

**OIL EXPLORATION AND THE ISSUES OF RURAL  
LIVELIHOOD - A STUDY OF LAKWA ONGC OILFIELD IN  
SIVASAGAR DISTRICT OF ASSAM**

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The oil sector bears a significant role in the economy of Assam in terms of revenue generation in the form of royalty. But, when the performance of the oil sector is judged in terms of contribution to the state's income, several impacts related to local rural livelihoods and issues of sustainability remain unreflected. Therefore, the present study attempts to make a discussion on some of the impacts of oil exploration of ONGC on the local livelihoods in Sivasagar district. The present study deals with some of the effects associated with land acquisition, threat to indigenous occupation, occupational change and occupational sustainability with the help of field observation and primary data. The study reveals an occupational shift from indigenous to industrial works, as ONGC is providing some casual and contractual employment opportunities to the local people of the study area. It is also reported that industrial pollution has severely troubled paddy cultivation and sericulture in the study area which was a profitable venture for the villagers during the days of their forefathers. Land acquisition for the purpose of oil exploration, temporary job arrangements by the oil industry and industrial pollution affecting cultivation have generated vulnerability to many aspects of sustainable livelihoods of the rural people in the study area.

**Keywords** : *Rural livelihood, Sustainability, Indigenous occupation, Casual employment, ONGC.*

**Introduction**

Oil is one of the major contributing factors of industrial growth in the world. The oil sector has directly contributed about 1.01 percent to the world's GDP in 2016 (The World Bank, n.d.). For India, the role of oil sector is observed to be very important for the growth of the nation's economy. It is listed amongst the six core industries in India (Govt. of India, 2018a).

So far as India's history of oil is concerned, it started in 1889 in Assam. Till 1960s, Assam occupied the leading position as the only oil producing state in the country. Currently, Assam is the third largest

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onshore producer of petroleum (crude production) and first largest onshore producer of natural gas accounting for about 11.67 percent and 9.44 percent to the total production of the country, respectively (Government of India, 2018b). Sivasagar is one of the major oil and gas producing districts of Assam where large number of oilfields are operated by Oil and Natural Gas Corporation (ONGC). The rich oilfields of the district are Rudrasagar (discovered in 1960), Lakwa (discovered in 1964) and Gelakey (discovered in 1968).

Undoubtedly, the oil sector bears a significant role in the economy of Assam in terms of revenue generation in the form of royalty (Economic Survey of Assam, 2014-15, p. 116). But, when the performance of the oil sector is judged in terms of contribution to the State's income, several impacts related to local rural livelihoods and issues of sustainability remain unreflected. As for example, local employment, land acquisition, loss of indigenous occupations, rural income diversification, asset holdings, accessibility of rural infrastructures etc. (Fentiman, 1996; Mishra, 2009; Behera, 2015). These issues have quite meaningful implication on sustainable rural livelihoods (Chambers & Conway 1991, Scoones 1998, Ellis & Freeman 2005). Therefore, the present study attempts to make a discussion on some of the impacts of oil exploration of ONGC on the local livelihoods in Sivasagar district.

### **Review of literature**

After independence, India planned through its the second five year plan to shift from agriculture to industry by prioritizing big investment in major key industries. Again, a big push to fasten the industrialization was given under the policy of new economic reform, 1991. These reform policies have significantly boosted the industrial sector and accelerated the growth rate of the industry sector (Konar, 2013; Ghosal, 2013). But, different researchers have found that industrialization has failed to provide livelihood security to the people of India. Casualization of workforce is one of the major issues of industrialization in India in recent years. In India, it is reported that the proportion of self-employed workers is falling with a corresponding rise in that of casual workers, while the proportion of regular salaried workers remains stagnant. A wider use of non-regular work arrangements has led to greater uncertainty about workers' employment status, giving rise to instability and vulnerability among certain groups of workers (Aggarwal & Kumar, 2012; Paul & Sarma, 2013).

Mishra (2009) has conducted a study in the Ib Valley Coalfields of Orissa located in Jharsuguda district to study the impact of coal mining on the rural livelihoods of Orissa. She has observed an increase of mean household income and per capita income in the mining villages

as compared to the control (distant) villages. But, the households of the control villages have been found having more diversified sources of income which is an effective strategy for achieving sustainable livelihood.

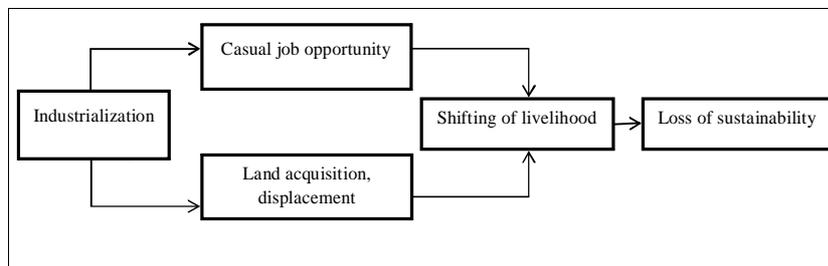
Das (2015) also conducted another case study in the same district of Jharsuguda of Orissa to assess the impact of coal mining on diversified sources of rural livelihoods. The finding of the study was that the magnitude of diversification was high in the pre mining phase than the post mining situation. For, in the pre mining situation the households were dependent on land, agriculture and allied activities. But, in post mining situation, the livelihood source was concentrated only in mine related works. Besides, the control villages experienced more diversified source of livelihood than the mining villages.

Moreover, Guha (2004), Sarkar (2007), Guha (2007), Ghatak & Ghose (2011), Paul and Sarma (2013) studied the impacts of industrialization on livelihoods resulted from land acquisition and displacement in West Bengal. Major findings of the studies were increase in the number of the landless, small and marginal farmers, displacement of people from their traditional occupations and livelihood; and lacking of well compensation and rehabilitation programme.

A few studies in similar context were also made by Sharma and Singh (2009) on the loss of livelihood as a result of displacement due to some industrial activities like construction of dams and power and mining projects in a border area of Uttar Pradesh and Madhya Pradesh; and by Ray and Saini (2011), Stanley (1996), about the livelihood impacts of the Coal Mining Project in Orissa.

The relation amongst the industry generated issues such as casual job opportunity, land acquisition and displacement, shifting of livelihood, loss of sustainability is portrayed in chart-1 on the basis of the literature reviewed.

**Chart-1: Industrialization and sustainability of livelihood**



Source: Literature review

Though many of the studies have addressed the issue of the impact of industry on rural livelihood in different states as discussed above, few studies have been found dealing with the impact of oil industry in the rural livelihoods at national level in the literatures so far reviewed. In Assam, a few studies have been conducted to study socio-economic impact of oil industry (Kalita, 2006; Sarma, 2007; Chakrabarty, 2010). Their studies are limited to only issues like direct employment and revenue generation, sociological impacts and production behaviour of oil industries of Assam. But, these studies have not addressed the issues of sustainability of rural livelihoods which are largely affected by oil exploration.

Therefore, there is a scope for study to discuss the issues related to sustainability of rural livelihoods in the surrounding villages of the oil industry.

### **Objective**

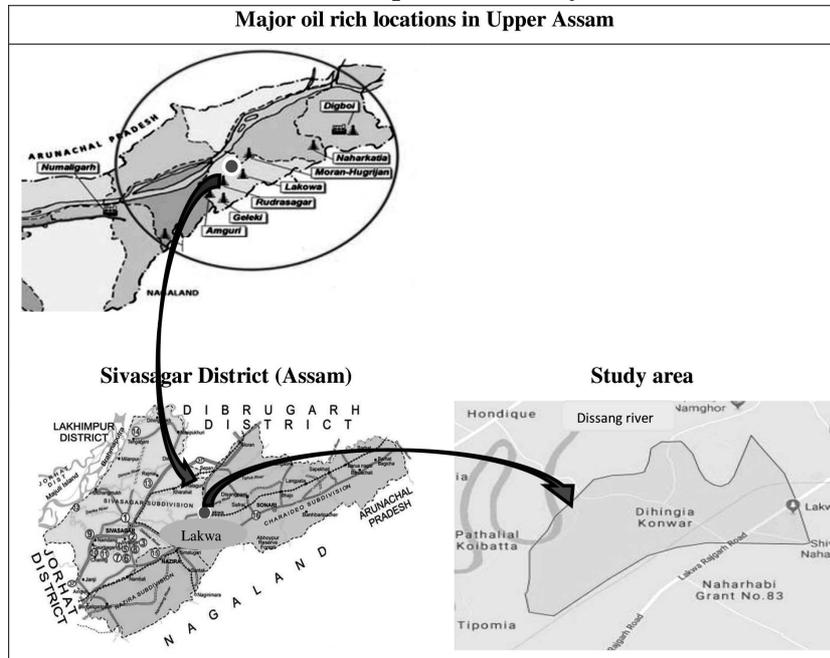
The objective of the paper was to discuss the issues related to sustainability of rural livelihoods associated with oil exploration activities of ONGC (Assam Asset) in Sivasagar district.

### **Methodology**

The study is based on primary data collected through household survey with the help of structured questionnaire.

The data are collected from Lakwa of Sivasagar district (undivided). This is one of the largest oilfields in the district operated by ONGC. This oilfield was discovered in 1964. The study is conducted at *Dehingia Konwar Gaon*, which is a revenue village of Lakwa Gram Panchayat. This village is very close to the operational area of ONGC in Lakwa. Many oil wells have been excavated in the village. For the purpose of interview and primary data collection, 102 sample households, which are almost 26 percent of the total households, are selected using random sampling technique. The data collection was done in the month of March, 2018.

**Locational Map of the Study Area**



Source: i) Patowary, Patowary, Kalita and Deka (2016).  
 ii) Sivasagar, (n. d.).  
 iii) Google map, (2018).

Note: Maps are not to scale

**Findings and analysis**

**Socio-economic profile of the study area**

The total households of the sample village was 387. Average family size of sample households was 4.96. The sex ratio was 953female per thousand males, which is almost equal to the State average of 958. The distribution of sample populations by age group as well as education along with other information is presented in table-1.

**Table 1: Brief socio-economic profile of the study area**

Description	Value
Total households in the village	387
Total no. of household surveyed	102
Total sample population	506
Average family size	4.96
Male	259
Female	247
Sex ratio (No. of females per thousand males)	953

Age group wise distribution of sample population:	0-14	85
	15-64	378
	65 & above	43
Education level:	Illiterate	16
	Primary	42
	Upper primary	44
	High school	165
	Higher secondary	155
	Graduation	59
	Beyond graduation	9
Distance to the nearest town (in kilometer)		16
Distance to district headquarter (in kilometer)		34
Distance to the nearest bank branch (in kilometer)		1.5
Distance to the nearest health centre (in kilometer)		1.5

*Source: Field survey*

### Land acquisition by ONGC

The land holding pattern of the sample households is shown in table 1. It is observed that 42 percent of the total sample households fall under the category of semi-medium holding (2 – 4 hectare) while 25.49 percent households fall under medium holding category (4 – 10 hectare). It is followed by the percentage of households with small holdings (1 – 2 hectare) and marginal holdings (below 1 hectare), respectively.

Since land is one of the important livelihood assets which help people to attain some livelihood outcomes through different livelihood strategies, acquisition of land implies seizing of livelihood of the local people. Land acquisition process in Lakwa area has started since the initiation of oil exploration in Lakwa oilfield in 1964. It is observed that many agricultural lands of the study area are acquired by ONGC for the purpose of drilling, construction of pipeline, building of gas gathering station (GGS), offices and colony in the study area. From the primary survey it was found that in total 25.45 hectares of land (which is 14.12 percent of total land held before acquisition or 0.24 hectare per household) of Dehingia Konwar Gaon are acquired for different purposes of ONGC (table-3). Almost 75 percent of sample households of Dehingia Konwar Gaon experienced land acquisition since initiation of oil exploration in the study area (table-4). Since agriculture is the main occupation in the study area that provides livelihood to larger section of the area, it is largely affected by land acquisition. Moreover, from the field study it was found that in total 74.51 percent of total sample households fall in the categories of marginal, small and semi medium land holders. That is why; acquisition of small plot of land affects the families very much.

Though compensation is paid to all households whose lands are acquired, it has failed to make sufficient arrangement of permanent livelihood options to the family members. It was observed that the households were paid cash by ONGC as compensation for their acquired

lands which was immediately spent on less productive asset purchasing. It generates many hindrances in achieving long lasting livelihood outcomes.

**Table–2. Land holding of the sample households in the study area**

Type of Land holding (in hectare)	No. of Household	Percentage of total households
Marginal holding (Below 1)	9	8.82
Small holding (1-2)	24	23.53
Semi-medium (2-4)	43	42.16
Medium holding (4-10)	26	25.49
Large holding (10 & above)	0	0
Total	102	100

Source: Field survey

**Table–3. Average land holding and land acquisition in the study area**

Description	Value
Total land holding before acquisition(in hectare)	180.28
Average land holding before acquisition (in hectare)	1.76
Land acquired (in hectare)	25.45
Percentage of land acquisition out of total land previously held (in %)	14.12
Average Land acquired (in hectare)	0.24
Current total land holding (in hectare)	154.82
Current average land holding (in hectare)	1.51

Source: Field survey

**Table–4. Land acquisition as a percentage of total land previously held in the study area**

Land acquired as a percentage of total land previously held	No. of sample Households	Percentage of total households
0.1-10	12	11.76
10-20	34	33.33
20-30	26	25.49
30-40	4	3.93
No acquisition	26	25.49
Total	102	100

Source: Field survey

### **Employment: Permanent job versus casualization of job**

The work participation amongst the sample households is satisfactory. It is 55.03 as a percentage of populations belong to 15-65 age group and 41.11 percent as a percentage of total population of the sample households shown in table-5. This statistics is much higher than the State average of 38.7 percent in 2011 (Government of India, 2016).

A classification of population of sample households is done on the basis of their primary occupation in table-6. It was observed that agriculture was the primary occupation for 30.76 percent of the populations of 102 sample households. It was followed by the percentage of population who were engaged in direct ONGC job as well as private company job under ONGC, which was found to be 27.88 percent. The study revealed that the oil exploration by ONGC in Lakwa oilfield has been creating different types of job opportunities to the local people. Other occupations were government job (14.42%), private job other than ONGC related companies (13.46%), business (9.62%) and self-employment (3.85%).

It is to be noted that the percentage of population employed in direct ONGC job was very less. Only 12.07 percent (out of total population engaged in all types of ONGC related jobs) were working as direct ONGC employee, while 87.93 percent were working in private companies or under contractors as casual or contractual workers. This is shown in table-7. This information implies that ONGC is creating more casual employment than permanent employment to the local people of Lakwa. Casual or contractual job arrangement by ONGC is not a solution for the sustainability of livelihoods of the local rural area.

**Table-5. Work participation of the population of the sample households**

Description	Value
Number of population who are working in different occupation	208
Number of population in the age group of 15-64 (total workforce)	378
Number of total population	506
<b>Work participation rate (as a percentage of total workforce)</b>	<b>55.03 %</b>
<b>Work participation rate (as a percentage of total population)</b>	<b>41.11 %</b>

Source: Field survey

**Table-6. Occupational distribution of population of sample households**

Primary occupation of the sample population	No. of persons
Agriculture	64(30.76)
Government job	30(14.42)
Business	20(9.62)
Direct ONGC job	7(3.37)
Company job under ONGC	51(24.51)
Other private jobs	28(13.46)
Self employed	8(3.85)
<b>Total</b>	<b>208(100)</b>

Source: Field survey Note: Figures in the parentheses indicate percentage of total

**Table–7. Total population engaged in ONGC related jobs**

Primary occupation of the sample population	Total
Direct ONGC job	7(12.07)
Company job under ONGC	51(87.93)
<b>Total population engaged in ONGC related jobs</b>	<b>58(100)</b>

Source: Field survey

### Indigenous occupation versus casual employment

At present, the only indigenous occupation prevailing in the study area is paddy cultivation. From the primary investigation, it is found that paddy cultivation is done mainly for home consumption, rather than for selling. However, some households sell their surplus amount in the local markets. The main trouble with this primary occupation is that it is affected by oil exploration in two ways, as reported by the respondents. First, crude oil leakages from the pipelines and oilfields are very common incidents for the villagers. When crude oil gets mixed with the water of paddy fields, it damages crops of a huge area. Second, the flaring of natural gas in the oilfields significantly reduces the paddy productivity in the surrounding paddy fields. The agricultural scientists have already found that the high light intensity and increased light hours due to flaring of natural gas are the factors responsible for sharp decline of productivity in the surrounding paddy fields. Because, flaring causes delay in flower initiation, reduction of panicle length, less number of grains per panicle and more grain sterility (Sharma, Hazarika, Kalita & Sharma, 2011).

While interviewing the respondents in the study area, it was reported that in addition to paddy cultivation, sericulture (*Muga* cultivation) was also a largely practiced occupation by their forefathers. But this indigenous occupation is not followed now by the people of that locality. It was stated that *Muga* cultivation was a very profitable venture in the study area, which has vanished after the initiation of oil exploration by ONGC. During the field survey, the two reasons of occupational shift from agriculture to industrial works have been reported. First, ONGC is providing some casual and contractual employment opportunities to the local livelihoods of the study area. These types of job opportunities attract the agricultural workers towards industrial jobs. Second, industrial pollution is also creating environmental pollution which makes lots of problems in rearing of *muga* in that area.

However, the *muga* cultivation is still practiced profitably in some areas of Sivasagar district which are far away from Lakwa oilfield. Besides, this is an environment friendly and sustainable occupation. If this occupation would have existed in the study area, then the people

of that locality would not have got the exposure to industrial pollutions and occupational health hazards that arise out of the oil exploration in ONGC.

Land acquisition by ONGC is also a threat to the household level sustainable livelihood. Though ONGC compensates the households by cash after acquiring lands, it is not able to ensure occupational sustainability of the households. In fact, oil exploration in the study area creates more casual jobs than permanent employment. Though earlier a significant number of population got direct employment in ONGC, but at present this is very less in number in the study area. Shifting of occupation from agriculture sector to industrial sector is one of the features of economic development. But, how long this type of development will sustain is, in fact, a big question. So far as the present study is concerned question arises what will happen to those casual employees after the end of the crude oil availability in the ground of the study area.

It is also reported that ONGC is not taking any initiatives regarding skill development of the people of the sample households through corporate social responsibility (CSR) so that they could cope with the shocks of vulnerability and formulate strategy to achieve profitable and sustainable livelihoods. At present, the only major benefit provided by the ONGC through CSR is free electricity to the households.

### **Discussion**

The main issues interrogated in this paper are: land acquisition, casualization of jobs, threat to indigenous occupation and sustainable livelihood. Presently, the inhabitants of the study area have to adjust themselves with these livelihood challenges. The local community is bearing the burden of national development. Similar observation was stated by Mishra (2009) and Hota & Behera (2016) who found that the local communities had to lose their land and livelihood due to coal mining activities in Orissa. Only, compensation and casual job opportunities cannot neutralize the cost of national development on the local community.

Though ONGC gives compensation to the paddy farmers for crop loss due to oil exploration, leakages etc., the farmers have to spend lots of time and labour to apply for it, which is normally a troublesome for the farmers. Besides, the oil contaminated water, flaring in the oilfields not only harms the paddy cultivation, but also deteriorate the yield of fruits and tea cultivation in the study area.

Now-a-days, losing of traditional livelihood resulting from industrial development seems to be a severe issue in many places. But, traditional livelihood is more sustainable “ environmentally,

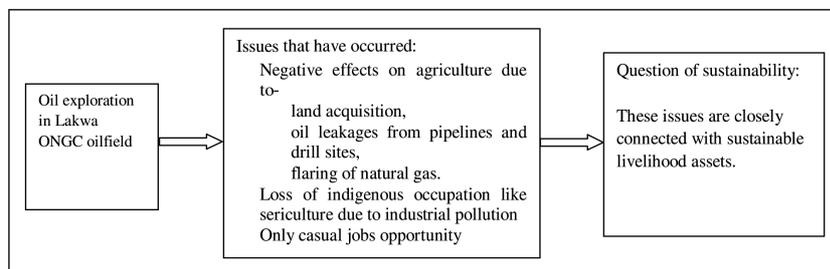
socially and culturally as compared to the temporary jobs created by industries. In the study area, sericulture is totally stopped as a result of heavy air pollution resulting from oil exploration activities. Similar impact on traditional occupation was observed by Fentiman (1996) while studying the impact of the oil industry on a fishing community in the Niger Delta. Fentiman (1996) observed that as a result of river pollution resulting from industrial waste disposals, the fishing community was compelled to leave their traditional occupation and to migrate to the other place in search of alternative jobs. However, no displacement of households to other places has been observed due to oil exploration in the Lakwa ONGC oilfield.

At present almost 25 percent of total working population of the households of sample village in Lakwa oilfield are associated with different casual jobs under private sector companies dealing with ONGC. But, there is no answer what will happen to these casual and temporary workers when ONGC will stop oil exploration in the Lakwa oilfield. It is also stated that oil exploration has already reduced soil productivity and also stopped sericulture in the study area. So, it will definitely reduce their livelihood options after the end of the oil exploration in that area. Such type of issue has already arisen in the coal mine areas of Orissa (Mishra, 2009; Das, 2015; Hota & Behera, 2016). It may lead to out migration of the workers to urban areas in search of other types of casual jobs.

Though Ellis & Freeman (2005) have opined that migration increases livelihood security by giving opportunity to get employment in urban areas and reduces vulnerability of the households of rural areas, but socio-cultural and health issues associated with migration can never be denied as they ultimately affect livelihood security in the long period.

The discussion of present study can be précised in the following way (Chart-2):

**Chart-2: Issues that have occurred from oil exploration in the study area**



Source: Field observation

### Conclusion and recommendations

Though industrialization is required for nation's development, it affects local livelihoods in many ways. The oil exploration of ONGC affects local livelihoods of the study area in different aspects. The present study has dealt with some of the effects associated with land acquisition, threat to indigenous occupation, occupational change and occupational sustainability. However, there is a further scope for study on the effects of ONGC on rural livelihoods considering all livelihood assets such as physical, financial, natural, human and social capital under sustainable livelihood framework.

Keeping in view of the present issues discussed above it is recommended that the ONGC should make necessary arrangements for skill development, technical education, and self-employment in the study area which will help to minimize the risk that arises from land acquisition and casualization of jobs. Since oil production is very important for economic development of the country, so the oil exploration companies as well as governments should pay attention on the issues of sustainability of the local people of oil villages. Otherwise, they will have to bear more costs in terms of loss of livelihood in coming days for the sake of national development.

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