According to the economic profile of the district, nearly 69 per cent people fall below the poverty line (BPL)<sup>28</sup>.

Poverty is further worse among the tribal people. According to official information, households falling BPL are proportionately much higher in all blocks in the district. The situation is in fact worst in some of the worst affected mining areas such as Banspal, Keonjhar, Joda, Jhumpura etc. (See table 29: *Social group-wise distribution of BPL households in Keonjhar district*).

**Table 28: Block-wise distribution of working and non-working population**

| Block/municipality name | Total working population (%) | Main workers (%) | Marginal workers (%) | Total non-working population (%) |
|-------------------------|------------------------------|------------------|----------------------|----------------------------------|
| Joda                    | 37.3                         | 26.1             | 11.2                 | 62.7                             |
| Jhumpura                | 49.8                         | 24.1             | 25.6                 | 50.2                             |
| Banspal                 | 49.8                         | 16.4             | 33.3                 | 50.2                             |
| Champua                 | 46.1                         | 27.3             | 18.8                 | 53.9                             |
| Hatadihi                | 33.9                         | 21.6             | 12.3                 | 66.1                             |
| Harichandanpur          | 50.2                         | 23.5             | 26.6                 | 49.8                             |
| Keonjhar                | 43.1                         | 24.0             | 19.0                 | 56.9                             |
| Anandpur                | 38.5                         | 20.7             | 17.8                 | 61.5                             |
| Ghasipura               | 32.3                         | 23.2             | 9.1                  | 67.7                             |
| Ghatagaon               | 45.5                         | 26.3             | 19.1                 | 54.5                             |
| Patna                   | 50                           | 25               | 25.6                 | 50                               |
| Saharpada               | 55.9                         | 31.9             | 23.9                 | 44.1                             |
| Telkoi                  | 48.2                         | 22.5             | 25.7                 | 51.8                             |
| Anandpur (M)            | 31.5                         | 26.5             | 5                    | 68.5                             |
| Joda (M)                | 34.9                         | 32.3             | 2.5                  | 65.1                             |
| Barbil (M)              | 33.1                         | 28.6             | 4.5                  | 66.9                             |
| Keonjhar (M)            | 33.7                         | 29.9             | 3.8                  | 66.3                             |

Source: Census of India, 2011

**Table 29: Social group-wise distribution of BPL households in Keonjhar district**

| Block name     | No. of households below poverty line |      |         |
|----------------|--------------------------------------|------|---------|
|                | ST                                   | SC   | General |
| Joda           | 10,165                               | 1357 | 2890    |
| Jhumpura       | 9483                                 | 1441 | 5435    |
| Banspal        | 13,749                               | 780  | 2364    |
| Champua        | 8726                                 | 1748 | 6107    |
| Hatadihi       | 4572                                 | 6140 | 7016    |
| Harichandanpur | 12,408                               | 1974 | 6889    |
| Keonjhar       | 12,247                               | 2541 | 6978    |
| Anandpur       | 8930                                 | 2469 | 4700    |
| Ghatgaon       | 12,275                               | 1331 | 4101    |
| Ghasipura      | 5362                                 | 4753 | 8986    |
| Patna          | 8251                                 | 1256 | 4460    |
| Saharpada      | 8660                                 | 1355 | 3809    |
| Telkoi         | 8286                                 | 1964 | 4862    |

Source: District Disaster Management and Response Plan, Keonjhar, 2016

The low income level among the rural population is also evident from the socio economic caste census (SECC, 2011). In rural areas, the highest earning member of more than 90 per cent of the households earns less than Rs. 5000 per month (See table 30: *Income distribution in rural areas of Keonjhar district*). Further, as per the SECC, more than half of the rural households are dependent on manual or casual labour as a means of livelihood.

The statistics clearly reflect high levels of income uncertainty and economic instability. Therefore, securing a stable and decent livelihood for people, especially for the rural and tribal population is of utmost importance.

**Table 30: Income distribution in rural areas of Keonjhar district**

| Income/ Earnings  | Proportion of households (%) |
|---|------------------------------|
| With salaried job   | 6.7                          |
| With highest earning head getting less than Rs. 5,000 per month     | 90.6                         |
| With highest earning head getting Rs. 5,000 to Rs. 10,000 per month | 5.1                          |
| With highest earning head getting more than Rs. 10,000 per month    | 4.4                          |

Source: Socio Economic Caste Census, 2011

### c. Key sources of employment and livelihood

Considering sector-wise distribution of the 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 more people living in towns.

In areas with considerable proportion of urban population such as Joda and Barbil, a majority of the main workers fall under the category “other workers”. This category includes employments related to construction, mining, trade, government workers, teachers etc. In rural areas on the other hand, most people are dependent on agricultural activities and fall under the category of cultivators or agricultural laborers (See table 31: *Categorization of main workers in Keonjhar district*).

**Industries related employment:** Keonjhar district is the heartland of iron-ore mining and is also an industrial hub for Odisha. The most important minerals of economic value found in the district include iron ore, bauxite, manganese among others. As per communication with state and district officials, significant proportion of the population depends on mining activities for livelihoods. However, no official estimate is available of the employment generated.

**Table 31: Categorization of main workers in Keonjhar district**

| Block /municipality name | Categories of main workers                 |                 |                           |                                |            |
|--------------------------|--|-----------------|---------------------------|--------------------------------|------------|
|                          | Proportion of main workers to total worker | Cultivators (%) | Agriculture labourers (%) | Household industry workers (%) | Others (%) |
| Joda                     | 69.9                                       | 8.8             | 3.2                       | 1.6                            | 86.4       |
| Jhumpura                 | 48.5                                       | 46.4            | 23.1                      | 2.4                            | 28.1       |
| Banspal                  | 33.0                                       | 45.2            | 20.8                      | 1.5                            | 32.6       |
| Champua                  | 59.2                                       | 41.9            | 21.7                      | 2.7                            | 33.6       |
| Hatadihi                 | 63.7                                       | 44.4            | 25.3                      | 2.8                            | 27.4       |
| Harichandanpur           | 46.9                                       | 48.2            | 25.8                      | 2.3                            | 23.8       |
| Keonjhar                 | 55.8                                       | 35.0            | 17.8                      | 2.5                            | 44.6       |
| Anandpur                 | 53.7                                       | 46.2            | 26.7                      | 2.3                            | 24.9       |
| Ghasipura                | 71.8                                       | 45.9            | 25.4                      | 2.5                            | 26.2       |
| Ghatagaon                | 57.9                                       | 39.0            | 27.2                      | 2.9                            | 30.9       |
| Patna                    | 49.2                                       | 53.3            | 18.6                      | 3.2                            | 24.8       |
| Saharpada                | 57.2                                       | 54.1            | 22.5                      | 3.8                            | 19.7       |
| Telkoi                   | 46.7                                       | 35.7            | 28.9                      | 3.3                            | 32.1       |
| Anandpur (M)             | 84   | 12.2            | 8.2                       | 16.8                           | 72.7       |
| Joda (M)                 | 92.7                                       | 0.6             | 0.4                       | 2.6                            | 96.4       |
| Barbil (M)               | 86.5                                       | 0.3             | 0.4                       | 2.6                            | 96.7       |
| Keonjhar (M)             | 88.8                                       | 3.4             | 4.4                       | 2.6                            | 89.6       |

Source: Census of India, 2011

Besides mining, Keonjhar also has a significant industrial presence, particularly in the Joda Barbil regions. The major companies in the district are Jindal Steel and Power ltd, TISCO, Kalinga Iron Works ltd, Essel Mining ltd etc. Among the micro and small-scale industries, agro-based and repair and servicing activities dominate the region. Other significant activities include mineral-based and textile-based industries. Besides these, other industrial activities such as paper and paper products, chemical-based, wood-based and furniture are significant in Keonjhar district. (See table 32: Micro and small scale industries and related employment in Keonjhar district).

**Agriculture related livelihood:** Overall in Keonjhar district, about 33 per cent of the total land area is categorized as net sown area. Even in the mining-affected areas such as Champua and Jhampura the proportion of net sown area is very high (See table 33: Distribution of main land use pattern in Keonjhar district). This also corroborates with the fact that about 60 to 70 per cent of the main workers in these blocks have agriculture based earnings, combining cultivators and agricultural labourers. However, at the same time it is also clear that in heavily mining-affected blocks such as Banspal, the potential of agricultural activities is extremely low. As also captured during ground interactions, water and soil pollution and availability of water has compromised people's livelihoods based on agriculture here (Refer to section 4).

**Table 32: Micro and small scale industries and related employment in Keonjhar district**

| Types of industry                            | No. of units | No. of people employed |
|--|--------------|------------------------|
| Agro based                                   | 1106         | 4162                   |
| Textile based                                | 444          | 1831                   |
| Wood/wooden based, furniture                 | 214          | 1060                   |
| Paper and paper products                     | 79           | 367                    |
| Leather based                                | 23           | 104                    |
| Chemical/ chemical based                     | 77           | 524                    |
| Rubber, plastic and petro based              | 69           | 389                    |
| Mineral based                                | 591          | 6235                   |
| Engineering and metal based                  | 419          | 4607                   |
| Electrical machinery and transport equipment | 12           | 79                     |
| Repairing and servicing                      | 1347         | 4310                   |
| Others                                       | 203          | 870                    |
| <b>Total</b>                                 | <b>4584</b>  | <b>24,538</b>          |

Source: Department of MSME report, 2016-17

Paddy, maize, various types of grams, niger etc. are some of the major crops cultivated in the district. Besides there are various horticultural produces including mangoes, cashews, coconut etc<sup>29</sup>.

**Table 33: Distribution of main land use pattern in Keonjhar district**

| Block name     | Net sown area (%) | Forest area (%) | Wasteland area (%) |
|----------------|-------------------|-----------------|--------------------|
| Joda           | 27.7              | 28.7            | 3.3                |
| Jhumpura       | 42.4              | 29.5            | 1.1                |
| Banspal        | 8.9               | 51.0            | 1.5                |
| Champua        | 58.1              | 15.7            | 6.5                |
| Hatadihi       | 60.9              | 19.3            | 0.1                |
| Harichandanpur | 26.9              | 50.6            | 2.1                |
| Keonjhar       | 54.3              | 23.3            | 0.9                |
| Anandpur       | 43.7              | 17.2            | 4.6                |
| Ghasipura      | 46.9              | 14.0            | 7.9                |
| Ghatagaon      | 25.2              | 49.4            | 1.7                |
| Patna          | 51.5              | 21.0            | 2.7                |
| Saharpada      | 56.5              | 14.7            | 2.1                |
| Telkoi         | 16.7              | 64.6            | 2.3                |

Source: Keonjhar district irrigation plan, 2016

Most of the farmers in the district are however marginal farmers with landholdings below one hectare. Large landholding is practically absent about SC category, and is mostly concentrated with other social groups (See table 34: Distribution of operational land holdings by type, area and social group in Keonjhar district).

**Table 34: Distribution of operational land holdings by type, area and social group in Keonjhar district**

| Scheduled Castes                  |          |        |             |        |       |
|-----------------------------------|----------|--------|-------------|--------|-------|
|                                   | Marginal | Small  | Semi-medium | Medium | Large |
| Total no. of operational holdings | 20,261   | 2915   | 504         | 60     | 0     |
| Total area operated (ha)          | 10,924   | 4933   | 1546        | 339    | 0     |
| Scheduled Tribes                  |          |        |             |        |       |
| Total no. of operational holdings | 97,800   | 21,235 | 4275        | 591    | 49    |
| Total area operated (ha)          | 62,633   | 36,159 | 13,257      | 3783   | 819   |
| Other social groups               |          |        |             |        |       |
| Total no. of operational holdings | 196,755  | 47,654 | 10,053      | 1863   | 152   |
| Total area operated (ha)          | 124,703  | 81,364 | 31,290      | 11,704 | 4105  |

Source: Agricultural census of Keonjhar district, 2011

**Forest-based livelihood:** The landscape of Keonjhar district is dominated by forest area, constituting an important resource for a sustainable livelihood for the people in the district.

In Keonjhar, about 37.5 per cent of land comes is under forest. Some of the mining-affected blocks such as Banspal and Harichandanpur have about 50 per cent of land as forest area.

The dependence on forests, therefore, continues to be significant even in areas which are affected by mining. The extent of dependence however varies based on the scale of mining operations in these blocks as observed during ground interaction. For instance, in Banspal, the dependence on forests for food and livelihood security is quite high. On the other hand, in Jhumpura, there is mixed interest and dependence on forest-based livelihoods.

Non-timber forest products (NTFP)/ minor forest produces constitutes important source of livelihood for the forest dependent people. The major NTFPs available in the area include mahula, tola (oil from mahula seeds), kusum knots, char seeds, tamarind, harida, bahada, sal leaf, mushroom, honey etc. While a significant number of people (particularly tribal people) are engaged in collecting and selling the minor forest produces, but back of an organized market and necessary support from the government on ensuring proper price of these products, the income from these remain sub optimal<sup>30</sup>. As observed during community interaction, on an average annual contribution of NTFPs to the household income ranges between Rs. 8,000 to Rs. 12,000.

A number of factors have restricted the scope of harnessing the full potential of such forest products for livelihood enhancement. These include, poor knowledge of communities regarding the market price of their products and minimum support price for minor forest produce scheme (MSP for MFP), lack of marketing knowledge and weak support from Government, access to markets etc.

Besides, the poor settlement of forest rights, particularly the title deeds given for community forest resource (CFR) rights, has also restricted the scope of enhancing livelihood opportunities based on forestry. While according to district officials most of the CFR titles have been given, but ground observations differed.

The FRA recognizes and emphasizes on community-based governance of forests. The Act specifically provides for the recognition of forestlands as CFR 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 of 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. CFR awarded appropriately to forest communities, entitles them for better management of forest resources for productive use, support from the government in terms value addition for their products, improved market linkages and get better pricing for their products etc. Also if the implementation of CFR is converged with other government schemes and worked upon properly, the economic conditions of tribal communities and people who are dependent on and derive livelihoods from forest resources can change significantly.

#### **d. Intervention through other schemes to ensure livelihoods**

The MGNREGS is aimed at improving livelihood security of the rural and ensure wage employment of at least 100 days per household annually. In the district MGNREGS has not been very successful in securing wage employment in the mining-affected areas. The viability of this scheme has not achieved its full potential due to a variety of reasons. These include availability of land in mining areas, sufficient work, and availability of work as per the skills of people, accessibility/distance to work, timely payment of wages etc.

However, in the mining-affected areas of the district potential of MGNREGS has been by far suboptimal. For instance, in Banspal, Joda and Hatadihi blocks, the proportion of the households who have completed 100 days of wage employment is shockingly low at below 1 per cent. It is also extremely low in other blocks of the district. (*See table 35: Average days of employment generated and completed under MGNREGS*).

However, the kinds of 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 rural blocks, drinking water projects can be a key area to focus on. Also increasing scope of micro irrigation works, food grain storage etc., can help to secure agriculture-based livelihoods in these areas.

**Table 35: Average days of employment generated and completed under MGNREGS**

| Block name     | Average days of employment generated | Total no. of households worked | Total no. of households completed 100 days of wage employment |
|----------------|--------------------------------------|--------------------------------|---|
| Joda           | 17                                   | 3123                           | 18  |
| Jhumpura       | 18                                   | 9224                           | 35  |
| Banspal        | 21                                   | 11,461                         | 113   |
| Champua        | 20                                   | 6930                           | 46  |
| Hatadihi       | 24                                   | 13,161                         | 32  |
| Harichandanpur | 19                                   | 9390                           | 168   |
| Keonjhar Sadar | 23                                   | 7924                           | 123   |
| Anandpur       | 25                                   | 6635                           | 18  |
| Ghasipura      | 19                                   | 8270                           | 74  |
| Ghatagaon      | 24                                   | 10,078                         | 429   |
| Patna          | 25                                   | 9949                           | 815   |
| Saharpada      | 24                                   | 11,949                         | 266   |
| Telkoi         | 27                                   | 12,043                         | 308   |

Source: MGNREGA MIS report, 2017-18

Beside, MGNREGS, the NRLM aims at reducing rural poverty by enabling poor households to access gainful self-employment and skilled wage employment opportunities through women 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 Keonjhar district, latest official data show that there are about 13,587 women SHGs in the district. In mining-affected areas, such as, Banspal, Jhumpura, Champua etc., on an average of 20 per cent women are engaged in these SHGs. (See table 36: SHGs in various blocks in Keonjhar district). As per official information available from the district, most of the women SHGs have bank linkages.

## B. Gaps in employment and livelihood

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

- a. Nearly 36 per cent of people within the working age-group in the district are non-workers.
- b. Earnings are significantly low in the district's rural areas, with about 90.5

**Table 36: SHGs in various blocks in Keonjhar district**

| Block name     | Total no. of SHGs | Total no. of members | Proportion of female population as SHG members (%) |
|----------------|-------------------|----------------------|--|
| Joda           | 596               | 5687                 | 10.9   |
| Jhumpura       | 891               | 9838                 | 18.3   |
| Banspal        | 1200              | 13,454               | 25.8   |
| Champua        | 1045              | 11,651               | 22.1   |
| Hatadihi       | 966               | 11,405               | 13.9   |
| Harichandanpur | 1282              | 14,122               | 23.2   |
| Keonjhar       | 1050              | 11,577               | 14.3   |
| Anandpur       | 937               | 8663                 | 15.9   |
| Ghasipura      | 1305              | 15,241               | 20.7   |
| Ghatagaon      | 939               | 10,748               | 18.1   |
| Patna          | 1404              | 15,921               | 31.2   |
| Saharpada      | 796               | 8656                 | 19.2   |
| Telkoi         | 1176              | 13201                | 27.2   |

Source: NRLM database, November 2017; Census of India, 2011

per cent of households have the highest earning head with earnings less than Rs. 5000 per month. Income insecurity is also high with about 52 per cent rural households dependent on manual casual labour.

- c. Lack of diversity in livelihood opportunity particularly in mining-affected areas; opportunities of livelihood enhancement around local resources undermined, particularly agriculture-related and forest-based resources.
- d. Rural livelihood schemes (MGNREGS) ineffective in enhancing earnings. All of this together contributes to insecurity in employment and livelihood, particularly for the poor and vulnerable sections of the society.

### 3.3 Public amenities and infrastructure

The status of basic public amenities in Keonjhar district, and particularly the mining-affected blocks has been reviewed on the basis of the following key parameters:

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

The data of all these parameters has been reviewed sub-district wise, as available from the Census of India (2011). Additional information as made available by district officials has also been taken into account. 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-affected areas. Given the high levels of pollution,

**Table 37: Percentage of households by main source of drinking water**

| Sub district name | Tap water from treated source(%) | Tap water from untreated source (%) | Covered wells(%) | Un- covered wells (%) | Hand pumps (%) | Tube wells/ boreholes (%) | Others (%) |
|-------------------|----------------------------------|-------------------------------------|------------------|-----------------------|----------------|---------------------------|------------|
| Barbil            | 33.09                            | 3.72                                | 7.26             | 22.22                 | 1.94           | 18.01                     | 2.67       |
| Bolani            | 62.89                            | 6.61                                | 8.45             | 3.49                  | 0              | 1.43                      | 1.14       |
| Rugudi            | 11.22                            | 10.55                               | 4.99             | 21.50                 | 0.72           | 15.24                     | 10.17      |
| Joda              | 28.05                            | 2.75                                | 8.72             | 25.01                 | 10.30          | 14.87                     | 1.27       |
| Bamebari          | 4.98                             | 3.51                                | 3.24             | 15.51                 | 7.19           | 19.75                     | 12.98      |
| Champua           | 4.90                             | 2.89                                | 2.65             | 14.82                 | 41.91          | 28.27                     | 0.12       |
| Jhumpura          | 2.55                             | 2.26                                | 1.97             | 15.91                 | 52.66          | 22.74                     | 0.07       |
| Baria             | 0.80                             | 1.60                                | 1.33             | 27.36                 | 46.54          | 20.52                     | 0.28       |
| Turumunga         | 0.15                             | 0.08                                | 2.19             | 26.12                 | 38.69          | 28.91                     | 1.03       |
| Patana            | 1.67                             | 3.61                                | 1.13             | 21.18                 | 60.04          | 6.55                      | 0.75       |
| Keonjhar Sadar    | 2.48                             | 1.20                                | 3.42             | 20.10                 | 32.05          | 30.34                     | 0.38       |
| Keonjhar town     | 24.03                            | 3.38                                | 11.82            | 14.32                 | 13.34          | 29.08                     | 0.76       |
| Nayakote          | 2.20                             | 0.62                                | 13.90            | 9.64                  | 15.80          | 15.29                     | 0.19       |
| Kanjipani         | 1.71                             | 1.69                                | 6.71             | 6.94                  | 5.31           | 17.16                     | 0.02       |
| Telkoi            | 1.37                             | 0.36                                | 2.72             | 14.65                 | 57.44          | 14.18                     | 0.08       |
| Pandapara         | 1.20                             | 0.23                                | 3.11             | 16.58                 | 48.21          | 20.01                     | 1.29       |
| Ghatagaon         | 5.26                             | 2.06                                | 1.91             | 25.97                 | 45.58          | 9.93                      | 0.33       |
| Harichandanpur    | 1.79                             | 0.76                                | 1.90             | 9.20                  | 45.93          | 24.48                     | 0.88       |
| Ghasipura         | 6.42                             | 2.08                                | 2.32             | 5.37                  | 52.07          | 23.25                     | 0.70       |
| Anandpur          | 14.98                            | 2.29                                | 1.14             | 4.59                  | 33.29          | 38.0                      | 0.85       |
| Soso              | 2.34                             | 0.22                                | 1.92             | 8.68                  | 50.99          | 25.79                     | 0.33       |
| Nandipada         | 0.10                             | 0.07                                | 0.10             | 0.32                  | 73.89          | 22.97                     | 0.84       |
| Daitari           | 15.78                            | 1.34                                | 1.38             | 7.49                  | 19.77          | 26.01                     | 1.05       |
| Sainkul           | 3.67                             | 3.32                                | 2.16             | 20.87                 | 29.17          | 34.76                     | 0.52       |

Source: Census of India, 2011

only treated tap water/treated piped water be assumed to be relatively safe. However, most of the households rely on untreated ground water sourced through hand pumps or uncovered wells. This is true for almost all rural mining-affected areas. (See table 37: Percentage of households by main source of drinking water).

Overall, just about three per cent of the rural households in the district have access to tap water from a treated source. Among the mining-affected areas also, the rural areas are worse with just about three to four per cent households getting treated tap water. Though urban areas have better access, the reality is only relative in comparison with rural areas. In Joda, for instance, about 28 per cent households have access to treated tap water.

Over the years, the coverage of households through piped water supply under Government schemes has also been far from comprehensive (See table 38: Households with piped water supply).

**Table 38: Households with piped water supply**

| Name of Block  | Households with piped water supply (%) |
|----------------|--|
| Joda           | 23.29                                  |
| Jhumpura       | 23.50                                  |
| Banspal        | 32.12                                  |
| Champua        | 30.51                                  |
| Hatadihi       | 29.86                                  |
| Harichandanpur | 28.26                                  |
| Keonjhar       | 39.85                                  |
| Anandpur       | 38.53                                  |
| Ghasipura      | 47.11                                  |
| Ghatagaon      | 18.46                                  |
| Patna          | 31.18                                  |
| Saharpada      | 25.84                                  |
| Telkoi         | 27.93                                  |

Source: Department of Drinking Water and Sanitation, 2018

**Table 39: Percentage of households by type of latrine facility**

| Sub district name | Flush/Pour latrine (%) | Pit latrine (%) | Night soil disposed into open drain (%) | Service latrines (%) | Public latrines (%) | Open defecation (%) |
|-------------------|------------------------|-----------------|---|----------------------|---------------------|---------------------|
| Barbil            | 37.61                  | 0.88            | 0.17                                    | 0.71                 | 0.45                | 60.18               |
| Bolani            | 37.68                  | 1.14            | 0.11                                    | 0                    | 0                   | 61.07               |
| Rugudi            | 8.03                   | 0.08            | 0.19                                    | 0                    | 0.36                | 91.33               |
| Joda              | 28.37                  | 3.76            | 0.13                                    | 0.42                 | 1.68                | 65.64               |
| Bamebari          | 9.71                   | 1.03            | 0.09                                    | 0.13                 | 0.13                | 88.89               |
| Champua           | 12.56                  | 0.96            | 0.06                                    | 0.12                 | 0.69                | 85.34               |
| Jhumpura          | 10.46                  | 2.15            | 0.11                                    | 0.37                 | 0.49                | 86.43               |
| Baria             | 3.96                   | 0.76            | 0.03                                    | 0.53                 | 3.04                | 91.68               |
| Turumunga         | 5.23                   | 6.71            | 0.02                                    | 0.59                 | 1.28                | 90.38               |
| Patana            | 7.19                   | 2.25            | 0.06                                    | 0.04                 | 0.08                | 90.38               |
| Keonjhar Sadar    | 9.57                   | 1.76            | 0.09                                    | 0.55                 | 0.25                | 88.08               |
| Keonjhar town     | 43.64                  | 2.95            | 0.45                                    | 2.73                 | 2.02                | 49.57               |
| Nayakote          | 0.67                   | 0.14            | 0.04                                    | 0.02                 | 1.78                | 97.34               |
| Kanjipani         | 1.41                   | 1.29            | 0.05                                    | 0                    | 0                   | 97.25               |
| Telkoi            | 3.56                   | 4.31            | 0.21                                    | 0.02                 | 0.21                | 91.68               |
| Pandapara         | 2.73                   | 2.90            | 0.28                                    | 0.20                 | 4.61                | 89.30               |
| Ghatagaon         | 5.33                   | 1.74            | 0.06                                    | 0.16                 | 0.47                | 92.24               |
| Harichandanpur    | 2.85                   | 1               | 0.07                                    | 0.42                 | 2.03                | 93.62               |
| Ghasipura         | 7.73                   | 2.77            | 0.19                                    | 0.60                 | 0.69                | 88.01               |
| Anandpur          | 13.67                  | 4.65            | 0.27                                    | 1.13                 | 1.07                | 79.21               |
| Soso              | 6.28                   | 2.0             | 0.09                                    | 0.32                 | 0.08                | 91.23               |
| Nandipada         | 8.24                   | 2.82            | 0.19                                    | 0.97                 | 0.89                | 86.87               |
| Daitari           | 14.91                  | 0.07            | 0.07                                    | 1.23                 | 0.59                | 83.15               |
| Sainkul           | 8.80                   | 2.87            | 0.27                                    | 1.05                 | 0.36                | 86.65               |

Source: Census of India, 2011

## **b. Sanitation/ latrine facilities**

Open defecation has been observed to be very high, particularly in the rural areas of Keonjhar district (*See table 39: Percentage of households by type of latrine facility*). However, there has been some progress in the district for making villages and towns open defecation free (ODF) through funds available under Swachh Bharat Mission (SBM). As per latest information available from the district (October, 2018), nearly 50 per cent of the households so far have been covered through individual household latrine facilities.

The responses of communities captured through FGDs have also captured the poor usability of the toilets constructed. High percentage of households in the mining-affected areas has dysfunctional toilets without water supply and proper drainage systems, preventing them from using such facilities (*Refer to section 4*).

## **c. Access to electricity**

As is the case with other public amenities, electricity availability and reliability is particularly a concern in the rural mining areas. As of Census 2011, only about 30 per cent of households had electricity access in the entire district. Most of the mining-affected areas, particularly rural areas, had very poor access to electricity (*See table 40: Households by main source of lighting*).

However since the Census, rural electricity coverage has made some progress under the Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY) of the GOI. However, this also remains far from the requirement. As per the latest information of the Government of Odisha, only about 30 per cent of the target villages have been covered so far<sup>31</sup>.

Besides households, reliable availability of electricity at other important public facilities such as healthcare centers and schools remain a concern, as reviewed earlier. This has been particularly captured through FGDs and interviews with various stakeholders (*Refer to section 4*).

## **d. Road Network and Connectivity**

Road connectivity is a particular problem mining-affected area of Keonjhar district. The situation is well captured through FGDs and SSIs in mining areas, particularly the tough terrains of areas like Banspal. While the mining-affected blocks are almost well connected to the district headquarters by major thoroughfares, the problem lies with rural connectivity. Lack of all weather roads limits people's access to basic facilities such as healthcare, education 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. Lack of proper sanitation facilities.
- c. Access and reliability of electricity in rural areas.
- d. Connectivity in rural areas (all-weather roads).

**Table 40: Households by main source of lighting**

| Sub district name | Using electricity (%) | Using kerosene (%) | Using other sources (%) |
|-------------------|-----------------------|--------------------|-------------------------|
| Barbil            | 65.35                 | 32.16              | 0.02                    |
| Bolani            | 59.43                 | 39.81              | 0.11                    |
| Rugudi            | 61.86                 | 36.95              | 0                       |
| Joda              | 57.48                 | 39.7               | 0.07                    |
| Bamebari          | 37.93                 | 57.42              | 0.46                    |
| Champua           | 27.77                 | 70.89              | 0.16                    |
| Jhumpura          | 32.33                 | 66.93              | 0.1                     |
| Baria             | 20.87                 | 78.35              | 0.23                    |
| Turumunga         | 18.9                  | 79.77              | 0.04                    |
| Patana            | 16.12                 | 83.43              | 0.05                    |
| Keonjhar Sadar    | 29.28                 | 68.73              | 0.03                    |
| Keonjhar town     | 62.81                 | 34.84              | 0.21                    |
| Nayakote          | 3.6                   | 91.55              | 0.18                    |
| Kanjipani         | 2.97                  | 93.04              | 0.05                    |
| Telkoi            | 9.8                   | 88.44              | 0.12                    |
| Pandapara         | 7.81                  | 91.33              | 0.03                    |
| Ghatagaon         | 15.04                 | 83.9               | 0.05                    |
| Harichandanpur    | 10.31                 | 87.79              | 0.04                    |
| Ghasipura         | 28.65                 | 70.15              | 0.05                    |
| Anandpur          | 32.26                 | 66.55              | 0.41                    |
| Soso              | 30.76                 | 68.92              | 0.02                    |
| Nandipada         | 43.99                 | 53.83              | 0.73                    |
| Daitari           | 17.8                  | 80.79              | 0.21                    |
| Sainkul           | 38.25                 | 60.27              | 0.02                    |

Source: Census of India, 2011

**a. Poor access to treated tap water:** Most of the rural mining areas have very poor access to treated tap water. While Barbil, Bolani and Keonjhar town being the urban areas are slightly better off, majority of rural households do not have access to this. This is the most pressing point highlighted by local communities, Gram Panchayat (GP), and officials during ground interactions.

**b. Lack of proper sanitation facilities:** Open defecation continues to be a major challenge in various parts of the district due to lack of toilets and more particularly functional toilets. Even the progress under SBM is slow with only 50 per cent coverage so far. Additionally, usability of the toilets is a concern due to lack of water supply and poor drainage systems.

**c. Access and reliability of electricity in rural areas:** Accessibility of electricity still seems to be very limited in rural areas with less than 30 per cent of households in various mining-affected sub districts having access to it. As evident from the review of latest coverage, nearly 70 per cent of the target villages for intensive electrification in rural areas are yet to be covered.

**d. Connectivity in rural areas (all-weather roads):** This has been particularly captured during ground interactions and FGDs. People have indicated poor connectivity in rural areas, due to lack of presence of all-weather roads.

### **3.4 Environmental Pollution and Degradation**

Keonjhar is known for its rich mineral reserves which have attracted extensive mining activities. However, mining, mineral transportation and related industrial activities in the area have been major sources environmental pollution.

The pollution factors considered to gauge the status of environmental pollution and degradation in the mining-affected areas include air pollution/ Ambient Air Quality (AAQ), water pollution and ground water depletion and soil pollution.

However, at the time of the study as per available records reviewed, the availability of pollution monitoring data on all of these accounts is extremely poor. However, pollution of air, water and soil has been categorically identified as a significant problem during Focus Group Discussions (FGDs) and field interactions (*Refer to section 4*). In this context, it is to be noted that monitoring and maintenance of environmental pollution data and generation of baseline pollution information assumes particular importance.

**Air Pollution/Ambient Air Quality (AAQ):** Air pollution is particularly evident in the iron ore mining belt of Joda, Banspal, Harichandanpur blocks and other mining-affected areas of Keonjhar district. However, officially recorded data is extremely poor and barely captures the actual problem.

Poor air quality in the area has been highlighted in various scientific studies particularly conducted in Joda and Barbil areas<sup>32</sup>. Temporal studies done by the Odisha State Pollution Control Board (SPCB) also have indicated high levels of respirable suspended particulate matter (RSPM) and suspended particulate matter (SPM) particularly during the winter season<sup>33</sup>. Field visits and interaction with communities in the mining areas also confirm the constant presence of red iron ore dust across the area.

**Water pollution and ground water depletion:** Keonjhar district, particularly the mining-affected areas suffer from problems of water pollution and ground-water depletion owing to various mining and industrial activities. Scientific studies in the district on surface water quality have also established pollution problems in the surface water sources.

Studies in and around Jhumpura and Joda blocks and Joda municipality area, have detected heavy metal contamination of ground water. The levels of iron (Fe), manganese (Mn), Chromium (Cr), Nickel (Ni), copper (Cu), Cadmium (Cd) and lead (Pb) in most of the ground water resources were beyond the standard limits of Bureau of India Standards (BIS) and World Health Organisation (WHO) indicating their unsuitability for drinking purpose. Nearly 80 per cent of samples exceeded such standards in pre-monsoon seasons<sup>34</sup>.

Besides ground water, surface water pollution particularly of Baitaitarani and Brahmani rivers, their tributaries and nallahs has been indicated by various scientific studies (*See figure 3: Surface water bodies in Brahmani and Baitarani river basin*). Surface water quality evaluation results from various monitoring points near Gandhamardan iron ore mining areas<sup>35</sup> and in Joda<sup>36</sup> has indicated the presence of various pollutants in the surface water bodies. Seasonal water quality assessment from Baitarani river and local streams such as Jalpa nadi, Balda nallah, Dalko nallah in the Joda area showed presence of high concentrations of heavy metals such as iron (Fe) and chromium (Cr). The concentrations of these exceeded the BIS permissible levels in all seasons. The overall water quality index (WQI) of the region reveals that high concentrations of Fe and Cr are particularly responsible for the poor water quality<sup>37</sup>. Besides high concentrations of heavy metals, poor quality of the water is also evident from presence of low levels of dissolved oxygen (DO), high biological oxygen demand (BOD), high turbidity and high level of total suspended solids.

Given all pollution parameters, studies have inferred the water to be unsuitable for drinking purposes and have recommended proper treatment of surface water before allowed for human consumption<sup>38</sup>.

Figure 3: Surface water bodies in Brahmani and Baitarani river basin



Source: Water Resource Information System (WRIS), Government of India

# Section 4: Situation analysis through Participatory Rural Appraisal

## 4.1 Background of the process

To complement the quantitative data and to understand the status of various socio-economic, human development and environmental issues further, 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-structures interviews (SSI).

**Focus Group Discussion (FGD):** FGD is a ‘structured group review’ process, conducted to stimulate participants to reveal their views, beliefs, and 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 six village(s)/habitations in two mining-affected areas –Joda and Banspal along with block panchayat functionaries and block development officials (See table 41: Focus Group Discussions in mining-affected areas). The total sample size considering all FGDs conducted in mining-affected areas is 242.

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

1. Various demographic group FGD- This was held with three constituencies.
  - i. General populace FGD - This included representative population- bothmale and female, from various demographic groups including, Scheduled Castes (SC), Scheduled Tribes (ST) and Other Backward Classes (OBC).
  - ii. Women FGD - Held with women separately to understand their specificissues. This had representation from teachers, SHG representatives, and various frontline workers such as ASHAs and AWC workers.
  - iii. Scheduled group FGD- Held with the scheduled populace
2. Block panchayat FGD- Held with block panchayat functionaries.
3. Block development official FGD- Held with various block development officials.

**Table 41: Focus Group Discussions in mining-affected areas**

| Block/<br>municipality<br>name | Place where focus<br>group was held | Type of focus group         | No. of<br>participants |
|--------------------------------|-------------------------------------|-----------------------------|------------------------|
| Joda                           | Sialijoda                           | General                     | 32                     |
|                                |                                     | Women                       | 19                     |
|                                | Gobardhanpur                        | Scheduled groups            | 37                     |
|                                | Joda                                | Block panchayat members     | 9                      |
|                                | Joda                                | Block development official  | 2                      |
| Banspal                        | Talakainsari                        | General                     | 48                     |
|                                |                                     | Women                       | 31                     |
|                                |                                     | Scheduled groups            | 42                     |
|                                | Suakati                             | Block panchayat members     | 15                     |
|                                | Banspal                             | Block development officials | 7                      |

**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, civil society organization (CSO) representatives, and concerned district and block officials. The total sample consulted through SSIs was about 40.

Therefore between all FGDs and SSIs held in the mining-affected areas, and also the group discussion held in the control block, a total of 282 people have been consulted through the process of PRA.

## 4.2 Observations from Focus Group Discussions

The FGDs as held with various demographic groups in the mining-affected area brings 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. The issues also capture the opinion of the majority, that represents 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 to 90 per cent of participants/ respondents.

In the sector-wise observation tables of FGDs, the majority response (70 per cent and above where people identified it as a major problem/issue) 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”. Where only a handful number of people have mentioned a problem it has been noted as “not significant”, and an absence of a response by the participants has been denoted as “no response”.

### 4.3 Key issues highlighted by community for improvement

To capture the perception and need of mining-affected people in a comprehensive fashion, FGDs were held separately with various constituencies. The key issues highlighted by communities which they consider improvement is required on in outlined below (See table 42: Key issues highlighted by communities in mining-affected areas).

**Table 42: Key issues highlighted by communities in mining-affected areas**

| Block name | Constituency                | Key issues  |
|------------|-----------------------------|---|
| Joda       | General                     | Healthcare facilities near the villages with proper staff and infrastructure<br>Drinking water<br>Requirement of teachers and upgrading infrastructure in schools<br>Greater employment opportunities<br>Addressing pollution |
|            | Women                       | Healthcare<br>Nutrition and lack of food<br>Drinking water<br>Pollution   |
|            | Scheduled group             | Improvement of healthcare facilities and proper treatment for diseases such as TB, malaria that are predominant<br>Air pollution<br>Water scarcity<br>Employment opportunities  |
|            | Block panchayat members     | Water shortage<br>Improvement on educational parameters<br>Agriculture<br>Awareness generation on social schemes  |
|            | Block development officials | Improving healthcare and addressing key health issues like Malaria, TB etc<br>Improvement on educational parameters<br>Air and water pollution  |
| Banspal    | General                     | Resources at, and access to healthcare facilities<br>Improvement in agriculture and support for the same<br>Reduction of air and water pollution  |
|            | Women                       | Drinking water<br>Transportation and access to healthcare facilities, AWCs, schools<br>Air pollution reduction  |
|            | Scheduled group             | Healthcare access and affordability<br>Air pollution reduction<br>Soil pollution and agricultural support<br>Support for forest produces and marketing  |
|            | Block panchayat members     | Healthcare support and access<br>Clean drinking water<br>Nutrition among children<br>Improvement in educational resources   |
|            | Block development officials | Healthcare support<br>Clean drinking water<br>Reduction of air pollution<br>Soil pollution and agriculture  |

## 4.4 Perception on issues sector-wise

### a. Perception on public health and healthcare system

Most people in the mining-affected areas suffer from various poor health conditions particularly related to gastrointestinal diseases, malaria and respiratory ailments. Heavy pollution in the mining areas contributes to the health burden. Further, poor healthcare infrastructure and inadequate financial resources or solvency of the people are major shortfalls contributing to poor healthcare access.

**Table 43: Key concerns and factors regarding public health and healthcare system**

| Issues                       | Key challenges and factors identified   | Block/ municipality name |                 |
|------------------------------|---|--------------------------|-----------------|
|                              |   | Joda                     | Banspal         |
| Disease burden               | Malaria   | Very poor                | Very poor       |
|                              | Tuberculosis  | Very poor                | Very poor       |
|                              | Skin disease  | Poor                     | Very poor       |
| Infrastructure and resources | Number of primary healthcare facilities                                       | Poor                     | Very poor       |
|                              | Poor health infrastructure- beds, ambulances                                  | Poor                     | Very poor       |
|                              | Availability of full time doctors and paramedical staff                       | Very poor                | Very poor       |
| Access                       | Access to nearest health facility (average distance travelled about 5-10 kms) | Very poor                | Very poor       |
| Healthcare coverage          | No or inadequate health coverage  | Not significant          | Not significant |

Most people during the FGDs reported that access to the healthcare facility was a problem as either the facility was located too far or did not have the required resources like equipment, healthcare staff etc. The problem in the healthcare system is the distance from healthcare facilities which becomes worse due to poor transportation and communication. Among soft resources there is lack of skilled and full-time healthcare personnel such as doctors, paramedics and nurses (See table 43: Key concerns and factors regarding public health and healthcare system).

### b. Perception on nutrition and food security

The concerns regarding nutrition are primarily focused on awareness generation. Timely ration is received by people of most places, leaving aside a few. FGDs reveal sufficient support to mothers and children at AWCs. General lack of awareness and community results in unsatisfactory PDS delivery. (See table 44: Key concerns and factors regarding nutrition and food security). Women particularly feel that improvement on these fronts can help to improve nutrition issues.

**Table 44: Key concerns and factors regarding nutrition and food security**

| Issues       | Key challenges and factors identified                | Block name/Municipality |                 |
|--------------|--|-------------------------|-----------------|
|              |  | Joda                    | Banspal         |
| ICDS related | Nutrition support from AWCs                          | Not significant         | Poor            |
|              | Adequacy of nutrition provided                       | Poor                    | Poor            |
|              | Nutrition education                                  | Poor                    | Poor            |
|              | Nutrition and health monitoring                      | Not significant         | Poor            |
| PDS related  | Timely ration  | Not significant         | Not significant |
| Others       | Education and awareness to avail benefits of schemes | Poor                    | Poor            |

### c. Perception on Education

The key problems with education involve both infrastructure and resource issues (*See table 45: Key concerns and factors regarding education*).

On the infrastructure front, the problem lies with availability of basic resources such as toilet facilities, electricity and drinking water in schools across all grades. There is also concern about adequacy of schools for secondary education.

However, the problem across all levels is particularly about soft resources. Most people reported inadequacy of full-time teachers. Even when teachers are there, at various times they are teachers involved in different activities such as preparation of mid meal, doing voter correction, engaged in government data enumerations etc. These all have affected the enrolment of students in schools and their faith in public education. Quality of teaching is unsatisfactory and an adverse PTR also exists. Also, access to schools, particularly at the secondary level is poor.

**Table 45: Key concerns and factors regarding education**

| Issues               | Key challenges and factors identified                                | Block/municipality name |                 |
|----------------------|--|-------------------------|-----------------|
|                      |  | Joda                    | Banspal         |
| Infrastructure       | Schools for elementary education                                     | Not significant         | Not significant |
|                      | Schools for secondary education                                      | Very poor               | Very poor       |
|                      | Basic infrastructure in schools; particularly toilet and electricity | Very poor               | Very poor       |
| Resources and access | Quality of teacher   | Very poor               | Very poor       |
|                      | Adequacy of teachers in school                                       | Very poor               | Very poor       |
|                      | Access to schools (particularly secondary level)                     | Poor                    | Poor            |

### d. Perception on Employment and Livelihood

Livelihood is a key concern across communities in the mining-affected areas. The local people lack full-time employment. In Keonjhar, most people reported as being day laborers involved in mining-related work, drivers, construction

activities (helpers) etc. It is to be noted that the mining companies do not provide jobs to all displaced people. Also a major population here is engaged in the collection of minor forest produce. (See table 46: Key concerns and factors regarding employment and livelihood). Villagers participate in Government schemes, to improve their livelihoods, mostly MGNREGA.

**Table 46: Key concerns and factors regarding employment and livelihood**

| Issues                            | Key challenges and factors identified  | Block / municipality name |                  |
|-----------------------------------|--|---------------------------|------------------|
|                                   |  | Joda                      | Banspal          |
| Employment                        | Full-time employments, mostly day laborers   | Very poor                 | Very poor        |
|                                   | Work training that provides job  | Very poor                 | Very poor        |
|                                   | Loan support   | Very poor                 | Very poor        |
|                                   | Support for small businesses (handloom, dairy farming)                                 | Very poor                 | Very poor        |
| Livelihood around local resources | Support for agriculture based livelihoods  | Poor                      | Poor             |
|                                   | Support for forest based livelihoods and marketing and selling of minor forest produce | Not satisfactory          | Not satisfactory |
|                                   | Market support for products  | Poor                      | Poor             |
| Government schemes                | Work availability under MGNREGA  | Poor                      | Poor             |

Given the predominantly rural nature of the mining areas, people are mostly skilled and knowledgeable of agricultural activities. They also depend on forests for minor forest produce. However, employment in agriculture and forest-based livelihoods remains a major challenge. This is due to acquisition of land, degradation of cultivable lands, degrading in environmental conditions, poor financial support for both agriculture and forest produce.

Most of the villagers feel the need of safeguarding their livelihood opportunities and also creating new opportunities considering their skills.

#### **e. Perception on welfare support available for vulnerable groups**

The key concern that emerged regarding the welfare support to vulnerable groups was the lack of awareness amongst some people and sometimes also due to lack of support of ward members (See table 47: Key concerns and factors regarding welfare support to vulnerable groups). The people also added that the pension support was very little and not enough to meet the basic needs. The pension support they get is of Rs. 300 per month.

#### **f. Perception on supply of and access to public amenities**

Particularly two issues came up as challenges with respect to basic public amenities. These include drinking water and sanitation (See table 48: Key concerns and factors regarding public amenities).

**Table 47: Key concerns and factors regarding welfare support to vulnerable groups**

| Issues                     | Key challenges and factors identified   | Block / municipality name |                 |
|----------------------------|---|---------------------------|-----------------|
|                            |   | Joda                      | Banspal         |
| Pension funds and Delivery | Adequate pension  | Poor                      | Poor            |
|                            | Delayed pension   | Not significant           | Not significant |
|                            | Difficulty in receiving pension due to access issues, no doorstep delivery of pension | Poor                      | Poor            |

**Table 48: Key concerns and factors regarding public amenities**

| Issues         | Key challenges and factors identified                   | Block / municipality name |           |
|----------------|---|---------------------------|-----------|
|                |   | Joda                      | Banspal   |
| Drinking water | Availability of treated clean water                     | Very poor                 | Very poor |
|                | Reliable and adequate supply                            | Very poor                 | Very poor |
|                | Delivery by government intervention/ schemes            | Poor                      | Poor      |
| Sanitation     | Toilet facilities and with water supply to toilets, SBM | Poor                      | Poor      |
| Electricity    | Reliable electricity supply specially at night          | Not significant           | Poor      |

**Clean drinking Water:** On the drinking water front, FGDs reveal that there are sufficient tube-wells but the water is not fit for drinking. Potable drinking water is unavailable. The respondents complained of contamination and pale and at times even red coloured water. The run-offs from the mines and high content of iron in the water were reported as the biggest concern. Some respondents also reported hand pumps running dry due to depletion of groundwater.

**Sanitation:** On sanitation issues, a key need of people is of toilet facilities in household premises. However, the usability of the toilets is a challenge as identified. The supply and availability of water has prevented people from using toilets, even when they have been constructed. Lack of awareness is another major challenge to proper sanitation.

### **g. Perception on environmental pollution**

In all FGDs, the major concern was about environmental pollution, including of air, water and soil (*See table 49: Key concerns and factors regarding environmental pollution*). The respondents expressed overwhelming concerns about the poor status of environmental management by mining companies and authorities. In Joda, people complained of constant red dust from mines. Respondents also underscored that run-offs from mines often destroy their crops and are degrading the quality of soil, thereby, affecting the quality and quantity of their produce. All respondents complained about heavy water contamination. In all the cases people have asked for action on improvement on all pollution issues by mining companies as well as authorities.

**Table 49: Key concerns and factors regarding environmental pollution**

| Issues                                    | Key challenges and factors identified                     | Block / municipality name |           |
|---|---|---------------------------|-----------|
|   |   | Joda                      | Banspal   |
| Air pollution                             | Pollution related health problems                         | Very poor                 | Very poor |
|   | Working ability reduction                                 | N/A                       | N/A       |
| Water pollution and water table depletion | Water availability for drinking                           | Poor                      | Poor      |
|   | Water availability for agriculture affecting productivity | Poor                      | Poor      |
| Soil pollution                            | Agricultural productivity and livelihood                  | Poor                      | Poor      |

# Section 5: Economic resource mapping

## 5.1 Background

The funds accrued to DMF and that estimated to be coming per annum in the near future is substantial. 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 financed by the district's 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 in the district.

For identifying the issues for which DMF funds must be directed and to what extent, a review of the existing resource envelops is important. Such review of financial resources, alongside the stocktaking exercise of district and block data on various parameters, and the PRA process followed to capture people's perception, will help to identify and prioritize on factors for DMF fund investments in the most efficient manner.

For the purpose of this exercise, two sources of resources have been considered. These include:

- The proposed outlay for various sectors/heads in the district annual budget (including funds received through various flagship schemes/programmes)
- Spending under Corporate Social Responsibility (CSR) by key industries

## 5.2 District annual budget and major schemes

A review of the financial allocation for various heads under the district annual budget of 2017-18, has been done to understand the allocation for sectors/ issues which also fall under the ambit of DMF investments. Overall, out of the total budget of about Rs. 1,285 crores, the highest proportion of stand-alone allocation is for the combined allocation for various heads under "rural development" sector, which is about 36 per cent of the total allocations. The allocation for various sub-heads under this has varied thrust (*See table 50: Sectoral outlay in district annual budget, 2017-18*). Beside this, another significant proportion in the budget is allocated for the "transport" sector which is about 26.9 per cent.

Most of the major sub-heads under the "social services" sector, which account for about 19.9 of the total district outlay are also the ones which are priority areas under the DMF law. These include education, water supply and sanitation. Among these the share of the water supply and sanitation allocation is the highest, which is about 70 per cent of the social services budget. However, pressing issues in the district such as proper public healthcare, women and child development and development of SCs and STs received a far lower allocation.

**Table 50: Sectoral outlay in district annual budget, 2017-18**

| Heads/ Sectors                    | Subsectors/ areas covered  | Proposed fund outlay (Rs. crore) | Percentage of total budget |
|-----------------------------------|--|----------------------------------|----------------------------|
| Agriculture and allied activities | Crop husbandry   | 0.10                             | 0.11                       |
|                                   | Horticulture   | 0.73                             |                            |
|                                   | Animal husbandry   | 0.71                             |                            |
|                                   | Agriculture and allied activities total                                    | 1.54                             |                            |
| Rural development                 | MGNREGA  | 186.16                           | 36.15                      |
|                                   | NRLM   | 6.86                             |                            |
|                                   | PMAY   | 265.77                           |                            |
|                                   | BPGY   | 5.85                             |                            |
|                                   | Rural development total  | 464.65                           |                            |
| Special area programmes           | GGY  | 14.62                            | 1.13                       |
|                                   | Special area programmes total  | 14.62                            |                            |
| Irrigation and flood control      | Minor irrigation- flow irrigation  | 106.47                           | 11.78                      |
|                                   | Minor irrigation- lift irrigation  | 44.94                            |                            |
|                                   | Irrigation and flood control total   | 151.42                           |                            |
| Energy                            | Power  | 36.55                            | 2.84                       |
|                                   | Energy total   | 36.55                            |                            |
| Industry                          | Handicrafts and cottage industries   | 1.26                             | 0.28                       |
|                                   | Textiles / Handlooms   | 2.39                             |                            |
|                                   | Industry total   | 3.65                             |                            |
| Transport                         | Road and bridges   | 346.22                           | 26.94                      |
|                                   | Transport total  | 346.22                           |                            |
| Forestry and environment          | Ecology and environment  | 0.75                             | 0.05                       |
|                                   | Forestry and environment total   | 0.75                             |                            |
| General economic services         | Other general economic services (MLALAD and SDP)                           | 9.00                             | 0.70                       |
|                                   | General economic services total  | 9.00                             |                            |
| Social services                   | Primary healthcare   | 0.00                             | 19.97                      |
|                                   | Development of SCs and STs (educational institution)                       | 32.21                            |                            |
|                                   | Women and child welfare  | 40.41                            |                            |
|                                   | Water supply and sanitation  | 179.79                           |                            |
|                                   | Urban development (NULM, Development of parks, greenery and afforestation) | 4.30                             |                            |
|                                   | Social services total  | 256.71                           |                            |

Source: District planning cell, Keonjhar

Many of the heads are supported by fund flow from Centre and State Government schemes, in varied proportions. Some of the key ones pertaining to issues of human development, social services, rural development etc. include, Integrated Child Development Scheme (ICDS), Midday Meal Scheme and school nutrition programme from improving nutrition among children below six years and young children; Sarva Siksha Abhiyan (SSA), Rashtriya Madhyamik Siksha Abhiyan (RMSA), block grants for education; Gopobandhu Gramin Yojana (GGY) for overall district development programs such rural electrification, water supply and roads; Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) and National Rural Livelihoods (NRLM) for livelihood enhancement; National Rural Drinking Water Programme (NRDWP) for water supply; Swachh Bharat Mission (SBM) for sanitation; Pradhan Mantri Awas Yojana (PMAY) and Biju Pucca Ghar Yojana (BPGY) for housing; and Madhubabu Pension Yojana (State scheme aligned to Indira Gandhi National Old Age Pension) for welfare of old people.

Besides, Keonjhar district also receives investments in various social services through Corporate Social Responsibility (CSR) funds, particularly from iron ore mining and iron and steel manufacturing sector. Total CSR spending in the district in the fiscal year 2017-18 was nearly Rs. 47 crores. Investments were in the areas of education and skill development, rural development, healthcare etc<sup>39</sup> (See table 51: CSR spending in Keonjhar district, 2017-18).

**Table 51: CSR spending in Keonjhar district, 2017-18**

| Sectors                         | Amount spent (Rs. crore) |
|---------------------------------|--------------------------|
| Education and skill development | 20.63                    |
| Rural development               | 12.04                    |
| Healthcare                      | 8.43                     |
| Swachh Bharat                   | 2.97                     |
| Environment conservation        | 1.19                     |
| Sports                          | 1.04                     |
| Gender equality/ empowerment    | 0.16                     |
| Slum area development           | 0.22                     |
| National heritage               | 0.21                     |
| Armed force facilities          | 0.01                     |

Considering the total collected funds in DMF Trust in Keonjhar district, which stands at Rs.2,218 crore (*as of November, 2018*), and a yearly estimated flow of around Rs. 600 crore, the potential for investments through DMF on key human development and socio-economic issues is enormous.

Taking into account the gaps in various sectors, the available financial resources and current spending, the issues where DMF investment is necessary include public health and nutrition, clean drinking water supply, education and livelihood opportunities. Interventions in these areas can be optimized through convergence with schemes that are in place, and also earmarking standalone investments in issues for which there are no such allocations.

# Section 6: Prioritizing issues and identifying 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.

## 6.1 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 and available government data. 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.

## 6.2 Output-outcome framework for investments

As noted, the indicative planning exercise is based on an output and outcome oriented approach. In this, 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.

### **6.3 Priority sectors for DMF investments in Keonjhar district**

The sectors that DMF should focus on for investments in Keonjhar 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 Sections 3 and 4*).

For each of these priority sectors/issues, some target outcomes have been identified which DMF should aim to achieve. A number of intermediary outputs have also been identified that can help achieve the target outcome. The outputs have been divided into two 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 and enhancement of water quality
- c. Education
- d. Livelihood enhancement

#### **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 Keonjhar, both IMR and U5MR are concerns particularly for rural parts of the district including mining-affected areas. The IMR and U5MR in the district is 54 and 70 respectively. Besides about 44 per cent of the children below the age of five years have stunted growth and are underweight, and about 33 per cent children suffer from anemia. Besides, among adults, there is high incidence of chronic ailments such as diarrhea, asthma and tuberculosis (TB). However, the implementation of ICDS, coverage of child nutrition and the public healthcare infrastructure and resources are sub-optimal as compared to the gravity of the problem. 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 ensuring better nutrition, 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<sup>40</sup>.

The district budget and availability of funds from various schemes related to health and nutrition, the resource envelop is extremely thin. Considering 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.
- Design and support 'nutrition-sensitive scheme' that can strategically address the underlying causes of insufficient or inadequate food.
- Support 'demand side financing' to improve access to and utilization of health services, particularly among the poor<sup>41</sup>.

The output outcome oriented investment framework takes these mechanisms into account to suggest the outputs and corresponding necessary actions.

| Outcome (projected)   | Output  |  |
|---|---|--|
|   | 1-3 years   | 3-5 years  |
| Reduction of neonatal and IMR to 12 by 2030, and U5MR to 25 by 2030, following targets of SDG | <p>a. Add on financial grant for ICDS to improve intervention:</p> <ol style="list-style-type: none"> <li>1. Increase the number of AWCs to twice the existing numbers in Joda and Keonjhar blocks, and to 1.5 times in other blocks to meet the stipulated Government standards, which is one AWC per 40 children for rural areas and one AWC per 42 children for tribal areas.</li> <li>2. The district should also considerup gradation of existing facilities to include crèche services particularly targeted for 0-3 years children.</li> <li>3. Ensure clean drinking water, toilet facilities at all AWCs.</li> </ol> <p>b. Develop 'nutrition-sensitive' schemes:</p> <ol style="list-style-type: none"> <li>1. Complementary food processing and sales/ support scheme involving SHGs- Teaching/ training local women to produce and supply affordable cereal, nuts, grain based food (and anything else that can have some shelf life), coupled with nutrition education on complementary food.</li> <li>2. Direct transfer of stipend to women/ mothers of BPL/low income households in direct mining-affected areas, to improve nutrition and health of mother and child. An allocation of Rs. 1,000 per month per mother and child can be considered. The support can start after the first trimester of pregnancy and be continued for up to the time of 3 years of age of the child<sup>42</sup>.</li> </ol> <p>c. Augment neonatal and pediatric care services at primary healthcare facilities- This should focus on adequate numbers of trained healthcare personnel, scientific diagnosis and monitoring facilities, providing ambulances and mobile healthcare infrastructure.</p> | <p>a. Investments shall be continued building upon achievements of the previous 3 years.</p> <p>b. Direct transfer of stipend to women/ mothers of BPL/low income households in directly to be continued to augment coverage of beneficiaries.</p> <p>c. Provide 'health vouchers' to women/mothers to avail treatments and check-ups at both public and private facilities, to improve on the existing service as provided under Janani Shishu Suraksha Karyakram (JSSK).</p> |

|  |   |   |
|--|---|---|
| <p>Augmentation of primary and secondary healthcare infrastructure/resources as per IPHS norms and reduce disease burden</p> | <p>a. Increase primary and secondary healthcare facilities to meet at least IPHS norms-</p> <ol style="list-style-type: none"> <li>1. Increase PHC capacity by 50 per cent in mining-affected blocks of Joda, Jhumpura and Banspal. It must be ensured that at least 50 per cent villages in the directly affected areas have a primary healthcare facility within 3-5 kilometers.</li> </ol> <p>b. Fill in deficits of healthcare personnel and improve delivery of services through PPP model-</p> <ol style="list-style-type: none"> <li>1. 'Contracting-in' can be done to fill vacant positions in health units. Doctors, nurses, technicians and other staff as required can be recruited on contracts for a stipulated time period. There is currently about 50 per cent deficit of doctors and nurses in hospitals and CHCs as compared to the requirement.</li> <li>2. 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.</li> </ol> <p>Public institutions will also be responsible for establishing performance standards and ensuring compliance.</p> <p>c. Nursing training for local women- Locally trained nurses can be key to fill in the resource deficit of healthcare personnel, help in addressing the retaining problem as well as create economic opportunities for local women.</p> <p>d. Improve health access through demand side financing— A 'voucher system' can be introduced to improve health access at public as well as private facilities (particularly for BPL and marginalized people).</p> <p>The voucher can be exchanged for defined goods or 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.</p> <p>For treatments that entail higher costs, a standard deductible can be stipulated (payable by the voucher user/patient), to cover part of the extra cost.</p> | <p>a. Investments shall continue building upon achievements of the previous 3 years to improve healthcare access for all directly-affected villages and municipal areas.</p> <p>b. Build on coverage of health insurance schemes, such as Rashtriya Swasthya Bima Yojana (RSBY) providing coverage to BPL families, Aam Aadmi Bima Yojana (AABY) providing coverage for rural landless households, for people in mining-affected areas.</p> |
|--|---|---|

## **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/piped water accessibility. Besides households, there is lack of tap water facilities within premises of majority AWCs, lack of treated tap water facilities in schools across all levels and lack of such facilities at healthcare centres.

While these problems and deficits need to be tackled on an immediate basis, but given vast surface and ground water pollution in mining areas, a long term

‘watershed approach’ must also be adopted. A watershed approach has been considered and advised as best water management practice by the Ministry of Rural Development of the GOI<sup>43</sup>, as well as international regulatory agencies such as the US Environment Protection Agency (US EPA). Such approach can help in drinking water protection, pollution control, agriculture enhancement, fish and wildlife habitat protection and preservation of native vegetation. It is also economic and efficient as it builds upon existing resources and saves management costs, improves coordination and reduces duplication among management practices and creates opportunities for long-term community development<sup>44</sup>.

| Outcome (projected)   | Output  |   |
|---|---|---|
|   | 1-3 years   | 3-5 years   |
| Safe and adequate drinking water for all households and service facilities in mining-affected areas | <p>a. Ensure treated clean water supply in all directly-affected villages. This should cover individual households as well as AWCs, schools, primary health centres and hospitals.</p> <p>b. A PPP mechanism can also be adopted in the first phase. In this 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.</p> | <p>a. Investments to be continued building upon achievements of the previous three years.</p> |
| Enhancement of water quality and water availability through watershed based approach                | <p>Initiation of a long term approach for watershed management in convergence with various concerned departments. Implement integrated watershed management plan by convergence with concerned programs (such as MGNREGS) and support of DMF Trust funds.</p>   | <p>The approach to be continued as a long term measure.</p>                                   |

### c. Education

Continuation of education beyond the elementary level is a challenge in the district. There exists big disparity in terms of number of schools offering elementary and secondary education (secondary schools being 10 to 20 per cent of elementary education facilities, and higher secondary only two to three per cent of elementary), adequate number of teacher in secondary schools, supporting infrastructure in schools, and financial constraints among a big section in the mining areas to continue 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. Considering the district budget and

availability of funds from various schemes, there is particularly scope of convergence with RMSA to improve education and secondary and higher secondary levels.

| Outcome (projected)  | Output  |  |
|--|---|--|
|  | 1-3 years   | 3-5 years  |
| Improve gross enrollment and completion for secondary education as per RMSA goals (GER of 100 per cent from current 77.65 per cent; and universal retention by 2020) | <p>a. Increase the number of secondary schools as per RMSA standards:</p> <ol style="list-style-type: none"> <li>1. 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.</li> </ol> <p>b. Strengthening of existing secondary education facilities by augmenting resources:</p> <ol style="list-style-type: none"> <li>1. Strengthen about 50 per cent existing education facilities offering secondary education by ensuring adequate teachers in secondary schools in mining-affected areas. The target should be to fulfill at least the RMSA norms of PTR which is 30:1.</li> <li>2. Competitive remunerations need to be provided particularly for rural and distressed areas.</li> </ol> <p>c. Provide pre and post matriculation education scholarship- This should be particularly for IX, X, XI and XII grades. The scholarships should be targeted for beneficiaries who belong to ST community and/ or are from BPL families<sup>45</sup>.</p> <p>Educational scholarships can also increase the amount of some of the existing ones. For example, to:</p> <ol style="list-style-type: none"> <li>1. Reduce overall dropout can increase the coverage of National Means-cum-Merit Scholarship Scheme (NMMSS).</li> <li>2. To improve girl education- National Scheme of Incentives to Girls for Secondary Education.</li> <li>3. For SC/ST children- ANWESHA- to provide quality education to ST &amp; SC students in partnership with urban educational institutions.</li> </ol> | <p>a. Fill in infrastructure and resource gaps for secondary secondary education as per RMSA norms building on from previous three years.</p> <p>b. In directly-affected areas with high tribal population (50 per cent or more), such as in Banspal, Joda and Jhumpura blocks, increase the number and access to Ashram and Sevashram schools.</p> <p>c. Increase the scope of education scholarships by building on existing schemes for higher education.</p> |
| Treated water facilities in all schools  | Ensure treated drinking water facilities in all schools in the mining-affected areas. Currently in all mining-affected blocks nearly 90 to 95 per cent (or more) of schools lack such facilities.   |  |

#### d. Livelihood enhancement

Improving the status of employment and livelihood in Keonjhar will require a multi-pronged approach considering the potential of local resources (such as forest resources and agricultural land), the traditional knowledge of the local communities and education and skill levels among youth people within employable age. Therefore, improving employment and livelihood opportunities are also related to investments on these issues.

The districts huge forest resource is crucial for improving sustainable livelihood opportunities in the district. Providing necessary forward and backward market linkages for forest-based products, 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.

Besides forest, agriculture is another sector for augmenting and improving sustainable livelihood opportunities for the local. On this front, the major focus should be soil and water 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.

Besides these, there should be also focus on improving employability of people and supporting entrepreneurship. The budget for skill development for promoting entrepreneurship is extremely limiting, which can be augmented through DMF funds.

| Outcome (projected)   | Output   |   |
|---|--|---|
|   | 1-3 years  | 3-5 years   |
| Enhance forest-based livelihood particularly for tribal communities   | <ul style="list-style-type: none"> <li>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)<sup>46</sup>.</li> <li>b. Develop and provide support for market linkages of forest based products to facilitate trade relationships between local/ small-scale producers, cooperatives etc. and the external market, and to ensure better economic value for the goods. This can be done by building on the work done by the Tribal Development Cooperative Corporation of Orissa Limited, and other similar corporations,</li> </ul>  | Improve support on market linkages by developing on investments from previous three years.  |
| Enhance agriculture-based livelihood and income   | <ul style="list-style-type: none"> <li>a. Initiate a long term approach for watershed management in convergence with various concerned departments, to improve water and soil availability and relieve distress for the agricultural communities.</li> <li>b. Build on Pradhan Mantri Krishi Sinchayee Yojana (PMKSY), to improve enhance recharge of aquifers and introduce sustainable water conservation practices.</li> </ul>  | Build on investments from previous three years.   |
| Progress towards universal livelihood within employment age of 15-59 years, with focus on women and ST population | <ul style="list-style-type: none"> <li>a. Education support:               <ul style="list-style-type: none"> <li>1. 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).</li> <li>2. Augmenting the assistance as provided under post-metric scholarship to SC/ST/OBC to incentivize higher education.</li> </ul> </li> <li>b. Skill development:               <ul style="list-style-type: none"> <li>1. Increase training for unemployed people/ non-workers falling within working age group of 15-39 as per provisions of PMKVY to increase the number of skilled people<sup>47</sup>. Of this at least 60 per cent should be ST and 50 per cent should be women. Special preference also should be given to the Primitive Tribal Groups (PTGs).</li> <li>2. Given the local resources and socio-economic profile of Keonjhar district, training can be focused around sectors such as forest based resources, agriculture, food-processing, healthcare, sustainable tourism (many also identified as target sectors by PMKVY for Odisha).</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>a. Increase the number of people trained and areas requiring skill development based on assessment of previous years.</li> <li>b. Improve on education support to increase people's employment from building on previous years.</li> </ul> |

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Centre for Science and Environment

41, Tughlakabad Institutional Area, New Delhi 110 062

Phones: 91-11-29955124, 29955125, 29953394

Fax: 91-11-29955879 E-mail: [cse@cseindia.org](mailto:cse@cseindia.org)

Website: [www.cseindia.org](http://www.cseindia.org)