



## **BALANCE BETWEEN INDUSTRY AND ENVIRONMENT – A CASE STUDY OF IOC AT BUDGE BUDGE**

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### **Abstract**

*Oil represents more than just one of the main energy sources used by mankind .On the other hand, despite its potential threats to the environment , the oil industry plays a positive role in the society as well, creating many jobs and generating a significant volume of tax revenues and royalties to national government. In this paper an attempt has been made to analyse the impact of oil industry on environment with special reference to Budge Budge Indian Oil Corporation (IOC) keeping in mind that unless there is a balance between industry and environment there cannot be any wellbeing of nations.*

**Keywords:** *Environmental Pollution, immigration, population change, mitigation measures*



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### **Introduction:**

Oil plays a vast and vital role in our society as it is organized today. Oil represents more than just one of the main energy sources used by mankind .On the other hand, despite its potential threats to the environment , the oil industry plays a positive role in the society as well, creating many jobs and generating a significant volume of tax revenues and royalties to national government.

Millions of people are still jobless in India. And unless industry is not developed, employment is increased, there will be a problem. But industrial development can come at a cost to the environment. But with this rate of increase in population, the reality is more plants powered by energy will be needed to meet demand.

In this paper an attempt has been made to analyse the impact of oil industry on environment with special reference to Budge Budge Indian Oil Corporation (IOC) keeping in mind that unless there is a balance between industry and environment there cannot be any wellbeing of nations. IOC plays a discerning role in development of local economy and society as well as

it influence the neighbourhoodl regional planning process. However waste materials from IOC have been removed to create pollution in and around the study area

### **Objectives:**

The main objectives of this paper are to analyse the impact of IOC with respect to the following aspects:

- Performance of IOC Budge Budge
- Human, Socio- economic and Cultural Aspects
- Atmospheric Impacts
- Aquatic Impacts
- Terrestrial Impacts
- Ecosystem Impact
- Mitigation Measures

There are two important sectors of oil industry:

1. Upstream Sector- It is exploration and production sector of oil industry
2. Downstream Sector- This sector which deals with refining and processing of crude oil and gas products as well as and their distribution and marketing.

In 1961 Indian Oil has set up its unit as Indian Oil corporation(IOC) under the auspices of Budge Budge IOC Limited in Budge Budge Municipality (Budge Budge – I segment) on the bank of the Hugli river. It is mainly associated with distribution and marketing Budge Budge used to be known for its dense habitation before the independence. The main source of economy and livelihood for the local people was agriculture. But there gradually occurred a drastic change due to concentration of the industries.

### **Locational Factors for IOC at Budge Budge:**

- ✓ Availability of land for industry
- ✓ Skilled labours from surrounding areas
- ✓ An independent Electronic Telephone Exchange being installed in the study area
- ✓ A developed social infrastructure within the municipality

### **Location of the Study Area:**

Budge Budge is a town and a municipality under Budge Budge police station of Alipore Sadar Subdivision in South 24 Parganas district in the state of West Bengal. It is a part of the area covered by Kolkata Metropolitan Development Authority.

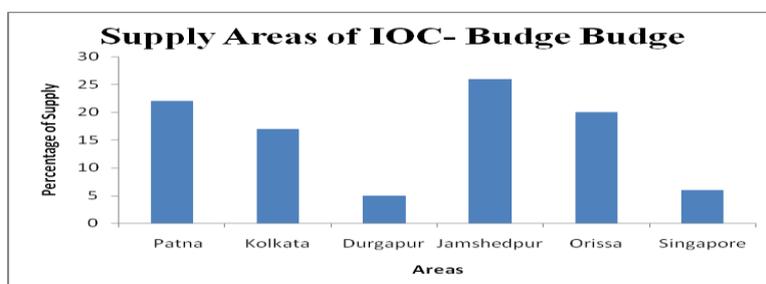
**Materials and Methods:**

The first part of this study is mainly based on secondary data collected from Census of India, NGOs, Self-Help Groups, Agricultural Development Organization. The second part is based on literature survey. Available data have been subsequently analysed and interpreted. Suitable cartographic techniques have been used to represent the data.

**Performance Report of the Budge Budge Indian Oil station:**

**Supply features:**

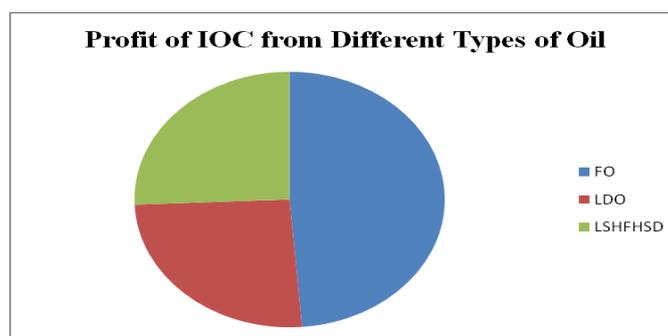
The Budge Budge Indian Oil acquires a considerable larger area which include Patna, Kolkata, Durgapur, Jamshedpur, Orissa and Singapore. Among these six areas oil is supplied to Singapore by bunker. To the remaining five areas oil is supplied by Tank Track. There is a fluctuating trend in month- wise supply from the Budge Budge plant. During the period of September to November (Durga Puja season) oil supply and consumption rises.



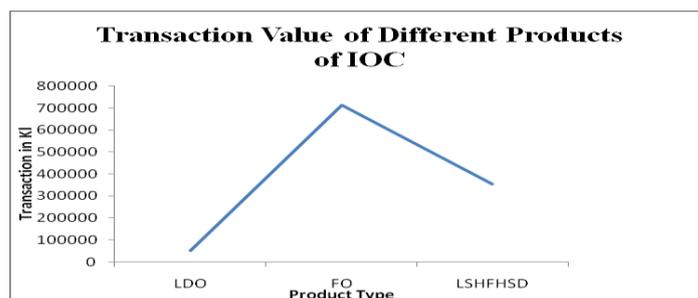
Source: IOC Office

**Economic Profile of IOC:**

The main products which are supplied from IOC Budge Budge terminal are **Furnace Oil (FO)**, **Light Diesel Oil (LDO)** and **Low Sulphur High Flash High Speed Diesel Oil (LSHF-HSDO)**. Among these three, the transaction value of LDO is highest followed by FO and LSHFHSDO.

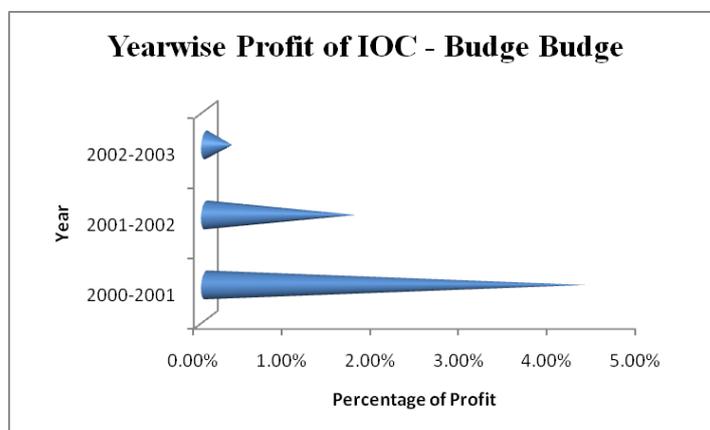


Source: IOC Office



Source: IOC Office

Profit trend however shows that a declining pattern (Fig. 3). The main reason behind this is competition with HP and increasing transport cost. This is also the reason for the loss of IOC. Other factors include demand of LDO has decreased, labour problems and declining trend of export.



Source: IOC Office

### **Socio-economic Structure of Workers**

The IOC directly influence the socio-economic structure of the workers. On the basis of IOC Worker survey data the following conclusions can be drawn. Maximum portion of normal workers have been found in municipality. The maximum numbers of labours are coming from near most area of the station and the maximum numbers of staff are coming from others side of the station.

### **Results:**

#### **Impact of IOC on the area surrounding Budge Budge:**

The impact is analysed on the following aspects:

#### **Human , socio economic and cultural aspects**

- a) Changes in land use;
- b) Local population level changes due to in-migration;

- c) Change in socio economic system due to new employment opportunities, income differentials, differences in per capita income and local people benefit from induced changes;
- d) Socio – cultural system such as social structure, organization, cultural heritage etc;

#### **Atmospheric impacts**

1. Atmospheric emissions from oil and gas operation – combustion process, fugitive gases from loading and tankage losses, flaring, venting and purging gases air borne particulars and particulars from other burning sources.
2. Emission of gases include carbon dioxide, carbon monoxide, methane, volatile organic substances and nitrogen oxides, ozone depleting gases from refrigerants.

#### **Aquatic Impacts**

1. Chemicals with high pH salt content impact on fresh water.
2. Spills and leakage causes pollution in ground and surface water
3. Cooling water – effect on local drainage pattern

#### **Terrestrial impact**

1. Physical disturbance due to construction
2. Contamination from spilling and leakage and solid waste disposal

#### **Ecosystem impact**

1. Impact on plant and animal community
2. Ecological disturbance
3. Changes in food and nutrient supplies
4. Change in habitat and
5. Soil disturbance
6. Removal of vegetation

#### **Impact of Agricultural Production of Area surrounding Budge Budge:**

Some changes have been observed in the cultivation of Kharif, Rabi and summer crops during the period, between 1996-1997 and 2004-2005. Since paddy is considered as the principle crop in the region as it have been cultivated in most of the ploughable lands during the period before the setting up of the IOC. Also other crops had been taken care of cultivation along with paddy to the extent possible. They were forced to change agricultural land for habitation, which also affected the agricultural production noticeably. Though some increase in the production of Rabi crops are being observed.

**Changing pattern of land utilization:**

- ✓ The Budge Budge IOC station acquired area was covered by dense forest named Hogla Bon
- ✓ The paddy field and cultivated land are reduced and turned mostly settlements area
- ✓ Some of the portion of agricultural land had taken by IOC for jute disposal ground
- ✓ Major changes have been found in settlement area
- ✓ The area of brick field along the Hugli River has extended comparatively than before

The industrial extension and impact of jute on agriculture production causes the arable land in declining phase, at the same time settlement and brick field area have flourished than before. It can be said that after establishment of IOC the region began to be planned infrastructural and socio economically, that pushed to one level up of hierarchy of urban centre.

**Potential environmental impacts**

1. Water contamination due to effluent waste water and cooling water discharges and seepages from storage and waste tanks.
2. Water contamination due to discharge of effluent water rich in inorganic salts.
3. Thermal pollution due to discharge of effluents with temperature higher than recipient water.
4. Water contamination due to oil spill
5. Particulate emission into the atmosphere
6. Increase in amount of Sulphur, Nitrogen Oxides, Ammonia acid mist and fluorine compounds
7. Occasional release of hazardous elements
8. Soil, surface water and ground water contamination
9. Traffic congestion
10. Noise pollution
11. Accidents

**Mitigation Measures**

1. No waste water shall be discharged to rivers without treatment
2. Water effluents has to be treated by neutralization, evaporation ,aeration flocculation, oil and grease separation ,carbon adsorption, reverse osmosis, ion exchanging, biotreating depending on contaminate to be removed
3. Materials that may seep due to rain must be placed in covered storage areas equipped with drainage system to avoid contamination with water

4. Areas for storing and handling of raw materials and products should be waterproofed and have a drainage system so that any spills and waste water treatment can be applied.
5. Particulate emission can be controlled by wet scrubbers and carbon absorption
6. Proper maintenance plant
7. Solid waste management of waste products of plant
8. Proper planning to control pollution
9. Proper treatment of waste materials of plant
10. Emergency measures of the plant.

### **Prevention**

1. Technological initiatives to reduce emission as a result of combustion process
2. Treatment of produced water for removal of dispersed oil-skimming gas, floatation, static hydroclones, mechanical configuration and gas stripping
3. Source reduction of solid waste- reuse, recycle and recovery of waste materials

**Potential Emergencies:** Spillage of gas, chemicals and hazardous materials, explosion, fires etc

### **Safety measures taken by Budge Budge IOC:**

- ✓ First Aid Box
- ✓ Oxygen shoulder pack
- ✓ Oxygen meter
- ✓ Universal Nozzle
- ✓ Hydrant valve
- ✓ Safety flags
- ✓ Fire hoses
- ✓ Water tank

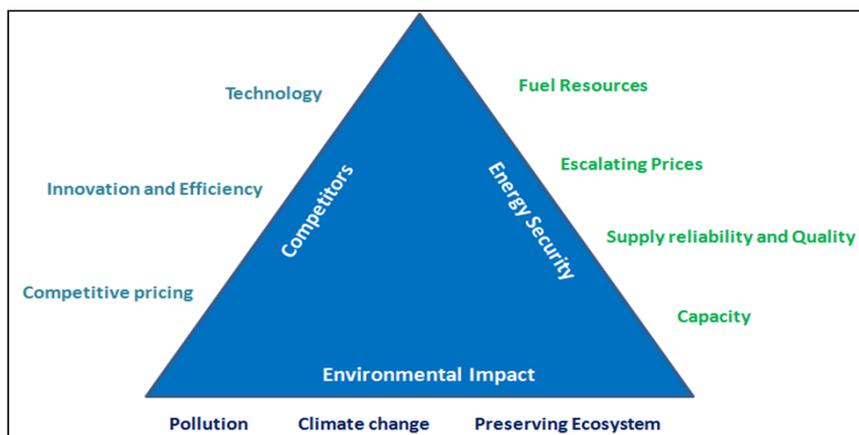
### **Conclusion**

From the foregoing discussion one may have an overall idea about the socio-economic and occupational structure of the people of Budge Budge municipality. If we consider the overall social wellbeing and agricultural development side by side in view of the industrialization in the region, it is rather difficult to come to a conclusion whether the IOC is just or unjust. But it is apparent from the various aspects of the study conducted that there are certain reasons which are affecting the cultivation process at least the least and it is possible to overcome all this by taking proper attention and adopting affective remedial measures. There can be no

denying the fact that in a developing economy like ours we need development in agriculture as well as industrial growth for economic progress.

Yet IOC remain critical and apprehensive because of the real nature and scenario of the agricultural and public life currently prevailing in the region. It can be concluded that the Indian Oil Corporation has vital role in regional planning and it tries to take proper management of jutes.

### **Key Challenges**



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