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Environmental Governance with Special Reference to Air pollution in Delhi

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ABSTRACT

The march of people from forests and small towns to mega-metropolis such as Mumbai and Delhi is a remarkable step in the story of development in India. But this march towards development and progress has its own twists and turns. In the present paper an attempt is made to study the air pollution and state of environmental governance in Delhi and how various government and non-government agencies are working to control the problem of air quality degradation in Delhi. The study is based upon the secondary source of information collected from WHO, Central Pollution Control Board and the Report of Forest Survey of India, Ministry of Environment and Forest 2015. From the results it is clear that effective environmental governance has become an inescapable reality in India demanding meaningful and effective steps to save life and its quality from the human misdeeds disturbing the 'nature' making its response adverse and reactive, poor air quality is one such reaction. It requires strong institutional reforms so that it can combat diverse environmental problems including the air pollution in Delhi. Apart from it environmental protection law and various agencies are not able to control the air pollution and many other environmental problems and it is continuously increasing.

KEY WORDS: Environmental Governance, Air Pollution, Delhi

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INTRODUCTION

The rapidly changing climatic conditions in different parts of the world during last two decades have come as a big surprise to climatologist and experts in the field of environmental science. This recent and unpredictable climate change is prompting an unprecedented questioning of the fundamental bases upon which society is founded. Natural set up has its own governing mechanism but continuous human intervention and tinkering into the natural zone resulted in violent response from nature. "Corporate giants and businesses claim that technology can save environment, while politicians champion the role of international environmental agreements to secure global action. Experts in the field of economics offer financial solutions and suggest that developed countries should provide monetary assistance to developing countries not to destroy their forests, while environmentalists question whether we can solve ecological problems with the same thinking that created them. Environmentalists demand for a total transformation in thought and action. As the process of steering society, governance has a critical role to play in coordinating these disparate voices and securing collective and more affirmative action to achieve a more sustainable future".[1]

We are lucky to have mother earth as our living place which is very rich in natural resources. Governing our planet's rich and diverse natural resources is an increasingly complex challenge. In our globalised world of interconnected nations, economies and people, managing environmental threats, particularly those that cross political borders such as air pollution and biodiversity loss, will require new global, regional, national and local responses involving a wide range of stakeholders.[2] Undoubtedly, effective environmental governance at all levels is critical for finding solutions to these challenges. Environmental Governance comprises the rules, practices, policies and institutions that shape how humans interact with the environment.

When we look at governance in simple words, it means "the purposeful effort to steer, control or manage sectors or facets of society" in certain directions.[3] In fact, governance involves actors beyond the state in the practice of governing by securing the conditions to enable collective action. While the shift from government to governance has not been restricted to the environmental domain, the complex nature of environmental problems suited them to the governance approach. The recurring challenges of high levels of uncertainty, surrounding environmental change, the global or trans-boundary nature of many problems, and the lack of global institutions to make and enforce decisions, create an obvious need to include broader sets of actors in the process of decision making.[4] Governance has the potential to link people, place and things together in radical new ways. Innovations, whether they take the form of new technologies, novel social networks or creative political system, can cause a ripple effect, whereby small interventions can have very large impacts. Breaking with the existing status quo requires diversity, open mindedness and the capacity to learn

and change. In doing these things, governance can help forge new identities and visions for the world in which we want to live.

There is no doubt that effective environmental governance takes into account the role of all actors that impact the environment. From governments to NGOs, the private sector and civil society, cooperation is critical to achieving effective governance that can help us move towards a more sustainable future. United Nations Environment Programme (hereinafter referred to as UNEP) is the leading global environmental authority in global environmental efforts.

It delivers expert scientific assessments providing international platforms for negotiation and decision making ever since its inception in 1972. It is remarkable to mention that UNEP's Environmental Governance sub-programme promotes informed environmental decision-making to enhance global and regional environmental cooperation and governance. Working with States and all major groups and stakeholders, UNEP helps to bridge the science and policy gaps by keeping the state of the global environment under review, identifying threats at an early stage, developing sound environmental policies, and helping and implementing these policies.[5]

Many researchers from India and abroad had worked upon this very urgent and basic issue of human survival on this planet i.e., environmental governance. Young, 1997 in his book has explained the concept of Environmental Governance and made an exhaustive study of governance from local level to global level.[6] An environmentalist Evans, 2012 in his book had discussed the concept of environmental governance.[7] Lele et al, 2009 had proposed the structure of environmental governance.[8] Weale et al, 2002 in their paper "Environmental Governance in Europe: An Ever Closer Ecological Union" have explained that how environmental governance may extend to the ways in which decision making on environmental policy has become institutionalized with in Europe, both at the level of the EU itself and in practice of the member states.[9] It then looks at the operation of the system of environmental governance through an examination of policy case studies before examining the wider political significance of these developments. Loca, 2011 in his paper has pointed out that the establishment of greater synergies between ecological economics, political ecology, sustainability sciences and earth system governance will be beneficial in developing the broader study area of Environmental Governance.[10] Bennett 2002 in their book have emphasized that local support is important for longevity of conservation initiatives. In their paper they have examined the relationships of ecological effectiveness, social impacts and good governance using the data from the survey of small scale fishermen in 11 marine protected areas from six countries in Mediterranean sea.[11] But perhaps there is no such micro level study which deals with environmental governance and environmental degradation in the third largest urban agglomeration of the world i.e Delhi. Therefore,

in this paper an attempt has been made to visualize the state of environmental governance to combat the pollution in Delhi the National Capital of India.

OBJECTIVES

The major objectives of this research paper are:

1. To discuss the concept of Environmental Governance in detail.
2. To discuss one major types of environmental problems in Delhi namely air pollution, water pollution, and forest degradation in Delhi in the light of legal procedure laid down for its protection.
3. To highlight the efforts made by different stake holders for effective environmental governance in Delhi.

DATABASE AND METHODOLOGY

The entire study is based upon the secondary sources of data for Delhi which have been collected from Central Pollution Control Board India publications, New Delhi, World Health Organization, Ministry of Urban Development for understanding air and water pollution and the report of Forest Survey of India, 2015

DISCUSSION

Environmental Governance

While governance is a relatively recent phenomenon, the practice of governing more broadly has a long history, accompanying the emergence of the modern nation state, which required an administrative government to tend to its population. The transition from government to governance that has occurred over the last 25 years and has been a gradual process, in which various roles that were traditionally performed by government have been opened up-to actors beyond the state. Depending on the political viewpoint up the process of governing in this way can be seen as an extension of democracy that strengthens decision-making, or conversely as part of a wider undermining of the state and public sector by neoliberalism and economic globalization.

The period prior to 1990 was an age of 'big government', when citizens expected the state to take the lead in providing services, but economic globalization precipitated a crisis of legitimacy in the state. Rather than the state taking sole responsibility for governing, governance provided a way to bring the public, NGOs and business into the process of governing. "Governance is ultimately concerned with creating the conditions for ordered rule and collective action. But this collective action is rather a challenging task.. Apart from it many environmental problems are transboundary in character, which means that they require international cooperation. Finally, environmental issues

tend to have complex causes that spill across many different areas of human activity, making it hard to coordinate action.

The problem of environmental degradation can be tackled by engaging wider groups in the governance especially the cooperation of local public because the local communities have deep knowledge about and emotional attachment to the places in which they live and work, making them indispensable partners in the delivery of sustainable development. Public participation involves designing institutions and rules that can involve all interested parties in decision-making to produce a consensus that forms the basis for legitimate decisions. But sometime public knowledge is not sufficient the expert opinion is desirable as they have technical knowledge as they devote their professional lives to mastering a specialist field. Here network governance will be helpful for effective environmental governance. Network governance involves groups of actors with common interests coming together to work towards mutually beneficial outcomes, leveraging the collective resources of diverse actors and simply bypassing reluctant national government. The profusion of NGO and local communities in to practice may be the most exciting and dynamic development in the field of Environmental governance, it can generate real change to the political and economic behavior of the government, companies and local public. Many of these networks have emerged to support market mechanism. Market approach promise to address environmental problems efficiently by allocating resources through the law of supply and demand. For example production of grains fruits and vegetables through organic means may phase out the chemically produced agricultural goods if armies of international organizations, bureaucrats, scientists, eco-entrepreneurs and state decide to do it in the agricultural country like India.

Transition management is an-other approach to govern the environment in the country where most of the energy requirement is fulfilled by conventional resources of energy. "Transition management seeks to steer the economy by encouraging low carbon innovations. In this case, the ability of the state to manipulate economic conditions is critical. Transition management gets less bogged down in the ethical debates that hamstring many approaches to the environment, seeking to transform society by changing its material basis".[12] Adaptive governance enable the society more responsive to changing environmental condition. This is one of the advance approaches of environmental governance. This adaptive governance is based upon the concept of Resilience. Resilience is the "measure of the persistence of systems and of their ability to absorb change and disturbance and still maintain the same relationships between populations and state variables".[13] The concept of resilience is increasingly influential in the realm of environmental governance, holding considerable appeal to policy-makers who must adapt society to changes that cannot be predicted with any accuracy.

Thus it can be safely said that environmental governance is the only possible solution to combat the environmental degradation but it is found difficult to implement it in this unruly fragmented world it is heralded by corrupt form of politics. Hopefully, it has become apparent that this is partially true but everything has a brighter side too. The future under environmental governance is far from certain, but in some ways, that is the point: governance is about steering and emergence, not rigid control and revolution.

Environmental Governance and Delhi

Delhi with an area of 1483 Km is located at latitude of $28^024'$ $17''$ and Longitude $77^045'30''$E-$77^021'30^0''$E. Delhi is jointly administered by central and state government. According to 2011 census data approximately 16.3 million people inhabits in Delhi and it is the second most populated urban agglomeration in India and third most populated urban agglomeration in the world. The regulatory regime for environmental protection in Delhi is a picture of sharp contrast. This small state as national capital has elaborate statutes and regulations on almost every conceivable area from hazardous waste to forests and wildlife for the whole nation. Yet, monitoring and enforcement capabilities remain weak. Tenth five year plan was a period of reengineering of the environmental processes and laws. During this plan the first National Environmental Policy has been put in place in May 2006.[14] This section examines the major environmental problems like air pollution and water pollution and forest degradation in the light of available laws for its protection.

Air Pollution

The primary statute in this area is the Air (Prevention and Control of Pollution) Act of 1981. Air Act was based on the decisions of a supranational body, namely, the 1972 UN Conference on Environment. The Act is nationwide in its scope and states that had not set up pollution boards establish them. Under this Act all industries have to obtain consent from state boards to operate within air pollution control areas delineated by the boards. In practice, however, all states have declared themselves as entirely air pollution control board.[15]

The latest urban air quality database released by the World Health Organization (WHO) reconfirms that most Indian cities are becoming death traps because of very high air pollution levels. Air quality monitoring in Delhi is done by agencies like Central Pollution Control Board, Delhi Pollution Control Committee and System of Air Quality and Weather Forecasting and Research of Indian Institute of Tropical Metrology. The Central Pollution Control Board has planted 11 manual air quality monitoring systems at different places in Delhi. Delhi Pollution Control Committee has established 6 air quality monitoring stations in Delhi and System of Air Quality and Weather

Forecasting and Research of Indian Institute of Tropical Metrology has established 8 air quality monitoring stations in Delhi.

The air quality index is measured on the basis of the quantity of major pollutants like SO2, NO2, PM10. According to data released by Manual air quality stations of central pollution control board (2009-15) the concentration of SO2 is within the reference range and NO2 is above the reference range while the concentration is PM10 increasing rapidly above the reference range. A World Health Organisation report released on 2 May 2018 confirms that Delhi has the worst air quality index ion the world. India's capital was found to have a heavy presence of PM10 matter (202). The Annual safe limit set by WHO is 60. [16] Delhi is among the most polluted cities in the world today. In addition to this, Narain points out, 18 million years of healthy lives in India are lost due to illness burden that enhances the economic cost of pollution. Half of these deaths have been caused by ischemic heart disease triggered by exposure to air pollution and the rest due to stroke, chronic obstructive pulmonary disease, lower respiratory tract infection and lung cancer.[17]

Apart from the vehicular and industrial emission local climate and seasonal factors also affect the air quality in Delhi. Delhi being land locked territory is unable to dilute its emission using the moderating affect (Land and Sea Breeze at diurnal basis) of the Sea. The stubble burning in the neighboring in the autumn season is raising fear of a spike in air pollution across the national capital i.e., New Delhi.[18] According to estimate 20per cent of the dense smog in the northern India is caused by stubble burning. [19] This smog hinders the retreat of south west monsoon, setting off north westerly winds which blow into the plains, carrying the smoke from the stubble. [20] Apart from it Delhi is surrounded by different climatic regions from all the sides. In the west it is surrounded by desert of Rajasthan, in the north and east it is surrounded by cold hilly region and in the south it is surrounded by central hot plain. Thus it faces extreme climatic conditions i.e., scorching summers to very cold winters. In winters the very low temperature causes radiation fog leading temperature inversion and in-turn brings atmospheric stability. The vertical movement of the air is completely checked since November till the westerly disturbances (originates in Mediterranean sea) enters the India from if western part after middle of January. Thus the impurities discharges from industries, vehicles, construction site get trapped and concentrated in this lower atmosphere and creates smog in the lower atmosphere which reduces the visibility and deteriorates the air quality in the winters in Delhi.

Water Pollution

It was not till the 1970s that the federal government started enacting more wide-ranging and comprehensive environmental laws starting with the Water (Prevention and Control of Pollution) Act of 1974, which was notable for the degree of consensus between the centre and the states. Six states

had passed resolutions in 1969 urging parliament to legislate on water pollution. By the time the Act came into force in 1974, a total of twelve states had joined the consensus in a remarkable instance of voluntary surrender of legislative authority to the central government. The Act is very much in the nature of a "command and control" regulation: it prohibits the discharge of pollutants into water bodies beyond established standards (Section 24) and requires generators of all new and existing sources of discharge into water bodies get the prior consent of pollution control boards (Sections 25 & 26). It also lays down penalties including fines and imprisonment for non-compliance. Prior to 1988, enforcement was through criminal prosecutions initiated by state boards and by seeking injunctions to restrain polluters. After amendments to the Act in 1988, boards were given more teeth in that they can shut down errant factories or cut off their water or electricity by administrative orders. [20&21]

Out of all these laws and acts, the availability of freshwater resources is declining in India on per capita basis due to increase in population from 345 million during 1947 to 1130 million during 2007 in six decades. Delhi, which is the largest metropolis in north India, has undergone explosive demographic expansion increasing pressure on water sources in various river basins in north India as well as on its internal groundwater resources. The small city state is high on consumption [with an insatiable demand], low on internal resource and high on external dependence [mainly dependent on river Yamuna, Ganga, Bhakra Beas system - all snow fed northern rivers]. Delhi has limited options to influence developments outside its boundary. With restricted sources of supply, no addition to its supply is expected for at least next 10-15years.[23]

The report, based on latest data from the ministry of urban development (2013), census 2011 and Central Pollution Control Board, estimates that 75-80% of water pollution by volume is from domestic sewerage, while untreated sewerage flowing into water bodies including rivers have almost doubled in recent years.[24] The State wise Water Quality Data shows that Yamuna River in Delhi has shows poor quality of river water with great regional variation. The total dissolved oxygen varies from 5.1 mg/l in Wazirabad to 0.1 mg/l in Okhla. The total Coli form varies 54000mpn/100ml to 160000000mpn/100ml and the permissible limit is <5000mpn/100ml. [25]

Noise Pollution

Noise is generated from variety of indoor and outdoor sources such as industries, transport vehicles, fire crackers etc. Under the environment (Protection) act, 1986 noise pollution (Regulation and Control) rules, 2000 notified by MoEF was last Amended in January 2010. Noise is considered as public nuisance under section 268 of Indian penal code and thus, there is a criminal liability of a person relating to his illegal omission resulting in common injury, danger or annoyance to people in

general. The act of public nuisance have been made a punishable offence under section 290 of the Indian Penal Code which provides that whoever commits a public nuisance in any case not otherwise punishable by the code shall be punishable with the fine which may extend to two hundred rupees A study conducted by Centre for science and Environment in 2011 confirms that the capital (Delhi) has noisiest road in the country. And second noisiest place in the world comes after Guangzhou in China. The study also confirms that ITO intersection in Delhi saw noise levels as high as 106 decibels (dB) due to vehicular honking. However the standard set by the CPCB is 50dB for a silence zone and 55 dB for residential area.[26]

Forest Degradation

India is the vast country with a rich biological diversity. Forest is the second largest land use in the Country just after the agriculture. Roughly 275 million people in India depends on forest for at least part of their subsistence and livelihood.[27] The growing concern for conserving the natural resources has resulted in the formulation of long term perspective plans for conserving forests. These forests facilitate the conservation of ecological balances, biodiversity, enhance the quality of environment by checking soil erosion, water retention and conservation, regulate water cycle, act as carbon sink which balances the carbon dioxide and oxygen in the atmosphere and facilitate the reduction of green house gases effect etc.[28&29] Out of all the ecological and economic benefits the reckless cutting of trees in the forested area is causing shrinkage in the forested area and finally the forest degradation.

To cope up with such problems of global climate change, environmental governance seems to play a vital role. Thus it can be safely said that for sustainable future it is mandatory to conserve natural resources including the forest resource because forest degradation will disturb the fragile ecological balance and in turn will intensify the problem of global climate change. Forest was brought degradation and "Degradation is a disinvestment in the stock of forests if more value than replaced (by nature or man) is extracted".[30] Para 4.1 of the National Forest Policy, 1988 provides that a minimum of 1-3rd of the total land area of the country should be under forest or tree cover. In the hills and in mountainous regions, the aim should be to maintain 2-3rd of the area under such cover in order to prevent erosion and land degradation and to ensure stability of the fragile eco-system. Taking the above strategy in view, the Govt. of NCT of Delhi is making all endeavors to meet the national goal as set by the Central Govt. and is constantly adding to the Green Cover of the State which is reflected the change in Forest and Tree Cover given below:

Table: 1 Showing the Forest/ Tree cover of Delhi, 1993-2015

S.N	Year	Forest/Tree Cover(KM)^2	Forested Area to Total Geographical Area (%)
1	1993	22	1.48
2	1995	26	1.75
3	1997	26	1.75
4	1999	88	5.93
5	2001	151	10.2
6	2003	268	18.07
7	2005	283	19.09
8	2009	299.58	20.20
9	2011	296.20	1997
10	2013	297.81	20.08
11	2015	299.77	20.22

Source: Forest Survey of India, Ministry of Environment and Forests, G.O.I.

The per capita forest area is only 0.064 ha against world average of 0.64 ha (FAO) i.e., 1/10th of the world average. As per the India State of Forest Report (SFR)-2015, the total Forest and Tree Cover of the country stood at 708,273 Km^2 while it was 701495 Km^2 in 2015 recording an increase of 6778km^2 within two Years. (moef.nic.in/sites/default/files/India National REDD/ 2B/strategy released on 30.08.2018 pdf, p.1). However, NCT of Delhi is 299.77 sq. km. (20.22%) as against 297.81 sq. km. (20.08%) reported in SFR-2015. This is made up of 111 sq. kms. of tree cover and 188.77 sq. kms. of forest cover making a total of 299.77 sq. kms. Thus there is an increase of Green Cover of Delhi from 20.08% to 20.22% which works out to 0.14% of the geographic area. Despite several infrastructural projects and large scale construction taking place in Delhi, the Forest and Tree Cover of Delhi has been increasing on a sustained basis from 22 Sq. Km. (1.48%) in 1993 to 299.77 Sq. Km. (20.22%) in 2015. Forest was brought under concurrent list in 1976 by 42 constitutional amendment. Enactment of the forest (Conservation Act in 1980 amend in 1988) empowered the central government (MoEF) to guide the state in the matters related to diversion of forested land for non forestry purposes, conservation of natural forests into plantation and even priorities of forest management in line with the National Forest Policy. [31] In Resolution No. 13/52/F, dated the 12 May, 1952, the government of India in the erstwhile Ministry of Food and Agriculture enunciated a forest Policy to be followed in the management of State Forests in the countr.[32]

Wild Life Protection

The wild life protection act 1972 is the first legal step to avoid illegal poaching and killing of wild animals. It is mandate under section 38 (Z) of the wild life (Protection) act, 1972, to collect intelligence related organized wild life crime activities and to disseminate the same to the state and other enforcement agencies for immediate action. Wild life crime control Bureau is a statutory multi-disciplinary body established by the Government of India under the ministry of Environment, Forest and climate change, to combat organised wild life crime in the country. The Protected area network in India comprises of 730 protected areas (103 National Parks, 535 Wild Life Sanctuaries, 66

Conservation Reserves 26 Community Reserves. Out of these only one wild life sanctuary is located in Delhi with no National park or other protected area.

Various Agencies and Their Efforts for Environmental Governance

Governance is seen by some as the only way to govern an increasingly unruly world, in which the old economic and political coordinates have been eroded by the force of globalization.[33] Governance extends the practice of governing to non state actors or stakeholders who have an interest or stake in governing, including charities, NGOs, businesses and the public. Environmental governance operates by setting common goals or targets, which allow different actors to device the most suitable ways to reach them.

The IPCC [Inter-governmental Panel on Climate Change]- an international body to monitor and control the climate change recommends that climatic change requires deeply considered responses from international to national up to individual level. A lead author named Hulme, 2009 on IPCC has claimed that climate change is the crisis of governance not the crisis of environment.[34] This new thinking about the global climate change in general and environmental issues of Delhi in particular is encapsulated here to meet out various environmental problems like forest degradation wild life protection and environmental pollution, environmental governance may play a vital role as it encompasses the involvement of the localities' along with the cooperation of government and non-government bodies. The strength of environmental governance in Delhi can be analysed in the light of the efforts taken by different bodies in Delhi.

Government Efforts for Environmental Governance

Environmental problems especially the climate change is no longer primarily a scientific or technological challenge, but a political social and economic one. In June 2008, the prime minister of India released the country first National Action Plan for climate change which outlined existing and future policies and programs that address climate change mitigation and adaptation, chief among them being the setting up of eight national missions to work on various important sections as solar power, sustainable agriculture, strategic knowledge on climatic change and others.[35] On 17 Februray 2016 our minister of forest, environment and climate change has launched the environment information system portal (ENVIS) for environment protection and sustainable development.[36] Many more positive policies and government plans are made to curb the current pollution level in India in general and in Delhi in particular but a large scale stubble burning of Kharif crop in the neighboring states of Delhi like Punjab, Haryana and Western Uttar Pradesh is further aggravating the problem of autumn air pollution in Delhi. Only in Punjab 30 lakh hectares of land is under paddy cultivation and after harvesting 20 million tonnes of paddy straws is left in the field. It is estimated that 15 million

paddy straw are burnt every year.[37] NGT is continuously giving direction to control burning and Summoned Chief Secretaries of Delhi, Punjab, Haryana and Uttar Pradesh. But these efforts are not sufficient as authorities are shifting their responsibilities on others.[38]

Efforts of the Apex Government Bodies of the Environmental Issues

Supreme Court of India ordered to control serious problem of air pollution in Delhi. This Order of the Supreme Court of India in the matter of M. C. Mehta Vs Union of India & Others dated 29/10/2018 regarding air pollution control in NCR Delhi is stated below Amicus Curiae has placed before the Court some submissions on urgent actions to control air pollution in NCR which the Court wants to implemented with immediate effect. These suggestions which are now Supreme Court's direction to check the air pollution in Delhi are:

a. The Transport Departments of NCR will immediately announce that all the diesel vehicles more than 10 years' old and petrol vehicles more than 15 years' old shall not ply in NCR in terms of the order of the National Green Tribunal.

b. CPCB will immediately create a social media account on which the citizens may lodge their complaint directly.

c. EPCA is permitted to take pre-emptive steps under the Graded Response Action Plan without strict adherence to pollution stages delineated in the plan.[39]

National Clean Air Programme (NCAP) was launched by MoEFCC in April, 2018 and this was preceded by Clean Air Programme in Delhi in February 2018 to sensitise the public in general and implementing agencies in particular. It is noteworthy that almost 1 million vehicles are added on the roads of Delhi every year and in spite of increased construction activities and vehicular movement, air quality in Delhi is showing signs of improvement.[40] National Green Tribunal (NGT) on Tuesday (October 16) imposed a fine of Rs 50 crore on the Delhi government owing to repeated failures of the Delhi Pollution Control Committee to shut down polluting industries in the city. The fine was imposed after the NGT bench found its order to shut down over 62 steel-pickling factories was yet to be implemented. "The authorities have assumed that nothing can happen if they continue to defy the law to benefit polluting industries at the cost of public health," the bench noted, in its order. The NGT has also directed the Delhi government to ensure all these industrial units stop operations immediately, while also asking for the setting up of an enquiry committee to identify the owners/managers of the factories -- liable to be prosecuted and punished for flouting the law.[41] NGT on 8 November 2018 has summoned Chief Secretaries of Delhi, Punjab, Haryana and Uttar Pradesh as their government failed to curb stubble burning and directed them to provide economic incentives and they can deny the minimum support price to those farmers who continue stubble burning.[42]

Halting all construction activities from November 1 for 10 days last year (2018) and intensifying patrolling in "hot spots" are among the measures directed by the Supreme Court-appointed Environment Pollution Control Authority.[43]

The effect the Supreme Court's direction and government non-government bodies efforts to cut down the air pollution can be analysed in the light of air a bit improved air quality in successive years. Data from the period October 1, 2017 to February 25, 2018 points to a slight improvement in air quality levels. An analysis of the Central Pollution Control Board's air quality index data shows that the number of days in the severe category has decreased for each month in comparison to the previous year, except in January. In February, 16 per cent of the days were in the moderately poor category, compared to 8 per cent in the previous year. "Overall, there is a small difference – the number of days in the poor-very poor category have increased as compared to the very poor-severe category."[44] The replacement of Dehli Transport Corpotation busses and other public three wheelers and four wheelers in Delhi through CNG busses and other vehicle has brought SO2, one of the major air pollutants under permissible as suggested by world Health Organisation (WHO).

The Planning Commission has commissioned major studies; the National Water Mission has its own set of recommendations, the National Water Policy of 2002 has been revised again in 2012, the National Sustainable Habitats Mission is laying down new benchmarks governing city environmental sustainability, the Supreme Court has ruled in favour of inter-linking of rivers, the UN has voted in a resolution on human right to water to which India is signatory. Several Ministries, international aid agencies, several NGOs and corporate CSR groups too are actively promoting new initiatives to increase sustainability and water security.

NGT has directed The Irrigation and Flood Department of Delhi government to site reasons why a fine of Rs 1 crore should not be imposed and prosecution should not be initiated against it, for dumping of industrial and municipal waste along the drain. The Central Pollution Control Board (CPCB) has issued a show cause notice against the Delhi government's irrigation and flood control (I&FC) department for dumping and burning waste along the Shahadra drain. The notice was sent on the same day on which the National Green Tribunal had asked the Delhi government to deposit Rs 25 crore with the CPCB for their failure to curb the problem of pollution in the city. A joint inspection team comprising officials from the union government, Delhi government and municipal bodies had visited the spots in the first week of November, 2018. The team found that industrial and domestic waste were being dumped and burnt along several stretches of the drain. The CPCB had earlier been issued challans by the East Delhi Municipal Corporation. "While the team found at least three such incidents on November 4 and 5, local residents have also lodged complaints against such dumping and burning of waste too." Open dumping and burning of any kind of waste is illegal in

Delhi as per directions of the National Green Tribunal and a penalty of Rs 5000 could be imposed on the violator.[45]

Efforts Taken by Public

Public participation is a decisive factor in success of policies. In U.S., U.K., Sweden, Canada the public pressure brought environmental issues to the policy arena in contrast to India where policy came before people. The public has a rooted interest in making sure that environmental laws are properly carried out, because local communities are directly harmed by environmental problems.[46] Public participations in the administrative process ranges from individuals to larger, expert nonprofit organizations. Chipko Movement started in Tehri Gharwal region, Save Narmada Movement, Jal Sathyagrah Movement are some of the efforts taken by the local public to save their native natural resources including the forests. In case of Delhi the public efforts to control the pollution can be analysed in the light of Dipavapi air quality deterioration. The air quality Index on Diwali 2018 was 410 against 403 in 2017. This value was 445 in 2016. Though the supreme has given strict directive to burst only green fire crackers for only two hours i.e., 8 PM to 10 PM on Diwali but did not get the full cooperation from the public.[47] However the survey by social media network revealed that 68% Delhiites will not burst the fire crackers so that pollution levels stay in control.[48] The sale of air purifiers rises in this festival season as the air quality index reaches to the severe category.[49] This shows that first they spend money to deteriorate the quality of the air of Delhi as they burst fire crackers and then spend money to improve its quality at household level. Ashutosh Dixit, the CEO of united Residents Joint Action, an apex body of Delhi's RWAs, said that exhaustive survey reaffirms that people are aware of air pollution. However, looking at the violation that happened on Diwali in Delhi suggests that Delhi public do not fully believe in the stated causes of air pollution and its stated impacts.[50]

Efforts Taken By the Media

While the media are not strictly a part of governance, their influence over public opinion science means that they play an important role in meta-governance. As Bennett, 2002 states , "few things are as much a part of our lives as the news and the media have great potential to generate legitimacy for collective action". [51] On the one hand, the media reinvigorate the social sphere by stimulating public debate. [52] Many articles from the news-papers coated in this research paper confirms the role of media in generating awareness among the public about the ill effects of their continuous tempering with the environment as it is accessed by the people on day to day basis.

CONCLUSION

The challenges of ecological conservation and management are immense in a country as large and diverse as India. But institutional mechanisms and implementation have not kept pace with the legislative and policy evolution as evident from the continuous degradation in the quality of air, water and forest. The deteriorating quality of air has fetch the attention of government and non-government bodies in Delhi. The Supreme Court has imposed ban on the use of diesel vehicle which are more than 10 years old and majority of public vehicle run by the diesel are replaced by CNG vehicles which in-turn has reduced the concentration of SO2 in the air. However SPM concentration is still much above the reference range in Delhi. As it is well known that every crisis seeds solutions for its own problem. The looming water insecurity has led to ferment in thinking about the water sector. Thus, the Planning Commission has commissioned major studies; the National Water Mission has its own set of recommendations, the National Water Policy of 2002 has been revised again in 2012, the National Sustainable Habitats Mission is laying down new benchmarks governing city environmental sustainability, the Supreme Court has ruled in favour of inter-linking of rivers, the UN has voted in a resolution on human right to water to which India is signatory. Several Ministries, international aid agencies, several NGOs and corporate CSR groups too are actively promoting new initiatives to increase sustainability and water security.

Here environmental governance is supposed to help in forging new identities and versions for the environment in which we want to live. But it has not sufficient potential to link people, place and resources in the radical new ways. It is creating only a rippling effect and requires institutional reforms and strong linkages. Quite clearly, there is a need to reassess the entire ambit of environmental governance in the country including National Capital of India i.e., Delhi. At the end it can be said many action plan plans are prepared but action is missing it requires some time motivation in the form of incentives and sometimes forceful implementation but environmental issues in are just like the old vine sold in the old bottle with new brand without concrete action and desired results.

RECOMENDATIONS

Among the various environmental challenges and crisis, pollution being linked with health hazards has caused greatest concern to humans in various parts of the earth including Delhi. It is necessarily, an outcome of urban-industrial-technological revolution which has resulted in complex man-environment relationship associated with large scale and speedy exploitation of resources, substantial exchange of matter and energy and more and more dumping of industrial and household toxins in to environment in the national capital region of India i.e., New Delhi. It is only the good

environmental governance which can combat various environmental problems as it promotes the cooperative efforts of the state and people to reduce environmental pollution. Here researcher would like to suggest few measures to combat environmental problems in Delhi.

i. Ecological modernization may act as a buffer to control various environmental problems. As ecological modernization is techno-centric, relying heavily on scientific research and technical expertise to develop new technologies that will enable environment friendly economic growth. [53] Development of Solar power in the vast Sahara desert can produce enough power to supply current global energy need. The greatest obstacle to mounting solar array in north Africa is reluctance of Europe to cooperate with African countries.[54]

ii. Government shape markets, innovation contexts, political visions and legitimacy through the policies that they enact. Given the scale and speed of change required to address climate change. The direct government action for example to pump money in to it like replacement of DTC diesel buses with CNG buses in Delhi is a major step to cut down the SO2 concentration in air in Delhi beyond the safe limit as set by World Health Organization. In the same way government should popularize and support the use of clean technologies for development.

iii. Vehicles-A major cause of air pollution national capital should be used judicially meaning there by that the public should be motivated to make more use public transport. The concept of shared taxis, pool cars, use of fuel efficient vehicles, bicycles, CNG vehicles, big carriers and big trucks should be popularizes to reduced vehicular movement on the roads of Delhi especially in winters.

iv. Those farmers who have already been sensitized to refrain from burning residue, should be given options such as biomass generation. Unfortunately, at present, only 20% of straw is managed through biomass power plants, paper and cardboard mills. There is an urgent need that the government should use geospatial techniques to identify areas where stubble burning is severe and encourage installation of biomass plants at such locations. Supreme Court of India has given directives to the governments of neighboring states of Delhi to give economic incentives to farmers for not burning their agricultural waste in their fields. The farmer should be encouraged and incentivized to sell the residual for additional income. The residual, indeed, has uses such as in paper, cardboard and packing material making and also hydro seeding. The state should provide agro machines and other equipment, including mulchers and choppers at susidised rates

v. If the state provides an application based support system, to rent out factors and farm implements and earn additional income, it would be cause to "Modernization of Agriculture".

There is an encouraging examples in this regards such as in Rajasthan, Madhya Pradesh, Uttar Pradesh and Bihar. It would not only curb stubble burning but at the same time make farming more mechanized, cost effective and a source of employment. So we would not only be able to control air pollution level but would also contribute agriculture and employment.

vi. Current energy need of Delhi should be shifted from traditional organic resources to non-conventional resources through the development alternate technologies which is certainly more expensive to install than their existing counterparts. For this purpose government has to subsidize these non-polluting technologies.

vii. Pollution hot spots approach may be used in Delhi to curb current level pollution. In this way we can identify the most polluted areas of Delhi and can put our efforts in those areas.

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ABBREVATIONS

NEPA	National Environmental Protection Authority
UNEP	United Nation Environmental Programme
FSI	Forest Survey of India
Mo EF	Ministry of Environment and Forest
ENVIS	Environment Information System Portal
Mo EFCC	Ministry of Environment, Forest and Climatic Change
CPCB	Central pollution Control Board
EPCA	Environmental Pollution Control Authority
CNG	Compressed Natural Gas
SO2	Sulphur di Oxide
NCAP	National Clean Air Programme
NGT	National Green Tribunal
IITM	Indian Institute of Tropical Meteorology