Chapter 20
Socio-economic Environmental Sustainability and Indian Mining Industry—A Perspective

Abhay Kumar Soni

Abstract Environmental degradation and socio-economic issues are the most significant areas of great concern. In an industrial area, it has direct linkages and visible results on the social fabric. An in-depth understanding of the environment and its degradation reveals that the impact could be caused on air, water, land and any other contributory component of the earth system, either biotic or abiotic. Since the socio-economic impacts are from among the many, in this chapter of book, the author has tried to concentrate and describe the socio-economic aspects only that deals with the sustainability concerning the Indian mining industry. In recent decades, rapid industrialization, progressive development has left innumerable and alarming impacts on the ecology and environment and it is evident that to progress holistically, environment protection and societal development must go hand-in-hand. No strategy to tackle the environmental challenges is complete without the coverage of societal parameters; hence, this topic in the book has relevance and benefits. The socio-economic dimensions of the environment are immensely helpful in terms of raising the standard of living, employment generation and literacy enhancement which are, of course, very serious issues for society. As evident, different regions have different parameters for the community and region development, it is necessary that an in-depth and site-specific understanding shall be made. In this chapter, the author has defined the methodology of socio-economic impact assessment and evaluation, the framework for environmental sustainability to tackle the environmental degradation menace, industry–community relation, etc., emphasizing that mining enterprises are useful for the societal development of rural areas, where mines are generally located. To cater for the progress of society, we must address the social issues and challenges more diligently. By doing so, the major issues of industrial unrest can be addressed properly for the masses. It should also be realized that socio-economic environment impact evaluation and analysis, ignored mostly, shall be handled on priority.

Keywords Environment · Socio-economic impact · Sustainability · Mining · Indian mining industry

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V. P. Singh et al. (eds.), *Environmental Degradation: Challenges and Strategies for Mitigation*, Water Science and Technology Library 104,
https://doi.org/10.1007/978-3-030-95542-7_20

20.1 Introduction

The social environment includes an individual's social, economic and political condition wherein he lives. The moral, cultural and emotional forces influence the life and nature of individual behaviour. Interlinkages between the environment and society, which may be, 'an open society' or 'a closed society', are already established and known. An *open society* is very conducive for individual development, whereas a closed one is not that conducive for development. Together with the social environment, the *physical environment,* common to any individual in specific circumstances or situations, is also a key. A person when getting a good milieu (natural environment) or society feels cheerful and satisfied, which is the part and parcel of a healthy and good societal environment. Hence, *the social environment* is immensely important to humans as well as human enterprises (industry), from among all other environmental component types, namely air water or land, that cause environmental degradation. It is the society and its immediate social surrounding which helps him/her to adjust every individual in achieving the targeted goal and overcoming the barriers of life.

Mining, an important economic activity, has major societal impacts. It affects the different spheres of industrial society right from income to daily routine life. Focusing, mines and mining regions it is always desirable that development should be environment-oriented. Regional development and economic progress, if both moves together the green environment is protected and saved naturally. Population dynamics (age groups, birth/death rate, sex ratio, life expectancy, dominant religion and popular language) literacy, health status, communication services, land holdings, per capita income, unemployment, occupational structure define the socio-economic progress of development in a particular region or for a group of people in that region. In India, it is experienced and observed, that the coal mining regions often lack in social development compared to that of metal mine regions, despite better spending capacity of the former region i.e. coal mines.

The Indian mining industry produces varieties of 'minerals', about 95, of fuel (4), metallic (10), non-metallic (21), atomic minerals (5) and other minerals of minor and industrial category minerals (55) from across the 29 states and 7 union territories[1] (IBM 2018). The industry encompasses opencast, open-pit as well as underground mines of all sizes-small, medium, large and very large production categories. It is well known that many regions and their local economy are dependent solely on mines, hence mining and ancillary industries which are very big to play an important role in regional development. *Labour* and *trade* are at the centre stage of the growth, employment, transaction and distribution of these regions. Therefore, the social dimension of the environment is extremely essential to make progressive improvements. The industry and the government(s), from time-to-time advocate several guidelines for upliftment and rehabilitation of the people that affect the society and living in the mining areas. Needless to say with technological and educational interventions, better progress results are achievable.

[1] Now changed (28 states and 08 UT's).

Fig. 20.1 Interlinkages of society, economy and environment

The minerals, as a raw material for the industry, plays and drive quality of life not only in the whole society. Figure 20.1 shows the interlinkages that exist between society, economy and environment for sustainable development.

In industry and society social impacts, environmental degradation, its evaluation, assessment, causes and remedies is a major and significant point of discussion which in turn leads to improved quality of life of that area/region. In this chapter, an attempt has been made to describe and address them briefly.

20.2 Defining the Impact and Degradation

Scientific interpretation of the impact(s) is a good way to define. When the industrial investment is made and a mine is opened, environmental degradation is most likely a consequence that is often questioned too. On the one hand, people demand the development of the area by sitting industry, whereas, on the other, the hullabaloo of locating the industry in the area (negative impacts) start surfacing. Managers of mine and decision-makers have to handle it in reality and most significant among them is the industrial unrest caused either on one or another pretext. The environmental ground is the first reason followed by other social and economical reasons. To define the causative effect on the socio-economic front, the impact categorization has been done according to the different phases of the mining life cycle (Table 20.1). These are first examined and impact evaluated.

Table 20.1 Direct and prominent social impacts of mining in various phases of the mine life

Phases of mining	Name of phase	Direct impacts
Ist phase	Exploration and development stage	Immigration from other areas, job opportunities, infrastructure development, welfare amenities development and relocation, land-use changes, tax regime changes, business development for the local population
IInd phase	Exploitation stage	Environmental degradation, pollution and its different forms, accidents due to mining and ancillary operation, social unrest, e.g. strikes, lockouts, employee-related matters such as wage cut, welfare, perks and dismissal
IIIrd phase	Decommissioning/closure stage (Rao and Pathak 2009)	Job loss, insecurity and social tension, increased migration, polluted air and water environment, contaminated land, salvaging and social issues

20.2.1 Environmental Indices

The 'environmental indices' provide a condensed description of multidimensional environmental states by aggregating several variables (or indicators) into a single quantity. A meaningful environmental index is defined as an index or a tool to examine trends, highlight specific environmental conditions and help government decision-makers evaluate the effectiveness of regulatory programs. *Environmental indices* are not the only source of information but a researched methodology for an easy decision. If the variables, which describe environmental status, have easy measurability and comparability, they are meaningful (Udo and Heinz 2000).

Numbers of environmental indices had been developed and proposed in the literature (Ott 1978). Many researchers claimed and applied them to fulfil the need for environmental evaluation. SEI and QOL indexes are also one of them and if explained or quantified, they are representative of the socio-economic side of the environmental scenario that serves as meaningful decision-making tools for the best solution.

20.2.2 Impact Predictions

Extrapolative methods, intuitive forecasting (Delphi techniques), trend extrapolation and correlation, metaphors and analogies, scenarios, dynamic modelling (input–output model) are some known techniques to predict the socio-economic impacts.

Both primary data and secondary data may be used for the analysis. Based on the surveyed data, the interrelationship of society and industrial activity may be explained, and the quality of life in the area can be predicted in advance to assess the future trend. A predictive assessment can also be made that is consistent with the past and the present socio-economic scene of the study area.

In this book chapter, QOL as an index has been advocated which is a 'single number index' easy to present and communicate. This index being discussed is a societal tool based on the multidimensional approach and has tremendous scope for further development that may be refined and made penetrating for the industrial need of the mining industry to be acceptable to a maximum.

20.3 Socio-economic-Based Framework for Environmental Sustainability

The socio-economic-based environmental sustainability framework is a framework capable to deliver the fruits of development that reaches the grassroots level in the far-flung areas. These contribute to the human development work for the poor people (WDR 2004). It is a well-known fact that mining activity causes an impact on the environment and ecology of a region. When a mine becomes operational, environmental disturbances either *positive* or *negative* become perceptible and being noticed by many (Canter 1996). To assess such impacts, at various stages in the life of a mine, we have a set of environmental impact assessment (EIA) procedures. Based on the number of parameters of air quality, water quality and land quality, environmental degradation is assessed. Whatsoever may be the impact, it is the society and the economy which are directly or indirectly affected and the concerned industrial activity is blamed for it. If we address the fallout of industrial activity, correctly 'project-affected people (PAPs)' and the society feel that justice is caused and measures taken are adequate to nullify the negative impacts. This also balances the economy indirectly.

Though a plethora of rules, acts, regulations and bye-laws exist to evaluate and regulate the environment scenario of a site or project, either pre-project or post-project, convincing the PAP's and individuals are the first and foremost requirement to get a green signal for smooth industrial operation. This has a direct link only when sound and satisfactory criteria are in place. By and large and as a general common approach, to reduce the operational difficulties of the industrial enterprises' environmental parameters, viz. air quality, water quality or land quality are well-attended. Their management is done through science and technology in such a manner that degradation is nullified, and pollution problems are solved to the maximum. In this perspective, the socio-economic parameter's-based evaluation procedure has been focused here in this chapter for evaluation and assessment. The socio-economic parameters are since directly attached with the 'PAP's and individuals well-beings, its penetration is direct. The acceptability of such an evaluation procedure, including

its decision for the industry and public, is not that easier because of its manipulative nature. Sometimes its result in society is irreversible and irresistible causing even industrial unrest too.

During the monitoring of the environment and review of the status of socio-economic factors, it was found that these factors are both direct (tangible) and indirect (non-tangible) (Dhar and Saxena 1994). The biggest difficulty is the circumstance encountered, and the variety of measurement units in which environmental variables can be expressed, e.g. kilograms and pounds in the case of pollutant loads, economic prosperity in terms of the currency earned in rupees or land holding in terms of hectares, etc. This may cause difficulties for the comparison of environmental states as the units of expression are avidly different. Therefore, to devise an index that fits statistically into a single number (common unit) and at the same time, a true representative of the scenario as well should be overcome. To assign weightage in indexing methodology in acceptable manner approaches in three classes, namely 'data-driven', 'normative' and 'hybrid weighting', were possible for various parameters (Koen and María 2013). A comparison of advantages and drawbacks for the respective category can be done accordingly. It is necessary, if not essential, that the designed index should pass the rigorous test of 'acceptable to the maximum'. Here, it is significant to mention that the socio-economic framework is an easily understandable approach provided unanimity is achieved. Socio-economic-based indices have flexibility, versatility too to serve the very purpose of evaluation and assessment of the environment in both pre and post-project periods. If designed properly, the framework is apt for the local as well as regional needs and may prove to be a beneficial 'decision-making tool' for the environment, society and industry (mining). But, for improved work performance, all major domains of the environment are a must and need to be studied.

However, a strong need is always felt to design and develop a methodology, which can prove scientifically and correctly, the existence of the industry. Having such a framework, an assessment of the not, an easy impact and degradation can be defined by—(a) Socio-economic Index (SEI). (b) Quality of life Index (QOLI). One may consider these as a norm or criteria or a factor for an individual mine or a community/society. Despite criticality, the 'well-beings' of people/citizens, governments and industry can be measured and the progress of the mining areas/regions elaborated in an integrated manner.

India is a developing country, with its vast mineral resources and human resource capabilities. Its mining industry, socially different from the rest of the World, is an industry that is rural area-based, with corporate in cities. Research studies indicated that developmental agenda and societal schemes of government can be accelerated, applied quickly, and benefits are extended to the common masses of a mining region by

(a) Employment generation in rural areas and ancillary employment opportunities in both rural and urban areas.
(b) Ensuring and enabling the local people involved in the monitoring of developmental activities.

(c) Infrastructure development including development of public facilities/utilities.
(d) Enhancement of literacy rate and educational facility.
(e) Positive impact on the development of health care facilities.
(f) Cultural changes and measures that provide freedom.
(g) Reduction in-migration from rural to urban areas (relocation, resettlement, rehabilitation and displacement of tribals and PAPS).
(h) Encouraging measures that reduce poverty, i.e. land holding capabilities, shelters/settlement, economic well-being and business growth.
(i) Improved lifestyle and its quality.

In the foregoing paragraphs, it will be discussed how these are applied for the project assessment and how the assessment criteria are decided.

20.4 Measuring Quality of Life: The Methodology

Before the 1970s, traditional objective indicators were accepted as suitable predictors of human welfare worldwide (George and Weitz 1977). However, in the late 1980s, social scientists concluded that quality of life (QOL) and the country's Gross Domestic Product (GDP) could better describe the financial position of the society. The same was adopted in India, and factors such as personal income, housing, education, health and family welfare were recognized as indicators to define the quality of life, which is none other than a socio-economic factor. Later, in the late 1980s and into the 1990s, progressive development took place to monitor and measure it. Over the years, how QOL should be defined and measured has been focused. It was recognized that both subjective indicators (demography, health) and objective information (wages and housing expenditure, infrastructure) are necessary to measure QOL, and accordingly, measures/parameters were considered in assessing QOL of mining communities using the economic, social, political, and even spiritual dimensions, though physical environment (air, water, land and noise) still dominated the assessment scene in industrial companies and organizations.

QOL can be defined as a function between the objective conditions of life and the subjective attitude. The objective conditions are those factors that can be assigned a numerical value, e.g. housing, food, health, education, assets, recreation, fuel and energy consumption, to determine the life quality. For assessing the quality of life, an index called the quality of life index (QOLI) has been suggested by Saxena (Saxena 2002) for coal mining areas. Similarly, for iron ore mines of the Goa region, Ligia Noronha also suggested an index (Ligia 2001) which were purely based on social and economical parameters. The QOL method is a value function-based empirical methodology that takes the course of data collection from a specific site through a structured questionnaire prepared for the families or individuals. To know the ground reality, a survey based on a questionnaire in a pre-designed format needs to be conducted (Annexure I). Based on the real-time data, a detailed analysis is

done. Available statistical methods and software tools are helpful to evaluate the interrelationship between QOL parameters and validate the analysed data as well.

This has been observed that the QOL methodology is very easy to use and describe. It is a tool for assessment and monitoring of the conditions that affect the living and working conditions of people. Whether we measure the quality of life in terms of 'subjective variables' or 'objective variables', one has to ameliorate the objective variables for improvement. To improve the life quality of a community or group of people, it is necessary to establish a relationship between subjective and objective dimensions of QOL. These dimensions in a mining site/complex vary significantly with the industry performance during the different phases of the mining operation. Adequate measures are required for a better and improved quality of life in the mining region if not taken, the situations may berserk from better to worse. Quality of life (QOL) measurement is thus meant to provide a tool for community development that intends to monitor social status in an understanding manner very aptly, hence recommended for future use. To estimate the QOL, the individual/families and mining complexes (group) are assigned scores (or weightage) on a 1–100 scale. The scores so chosen are based on the empirical approach (arbitrary) and may be changed/altered/fixed afresh to suffice the evaluation purpose. For different parameters, value function curves are plotted (Fig. 20.2) and the trend is established. These value function curves are based on the primary parameters (housing, water, food and nutrition; QOL score = 2) and secondary parameters (sanitation, health and safety, education, medical facility, public transport and communication, fuel and energy, family assets, transport means, per capita income and recreational facilities; QOL score = 1).

Eq. (20.1) is used to assess the quality of life (QOL).

$$\mathrm{QOL} = \left[(\mathrm{fp}(1) \cdot (\mathrm{fp}(2) \cdot \mathrm{fp}(3) \cdot \mathrm{Wp}^{n}) \left(\sum_{n=1}^{10} \mathrm{fsi} \cdot \mathrm{Wsi} \right) \right] \tag{20.1}$$

where

fp (1–3) = Value of primary parameters as determined from their respective value function curves.

Wp = Score (weightage) of primary parameters (normally 2).

n = Number of primary parameters (1–3).

fsi = Value of secondary parameters as determined from their respective value function curves.

Wsi = Score (weightage) of secondary parameters, taken as 1.0.

• word 'p' refers to the primary parameters (1–3) and 's' refers to the secondary parameters

• 1, 2, 3 = Housing, water, food and nutrition (calorie intake by an individual)

• n = 1–10 = Sanitation, health and safety, education, medical facilities, public transport and communication, fuel and energy, family assets, own transport means, per capita income and recreational facilities.

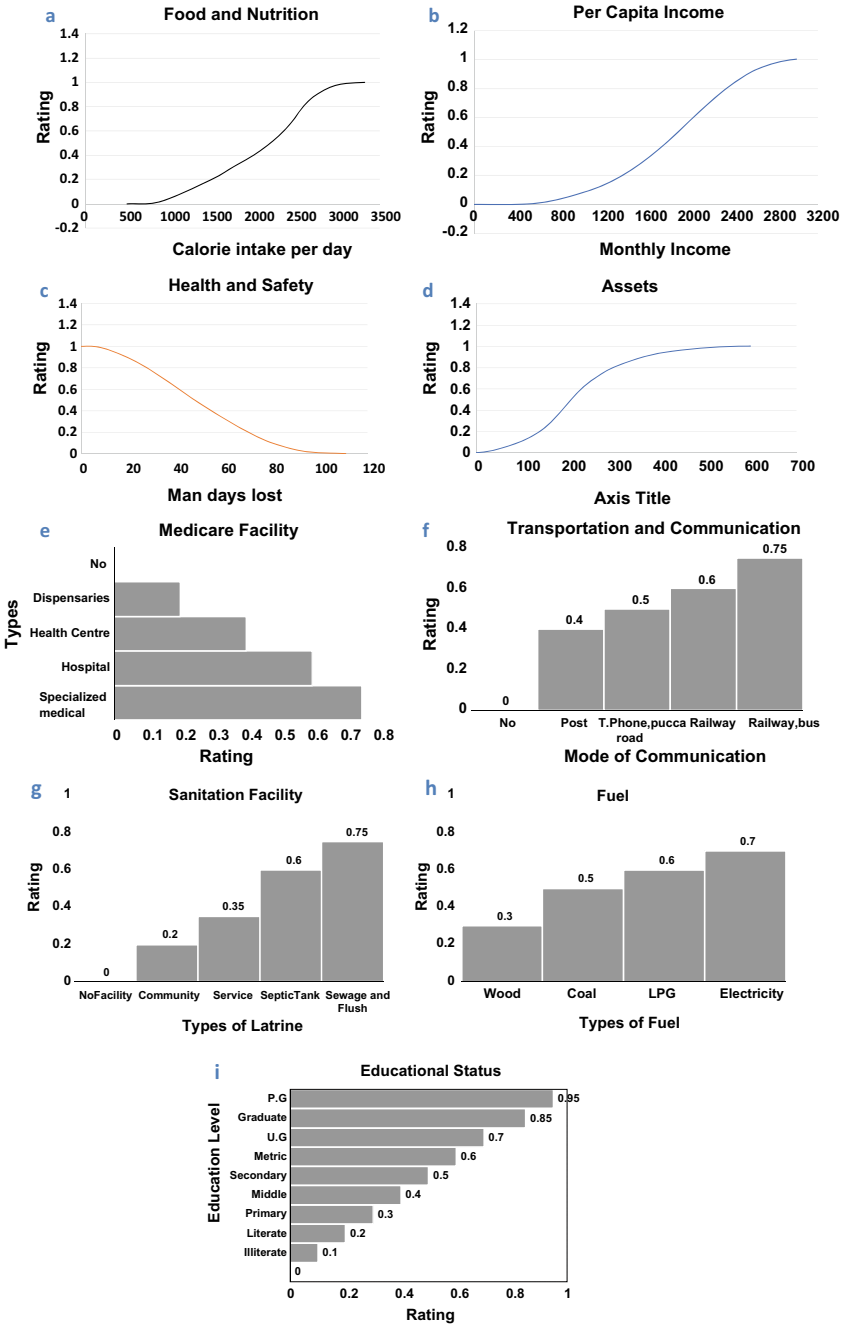


Fig. 20.2 Value function curves. **a** Food and nutrition; **b** per capita income; **c** health and safety; **d** assets; **e** medicare facility; **f** transportation and communication; **g** sanitation facility; **h** fuel; **i** educational status

Table 20.3 QOL ratings

S. No.	For individual/families		For mining complexes	
	QOL score	QOL rating	% of families having poor QOL	Rating/gradation
1	< 6	Poor	> 10%	Poor
2	6–20	Fair	5–10%	Fair
3	20–40	Good	< 5	Good
4	40–80	Very good		

To make an assessment, the QOL rating for the individual/families and complexes has been scaled and defined (Table 20.3). By performing site-specific socioe-conomic study, the overall QOL can be designated as poor/fair/ good or very good and scientific interpretation can be explained.

20.4.1 QOL Determinants

Quality of life instrument presents the best and most satisfying means to assess the social and economical progress and well-being of all the major stakeholders of the mining region, i.e. the government, company and community. QOL determinants are a measure to capture what mining is doing for the region and the local communities, e.g. (a) How social characteristics (basic amenities, literacy levels) are changed with time? (b) How sociopolitical and economic characteristics (income and asset, satisfaction level of an individual and community, perception of health and well-being, freedom, security and safety and activity) are altered or impacted?

Along with the QOL determinants, the core environmental parameters, i.e. air environment, water environment, land use and land cover changes due to externalities including the ecosystem health, i.e. changes in the ecosystem are equally necessary to understand the environment scenario and a person's well-being. If these tools are used regularly, and progress is recorded over time; the QOL tool is quite effective for the assessment of the living conditions in real society. Regional or local indicators may be needed depending on the choices and problems faced. QOL draws focus on community action and ways to improve their milieu, health, security and safety.

It is evident that the periodical changes in society are bound to happen, and therefore, it is monitoring through action plans is important for the assessment. Concerning the societal losses/gains, the agencies or the groups carrying out the planned action shall be made responsible and mitigation measures are taken accordingly. Criteria for mitigation and measurement have been listed in Table 20.2. Feedbacks from the affected population should be aimed at as the result of the progressive improvement of socio-economic status (Saxena 2002).

Table 20.2 Criteria for mitigation of social impacts

Criteria	Definition, measurement
A. Reversibility	How long will it take to mitigate the impact by natural or man-induced means? Is it reversible if so, can it is reversed in the short term or the long term?
B. Economic costs	How much will it cost to mitigate this impact? How soon will finances be needed to address this impact?
C. Institutional capacity	What is the current institutional capacity for addressing the impact? Is there an existing legal, regulatory, or service structure? Is there excess capacity, or is the capacity already overloaded? Can the primary level of government (e.g. local government) deal with the impact or does it require other levels or the private sector?

20.5 Implementation of Socio-economic Development Measures

A comprehensive picture of the living condition in an area, either a mining area or another general area could be described by SEI, QOLI (local or regional) and SDGI (regional/national). In the previous section, a short description of QOL has been covered, whereas in this section, the SDG index (SDGI) is a key evaluation component for national/state/region context along with the implementation components (i.e. CSR) that have been described. Encompassing major domains of the environment and economics, including sociopolitical conditions, implementation of the development measures through a mechanism shall be ensured for the sustainability promotion as well as for the advantage of industry and society.

Sustainable development goal index (*SDG index*) is a helpful tool for implementing social, economic and environmental measures. This is an internationally acceptable index that defines most of the parameters required for positive societal growth. Based on 100 national indicators, the SDG India Index (2019–2020) is prepared to track the progress and ranking of various socio-economic parameters. In India, it is prepared for the existing Indian States and Union Territories (UTs) for the seventeen developmental targets listed internationally by the United Nations (Fig. 20.3). SDGs assessment is derived from the national data (according to a developed framework) collected by the Ministry of Statistics and Programme Implementation (MOSPI). NITI Aayog, India's premier think tank, launches these SDGs as they are increasingly more relevant worldwide. From this index, sustainability in the mining area (region) can be derived comprehensively, e.g. Jharkhand, a mineral-rich state of India has mining, waste, water, environment and rural development are the key developmental factors (Fig. 20.4b) and are an integral part of the developmental agenda. The state has an overall SDG score of 53 (Fig. 20.4a) out of 100 meaning that the overall social, and economic development is of the medium level and scope exists for further improvement.

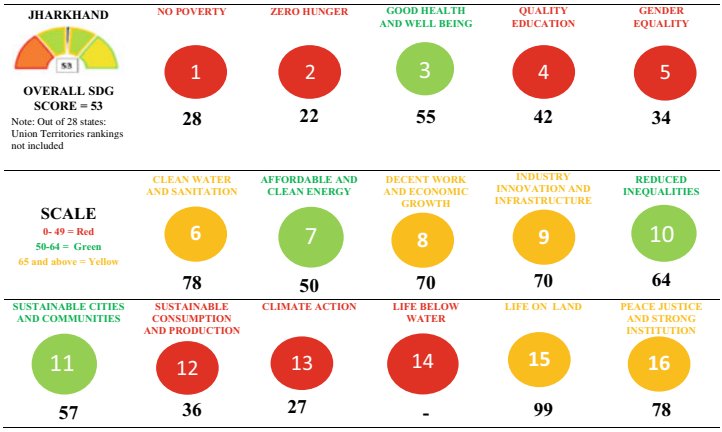
Besides the *SDG index,* one of the latest and the most modern implementation tool available to the industry is *Corporate Social Responsibility (CSR).* Responsible

Fig. 20.3 Sustainable development goals as framed by United Nations

mining business conduct and action plan always consider the CSR as one of the most strong socio-economic instruments or helpful tools (https://pib.gov.in/Pressreleaseshare.aspx?PRID=1568750). Depending on the stakeholder, requirement, either industry or beneficiary, the implementation strategy has been framed for CSR.

Corporate social responsibility (CSR) is a business approach that contributes to sustainable development by delivering economic, social and environmental benefits to all stakeholders. The purpose of CSR is to drive change towards sustainability and examine the social responsibilities of ongoing industrial activity on society. In India, the CSR clause comes under the Companies Act, 2013 and the Ministry of Corporate Affairs (MCA), Government of India is the nodal watchdog agency. For Indian companies, CSR Rules-2014 have been notified by MCA and Section 135 and Schedule VII of Companies Act, 2013 is promulgated.

In brief, CSR is the responsibility of the company towards the society that includes—poverty alleviations, (providing food to the hungry), malnutrition, health care, promoting education, promoting gender equality, setting up of homes for orphans, women, and senior citizens, animal welfare, the welfare of SC/ST/OBC's, protection of national heritage, rural development work, etc. The CSR-related activities have been undertaken by a company to fulfil its CSR obligations and guide towards environmental sustainability. In the literature, CSR topic is well-described (Masoud 2017; Dahlsrud 2008; Moir 2001) giving ideas behind CSR, its definition(s), theories of CSR (social contract's theory and legitimacy theory), stakeholder, indicators of CSR, ways of assessing and reporting CSR performance by the industry, etc. Our purpose here is not to describe all these different aspects of CSR but to make our point that CSR is an inescapable priority for business houses/leaders in every country including India. The CSR associated concepts are for the benefit of the environment, company, activists, stakeholders, local villagers and the whole community/society. The only thing that is needed is its enforcement and concrete actions that should be considered by the industrial organization.



(a) SDG score, Jharkhand state, 2020

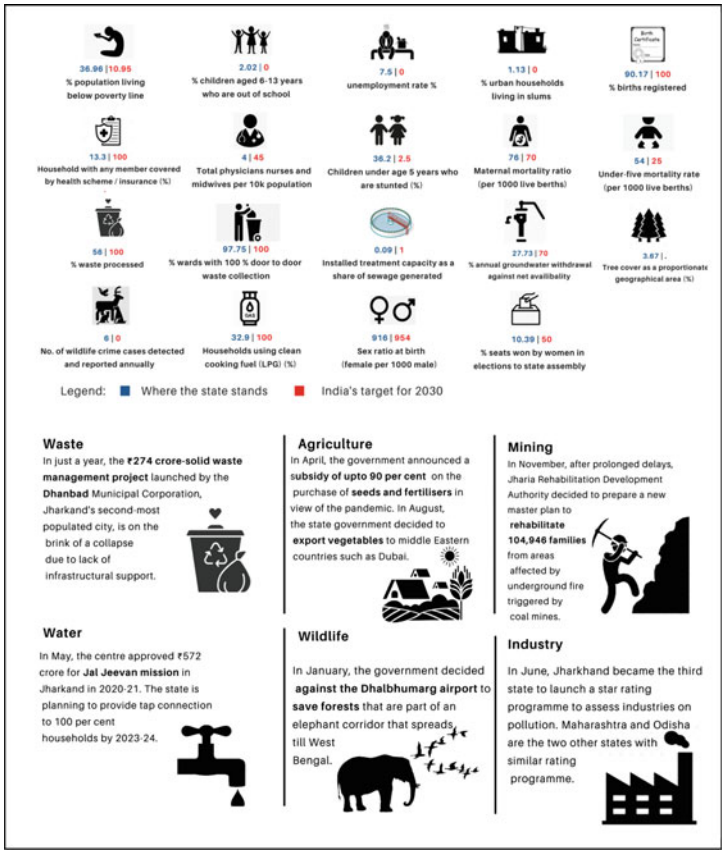


Fig. 20.4 Key development indicators for India and mineral-rich state of Jharkhand in 2020. *Source* CSE, 2021

Concerning the Indian mining sector, India's corporate laws and Companies Act, 2013, which came into effect in April 2014 describe various details about CSR and related matters and its intent is meant to improve accountability and responsibility of companies when it comes to business conduct. This Act makes CSR a matter of corporate governance from planning, monitoring and reporting perspectives and mandates that 2% of company spending be consumed in CSR activities. All over India, Indian companies of the corporate mining sector came forward to make use of a part of their profits to support social and economic changes and give back to the people of the region they are working with. Coal India Limited (CIL), the most vibrant and prominent coal mining organization of the country, had spent 2733.12 lakh rupees as *CSR* expenditure in the financial year 2018–2019 at its Kolkata HQ alone (Annexure III). MOIL Limited, another mining company, as part of its CSR activities created 'Self-Help Groups' at the mines which comprise women hailing from the remote villages. They are trained to make candles, washing powder, washing soaps, bamboo baskets, tailoring and various other vocational activities to make them self-reliant. This programme in MOIL has got a very good response and a huge success (Annexure II).

In this way, corporate, industry, NGO and PAP's together address the sustainability challenges for the mineral sector that forms a part of the raw material constituents.

In India, a state-wise comparison of CSR shows that a major portion of CSR expenditure is concentrated in few states while some are severely neglected. An analysis of cumulative CSR expenditure into various development sectors over the past five years (2014–2019) shows that the education sector has received the most CSR funds (30.1%) followed by health care (17.2%) and the least being rural development (10.9%). To improve the efficacy of CSR, NITI Aayog in collaboration with the state government launched a national programme called as '*Aspirational Districts Programme'* (*ADP*) in 2018. In this, 49 key performance indicators (81 data points) have been identified across various themes—health and nutrition, education, agriculture, and water resources, financial inclusion, skill development and basic infrastructure. These themes, mostly socio-economic parameters, have been considered crucial to maintaining the QOL and economic productivity of citizens (Chawla 2021).

20.6 Discussion and Analysis

A socio-economic profile is an outline characteristic feature of the region and its development. It gives a representative sketch of the social and economical condition of the people and the infrastructure build-up of the discussed locality. Quality of life (QOL) criteria have been used here for the evaluation of social and economic well-being. An interrelationship of impacts and QOL has been explained in Fig. 20.5 which obviously differs on a case-to-case basis. QOL, being a subjective concept has no standard or fixed yardstick for measurement. In a geographic domain, it varies

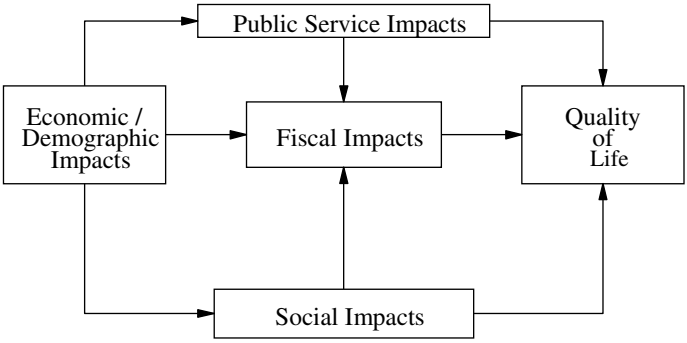


Fig. 20.5 Socio-economic impact and quality of life

with the place, time, availability of resources, educational status and aspiration of the society.

In developing the socio-economic-based index, i.e. QOLI, the biggest difficulty experienced is the variety of scales by which environmental variables can be measured; e.g. temperature is measured in Centigrade/Fahrenheit/Kelvin, whereas mass (weight) can be expressed in kilograms or pounds. Similarly, income pattern and occupation; assets; recreation; fuel and energy consumption; sanitation status; water availability and consumption, safety, etc., all have different units as their description criteria. In each case, the respective scale has no similarity at all. Thus, one has to take into account the ambiguity of scales, i.e. to make sure a sensible change does not affect the impact or reversal of the impact order.

Based on the subjective criteria, a comparison of the socio-economic status at the national level has been done with the mining areas of the Indian mining industry (Table 20.4). In this table, selected parameters are defined using relative terms, i.e. low, medium and high, average, present, dense, etc., the reason being the wide variance in their units of description. The status defined in Table 20.4 has been derived from multiple sources and records. My own experience and judgement have been utilized for the relative explanation; consequently, it is an approximation only for wider coverage.

Case study: Socio-economic studies are survey-based (site-specific) even then here, I am not describing any specific case study as an illustration for one particular site to assess the quality of life (QOL) in a mining region. As of 2020, in nearly all the mining regions of India, the social priorities are drastically different than it was earlier (Dhar and Saxena 1994); hence, rapid changes are inevitable. In Goa, iron ore mining is banned with court orders, and in coal mines, private participation for mining of coal has started. Infrastructure development in remote regions got acceleration in the later part of 2010. All these factors, together with the impact of the COVID-19 Pandemic on industry (Soni 2021), have changed the socio-economic status entirely. The most important of these are the facts that if mining is to happen, enabling conditions needs to be created and put in place to ensure local communities get benefited from the

Table 20.4 A comparison of the socio-economic status: national versus mining areas

S. No.	Parameter name	National status	Status in mining areas	Remarks
1	Demography/population Population density/km^2	High/dense 382 person per km^2	At par with the national average	Dense population in mining localities and industrial setup
2	Sex ratio (male:female)			Mining areas are mostly located in rural areas
	- Total - Rural - Urban	= 1000:933 = 1000:946 = 1000:900	At par with the rural average	
3	Literacy rate (%)	Total = 73% Male = 80.9% Female = 64.6%	Total = 67.8% Male = 77.1% Female = 57.9%	Less than the national average and at par with the rural average
4	Education facilities	Adequate Medium	Not adequate Low/less	Leading to migration from rural to urban areas
5	Housing/shelter	Low to average	Medium	Mining areas are planned areas
6	Food and nutrition	Low to medium	Low	--do--
7	Medical facility and health-related amenities	Low to medium	Medium	--do--
8	- Birth rate (BR) - Death rate (DR) - Male:female ratio	BR = 17.9% DR = 7.2% M:F = 52:48%	At par with the national average	–
9	Income [per capita income/monthly income per household)	2018–19 = Rs 10,534 /- 2019–20 = Rs 11,254 /- (rise of 6.8%)	Less than average Progressive income pattern noticed in mining areas	* Data as per Ministry of Statistics and Programme Implementation, Govt of India
10	Occupation pattern	Mixed occupation of all types	Mainly mining	Agriculture and mining are the dominating occupation pattern of mining areas
11	Assets (land holdings)	Widely varying; average being medium	Low to medium	Industrial workers have better asset
12	Expenditure capabilities (as a percentage of income)	Widely varying; average being medium	Low to medium	Better standard of living in mining areas hence good expenditure capabilities
13	Recreation	Medium	Less to medium	Dependent on individual

(continued)

Table 20.4 (continued)

S. No.	Parameter name	National status	Status in mining areas	Remarks
14	Fuel and energy consumption (per capita)	22,351 MJ (2016–17) (In the year 2016–17 the energy consumption was 30% of world average; less than the world average) Elect. Consumption—1181 kWh	Medium and at par with the national average	Differs widely from area to area More energy consumption in coal mining areas
15	Sanitation status	Medium	Medium	At par with the national average and as per rural areas
16	Water availability and water consumption	Medium Average: 135 L per person/day (Nat)	Medium 110–120 L/person/day) less than the national average	World average water consumption is 300–375 L per person/day
17	Safety awareness	Medium to Low	High	Better awareness in mines and industrial establishments
18	Infrastructure facilities (transport and communication)	Medium	Medium to low (overall)	'Low' means lack of infrastructure facilities. 'Medium' means inadequate needs improvement. Some mining areas have adequate facilities
19	Migration pattern	Present (interstate and inter-country)	Present (from urban to rural areas)	Mostly for job opportunities

Note Data/statistics shown in the table above are drawn from multiple authentic sources such as Census, 2011 records and Govt of India ministries official websites

commercial projects all through the entire life cycle, i.e. from the concept (start) to the decommissioning phase of the project.

As explained earlier, empirical criteria are the approach for socio-economic indexing to define and describe societal status. Since fast changes have been witnessed in mining society, therefore, let me search and explore the answer to the questions: (1) Does mining influence the QOL of the local people? (2) Can we compare the 2021 status with the 2010 or earlier status? The answers to these questions for this case study description are—in all those regions where mining is prominent, e.g. Goa, iron ore mining belt the mining influence the economics of the region significantly. Overall QOL for the Goa mining region was 6 in 2010, and it is 5.6 in the year 2021. This comparison between the past and present status shows a slightly declined status probably due to the mining ban and difficult social liveability conditions. In short, a comparison between two periods is feasible and helpful in defining life quality.

Mining activity and the results of the mining projects have to ensure that there is an improved quality of life in the region. QOL index between 07 and 10 for a majority of population be aimed at, of course, progressively. For locals, infrastructure development must take place, and more attention shall be given to better social and environmental health. The rights of people should be protected and the implications of degradation for mining or society be addressed properly and appropriately. The net result is fewer (or nullified) negative impacts of the mining as far as possible.

QOL has many and widely varying dynamic parameters, limits or constants. *Ligia and Subramaniya* assessed the QOL in the Goa mining region in 2005. Their results suggest that while there is a difference in objective conditions between mining and non-mining regions, there is no statistically significant difference in satisfaction levels between the two, except for the environmental domain. This is especially important in the case of women, who report higher satisfaction levels but overall have lower access to resources (Ligia and Subramanya 2005). Similarly, the quality of life index (QOLI) as determined in the Bhowra Coal mining area of Jharia Coalfield (1998) depicts that a total of 59.8% of families has QOLI $= < 5$, indicating that majority of the families are below the desired minimum quality of life. Nearly, 35.8% of families fair QOLI and only 5.2% of families had good QOLI, between 07 and 10 (Prushty 1998). Scrutinizing these two studies critically reveals that there seems no similarity in between.

20.6.1 Mining and Community Relation

In the context of socio-economic impacts and evaluation, the relationship between mining and community has the most important role because it is none other than a community that faces rungs of mining impacts. The dynamics of the industry are well known and the emerging paradigm put a focus on the 'Social License to Operate' (SLO), which is similar to the 'public hearing clause' of EIA (environmental impact assessment). SLO identifies a set of concepts, values, tools and practices that

represent a way of viewing reality for industry and stakeholders within the context of corporate responsibility, competitive advantage and growth (Nelson 2006).

As regards the Indian mining industry, it is quite clear that for the smooth operation of a mine, all or nearly all, stakeholders must feel satisfied and kept balanced. At each operational phase of the mine, i.e. exploration, development, site remediation, from grassroots to the legacy, project sustainability is a must along with the industry and community relation. Undoubtedly, both industry and stakeholders, development and sustainability will remain at the forefront now and also in future.

20.6.2 Degradation, Population and Policy

Most people feel that environmental degradation is proportional to the number of people, as they are an effective means of environmental destruction. In the simplest possible terms, the total impact of a group of people on its environmental resources is the environmental impact per person multiplied by the number of people. It is expected that a population increase is bound to occur in developing countries contrary to the developed world. Although fertility rates in developing countries are mostly high to very high, many countries have started to decline in recent years. To some extent, this is a reflection of rising incomes, a part of socio-economic development. Increasing income, better standard of living and literacy are almost always associated with lowered fertility rates. Other important causal factors responsible for higher QOL are—reduction in infant mortality increased availability of family planning services and increase in educational opportunities especially for women, etc. Continued emphasis on these factors is in the best interest of people for socio-economic progress in the developing world, not solely for environmental reasons, but also to reduce poverty directly and to make it easier for the institutional developmental changes (Field and Field 2017). Hence, it is clear that the reduction in population growth rates certainly helps to reduce the overall impacts on its environmental resources and thereby reducing degradation. Also, one thing is apparent that sound socio-economic-based environmental policies have no substitute for their people's rights. It should be clubbed with the population either mining or agricultural to facilitate reduced environmental damages (Field and Field 2017). For the improved work performance, environmental degradation, population and policy have many conflicts of interest, as the case may be, either for the area or for the industrial enterprise.

To achieve the UN Sustainable development goals (SDGs) in the Indian mineral industry, there is very little regard to social responsibility and sustainable development implications. Of the 17 agreed SDGs, many aspects related to mining and geosciences including climate change, pollution and contamination, water, waste, minerals and energy. In the industry, issues such as corporate social responsibility (CSR), social license (SL), consent to operate (CTO), artisanal/small-scale mining

(ASM/SSM) have attracted great attention of the indigenous people and the government and becoming more vital for civil society, NGOs and other stakeholders. Especially, environmental concerns and people's rights for the local and regional development, of course, related to the industry come across many examples of responsibility and sustainability either at the policy level or the local subject discussion level. Hence, a more practical way to apply this social responsibility and sustainability awareness is through the social—SDG content. This should be introduced in the industry that includes community relations, human rights, gender issues, poverty alleviation, literacy, climate change, clean energy, e-governance, sanitation/health (occupational and general) and hazards, disaster and safety. The industry and its staff must utilize some of their time to reach out to the local community and engage them to be stakeholders in the project of socio-economic environmental sustainability.

20.7 Addressing Social Issues

Indeed, growing awareness about the environment has pressed the need to look at the socio-economic issues of industrial projects and affected persons (PAPs) from a fresh angle. To address these issues helps of the following can be taken

- Action plan
- Community development programme
- R&R Policy (Rehabilitation & Resettlement Policy).

Owing to the large land area, required for opencast mining, land acquisition becomes a stupendous task and the issue of resettlement and rehabilitation of affected people assumes immense significance. Thus, R&R is one major and difficult social issue for the community living within or in close vicinity of the mining projects. At some places, the population is sparse but at some places, population density is high, thereby creating problems beyond control. To create enabling conditions for the mining companies, effective social handling and management are necessary. Some of the aspects that need to be paid greater attention for the R&R issues are—monetary compensation; fixed recurring monthly allowance to the titleholder or the landholder for a designated period; income generation schemes (training/skill) for the PAPs, new employment alternative; compensatory land for resettlement of PAP's (land for land). All these issues are the responsible social issues, required to achieve the growth path. Their handling will be dependent on the defined plan, policy and programme of the company attending it.

According to the yearbook of the Indian Bureau of Mines published in 2018, the Indian mining sector had employed around 4.77 lakh people in the financial year 2018 (IBM 2018). The mining industry segment in the Indian state of Goa alone used to support about 300,000 people before being shut down by an order of the Supreme Court of India. With the dwindling industrial situation, social issues at the individual level and also at the community level, i.e. infrastructures (transportation by ships, rail, road, water, air, etc.), are considerably brushed up. Persons from the

mining regions, including mineworkers who got affected can get better household income provided the improved QOLI is restored by removing the ban on mining, thereby obtaining better health care and nutrition for their families. Thus, it is evident that an enhanced/higher overall standard of living is possible with mining advancements. Fast-changing social scenarios and a vivid variety of different mining regions call for a site-specific in-depth study on socio-economic parameters. To address the social issues of the industry, mining and community relation (Sect. 20.6.1) must be understood.

Similar to the Quality of Life Index (QOLI) criteria for mining areas, as described here and methodology explained to address the social issues, the 'Social Progress Index' (SPI) is yet another method. The SPI provides evidence for social performance based on the basic human needs/dimension. Parameters, namely shelter, nutrition, basic medical care, water, sanitation and personal safety, form the basis for their evaluation and assessment. According to the US-based non-profit group—'Social Progress Imperative', India ranks 102nd among the 132 countries on the SPI index (ET 2014). The SPI is a measure of human well-being that goes beyond traditional economic measures such as GDP or per capita income.

As an end note to this chapter, it is added that the QOL cannot be raised unless we raise the texture of our thoughts and the depth of our understanding because the assessed QOL is only for the physical well-being, and we have to enhance both our mental and physical well-beings.

20.8 Conclusions

The given analysis concludes that a socio-economic-based environmental assessment mechanism is apt and best for the ongoing projects because it covers the overall regional development and economic progress and justifies the sitting of the industry in a better way. Since the basic objective of opening up of mine in any region is the social upliftment and economical gain, apart from the routine mineral production, hence socio-economic performance is a good indicator of governance competence to attain sustainable developmental goals. With this approach, industrial unrests (political and social issues) are minimized and the negative environmental impacts of mining activity are not accelerated further as they are being noticed regularly.

Mining is a long-term business, with hazards, risks and capitalistic costs. Many times, it becomes difficult to run the industry smoothly because of resistance from society. Hence, pre-assessed and evaluated, socio-economic status is helpful to address the general public concern directly and quite effectively. For decision-makers and policy formulators, at different levels, the socioeconomic-based sustainability development indicators meet the short-falls and potential gains criteria of present and future planning too. It is easy to implement it into practice for the individual mines and mining complexes as the industry is labour-centric.

Adequate *quality of life* in a mining region (>7) is therefore desirable to ensure societal development, which could be gauged in terms of employment, infrastructure

and literacy enhancement of the local population or the region. Long-term benefits can be linked and expected with higher QOL. To reduce environmental degradation, protect society from the ill effects, preserve the ecology and improve the local economy, socio-economic environmental sustainability is the key and should be promoted.

20.9 Recommendations

Framing recommendations for the socio-economic dimensions of the environment is a stupendous task because it is difficult to reach a consensus. The analysis of the environmental sustainability framework, concerning the Indian mining industry indicates that to handle the environmental degradation menace the QOL should be at par with the national average and not below. Both, society and economic scene are fast-changing; therefore, periodical assessment and evaluation are recommended.

Acknowledgements I am grateful to the Director, CSIR-CIMFR, Dhanbad, for according permission and for extending his support for this technical contribution. As the author, I would like to duly acknowledge all my colleagues and friends for their direct and indirect help.

Disclaimer Socio-economic-related study and analysis, as described in this chapter, will be of help and interest to all in general and for the mining community, in particular, who are involved in planning and designing of mines and mining operations. Personnel involved in the decision-making for implementation and control of environmental mitigation measures, i.e. the management authorities including academicians, researchers and students will be benefitted directly. Conclusively, this can be stated that mineral excavation operation and impact on society be clubbed in such a way that economic gains are harnessed and well-beings of PAP's be ensured.

Annexure I: Socio-economic Survey Questionnaire (to be done on household basis)

Date of Survey: Name of person (who performed survey):

Part 1 of 3: Area/Region and its details

A. Name of State and District
B. Name of Block/Division
C. Name of Village
D. Name of Coalfield /Mining area
E. Name of nearest urban locality and its distance from the village

Part 2 of 3: General Social/Societal details

A. Name of head of household
B. Religion and Mother Tongue

C. SC/ST/OBC Category
D. Demographic Aspects

- Family details and its composition, age, sex, relationship, marital status, Handicap if any.
- Occupation of various members in the house (self-employed, farmer, shopkeeper etc.)

E. Housing and related aspects

- No of houses, ownership status, area of the dwelling, number of rooms, latrine/bathroom facility, livestock shed and open space if any
- Fuel used and its consumption details (Wood, kerosene, LPG, charcoal, electricity)
- Livestock details and type of animals (milching/non-milching). Are they owned for the owner's subsistence?

[Ask Question—How do you rate the general characteristic of the house you live in and are you satisfied with it the existing infrastructure facilities. If not why state reason?]

F. Infrastructural Provisions and its details

- Road and public utilities/facilities
- Water and sanitation facilities (Quality, type, access and availability for use)
- Electricity and its availability for use
- School, college and other educational facilities
- Medical facilities (Doctors, Hospitals, primary health centre/sub-centre, dispensary, family planning centre or other specify here)
- Market (daily/weekly hat) and shopping facilities (Daily needs, clothes, books & stationary, milk, vegetables, grocery, seeds, fertilizers, festive purchases. others)
- Religious places of your worship
- Recreational facilities (playground etc.)
- Gram Panchayat for civic support

[Ask Question—Are you satisfied with the existing infrastructure facilities. If not state the reason for it?]

G. Habits of the family (Smoking, drinking, tobacco consumption and others)
H. Major and chronic disease in the family

- Health status in the last 05 years including handicap, physically challenged and mentally disabled person if any; death, if any occurred in past five years.

I. Migration

- Are you or your family originally from this place?
- Have you migrated from another part of state or country, if so state details?

- Has anyone in your family migrated out if so state details including reasons if any?

J. Forward and Backward Linkages

- *Under this section please specify the frequency of visiting other places, no of the person of family who visited, transportation mode used and purpose of the visit shall be described*

Part 3 of 3: Economy of the people and its details

A. History of employment/Jobs performed

- Parental history; own job details, contribution to the job, if still being performed and its salient details such as the name of the organisation where a job is performed, salary obtained, place of work, previous employment etc.

B. Occupation of various other members in the house
C. Self Employed

- Type of work /job performed, regular or seasonal, income, place and earning.

D. Land Holding

- Type of land and its area (Cultivable /uncultivable, Irrigated, fallow, double-cropped, grazing, forestry, barren or other types such as land damaged or occupied by industry, subsided land etc.)

E. Cropping Pattern for agriculturists and income
1—Irrigated 2—Un-irrigated

- Rabi—Crop, Production,Area,income
- Kharif—Crop, Production,Area,income
- Other (For those, who are seasonally employed)—Employer, Income from job, No of days engaged, place of work and its nature

F. Any assistance from government schemes
G. Animal Husbandry and its Details, whether for self or common for all village
H. Expenditure Pattern
I. Banking and Other Financial Systems of the area—Salient details about surveyed household.

[Ask Questions—(a) What is your monthly take-home income? (b) Is it sufficient for you and your family? (c) How do you consume the income whether it is for self-consumption or family use (d) Are you satisfied with the set-up you have for your daily life? If not, state the reason for it?]

(Signature of Surveyor)

Annexure II: Corporate Social Responsibility (CSR) and Sustainability at MOIL Limited

Source: Annual Report, MOIL Ltd, 2019–20

Tricycle distribution Under CSR

Corporate social responsibility (CSR) in MOIL limited is a continuous process. MOIL has been carrying out CSR activities in a resolute manner for the past several years. The Company has framed a CSR policy, duly approved by the Board of Directors. Several schemes have been taken up and being implemented under CSR which broadly include the following:

- In the education and skill development initiative, MOIL is supporting various schools near its mines in the Balaghat district of Madhya Pradesh and the Bhandara district of Maharashtra.
- In a major step towards providing quality education to rural children, MOIL in association with DAV Group of Schools has constructed a large school at Village Sitasaongi, in Bhandara district with the overwhelming response for DAV-MOIL school of Sitasaongi. The company is in the process to open one more branch of this school at Munsar, Dist. Nagpur, which will cater to the need for quality education of rural children.
- Skill development program: Training on logistic skills, mine mate and blasters has been imparted to 217 youths including contractors' workers. As per NSDC's (National Skill Development Council) guidelines, MOIL has been engaging around 460 trainees each month for Apprentice Training.
- MOIL has also initiated the "Saksham Balika Programme" in which 15 girls belonging to Below Poverty Line families (BPL) have been selected for a Nursing course, in association with Apollo College of Nursing, Hyderabad.
- The company has tied up with Lata Mangeshkar Hospital, etc., for carrying out free cataract surgeries for needy people.

- Ten Organic Waste Converter Machines are being installed under CSR in various Gardens of Nagpur Municipal Corporation, which are used for converting organic garden waste to manure.
- The company has associated with a professional agency BAIF and Maharashtra Institute of Technology Transfer for Rural Areas (MITTRA), an associate organization of BAIF, Pune having vast experience in rural development programmes. MOIL has entered into MoU with MITTRA who has prepared a detailed project report for the project. Initially, 21 villages have been identified in Nagpur, (5 villages) Bhandara (11 villages) districts in Maharashtra and Balaghat (5 villages) district in Madhya Pradesh.
- MOIL is having 797 women employees, 13.32% of its total workforce of 5982 as of 31.03.2020. *Welfare Schemes and Facilities for Women Empowerment* has been taken e.g. *Mahila Mandals* are working effectively at all the mines of the company. Various cultural, social, educative and community activities such as adult education, blood donation camps, eye camps, family planning, etc., are being organized regularly, mostly for the benefit of women residing in the remote mine areas.
- MOIL is a labour intensive organization with 5982 employees on its rolls as of 31.03.2020. More than 80% of the total strength belongs to SC/ST/OBC (SC 19.91% ST 25.33% OBC 35.49%). The company is taking a keen interest in the development of the tribal population living in the vicinity of the mines situated in remote areas by adopting various measures e.g. adopting villages near the mines, providing financial aid, organizing training classes for self-employment schemes, providing training to the physically challenged persons and the person with Disabilities.

Briefly, MOIL has taken up various infrastructural development works like the construction of village roads, personal toilets, community halls, etc., in the vicinity of the operational area of MOIL's mines. Other major areas of developmental activities are—Livelihood; Education; Women Empowerment; Anganwadi based intervention; Water Resources Management; Community Resources Development; Agricultural Training; Infrastructure Development; Livestock Development; Training, Health, Hygiene, Cleanliness, Sanitation & Quality of Life improvement in the mining areas of MOIL.

Annexure III: Statement of CSR Expenditure for FY 2018–2019 of CIL (HQ)

(Source: Official website of CIL HQ, Kolkata)

CSR expenditure for FY 2018–2019									
1	2	3	4			5	6	7	8
S. No.	CSR project or activity identified	Sector in which the project is covered	Projects or programs			Amount outlay (Rs. lakhs)	Amount spent on project or program	Cumulative exp. up to the end of FY 18–19 (Rs. lakhs)	Amount spent—directly or through implementing agency
			(1) Local area or other	(2) State	(3) District				
1	Cure and better management of Thalassemia by providing financial assistance for bone marrow transplants (BMTs)	Healthcare	Other	PAN India	NA	2000.00	1080.75	1680.75	6 hospitals across India
2	Eye surgery camps in 3 districts—East Midnapore, West Midnapore and Purulia (West Bengal)	Healthcare	Other	West Bengal	Midnapore, West Midnapore, Purulia	25.00	12.50	25.00	Help age India
3	Installation of 44 nos. of handpumps in villages of Sundarbans	Water supply	Other	West Bengal	South 24 parganas	97.83	47.55	97.55	South Sundarban Janakalyan Sangha
4	Construction of 400 nos. of Individual household toilets in villages of Sundarbans	Sanitation	Other	West Bengal	South 24 parganas	97.10	46.83	96.83	South Sundarban Janakaly anSangha

(continued)

(continued)

CSR expenditure for FY 2018–2019									
1	2	3	4			5	6	7	8
S. No.	CSR project or activity identified	Sector in which the project is covered	Projects or programs			Amount outlay (Rs. lakhs)	Amount spent on project or program	Cumulative exp. up to the end of FY 18–19 (Rs. lakhs)	Amount spent—directly or through implementing agency
			(1) Local area or other	(2) State	(3) District				
5	Payment for the year-round cleaning and sweeping of 20 schools in Bidhan Nagar Municipality	Sanitation	Local Area	West Bengal	North 24 Parganas	10.91	5.63	5.63	M/s Service Master Clean Ltd
6	Development of charitable dispensary by way of installation of medical equipment	Health care	Local area	West Bengal	North 24 Parganas	10.92	1086	10.86	Ramakrishna Math Barasat
7	Cure and better management of Thalassemia by providing financial assistance for Bone Marrow Transplants (BMTs)	Healthcare	Other	PAN India	NA	16.80	2.61	10.12	Thalassemic s India
8	Construction of Blood Bank with component separation	Healthcare	Other	Uttar Pradesh	Kanpur	300.00	17.62	29,437	Indian Medical Association, Kanpur
9	Providing aids and appliances to differently-abled people	Welfare of the differently-abled	Local area	West Bengal	Kolkata	4.37	2.18	4.37	NRS Hospital, Kolkata

(continued)

(continued)

CSR expenditure for FY 2018–2019								
1	2	3	4			5	6	7	8
S. No.	CSR project or activity identified	Sector in which the project is covered	Projects or programs			Amount outlay (Rs. lakhs)	Amount spent on project or program	Cumulative exp. up to the end of FY 18–19 (Rs. lakhs)	Amount spent—directly or through implementing agency
			(1) Local area or other	(2) State	(3) District				
10	Construction/Renovation of Prarthana Bhawan at Hooghly district	Women empowerment	Local area	West Bengal	Hoogly	4.89	2.44	4.89	Garalgaccha Vivekananda Samaj Seva Kendra
11	Kitchen cum dining hall complex at Ramakrishna Math Premises	Eradicating hunger and malnutrition	Local area	West Bengal	Howrah	10.00	10.00	10.00	Ramakrishna Math Belur
12	Financial Support to Center for Child Development for children with severe disabilities	Welfare of the differently-abled	Other	Uttarakhand	Dehradun	68.00	34.00	34.00	Latika Roy Foundation
13	Different development works in Purulia district of West Bengal	Rural development	Other	West Bengal	Purulia	3291.89	649.53	2610.70	The Energy and Resources Institute (TERI)
14	Road safety awareness campaign in K Kolkata	Others	Local area	West Bengal	Kolkata	69.85	15.82	68.42	Traffic Dept., Kolkata Police
15	Menstrual hygiene management project in Purulia district	Women empowerment	Other	West Bengal	Purulia	85.94	20.47	85.94	Nirmaan Foundation

(continued)

(continued)

CSR expenditure for FY 2018–2019								
1	2	3	4			5	6	7	8
S. No.	CSR project or activity identified	Sector in which the project is covered	Projects or programs			Amount outlay (Rs. lakhs)	Amount spent on project or program	Cumulative exp. up to the end of FY 18–19 (Rs. lakhs)	Amount spent—directly or through implementing agency
			(1) Local area or other	(2) State	(3) District				
16	Construction of building to facilitate medical research and medical care for underprivileged people	Healthcare	Local Area	West Bengal	North 24 parganas	92.76	62.17	92.17	Institute of Pulmocare and Research
17	Training of 2000 persons at different centres of CIPET	Skill Development	Other	PAN India	NA	1290.00	353.46	353.46	Central Institute Engineering & Technology (CIPET)
18	Promotion of preventive healthcare in Assam	Health care	Other	Assam	Kamrup	31.45	5.25	31 0.45	NILA
19	Construction of student community hall	Education	Local area	West Bengal	North 24 parganas	31.22	20.14	31.22	RK Math Baranagar
20	Construction of road in Ghazipur	Rural development	Other	Uttar Pradesh	Ghazipur	99.13	25.45	48.23	PWD Ghazipur
21	Construction of 200 nos. of individual toilets under Swac hh Bharat Mission in Kathua, J&K	Sanitation	Other	Jammu & Kashmir	Kathua	74.00	24.00	48.66	District Administration, Kathua

(continued)

(continued)

CSR expenditure for FY 2018–2019									
1	2	3	4			5	6	7	8
S. No.	CSR project or activity identified	Sector in which the project is covered	Projects or programs			Amount outlay (Rs. lakhs)	Amount spent on project or program	Cumulative exp. up to the end of FY 18–19 (Rs. lakhs)	Amount spent—directly or through implementing agency
			(1) Local area or other	(2) State	(3) District				
22	Installation of 100 hand pumps in Ghazipur Uttar Pradesh	Water supply	Other	Uttar Pradesh	Ghazipur	43.59	14.53	29.06	UP Jal Nigam, Ghazipur
23	Distribution of 120 nos. of blankets at SOS Children Village	Others	Local area	est Bengal	North 24 Parganas	0.93	0.93	0.93	SOS Children Village
24	Construction of 100 bedded hospital at Muzaffarpur	Health care	Other	Bihar	Muzaffarpur	493.00	118.89	487.89	Ramakrishna Mission Sevashrama
25	Conducting health camps	Healthcare	Local area	West Beng al	Kolkata	6.00	0.02	0.02	Medical Dept CIL
26	Installation of 275 nos. of hand pumps in Shravasti water supply	Water supply	Other	Uttar Pradesh	Shravasti	99.20	18.68	68.68	UPSICL Allahabad
27	Providing menstrual cups in flood-hit areas of Kerala	Women empowerment	Other	Kerala	Multiple	7.50	7.50	7.50	HLL Lifecare Ltd

(continued)

(continued)

CSR expenditure for FY 2018–2019

1	2	3	4			5	6	7	8
S. No.	CSR project or activity identified	Sector in which the project is covered	Projects or programs			Amount outlay (Rs. lakhs)	Amount spent on project or program	Cumulative exp. up to the end of FY 18–19 (Rs. lakhs)	Amount spent—directly or through implementing agency
			(1) Local area or other	(2) State	(3) District				
28	Financial support for solar power station for supply of solar power to education and health centre	Environment Sustainability	Other	Andhra Pradesh	Chittoor	26.75	26.75	26.75	Rishi Valley Education Centre
29	Setting up of Community Drinking-Water Project	Water Supply	Other	West Beng al	Bankura	96.00	18.00	96.00	Bishnupur Municipality
30	Construction of soak pits, drains, platforms etc. for spot sources including training and IEC activities	Sanitation	Other	West Beng al	Purulia	99. 91	22.90	72.90	WSSO PHED West Bengal
31	Construction of pre-university college block building	Education	Other	Karnataka	Udupi	99.75	24. 94	49.88	Anandtirtha Trust
32	Renovation of juvenile home and purchase of the vehicle for mentally retarded children	Education	Local area	West Bengal	North 24 Parganas	26.59	6.00	6.00	Bodhana Kolkata
33	CSR expenditure of North Eastern Coalfields (NEC)	Rural development	Local area	Assam	Tinsukia	30.05	30.05	30.05	NEC

(continued)

(continued)

CSR expenditure for FY 2018–2019								
1	2	3	4			5	6	7	8
S. No.	CSR project or activity identified	Sector in which the project is covered	Projects or programs			Amount outlay (Rs. lakhs)	Amount spent on project or program	Cumulative exp. up to the end of FY 18–19 (Rs. lakhs)	Amount spent—directly or through implementing agency
			(1) Local area or other	(2) State	(3) District				
34	Adjustment of the advance amount released in favour of TERI	Rural development	Other	West Bengal	Purulia		4.32		TERI
35	Amount spent on miscellaneous activities through Imprest	Administrative Expenditure					0.05		
	Gross CSR EXP						2742.82		
36	Refund of unutilized CSR fund	Women empowerment	Local area	West Bengal	Kolkata		1.00		Ankur Kala
37	Refund of unutilized CSR fund	Others	Local area	West Bengal	Kolkata		7.33		Traffic Dept., Kolkata Police
38	Reversal of old liabilities						1.37		
	Total of refunds/reversals						9.70		
	Net CSR EXP						2733.12		

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