

Petroleum Status in India and Environmental Pollution Through Petroleum Industries And Its Management Plan

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Abstract:

Petroleum is one of the most important energy source in the world. Petroleum and its by-products are used in various ways in society such as fuel, transportation, domestic, electricity etc. India is the third largest consumer of crude oil in the world, after the two important country China and United state. India imports approximately 82% of its oil needs India accounted 4.81% of total world oil utilization in 2016-17. The expected total utilization of crude oil in India rose from 160.77 MMT in 2008-09 to 251.93 MMT in 2017-18 with a CAGR of 4.59%. As increasing the population of India and modernization in societies, the demands of the petroleum products also increases with put a pressure on the petroleum industries. Environmental pollution poses a serious threat to the ecosystem, often with adverse effects. The main change of climate is due to the released of waste gases of petroleum in environments. It is our duty to protect the environment from the different waste gases.. Environmental protection requires better and valuable education and training of industry personnel. There is a valuable information available on the environmental impact of petroleum operations and on ways to minimize that impact; however, this information is scattered among thousands of newspaper, reports and making it difficult for industry personnel to obtain specific information on controlling the environmental effects of particular operations. This paper has been planned and written for target viewers having little or no training in the environmental issues facing the petroleum industry. The present paper depicts the environmental issues and their management associated with the industry.

Index Terms : Petroleum products, Climate change, . Environmental pollution, Environmental protection.

INTRODUCTION

India is more dependent on crude oil and LNG imports, It imports 82.8% for crude oil and 45.3% for natural gas/LNG. The foreign exchange is 63.30 billion US\$ in the financial year 2017-18 on account of crude oil imports. Our Country generated 35.2 million tons of petroleum products from indigenous crude oil production whereas the consumption of petroleum products is 204.9 million tons. Similarly it generated 31.7 bcm natural gas locally against the consumption of 58.1 bcm. LNG price is also linked with the prevailing crude oil price in global markets. More consumption of petroleum products in India with increasing the population leads to more influences the environments. Because the environment is exposed to different forms of pollutants. They consist of organic pollutants and inorganic (Notoma, 2010). They contaminate to the environment , can cause instability, disorder, harm or discomfort to the ecosystem. Their effects are the damage to aquatic life, agriculture and human health. Pollutions can take the form of chemical substances, or energy, such as noise, heat, or light (Azubike, 2010). Engelking (2009) considers pollution as contamination of the earth's environment with materials that interfere with human health, the quality of life, or the natural functioning of the ecosystems. So many gases emitted by refineries are harmful to humans, and can cause permanent damage and even death. They can cause respiratory problems such as asthma, cough, chest pain, skin irritation, headaches, and cancers. Crude oil contains relatively high quantities of sulphur. When crude oil is heated at the refinery to produce fuel, the sulphur is converted into SO₂. This is a colourless gas with an offensive smell, like burning of sulphur. Exposure to very high concentrations of SO₂ can result in painful irritation of the eyes, nose, mouth and throat, difficulty in breathing, nausea, vomiting, headaches and even death. Some of the health effects from daily exposure to the gas are tight chests, worsening of asthma and lung disease, and narrowing of air passages in the throat and chest – a situation that provokes asthma attacks. Many studies have revealed that extended exposure to noise pollution may cause auditory and no auditory disorders, such as temporary or permanent hearing loss Keipert, 2008), sleep disruption (Freedman et al., 1999; vertigo, agitation, weariness, hypertension, gastrointestinal system problems (including gastric and duodenal ulcer), cardiac arrhythmia, nervous and psychic disorders (Van Kempen et al., 2002; Ising and Kruppa, 2004; Penny and Earl, 2004; Roozbahani et al., 2009).. The government has taken many reforms and accomplished major task with far-reaching impacts in the sectors of Exploration and Production, Refinery, Marketing, Natural Gas and international cooperation. A number of new initiatives have been taken in the last one year to promote Exploration and Production activities in the country. **Various environmental standards guidelines should be followed strictly.**

RESULT AND DISCUSSION

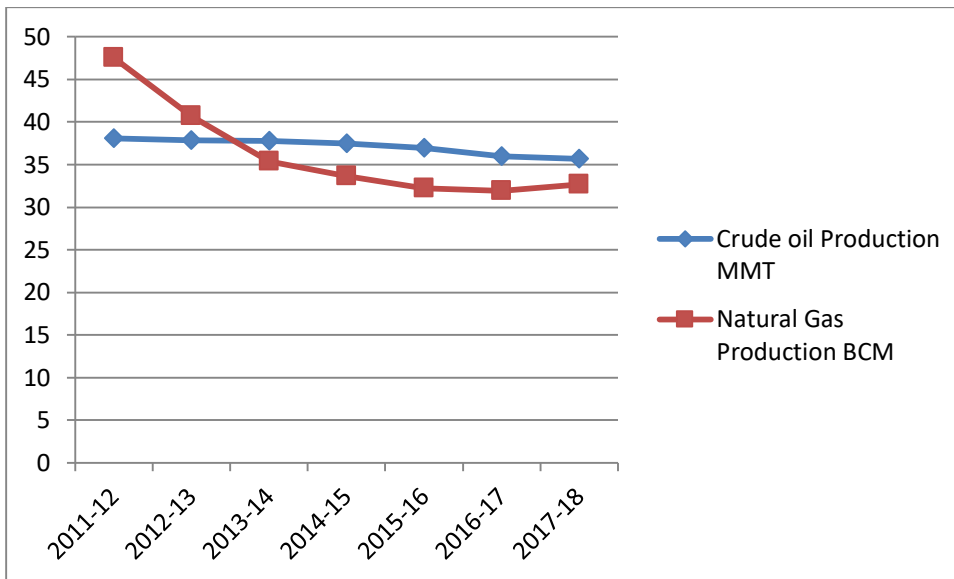
There are 23 refineries in the country, 18 refineries are in public sector, 3 refineries are in private sector and two as a joint venture with a total refining capacity of 247.56 MMTPA. Out of the refining capacity of 247.56MMT, 142.06 MMT is in the public sector, 17.30 MMT in joint venture and the balance 88.2 MMT is in the private sector. India is not only self-sufficient in the refining capacity for its domestic utilization but also exports more quantity of petroleum products. The imports of crude oil was reported at 4,543.64Barrel/Day in December 2018. This value is greater from the previous year Dec 2017. India's Crude Oil imports data is updated yearly, averaging 1,178.27 Barrel/Day from Dec 1980 to 2018, with 39 observations. The demand of petroleum increases with increasing the population and modernization in society. The Organization of Petroleum Exporting Countries is the main influencer of fluctuations in oil prices. Fluctuation in crude oil price created pressure on Global economy. India was the third top net crude oil importer of 205.3 Mt in 2018.India produced 35.68 MTs of crude petroleum in 2017-18. It generated for 0.92% of world oil production in 2016-18. Crude oil production petroleum in India had a CAGR of 0.63% between 2008-09 and 2017-18. India produced 254.40 MT in 2017-18, a growth of 4.46% over the previous year. Under the products, diesel oil accounted for 42.41%, and then followed by motor gasoline (14.85%). The Production of natural gas was estimated 31.72 billion cubic meters in 2017-18, growing by 2.86% over the previous year. India generated for 0.77% of world natural gas production in 2016-17. Our country has utilised159 rigs and drilled 545 production wells in 2017-18, which stands globally fifth. India spent approximately ₹8.81 lakh crore (US\$130 billion) to import 228.6 million tons of crude oil in 2018-19.The 15 largest sources of crude oil imported into India in 2018,which is represented in table. No.1 India imported crude oil \$23 billion from Iraq, while \$1.2 billion from Russia. Crude oil and natural gas production in India are going to decreases from 2011-12 to 2017-18 in the given table 2 and graph 1.In the another way the Import of Crude oil are going to increases from 2011-12 to 2017-18 in the table .no.3 and graph 2 The production of petroleum products were increased from 2011 to 2017 in the table 4.

Table.1 sources of crude oil imported into India in 2018 and their import value

Rank	Country	Import value
1	Iraq	\$23 billion
2	Saudi Arabia	\$21.2 billion
3	Iran	\$13 billion
4	Nigeria	\$9.6 billion
5	United Arab Emirates	\$8.9 billion
6	Venezuela	\$7.4 billion
7	Kuwait	\$5.7 billion
8	Mexico	\$3.7 billion
9	Angola	\$3.4 billion
10	United States	\$2.8 billion
11	Malaysia	\$2.4 billion
12	Oman	\$1.7 billion
13	Brazil	\$1.5 billion
14	Qatar	\$1.2 billion
15	Russia	\$1.2 billion

Table 2. Crude oil and Natural gas Production In India from 2011-12 to 2017-18

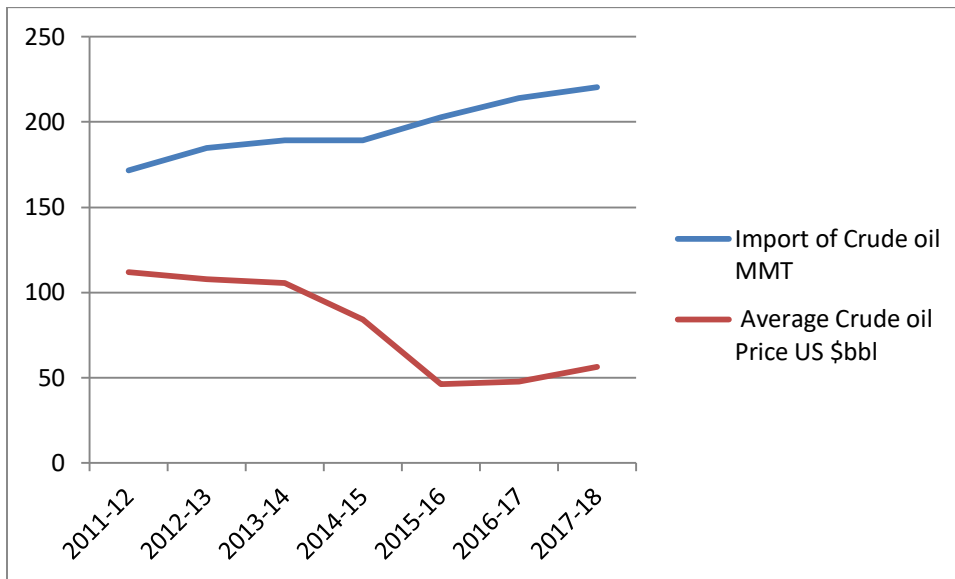
Year	Crude oil Production MMT	Natural Gas Production BCM
2011-12	38.09	47.56
2012-13	37.86	40.68
2013-14	37.79	35.41
2014-15	37.46	33.66
2015-16	36.94	32.25
2016-17	36.01	31.9
2017-18	35.68	32.65



Graph 1. Crude oil and Natural gas Production In India from 2011-12 to 2017-18

Table 3 Import of Crude oil and Average crude oil Price

Year	Import of Crude oil MMT	Average Crude oil Price US \$bbl
2011-12	171.73	111.89
2012-13	184.8	107.97
2013-14	189.24	105.52
2014-15	189.43	84.16
2015-16	202.85	46.17
2016-17	213.93	47.56
2017-18	220.43	56.47



Graph 2.Import of Crude oil and Average crude oil Price from 2011-12 to 2017-18

Table 4. Production of Petroleum Products(MMT) Year wise from 2011 to 2017

Production of Petroleum Products(MMT) Year wise	
Year	Products
2011	203
2012	213
2013	221
2014	221
2015	226
2016	244
2017	250

RECOMMENDATIONS:

Environment is formed by air, water, land, natural resources, flora, fauna, humans and their interrelations. People have to change itself for environmental protection .Major initiatives should be taken by the Government of India to promote oils and gas sectors

1. The Government of India should be planned to set up more compressed bio gas (CBG) plants ,ethanol, biodiesel etc.
2. Government of India should attract investments and pollution free technology to improve recovery from oil fields in India .
3. Alternative energy sources such as sun, wind, geothermal, and other renewable electricity source should be used for protection of our environments.
4. India is a marginal player at Kyota. It would like per capita emission to be benchmark for national action. rather than total emission.
5. The measuring and monitoring activities and internal environmental management system audits will identify areas for improvement. Action must be taken immediately to mitigate any negative impact of the nonconformance and corrective action must be implemented, proportional to the non –conformance, to eliminate reoccurrence.
6. Once the environment management system is implemented ,its progress needs to be continually measured and monitored.

ENVIRONMENTAL MANAGEMENT

The measuring and monitoring activities and the internal environmental management system will identify areas for improvement. Action must be taken immediately to mitigate any negative impact of the nonconformance and corrective action must be implemented, proportional to the nonconformance, to eliminate reoccurrence. Our attempts should have to maximize human benefit and to minimize environmental degradation due to human activities. Environmental management is about decision-making for the protection of ecosystems by pollutants. Pollutants are generated from various sources in the oil industry and released into the atmosphere in form of gases causes air pollutions. Therefore environmental sensitivity index (ESI) is used to identify sensitive zone resources prior to an oil spill event in order to set priorities for protection and plan cleanup strategies. The review allows management to look at the system and ensure that it is suitable and effective. The management assessment may result in changes to policies as the organization evolves and as technology advances.

CONCLUSION :

India imports 82% oil necessities and plan to carry that down to 67% by 2022 by replacing it with local exploration, renewable energy and local ethanol biodiesel fuel. The CO₂ and other poisonous gases are released from burning of petroleum into the atmosphere causes abnormal heating effect on the earth's surface leading to global warming. It is hoped that through this study the public would be aware of the various effects plant operations have on the environment. Various environmental issues are associated with exploitation of oil reserves. In recent times the social impact of operations, especially in remote communities, has also been recorded. Broadly these issues are manifested at both local and global levels including habitat protection and biodiversity, air emissions, marine and freshwater discharges, incidents and oil spills, and soil and groundwater contamination. In India oil drilling is spread over entire length and breadth from Gujarat to Arunachal Pradesh and from J&K to Tamil Nadu. Although a gamut of statutory provisions are there to safeguard the environment and social concerns but their proper implementation is still lacking. It is therefore important to know the link between exploration and development of oil fields and necessity of environmental management.

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