

Environmental Accounting and Reporting Practices of Hindustan Petroleum Corporation Limited

ALKA H. SHAH

Assistant Professor, Department of Accounting and Financial Management
Faculty of Commerce, The Maharaja Sayajirao University of Baroda
Email - alkashah2007@yahoo.com

Abstract: *In recent years, due to increased global warming and environment degradation, environment protection has assumed utmost priority at the international level. There is a growing pressure for the corporate enterprises to consider environmental effects of their business operations. As a result, accounting and disclosure of environmental matters have rapidly been emerging as an important dimension of environment management. Environmental Accounting is the process of identification measurement and communication of information on the environmentally responsible performance of a business entity to permit economic decisions. Environmental Reporting is an extension of environment accounting and it means incorporation of environmental issues into the corporate annual reports of corporate entities. It denotes voluntary and involuntary disclosures by corporate entities on the impact of its activities on environment.*

The present study aims at documenting and analysing Environmental Accounting and Reporting practices of Hindustan Petroleum Corporation Limited (HPCL). An attempt has been made to review the published Sustainability Reports and Annual Reports of HPCL to analyse its disclosure practices regarding the environmental issues and to examine the environment conservation initiatives taken by HPCL during last two years i.e. 2015-16 and 2016-17.

Key Words: *Environmental Accounting, Environmental Reporting, Environment Protection Acts, Central Pollution Control Board, HPCL*

1. INTRODUCTION:

In recent years, the issues such as rapid climate changes, glacier meltdown, soil erosion, degradation of lands, deforestation and pollution contributed towards increased awareness about the importance of protecting the environment. A tradeoff between environmental protection and development is a great concern today. The responsibility towards environment has become one of the most vital areas of corporate social responsibility. The concern of environmental responsibility and the sustainable industrial development has given birth to a new branch of accounting i.e. Environmental Accounting.

Environmental Accounting is the process of identification measurement and communication of information on the environmentally responsible performance of a business entity to permit economic decisions. It is concerned with the measurement and disclosure of costs and benefits to the society as a result of operating activities of a business enterprise within or outside the business. Environmental Reporting is an extension of environment accounting and it means incorporation of environmental issues into the corporate annual reports of corporate entities. It denotes voluntary and involuntary disclosures by corporate entities on the impact of its activities on environment. Now the performance of a business concern is not only judged on financial parameters but also on the basis of contribution towards protection of environment. As a result a large number of companies all over the world have started reporting on environmental issues in their annual reports.

2. OBJECTIVES OF STUDY:

- To expound the understanding on the concept of Environmental Accounting.
- To study Environment Protection Acts and Regulations in India.
- To examine the recent environment conservation initiatives taken by Central Pollution Control Board (CPCB).
- To analyse the environmental accounting and reporting practices of Hindustan Petroleum Corporation Limited (HPCL) and to examine the environment conservation initiatives taken by HPCL during last two years i.e. 2015-16 and 2016-17.

3. RESEARCH METHODOLOGY:

The present study is an exploratory research undertaken to analyse the nature and extent of environmental reporting and accounting practices followed by HPCL. The study is based on secondary data collected from official Government websites, research papers published in various Journals and annual audited reports of HPCL. The Annual Reports of HPCL for the year 2015-16 and 2016-17 are analysed in detail to examine its disclosure practices regarding the environmental issues.

4. ENVIRONMENT PROTECTION ACTS AND REGULATIONS IN INDIA:

The National Council for Environmental Policy and Planning was set up in 1972 within the Department of Science and Technology to establish a regulatory body to look after the environment-related issues. This Council evolved into a full-fledged Ministry of Environment and Forests (MoEF) in 1985. At present the MoEF is the apex administrative body in the country for regulating and ensuring environmental protection and lays down the legal and regulatory framework for the same. The MoEF and the pollution control boards ("CPCB", i.e. Central Pollution Control Board and "SPCBs", i.e. State Pollution Control Boards) together form the regulatory and administrative core of the sector.

Since the 1970s, a number of environment legislations have been put in place. Some of the important legislations for environment protection are as follows:

- The National Green Tribunal Act, 2010
- The Air (Prevention and Control of Pollution) Act, 1981
- The Water (Prevention and Control of Pollution) Act, 1974
- The Environment Protection Act, 1986
- The Hazardous Waste Management Regulations, etc.

In addition, there are many other laws relating to environment, namely –

- The Wildlife Protection Act, 1972
- The Forest Conservation Act, 1980
- Public Liability Insurance Act, 1991
- The Biological Diversity Act, 2002
- Coastal Regulation Zone Notification

5. RECENT ENVIRONMENT CONSERVATION INITIATIVES TAKEN BY CPCB:

The Environmental concerns and challenges have changed over the years requiring a paradigm shift in strategies for pollution abatement and control. Economic development has hastened industrialization, thereby, putting additional burden on resources including water, fuel and raw material and environment. The present challenges include conservation of resources, managing the ever growing solid waste, ensuring treatment of domestic and industrial wastewater, maintaining river water quality, using IT as a compliance tool, etc.

Significant steps towards prevention and control of environmental pollution have been taken in the past. However, in order to meet the growing challenges, Central Pollution Control Board (CPCB) has embarked upon a number of new initiatives such as –

- CPCB launched Air Quality Index which is a tool for effective communication of air quality status to people. Presently, AQI of 30 cities is disseminated on CPCB website.
- CPCB has prepared segmental action plan for restoration of water quality of River Ganga. The rejuvenation plan aims to stop the discharge of untreated sewage and waste water from 118 towns along river Ganga.
- CPCB has initiated online monitoring of industrial emissions/ discharges which is a significant step towards self-regulation in 17 categories of highly polluting industries apart from industries discharging their effluent into river Ganga or its tributaries.
- Real time water quality monitoring has been initiated at eight locations on the main stem of river Ganga and at two locations on river Yamuna.
- Environmental standards have been revised/ developed for sectors like cement, sugar, and thermal power plants etc. in tune with modern advancement of technology.
- The concept of Comprehensive Environmental Pollution Index (CEPI) has been revised and subjectivity has been removed.

6. ENVIRONMENTAL ACCOUNTING AND REPORTING PRACTICES OF HINDUSTAN PETROLEUM CORPORATION LIMITED (HPCL):

HPCL is a Government of India Enterprise with a Navratna Status, and a Forbes 2000 and Global Fortune 500 company. HPCL owns & operates two major refineries producing a wide variety of petroleum fuels & specialities, one in Mumbai (West Coast) of 6.5 Million Metric Tonnes Per Annum (MMTPA) capacity and the other in Visakhapatnam, (East Coast) with a capacity of 8.3 MMTPA. HPCL also owns and operates the largest Lube Refinery in the country producing Lube Base Oils of international standards, with a capacity of 428 TMT. HPCL has the second largest share of product pipelines in India with a pipeline network of more than 3015 kms for transportation of petroleum products and a vast marketing network consisting of 13 Zonal offices in major cities and 106 Regional Offices.

7. ENVIRONMENTAL CONSERVATION MEASURES TAKEN BY HPCL IN 2015-16:

“HPCL is socially responsible Corporate Citizen caring for the environment and striving to reduce its carbon footprint by incorporating the ‘green’ perspective in all its key organizational processes, while pursuing its own growth aspirations towards customer delight”

- HPCL's policy statement on

Climate Change

7.1 Air Emissions Reduction Initiatives:

Being committed towards environmental conservation, HPCL constantly monitors emissions and committed to reducing air emissions to preserve and promote healthy ecosystems, including nitrogen oxides (NO_x) and sulphur dioxide (SO_x). All quality parameters of the ambient air were conforming to the National Ambient Air Quality Standards (NAAQS) during the year. Some of the Air Emission Initiatives taken are as under:

- Visakhapatnam Refinery has successfully commissioned Tail Gas Treating Unit (TGTU) in the Sulphur recovery trains at DHDS, thus achieving 99.9% Sulphur recovery.
- Mumbai Refinery has commissioned Flue Gas Scrubber (FGSU) at Old FCCU for the reduction of sulphur dioxide (SO_x) emissions and Suspended Particulate Matter.
- In Mumbai Refinery, treatment of fuel gas in Fuel Gas Desulphurization unit results in the reduction of the Sulphur content before being fired in furnaces and boilers for reduction in sulphur dioxide (SO_x) emissions. In addition, Tail Gas Treating Unit is installed in Sulphur recovery units with 99.7% efficiency for the recovery of elemental Sulphur in continuous operation.
- Low nitrogen oxides (NO_x) burners are installed in Mumbai Refinery for NO_x emissions reduction. Ultrasonic mass flow meters are installed for continuous monitoring of flare.
- A zero emission electric car was introduced by Aviation SBU for the movement of their officers on the airport apron, while supervising the fueling process. This initiative is undertaken at two of their locations viz., Dum Dum and Juhu ASF. In addition to zero emission, the car is also cost effective.
- Green House was constructed at MDPL Bahadurgarh on World Environment Day 2015 to provide better growing environment to plants.
- HPCL has been making huge investments in pipeline infrastructure. In 2015-16, it commissioned 443 Km long Rewari Kanpur Pipeline. By increasing the network of its pipelines, it has significantly cut down on the emissions, resulting from transportation of products by road or rail.

7.2 Energy Conservation Initiatives:

Energy efficiency is one of the important ways to manage carbon emissions. HPCL adopted various clean technologies across both the refineries and all its marketing locations to minimise its carbon footprint and reduce the energy consumption. Both the refineries have implemented various energy conservation initiatives in terms of process improvement, modifications and adoption of latest technologies. They have given special focus on hydrogen management, hydrocarbon leak detection surveys, continuous monitoring of excess air in furnaces and steam leaks. During the year, Visakhapatnam Refinery achieved best ever Energy Intensity Index (EII) of 109 and Mumbai Refinery achieved EII of 108. Through various initiatives, they have saved 19,170 SRFT/year at the two refineries. Some of the Energy Conservation Initiatives taken are as under:

- Revamp of existing Diesel Hydro Desulphurization (DHDS) and implementation of the Iso-Therming technology, which is the first of its kind in the country. This has resulted in enhanced capacity, improvement in energy efficiency and better product quality of HSD.
- Revamp of Lube Refinery-VPS Furnace from natural to balanced draft has resulted in reduction in stack temperature and increase in furnace efficiency by 9%, thereby saving 1,038 SRFT.
- Installation of free float steam traps in Propane Dewaxing Unit (PDU) has resulted in savings of 1,085 SRFT.

- Replacement of conventional lights with LED fixtures at locations and retail outlets.
- Light Emitting Plasma (LEP) was implemented at Khapri LPG Plant and Lucknow depot on pilot basis, which has resulted in 65% saving in electricity consumption.
- Solar PV plants installed at 575 retail outlets, taking the total to 805 nos.

Solar Energy

In 2015-16, HPCL achieved a major milestone by successfully commissioning first grid connected captive solar PV plant of 258 kWp capacity at Ennore Terminal, Chennai, with a total cost of Rs.279 lacs. The estimated annual generation from the plant would be around 4.13 lacs KWh, which would be used for captive purpose by Ennore terminal, resulting in annual cost savings of around Rs.29 lacs. HPCL have also undertaken a 5 MW Grid Connected Solar PV Power Plant project at Ghatkesar Terminal in Andhra. HPCL have approximately 1,016 kWp of installed capacity of solar energy and have generated 335,610 kWh solar energy in the year 2015-16.

Wind Energy

Currently, HPCL have 50.5 MW installed capacity; it generated approx. 44,700 MWh of electricity in the year 2015-16. Augmentation project for additional 50.4MW wind power capacity is under implementation.

Green Cover

World Environment Day was celebrated and 1,50,000 saplings planted in the designated locations of Visakhapatnam as part of the 'Green Visakh Programme'. Moving towards a greener and cleaner environment, the Visakh White Oil Terminal has come up with a unique initiative of developing an organic vegetable garden in 2 acres of land. The total green cover in HPCL, including both refineries and marketing locations, is more than 1,060 acres.

7.3 Water Management Initiatives:

In order to reduce overall consumption of water and to increase the ratio of use of recycled water to total water consumed, following water management initiatives are taken by the HPCL:

- HPCL has state-of-the-art Integrated Effluent Treatment Plant (IETP) at Mumbai Refinery, which is a "Zero Liquid Discharge" ETP since April 2014. In 2015-16, treated water recycled from IETP at Mumbai Refinery was 636,381 KL.
- Ground water aquifers are recharged during rainy season employing roof top rainwater harvesting and being monitored for quality (IS 10500: 1991) regularly with a network of bore wells spread across entire geographical area of Mumbai Refinery.
- Micro Drip Irrigation system implemented for optimum use of water for irrigation.
- Installation of efficient irrigation systems with timers, spray nozzles and sprinklers, etc.
- Installation of water efficient fixtures such as auto push type/sensor based taps.
- Recycling of Tank Truck Calibration water.
- Recirculation of water in the cylinder washing/ hydro testing units.
- Rejected water from Reverse Osmosis (RO) plant used for flushing of toilets and treated water from ETP used for gardening purpose.
- Rainwater harvesting is one of the many solutions for tackling the current global challenge of water scarcity. It entails accumulation of rainwater and then recharge or re-use the collected rain water. HPCL implemented rainwater harvesting at both the refineries and 94 marketing locations.

7.4 Waste Management Initiatives:

- HPCL introduced an 'Oil-zapper' technology to treat oily sludge through bioremediation process after mechanical recovery of oil, which has further helped in effective waste management. This technology is indigenously developed with The Energy and Resources Institute (TERI) and classified as bio-augmentation method.
- 480 m³ of oily sludge was treated through bioremediation and 5,992 m³ of oily sludge was processed during the year from ETP-II lagoons for oil recovery in Visakhapatnam Refinery.
- R&D center of HPCL has developed a unique bio-additive "HP - BioActiva" for improving the performance of the wastewater treatment process. The product is developed in-house and is a replacement for imported materials being used. This has not only improved the overall efficacy of the treatment process, but has also reduced the overall cost.
- To be a step ahead in waste management, HPCL introduced the concept of Phytoremediation for treating sewage water, which is considered as the most sustainable way of treating the liquid waste. Phytoremediation is the direct

use of living green plants for in-situ removal or degradation of contaminants in sewage, sludge or other wastewater. Through this technology, plants are used efficiently to detoxify or immobilize contaminants in wastewater. So far, HPCL have constructed phytoremediation plants at six marketing locations with a cumulative capacity of approximately 60 KLD.

Awards / Recognition:

Visakhapatnam Refinery bestowed with 'Oil & Gas Conservation Fortnight Award' for the year 2015 towards 'Best Performance in steam leaks over previous year' from Ministry of Petroleum and Natural Gas, Government of India.

8. ENVIRONMENTAL CONSERVATION MEASURES TAKEN BY HPCL IN 2016-17:

8.1 Air Emissions Reduction Initiatives:

- All continuous ambient air monitoring stations have been upgraded. Additional analyzers for monitoring of parameters namely Ozone, Benzene, Ammonia and H₂S have been added along with new SO_x and NO_x analyzer.
- Low NO_x burners are installed for NO_x emissions reduction.
- Flue Gas scrubbing unit and Purge Treatment unit control Sulphur Dioxide and Suspended particulate matter wherein more than 90% of these pollutants are reduced before letting the flue gas into the atmosphere.
- Fuel gas is treated in Fuel gas Desulphurization unit to bring down the Sulphur content before being fired in furnaces and boilers for reduction in SO_x emissions. Tail Gas Treating Unit is installed in Sulphur Recovery units with 99.7% efficiency, for recovery of elemental Sulphur in continuous operation.
- Tail Gas Treating Unit is commissioned and operational in DHT Sulphur recovery units with >99.5% efficiency, for recovery of elemental Sulphur in continuous operation. Tail Gas Treating Unit is installed in DHDS SRU and commissioning is in progress.
- Ultrasonic Mass flow meters are installed for continuous monitoring of flare.
- Natural gas is being used as fuel in fired equipment thereby substituting part of the liquid fuel as an emission control measure for sustainable operations.
- Flare Gas recovery system is installed and is in operation thereby reducing air emissions.
- Leak Detection and Repair (LDAR) program is in place for monitoring & controlling the hydrocarbon emission level.

8.2 Water Management Initiatives:

- State of the art New Integrated Effluent Treatment Plant consisting of primary, secondary and tertiary treatment sections has been in operation consistently since 2010 with a design capacity of 300 m³/hr. The purified treated water is being recycled for refinery consumption and has reduced intake of fresh water from the municipal corporation.
- Natural Resource conservation by recycling 6,64,149 KL of treated water in the year 2016-2017. Cumulative water recycling since the inception of the "Effluent Treatment Plant" (ETP) is 35,32,518 KL till Mar 31, 2017 thereby saving equivalent amount of Natural Water resource for community.
- Overall compliance to the MINAS (environment standards) has enhanced. Installation of on-line effluent analyzers in ETPs completed in June 2016 and connectivity established to CPCB for ETP-IV analyzers in March, 2017.
- Rainwater Management has been in place since 2010-11. Mumbai Refinery has constructed necessary infrastructure and has harvested about 60000 KL, 74000 KL, 120000 KL, 169000 KL, 170000KL and 83900 KL of rainwater during 2011-12, 2012-13, 2013-14, 2014-15, 2015-16 & 2016-17 respectively. Further augmentation of rain water management facility is in progress as a part of Natural Water Resource Conservation and Sustainable Development.
- Ground water aquifers are recharged during rainy season employing roof top rain water harvesting and being monitored for quality (IS 10500: 1991) regularly with a network of bore-wells spread across entire geographical area of the refinery.

8.3 Waste Management Initiatives:

- As per the Hazardous Waste Management Amendment Rules 2008, low oily sludge is to be treated by adopting bio-remediation using natural occurring bacteria for oil degradation thereby converting the low oily silt into a fertile soil. This is an ongoing process at Mumbai refinery for safe disposal of low oily silt/oily sediments after mechanical recovery of oil. In the year 2016-17 the total batch bio-remediated is around 2000 m³.

- Mumbai Refinery has disposed approx. 2,216 MT of spent catalyst during 2016-17 to “Common Hazardous Wastes Treatment Storage Disposal Facility” (CHWTSDF), operated by Mumbai Waste Management Limited (MWML) for secured Landfill / incineration.
- Vishakhapatnam Refinery has disposed all spent catalysts and discarded chemicals to the authorized Central Pollution Control Board (CPCB) recyclers and disposed around 787 MT of various hazardous waste materials. Also processed highest ever oily sludge of 14276 m³ during 2016-17.

8.4 Other Initiatives:

- ISO-14001 recertification audit was successfully carried out and certificate obtained with a validation of 3 years.
- Leak Detection and Repair (LDAR) program is in place for monitoring & controlling the hydrocarbon emission level.
- World Environment Day (June 5) was celebrated and 2,00,000 saplings planted in the designated locations of Visakhapatnam as part of ‘Green Visakh Program’.

Awards / Recognition:

Mumbai Refinery was conferred with ‘Energy Conservation Award - 2016’ from Ministry of Petroleum and Natural Gas, Government of India and ‘Golden Peacock Award for sustainability’ - 2016’ from Institute of Directors.

9. FINDINGS:

An analysis of Sustainability Reports and Annual Reports of HPCL shows that the company has extensively disclosed the impact of its business activities on the environment and measures taken for environmental conservation. The major findings are as under:

- Both Mumbai and Visakhapatnam refineries conform to ISO 14001. Environment Management Systems and various Environmental system and procedures in place to control and mitigate significant environmental aspects and their impacts.
- All quality parameters of the ambient air were conforming to the National Ambient Air Quality Standards (NAAQS) during both the years.
- Natural resource conservation by recycling of treated water is increasing every year, thereby saving equivalent amount of natural water resource for the community.
- Generation and use of wind & solar energy and various energy conservation initiatives has resulted in reduction of carbon footprint and energy consumption.
- Overall compliance to the Minimum National Standards (MINAS - Environment Standards) has enhanced.

10. CONCLUSION AND RECOMMENDATIONS:

The environmental issues have assumed utmost priority at the international level. There is a growing pressure for the corporate enterprises to consider environmental effects of their operation. As a result, accounting and disclosure of environmental matters have rapidly been emerging as an important dimension of environment management. The role of business in society has undergone a vast change and the business houses have started realizing the fact that being socially responsible is critical for survival.

In India, there is no legal compulsion for the corporates to account and report for the environmental issues. Neither the latest company law nor the accounting standards by ICAI prescribes the disclosure norms for environmental related aspects in the corporate financial reports. As the environmental disclosures are voluntary in nature, except few industries for which environmental accounting is mandatory such as oil and petroleum, natural gas, cement, steel, etc. the companies hesitates to implement the practice in their books of accounts. The poor environmental performance of the company may also bind them to no-disclosure.

It is strongly recommended that environmental accounting should be made mandatory in India and its strict enforcement should be done. Environmental audit at regular intervals should also be made compulsory. There should be suitable framework for environmental disclosure so that all the stakeholders can use it as credible information. In order to improve the comparability of Environmental Reports, companies should calculate and report some specific ratios indicating their environmental performance. These ratios, being relative measures may be used for comparing the performance of the companies on environment related issues.

REFERENCES:

1. Kaushik Jyoti and Manoj Kumar (October 2015): Environment Reporting and Disclosure Practices of Selected Maharatna Companies in India: Asian Resonance, 4(4) – <file:///F:/Search-19-9-2016/EA/1512231210231st%20jyoti%20kaushik.pdf>
2. Namitha K. Cheriyan (25th March 2015) - Environmental Accounting and Reporting: A Theoretical Analysis of Indian Scenario - <http://thecommercepedia.blogspot.in/2015/03/environmental-accounting-and-reporting.html>
3. Goswami Dr. Manoj (May 2014) : Corporate Environmental Accounting: The issue, its practices and challenges: A study on Indian corporate accounting practices: IOSR Journal of Business and Management,16(5), 36-42 - www.iosrjournals.org.
4. Shukla Dr. Anita &, Nidhi Vyas (January 2013): Environmental Accounting & Reporting in India -A comparative study of BPCL & ONGC: Pacific Business Review, 5(7) - www.pbr.co.in
5. Banerjee Dr. Bhabatosh (April 2006) : Corporate Environmental Accounting and Reporting: The Chartered Accountant – <http://www.icai.org>
6. Dr. Neetu : Environmental Accounting in India - A Survey of selected Indian Industries : <file:///F:/Search-19-9-2016/EA/1467384303138.pdf>
7. A Study of Corporate Environmental Disclosure Practices of Companies Doing Business in India - <file:///F:/Search-19-9-2016/EA/10.1.1.882.1355.pdf>
8. Environmental Accounting and Reporting: An Overview - http://shodhganga.inflibnet.ac.in/bitstream/10603/11267/10/10_chapter%202.pdf

web references:

- www.hindustanpetroleum.com
- www.cpcb.nic.in