

Improvement of Water Quality in Howrah District of West Bengal by using Bio-Fuel

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Abstract— This paper examines that transportation generates maximum pollution in Howrah district mainly in urban area. Development & urbanization has led this city population increased very rapidly in the recent past. Howrah has a well connectivity of multimode road network which is very benefiting the population but use of conventional fossil fuel slowly ruining the Biodiversity and National Wealth like Water. Vehicular emissions from transport sector are main sources of chemical hazard, which releases toxic gases to the atmosphere, like NO_x, SO₂ & CO, mixes with air & condense with water, evaporates to form cloud and then reaches the ground in the form of acid rain, which contaminates the fresh water sources & damages the water bodies/resources at large. This can be reduced by using of bio fuel in mixture 10% with the petroleum products. Bio fuel is a renewable fuel & does not have any harmful chemical that damages the environment. It is bio degradable in nature can be harvested in waste land or semi-arid land. It has high flash point & cost is less than petroleum products [1]. The Govt. of India & the Govt. of West Bengal has already announced different levy on bio fuel production in Howrah district & many cooperative societies also taken up the matter seriously at district level. Transportation sector emits pollution higher than any other sector, according to data around 73% in India 2005 [13] & it is forecasting that between 2020 the transport sector is going to have 21% increase in emission [12]. The major concern for west Bengal is that the transport emission mainly SPM₁₀ & NO₂ in industrial belt especially in Howrah district [14]. Howrah district was regarded as Manchester of West Bengal, because of its industrial growth in pre Independence era. Improper planning, and unlawful design has choked the district especially urban life, the city is famous for its multimode transport facilities.

Key words: Transport sector, water bodies, chemical hazard, Bio degradable, Bio fuel

I. INTRODUCTION

Howrah district is situated in West Bengal, which is located in the eastern part of India. Co-ordinates in between 22°12' N to 22°48' N and 88°23' E to 88°50' [4] . Howrah bears the name of twin city of Kolkata & a rich 500 years long history which tells the story from its inception of land transformation to today's multi-mode transport system. Near about 1,467 sq.km area it has & actual population is according to census 2011 is 4,850,029 [3]. Howrah is well known for its railway network system nationwide & it has significant road transport service & water ways also. It has two major National high ways, mainly NH-2 & NH-6, along with state highways & kona expressway [4].

Howrah has significant road & railway based mass transport services which helps in developing the district specially city transport services. It has 2 major bridges namely Howrah Bridges & Second Hooghly Bridge which connects with Kolkata, capital of West Bengal. Howrah has mass transport system like railway, bus, mini bus, taxi, auto, E rickshaw, trekker, & ferry service.

Due to its mass transport service mainly in urban area and transport related emission like CO, NO_x, CH₄, SO₂, VOCs, Pb, HC Chemical compound, toxic gases along with SPM, degrading the air quality as well as water/aqua resources.

India climbs five places and continues to profit from the very low level of per capita emissions, but overall CO₂ emissions have risen constantly over the past five years to about 40% [11]. At the G20 summit (2015), India's president announced a new program promoting renewable. At the same time, the coal sector is experiencing immense growth.

A. 2015 Climate Change Performance Index

Key Data						
Country	CCPI Rank		Share of Global GDP	Share of World Population	Share of Global CO ₂ Emissions*	Share of Global Primary Energy Supply
	2015	2014				
India	31	36	6.72%	17.57%	5.70%	5.89%

Performance ■ Very good ■ Good ■ Moderate ■ Poor ■ Very poor

www.indiaenvironmentportal.org.in/media/iep/infographics/CCIP-2015

STUDY AREA

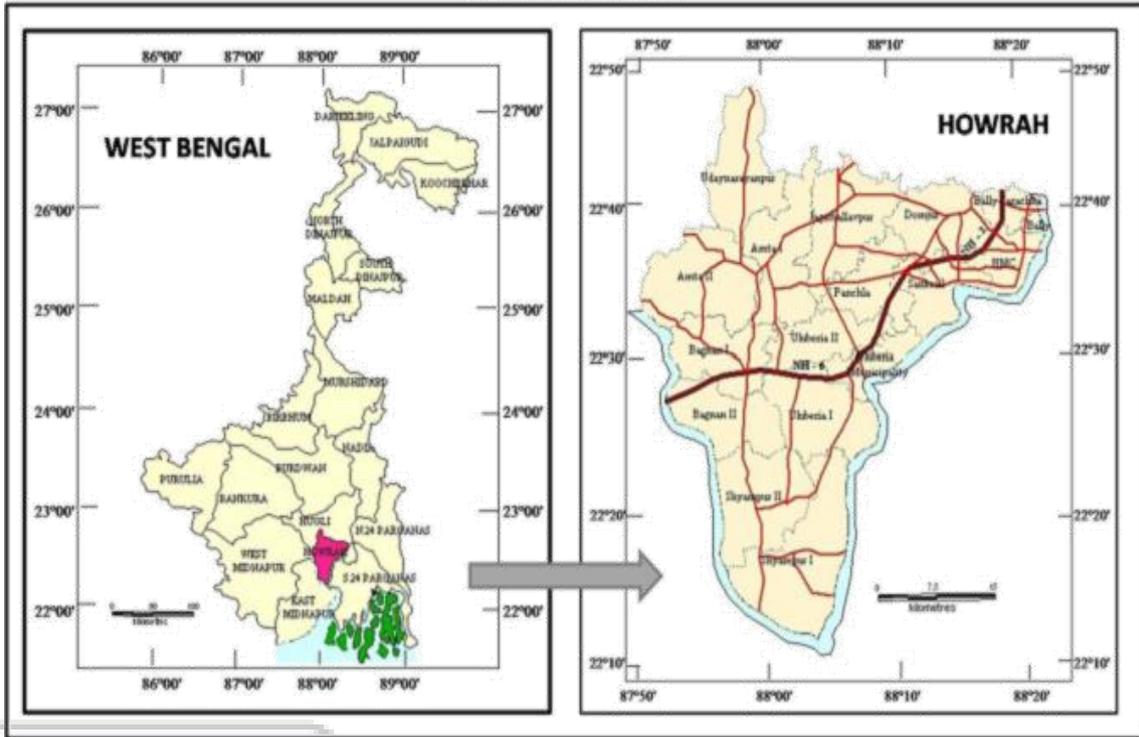


Fig. 1: Research world, e-issn-2229-4686, issn-2231-4172, Teesta Dey, July 2013, A profile of road transport development in Howrah District, West Bengal, India

At this present juncture energy supply & demands are not matching, both socio-economic, urbanization, development & environmentally. If timely action is not taken seriously, the effects of greenhouse gases, which is covering the earth will be double by 2050. The international energy agency (IEA) prepared a report on technology roadmap of bio fuels for transport & they forecasts that by the 2050, 32 exajoules of bio fuel the world will use which is 27% of transport fuel. To get the desired result we need to work closely with the help of Central Govt. & the state Govt. as well to prepare the road map for future & work on different policies by implementing this bio fuel production in big way it will also create employment generation as well, it will reduce the dependency of energy security of the nation & with the less price as compared with conventional fossil fuel.

II. LITERATURE SURVEY

I have gone through the data from india environmentportal.org.in/media/iep/infographics/CCIP 2015, according to Climate Change performance index 2015 India is in moderate place for share of global CO₂ emission [11]. Another data released recently says Howrah district especially urban life is in danger due to emission like SPM₁₀ & NO₂ release from transport sector [14]. Also gone through a data from Ministry of water resource Govt. of India is showing that 85% of the population in India is using ground water / fresh water for drinking & domestic use [10]. A data from www.iea.com, Technology roadmap, Bio fuels for transport, OECD/IEA, Paris 2011. With all this data I have prepared my journal paper.

III. METHODOLOGY

By studying the already published research works in several journals, visiting several sites in Howrah Districts, visiting several government offices that deals with ecology and renewable energy this paper has been prepared.

IV. RESULTS AND DISCUSSIONS

To examine the reasons behind the water quality degradation of Howrah district is that, due to its mass transport service mainly in urban area and transport related emission like CO, NO_x, CH₄, SO₂, VOCs, Pb, HC & OC Chemical compound, toxic gases along with SPM, degrade the air quality as well as water/aqua resources. Chemical hazard, dust, water evaporates then condenses with air and produce acid rain & mix with water bodies. The chemical hazards then destroy the aqua culture & water quality. Both wet & dry deposition has been found in the damage & destruction of vegetation & water courses. Acidification of water resources, agriculture, forestry & fisheries are the result of acidification compounds resulting principally from the oxidation of primary SO₂, NO_x, & CO emissions from conventional fossil fuel combustion. Awareness is required at mass level from the Govt. & different co-operative society to opt for renewable fuel or bio fuel because in Howrah, mainly in urban transport sector it is alarming time to stay in city, smoky black emission with SPM (suspended particulate matter) ruin the human health & destroy the eco system.

To analysis how to use of bio fuel can bring difference in quality of water bodies/resources. Biofuel like

Bio diesel is made from non-edible oil seeds for that food security is not affected. Bio diesel can be used in Howrah district where transport sector is the central mode for communication. Bio diesel can be produce through vegetable oil, non-edible oil that can be directly mixed with 10% petroleum diesel without modified the engine [1]. Bio fuel is renewable oil & present 80% less CO₂ & almost 100% SO₂ free [5]. Bio diesel has high flash point 150°C with less volatile & safer to transport & from petroleum diesel [10]. It has good synthetic & lubricant property which reduces engine wear & extends engine life. we need to maintain the balance in the eco system, transport sector is mainly responsible for global warming, now the time has come to choose the right fuel, now a day's scientist test the bio-fuel & it is quite clear that bio diesel/fuel is the only option to go for, so renewable oil is the solution for better & greener tomorrow. We should now take more responsible for our mother earth care it is now or never situation & start clean Howrah green Howrah movement, which is also an initiative from Govt. of India in smart city programme.

In fact a lot of work to be done simultaneously to get the desired result of production bio fuel in large amount to fulfill the demand of the end users. Present picture of production is very grim and it really needs co-operation from all sectors to understand the need of the hour to look for alternate source of bio diesel for the generations to come. We need to conserve the water for irrigation, apply different tools & techniques to conserve/preserve the water at village level to improve the ground water level at all season. Rain water harvesting & create water bodies / water ponds in cultivation lands to cater the demand in agriculture, fishing & other agro farm business products. Testing should be done time to time use bleach 0.1% [6], proper water body management needs as per the test report. Acidification of water bodies/resources needs to be clean properly. Bio fuel is bio degradable and it is environment friendly renewable fuel, Howrah district must follow the green way of transport sector to come up with expectations. Above all bio diesel is the answer for tomorrow not only in Howrah district not only in West Bengal it is for the world & it should be implemented in a systematic way.

V. CONCLUSION

A district which has a population of 4,850,029 people need huge amount of Clean water for several purposes. If excessive transportation like today keeps on damaging the Water Quality of Howrah District then there is threat of loss of life at mass level, cattle will also lose their lives, Agricultural production will be disturbed, food quality will be abridged, food cost will go up. That means a definite Ecological Imbalance is waiting for the district as well as for the state.

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