

Analysis of the Contribution of Corporate Social Responsibility (CSR) Initiatives of Indian Coal Mining Industry in Sustainable Development

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ABSTRACT: Compulsory participation of business companies in achieving sustainable development goals through delivering corporate social responsibility (CSR) in effective and efficient manner is one of the firm efforts of India to ensure that developmental practices go in optimal harmony with social and environmental sustainability. This research paper analyses to what extent CSR practices of Indian coal mining industry contribute to sustainable development. The analysis is based on prevalent CSR practices of the industry as well as on businesses motivations regarding environmental and social investments in the light of legislations and international expectations; that mean what responsibilities the industry should bear in order to achieve sustainable development goals on its part and how far it has gone through its CSR initiatives. The analysis revealed that the CSR initiatives could cause very limited outcome in spite of substantial expenditure of money and efforts by the industry. Most of the initiatives undertaken were short-term mitigation of business impacts. The paper recommends integration of CSR measures in core business operations of the industry and conducting standard measurement practice for need assessment before undertaking CSR activity as well as periodical impact assessment to align CSR activities with sustainable development goals.

KEYWORDS: Coal mining industry, CSR, Environment, Mined out land, Sustainable development, Social welfare.

I. INTRODUCTION

Recent growth in industrial productions is directly related to exploitation of natural resources. Although this growth is considered essential for economic and demographic development, but the concern for over-exploitation of natural resources is continuously increasing and arising conflict over economy and ecology because of the imbalance between the development and the social and environmental sustainability. Moreover, the benefit of exploiting natural capital is not being shared properly in the world. Ambition for maximizing profits by big business entities either managed private or public is dividing the world between the rich and the poor and initiating disturbance in peace. Leaders all over the world are sensing since decades that the earth is gradually becoming difficult to live in due to unsustainable human induced activities and supporting the need to implement worldwide solidarity to deal with the risks of chaos disturbing the social and environmental sustainability. In response to global call for sustainable development, India has been making firm efforts to ensure that the developmental practices go in optimal harmony with social and environmental sustainability; one of such efforts is ensuring compulsory participation of business companies in sustainable development through delivering corporate social responsibility (CSR). The aim of this paper is to analyse to what extent CSR practices of Indian coal mining industry contribute in sustainable development.

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 5, Issue 4, April 2016

II. BACKGROUND

Coal is an abundant and promising fuel source. This is used by power plants for generating over 41% of global electricity[1]and has many other important uses like in steel production, burning clay bricks, cement and paper manufacturing and even as a liquid fuel. The demand curve for coal is continuously rising especially in highly populated emerging economies like China, India and South-East Asia. With a proven reserve of 867 billion ton of anthracite and bituminous coal [2],it is the most mined mineral in the world. Coal mining industry working in more than 200 nations is considered one of the most important propellants of growing economy of several coal producing nations. In year 2014, global production of coal was 7895 million tons; out of which PR China produced 44.0%, United States 11.7%, India 8.3%, Australia 6.1%, Indonesia 6.0%, Russia 4.5%, South Africa 3.4%, Germany 2.4%, Poland 1.7%, Kazakhstan 1.4% and others 10.5%. In spite of generating negative impacts on environment and community, this is considered essential to continue with coal mining industry till some other sustainable sources of energy are ensured in order to ensure achievement of SDGs by 2030. Because, the average consumption of electricity per person is considered as one of the strong indicators of social and economic development, and at present, one in five people lack access to modern form of electricity; more than 95% of those living without electricity are in countries in Africa and Asia[3]. Whereas the energy consumption per person is a defining indicator of development in the 21st century and the world is in process of addressing climate change and access to modern forms of energy, energy markets are getting shifted towards renewable energy in accordance with government policies and technological advancements, but even then in recent years, the use of fossil fuels has grown at faster rate than that of improving renewable energy capacity. As of the low efficiency and reliability of renewable energy sources, the global trend of coal consumption indicates urgency of continuing coal mining. Coal mining industry is not a clean industry and there is a need for balancing between the development opportunities provided by the industry and its environmental as well as social impacts. In response to the international call for sustainable development, integration of CSR measures in core operations of all business companies in India has been made mandatory and most of the companies claim compliance of the statute. The Indian coal mining industry has been making substantial expenditure and effort towards CSR initiatives since years in order to meet the legal requirements and international expectations. A study was required to analyse as to what extent CSR initiatives of the industry contribute to sustainable development, i.e. to what extent the use of natural resources and the environment is possible, given the current level of economic activity; what responsibilities the industry should bear in order to achieve sustainable development goals on its part and how far it has gone adopting CSR initiatives. The analysis was based on prevalent CSR practices and theory as well as on businesses motivations regarding environmental and social investments in the light of statute and international expectations; that means what responsibilities the industry should bear in order to achieve sustainable development goals on its part and how far it has gone through its CSR initiatives.

III. MATERIALS AND METHODS

Proposed outcome construct of interest in the research is the contribution of prevalent CSR practices of Indian coal mining industry in sustainable development. The Indian coal mining industry and the impacts its activities on society and environment have been considered as constant in the construct during the time frame of research. The subject of sustainable development is well elaborated internationally and the sustainable development goals (SDGs) are well defined, and this has been considered as the independent variable of the construct. CSR has gained a legal framework in India. The prevalent CSR practice of Indian coal mining industry is the dependent variable of the construct. The details of the CSR initiatives of the industry were taken from various data and reports available on websites of the coal mining companies and the government of India.

Indian coal mining industry

Coal mining industry in India is controlled by the central government since nationalization of coal mines of the nation in the early 1970s. All coking coal mines were nationalized in 1971-72 and non-coking coal mines in 1973.Coal India Limited (CIL) was formed as a holding company in 1975 incorporating almost all coal assets of the nation. The central

International Journal of Innovative Research in Science, Engineering and Technology

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government through the Ministry of Coal (MoC) plays a key role in formulation of policy and strategies for coal exploration, project approvals and other issues relating to the production, supply, distribution and pricing of coal in India. Under the direct administrative control of the MoC, there are two Public Sector Undertakings: (i) Coal India Limited (CIL), and (ii) Neyveli Lignite Corporation Limited (NLC). CIL, having headquarters at Kolkata, is the single largest coal mining company of the world with a total production of 494 million tons of coal in 2014-15 and 537 million tons in 2015-16. CIL has wholly owned eight coal producing subsidiaries and one planning and design subsidiary, viz. (i) Eastern Coalfields Limited (ECL), Sanctoria (West Bengal), (ii) Bharat Coking Coal Limited (BCCL), Dhanbad (Jharkhand), (iii) Central Coalfields Limited (CCL), Ranchi (Jharkhand), (iv) Northern Coalfields Limited (NCL), Singrauli (Madhya Pradesh), (v) Western Coalfields Limited (WCL), Nagpur (Maharashtra), (vi) South Eastern Coalfields Limited (SECL), Bilaspur (Chhatisgarh), (vii) Mahanadi Coalfields Limited (MCL), Sambalpur (Orissa), (viii) Coal India Africana Limitada, Mozambique, and (ix) Central Mine Planning & Design Institute Limited (CMPDIL), Ranchi, (Jharkhand). CIL operates in 21 major coalfields across eight states in India including 164 opencast mines, 275 underground mines and 31 mixed mines that is including both opencast and underground mines. NLC, with headquarters at Neyveli in Tamil Nadu is primarily engaged in the exploitation of lignite deposits in the country and generation of power from lignite. One more company, the Singareni Collieries Company Limited (SCCL) incorporated as public limited company in 1920 became a Government company in 1956 with headquarters at Kothagudem in Telangana. The company is a joint undertaking of Government of Telangana and Government of India. The share capital of this company is held by the Government of Telangana and Government of India in the ratio of 51:49 respectively. This company is engaged in the exploitation of coal reserves in the State of Telangana. CIL accounts for around 80 per cent of India's total coal production. SCCL accounts for around ten per cent of India's total coal production and NLC accounts for total lignite production from India which is nearly five per cent of India's total coal production. There are a few number of captive coal mines also in India. The country aims to produce one billion tons coal by in 2019-20. The study is limited to government owned coal mining companies of India.

Social and environmental impacts of coal mining industry

Mining industries invariably extract minerals from the earth ignoring often the values of the finite world resources that ecosystems and biodiversity they provide. The world's stock of natural capital in earth crusts got their ultimate existing forms after going through very slow recycling processes in geological ages. Habitats, soils and rocks in the earth form the basic constituents of local ecosystems and biodiversity; the mining industries disturb the whole. The social and environmental issues associated with Indian coal mining are of special nature as the coal reserves are located in river basins such as Damodar, Barakar, Son, Wardha, Brahmani, Mahanadi etc. which are rich in forest cover and are habitats of precious wildlife and indigenous tribal communities. The industry puts short-term to long-term environmental and health effects on local, regional, and even global level. Damage to land, plants, animals and humans occurs from the destruction and removal of habitat and environmental contamination. Opencast mining completely removes the land from its normal uses. Property and scenic values are degraded as agricultural land, settlements and forests are replaced by pits, quarries and waste dumps. Mine wastes are generated in huge quantities – on the order of billions of tons per year. These wastes include the solid wastes from the mine, called overburden or rock wastes, refuse from coal preparation, and the sludge from treating mine drainage. There are a number of environmental impacts from this waste generation. First, the land where these wastes are dumped is no longer useable for other purposes. Second, the waste dumps are susceptible to spontaneous combustion because they contain some amount of carbonaceous materials. Third, they are prone to erosion which is a major concern because the runoff and seepage from these dumps is acidic. This acidic runoff contains heavy metals which end up in local surface waters and seep into groundwater. These wastes also increase sediment build-up in local waters. Although vast area of mined out land has been biologically reclaimed land in Indian opencast coal mines but as the landscape is not restored to its original contours, it is difficult to utilize those land for sustainable development except providing some green cover to waste dumps.

Coal mining impacts both surface waters and groundwater. Coal dumps and waste dumps at surface create runoff that pollutes and alters the flow of local streams. As rain percolates through these dumps, soluble components are dissolved in the runoff and cause the elevation of total dissolved solids (TDS) in local water bodies. The presence of TDS in a stream usually indicates that sulphates, calcium, carbonates and bicarbonates are present. While not a

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direct threat to human health, these pollutants make water undrinkable by altering its taste and can also degrade water to the point where it cannot be used for industry or agriculture. Acid mine drainage is a severe by-product of mining especially where coal seams have abundant quantities of pyrite. When pyrite is exposed to water and air, it forms sulphuric acid and iron. The acidity of the runoff is problematic by itself, but it also dissolves metals like manganese, zinc and nickel, which then become part of the runoff. The resulting acidity and presence of metals in the runoff are directly toxic to aquatic life and render the water unfit for use [4]. Some metals accumulate in the aquatic food chain. Bottom-dwelling organisms can additionally be smothered by iron that settles out of the water. Coal mining affects groundwater also including contamination and physical dislocation of aquifers. Although these are typically localized effects but bear serious concern. The common cause of contamination of groundwater is acid mine drainage that seeps into ground. Physical disruption of aquifers occurs from blasting which causes the groundwater to seep to a lower level. This may even connect two or more aquifers leading to contamination of all. A coal mine normally works below the water table which leads to seepage of water into the mine and the water has to be pumped out for continuing mining operation. This lowers the water table and even dry up nearby wells. Underground coal mining not only impact groundwater hydrology; they are prone to subsidence also. Subsidence occurs when the ground above the mine depresses because the roof of the mine either shifts or collapses. Subsidence alters the surface topography to such an extent that roads, water and gas lines and buildings are damaged. Natural drainage patterns, river flows and aquifers can also be altered. The extent and severity of the subsidence depends on numerous factors including how thick the overlying soil and rock layers are and the mining method.

Soils and rock masses overlying coal seams are broken mostly by blasting those using explosives for ease in excavation. In this activity, huge quantity of explosives is used in opencast coal mines of the world. This is a major contributor to originate several evils like emission of oxides of nitrogen, high speed dust and fly rocks, heat, and noise and ground vibrations. During blasting, explosives go under instantaneous chemical reaction and the chemical energy of explosives is converted into shock energy and gas energy. This is an established fact that only twenty percent of the energy is utilized in breaking of rock mass, and the remaining goes waste. This waste energy takes the form of heat, light, noise and seismic energy. In addition to these, each blasting in the mine generates oxides of nitrogen as blasting fumes and high speed fly rocks and dust. Every kilogram of ammonium nitrate in explosives generates 110 litre to 600 litre of oxides of nitrogen and six to thirty one litre of CO in air[5]depending upon the quality of explosives, their use and situations. Oxides of nitrogen are suffocating and irritate the lungs and can reduce the resistance to respiratory infections such as influenza. They are strong oxidizing agents that react in the air and form corrosive nitric acid and toxic organic nitrates. They play a major role in the atmospheric reactions that produce ground-level ozone (or smog) and thereby adverse effects on terrestrial and aquatic ecosystems. Oxides of nitrogen in air can contribute to acid rain and can reduce the amount of oxygen in water producing a destructive environment to fish and other animal life. Also, NO along with CO can remain in the expanded rock for a long time and NO only gradually changes to NO₂ with exposure to oxygen[6]. Further, nitric oxide (NO) is one of the atmospheric trace gases that influence atmospheric chemistry and the greenhouse effect. Biological and chemical processes produce nitrous oxide (N₂O) on the earth surface. Entering the stratosphere, N₂O is converted to NO by photo-oxidation. NO together with nitrogen dioxide (NO₂) participate in a set of reactions that transfer ozone (O₃) to molecular oxygen (O₂), thereby leading to O₃ layer depletion (Schreiber et al. 2012). Additionally, the environmental impacts of ground vibrations, noise and fly-rock produced by blasting pose a great challenge to the safety of the nearby structures and the people. The ground vibrations cause the ground to vibrate in transverse, longitudinal and the vertical direction, and may damage the structures in vicinity. Air overpressure is a transient impulse that travels through the atmosphere. Although, the air overpressure (noise) produced by the blasting bears a frequency below the audible limit of 20 Hz, but causes a structure to vibrate in much the same way as ground vibrations. It puts a psychological pressure on birds, animals, and population nearby because they sense air overpressure more than ground vibrations [7]. High speed fly-rocks are responsible for nearly 50% of the accidents due to blasting in opencast mines. High speed dusts spread in surroundings and deposit upon soils, grass and leaves. Dust in atmosphere causes health problems to local population. Fly-rocks, noise and dust of blasting make birds and animals too afraid to return to location. In transportation of coal and wastes, huge volume of noxious gases and dust are generated. They directly or indirectly affect air or water quality. In addition to the ambient air and public health impacts from blowing coal dust, there is also the air pollution from the transporting vehicles.

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These problems can be addressed by preventive methods. Mining legislations provide sufficient checks and procedures.

Sustainable development, CSR and the legal framework

Sustainable development as defined in the report 'Our Common Future' as the development 'that satisfies the needs of the present without compromising the ability of future generations to satisfy their needs' is the most accepted definition. The report, published in 1987 by the United Nations World Commission on Environment and Development, insisted upon the need to protect the diversity of genes, species, and all terrestrial and aquatic ecosystems in nature. This can be achieved through integration of suitable measures in our actions. Sustainable development incorporates the fulfilment of various initiatives like maintaining the overall balance, respect for the environment, and efficient exploitation of natural capital with due regard to conservation and quality, reducing generation of wastes, rationalizing production and energy consumption etc. Sustainable development concept essentially requires modifying the ways of development which lead to worrying social and environmental damages, as well as combining the three main elements in our actions - fairness, protection of the environment, and economic efficiency. As such, the sustainable development initiatives should be based upon a better-developed mode of consultation between the community and the stakeholders. The aims of sustainable development must be considered by individuals, by companies, and on global level. The concept of sustainable development is based upon a set of requirements; it must allow the basic needs of present and future generations to be fulfilled with regard to demographic constraints, such as: access to clean water, education, health, employment, and the fight against hunger or malnutrition. Further, this type of development needs to improve quality of life involving easy access to electricity, medical care, social services, culture, and therefore also social well-being. Respect for rights and freedoms, promotion of new forms of renewable energy such as wind, solar, and geothermal power, skill development, gender equality are also important aspects of sustainable development. Sustainable development requires benefits from natural assets to be shared, narrowing the gap between rich and poor for a peaceful environment in the world.

There are many initiatives taken worldwide in favour of sustainable development. In 1992, when the world got acquaintances with the risks of acid rain, hole in the ozone layer, greenhouse effect and others disturbing the nature's balances, the United Nations Conference on Environment and Development in Rio de Janeiro casted the vision for the direction and nature of the modern sustainable development policies and the development of new systems of measurements to better reflect the concept of sustainable development and prosperity. The Conference published 'the Earth Chapter' with Agenda 21 action plan for building of a just, sustainable, and peaceful global society in the 21st century and emphasized that broad public participation in decision making is a fundamental prerequisite for achieving sustainable development. In 2000, commitments for sustainable development against Millennium Declaration Goals (MDGs) were set: eight goals with 21 targets and a series of measurable health indicators and economic indicators for each target[8]. In 2012, the United Nations Conference on Sustainable Development ((UNCSD) held in Rio de Janeiro, also called Rio+20 conference focused on two themes: (1) a green economy in the context of sustainable development poverty eradication; and (2) the institutional framework for sustainable development, and identified seven areas as needing priority attention: decent jobs, energy, sustainable cities, food security and sustainable agriculture, water, oceans and disaster readiness. The document of the conference 'The Future We Want' offered a plenty of opportunity to engage in future initiatives towards sustainable development, and calls for global Sustainable Development Goals (SDGs) to be elaborated by 2015 for focused and coherent action on sustainable development[9]. The Secretary-General, UN, Ban Ki-moon in the Foreword of The MDGs Report 2015 wrote that the global mobilization behind the MDGs produced the most successful anti-poverty movement in history[10]. The post-2015 development agenda has been set now as 'Transforming Our World: the 2030 Agenda for Sustainable Development'. This plan of action demonstrates the scale and ambition of the world towards people, planet, prosperity, peace and partnership. This contains 17 Sustainable Development Goals (SDGs) and 169 targets, well integrated and indivisibly balancing the three dimensions of sustainable development: the economic, social, and environmental. The SDGs and targets are expected to stimulate action over the next fifteen years in areas of critical importance for humanity and the planet, namely (1) to end poverty and hunger, in all their forms and dimensions, and to ensure that all human beings can fulfil their potential in dignity and equality and in a healthy environment (People), (2) to protect the planet from degradation, including

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through sustainable consumption and production, sustainably managing its natural resources and taking urgent action on climate change, so that it can support the needs of the present and future generations (Planet), (3) to ensure that all human beings can enjoy prosperous and fulfilling lives and that economic, social and technological progress occurs in harmony with nature (Prosperity), (4) to foster peaceful, just and inclusive societies which are free from fear and violence. There can be no sustainable development without peace and no peace without sustainable development (Peace), and (5) to mobilize the means required to implement the SDGs agenda through a revitalized global partnership for sustainable development, based on a spirit of strengthened global solidarity, focused in particular on the needs of the poorest and most vulnerable and with the participation of all countries, all stakeholders and all people (Partnership). The inter-linkages and integrated nature of the SDGs are of crucial importance in ensuring our world transformation for the better. SDGs concentrate on Poverty eradication; Sustainable management of the resource base; Sustainable consumption and production; Access to basic goods and services for a decent life; Productive employment; Health and Education; Human rights; Global warming, Achieving gender equality and the empowerment of all women and girls. The SDGs seek to build on the millennium development goals (MDGs) and complete what these did not achieve. They seek to realize the human rights of all and to achieve gender equality and the empowerment of all women and girls[11]. Measureable indicators of sustainability should be identified properly for analysing the achievements towards the goals and their management. This is a highly technical task requiring capturing complex economic, societal and environmental interactions; collection of baseline data for the targets (like income, gender, age, race, ethnicity, migratory status, disability etc.) and development of an integrated framework of indicators remain a challenging task.

Literatures focusing on CSR are increasing year by year globally and the terms are becoming more popular. Obviously, international views and expectations from the subject are continuously increasing; and although they appear varying in deliberations but they aim common objectives. The concept of CSR prevails since centuries in the world and practiced since ancient times. However, the term CSR in academic literatures dates back to 1930s[12][13]. By late 1990s, the concept was fully recognized by the academicians, politicians, institutions and researchers across the globe who started supporting it and as a result, whereas in 1977 less than half of the Fortune 500 firms even mentioned CSR in their annual reports, by the end of 1990, approximately 90 percent Fortune 500 firms embraced CSR as an essential element in their organizational goals, and actively promoted their CSR activities in annual reports [14]. In the initial stages of CSR research - often referred to as social responsibility, the literatures were primarily at the institutional level[15]with the discourse being around the role of the firm in society[16]. In 1979, Carroll defined CSR as the economic, legal, ethical, and discretionary expectations that society has of organizations at a given point in time[17]. Over thirty-five definitions of CSR have been proposed [18][19]by 2008 but CSR related researches, debates and discussions in many contexts still continue. The importance attached to CSR may differ in each country; the concept of CSR adopted in one country may perhaps be of little or no significance in another. Matten and Moon (2008) [19] studied why forms of CSR differ among countries by comparing United States with Europe and identified differences like the power of the state, governments' engagement in economic and social activity, financial sources and education and labour systems, environment legislations. Issues such as poverty, inability to service and repay international debt, illiteracy, HIV/AIDS, the absence of clean running water and electricity, fraud, bribery and corruption are typical of the underdeveloped world whilst other issues such as global warming, terrorism, money laundering, corporate and individual philanthropy, CO₂ emissions reduction might be issues that affect all nations but are publicized by the more industrialized ones [20]. Due to the reason, a single widely accepted definition of CSR has not been established [21]. A few of the definitions of CSR that have been widely accepted in the world are as follows. Philip Kotler and Nancy Lee (2005) defined CSR as a commitment to improve community well-being through discretionary business practices and contributions of corporate resources [22]. As per World Business Council for Sustainable Development, "Corporate Social Responsibility is the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large" [23]. Archie Carroll in 1991 described CSR as a multi-layered concept that can be differentiated into four interrelated aspects – economic, legal, ethical and philanthropic responsibilities. Carroll presented these different responsibilities as consecutive layers within a pyramid, such that true social responsibility requires the meeting of all four levels consecutively[24]. The European Commission in 2011 put forward a new definition of CSR as "the responsibility of enterprises for their impacts on society". The EU required - Respect for applicable legislation, and for collective agreements between social partners, is a prerequisite for meeting that responsibility. To fully meet

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their corporate social responsibility, enterprises should have in place a process to integrate social, environmental, ethical, human rights and consumer concerns into their business operations and core strategy in close collaboration with their stakeholders, with the aim of (1) maximizing the creation of shared value for their owners/shareholders and for their other stakeholders and society at large; and (2) identifying, preventing and mitigating their possible adverse impacts [25]. The definitions of CSR differ slightly in language and literatures, but the objectives are common and that is well-being of the triple bottom line and better sharing of benefits; and integration of CSR measures in business operations helps in the industry in many ways like managing risks, enhancing reputation and brand image, building trust and obtaining community license to operate, improving efficiency, establishing better stakeholder relationships etc.

Evolution of CSR in India followed a chronological evolution of four thinking approaches [26] (1) Ethical Model (1930 –1950): Promotion of trusteeship that was revived and reinterpreted by Mahatma Gandhi. Under this notion the businesses were motivated to manage their business entity as a trust held in the interest of the community. (2) Statist Model (1950 –1970s): Mixed and socialist kind of economy, reinterpreted by PanditJawaharLal Nehru. The important feature of this model was that the state ownership and legal requirements decided the corporate responsibilities. (3) Liberal Model (1970s –1990s): Confined to economic bottom line, this implies that it is sufficient for business to obey the law and generate wealth, which through taxation and private charitable choices can be directed to social ends. And (4) Stakeholder Model (1990s – Present): The model came into existence during 1990s as a consequence of realization that with growing economic profits, businesses also have certain societal roles to fulfil. The model expects companies to perform according to “triple bottom line” approach. The businesses are also focusing on accountability and transparency through several mechanisms. While looking into the legislative part of CSR in India, a thorough effort has been put by the Government for integrating CSR in all operations of companies in true sense and spirit for protection and improvement of environment and community expectations. India has transited from a regime of CSR being a purely voluntary activity with voluntary reporting till 2008, to a CSR regime of voluntary activity with mandatory reporting by 2012, and finally, to a regime of mandatory activity with mandatory reporting by 2013. The Department of Public Enterprises (DPEs), Government of India (GoI) defined CSR that this is a philosophy wherein organizations serve the interest of society by taking responsibility for the impact of their activities on customers, employees, shareholders, communities and the environment in all aspects of their operations [27]. The study adopted this definition of CSR because this fits well in Indian context. The GoI had been requiring since years the industry to remain responsible for conservation, safety and development on economic, environmental and societal front. The last decade has witnessed several advisory and statutory directions from the GoI in this respect. In addition to the DPE guidelines 2010, National Voluntary Guidelines for Social, Environmental and Economic Responsibilities of Business or the NVGs (accompanied by the Business Responsibility Reports mandated by the SEBI for the top 100 companies-2011) were introduced followed by a well framed CSR clause within the Companies Act 2013 and Companies (CSR) Rules 2014. In view of these regulatory provisions and societal pressures, the Indian coal mining industry started pursuing its CSR activities more systematically. Companies being part of the State, bear a moral responsibility to play an active role in discharging the social obligations endowed on a welfare State, subject to the financial health of the enterprise [28]. The DPE Guidelines, 2010 required companies to formulate their business plan under CSR integrated with social and environment concerns. The Government became more specific in 2013 and required the industry to formulate its policies with a balanced emphasis on all aspects of CSR and sustainability – equally with regard to its internal operations, activities and processes, as well as in its response to externalities. Further, the industry has to act in a socially responsible manner at all times; even the normal business activities to be conducted in a manner that is beneficial to both, business and society [29]. A section 135, exclusively for CSR was brought in Companies' Act in 2013. The Act was supplemented with Companies (CSR) Rules in April 2014 and fresh DPE Guidelines, 2014. The Government of India became the first country to mandate CSR and sustainability by making it compulsory for companies to participate in the process of development of the society through CSR and sustainability practices. The legislations provide complete framework for CSR in organizations like compulsory expenditure of 2% of net profit in CSR activities, composition of CSR Committee, framing of CSR policy, monitoring of CSR, selection of activities under CSR, preference to local area, execution of activities and reporting etc. A list of activities which may be undertaken by the companies in their CSR program has been provided in Schedule-VII of Companies' Act 2013. As per the DPE Guidelines, 2014 [30], the CSR and the sustainable development are treated as complementary. The guidelines direct the industry not to overlook the larger objective of sustainable development in the conduct of business

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and in pursuit of CSR agenda and require that the industry shall not lose sight of its social and environmental responsibility and commitment to sustainable development even in activities undertaken in pursuance of their normal course of business, and the philosophy and spirit of CSR and sustainability should be understood and imbibed by the employees at all levels and get embedded in the core values of the company', and preference should be given to the 'local area' in selecting the location of their CSR activities. The CSR activities which are envisaged in the Act (Schedule VII) and in the CSR Rules can be supplemented with sustainability initiatives as both aim at achieving sustainable development goals. In response to the international expectations and the legislations, the coal mining industry in India put CSR activities in practice for contributing to the well-being of the environment, the communities and the society it affects [31].

There are individual legislations enacted for the protection of Forest, Water, River, Air, Wildlife, Biodiversity, Labour, Land etc. in India in order to achieve sustainable development goals. Apart from them, National sustainable development strategy of India was documented as "Empowering People for Sustainable Development" (EPSD) and presented before the World Summit for Sustainable Development (WSSD) in 2002. The main objectives of EPSD were: Combating poverty, Empowering people, Using core competence in science and technology, Setting environmental standards (setting standards, institutions and legislations), Conservation of Natural Resources (water, agriculture, forest & biodiversity, marine resources, water resources) and Improving Core Sectors of Economy (energy, industry and transport) etc. The government's commitment to sustainable development was reflected in specific and monitorable targets for key indicators of human development and conservation of natural resources, and became vital element in Five Year Plans (FYP) from the tenth to the twelfth. The Twelfth Five Year Plan (2012-17) aims 'Faster, Sustainable, and More Inclusive Growth' of the country. The inclusiveness is aimed to be achieved through poverty reduction, promoting group equality and regional balance, reducing inequality, empowering people etc. whereas sustainability includes ensuring environmental sustainability, development of human capital through improved health, education, skill development, nutrition, information technology etc. and development of institutional capabilities, infrastructure like power telecommunication, roads, transport etc. The 12th FYP has set core monitorable indicators which reflect the vision of rapid, sustainable & more inclusive growth.

IV. PREVALENT CSR PRACTICES OF INDIAN COAL MINING INDUSTRY

All the three government-owned coal mining companies namely CIL, SCCL and NLC have comprehensive policy frameworks on CSR and standardized management systems in order to fulfil legal requirements of CSR. Comprehensive legislation for environment protection is also well in place since decades in India. All the companies bear good intensions and commitments to CSR and sustainability as reflected from their policy documents and disclosure documents. In recent years, the industry has rapidly expanded its operations into rural reaches of its working areas through enhanced CSR activities and expenditures. During the period 2004 to 2010, CIL including its all subsidiary companies allocated a budget of Rs.2118 million (nearly point seven percent of the aggregate net profit of Rs.310624 million over the same period) against community development and peripheral development activities, out of which only Rs.1530 million was utilized. But since adoption of a comprehensive CSR policy with effect from December 2009, CIL became very sensitive towards improving the corporate performance measured in terms of economic impact, social impact and environmental impact commonly called the triple bottom line through CSR initiatives. Activities towards protection of environment in terms of land reclamation, dust suppression, treatment of effluent and sewage, disposal of slurry and rejects and rain water harvesting etc. were considered important by the industry as well as priority was given to CSR activities for contributing to the well-being of the community it affects. As per the Report of Standing Committee on Coal and Steel (2015-16), sixteenth LokShabhaon Public Undertakings, MoC, [32] budget allocation against CSR activities and actual expenditure of Coal India Limited in 2013-14 was Rs.4743.6 million and Rs. 4093.7 million respectively and budget allocation for the year 2014-15 was Rs.4716.5 million. An amount of Rs.155.6 million and Rs.416 million for the year 2014-15 had been approved for CSR expenditures by SCCL and NLC respectively. The CSR activities undertaken by the industry consisted mainly: (1) Education - financial assistance to schools, scholarship, adult literacy, bicycle to needy girl students etc.; (2) Water supply including drinking water - installation and repair of hand pumps, digging wells boreholes, laying pipelines; (3) Health care - organizing health awareness camps on AIDS, TB, Leprosy, diet, nutrition, family planning, facilities of

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mobile medical vans etc.; (4) Social empowerment - Training and Development in various fields such as welding, fabrication, tailoring, farming etc. for weaker section of the community for self-employment; (5) Sports and culture - promotion of sports of different events in coalfields including nearby villages; (6) Infrastructure support - construction of community buildings, roads, culverts, repairing and supply of furniture for educational institutions; (7) Generation of employment - By setting up cooperative societies, construction of shopping complex etc.; (8) Relief of victim against natural calamities; (9) Adoption of village - For carrying out activities like infrastructure development such as providing solar light, windmill, construction of road etc.; (10) Financial assistance to NGOs - For under taking different activities towards upliftment of the under privileged backward, physically and mentally challenged children; (11) Financial support- for organizing medical camps, free consultation, distribution of medicines, medical awareness for under privileged and slum dwellers in association with local community for education, health & nutrition by creating needy children and women friendly communities; (12) Assistance for creating employment opportunities to the visually impaired in IT Sector; (13) Various activities towards protection of Environment; Financial support for repair & maintenance of Holy Child Home and provision for water filtering systems for the welfare home for children of Life Term Prisoners and sex workers. CSR Budget of CIL for 2014-15 is Rs. 4716.5 million out of which Rs.2350 million had been earmarked for Sanitation Project under 'Swachh Vidyalaya Campaign' of India for construction of 52036 school toilets in 35224 schools in six states viz Chhattisgarh, Jharkhand, Madhya Pradesh, Odisha, Uttar Pradesh and West Bengal. CSR funds of Coal PSUs were also utilised for welfare measures for Scheduled Castes and Scheduled Tribes, and disabled persons. Contributions to the three funds viz. Prime Minister's Relief Fund, Swachh Bharat Kosh and Clean Ganga Fund currently notified under the 2013 Act are to be recognized as CSR activity. Similarly, Singareni Collieries Company Limited has put thrust on training in vocational trades like dress making, screen printing, photo lamination, motor driving, saree rolling, photography, refrigeration and air conditioning, book binding, cell phone repairing, beautician, fashion technology, hotel management, D.T.P., soft toys, radio and T.V., hardware, spoken English, pre-primary teaching etc. and 11596 number of persons have been trained by the company till 2014. A large number (2043 numbers) of project affected people have also been imparted training in driving, tailoring, agarbati making, honeybee keeping, electrician, paper plate making, paper carry bag, motor winding, fabric painting, beautician, fashion designing, welder and fitter trades etc. The company has made substantial expenditures on financial assistance to schools, scholarship, health care, sports and culture promotion, setting up cooperative societies, construction of shopping complex, financial assistance for organizing medical camps, free consultation, distribution of medicines, medical awareness etc. Neyveli Lignite Corporation also has been making CSR initiatives through providing water to nearby locality from mines as well as from bore wells, making roads, providing assistance to schools - furniture and laboratory equipment, street lighting and several other activities for assisting the community. The company participated in relief operations like Tsunami and drought.

All the three companies claim that they get need assessment survey conducted in nearby locality before taking up CSR initiatives. These surveys are more or less similar to the surveys conducted by the government. Results of these surveys and periodical surveys to ascertain the impacts of CSR initiatives were not found published.

V. RESULTS AND DISCUSSIONS

Indian coal mining industry are required to undertake CSR activities related to eradicating extreme hunger and poverty; promotion of education; promoting gender equality and empowering women; reducing child mortality and improving maternal health; combating human immunodeficiency virus, acquired immune deficiency syndrome, malaria and other diseases; ensuring environmental sustainability; employment enhancing vocational skills; social business projects; contribution to the Prime Minister's National Relief Fund or any other fund set up by the Central Government or the State Governments for socio-economic development and relief and funds for the welfare of the Scheduled Castes, the Scheduled Tribes, other backward classes, minorities and women as directed through Schedule VII under Section 135 of the Companies Act 2013 and other matters as prescribed by the government from time to time. What ethical responsibilities the coal mining industry should bear in relation to mitigation of its impacts on society and environment are the following:

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- The industry displaces habitats of the locality. They had been in existence there since long and might continue there for long future as well. This is required to provide sustainable sources of livelihood for all the habitats that are displaced due to mining.
- The industry utilizes land for mining. Land is one of the most sustainable sources of livelihood. This is required that the mined out land is properly reclaimed for previous uses.
- Mining disturbs the local ecosystems and biodiversity. This is required to restore them back after mining.
- Mining creates air pollution. Generation of greenhouse gases and dust should be minimized.
- Huge volume of solid wastes is generated in mining. This should be reduced and impacts of these wastes on surface water as well ground water should be minimized.
- Noise pollution and its impacts should be minimized.

The results obtained from analysis of prevalent CSR practices by the three companies reflect how CSR is put into practice in Indian coal mining industry. Basically, in Indian scenario, CSR is an application to sustainable development; its basic objective is to attain SDGs. The initial goals of SDGs viz. Goal 1 and Goal 2 call for generation of livelihood. The most sustainable sources of livelihood identified since ancient times are agriculture, forestry, and animal husbandry (and fisheries). That means CSR should strive for generation of these sustainable sources of livelihood in order to eliminate poverty in the locality of company's operation. Although, all mining companies have made efforts towards skill development and employment generation but only a few could start some self-sustaining social business projects. Whatever have been done are only short or medium term solutions to poverty. The vast area of used land, the biologically reclaimed land, the subsided land, unfilled opencast excavated areas etc. if reclaimed properly as CSR initiatives could have provided ample opportunity to the local community for agriculture, forestry, and animal husbandry (and fisheries). The reports of companies like ECL, BCCL, NLC etc. have indicated similar efforts but their intensions into the matter for benefitting the community through these efforts are not clear.

Operations in mining engineering include drilling, blasting, loading, transport, beneficiation etc. Subsidiaries of CIL as well as SCCL and NLC have started reducing the use of explosives by introducing continuous coal cutting machines in some of their mines. This certainly reduces emission of nitrous fumes due to reduced use of explosives; this is an excellent example of integration of sustainability initiative in core operation. Such efforts should be incorporated widely in mining operations for better sustainability and control global warming.

Some of the CSR and sustainability initiatives (like construction of toilets, contribution to far distant NGO run hospitals and schools etc.) of the companies were undertaken in localities far distant places of the area of mining operation under compulsion either of the Government or of outer interventions. Essentially, the outcome of CSR and sustainability initiatives should benefit the both the company and the community; if anyone of them is deprived of the benefit may put question on the sustainability of the practices.

Several companies have adopted nearby villages for providing solar lights, good road, tap water and improving living standard under their CSR and sustainability initiatives. Expenditures on such CSR and sustainability initiatives taken are described in reports of the companies but what impact (outcome) has been there as a result of such initiatives is stated seldom; at places, number of beneficiaries against certain activities is indicated. Had a specific survey against the measurable targets in line with the national targets as set in FYP, before starting an initiative is done in specific locality, the impact could have been better assessed after periodical intervals of time. Some companies have got done the need based survey conducted through NGOs, but they are only sample survey.

A mining company at a particular place is never forever; as soon as the minerals gets exhausted, the mines are closed. The CSR activities undertaken by the company if do not result into sustainable development are only short-term mitigation of the impacts of the company. Most of the CSR initiatives of the company like providing water from mines to nearby villages, installation and repair of hand pumps, facilities of mobile medical vans, Relief of victim against natural calamities, providing financial assistance to NGOs, free consultation, distribution of medicines, medical awareness for under privileged and slum dwellers in association with local community for education, health & nutrition by creating needy children and women friendly communities, repair & maintenance of minority home and providing water filtering systems to welfare homes etc. cannot continue when mine is closed. Such activities, instead of making the society self-sustaining make the society dependent on mines.

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Involvement of all employees as well as local community by way of integration of CSR measures in core business operations of the company is legal requirement but none of the companies has made a sincere effort in line.

VI. CONCLUSIONS

The Indian coal mining industry is striving hard to put CSR initiatives towards well-being of the environment and local community. The efforts and expenditures made on account of CSR are substantial but there appears a requirement to dress up the CSR practices in the industry as a business discipline in a manner that every initiative should deliver business results, a requirement to align the industry's environmental and social activities with its business purpose and values, a requirement to make CSR an integral part of coal mining engineering. The legislations require CSR to be integrated with all business activities and to be conducted in such a manner that is beneficial to both, the business and the society; the philosophy and spirit of CSR should be understood and imbibed by the employees at all levels and get embedded in the core values of the company; in practice these fundamentals of CSR are lacking. The international expectations and legislative requirements are clearly spelt in respect of CSR in India; the industry is making efforts in line with them, but the outcome appears to be weak in terms of sustainable development. The initiatives undertaken mostly depend upon the existence of the company; that means the outcome is not sustainable beyond the existence of mining. A structured way of working towards sustainable improvements and sharing information is still in its infancy stage in Indian coal mining industry. There is a clear gap between the stated intensions of the industry towards sustainable development and the actual implementation of its CSR policy. The scenario of implementation of CSR initiatives of Indian coal mining industry in recent years is highly encouraging but requires further ground work to cover sustainable development goals. There exist sufficient checks and procedures in Indian mining legislation for mitigating social and environmental impacts of mining, but sincere compliance towards strong sustainable development through CSR is the demand of time.

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