

## CHAPTER 2

### REVIEW OF LITERATURE

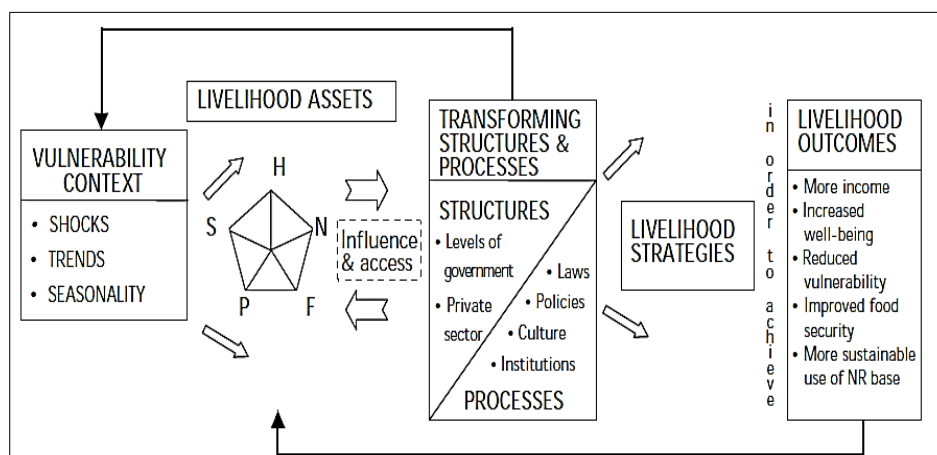
This chapter deals with the review of previous studies related to different industries and their impacts on livelihoods. This chapter is arranged in five sections. In the first section, an attempt is made to understand the meaning and concept of sustainable livelihoods. Second, by reviewing the empirical studies at the global level, an effort is done to understand how the extractive industries affect the livelihoods of the local community. The third section includes a review of the studies related to the effects of extractive industries on the local communities at the national level. The fourth section presents the previous studies done at a regional level, particularly in Assam. Based on the literature review, the gap in research is also identified in section 5.

#### 2.1 Livelihood - A conceptual framework

To put it simply, livelihood is what people do for a living. However, livelihood, in conjunction with 'sustainability,' becomes a complex, diverse, and dynamic concept. A livelihood refers to the abilities, assets (both material and social), and activities required for a living. A livelihood is sustainable when it can withstand and recover from stresses and shocks, as well as maintain or improve its capabilities and assets both now and in the future, without jeopardising the natural resource base (Chambers & Conway, 1992; Scoones, 1998; DFID, 1999). Ellis & Freeman (2005) opined that livelihood refers to the resources as well as institutional and policy context that enable people to make a better and more sustainable living. The resources or assets discussed in the above definitions are classified into five categories (popularly known as asset pentagon); and they are physical capital (which includes produced investment goods), human capital (which includes skills, education, and health), natural capital (land, water, tree, grazing etc.), financial capital (money, saving, loan access) and social capital (networks and associations). The sustainable livelihood (SL) approach is thought to be superior to the traditional poverty definition because it is narrowly defined, primarily measured by low income, and ignores some important components of poverty such as vulnerability and social exclusion. The SL approach provides a more coherent and integrated approach to poverty reduction by taking into account various factors and processes that either limit or enhance poor people's ability to make a living in an economically, environmentally, and socially sustainable manner (DFID, 1999; Krantz, 2001). The SL framework discussed

above is portrayed in figure 2.1 which is adapted from the Sustainable Livelihood Guidance Sheet of DFID.

**Figure 2.1**  
Sustainable Livelihood Framework of DFID



Source: DFID (1999). Sustainable Livelihood Guidance Sheet, April 1999

However, there are some limitations of SL approach. If the SL technique is not operationalized in a participatory way, it will not be effective. But, this can be overcome by incorporating the existing participatory approaches to the SL approach (Pokharel, 2010). In this context, many researchers have stated that focus group discussion is one of the widely used participatory research techniques that social science scholars use either exclusively or more frequently in combination with other techniques (Ochieng et al., 2018; Kumer & Urbanc, 2020; Schubotz, 2020).

By considering the robustness of the SL approach, the review of literature in the following section is conducted by discussing the impacts of extractive industries on the five livelihoods capitals of the neighbouring people.

## 2.2 Effects of Industry on Livelihood Assets

Industrialization and regional development are closely associated. An industry generates several spread (favourable) and backwash (unfavourable) effects in its surrounding areas. According to Myrdal (1957), the backwash effects have domination over the spread effects. But, Hirschman (1958) opines that the domination of the backwash effects is observed at the initial stage only, as resources are pulled into the

growth poles from the surrounding area. Backwash effects diminish over time, and positive effects begin to flow to the surrounding regions. Likewise, location theory and growth pole theory also advocate the development diffusion of industry to its locality. But, whatever the effect, whether it is positive or negative; it is linked to the livelihoods of the local people. In this section, a discussion is made on how industry affects different livelihood assets or capital of the local community.

### **2.2.1 Effects of industry on financial capital & physical capital**

Financial capitals are the financial resources that people use to achieve various livelihood outcomes. It denotes the availability of cash or equivalent assets, which enables people to devise various livelihood strategies. Financial capital is considered the most versatile of the five livelihood assets because it can be easily transformed into another form. Furthermore, it can be used to directly achieve livelihood outcomes, such as purchasing food to reduce food insecurity, and so on (DFID, 1999). Physical capital includes basic infrastructure and producer goods needed to support household livelihoods. Infrastructure creates the physical changes needed for people to meet their basic needs, and such infrastructure increases productivity. Infrastructure components identified by DFID (1999) include affordable transportation, secure shelter and buildings, adequate water supply and sanitation, clean, affordable energy, and information access. Similarly, producer goods are the tools and equipment that allow people to work more efficiently.

The process of industrialization seems to influence many components related to the financial and physical capital of the rural community inhabiting the surrounding areas of the industry. Indeed, it has a significant impact on the local community's employment and income, agriculture, asset holdings, and infrastructure.

#### **i) Employment and income**

The surrounding area of industry experiences three types of employment effects: direct, indirect, and induced (Lucey, 1968; Meller & Marfán, 1981; McNicoll, 1984). By studying the impact of industrialization on two rural communities in Western Ireland, Lucey (1968) discovered that newly established industrial plants directly increased employment and income in nearby rural areas. Approximately three-quarters of the plant employees reported an increase in their household income as a result of their

employment at the new plant. However, he observed a weak indirect employment effect in the industrial plant's surrounding rural area. This is because many industry workers spent their extra money in towns outside the area. Wong & Tiongson (1980) concluded from a case study on the economic impact of a growth centre on surrounding rural areas in Mariveles, Philippines, that the growth centre provided less benefit to the rural areas. For, the direct spending of the growth center's industry workers in the neighbouring rural area is very low. Residents and factory workers spent the majority of their money in the growth centre rather than nearby rural areas. Besides, it was discovered that indirect job creation in the surrounding rural area was negligible. Rural residents, on the other hand, generated more income for the centre and contributed more than twice as much to the development of the growth centre as industries did. McNicoll (1984) and Gana (1978) also observed that the majority of an industry's expenditures were made directly outside the local area, resulting in no direct employment effect on the surrounding area and thus no stimulus to regional income or employment. Many industry workers came from states other than those where the industries were located. This was due to a mismatch between the industry's operational requirements and the rural area's supply capabilities. It proved that employment generation by an industry to the local people depends on the type of the industry. Only those industries, which utilized local raw materials, created a substantial income transfer to the nearby rural area. But, in the case of industries utilizing non-local raw materials, the impact on the local economy via the purchase of raw materials was found to be negligible.

## **ii) Agriculture**

Agriculture is one of the oldest forms of subsistence. It is still an important source of employment and income for a large portion of the developing world's population. Industry has a variety of effects on the local community's agriculture sector.

Lucey (1968) observed some positive effects of industrialization on the agriculture sector of the neighbouring area in terms of increased farm production as a result of the operation of the substitution effect and the investment effect. Many rural households in Western Ireland were discovered substituting traditional methods of cultivation by using either owned or hired machinery in their farm activities after gaining employment in the industry. This was termed as the substitution effect of industrial employment on the local agriculture sector. Similarly, a strong *investment effect* was also

observed in terms of buying or leasing extra land, buying additional livestock and more investment in fertilizer.

Winfield (1973) also noticed a technological transformation in the agriculture sector in the surrounding rural areas as a result of the urbanization process. Crop production in the surrounding rural areas was found increasing due to mechanization, energy use and fertilizer use in cultivation, despite an increase of land under urban uses. It prevented the reduction in crop production. Moreover, the growing demand for agricultural products, high-valued crops etc. in urban centres also encouraged the farmers to increase agricultural activities in the nearby rural areas (Rao et al., 2006). Thus, industrialization appeared to be functioning as a factor for agricultural transformation in the surrounding rural economy.

Another advantage of industrialization is that it boosts agricultural productivity in surrounding areas in other ways too. After industrialization, some agricultural labourers were found shifting to the industrial and the services sectors. It reduced pressure on agricultural land, and increases average landholding, which reduced land fragmentation and facilitated the use of modern technology (Sarkar, 2007).

By studying the impact of industrialization on a rural community, Bertrand & Osborne (1959) discovered that industrialization had little or no effect on the agriculture sector. They opined that industrial employers usually gave preference to people with non-farm experience. Before working in the industry, the majority of the workers did other non-farm jobs. They also stated that there was less potential for shifting surplus farm workers to the industrial sector. As a result, employment opportunities for farm workers in the surrounding rural area are extremely limited.

### **iii) Asset holding, infrastructure facility etc.**

Industrial employment and income have a significant impact on asset holding. Some studies observed that due to an increase in income resulting from industrial employment (casual & permanent), many local inhabitants were found capable of increasing their asset holdings such as land, improved housing, running water facilities, sanitation, clean affordable energy, televisions, motorcycles, refrigerator, washing machine, phone, etc. In addition, because of industrial development, local people's

accessibility to better transportation facilities in the locality was found increasing (Bertrand & Osborne, 1959; Mishra 2009).

### **2.2.2 Effect of industry on natural capital**

Natural capital refers to the natural resource stocks that make resource flows and services available for achieving livelihoods. Natural capital has a close relationship with the vulnerability context of the sustainable livelihoods framework (DFID, 1999). Some important components of natural capital are water, soils, air, flora and fauna, minerals, and other natural resources.

For an agrarian economy, the land is an important natural capital which is one of the most common sources of income for rural households. Many studies discovered that the communities surrounding many industries were fraught with conflict over land resource-based livelihoods.

Previous studies observed how the oil and mining industry threatened livelihood via land scarcity and soil quality degradation. Schueler et al. (2011) found that surface gold mining in Western Ghana caused a scarcity of suitable farmland. As a result of surface mining, the local community of Wassa West District of Ghana experienced a direct loss of about 5 per cent of the district's total farmland, which in turn affected 6.8 percent of its agricultural labour force.

Furthermore, the farmers were found to be forced by the government to give up their farmland to the industry while establishing new industries and implementing development projects (Fentiman, 1996; Guha, 2004), which could be regarded as a direct adverse effect on traditional livelihood. Previous studies concluded that the expansion of industrialization and subsequent urbanisation resulted in significant changes in agricultural land holding and agricultural land use (López et al., 2001; Guha, 2007; Jiang et al., 2013). Overall, these studies identified two issues which were occurred from land scarcity: i) intensive agriculture, and ii) an increase in the number of landless rural non-farmers (Adi, 2007). This would further create the problem of food insecurity (Sarkar, 2007).

Industrialization and subsequent urbanization create another problem with natural resources. Previous studies discussed the consequences of setting up an industry and how

it led to the displacement of farmers from the nearby rural area. A study showed that the increased deforestation, agricultural intensification, and land degradation were some issues concerning natural resources arising out of industrialization and subsequent urbanization. After losing the farmland due to industrialization, the farmers clear adjacent forest area for new farmland. The Overall consequences were: a massive erosion of the region's farming base, widespread environmental degradation and loss of ecosystem services on which the local communities depend (Schueler et al., 2011).

López et al. (2001) also observed the possibility of agricultural land expansion with the persistent urban growth which seemed to pressurizing the country's land resources. Burry (2004) found that excessive pressure on land resources resulted in a dramatic increase in land prices which created negative consequences on the households with few land holdings. A similar observation was made by Dien (2012) and Tuyen (2014) that the agricultural land conversion for industrialization brought about a decline in farmland followed by an increase in land value, a decline of farming jobs and the creation of informal employment.

Like land asset, industrialization has negative effects on other natural capital, such as air and water. Fentiman (1996) found some negative impacts of the oil industry on the livelihood of a community in the surrounding area. The community experienced both environmental and cultural degradation. But, after the operation of the oil industries, they used to dump their waste products into the river which severely polluted the water and affected the aquatic fauna. This study concluded that the river pollution severely affected the traditional livelihood of the fishing community which, in turn, forced the fishermen to find alternative sources of livelihood. Similarly, Burry (2004) also observed that the river pollution caused by industrial activities in some locations of Peru triggered health risks for humans and animals.

### **2.2.3 Effects on human capital**

Skills, knowledge, ability to labour, good health etc. are some important components of human capital. These are very essential to achieve different livelihood objectives (Ellis & Freeman, 2005). There are numerous research evidences to present the positive and negative impacts on human capital.

Some researchers found that industrialization improved many aspects of human capital via an increment in financial capital. For example, Mishra (2009) pointed out that increase in income through industrial employment in extractive industries enhanced the standard of living of the local rural people. Burry (2004) also stated that with the capital improvements such as infrastructure and education, the local people of the industry were able to access a variety of preventive health practices and modern health services. Likewise, Kundu et al. (2002) observed that the increasing health practices in terms of increasing health expenditure were found in the locality of an urban area. Moreover, the improvement in the health status in the nearest locations has been observed in terms of reducing the infant mortality rate.

In contrast to such positive effects on access to health care, some previous researchers have observed several negative effects on human capital. The degradation of natural capital has had numerous negative effects on human capital. Mishra (2009, 2014) observed fevers, gastritis, skin diseases, joint pain, tuberculosis, weakness, cough and cold, asthma, and gynecological problems among the residents in a study in a coal mining region in Orissa. Kundu et al. (2002) discovered higher long-term morbidity in the immediate surrounding areas than in the distant villages. He also pointed out that increased tension in the urban environment led to the risk of certain diseases such as hypertension, heart disease, and so on, in the nearby areas.

Some studies exposed that many companies were providing health facilities only to their employees. On the one hand, the negative effects on health status due to industrial activities were borne by all, but health facilities were made limited only to the employees, which badly affected the livelihood condition of the non-employee local inhabitants in terms of health deterioration and increasing health expenditure. (Behera, 2015; Mishra, 2009; Bury, 2004)

#### **2.2.4 Effect on social capital**

According to DFID (1999), social capital indicates the social resources which can be derived from networks and connectedness; membership in more formalised groups; relationships of trust, reciprocity and exchanges. Social resources help people in achieving their livelihood goals. By social capital, Ellis (2000) refers to social relations as the social positioning of individuals and households within the society where factors



such as gender, caste, class, age, ethnicity, and religion create constraints on individuals' courses of action. Researchers opine that economic development has a significant effect on society, and the social factors conversely affect the development of an economy. But, despite its importance, the social factors are hardly incorporated in development models. Due to difficulties in dealing with some social factors such as culture, in comparison to economic factors, these were often neglected in development models (Granato et. al, 1996).

Like the other capitals of sustainable livelihoods, social capital seemed influenced by industrial activities. In most cases, for the sake of national development through industrial development, the local communities lose their land and livelihood. In addition to bearing the effects of pollution, they were forced to relocate to a new settlement without adequate resources (Mishra 2009), most commonly termed development-induced displacement. Such development-induced displacement was also observed by Stanely (1996) in Orissa, which results in the marginalization and impoverishment of the weaker sections. Such development projects benefited the powerful, the high castes and the urban population only. Stanely (1996) observed that these categories were found enjoying the project benefits like irrigation, employment, electricity, and other infrastructural gains, and so they were unable to understand the sufferings and the marginalization of the displaced population.

Again, some industrial activities affected some people of specific castes and communities. Fentiman (1996) found that as a result of river pollution resulting from industrial waste disposals, the fishing community had to leave their traditional occupation and they were compelled to migrate to the other place in search of alternative jobs. Furthermore, by studying the social impacts of the mining industries, Sosa & Keenam (2001) also stated that the traditional skills, knowledge and cultural practices were negatively affected, which increased alcoholism, child neglect and domestic violence. They, further, observed another consequence of the industries, that is, gender-based social exclusion. Due to the reduction of traditional activities or occupations (agriculture, fishing etc.), and male-oriented employment opportunities in the industries, the women have become jobless and they had to 'stand to gain the least and lose the most'. Besides, pay differentials between male and female workers in casual jobs intensified gender-based income inequality (Blue & Kahn, 1992). But, gender-based social exclusion may not be common for all types of industries. As Kholsa (2009)

observed that the ready-made garment industry in Bangladesh created job opportunities for the women section which improved their social, economic and health status.

Migration, again, creates some demographic changes such as age-sex composition, population density etc. in both places where they migrated from and where they migrated to (Bhende & Kanitkar, 1978). Most of the migrant labourers, whether agricultural or non-agricultural, were found living in deplorable conditions. They suffered from a lack of safe drinking water or hygienic sanitation. Besides, they were excluded from the health and family care programmes because of their temporary status (Sosa & Keenam, 2001). Migration, although, increases livelihood security by increasing employment and income; and reducing the vulnerability of the households (Ellis & Freeman, 2005), socio-cultural and health issues associated with migration affect livelihood security over the long period.

### **2.3 Review of the previous studies on the impact of industry on local livelihood in India**

Very few researches regarding the impact of industry on local livelihood were conducted in India. However, a few researchers addressed the impacts of industrialization on livelihoods resulting from land acquisition and displacement in West Bengal. Major observations of these studies were an increase in the number of landless, small and marginal farmers, displacement of people from their traditional occupations and livelihood; and absence of adequate compensation and rehabilitation programme (Paul & Sarma, 2013; Sarkar, 2007; Guha, 2004; Guha, 2007; Ghatak & Ghose, 2011). Sharma & Singh (2009) also observed the loss of livelihood as a result of displacement due to some industrial activities like the construction of dams and power and mining projects in a border area of Uttar Pradesh and Madhya Pradesh. Furthermore, Stanley (1996), Mishra (2009), Ray & Sainy (2011), Hota & Behera (2016), and Paltasingh & Satapathy (2021) discussed the livelihood impacts of the Coal Mining Project in Orissa. These studies mainly focused their research on the short-run benefits accumulated from industrialization to the local community in terms of employment and income along with the mining-induced long-term threats in terms of loss of natural and human capital. At the national level, no research has been found related to the oil industry and its impacts on rural livelihood. Most of the researchers covered the coal mining industry-induced impact on local rural livelihood and such studies were geographically limited to Orissa and West Bengal.

## **2.4 Review of some studies conducted at the regional level**

In the context of extractive industry-induced impact on local rural livelihoods in Assam, very limited literature has been documented.

Kalita (2006) made a study of the contribution of petroleum-based industries to the economy of Assam. He examined the contribution of petroleum-based industries in terms of direct employment generation and royalty given to the state by the industries. He also highlighted the issue of employment generation by the contractual private firms associated with the petroleum-based industries. This study dealt with the economic impact of the oil industry in Assam at the macro level, it did not discuss oil industry-induced impacts on the different livelihood capitals of local rural households.

Sarma (2007) conducted a sociological study on the oil industry of Assam with special reference to the Oil and Natural Gas Corporation (ONGC). The main focus of the study was laid on the interaction between the ONGC and its neighbourhood from the sociological perspective. He observed a mixed impact of ONGC operations on the social ecology of the rural areas in Assam.

Chakrabarty (2010) in his study on the Bongaigaon Refinery and Petrochemicals Limited (BRPL) emphasized more on the study of the production behaviour of BRPL. The rural livelihood issues of the local community were not addressed in this research.

Likewise, Sen (2014) carried out a historical analysis about the impact of the coal mining industry of Assam for the period of 1865-1940 and observed that coal mining during that period brought a change in transport, communication and technology, which in turn, influenced the economic structure of the state.

The main observation from reviewing the above studies is that most of the studies hardly addressed the impact of extractive industries on the local rural community by considering the livelihood aspects.

## **2.5 Research Gap**

From the literature discussed above, many researchers, at the global level, discussed the impact of oil, mining and other industries on the livelihoods of neighbouring areas. They addressed how the different livelihood capitals of neighbouring people were affected by industrialization.

At the national level, most studies related to extractive industry's impact on the local rural communities were confined to the coal mining industry only. Moreover, most of these researches were geographically limited to Orissa and West Bengal (Mishra, 2009; Das, 2015; Behera, 2015; Hota & Behera, 2016; Paltasingh & Satapathy, 2021). Though India has a long history of crude oil exploration and petroleum production since 1889, no research has been found related to the oil industry and its impacts on rural livelihood. Most of the researchers covered the coal mining industry-induced impact on local rural livelihood and such studies were geographically limited to Orissa and West Bengal.

In Assam, although a few studies were conducted to examine the impact of the oil industry, these studies were limited to the issues like direct employment and revenue generation, sociological impacts and production behaviour of oil industries of Assam (Kalita, 2006; Sarma, 2007; Chakrabarty, 2010). But, these studies did not include the discussion related to the oil industry-induced impacts on the different livelihood capitals of local rural households. Besides, these studies did not address the issues concerning rural livelihood sustainability of nearby rural communities of the oil industries which seems to be a major concern at present at the global level.

Therefore, by considering the limitations of the above studies conducted at the national and regional level, there is a scope of research to examine the impact of the oil industry of Assam on the local rural livelihoods including the aspects of livelihood sustainability.

## **2.6 Importance of the study**

Ensuring improved livelihood is one of the basic goals of the nation. Without a secured livelihood, sustainable development goals cannot be achieved. Moreover, for a state where 86 per cent population live in rural areas, extensive livelihood research is very essential to find out the livelihood challenges and formulate necessary livelihood strategies for achieving desired outcomes. Considering the potential livelihood challenges posed by the oil exploring industries in rural areas of Assam, the present study will help to understand how these industries contribute to the local rural livelihoods.

One important aspect of the present study is that it has been carried out by using the sustainable livelihood approach of DFID (1999) and it has discussed the impacts of

oil exploration on different livelihood capitals of the local rural households. The previous studies conducted in Assam in context to the impact of extractive industries have not used the sustainable livelihood approach which has superiority over the traditional poverty definitions. The present study provides a scope to understand the impacts of oil exploration on five livelihood capitals (viz.: financial, physical, human, natural and social) of rural households. The present study also tries to identify the vulnerability context arising out of oil extraction and how such vulnerabilities affect the sustainable livelihoods of the local rural community. Besides, the present study constructs the sustainable livelihood index by considering some important sub-indicators which would help to understand the status of sustainable livelihoods in the villages of oil operational areas. In addition to the quantitative assessment of various aspects of livelihoods, a qualitative analysis of the livelihood issues has been deployed.

This study bears significance from policy implications point of view. Since this study aims at exploring the vulnerability contexts created by the oil industries in the local community, it is expected to be helpful for the policy makers to deal with such livelihood challenges. Moreover, the oil companies will also be able to appropriately devise their corporate social responsibility (CSR) policies such that the vulnerabilities of livelihood can be reduced to a great extent.

Further, it should be noted that in context of Assam, there is a dearth of previous studies on the impact of the oil industry on the sustainable rural livelihoods of neighbouring peoples. As a result, it is expected that this study will help to fill a void in this field of research and pave the way for future research.