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EDITORIAL

The Editorial Board is proud to present the fifth volume of the Environment Law and Practice Review, a culmination of contributions from students as well as from scholars on invite and solicitation. This volume covers a wide range of issues focusing primarily on the Indian subcontinent.

The first paper by Anasuya Syam and Sushma Sosha Philip titled "Investigating Interlinking: A Critique of India's National River Linking Plan" critiques India's National River Linking Project, an idea conceived in the 1980s. The aim of the Plan is to alleviate the hurdle of water scarcity in order to aid India's primary economic sector. This paper discusses the support that the plan has received from the Supreme Court of India even though the plan would violate established principles of customary international law.

Moving on to the ever-pressing issue of air pollution which has garnered increasing alarm in recent times especially in the Indian metropolitan cities, we present the second paper of the journal titled "Economic Aspiration, Polluted Respiration: Story of Developing India" by Jonnavithula Gayatri Anugha and Ujwal Prabhakar Nandekar. This paper analyzes the policy trade off that the Union Government faces between sustainable economic growth and tackling the degradation of air quality. The authors who present an exhaustive research methodology have also extensively engaged with the existing legislative framework.

Written from a policy perspective, Aditya Thakur and Kashish Sinha's paper titled "Permissibility of Exercise of Suo-Motu Powers by the National Green Tribunal" questions the source of the National Green Tribunal's power in light of other statutory provisions. This paper engages with the fact that the issue had resulted in the Madras High Court preventing the NGT from taking up cases suo moto.

The fourth paper, written by Saumya Chaudhari "Indian 'Redd+' Readiness: The Inclusive Climate Change Combat" takes the form of a stakeholder analysis and discusses the inclusion of indigenous populations in the inclusive climate change combat. The author traces the present position and impact of development in this arena and analyses the prospects of a successful participatory REDD+ programme in India.

Following a similar theme, Utkarsh Mishra's paper titled "Balancing the Cultural Rights of Indgenous Communities against the Goal of Sustainable Development of Species

Protection" deals with the need to harmonize the differences between the indigenous population and the conservation of biodiversity so as to minimize the destruction that is caused to the species population while providing space to the indigenous people to practice their culture. The author then discusses the potential solutions that the Government may adopt to resolve this conundrum.

The sixth paper of the journal, titled "Atmospheric Trust Litigation- the Tool of Public Trust in Climate Concerns" written by Pranahita Srinivas discusses Atmospheric Trust Litigation as an opportunity to bring about a greater change than the glacial multilateral agreements such as the Paris Climate Change Agreement. The Public Trust Doctrine (PTD) is discussed in great lengths in order to provide support for the use of ATL as an interventionist approach to climate change issues.

The penultimate paper of this volume, titled "Conservation of Ganga River- Is Public Participation the Key?" written by Pranav Awasthi systematically pieces together an argument for public participation as a means to preserve the Ganga river in light of failed attempts both by the Executive and the Judiciary. This paper, in addition to outlining the gravity of the issue itself, lays down specific recommendations such as the establishment of Ganga Panchayats in order to ensure local participation.

The final piece of this volume titled "Regulation of Agricultural Biotechnology in India: Environmental Law & other Policy Considerations" written by Debanshu Khettry and Sreenivasulu N.S., deals with the relevance of agricultural biotechnology to the Indian agriculture sector, in light of the need for infusion of new technology to keep pace with the increasing population of the country. The paper engages with the conflict between the potential of biotechnology to revive and enhance agricultural production and the environmental risks it may pose. The existing and proposed legal and regulatory mechanisms in India are also critically analyzed with aid from relevant case studies.

We would like to express its gratitude to the Chief Patron and the Advisory Board of the journal for their continuous support towards the publication of this volume. The Board is also indebted to Professor N. Vasanthi, Professor Aruna Venkat, Udai Singh, Nastassia Khurana, Lakshmi Venkataraman, Dipankar Krishna Das, Ravishankar Krishnan and Preeti Kolluri for their help and assistance towards this publication.

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Articles

INVESTIGATING INTERLINKING: A CRITIQUE OF INDIA'S NATIONAL RIVER LINKING PLAN

Anasuya Syam and Sushma Sosha Philip [*]

Abstract

The National River Linking Project (NRLP) has been the subject of much of hype and attention in recent times. Conceived formally in the 1980s, it is viewed by some as a means to save India from the scourge of water scarcity and as a long term solution to address the water needs of over a billion people and counting. It proposes to link water rich areas with water deficit areas, ignoring the ecological, social, environmental and legal impact of such a step. Almost all the major peninsular and Himalayan rivers have been included in the project, creating discord between not just states, but also between the Centre and the states, and more importantly, between India and its neighbouring countries such as Bangladesh and Nepal. Some of the rivers included are transboundary rivers, which if linked, will be catastrophic to our downstream neighbours. This would be in gross violation of established principles of customary international law, multilateral agreements and bilateral treaty obligations. Even within our national legal framework, there are intractable complications with respect to the authority of the centre to direct states to link exclusively intra-state rivers. However, the plan has received backing from the Supreme Court of India. The apex court has in fact, recommended its expeditious implementation. It is at this juncture, that the subject assumes importance and needs detailed scrutiny. It has already received flak from scientists, various state governments, scholars and the civil society for being too unrealistic and short sighted, drawing not only from the aforementioned legal hurdles and potential environmental damage, but also the experiences in linking rivers around the world.

INTRODUCTION

Wild rivers are earth's renegades, defying gravity, dancing to their own tunes, resisting the authority of humans, always chipping away, and eventually always winning.

-Richard Bangs, River Gods

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The scarcity of freshwater poses a seemingly insurmountable problem to India's burgeoning population of over 1.2 billion people. The existing resources are overstressed or pollu ted, making them almost unsuitable for human use and consumption. Presently, much of the debate revolves around core questions surrounding sustainability vis-à-vis the need for mega projects catering to the need of an increasing population. The proposal to link India's rivers has come at a time when the chronic problem of water scarcity looms large. Linking rivers has been proposed as a long term solution to address this scarcity. The National River Linking Project (NRLP) or the National Perspective Plan as it is known, envisions a large scale engineering project, aimed at transferring water from 'surplus' basins marked by flooding to water 'deficit' basins characterized by droughts.

The concept of river-linking is not new. In fact, variations of such a plan have been doing the rounds for many years now. It is believed that Sir Arthur Cotton first conceived of such an idea more than a century ago, with a focus on the navigational aspects of rivers and trade facilitation in colonial India.[1] In the 1970s, K.L Rao, the then Minister for Irrigation proposed to link the northern Ganga (Ganges) River with the southern Cauvery River. Later, Captain Dastur reinvented the concept of interlinking with his proposal of 'garland' canals linking Brahmaputra and Ravi to the Himalayan canal. Both these proposals were rejected due to high costs, energy requirements and technical non-feasibility.[2]

The idea of transferring water from one region to another took definite shape in the 'National Perspective Plan' of 1980 formulated by the Ministry of Water Resources. The National Water Development Agency (NWDA) was set up under the plan to identify the links and investigate its feasibility. There are three components to the plan – A Himalayan component comprising of 14 links, a southern peninsular component with 16 links and an intra-state rivers component.[3] The first component involves two of the largest rivers and the lifeline of millions of people across India and Bangladesh – the transboundary Ganges and Brahmaputra.[4]

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[1]Monirul Q. Mirza & Qazi K. Ahmad, *Interlinking of Rivers in India in* INTERLINKING OF RIVERS IN INDIA: ISSUES AND CONCERNS 1, 11-15 (Monirul Q. Mirza et al. eds., 2008).
[2]*Id* at 5.
[3]MINISTRY OF WATER RESOURCES, INTERLINKING OF RIVERS (2012).
[4]Shwakat Alam, *An Examination of the International Environmental Law Governing the Proposed Indian River-Linking Project and an Appraisal of Its Ecological and Socio-Economic Implications for Lower Riparian Countries,* 19 Geo. Int'.l Envt'l. L. Rev. 210, 211-218 (2007).

In 2002, the plan received a fresh lease of life after it found a mention in a speech by the then President Dr A.P.J. Abdul Kalam. This inspired an application to the Supreme Court requesting an order on the matter; which was later converted into a writ petition. Subsequently, the apex court directed the Central Government to initiate work on the major rivers of the country.[5] The authority of the court to decide such a matter has been questioned, since it is a matter of policy and hence, the exclusive domain of the executive.[6] Despite the ruling, the United Progressive Alliance (hereinafter UPA) government was wary of the very idea, with the then Environment Minister Jairam Ramesh calling it a disaster in the making.[7] At the end of the day, the UPA government had to put the issue in cold storage due to frequent run in with state governments. While several governments have toyed with the idea before shelving it (including the Atal Bihari Vajpayee-led National Democratic Alliance which was a strong advocate of the same), the Modi government considers it as an engineering panacea that can be executed; an answer to the nation's water woes.[8]

Though the main purpose of this project is to mitigate droughts and floods and bring water to dry areas, it is seen more as a superficial 'fix' than a viable long term solution. The proposal fails to address the larger malaise i.e., the unsustainable use of the existing resources. Many of the much-touted objectives, though laudable, are far removed from the consequences and reach of the project.[9] The project also faces criticism from various states in India and has many legal hurdles to cross before it can be realized. However, in 2012, the Supreme Court called for all states to co-operate with the others to implement the plan, adding that national interest must take precedence over individual states' interests.[10] This has effectively paved the way for central hegemony over water resource management.

By analysing the results of interlinking projects around the world in Part I, this paper seeks to examine in detail, the environmental, economic and social consequences of the project, and makes a case against interlinking of rivers. Part II of this paper deals with the legal

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[5]Writ Petition (Civil) No. 512/2002

[6]Ramaswamy R. Iyer, R*iver-Linking Project: A Disquieting Judgment*, ECONOMIC AND POLITICAL WEEKLY, April 4, 2012, at 33.

[7]*Interlinking of Rivers Buried, Jairam says idea a Disaster*, THE INDIAN EXPRESS (Oct. 6, 2009),http://indianexpress.com/article/news-archive/web/interlinking-of-rivers-buried-jairam-says-idea-a-disaster/

[8]Parvathy Binoy, *Mr. Modi's Disconnect*, THE HINDU (August 14, 2014), http://www.thehindu.com/opinion/lead/mr-modis-river-disconnect/article6313925.ece

[9]Shekhar Singh, *Linking of Rivers: Submission to Prime Minister*, ECONOMIC AND POLITICAL WEEKLY, Oct.4, 2003, at 4278, 4279.

[10]*In re*, Networking of Rivers, 2012(3) SCALE 74 paras 52, 53

implications of the Networking of Rivers Plan in India, while Part III examines the international/multilateral and bilateral legal implications of the project. Part IV of this paper speculates on the effects interlinking will have on India's neighbours. In conclusion, though the NRLP was put in motion in 2015, there is still an opportunity to put a stop to this project on grounds of viable alternatives that have been identified to address the water scarcity problems in the nation.

PART I - A BRIEF STUDY OF THE EFFECTS OF VARIOUS INTERLINKING PROJECTS AROUND THE WORLD

The idea to provide water-scarce regions with water from areas with surplus water is by no means an original one with respect to India. As early as 1957, Inter-Basin Water Transfer projects have been implemented in America and elsewhere in the world and, while in many cases, the water availability in such areas has improved, the idea of solving both problems of flooding and drought in one fell swoop has not panned out in the expected manner.

Inter-Basin Water Transfer projects are large scale undertakings. Thus, the damage which, in most cases is massive can only be contained, not reversed. The repercussions of interlinking can be felt on environmental, social and economic fronts. Studying the effects of interlinking projects in various countries that have tried implementing this scheme, will provide a clear picture of what can be expected in India as well, if this plan is followed through.

Environmental Effects:

The instances where projects altering river systems have resulted in massive damage to the fragile riverine ecosystems are unfortunately, numerous. During the construction of the Suez Canal, certain fish species endemic to the Red Sea found their way into the eastern Mediterranean Sea. As a result, the local species of marine life were displaced leading to an imbalance in the fragile marine ecosystem of the area.[11]

In Europe, a prime example of an interlinking project where the costs far outweighed the benefits was the proposed diversion of the Acheloos River in Greece. The scheme was touted to be for the benefit of the national economy. However, the environmental damage wrought

[11]Sharada Balasubramanian, *Interlinking of Rivers – Boon or Bane?* 6 TERRA GREEN 26, 30 (2013), http://www.teriin.org/pdf/TG_Nov2013.pdf.

by this project, was found to be irreversible. Though a multitude of decisions of the Council of State of Greece declared the project to be illegal on grounds of violation of Greek and EU legislations on water management, the diversion was high on the Greek political agenda and the project was declared legal in July 2006 as it was a plan of "national importance". This was used to bypass the legal obstacle of the Council's rulings.[12] However, after stiff public opposition, the project was put on hold[13] and in 2014, after a 20-year long battle, the Greek Council of States put an end to the controversial diversion project believing that it violated the principle of sustainable development.[14]

In Canada, apart from the more striking environmental effects of interlinking[15], a case-by-case study also revealed that clogging of secondary drains was one of the backlashes of interlinking of rivers, thus aggravating the problem of flooding.[16] Following these studies, a number of inter-basin water transfer projects have been suspended by the Canadian Government, like the McGregor Diversion project in British Columbia, 1978. In some cases, projects were even cancelled and legislations such as British Columbia's Water Protection Act, 1995, which safeguards against further damage caused due to water diversion were passed.[17]

In the East, the Korean Grand Canal Project, which aimed at canalizing 3,134 km of the Korean peninsula's rivers, was suspended in the June of 2008, mainly due to the environmental concerns that arose with reference to this project such as the impact on Ramsar Sites[18] and the coastal ecosystem.[19] Taking these factors into consideration, the Central Government suspended the project and its cancellation is being lobbied for.

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[12]WWF, *Pipedreams? Interbasin water transfers and water shortages Case study 4 Acheloos Diversion, Greece*, GLOBAL FRESHWATER PROGRAMME 17, 17 (2007), https://www.wwf.or.jp/activities/lib/pdf_freshwater/freshwater/pipedreams_27_june_2007_1.pdf.

[13]*Court keeps Acheloos River diversion on hold*, EKATHIMERINI, (March 2, 2011), http://www.ekathimerini.com/4dcgi/_w_articles_wsite1_1_02/03/2011_380861.

[14]AdéaGuillot, *EnGrèce, le fiasco écologique du projet de dérivation du fleuveAchéloos (In Greece, the ecological fiasco diversion project of the river Achelous)*, M PLANETE, (May 3, 2014), http://www.lemonde.fr/planete/article/2014/03/05/en-grece-le-fiasco-ecologique-du-projet-de-derivation-du-fleuve-acheloos_4377807_3244.html#.

[15]Deepak Kumar Das, *Environmental Impact of Inter-Basin Water Transfer Projects: Some Evidence from Canada*, 41 ECONOMICS AND POLITICAL WEEKLY 1703, 1703-1707 (2006), http://www.jstor.org/stable/4418149?seq=3#page_scan_tab_contents.

[16]*Id.* at 1705.

[17]Das, *Supra* note 15 at 1706.

[18]Nial Moores, *The Korean Grand Canal: another huge threat to the region's wetlands and waterbirds,* 10 Birding ASIA, 48, 51 (2008), http://orientalbirdclub.org/wp-content/uploads/2012/11/moores-koreancanal.pdf.

[19]*Id.* at 51-53.

In Pakistan and India, diversions on the Indus River and its tributaries have reduced the water outflow into the Arabian Sea by a considerable amount. This, in turn, has resulted in the destruction of the deltaic mangrove forests endemic to this region[20].

For India, being home to multiple endangered species of flora and fauna, perhaps it would be prudent to take a leaf out of both the Canadian and Korean Governments' administration system and nip the river linking project in the bud.

Economic Implications:

An apt method for ascertaining the efficiency of interlinking rivers is a benefit-cost analysis of the project.[21] It must be analysed whether the benefits that are claimed to result from interlinking will outweigh the costs. In many cases, it was not just the environmental factors that acted as a deterrent to the proposition of inter-basin water transfers. Once more, Greece's Acheloos scheme can be cited as an example. Though the economic arguments were in favour of this scheme initially, Greece underwent a massive financial crisis after the proposal of this scheme. As early as 1988, the Ministry of National Economy commissioned Morgan Grenfell to perform a cost benefit analysis on the project. This study concluded that even assuming that the tight schedules then proposed were met, the financial viability of the project was marginal.[22]

The interlinking project proposed in India is estimated to cost up to Rs. 11 lakh crores[23] which a sum far exceeding even China's South-North Water Transfer (SNWT) project, another large-scale water transfer project. Thus, it is imperative that the cost-benefit analysis of the project in India be done immediately, because, if a project which requires such huge expenditure does not benefit the public as expected, there will be no way to recover from the loss.

Social Effects:

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[20]Balasubramanian, *Supra* note 11 at 31.

[21]Bruce R. Beattie, Emery N. Castle, William G. Brown and Wade Griffin, *Economic Consequences of Interbasin Water Transfer,* 8 AGRICULTURAL EXPERIMENT STATION OREGON STATE UNIVERSITY CORVALLIS TECHNICAL BULLETIN 116 (1971), http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/8859/tec_bul_116.pdf?sequence=1.

[22]*Acheloos River Diversion Project, Greece,* WATER-TECHNOLOGY.NET (Mar. 24, 2015), http://www.water-technology.net/projects/acheloos/

[23]G Seetharaman, *Will Government's grand plan to link 37 rivers be nothing more than wishful thinking?,* THE ECONOMIC TIMES, (Oct. 4, 2015), http://economictimes.indiatimes.com/news/economy/infrastructure/will-governments-grand-plan-to-link-37-rivers-be-nothing-more-than-wishful-thinking/articleshow/49208462.cms

Generally, large projects such as interlinking of rivers require mass construction of dams, canals and reservoirs. These structures cannot be built in urban areas, thus forests and lesser populated rural areas are sacrificed as in the case of inter-basin water transfers in Canada which detrimentally affected the country's native population.[24]

Another case significant to India is Australia's Snowy River Scheme of 1884. Here, the plan was to divert the water of the Snowy River into the Murray River basin. Initially, the transfer yielded substantial economic benefit. But the subsequent environmental damage to the Snowy River was unprecedented. By this time, however, the community around the Murray River had become dependent on the water from the Snowy. A compromise was arrived at in 2002 where the minimum amount of water required to undo the damage in the Snowy was allowed to flow[25] resulting in a dent in the country's exchequer. This case demonstrates the consequences of attempting to reverse the damage caused by interlinking of rivers once the recipient community has become totally dependent on the water availability due to interlinking.

In summary, river linking projects world over have led to more harm than good and a fair number of them have cause substantial destruction. India must take these cases and their results into careful consideration while undertaking this national scheme.

PART II – NATIONAL LEGAL IMPLICATIONS OF THE NRLP

The national river linking project seeks to 'centralize' most rivers within India, irrespective of whether they are inter-state or intra-state. For this to happen, parliament will have to come up with an all pervasive legislation, authorizing the same. Only inter-state rivers are within the purview of the Parliament. Even otherwise, usurping the domain of the states through an executive order will be tantamount to shaking firmly established constitutional principles. Consequently, this project goes to the very root of our federal design and has far-reaching implications. Many states have already expressed their disagreement with the proposed links. For example, the Kerala Assembly passed a resolution rejecting those links which involve its rivers. The Government of Odisha was also not agreeable to a few of the links proposed due to the potential large scale submergence of certain areas within its territory. Even the state of

[24]Das, *Supra* note 21 at 1706-1707.
[25]WWF, *Supra* note 12, at 11.

Karnataka wants to deal with its purely intra-state Netravati river as per its wishes, detracting from the national plan.[26]

It is well established that sharing of powers between the Centre and the States is the corner stone of any federal set up. A federal constitution involves a distribution of legislative powers between the Union and the States, each being supreme and sovereign in its own sphere. Article 246 is the source of this division of powers. Article 246(3) confers exclusive power on the States to make laws with respect to matters enumerated under List II. Broadly, it can be said that the Union List (List I) concerns itself with matters of national importance, while the State List (List II) concerns itself with matters of local significance. Entry 17[27] of List II grants power to the States to legislate on the subject of water. The only limitation placed on this power is with respect to regulation and distribution of inter-State rivers, over which the Union has powers to legislate vide Entry 56[28](List I) to the extent to which such regulation and development is declared by the Parliament by law to be expedient in public interest.

Moreover, as regards water located entirely within a State, power for its beneficial use is vested exclusively in the State legislatures. Water flowing through each state is a valuable asset for that State, and, like land, in its territory, it is a matter of vital local concern. It can never be said that matters like land, irrigation and water are of national concern, and hence should be included in the Union List. If this were the case, the framers would have adopted a unitary and not Federal form of government.[29] Prof Wheare, an authority on Federalism, opines that the principle of one economic life is not recognized in Federal countries as far as the allocation of governmental powers is concerned.[30] "The legal and political pluralism of the federations is imposed on the alleged unity of economic affairs." Each State has its own consideration in planning, management and use of its water resources which vary from region to region and State to State. National interest, rather, requires that the States should be left to manage their water. Water problems are always local in nature and therefore, they need local solutions. State governments are vested with the Constitutional right to plan, implement,

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[26] MINISTRY OF WATER RESOURCES, INTERLINKING OF RIVERS (2014).

[27]INDIA CONST.VIIth Schedule.Entry 17.List II. –" Water, that is to say, water supplies, irrigation, and canals, drainage and embankments, water storage and water power, subject to Entry 56 List I".

[28]INDIA CONST.VIIth Schedule.Entry 56.List I. –" Regulation and development of inter-state rivers and river valleys to the extent to which such regulation and development under the control of the Union are declared by the parliament by law to be expedient in the public interest"

[29] 3 H.M.SEERVAI, CONSTITUTIONAL LAW OF INDIA, 3242,3245(4th ed., Universal Law Publishing Co. Pvt. Ltd. 1996)

[30]K.C. WHEARE, FEDERAL GOVERNMENT, 127 (4th ed., 1963)

operate and maintain water supply projects. In *Bommai*[31], the judges observed that federalism is a basic structure of the Constitution; within the spheres allotted to the states, the states are supreme and are not mere appendages of the centre.

The *Sarkaria Commission Report* on Centre-State Relations has also categorically stated that the Constitution did not place regulation and development of waters of inter-State rivers and river valleys in List I, but only provided that the Parliament may declare by law that control of waters of inter-State rivers or river valleys is expedient in public interest for development. This arrangement is in consonance with the principle underlying the Constitutional scheme of distribution of powers. States have exclusive powers in respect of waters which are not part of inter-State rivers and are located within the territory of a State. Any derogation from this, would therefore amount to a clear violation of explicit Constitutional arrangements.[32] The *second commission on Centre-State Relations* was also of the same view; good governance calls for decentralization because of the variety of local problems and solutions, especially in the case of water.[33]

In fact, the trend in decentralization when it comes to water is evident by the enactment of the 74th Constitutional Amendment Act, 1994. It gave the urban and rural bodies the responsibility of water management and supply for domestic as well as commercial purposes.[34] Thus, interference of the Centre in the matter of linking intra-State rivers does not bode well for the trend of decentralization of power, so far followed in India.

PART III - INTERNATIONAL LEGAL IMPLICATIONS OF INTERLINKING OF RIVERS

The National River Linking Plan cannot be viewed in isolation as an internal matter without transboundary implications. Transboundary rivers, of which there are an abundance in India, are 'international' rivers. i.e., shared by two or more states, and hence, their utilization must be governed by international norms. International law has conventionally regulated these resources indirectly, by determining the grounds on which rights have to be distributed between the various stakeholders (states). The legal status of the resource varies according to whether the resource is under the sovereignty of one state, shared by several states or held in common benefit for all; this has an impact on the right to exploit and to what extent it can be

[31]Bommai v. Union of India, A.I.R. 1994 S.C. 1918.
[32]7 *Inter-state Water Disputes*, 1st Commission on Centre-State Relations Report, 489 (1987).
[33]6 *Environment, Natural Resources and Infrastructure*, 2nd Commission on Centre-State Relations Report, 43 (2010).
[34]INDIA CONST.12th Schedule.Item 5. "water supply for domestic, industrial and, commercial purposes"

done. The interdependence of States sharing an international watercourse has been eloquently stated by John Kraska:

International drainage basins link riparian states into a common and interdependent freshwater system that connects the agriculture, industry, energy, and transportation sectors into an integrated regional unit. Action by one riparian may affect the quantity and quality of river water available to neighbouring states, imposing direct costs on other states in the basin. Basin nations share not just a river, but an entire ecosphere. Consequently, the potential for conflict, and the possibility of compromise and cooperation, exist side by side.[35]

The primary international legal instrument on the topic is 'The Convention on the Law of the Non-navigational Uses of International Watercourses 1997' (hereafter the UN Water Convention). However, this convention came into force only on 17th August 2014. It represents the first global legal framework for cooperation over water resources between countries. India has not ratified the convention whereas Bangladesh has.

Eons ago, Hugo Grotius propounded the notion of absolute territorial sovereignty over natural resources; a notion, which has lost meaning today, politically and legally. He said that a river is the property of the people through whose territory it flows, or the ruler under whose sway those people are.[36] This was also the defence powerful upper riparians invoked when exclusively appropriating watercourses in their territory. A classic example is the *Harmon Doctrine*, which was used to justify the U.S diversion of Rio Grande water in 1895, leaving hardly any water for the downstream state of Mexico.[37] However, later on, the U.S Secretary of State went ahead and negotiated a treaty with Mexico based on equitable sharing principles. Similarly India, at one point did assert its full freedom to draw off such waters as it needed from the Indus, but eventually the treaty that was concluded is said to have effected

[35]James Kraska, *Sustainable Development Is Security: The Role of Transboundary River Agreements as a Confidence Building Measure (CBM) in South Asia*, 28 YALE J. INT'L L. 465, 581 (2003).
[36]HUGO GROTIUS ON THE LAW OF WAR AND PEACE 99 (Stephen Neff ed., Student Edition, Cambridge Univ. Press 2012) (1625)
[37]M.M Salman, *The Helsinki Rules, the UN Watercourses Convention and the Berlin Rules: Perspectives on International Water Law*, 23 Water Resources Development, 625–640, (December, 2007), http://www.internationalwaterlaw.org/bibliography/articles/general/Salman-BerlinRules.pdf
Also see INTERNATIONAL ENVIRONMENTAL LAW AND POLICY FOR THE 21STCENTURY 294 (Ved Nanda, George Pring and Don C Smith eds., 2013)

equitable apportionment of waters.[38] Concluding treaties[39] on equitable principles became the practice among states, in resolving disputes relating to sharing of water resources.

Similarly, the principle of absolute territorial integrity or the right of a lower riparian to the continuous natural flow of a river from an upper riparian (as distinct from absolute sovereignty) has also fallen out of favour, though a few still argue that it has a place in common law water rights.[40]

Grotius's view and the Harmon doctrine have both now been relegated to archaic positions and are not considered a part of contemporary international law.[41] Principles of good neighbourliness and equitable use dominate the discourse on water law today. The UN fosters respect among different states with a view to establish friendly relations among them all. The general principle of good neighbourliness has been incorporated under Article 4 of the Charter. All UN members "pledge" themselves in Article 56 of the Charter to attain this objective through individual and collective efforts. This entails legal obligations for UN member states.[42] The 1972 Stockholm conference reiterates this by declaring that states while exploiting the resources in their territory have to ensure that it does not detrimentally affect or cause damage to the environment of other states or of areas beyond the limits of national jurisdiction.[43] This essentially translates into a restricted sovereignty approach to the question of water resources within a state's territory. The Rio Summit in 1992 and the Convention on Biodiversity emphasizes the need to ensure responsible appropriation of natural resources and also embodies the obligation not to cause harm.[44]

The orthodox Westphalian notion of sovereignty has given way to the theory of limited territorial sovereignty. This has shaped much of the discourse on transboundary resource management today. It respects the rights of both upstream and downstream states, recognizing the right of reasonable use by the upstream country within context and limits of

[38]Indus Water Treaty, 1960, http://wrmin.nic.in/forms/list.aspx?lid=346
[39]*Legal Aspects of the Hydro-Electric Development of Rivers and Lakes of Common Interests*, U.N. Doc. E/ECE/136.49, 1952.
[40]Abu Khalid, *The Interlinking of Rivers Project in India and International Water Law*: *An Overview*,3 Chinese J. of Intl. Law, 563 (2004).
[41]Stephen McCaffrey, *The Harmon Doctrine 100 Years Later: Buried, Not Praised,* 36 Natural Resources Journal, 549 (1996), http://lawschool.unm.edu/nrj/volumes/36/4/13_mccaffrey_harmon.pdf
[42]Alam, *Supra* note 4, at 218.
[43]Report of the United Nations Conference on the Human Environment, Stockholm, Action Taken by the Conference, 4, U.N. Doc.A/CONF.48/14/Rev. 1 (1973).
[44]Rio Declaration on Environment and Development, Principles 2,13,14 & 24, *adopted on* June 14, 1992, 31 I.L.M. 874.

equitable use by all co-riparians.[45] The Roman proverb *sicutero tuo ut alienum non laedas*, meaning use your own so as to not injure another, gave rise to a fundamental concept in international law. A state is not to use its territory to the detriment of another state. The UN Water Convention embodies the principle of "no significant harm" in Article 7. Historically, disputes have hinged on this point. In 1974, the International Court of Justice (hereinafter the ICJ) asked France not to carry out its atmospheric nuclear testing in the Pacific in a manner that caused the radio-active fall-out in the territory of Australia.[46]. Another seminal case on the point is the *Corfu Channel case* between Great Britain and Albania in 1949, in which the world court held that "every State has an obligation not to knowingly allow its territory to be used for acts contrary to the rights of other States."[47]

Equitable use is another important concept when it comes to international water treaties. The traditional exposition of equitable use can be found in the International Law Associations' Helsinki Rules on Uses of Water for International Rivers (Helsinki Rules), and later expressed in Article 5 of the UN Water Convention which states that Watercourse States shall in their respective territories utilize an international watercourse in an equitable and reasonable manner. In particular, an international watercourse shall be used and developed by watercourse States with a view to attaining optimal and sustainable utilization thereof and benefits therefrom, taking into account the interests of the Watercourse States concerned, consistent with adequate protection of the watercourse and the 2004 Berlin Rules on Water Resources. Article V of the Helsinki Rules specifies certain factors or conditions to determine what constitutes an equitable use. These factors include climate, geography, and hydrology of the basin, past and present uses of the waters, economic and social needs of each basin state, population dependent on the waters of the basin in each basin state, cost of alternative means, availability of other resources, avoidance of unnecessary waste, and the practicability of any artificial structures made on a part of the basin and compensation as a means of settling disputes between states. In 2004, the Helsinki Rules were superseded by the Berlin Rules on Water Resources (hereinafter the Berlin Rules). Article 12 of the Berlin rules mentions: *"Basin States shall in their respective territories manage the waters of an international drainage basin in an equitable manner having due regard for the obligation not to cause significant harm to other basin States".* While the Helsinki Rules and the UN Water

[45]M.M. Rahamann, *Principles of international water law: Creating Effective Transboundary Water Resources Management*, 3 Int. J. Sustainable Society, 210 (2009).
[46]Nuclear Tests Case, (France v. Aus.), Interim Protection Order, 1973 I.C.J. Rep. 99 (June 22).
[47]Corfu Channel Case (U.K. vs. Alb.), Judgment (Merits), 1949 I.C.J. Rep. 4 (April 9).

convention allow for a positive assertion of the right to reasonable and equitable use, the Berlin Rules encompass an 'obligation' on each basin state to manage its water equitably.[48]

This basic principle enjoys recognition in judicial decisions, state practice and international legal instruments. The earliest case on the subject is the *River Oder* case, in which the Permanent Court of International Justice upheld the rights of lower riparians to navigate in the Polish waters upstream; it was based on equality of rights over the navigable course of the river.[49] It noted that the community of interest in a navigable river is the heart of a common legal right, of which essential features are equality of all riparians in the course of a river and the exclusion of any preferential privileges of any riparian state in relation to others. Though this decision was restricted to navigation, the principle on which the case was decided applies to other rights including utilization of river water.

A more coherent expression of this principle was found in the *Lac Lanoux Arbitration* case, where, the tribunal recognized that France had an obligation to consult Spain before undertaking diversion works, to safeguard her rights in the watercourse.[50] To sum up, the sovereignty of a state over its rivers is qualified by the co-relative rights of a co-riparian; it is a part and parcel of the corpus of contemporary international environmental law. Significant in this regard is the ICJ's endorsement of reasonable use and equitable utilization in the *Gabcikovo-Nagymaros Project*[51] case. A dispute arose between Hungary and Czechoslovakia concerning their bilateral treaty on the construction of certain projects on the Danube, which were to be undertaken by both parties individually, at their own expense. Unilateral cessation of the project undertaken by Hungary and a unilateral implementation of a part of the project by Czechoslovakia resulted in diminished flow of the Danube towards Hungary (lower riparian.) The court admonished the two states for their respective treaty violations and more importantly, enunciated Hungary's basic right to equitable and reasonable share of the natural resources of the Danube which was unilaterally controlled by Czechoslovakia. Relying on the relevant provisions of the UN Water Convention, the court awarded compensation to Hungary for the damage sustained as a result of the diversion of the Danube which led to Hungary being deprived of its rightful part in the shared watercourse.[52] Normally, these

[48] Salman, *Supra* note 37 at 633.
[49]Territorial Jurisdiction of Int'l Comm'n of River Oder (U.K. v. Pol.), Judgment, 1929 P.C.I.J. (ser. A) No. 23(Aug.29).
[50]Affaire du Lac Lanoux (Fr. v. Spain), Judgment, 24 Int'l. L. Rep. 101 (Nov. 16)
[51]Case Concerning the Gabcikovo-Nagymaros Project (Hung. v. Slovak.) Judgment, 1997 I.C.J. 7 (Sept.25).
[52]*Id* at paras 85, 152

decisions are not binding on other states, nevertheless, they may be used as a source of international law being a "general principle of law" under Article 38(1)(c) of the Statute of the ICJ, and important in identifying the principles which have attained the status of customary international law.

Another important pitfall in this project is the lack of consultation, dialogue and cooperation between India and the interested parties from its inception. There are numerous procedural requirements that a riparian has to follow before going ahead with a project affecting an international basin. It is the responsibility of such a state to co-operate and exchange data and information on the state of the transboundary watercourses, including future appropriation/development projects affecting it. The U.N Water Convention makes these measures obligatory on member states; Article 8(1) requires states to cooperate for the optimal utilisation and adequate protection of the international watercourses. Article 8 (2) encourages the riparian countries to establish joint mechanisms to facilitate cooperation. Article 26(2) requires states to enter into consultation in case any installations, facilities and other works related to an international watercourse, causes or poses to cause significant adverse effects to watercourse states. The Berlin Rules also expound on these customary norms of international law. For example, it acknowledges that a co-riparian is entitled to receive prior notice and engage in consultation and negotiation in a situation that affects its rights or interests.[53]

PART IV - TRANSBOUNDARY EFFECTS OF INTERLINKING

Apart from the general principles of international law, certain bilateral treaties also apply to India's grandiose project. The Himalayan component of the plan involves two of the largest rivers in South Asia; the Ganges and the Brahmaputra. Entire nations depend on these transboundary rivers for their water and other livelihood needs. Nepal and Bangladesh, are the two countries which will be potentially most affected. Aside from the general effects of interlinking dealt with in Part I of this paper, India's neighbours have voiced certain other concerns which are elucidated in this part.

[53]Convention on the Law of the Non-Navigational Use of International Watercourses, art. 57, 58, 59 and 60 *adopted on* May 21, 1997 & *entered into force on* Aug.17, 2014, U.N.G.A. Res. 51/229

Prior relationships regarding the issue of water sharing between India and its neighbours will give some evidence as to how the National Interlinking of Rivers Project of India will be received by these countries.

Bangladesh is a nation characterized by its intricate river-system, with nearly 57 trans-boundary rivers.[54] The economy of Bangladesh, which is agriculture-dependent, relies on the 54 major rivers flowing through it. Agriculture comprises around 17.2% (2013 est.)[55] of the country's GDP and employs around 47%[56] of the total labour force (2010 est.), with rice – an extremely water intensive crops[57] - the single most important product. In addition to this, globally, Bangladesh has one of the least favourite river dependency ratios – 91.44%[58]. Thus any activity affecting the rivers flowing into Bangladesh, will not only affect its environment detrimentally, but may also destroy the economy of the country and lower the standard of living immensely.

Historically, Bangladesh has been at an unfair bargaining position with India. The latter was able to leverage its role as Bangladesh's 'knight in shining armour' during its independence struggle in 1971 to influence any negotiations that took place over the Farakka Barrage and other shared transboundary resources. In this backdrop, the Ganges Treaty was signed in 1996, effective for the next 30 years. It provided a method to share Ganges waters at Farakka in the dry season and limited the reduction of waters below the Farakka except when needed for reasonable use (Article III).[59] Moreover, an Indo-Bangladesh joint commission was established within the treaty framework to deal with disputes arising between the two States. The Commission, however, has been largely ineffectual, thus minimizing options for the Bangladeshi government to air its grievances.[60] *Prima facie,* it can be seen that the proposed project would be in violation of the 1996 Treaty in so far as it unilaterally goes ahead with the

[54]JOINT RIVERS COMMISSION, BANGLADESH, MINISTRY OF WATER RESOURCES, GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH (2016).
[55]BANGLADESH ECONOMY PROFILE, 2014, http://www.indexmundi.com/bangladesh/economy_profile.html
[56]*Ibid.*
[57]Jenna Watson, *Rice Most Water Intensive Crop Says Australian Stats Bureau*, TREEHUGGER.COM (May 20, 2015), http://www.treehugger.com/corporate-responsibility/rice-most-water-intensive-crop-says-australian-stats-bureau.html.
[58]AQUASTAT Survey, Irrigation in Southern and Eastern Asia in figures, (2011), http://www.fao.org/nr/water/aquastat/countries_regions/bgd/BGD-CP_eng.pdf.
[59] Khalid, *Supra* note 40 at 560.
[60]*Ibid*

project over other common rivers without concluding any agreements with Bangladesh and reduces water below Farakka, breaching Article III of the Treaty.[61]

Bangladesh is so concerned about the Indian project and the effect it will have on the nation that, at one point it considered approaching the United Nations to petition for concrete international legislations regarding water sharing.[62] The discontent of the nation and its concerns were aired as recently as 2012 when Imtiaz Ahmed in an article for EPW can be quoted to have stated, *"The Supreme Court's verdict directing the Government of India to implement the interlinking of rivers seems to have overlooked the regional and international implications of what the Indian Court strangely considers "the rivers of the country". Just Bangladesh shares 54 rivers with India. Any unilateral action by India on any of its international rivers will degrade its relations with its neighbours while also adversely affecting its ecology, economy and society."*[63]

To assuage Bangladesh's apprehensions, in a joint statement released during PM Modi's visit to Bangladesh in 2015, India assured that it would not take any unilateral decision regarding the Himalayan component of their River Interlinking Project which may affect Bangladesh.[64] However, with the Supreme Court ruling[65] in 2012, asking the Indian government to expedite the process of river linking, Bangladesh may have to garner support from the world community, especially Nepal, through diplomatic channels and put pressure on India to defer the implementation the project indefinitely.

Of the 14 Himalayan component links, 5 are Nepal-related links and would be of concern to Nepal.[66] At the very outset, it is to be noted that in the dry season, 75% of the Ganges flow comes from Nepal and hence, it has a crucial role to play in implementing this project.[67]As in

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[61]M. Rafiq Islam & Shawkat Alam, *Interlinking Of Rivers In India: International And Regional Legal Aspects, in* INTERLINKING OF RIVERS IN INDIA: ISSUES AND CONCERNS 219, 223 (M. Monirul Qader Mirza, Ahsan Uddin Ahmed & Q.K. Ahmad eds., 2008).

[62]John Vidal, *Troubled waters for Bangladesh as India presses on with plan to divert major rivers,* THE GUARDIAN (Jul. 24, 2003), http://www.theguardian.com/environment/2003/jul/24/water.india.

[63]Imtiaz Ahmed, *Teesta, Tipaimukh and River Linking - Danger to Bangladesh-India Relations*, 47, ECONOMICS AND POLITICAL WEEKLY 51, 51 (2012), http://www.epw.in/journal/2012/16/river-interlinking-uncategorised/teesta-tipaimukh-and-river-linking-danger.

[64] MINISTRY OF EXTERNAL AFFAIRS, GOVERNMENT OF INDIA, JOINT DECLARATION BETWEEN BANGLADESH AND INDIA DURING VISIT OF PRIME MINISTER OF INDIA TO BANGLADESH- *NOTUN PROJONMO – NAYI DISHA*,, (2015).

[65]*Supra* note 10.

[66]Dwarika N. Dhungel & Santa B. Pun, *Impact Of The Interlinking Of Rivers On Nepal: A Critical Analysis, in* INTERLINKING OF RIVERS IN INDIA: ISSUES AND CONCERNS 91, 104 (M. Monirul Qader Mirza, Ahsan Uddin Ahmed & Q.K. Ahmad eds., 2008).

[67] *Id* at 99, 100, 105

the case of Bangladesh, Nepal has also voiced concerns regarding the river linking plan that is being propagated by India. The position of India in this case will differ from its position with regard to water sharing in Bangladesh, as India is a lower riparian state as compared to Nepal. Unlike between Bangladesh and India, where sufficient bilateral treaties on trans-boundary water sharing are sorely lacking, there have been a fair amount of bilateral agreements between India and Nepal with regard to trans-boundary rivers.

Nepal is no stranger to water problems.[68] Apart from environmental issues such as floods and drought, here is also a chronic drinking water supply crisis in the Kathmandu valley.[69] Hence it is to be expected that water will be an issue of contention between this mountain nation and India.

As early as 1816, the British East India Company and Nepal signed the Sugauli Treaty which delimited the boundary along the Maha Kali River in Nepal.[70] In 1996, the Maha Kali Treaty laid down specific principles for trans-boundary water sharing with Article 9 stating- "*.... the Maha Kali River Commission shall be guided by the principles of equality, mutual benefit and no harm to either Party".*[71] However, Nepal still felt that such principles were more in India's favour.[72] Also, India being the lower riparian region in this case, contested the construction of various dams by Nepal, fuelling the already existing mistrust Nepal had for India.

The proposed NRLP may be opposed by Nepal for two main reasons. First, according to hydrologists,[73] India will have to construct certain parts of the Himalayan component of the project in Nepal. This construction will inevitably lead to displacement of population. Studies regarding constructions on transboundary rivers near the Nepal-India border have shown evidence of conflict between border communities in Nepal leading to migration to India on a

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[68]Mashfiqus Salehin, M. Shah Alam Khan, Anjal Prakash & Chanda Gurung Goodrich, *Opportunities For Trans-Boundary Water Sharing In The Ganges, The Brahmaputra, And The Meghna Basins, in* INDIA INFRASTRUCTURE REPORT (2011).

[69]Ramesh Bhushal, *Kathmandu: a city within sight of glaciers struggles with water crisis,* THE GUARDIAN, (Apr. 9, 2015), http://www.theguardian.com/sustainable-business/2015/apr/09/kathmandu-nepal-city-glaciers-water-crisis

[70]IPCS Special Report, Pia Malhotra, Water Issues between Nepal, India & Bangladesh – A Review of Literature, (July 2010), http://www.ipcs.org/pdf_file/issue/SR95.pdf.

[71]MAHAKALI TREATY Art. 9 (1996), *available at* http://wrmin.nic.in/writereaddata/MAHAKALI_TREATY_1996.pdf

[72]Dr. Gopal Siwakoti 'Chintan', Trans-boundary River Basins in South Asia: Options for Conflict Resolution, (2011), https://www.internationalrivers.org/sites/default/files/attached-files/transboundaryriverbasins.pdf.

[73]Navin Singh Khadka, *Concerns over India rivers order,* BBC NEWS (Mar. 30, 2012), ,http://www.bbc.com/news/science-environment-17555918.

large scale.[74] Secondly, when it comes to barrages that were constructed for the benefit of both nations, the results have not been as expected. After the Kosi barrage construction and the ensuing floods causing displacement of citizens of both Nepal and Pakistan[75], the nation may be reluctant to give a green light to this project in India. Earlier this year, work on the first trans-country link commenced.[76] In spite of the possibility that this project may result in the availability of cheaper power to Nepal, it is facing opposition[77] due to pre-existing feelings of dissatisfaction and mistrust on Nepal's side when it comes to water sharing between the two nations[78]

Pakistan and India have a working treaty – the Indus water treaty – that deals with transboundary water distribution. This treaty has stood the test of four wars between the nations over Kashmir. Hence, Pakistan is in a better position to deal with the interlinking project proposed by India as a satisfactory legal structure is already in place with regard to trans-boundary water disputes.

The friendly ties that already exist between India and its fourth neighbour, Bhutan[79] have helped foster a relationship of trust between the countries. However with regard to the NRLP, it shares Nepal's fears that India will strong-arm it into co-operating with the scheme by means such as the unauthorized construction of dams and other storage facilities, irrespective of any reservations voiced.[80]

Another essential precondition for an effective long-term basin management treaty is the incorporation of a clear mechanism for the resolution for disputes.[81] Though such a mechanism was introduced in the Maha Kali Treaty between India and Nepal, no such

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[74]Richa Singh, *Dams, Barrages, Diversions as Sites of Conflict in South Asia*, TRANS-BOUNDARY WATER POLITICS AND CONFLICTS IN SOUTH ASIA: TOWARDS 'WATER FOR PEACE' A SCOPING STUDY (CENTRE FOR DEMOCRACY AND SOCIAL ACTION [CDSA] 19, 21 (2008), http://in.boell.org/sites/default/files/downloads/water._Final.pdf.

[75]Bishnu Pathak, *The Koshi Deluge: A History of Disaster for Nepal*, UNITED WE BLOG (Apr. 9, 2015, 7:15 PM), https://blog.com.np/2008/09/12/the-koshi-deluge-a-history-of-disaster-for-nepal/.

[76]Chetan Chauhan and Utpal Parashar, *India's thirst for water may address power woes in Nepal*, HINDUSTAN TIMES, (Feb. 10, 2016), http://www.hindustantimes.com/india/india-s-thirst-for-water-may-address-power-woes-in-nepal/story-pVeRGwKHxxtD9lfbs8eRYI.html

[77]Sudha Ramachandran, *The Cost of Interlinking India's Rivers,*THE DIPLOMAT, (Jul. 20, 2016), http://thediplomat.com/2016/07/the-cost-of-interlinking-indias-rivers/

[78]Singh, *Supra* note 73 at 10.

[79]Salehin, Khan, Prakash, and Goodrich, *Supra* note 68 at 30.

[80]*Supra* note77

[81]Muhammad Mizanur Rahaman, *Principles of Transboundary Water Resources Management and Ganges Treaties: An Analysis*, 25 WATER RESOURCE DEVELOPMENT 159, 166-67 (2009), http://www.internationalwaterlaw.org/bibliography/articles/general/Rahaman-Ganges-Water_Res_Devel.pdf.

provision was made in the Ganges Treaty between India and Bangladesh.[82] A guarantee to include a standard dispute resolution mechanism may alleviate the concerns of India's neighbours when it comes to water sharing.

Thus, from an analysis of India's pre-existing relationship with its neighbours regarding the issues of water sharing, certain reservations are to be expected.

IN CONCLUSION – SOME ALTERNATIVES

In spite of numerous objections to this scheme, voiced both in India and on a global scale, the Hon'ble Supreme Court has given the go-ahead to the National River Linking Plan, expressing a "pious hope of speedy implementation" and hailing it as a matter of "national benefit and progress".[83] Though the Apex Court has cautioned the implementers of this plan against escalating costs[84], it has also specifically mentioned the benefits of this scheme – flood control and drought moderation.[85] However, this decision may be put under the scanner if there is sufficient cause. The concerns of both the Indian as well as the global community, against this plan, have been dealt with exhaustively in the preceding sections of this paper. In response to the argument that river nationalization is the only way to address the problems of water deficit and surplus in our country, this part of the paper outlines various alternatives to river linking that serve the same purpose while being less controversial.

The most practical solution to the water problems faced by India, as noted by Prof. A. Gossain of IIT Delhi, would be the "*efficient utilization of existing water resources"*[86]. India is the second wettest country in the world with an average rainfall of 1170mm and a total rainfall of 4000 BCM per annum (est. 2010)[87]. This rainfall however, is dispensed unequally through the country and the amount of water that is received every year is dependent on the monsoons. As of now, delayed or absent monsoons detrimentally affect the agriculture of the region. However, by virtue of receiving this amount of rainfall, even if only in certain areas of the country, water scarcity should not be this big a concern. The fact that it is, points to

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[82] *Ibid.*
[83] *Supra* note 5 at para 79.
[84] A.K.Ghosh, *Interlinking rivers: is it a utopian idea?,* DOWN TO EARTH (Jan. 4, 2016), http://www.downtoearth.org.in/blog/interlinking-rivers-is-it-a-utopian-idea--52294
[85] *Supra* note 5 at para 79.
[86] Jacob Koshy and Samarth Bansal, *Interlinking of river: an idea with flaws*, THE HINDU (May 7, 2016), http://www.thehindu.com/data/last-drop-interlinking-an-idea-with-flaws/article8567203.ece.
[87] B.S.Prakasa Rao, P.H.V.Vasudeva Rao, G.Jaisankar, E. Amminedu, M.Satyakumar and P.Koteswara Rao, *Interlinking of River Basins: A Mega Harvesting Plan-A Review*, 14 J. IND. GEOPHYS. UNION 31, 34 (2010), http://www.igu.in/14-1/4prakasarao.pdf.

inefficient methods of conservation of water. Himanshu Thakkar, current coordinator of South Asia Network on Dams, Rivers and People (SANDRP), made the prudent observation that *"Considering that fact that we receive ample rainfall, water saving mechanisms can be one of the solutions to the water scarcity issues."* [88]

In the case of managing droughts and providing water in water-scarce areas, India needs to look no further for a solution than the arid state of Rajasthan where villages have developed certain local methods to conserve and collect water.[89] These methods of water collection are a combination of modern techniques and traditional knowledge and they have been very effective in these regions. The *paar* system[90] by which, the rainwater flows into a common catchment area and from there, percolates into the sandy soil from where it is accessed holes dug in the catchment area[91] is one among many conservation methods. Water can be harvested from the melt-off from glaciers in the colder regions of the country, as well. Z*ings* in Ladakh in ancient India[92] were used for this purpose. In the Deccan Plateau region, the main methods of conservation that are being followed are the construction of wells and percolated tanks. The *keres* of Karnataka and the *Ramtek model* are examples of the water harvesting methods practiced in this region. In the coastal state of Tamil Nadu, the system of building *eris,* a type of water tank, provide water for approximately one-third of the state's irrigation needs.[93]These also served to recharge the ground water table and as flood control systems. However, after the advent of the British, these traditional water harvesting systems fell into disuse.[94]

All these methods help to collect and conserve water during the monsoon season in watershed areas. This prevents water logging, which in turn, prevents flooding of these regions. During periods of drought, each area can fall back on the water so collected in the monsoon season to augment their water supply and prevent water scarcity. This, apart from

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[88]*Supra* note 11, at 33.
[89]Bharat Dogra, *A river sutra, without links*, THE HINDU (Mar. 3, 2012), http://www.thehindu.com/opinion/op-ed/a-river-sutra-without-links/article2954807.ece.
[90]Anumita Raj, *Something Old, Something New-Water Conservation in Rajasthan*, STRATEGICFORESIGHT.COM (Feb. 2011), http://www.strategicforesight.com/inner-articles.php?id=154#.VQROiI6UfXo.
[91]CENTRAL GROUNDWATER BOARD, MINISTRY OF WATER RESOURCES, SELECTED CASE STUDIES, RAIN WATER HARVESTING AND ARTIFICIAL RECHARGE, (2011), http://mahenvis.nic.in/Pdf/Report/report_nrmc_water%20harvesting.pdf,
[92] Margret Robertson, Sustainable Futures: Teaching and Learning: a Case Study Approach 107 (Margret Robertson ed., 2007).
[93]Dhiman and Gupta, *Supra* note 88.
[94]*Ibid*.

ensuring a uniform supply of water through the year in most parts of the country, also ensures the reduction of inter-state water disputes.

Aside from techniques of water conservation based on the geography of the region, other methods, especially in urban areas include raising awareness using educational lectures, door-to-door campaigns etc., as a via media, opening waste water treatment plants, passing new state legislations for enforcing measures of water conservation and, effectively enforcing the already existing legislations on this subject.[95]

These traditional methods of water conservation specific to all regions of our nation, serve to fulfil the purposes of flood-control and drought management which were touted to be the main benefits of the NRLP as stated by the Supreme Court[96]. Though these methods are varied in nature and require a more intricate system of administration, they are more cost-effective and less destructive than the national river linking scheme. Hence, it is proposed that, by implementing these methods, the goals of the river linking plan can be arrived at, with minimal damage to the environment and leave less of a dent in the national exchequer. By directing funds and dedicating research to these methods of water conservation, there may not be a need for taking the drastic step of river linking.

It is easy to envisage interlinking on paper and appreciate it as an engineering marvel. However, the reality is that large scale linking will only prove disastrous in the long run. In conclusion, despite the Supreme Court's verdict[97] on this matter, it is imperative in the interest of the public that the Government explores all avenues and alternatives before proceeding with the National River Linking Plan.

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[95]THE KERALA MUNICIPALITY BUILDING RULES CHAPTER XVI A (1999) *available at* https://buildingpermit.lsgkerala.gov.in/content/rules/kmbr_rule.pdf; THE ANDHRA PRADESH WATER, LAND AND TREES ACT (2002) *available at* http://www.ielrc.org/content/e0202.pdf.
[96]*Supra* note 5 at para 79.
[97]*Supra* note 5.

Environment Law and Practice Review

ECONOMIC ASPIRATION POLLUTED RESPIRATION: STORY OF DEVELOPING INDIA

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Abstract

Pollution is the emerging issue of the country. Air pollution could lead to 570,000 premature deaths in India, according to a new report. WHO has released a report where it suggested that 33 out of 100 most polluted cities in the world belong to India. The problem of Air pollution is not just limited to urban areas but problems like Indoor pollution are more part of the rural India .There certainly has been a close inter relation between the rising Air pollution and the escalating economy .The scientist suggest that Industrial Revolution and urbanization is further degrading the quality of Air we breathe. The government is making policies and schemes for sustainable development of the economy. Already made laws could not prevent the pollution emission. This paper would analyze the prominent factors responsible for pollution and the approach of the government to fight the same.

INTRODUCTION

Delhi is no longer the world's most polluted city, says WHO in 2016.[1]It does sound like a positive news for the Indians living in the region but really how polluted is our country. The study, published this week in the journal Geophysical Research Letters, suggests that outdoor air pollution in the country is contributing to more than half a million premature deaths each year at the cost of hundreds of billions of dollars.[2] Four of the 10 cities in the world with the worst air pollution are located in India, a new WHO report showed.[3] As urban air quality declines, the risk of stroke, heart disease, lung cancer, and chronic and acute respiratory

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[1]Pritha Chatterjee, *WHO clears air: Delhi no longer most polluted, that's Zabol in Iran - WHO clears air:*| New Delhi/geneva | Updated: May 13, 2016. Available at http://indianexpress.com/article/india/india-news-india/delhi-pollution-no-longer-most-polluted-but-4-other-cities-in-top-7-who-2797288/#sthash.uIOrZR1R.dpufSee more at: http://indianexpress.com/article/india/india-news-india/delhi-pollution-no-longer-most-polluted-but-4-other-cities-in-top-7-who-2797288/#sthash.uIOrZR1R.dpuf.

[2] Chelsea Harvey,*Energy and Environment Air pollution in India is so bad that it kills half a million people every year*May 1 2016. Available at https://www.washingtonpost.com/news/energy-environment/wp/2016/05/11/air-pollution-in-india-is-so-bad-that-it-kills-half-a-million-people-every-year/

[3]Suryatapa Bhattacharya, *Which Cities in the World Have the Worst Air Pollution?*May 12, 2016 6:15 pm IST http://blogs.wsj.com/indiarealtime/2016/05/12/which-cities-in-the-world-have-the-worst-air-pollution/

diseases, including asthma, increases for the people who live in them.[4]Four out of ten most polluted cities in the world is certainly not good news for the population of India. But if we start looking at the larger picture does India still stand a chance to be called environmentally healthy? The answer is *no*. As per the World Health Organization's (WHO) latest report on 'Ambient Air Pollution 2016', India has the most polluted cities in the world. Out of the 100 most polluted cities in the world, India has 33, while it also contributes 22 cities to the top 50 most polluted ones. In contrast, China, which has long been the most polluted country, features 27 cities in the top 100 list. Despite the rise in number of Indian cities, the country's capital – New Delhi – is no more the most polluted city in the world. As per WHO 2014 data on air pollution, Delhi was the most polluted city reporting a mean annual PM 2.5 level of 153 µg/m3. However, within two years, the PM 2.5 level in the capital has gone down to 122 µg/m3, with Delhi now dropping to the 11th spot. The capital is thereby overtaken by Raipur (*144 µg/m3), Patna (*149 µg/m3), Allahabad (*170 µg/m3) and Gwalior (*176 µg/m3), the latter having the ignominy of being the most polluted Indian city and the second in the world. [*Annual mean PM 2.5 level].[5]There are many contributing factors to this pollution but the fundamental rights have been hampered eventually .This paper will discuss the major causes of pollution, measures taken to diminish the same also by throwing light on the laws related to it and how being a developing country has played a major role in the case of Air pollution.

MAJOR CAUSES:

While large-scale industrialization increases the production of material goods and urbanization creates mega cities, the ill effects of these activities are reflected in the form of various environmental problems. One such problem is the deterioration of urban air quality in India and other developing countries. The main contributing factors to air pollution are the overwhelming concentration of vehicles, poor transport infrastructure and the establishment of industries in urban agglomerations. Epidemiological studies have shown that there is a significant association between the concentration of air pollutants and adverse health impacts (Ostro, et al., 1995; MJA, 2004).[6] After the WHO report India has proven to have 33 most

[4]*WHO Global Urban Ambient Air Pollution Database* (update 2016) http://www.who.int/phe/health_topics/outdoorair/databases/cities/en/http://www.who.int/phe/health_topics/outdoorair/databases/cities/en/

[5]TakshakDawda, India has the most polluted cities in the world: 33 out of 100, May 13, 2016 http://www.autocarpro.in/news-national/india-polluted-cities-world-100-19805#sthash.36ahrjxa.dpuf

[6]Usha Gupta, *Valuation of Urban Air Pollution: A Case Study of Kanpur City in India*, available at http://www.indiaenvironmentportal.org.in/files/file/Valuation%20of%20Urban%20Air%20Pollution.pdf (SANDEE Working Papers, ISSN 1893-1891; 2006 - WP 17) ISBN: 99946-810-5-2

polluted cities in the word out of 100 .The number of cities are on the escalation stage .the urbanization only seems to be growing with time .The most affected areas are the urbanization and industrial zones of the country. Air pollution has a very fatal impact on the people living in the country. Major concerns for human health from exposure to Air pollution include effects on breathing and respiratory systems, damage to lung tissue, cancer and premature death. Elderly persons, children and people with chronic lung disease, influenza or asthma are especially sensitive to the effects of particulate matter. The urban air database released by the World Health Organization in September 2011 reported that Delhi has exceeded the maximum PM_{10} limit by almost 10-times at 198 $\mu g/m^3$, trailing in the third position after Ludhiana and Kanpur[7].Air pollution could lead to 570,000 premature deaths in India, according to a new report. For the new study, researchers at the Indian Institute of Tropical Meteorology and the US National Center for Atmospheric Research created computer simulations using 2011 data and found that air pollution could kill more than 570,000 people prematurely. Furthermore, the researchers say, the problem would likely cost the Indian economy hundreds of billions of dollars annually.[8]More than 1.4 million people die prematurely every year in India due to household and outdoor air pollution, researchers have estimated.[9] Power plants, industrial manufacturing, vehicle exhaust and burning coal and wood all release small particles into the air that are dangerous to a person's health. In India, a major contributor to poor air quality is the practice of burning wood, dung and similar sources of biomass for cooking and heating. Millions of families, among the poorest in India, are regularly exposed to high levels of particulate matter in their own homes.[10]Below are the discussed some of the major factors which contribute in respect to the air pollution both in rural and urban population.

ISSUES DUE TO VEHICULAR POLLUTION:

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[7] SA Rizwan, Baridalyne Nongkynrih, and Sanjeev Kumar Gupta "*Air pollution in Delhi: Its Magnitude and Effects on Health*"INDIAN JOURNAL COMMUNITY MED. 2013 Jan-Mar; 38(1): 4–8.doi: 10.4103/0970-0218.106617
PMCID: PMC3612296. Available at http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3612296/

[8]*Air Pollution could kill over 5.7 lakh Indians prematurely*. Available at http://www.thehealthsite.com/news/air-pollution-could-kill-over-5-7-lakh-indians-prematurely-ag0516/

[9] Air pollution kills 1.4 million people in India every year. More than 1.4 million people die prematurely every year in India due to household and outdoor air pollution, researchers have estimated.Agencies Feb 14, 2016 at 10:57 am Available at http://www.thehealthsite.com/news/air-pollution-kills-1-4-million-people-in-india-every-year-ag0216/

[10]*Id.*

Economic Aspiration Polluted Respiration: Story of Developing India

The outcomes of high population growth rates are urbanization, accompanied by growing number of vehicles. Rapid and unplanned expansion of cities is one of the serious problems as it has manifold effects, one of the most important being air pollution. Rapid population growth and urbanization in country is adversely affecting the environment. All these in turn lead to an increase in the air pollution levels. However, air pollution not only leads to deteriorating environmental conditions but also have adverse effects on the health of people.[11] Most of the world's most populous cities are in developing countries. Many of these cities are in Asian countries with low per capita incomes but big populations, such as China, India, and Indonesia. These cities have high concentrations of poor residents and suffer from social and environmental problems including severe air pollution.[12]

It has to be noted that it is a national average and some cities like Delhi, Chennai, and Coimbatore have more than 100 cars per 1,000 population Delhi has an ownership level of 157 cars per 1,000 population, followed by Chennai (127) and Coimbatore (125) while cities like Pune (92 cars per 1,000 population), Thane (98), Bangalore (85), and Hyderabad (72) are fast approaching the 100 cars per 1,000 population mark Different estimates show that the number of cars in India will increase to about 35 cars per 1,000 population by 2025. This would amount to about 45–60 million cars on our roads and in some cities more than 300 cars per 1,000 population.[13] For NOx, the study found industries contributed 79% and vehicles 18%; vehicles were the main source for CO and hydrocarbons: 59% and 50% respectively.[14] The major pollutants released as vehicle/fuel emissions are, carbon monoxide, nitrogen oxides, photochemical oxidants, air toxics namely benzene, aldehydes, 1-3 butadiene, lead, particulate matter, hydrocarbon, oxides of sulphur and polycyclic aromatic hydrocarbons. While the predominant pollutants in petrol/gasoline driven vehicles are 2 hydrocarbons and

[11] Dr. Dewaram A. Nagdeve,*Urban Air Pollution And its Influence on Health in India*, International Institute for Population Sciences, Mumbai 400 088. Available at http://iipsenvis.nic.in/Newsletters/vol1no3/Nagdeve.htm

[12]*Urbanization and Urban Air Pollution*, available at http://www.worldbank.org/depweb/beyond/beyondbw/begbw_10.pdf

[13]*Proliferation of Cars in Indian Cities: Let Us Not Ape the West*POLICY BRIEF June 2014. Available at http://www.teriin.org/policybrief/docs/cars.pdf

[14]Pritha Chatterjee,*Vehicle exhaust, dust, what fouls the air the most? Studies disagree As Delhi experiments with the 'odd-even' formula, Indian Express summarises the findings of a range of source apportionment studies on air pollution in the Capital over the last several years*. | INDIAN EXPRESSPublished:January 6, 2016 2:35 am http://indianexpress.com/article/explained/vehicle-exhaust-dust-what-fouls-the-air-the-most-studies-disagree/#sthash.1XdTeMRa.dpuf

carbon monoxide, the predominant pollutants from the diesel based vehicles are Oxides of nitrogen and particulates.[15]

Scientist believe that ecofriendly vehicles can help slaughter the air pollution but in the present scenario the Pollutions is also correlated to other factors which are associated with the vehicular population like :

1. *High vehicle density in Indian urban centers*.[16]- A recent estimate says the total number of vehicles in India will be 400-450 million in the next 20 years or so. Now we have nearly 60-70 million. [17]Just having vehicles would not suffocate the cities the way it is doing right now. But the number of vehicles i.e. Increase in the population of the vehicles which emit pollutants is the issue.
2. *Older vehicles predominant in vehicle vintage*[18]- "Those are older cars and their pollution level is almost six times of the pollution level of BS IV cars. One is saying that as a result of the Supreme Court (order), Bharat IV cars would not come into the market but pre-BS I cars would continue and those 2 lakh cars are equivalent to 12 lakh new cars. "Expressing concern over the Supreme Court's ban on big diesel cars and SUVs in Delhi-NCR, Maruti Suzuki India Chairman R. C. Bhargava said.[19]Older the vehicles emission and the fuel intake can at times become more .The new technology tries to be more greener than what it was in the past. The new revolution brought by the car companies or the government policies encourage more CNG vehicles on road.

Predominance of private vehicles especially cars and two wheelers, owing to unsatisfactory public transport system, thereby causing higher idling emissions and traffic congestion[20]- Public transport systems in India are generally inefficient, thanks to outdated technology, incompetent management, corruption, overstaffing, and low worker productivity. They require

[15]*Status Of The Vehicular Pollution Control Programme In India(March, 2010) Central Pollution Control Board* (Ministry of Environment & Forests, Govt. of India) East Arjun Nagar, Delhi – 110 032 Programme Objective Series PROBES/ 136 /2010. Available at http://cpcb.nic.in/upload/NewItems/NewItem_157_VPC_REPORT.pdf

[16]*Id.*

[17]Dipak Kumar Dash, *India will have 450 million cars 20 years from now* | January 29, 2011. Available on http://www.timescrest.com/coverstory/india-will-have-450-million-cars-20-years-from-now-4645

[18]*Id.*

[19]*Ban old polluting vehicles, not new ones: Maruti chairman.* Available athttp://www.thehindu.com/business/Industry/ban-old-polluting-vehicles-not-new-ones-maruti-chairman-r-c-bhargava/article8451910.ece

[20]*Id.*

increasingly large subsidies, in spite of extremely high passenger volumes.[21] One of the major factors which encourage people to buy more private vehicles is the lack of proper transportation. The trains and buses in the urban cities are mostly crowded due to over population. Also, the quality of public transport cannot be maintained up to the mark as urban cities have surplus population balancing quality and quantity of the public transportation becomes a challenge in the developing countries.

3. *Absence of adequate land use planning in development of urban areas, thereby causing more vehicle travel and fuel consumption*[22]- Planning and development play a very important role in controlling the pollution be it air land or water form of pollution .Mysore was recognized and given rank 1 under the *Swach Bharat Abhiyan* which is presently functioned under the present government and Prime minister Narendra Modi. Whereas in relation to the population Navi Mumbai is only escalating but it still it is termed as one of the clean cities.

4. *Inadequate inspection & maintenance facilities*.[23]- In a country like India inspecting each and every vehicle on the road is certainly very challenging .There are measures taken like the ODD EVEN rule which came up recently in Delhi 2016. But not all the urban cities have a backup plan for diminishing the emission or the pollution which are applied at present.

5. *Adulteration of fuel & fuel products*[24]-Adulteration of fuel can cause health problems directly in the form of increased tailpipe emissions of harmful and sometimes carcinogenic pollutants. It may be noted that all forms of adulteration are not harmful to public health. Some adulterants increase emission of harmful pollutants significantly, whereas others have little or no effect on air quality.[25]Adulteration remains as one of the main concerns of the country right now. Fuel adulteration can be threatening as they cause more pollutants and emissions.

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[21] John Puchera,*, NishaKorattyswaropama, NehaMittala, NeenuIttyerahb, *Urban transport crisis in India* ARutgers University, New Brunswick, NJ 08901-1987, USAIndian Railways, Chennai, IndiaReceived 25 October 2004; revised 14 February 2005; accepted 25 February 2005. Available online 21 April 2005 Transport Policy 12 (2005) 185–198 http://scholar.google.co.in/scholar_url?url=http://files.rsamuel.webnode.com/200000055-c7e5bc8dfa/Urban%2520Transport%2520Crisis%2520in%2520India.pdf&hl=en&sa=X&scisig=AAGBfm0C4rMeAQSSyFrfCiR0Rsojl59VdA&nossl=1&oi=scholarr&ved=0ahUKEwiU4Ni7zdvMAhVJMo8KHRm2DOoQgAMIHCgAMAA (Last accessed Oct 10, 2016).

[22] *Id.*

[23] *Id.*

[24] *Id.*

[25] Amit P. Gawande* And Jayant P. Kawarea, *Fuel Adulteration Consequences In India : A Review*Department of Chemical Engineering, College of Engineering and Technology, AKOLA – 444104 (M.S.) INDIA aBhonsla

6. *Improper traffic management system & road conditions*[26]- One of the examples we can cite is of davanagere a small city in Karnataka which has increased pollution due to the bad road condition. The WHO report stated that particulate matter, PM10 is 75 micrograms in Davangere, while it is 118 in Bengaluru and 36 micrograms in Hassan district. The report also indicates that the pollution in Hassan district is below permissible levels, in contrast to the alarming levels in Davangere. According to sources in the Davangere District Pollution Control Board, the major reason for the increasing dust and air pollution is improper roads, especially in commercial areas, and improper footpaths. The permissible limit of the pollution control board at commercial areas is 100 microgram and the equipment installed at the Gandhi Circle records a minimum of 250 to 260 micrograms every day, said the source.[27]All most all the cities in India have a common issue i.e. the traffic issue .lack of proper management halts most of the vehicles letting them emit more pollutants.

7. *High levels of pollution at traffic intersections*[28]- Traffic composition in Indian cities is of a mixed nature. There is a wide variety of about a dozen types of both slow and fast-moving vehicles. Two-wheelers and cars account for over 85% of the vehicle population in most of the metropolitan cities. They account for at least 90% of total vehicles in Ahmedabad, Bhopal, Coimbatore, Delhi, Kanpur, Lucknow, Nagpur, Vadodara, Varanasi, and Vishakhapatnam. Two-wheelers alone account for more than 80% of the total vehicles in number of metropolitan cities. For example, during the year 2009, in Nagpur (84%), Varanasi (84%), Surat (83%), Coimbatore (83%), Madurai (82%), Bhopal (81%), Kanpur (81%), Vadodara (81%), Vishakhapatnam (81%), and Lucknow (80%), two-wheelers accounted for at least 80% of the total vehicles. Analysis of data presented in Table 3 reveals that, during the year 2009, the share of buses is negligible in most Indian cities as compared to personalized vehicles. For example, two-wheelers and cars together constitute at least 90% of the total vehicles in Ahmedabad (91%), Delhi (90%), Lucknow (93%), and Nagpur (91%)

College of Engineering and Research, Washim Road, AKOLA (M.S.) INDIA Sci. Revs. Chem. Commun.: 3(3), 2013, 161-171 ISSN 2277-2669. Available at http://www.sadgurupublications.com/ContentPaper/2013/3_168_3(3)2013_SRCC.pdf (Last accessed Oct 10, 2016).

[26]*Id.*

[27] Pradeep Kumar Kadkol, *Bad roads take Davangere to WHO's high pollution list*, THE HINDU Available at http://www.thehindu.com/news/national/karnataka/bad-roads-take-davangere-to-whos-high-pollution-list/article8598160.ece (Last accessed Oct 10, 2016).

[28]*Id.*

whereas in these cities buses constitute only 1%, 0.7%, 0.3%, and 0.4% respectively.[29] Growing traffic and limited road space have reduced peak-hour speeds to 5-10 Km/h in the central areas of many major cities. The quantity of all the three major air pollutants (namely, nitrogen oxides, hydrocarbons, and carbon monoxide) drastically increases with reduction in motor vehicle speeds.[30]

8. *Absence of effective mass rapid transport system & intra-city railway networks*[31] -As already discussed above .having a effective transport system is a significant move to avoid the vehicular population which can also mean less pollution .

9. *High population exoduses to the urban centers*[32]- The most populous areas are mostly the most polluted areas in the country.

10. *Increasing number Skyrocketing buildings in the urban areas causes stagnation of the vehicular emissions to the ground level and unable its proper dispersion.*[33]- The skyscrapers in the urban cities do not allow the breeze or pollution to escape .the air when pollutant elements put in on has closed locality and only result danger and concentration of the pollutants.

THE PLAN:

i) *Promote integrated land use and transport planning* [34]- Proper transport planning and usage of the land which can crumb the traffic can be a great escape plan forms the pollution.

ii) *Adopt a conservative approach to create more road* ***space***[35]- More road space would directly mean less traffic .Less traffic jams would mean less pollution.

iii) *Provide infrastructure for walking, cycling, and no motorized transport modes*[36]- In a country like India there is no concept of having different mode of non-motorized vehicles .A bullock cart or a cycle if brought down to the urban roads has to pass through the dense vehicle

[29]Sanjay Kumar Singh, *Urban Transport in India: Issues, Challenges, and the Way Forward*, EUROPEAN TRANSPORT \ TRASPORTIEUROPEI (2012) ISSUE 52, Paper n° 5, ISSN 1825-3997. Available at http://www.istiee.org/te/papers/N52/ET_2012_52_5%20-%20Singh.pdf (Last accessed Oct 10, 2016).
[30]*Id.*
[31]*Id.*
[32]*Id.*
[33]*Id.*
[34]*Supra* note 13.
[35]*Id.*
[36]*Id.*

population along with the traffic jams .But having cycling dedicated roads have become a challenge to the government. One of the bad set examples was the case in Bangalore. . Bengaluru's municipal corporation unveiled cycle tracks totaling a length of 40 km in the Jayanagar area in 2011. This was supposed to be a big catalyst to those previously wary of cycling, but it ended up being a parking space for cars and two-wheelers. MA Saleem, additional commissioner of police, traffic, Bengaluru, says parts of the cycling tracks are designated parking zones, which have to first be identified.[37]

iv) *Make investments in public transport*[38] - Increased investment in, and use of, public transportation can mitigate this trend. Experts indicate we need to reduce total CO2 emissions to 60%-80% of 1990 levels by 2050.[39] Public transport has to be well structured in the coming future .better public transport will only mean that the private vehicles will be less utilized and public transport will be used more.

v) *Implement measures to restrict car ownership and use*[40]- Many cities in Europe restrict the usage of cars in accordance with the current atmospheric pollution situation [41]The country with such a rapid economic growth has empowered the urban population to afford their own vehicles .In a country like India where urbanization and industrialization has increased employment and GDP number of people owing vehicles has increased. With that increase number of people improving economically has also gone up. Every class of the urban population is trying to own number of vehicles according to their economic status.

GOVERNMENT'S ACTIONS:

i) The Supreme Court held that the Notification was issued to phase out old vehicles in a progressive manner while addressing the concern of adhering to the emission norms to control vehicular pollution and that the High Court misconstrued the notification. In Murali

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[37] G Seetharaman, *Encourage cycling to tackle pollution; but Indian motorists need to be sensitised to cyclists' safety*
, ET BUREAU May 24, 2015, 05.10AM IST. Available at http://articles.economictimes.indiatimes.com/2015-05-24/news/62583447_1_cyclists-cities-cent (Last accessed Oct 10, 2016).

[38] *Id.*

[39] *Public Transportation Reduces Greenhouse Gases and Conserves Energy The Benefits of Public Transportation*. Available at http://www.apta.com/resources/reportsandpublications/Documents/greenhouse_brochure.pdf (Last accessed Oct 10, 2016).

[40] *Id.*

[41] FrederikStrompen, Daniel Bongardt, *Environmental Zones Towards Better Air-Quality in Inner Cities*, GIZ CHINA | Transport Demand Management in Beijing. Available at http://www.tdm-beijing.org/files/Fact_Sheet_Environmental_Zones.pdf (Last accessed Oct 10, 2016).

Purushothaman v. Union of India[42], the petitioner focused the court's attention on air pollution due to the gaseous pollutants emitted by vehicles plying in Kerala. The High Court ordered that the state government should provide at least one smoke meter and gas analyzer or any other approved instrument, at each major district centers. Further the state government should also issue instructions to authorities in charge of registration of motor vehicles to see to it that the standards for emissions of air pollutants are complied with.[43]

ii) With respect to vehicular pollution, the concern of this Court since 1986 has only been to protect the environment and the health of the people, especially those living in the National Capital Region. The Supreme Court has therefore, issued various directions to the governmental authorities to measures to reduce the air pollution. Further, it directed the ministry to carry out research to suggest a pollution reducing devise. Some of the orders of the Apex Court at various stages under the M.C. Mehta v. Union of India (Vehicular Pollution) Case are as follows: The court exerted pressure on government to ensure that new vehicles are fitted with catalytic converters and that lead free petrol is introduced in the four metro cities; Ordered the Central Government to convert its vehicles to operate on a cleaner fuel - Compressed natural gas (CNG); ordered that commercial vehicles including taxis which were 15 years old were order off the road by October 1998; All private vehicles registered after 1st June 1999 to conform to Euro I norm and those registered after April 2000 to meet the Euro II norms; Conversion of Government Cars belonging to various departments to CNG with a view to reducing pollution.[44]

iii) The popular Odd-Even rule: Observing that the current air pollution levels in the national capital have reached "alarming" proportions and it was akin to "living in a gas chamber", the Delhi High Court. With regard to yellow line violations, the court directed traffic police to ensure there was zero tolerance for such incidents and to ensure proper lane driving in Delhi. “Publicize there would be strict action and fines for violations," it said while hearing a PIL initiated by it on the issue of increasing air pollution in Delhi. [45]The odd-even rule was introduced in the state for curbing the pollution .Later, the Delhi Pollution Control Committee (DPCC) submitted its odd-even analysis report to the NGT, which shows that

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[42] AIR 1993 Ker 297.

[43]*The threat of global climate change*Published: 23, March 2015. Available at https://www.ukessays.com/essays/environmental-studies/the-threat-of-global-climate-change.php (Last accessed Oct 10, 2016).

[44]*Id.*

[45]*Living in Delhi like living in a gas chamber: High Court.* Available athttp://www.firstpost.com/india/living-in-delhi-like-living-in-a-gas-chamber-high-court-2532178.html (Last accessed Oct 10, 2016).

particulate matter (PM 2.5, PM 10) and nitrogen dioxide (NO2) levels came down in the first week of the road rationing scheme.[46] The scheme brought up good result which is now considered by other states in India to minimize the pollution in their jurisdiction.

iv) The Government of India formulated a comprehensive policy for abatement of pollution in 1991. The policy aims at: Prevention of pollution at source. Encourage development and application of the best available practicable technologies. Focus on the "critical" or the heavily polluted areas. In the policy statement of 1992, the Government paid specific attention to transport related pollution and the highlights were: Control of pollution from automobiles. Encourage use of the public transport system. Encourage the use of bicycles for short distances. Development of rapid mass transit system. Discourage the plying of vehicles in heavily polluted areas. Earmarking of natural gas for the transport sector.[47]

v) Formulation of the national emission control standard was set up in India in 1985 when the Ministry of Environment and Forests set up an Expert Committee in the Central Pollution Control Board. In order to focus specifically on the increasing trend of vehicular pollution in the major metropolitan cities in India, tightened national vehicular standards have been notified in early February 1998 for vehicles fitted with catalytic converters in the four metros (Delhi, Bombay, Calcutta and Madras), all state capitals and all Union Territories as well. These standards are stricter by 50% over national standards for petrol driven vehicles fitted with catalytic converters. The Government is also implementing a major program for improvement of automotive fuels in India in a phased manner to harmonize with the introduction of tighter emission norms. The Ministry of Environment and Forests of India is in the process of notifying the standards for two stroke engine oils of the low smoke quality. Simultaneously, they are also involved in a time bound program for the supply of premixed petrol engine oil in all the major cities of India for the use of 2 stroke engines. The Government has also taken up the use of compressed natural gas (CNG), an ecofriendly fuel, for the use of petrol driven vehicles. By fixing a CNG kit, gasoline vehicles can be converted to CNG Vehicles. Inadequate supply of CNG has affected its acceptance among consumers. Supply of CNG on a large scale implies large expenditures. Owing to the gaseous nature of

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[46] *Odd-even: Unimpressed with results, National Green Tribunal questions Delhi government's rationale* TNN & AGENCIES | May 11, 2016, 01.04 PM IST. Available at http://timesofindia.indiatimes.com/india/Odd-even-Unimpressed-with-results-National-Green-Tribunal-questions-Delhi-governments-rationale/articleshow/52219637.cms? (Last accessed Oct 10, 2016).

[47] *Chapter 4 Vehicular Pollution Control Measures In India And Other Countries* Available at http://shodhganga.inflibnet.ac.in:8080/jspui/bitstream/10603/78566/6/sree_chapter4.pdf (Last accessed Oct 10, 2016).

CNG and being a non-renewable source, doubts have been raised regarding its worth in terms of the expenditure involved in procuring adequate supplies of the same. However, the Ministry of Environment and Forests is preparing an action plan for conversion of all 3-wheelers plying in Delhi to use CNG. In addition, replacement of old buses with new ones (which have CNG engines) is also planned. The use of other alternative fuels like Liquefied Petroleum Gas (LPG) is also under consideration of the Government of India. Emission norms for all categories of petrol and diesel vehicles at the manufacturing stage have been introduced. The mass emission standards for the vehicle manufacturers came into force in April 1991. These were further revised for enforcement in 1996 and subsequently in the year 2000. It is contended that the targets set for 1996 are so low that over 60% of the vehicles in India are already within these standards and that these standards will not provide sufficient inducement for improvement in technology, more so in view of the fact that 10 to 20 percent relaxation in standards is allowed during the conformity of production costs. This necessitates the need to lay down appropriate norms keeping in view the problem.[48]

ISSUES DUE TO COAL-POWERED THERMAL POWER PLANTS FOR ELECTRICITY:

As of Jan 2015, coal-powered thermal power plants account for 60.72% of India's total power generation, according to data available from Central Electricity Authority (CEA). Coal plants happen to be one of the leading sources of SO2 and NO2.[49]Coal is the favorite fuel for the electricity generation in countries like India and China. Abundant supply of coal locally and sustained high prices for imported natural gas and oil make coal-fired generation of electricity more attractive economically. Coal is approximately 90% of the total fuel mix for electricity generation. Main emissions from coal fired and lignite based thermal power plants are CO_2, NOx, SOx, and air-borne inorganic particles such as fly ash, carbonaceous material (soot), suspended particulate matter (SPM), and other trace gas species. Thermal power plants, using about 70% of total coal in India, are among the Large Point Sources (LPS) having significant contribution (47% each for CO2 and SO2) in the total LPS emissions in India.[50]

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[48]*Id.*

[49]*Air Pollution in India Impact, policy analysis and remedial measures by governments*Available at http://www.swaniti.com/wp-content/uploads/2015/04/Air-Pollution-in-India.pdf (Last accessed Oct 10, 2016).

[50]Moti L. Mittal,Estimates of Emissions from Coal Fired Thermal Power Plants in India, Department of Environmental and Occupational Health, University of South Florida, Tampa, Florida, USA Chhemendra Sharma and Richa Singh Radio and Atmospheric Sciences Division, National Physical Laboratory, Council of

What is not frequently considered in India are the health and environmental impacts of using coal, which generates 75% of the country's electricity. Let's consider some impacts:

About 115,000 people die prematurely from pollution caused by Indian coal-fired plants, including 10,000 children below age five. The health costs to India are about $4.6 billion (Rs 29,400 crore) annually, which is the cost of setting up five power plants of 1,000 megawatts (MW) each, or 2% of India's installed capacity, every year. The death toll and health costs were estimated in a 2013 study by a former World Bank pollution analyst. Emissions from an Indian power plant were estimated to kill 650 people, said this study of emissions between 2000 and 2008, and conducted by Harvard University researchers.[51]

THE PLAN:

Government of India has recognized the importance of solar energy as one of the sustainable sources of energy under National Action Plan for Climate Change (NAPCC). NAPCC aims to derive 15% of its energy requirements from RE sources by the year 2020. [52]Incentives include:

i) *Preferential tariff*[53]- In some states like Tamil Nadu the plan of action to encourage the solar power generation have been taken very seriously as the environmental impact of such generation will be much more green .In the State Advisory Committee (SAC) meeting the Tamil Nadu Generation and Distribution Corporation TANGEDCO suggested that Accelerated Depreciation (AD) may be adopted to decide the preferential tariff for solar power.[54]

ii) *Capital subsidy*-[55] -As cited in the solar mission by former Prime Minister ManmohanSingh "Our vision is to make India's economic development energy-efficient. Over a period of time,

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Scientific and Industrial Research, Dr K.S. Krishnan Road, New Delhi – 110012, India Available at https://www3.epa.gov/ttnchie1/conference/ei20/session5/mmittal.pdf (Last accessed Oct 10, 2016).

[51]Amit Bhandari, *Coal Kills Indians. Can The Sun Power India?*, May 30, 2015. Available at http://www.indiaspend.com/cover-story/coal-kills-indians-can-the-sun-power-india-32906 (Last accessed Oct 10, 2016).

[52] Sandeep Kumar Gupta and Raghubir Singh Anand, "*Development of Solar Electricity Supply System in India: An Overview*," JOURNAL OF SOLAR ENERGY, VOL. 2013, Article ID 632364, 10 pages, 2013. doi:10.1155/2013/632364. Available at http://www.hindawi.com/journals/jse/2013/632364/(Last accessed Oct 10, 2016).

[53]*Rooftop solar – next big wave in Indian solar sector! Energy Tata Strategic* Available at http://www.tsmg.com/download/article/Rooftop_Solar_next_big_wave.pdf (Last accessed Oct 10, 2016).

[54]*Tamil Nadu Electricity Regulatory Commission Comprehensive Tariff Order On Solar Power*Order No 4 of 2014 dated 12-09-2014 . Available at http://mnre.gov.in/file-manager/Compendium/O%20Order/Tamil%20nadu%201.pdf (Last accessed Oct 10, 2016).

[55]*Id.*

we must pioneer a graduated shift from economic activity based on fossil fuels to one based on non-fossil fuels and from reliance on no-renewable and depleting sources of energy to renewable source of energy. In this strategy, the sun occupies center-stage, as it should, being literally the original source of all energy. We will pool our scientific, technical and managerial talents, with sufficient financial resources, to develop solar energy as a source of abundant energy to power our economy and to transform the lives of our people."[56]

iii) *Renewable Purchase Obligation*[57]-The Renewable Purchase Obligations (RPO) has been the major driving force in India to promote the renewable energy sector. But the State Electricity Regulatory Commissions (SERCs) have defined their respective RPO Regulations which may create a favorable and neutral/off-putting effect in the growth of renewable energy sector.[58]

iv) *Soft loans and accelerated depreciation benefits*.[59]- The wind energy sector might take a major hit, with the Budget capping the accelerated depreciation tax benefit at a maximum of 40 per cent from April 2017.The sector had enjoyed accelerated depreciation (AD) of 80 per cent under the Income Tax Act.[60]

GOVERNMENT ACTIONS:

Like China, India is also pursuing alternatives to coal. The present government has doubled an existing tax of 50 rupees (US$ 0.80) per tons of coal mined or imported, to further finance a national Clean Energy Fund. It has also increased India's solar target for 2020 fivefold from 20 to 100 GW.[61]

i) Government of India has recognized the importance of solar energy as one of the sustainable sources of energy under National Action Plan for Climate Change (NAPCC). NAPCC aims to derive 15% of its energy requirements from RE sources by the year 2020.[62]

ii) Jawaharlal Nehru National Solar Mission (JNNSM) The National Solar Mission is a major initiative of the Government of India and State Governments to promote ecologically

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[56]*Guidelines For Selection Of New Grid Connected Solar Pv Power Projects*. Available at http://mnre.gov.in/file-manager/UserFiles/jnnsm_gridconnected_24082011.pdf (Last accessed Oct 10, 2016).
[57]*Id.*
[58]*Analysis of state-wise RPO Regulation across India*. Available at http://mnre.gov.in/file-manager/UserFiles/Solar%20RPO/analysis-of-state-RPO-regulations.pdf (Last accessed Oct 10, 2016).
[59]*Id.*
[60]Shreya Jai, *Budget 2016: Wind sector to take a hit as accelerated depreciation tax benefit capped at 40%The sector had enjoyed accelerated depreciation of 80 per cent under the Income Tax Act*March 2, 2016Last Updated at 00:17 IST available at http://www.business-standard.com/budget/article/budget-2016-wind-sector-to-take-a-hit-as-accelerated-depreciation-tax-benefit-capped-at-40-116022900591_1.html (Last accessed Oct 10, 2016).
[61]*Policy watch: pollution versus health.*Available at http://www.currentscience.ac.in/Volumes/109/06/1013.pdf (Last accessed Oct 10, 2016).
[62]*Supra* note 53.

sustainable growth while addressing India's energy security challenge. It will also constitute a major contribution by India to the global effort to meet the challenges of climate change.[63]

iii) Rooftop Photovoltaic (PV) and Small Solar Power Generation Programmed (RPSSGP) is a Generation-Based Incentives (GBIs) programme of the Ministry of New and Renewable Energy (MNRE) under the JNNSM for rooftop and other small solar plants[64]

ISSUES DUE INDOOR AIR POLLUTION:

As per Census 2011, 87% of rural households and 26% of urban households depend on biomass for cooking. Burning of biomass is a leading cause of indoor air pollution and is responsible for respiratory and pulmonary health issues in approximately 400 million Indians.[65]Indoor Air pollution is not just a rural phenomenon but also urban issue. The carpet area of the houses in the urban area is smaller too not helping the ventilation to pass by .The pollutants in the Air tend to be stagnant inside the houses due to lack of ventilation. By 2030, urbanization in India is projected to reach 50 percent.[66] Inadequate ventilation - increases indoor pollutant levels by not bringing in enough outdoor air to dilute emissions from indoor sources and by not carrying indoor air pollutants out of the home.

- High temperature and humidity levels increase concentrations of some pollutants.[67]- The concentration of air pollutants in ambient air is governed by the meteorological parameters such as atmospheric wind speed, wind direction, relative humidity, and temperature. This study analyses the influence of temperature and relative humidity on ambient SO_2, NO_x, RSPM, and SPM concentrations.[68]
- There are many sources of indoor air pollution in any home. These include combustion sources such as oil, gas, kerosene, coal, wood, and tobacco products; building materials and furnishings as diverse as deteriorated, asbestos-containing insulation, wet or damp carpet, and cabinetry or furniture made of certain pressed wood products; products for household

[63]*Jawaharlal Nehru National Solar Mission Towards Building SOLAR INDIA.*Available at http://www.mnre.gov.in/file-manager/UserFiles/mission_document_JNNSM.pdf (Last accessed Oct 10, 2016).
[64]*Id.*
[65]*Supra*note 49.
[66]*India Releases Its First Report on Urban Poverty available* at http://www.citiesalliance.org/node/408 (Last accessed Oct 10, 2016).
[67]*Indoor Air Pollution Monitoring Guidelines (Draft for comments)*Central Pollution Control Board Ministry Of Environment & Forests, Govt. Of India. Available at http://www.cpcb.nic.in/Proto-Ind_AirPollution_June2014.pdf (Last accessed Oct 10, 2016).
[68]Ramasamy Jayamurugan,1 B. Kumaravel, S. Palanivelraja,1 and M. P. Chockalingam, *Influence of Temperature, Relative Humidity and Seasonal Variability on Ambient Air Quality in a Coastal Urban Area,* INTERNATIONAL JOURNAL OF ATMOSPHERIC SCIENCES VOLUME 2013 (2013), ARTICLE ID 264046, 7 pages. Available at http://dx.doi.org/10.1155/2013/264046 (Last accessed Oct 10, 2016).

cleaning and maintenance, personal care, or hobbies; cooling systems and humidification devices; and outdoor sources such as radon, pesticides, and outdoor air pollution.[69]

- Outdoor air enters and leaves a house by: infiltration, natural ventilation, and mechanical ventilation. Air movement associated with infiltration and natural ventilation is caused by air temperature differences between indoors and outdoors and by wind.[70]
- High pollutant concentrations can remain in the indoor air for long periods after some of these activities, and [71]
- The use of cleaning products and pesticides in housekeeping.[72]- Everyday people are being exposed to pesticides inside their homes. It is believed that almost 80% of exposure to pesticides happens inside our homes. A measurable level of up to 12 pesticides can be detected in the indoor space.[73]

THE PLAN

Clean and efficient cook stoves:

Biomass – fuel wood, agricultural residue and animal waste – is among the most prevalent sources of energy in India, with almost 87% of rural households and 26% of urban households dependent on biomass for cooking. The Government of India has focused on the importance of clean and efficient cook stoves in order to reduce emissions as well as the health hazards associated with inhalation of these emissions.[74]

Public awareness: One of the most important steps in prevention of indoor air pollution is education, viz., spreading awareness among people about the issue and the serious threat it poses to their health and wellbeing. The education should help people in finding different ways of reducing exposures with better kitchen management and protection of children at home. People should also be educated about the use of alternative cleaner sources of energy to replace direct combustion of biomass fuel.[75]

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[69] *Id.*
[70] *Id.*
[71] *Id.*
[72] *Id.*
[73] *Indoor Air Pollution.*Available at http://cleanairindiamovement.com/air-pollution-2/indoor-air-pollution (Last accessed Oct 10, 2016).
[74] *Supra* note 49.
[75] AnkitaKankaria, BaridalyneNongkynrih, andSanjeev Kumar Gupta, *Indoor Air Pollution in India: Implications on Health and its Control*, INDIAN J COMMUNITY MED. 2014 OCT-DEC; 39(4): 203–207.doi: 10.4103/0970-0218.143019 PMCID: PMC4215499.

Improvement in ventilation: During construction of a house, importance should be given to adequate ventilation; for poorly ventilated houses, measures such as a window above the cooking stove and cross ventilation though doors should be instituted.[76]

Intersectoral coordination and global initiative: Indoor air pollution can only be controlled with coordinated and committed efforts between different sectors concerned with health, energy, environment, housing, and rural development.[77]

STEPS TAKEN:

National Biomass Cookstoves Programme: improved cook stoves to reduce indoor air pollution The National Biomass Cook stoves Programme (NBCP) was launched by the Ministry of New and Renewable Energy to promote the use of improved cook stoves, which would result in reduced emissions and offer cleaner cooking energy solutions. As part of this programme, the government undertook wide consultations with NGOs, entrepreneurs and industries in the country with the objective of identifying ways and means for the development and deployment of improved biomass cook stoves across a large number of community undertakings and individual households. Based on further discussions and deliberations, the government initiated the National Biomass Cook stove Initiative to design, develop an efficient and cost-effective device and assess the status of improved chulhas. Under this initiative, pilot scale demonstrative projects were undertaken to test for the efficiency of community-size cook stoves in Mid-day meal schemes in government schools in states of AP, Chhattisgarh, UP, Maharashtra, MP and Haryana and individual biomass cook stoves in J&K, Bihar, Karnataka, UP and Jharkhand. The results of the projects indicated substantial reduction in emissions and fuel consumption. Accordingly, the UnnatChulhaAbhiyan has been launched to expand the deployment of the improved cook-stoves across the country. Rs.131 cores have been allocated for promotion of improved cook stoves and solar cookers in the Union Budget 2015-16.[78]

INDUSTRIAL POLLUTION:

[76] *Id.*
[77] *Id.*
[78] *Id.*

One of the worst industrial disasters of all time took place in Bhopal, India, in December 1984.[79] In the three days after the first leak occurred, around 8,000 people died. Many thousands more still feel the effects.[80]

In many towns and cities exposure to air pollution is the main environmental threat to human health. Long time exposure to high level of toxic elements and small particulate matter in the air also contributes to wide range of chronic respiratory diseases, aggravates heart diseases and other types of particulates pollution, either on its own or in combination with SO2, leads to an enormous burden of ill health causing at least 500,000 premature death and 4 -5 million new case of chronic bronchitis each year (World Bank, 1992). Due to increase of manmade activities, emission of particulate matters and gaseous matters have been rising over past decades, Expansion of industries and transport systems has made this situation more critical. Hence in this context an investigation has been undertaken to assess the impact of air pollution on the health of human being at selected industrial areas.[81]

THE PLAN:

The Air (Prevention and Control of Pollution) Act, 1981 is the main legislation for regulating air quality through the pollution control boards (PCBs) in the states. A programmer for real time air quality monitoring for cities with population of more than 1 million was started during the Tenth Plan. The automatic air quality monitoring systems are operational in Jodhpur, Patna, and Sholapur while those in Kanpur, Varanasi, Jharia, and Kolkata are to be operationalized during the Eleventh Plan.[82]

During the Tenth Plan period, as many as 76 cities/towns were found to exceed acceptable limits of the parameters set, mainly due to vehicular and industrial pollution measured in

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[79] *Infra* note 106.

[80] DrArinBasu,*The health effects of industrial pollution: A primer*. Available athttp://infochangeindia.org/agenda/industrial-pollution/the-health-effects-of-industrial-pollution-a-primer.html (Last accessed Oct 10, 2016).

[81] Harinath,Usha N. Murthy, Effect Of Air Pollution On Human Health In Industrial Areas? A Case Study. Department of Civil Engineering, SVCE, Bengaluru, IndiaJOURNAL OF INDUSTRIAL POLLUTION CONTROLAvailable at http://www.icontrolpollution.com/articles/effect-of-air-pollution-on-human-health-inindustrial-areas--a-case-study-.php?aid=45672 (Last accessed Oct 10, 2016).

[82] SarithaPujari, *Pollution and its Control in India – Types, Effects and Controlling Pollution*Available at http://www.yourarticlelibrary.com/pollution/pollution-and-its-control-in-india-types-effects-and-controlling/11175/ (Last accessed Oct 10, 2016).

terms of ambient air quality in residential, industrial and sensitive areas for SO_2, oxides of nitrogen, suspended particulate matter (SPM), RSPM, ammonia and carbon monoxide.[83]

ACTION TAKEN:

The measures taken for controlling air pollution from industries are as follows:

1. Emission standards have been notified under the Environment (Protection) Act, 1986 to check pollution.[84]

Providing for the control and abatement of air pollution. It entrusts the power of enforcing this act to the CPCB (Central Pollution Control Board (CPCB) 1981 - The Air (Prevention and Control of Pollution) Act, Different act like 1982 - The Air (Prevention and Control of Pollution) Rules defines the procedures of the meetings of the Boards and the powers entrusted to them.1982 - The Atomic Energy Act deals with the radioactive waste.1987 - The Air (Prevention and Control of Pollution) Amendment Act empowers the central and state pollution control boards to meet with grave emergencies of air pollution.1988 - The Motor Vehicles Act states that all hazardous waste is to be properly packaged, labeled, and transported[85]

2. Industries have been directed to install necessary pollution control equipment in a time bound manner and legal action has been initiated against the defaulting units.[86]

3. As many as 24 critically polluted areas have been identified. These areas are Singrauli, Korba, Vapi, Ankleshwar, Greater Kochi, Vishakhapatnam, Haora, Durgapur, Manali, Chembur, MandiGobindgarh, Dhanbad, Pali, Najafgarh Drain Basin, Angul-Talcher, Bhadravati, Digboi, Jodhpur, Kala Amb, Nagda-Ratlam North Arcot, Parwanoo, Patancheru, Bollaram and Tarapur, Action plans have been formulated for restoration of environmental quality in these areas.[87]

4. Environmental guidelines have evolved for siting industries.[88]

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[83] *Id.*

[84] Smriti Chand, Measures Taken for Controlling Air Pollution from Industries in India Available athttp://www.yourarticlelibrary.com/air-pollution/measures-taken-for-controlling-air-pollution-from-industries-in-india/19769/ (Last accessed Oct 10, 2016).

[85] *Environmental laws.*Available at http://edugreen.teri.res.in/explore/laws.htm (Last accessed Oct 10, 2016).

[86] *Supra* note 84.

[87] *Id.*

[88] *Id.*

5. Environmental clearance is made compulsory for 29 categories of development projects involving public hearing/NGO participation as an important component of Environmental Impact Assessment process.[89]

6. The process of Environment Auditing has been initiated in highly polluting industries. The methodology has been standardized and finalized for respective group of industries. Submission of Environmental Statement has been made mandatory.[90]

7. Under Indo-German Bilateral Programmed, methodology for zoning, mapping and siting of industries is developed in various states in collaboration with State Pollution Control Boards in order to identify the existing characteristics of the district, unsuitable zones for the industries, air quality mapping assessment of risk due to siting of air polluting industries and industrial suitability mapping. Based on zoning/siting programmer, the site clearance procedure has to be streamlined.[91]

8. Minimal National Standards (MINAS) have been presented for highly polluting industries under The Air (Prevention and Control of Pollution) Act, 1981 and Environment (Protection) Act 1986.[92]

9. Power plants (coal based) located beyond 1000 kms from the pit-head are required to use low ash content coal (not exceeding 34%) with effect from 1.6.2002. Power plants located in the sensitive areas are also required to use low ash coal irrespective of their distance from the pit head.[93]

It is estimated that about 40 million tons of fly ash is generated per annum from thermal power plants and contribute to particulate matter loading to environment. Fly ash possesses good pozzolinic properties due to presence of active and finely divided silica, alumina and calcium oxide, which provide it with cement like qualities in combination with lime rich

[89] *Id.*
[90] *Id.*
[91] *Id.*
[92] *Id.*
[93] *Id.*

material. Thus fly ash emitted by thermal power plants can be used for manufacturing bricks, blacks, aggregates and cement production.[94]

10. Use of cleaner technologies is a new dimension emerging rapidly for cleaner production and to increase production efficiency, and at the same time eliminate or at least minimize emission and waste at their source rather than to treat them at the end of the production chain after they are generated.[95]

11. Industrial wastes like slags, red mud etc. are generated from iron and steel and during extraction of non-ferrous metals such as aluminum and copper. The slags are dumped in the vicinity of plant while red mud is disposed as slurry.[96]

Economic growth and pollution

The Industrial Revolution in Europe in the 18th and 19th centuries saw the beginning of air pollution, which has gradually become a global problem. Air pollution and environmental Destruction have been aggravated in the 20th and 21st centuries in many developing countries like China and India as a result of industrialization and modernization.[97]

Urbanization is a process of relative growth in a country's urban population accompanied by an even faster increase in the economic, political, and cultural importance of cities relative to rural areas. There is a worldwide trend toward urbanization. In most countries it is a natural consequence and stimulus of economic development based on industrialization and post industrialization. International experience shows that in most countries air quality deteriorates in the early stages of industrialization and urbanization.[98] Lacks of implementation of environmental Regulations are contributing to the bad air quality of most of the Indian cities. Air pollutants produced in any air shed are not completely confined, but at Time trespassing all the geographical boundaries, hence do not remain only a Problem of urban centers but

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[94] *Id.*
[95] *Id.*
[96] *Id.*
[97] Zhiqun Zhu, *Political Economy Of China And India: Dealing With Air Pollution N The Two Booming Economies*
University of Bridgeport, United Status. E-mail: zzhu@bridgeport.eduRec*Ibid*o: 22 Febrero 2005 / Revisado: 26 Marzo 2005 / Aceptado: 27 Abril 2005 / Publicado: 15 Junio 2005 HAOL, Núm. 7 (Primavera, 2005), 123-132 ISSN 1696-2060.
[98] *Chapter X. Urbanization and Urban Air Pollution.* Available at http://www.worldbank.org/depweb/beyond/global/chapter10.html (Last accessed Oct 10, 2016).

spread and affect remote rural areas supporting Large productive agricultural land.[99] Much of the 20th century witnessed an increasing trend in urbanization in developing countries. While urbanization can be a stimulus of development, in the process many cities in Asia, Africa, the Near East and Latin America are facing two challenges of pollution and congestion. In 1960, less than 22% of developing world's population was urban and the proportion increased to 34% by 1990. The projections are that 50% of the global population will be urban by 2020. The general state of the environment, including air quality, is deteriorating in many cities of the developing countries. World Bank studies in selected cities of developing countries have shown that swelling urban populations and the growth of industrial activities and automotive traffic in Asia have caused serious air pollution.[100]Urban air pollution generated by vehicles, industries, and energy production kills approximately 800 000 people annually [101] Unable to afford clean fuels, the poor depend on dirty fuels for cooking and heating, filling their dwellings with smoke; their dwellings are usually located near roadways, waste dumps, or industrial areas, subjecting them to a daily barrage of air pollution, noise, and the risks of toxic spills.[102] The greatest threats to human health from industrialization are injuries resulting from workplace accidents, acute chemical poisoning in the workplace or in surrounding areas, and long-term exposure to chemicals released into the general environment.[103]According to another study, while India's gross domestic product has increased 2.5 times over the past two decades, vehicular pollution has increased eight times, while pollution from industries has quadrupled.[104]

The present day legislations in India are the outcome of the growing industrialization and population pressure. There are stated to be over 500 Central and State statues which have at least some concern with environmental protection, either directly or indirectly. Besides that, the common law and Constitutional remedies relating to environmental protection are also

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[99]RichaRai, Madhu Rajput, Madhoolika Agrawal* and S.B. Agrawal, *Gaseous Air Pollutants : A Review On Current And Future Trends Of Emissions And Impact On*, AGRICULTURE JOURNAL OF SCIENTIFIC RESEARCH VOL. 55, 2011 : 77-102 Banaras Hindu University, Varanasi ISSN : 0447-9483 Available at http://www.bhu.ac.in/journal/Issues/JournalofScientifcResearchVol55/9.%20R.Rai%20&%20Madhoolika%20Agrawal-Gasecous.pdf (Last accessed Oct 10, 2016).

[100]*Id.*

[101]*Environment and health in developing countriesHealth and Environment Linkages Policy Series*Available at http://www.who.int/heli/risks/ehindevcoun/en/ (Last accessed Oct 10, 2016).

[102]*The Hidden Tragedy Pollution in the Developing World* Blacksmith Institute, available at http://www.blacksmithinstitute.org/files/FileUpload/files/Additional%20Reports/hidden.pdf (Last accessed Oct 10, 2016).

[103]*Id.*

[104]*Id.*

there.[105] Considering various stages of development in terms of environmental laws we have Environmental Policy and Laws in Ancient India, Medieval India, British India, After Independence and Environmental Policy since 1970.

POLICY AND LAWS IN INDIA:

In 1860, for the first time, an attempt was made to control especially water and atmospheric pollution through criminal sanctions under the Indian Penal Code, 1860. As against prohibitive provisions under the IPC, 1860, the Easement Act of 1882 allowed a prescription right to pollute the water but it was not an absolute right (one was not to "unreasonably pollute" or cause "material injury to other"). The Bengal Smoke Nuisance Act of 1905 and Bombay Smoke Nuisance Act of 1912 were the earlier laws enacted during the British Raj, aimed at controlling air pollution.

The Air (Prevention and Control of Pollution) Act,1981, aimed at checking air pollution via pollution control boards, The Environment (Protection) Act, 1986 is a landmark legislation which provides for single focus in the country for protection of environment and aims at plugging the loopholes in existing legislation. It provides mainly for pollution control, with stringent penalties for violations.

The Public Liability Insurance Act, 1991, provides for mandatory insurance for the purpose of providing immediate relief to person affected by accidents occurring while handling any hazardous substance. The National Environment Tribunals Act, 1995, was formulated in view of the fact that civil courts litigations take a long time (as happened in Bhopal case[106]). The Act provides for speedy disposal of environmental related cases through environmental tribunals. Under the Act, four benches of the tribunal will be set up in Delhi, Calcutta, Madras and Bombay and 8,000 of the most Hazardous industrial units in the country will be brought under its security. The National Environment Appellate Authority Act, 1997, provides for the established of a National Environment Appellant Authority (NEAA) to hear appeals with respect to restriction in areas in which any industries, operations or processes

[105]Environmental Legislations InIndia. Available at http://shodhganga.inflibnet.ac.in/bitstream/10603/6565/9/09_chapter%204.pdf (Last accessed Oct 10, 2016)

[106] The Bhopal Gas Tragedy, 1984 was a catastrophe that had no parallel in the world's industrial history. In the early morning hours of December 3, 1984, a rolling wind carried a poisonous gray cloud from the Union Carbide Plant in Bhopal, Madhya Pradesh (India). Forty tons of toxic gas (Methy-Iso-Cyanate, MIC) was accidentally released from Union Carbide's Bhopal plant, which leaked and spread throughout the city. (Source: http://www.bmhrc.org/Bhopal%20Gas%20Tragedy.htm) (Last accessed Oct 10, 2016).

shall not be carried out or shall be carried out subject to certain safeguards under the Environment (Protection) Act, 1986.[107]

ENVIRONMENTAL LAW AND THE INDIAN CONSTITUTION:

1. Duty of the State (Part IV)

Part IV of the Constitution of India contains the directive principles of State policy. These directives are the active obligations of the State; they are policy prescriptions for the guidance of the Government.[108]

Article 37 of Part IV of the Constitution limits the application of the directive principles by declaring that these principles shall not be enforceable by any Court. Therefore, if a directive is not followed by the State, its implementation cannot be secured through judicial proceedings. On the other hand, these principles are fundamental in the governance of the country and it is the duty of the state to apply these principles during the process of law-making.[109]

Part IV - Directive Principles of State Policy

Article 48A. Protection and improvement of environment and safeguarding of forests and wild life The State shall endeavor to protect and improve the environment and to safeguard the forests and wild life of the country. The parliament had considerable debate over the wording of the draft Article 48-A. Several amendments were moved in both the houses of the Parliament. H.M. Seervai has correctly pointed out:

Article 48-A reflects an increasing awareness of people all over the word of the need to preserve the environment from pollution, especially in urban areas. Smoke, industrial waste, deleterious exhaust fumes from motor cars and other combustion engines are injurious to the health and well-being of the people and foul the atmosphere. The preservation of forests and their renewal by afforestation has long been recognized in India as of great importance both with reference to rainfall and to prevent erosion of the soil by depriving it of forests which protect it. The preservation of wild life is looked upon as necessary for the 'preservation of

[107] *Supra* note 105.
[108] *Introduction to Environmental Law and Policy*, available at http://www.expertchoice.in/FilesDownload/340session_1_5.pdf (Last accessed Oct 10, 2016).
[109] *Id.*

ecological balance'. Article 48- A rightly emphasis the fact that the State should try not only to protect but to improve the environment.[110]

Article 39(e), 47 and 48-A of the Directive Principles of State Policy have a definite bearing of environmental problems. They, by themselves and collectively impose a duty on the State to secure the health of the people, improve public health and protect and improve the environment. Environmental pollution may damage the monuments of national importance, the protection of which is a duty of the State under Article 49 of the Constitution.[111]

Article 49 of the Directive Principles of State Policy provides for the obligation of the State to protect monuments, places and objects of national importance.[112]

Article 51(c) directs the State to foster respect for international law and treaty obligations in the dealings of organized peoples with one another. Therefore, in view of the range of international treaties law and treaty obligations in Article 51(c), read to conjunction with the specific treaty provision, may also serve to strengthen the hands of pro-conservation judge.[113]

Fundamental Duties of the Citizens (Part IV A)

The Constitution (Forty-second Amendment) Act, 1976 inserted part IV-A into the Constitution of India. This new part prescribes certain fundamental duties for the citizens of India. The sole Article of this part, Article 51-A, specifies ten fundamental duties.[114]

Article 51A. Fundamental duties

It shall be the duty of every citizen of India..... (g) to protect and improve the natural environment including forests, lakes, rivers and wild life, and to have compassion for living creatures; Then Indian Constitution has imposed a joint responsibility upon the State; and every citizen of India to protect and improve the natural environment. In the words of Ranganath Mishra, J.:

"Preservation of environment and keeping the ecological balance unaffected is a task which not only Government but also very citizen must undertake. It is a social obligation and let is

[110]H.M. SEERVAI, CONSTITUTIONAL LAW OF INDIA: A CRITICAL COMMENTARY, 2019 (Vol.2, 1993).
[111]*Supra* note 105.
[112]*Id.*
[113]*Id.*
[114]*Id.*

remind every citizen that it is his fundamental duty as enshrined in Article 51-A (g) of the Constitution"[115]

After making reference to Article 48-A and Article 51-A (g), the High Court of Himachal Pradesh concluded- Thus there is both a Constitutional pointer to the State and a Constitutional duty of the citizens not only to protect but also to improve the environment and to preserve and safeguard the forests, the flora and fauna, the rivers and lakes and all the other water resources of the country. The neglect or failure to abide by the pointer or to perform the duty is nothing short of a betrayal of the fundamental law which the State and, indeed, every Indian high or low, is bound to uphold and maintain.[116]

Fundamental Rights (Part III): Right to Wholesome Environment

Part III of the Constitution of India contains fundamental rights. These rights were included in the Constitution after long debates in the Constituent assembly.

Part III - Fundamental Rights

Article 21. Protection of life and personal liberty

No person shall be deprived of his life or personal liberty except according to procedure established by law.

Article 32. Remedies for enforcement of rights conferred by this Part (1) the right to move the Supreme Court by appropriate proceedings for the enforcement of the rights conferred by this Part is guaranteed.

(2) The Supreme Court shall have power to issue directions or orders or writs, including writs in the nature of habeas corpus, mandamus, prohibition, quo warranto and certiorari, whichever may be appropriate, for the enforcement of any of the rights conferred by this Part.[117]

Writ Jurisdiction and Public Interest Litigations

One of the most innovative parts of the Constitution is that the Writ Jurisdiction is conferred on the Supreme Court under Article 32 and on all the High Courts under Article 226. Under

[115]*Rural Litigation and Entitlement Kendra v. State of U.P*., AIR 1987 SC 359, 364.
[116]*Kinkridevi v. State of Himachal Pradesh*, AIR 1988 HP.
[117] *Supra* note 108.

these provisions, the courts have the power to issue any direction or orders or writs, including writs in the nature of habeas corpus, mandamus, prohibition, quo warranto and certiorari, whichever is appropriate. This has paved way for one of the most effective and dynamic mechanisms for the protection of environment, that is, Public Interest Litigations.[118]

The Precautionary Principle

Beginning with Vellore Citizens' Welfare Forum v. Union of India,[119] the Supreme Court has explicitly recognized the precautionary principle as a principle of Indian environmental law. More recently, in A.P. Pollution Control Board v. M.V. Nayudu,[120] the Court discussed the development of the precautionary principle.[121] Furthermore, in the Narmada case,[122] the Court explained that "When there is a state of uncertainty due to the lack of data or material about the extent of damage or pollution likely to be caused, then, in order to maintain the ecology balance, the burden of proof that the said balance will be maintained must necessarily be on the industry or the unit which is likely to cause pollution."[123]

The "Polluter Pays" Principle

The Supreme Court has come to sustain a position where it calculates environmental damages not on the basis of a claim put forward by either party, but through an examination of the situation by the Court, keeping in mind factors such as the deterrent nature of the award.[124] However, it held recently that the power under Article 32 to award damages, or even exemplary damages to compensate environmental harm, would not extend to the levy of a pollution fine.[125] The "polluter pays" rule has also been recognized as a fundamental objective of government policy to prevent and control pollution.[126]

Sustainable Development and Inter-generational Equity

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[118] *Id.*
[119] AIR 1996 SC 2715.
[120] AIR 1999 SC 812.
[121] *S. Jagannath v. Union of India* (Shrimp Culture case), AIR 1997 SC 811.
[122] *Narmada BachaoAndolan v. Union of India*, AIR 2000 SC 3751.
[123] P. Leelakrishnan, "*Environmental Law*", ANNUAL SURVEY OF INDIAN LAW, VOLUME XXXVI, 2000, pp. 252-257.
[124] The explanation for the principle of absolute liability in M.C. Mehta v. Union of India (Oleum Gas case), AIR 1987 SC 965, and its subsequent application in Indian Council for Enviro-Legal Action v. Union of India, (1996) 3 SCC 212.
[125] M.C. Mehta v. Kamal Nath, AIR 2000 SC 1997.
[126] Ministry of Environment and Forests, Government of India, "Policy Statement for Abatement of Pollution", para 3.3, February 26, 1992.

Economic Aspiration Polluted Respiration: Story of Developing India

What is meant by the phrase "sustainable development"? The definition which is used most often comes from the report of the Brundtland Commission, in which it was suggested that the phrase covered "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." However, different levels of societies have their own concept of sustainable development and the object that is to be achieved by it. For instance, for rich countries, sustainable development may mean steady reductions in wasteful levels of consumption of energy and other natural resources through improvements in efficiency, and through changes in life style, while in poorer countries, sustainable development would mean the commitment of resources toward continued improvement in living standards. Sustainable development means that the richness of the earth's biodiversity would be conserved for future generations by greatly slowing and, if possible, halting extinctions, habitat and ecosystem destruction, and also by not risking significant alternations of the global environment that might – by an increase in sea level or changing rainfall and vegetation patterns or increasing ultraviolet radiation – alter the opportunities available for future generations. How has this phrase been understood in India? Perhaps the answer lies in the decision of the Supreme Court in Narmada BachaoAndolan v. Union of India[127] wherein it was observed that "Sustainable development means what type or extent of development can take place, which can be sustained by nature/ecology with or without mitigation." In this context, development primarily meant material or economic progress. Being a developing country, economic progress is essential; at the same time, care has to be taken of the environment. Thus, the question that squarely arises is: How can sustainable development, with economic progress and without environmental regression, be ensured within the Indian legal framework? This can be achieved through the implementation of good legislation. The courts have attempted to provide a balanced view of priorities while deciding environmental matters. As India is a developing country, certain ecological sacrifices are deemed necessary, while keeping in mind the nature of the environment in that area, and its criticality to the community. This is in order that future generations may benefit from policies and laws that further environmental as well as developmental goals. This ethical mix is termed sustainable development, and has also been recognized by the Supreme Court in the Taj Trapezium case.[128] In State of Himachal Pradesh v. Ganesh Wood

[127] 2000 (10) SCC 664 at p.727.
[128] *M.C. Mehta v. Union of India*, AIR 1997 SC 734. (perKuldip Singh, J.).

Products,[129]the Supreme Court invalidated forest-based industry, recognizing the principle of inter-generational equity as being central to the conservation of forest resources and sustainable development.[130]

Indian Penal Code, 1860

The Indian Penal Code 1860, enacted during the British rule, contains one chapter (Chapter XIV) on offences affecting public health, safety, convenience, decency and morals. Section 268 covers public nuisance. Sections 269 and 272 deal with adulteration of food or drink for sale and adulteration of drugs respectively. Section 277 lays down that, whoever, voluntarily corrupts or fouls the water of any public spring or reservoir, so as to render it less fit for the purpose for which it is ordinarily used shall be punished with imprisonment for a term which may extend to 3 months, or with a fine which may extend to Rs.500, or with both. Section 278 lays down that whoever voluntarily vitiates the atmosphere so as to make it noxious to the health of persons in dwelling or carrying on business in the neighborhood or passing along a public way shall be punished with fine which may extent to Rs.500. Sections 284,285 and 286 deal with negligent conduct with respect to poisonous substances, combustible matter and explosive substances. Sections 428 and 429 cover mischief to animals.[131]

The Air (Prevention and Control of Pollution) Act, 1981

The preamble to the Act states that 'whereas decisions were taken at the United Nations Conference on the Human Environment held in Stockholm in June 1972, in which India participated, to take appropriate steps for the preservation of the natural resources of the earth which, among other things, include the preservation of the quality of air and control of air pollution; And, whereas it is considered necessary to implement the decisions aforesaid in so far as they relate to the preservation of the quality of air and control of air pollution'. The central government used Article 253 to enact this law and made it applicable throughout India.[132]This Act defines air pollutant as 'any solid, liquid or gaseous substance (including

[129] AIR 1996 SC 149.
[130] Indian Council for Enviro-Legal Action v. Union of India (CRZ Notification case), (1996) 5 SCC 281. The Court noted that the principle would be violated if there were a substantial adverseecological effect caused by industry.
[131]U. Sankar, *Laws And Institutions Relating To Environmental Protection In India*, available at http://www.mse.ac.in/pub/op_sankar.pdf (Last accessed Oct 10, 2016).
[132]*Id.*

noise) present in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or plants or property or environment'.[133]

The Water (Prevention and Control of Pollution) Act, 1974 paved the way for the creation of Central Pollution Control Board (CPCB) and State Pollution Control Boards (SPCBs). The main function of the CPCB 'shall be to promote cleanliness of streams and wells in different areas of the states'. The term stream includes river, watercourse, inland water, subterranean waters, and sea or tidal waters to such extent or such point a state government may specify in this behalf.[134]

National Air Quality Monitoring Programme (NAMP)

Central Pollution Control Board is executing a nation-wide programme of ambient air quality monitoring known as National Air Quality Monitoring Programme (NAMP). The network consist of 308 operating stations covering 115 cities/towns in 25 States and 4 Union Territories of the country.

The objectives of the N.A.M.P. are

- To determine status and trends of ambient air quality;
- To ascertain whether the prescribed ambient air quality standards are violated,
- To Identify Non-attainment Cities
- To obtain the knowledge and understanding necessary for developing preventive and corrective measures;
- To understand the natural cleansing process undergoing in the environment through pollution dilution, dispersion, wind based movement, dry deposition, precipitation and chemical transformation of pollutants generated.[135]

The Environment (Protection) Act 1986

This Act was enacted in the aftermath of the Bhopal gas tragedy in 1984[136] claiming more than 3000 lives. The Statement of Objects and Reasons of this Act refers to the decisions taken at the Stockholm Conference in June 1972 and expresses concern about the decline in

[133] *Id.*
[134] *Id.*
[135] Available at http://cpcbenvis.nic.in/airpollution/objective.htm (Last accessed Oct 10, 2016).
[136] *Supra* note 105.

environmental quality, increasing pollution, loss of vegetal cover and biological diversity, excessive concentrations of harmful chemicals in the ambient atmosphere, growing risks of environmental accidents and threats of life system.

According to this Act environment includes 'water, air and land and the interrelationship which exists among and between water, air and land, and human beings, other living creatures, plants, micro-organism and property'. It defines hazardous substance as 'any substance or preparation which, by reasons of its chemical or physiochemical properties or handling, is liable to cause harm to human beings, other living creatures, plants, micro-organism, property or the environment'.[137]

CONCLUSION:

Number of laws are been constructed for bringing down the Air pollution in India .Number of policies have been made to make India a greener place to live. Incidences like Beijing china where the schools were shut down for of days because of the smog or the recent case in DeonarMumbai where dumping ground caught fire and the smog caused similar shutting down of schools and offices are becoming more and more common in the developing nations .The encouragement shown in the recent budget 2016-17 to make this country a green zone is well acknowledged by the entrepreneurs and the core industries in the country .The subsidies are going to play a projecting role in encouraging eco -friendly usage of energy. The association between developing economies and Air pollution cannot be overlooked. The developing Economies like India have to make more and more provisions not just for the development of the economy but also to protect and preserve the environment. Special benefits have been provided by the law makers and the government in order to have a greener industrialization and a cleaner aura in the country. The economic benefit due to the industrialization is undoubtedly not advantageous as compared to the number of lives lost and the climate change which in the end will cause no sustainable development. One of the other prominent source of the air pollution is vehicular emissions which different states are vexing to deal differently .The current model of Odd-Even by the Delhi government has proven to be bifacial but on a larger scale other issues like not having special ways for non-motorized vehicles or improving public transportation should also be looked upon .The urban poor and the rural poor with Indoor pollution are already been given various subsidies which is

[137] *Id.*

encouraging them to use less tools causing Indoor pollution .The limitation here is that the Indoor pollution has been understood just in light of cooking equipment but in reality Indoor pollution can be a result of usage of cleaners to pesticides which means education in the field of indoor pollution would play a very major role in curbing the problem .The laws which are already pertaining are certainly lacking a major enforcement regime as issues like adulteration of fuel are still part of the country. On a whole the problems like Industrial pollution are been suppressed by the laws made and greener development has been encouraged .But other issues like vehicular pollution which results in major emission of pollutants and Indoor pollution of the Rural and Urban poor have still to be addressed with better policies for making India a green zone which it was before the Industrial revolution and the urbanization.

Environment Law and Practice Review

PERMISSIBILITY OF EXERCISE OF SUO-MOTU POWERS BY NATIONAL GREEN TRIBUNAL

Aditya Thakur and Kashish Sinha*

Abstract

The National Green Tribunal was established by the National Green Tribunal Act, 2010 in order to provide for an effective adjudicatory mechanism for redressal of environmental disputes. Since its inception, the NGT has been at the forefront of many battles for environmental justice and is expected to play a major role in securing for many citizens the fundamental right to clean and healthy environment, a vision which remains unrealized till this day. In pursuance of its duties, the NGT has also taken up several issues on its own motion. However, the source of this suo-motu power remains largely unknown. The NGT Act and the Rules framed therein do not expressly confer or mention the presence of suo-motu powers with the NGT. Hence it becomes exceptionally difficult to reconcile the suo-motu jurisdiction of NGT with statutory provisions, especially in light of the well-recognized principle that tribunals and statutory bodies are strictly bound by the statute which created them and cannot claim any further powers. While many will claim that it is desirable for the Tribunal to act on its own motion to remedy injustice, what needs to be seen is whether such exercise is permissible under the present setup or not. The issue has been a source of significant controversy in environmental and legal circles and recently in 2014, the Madras High Court while hearing a Public Interest Litigation restrained the Tribunal from taking up cases suo-motu. Although the petition was later on dismissed on grounds of maintainability, the key question still remains unanswered. This essay is an attempt to bring forth the wide ranging arguments from both sides in the raging debate regarding the source of NGT's suo-motu powers.

1. INTRODUCTION

The National Green Tribunal (NGT) was formed in 2010 with the view to provide for an effective mechanism to adjudicate environmental cases. Since its inauguration, the tribunal has also been at the centre of several legal controversies. The question whether the Tribunal possesses the power to initiate *suo-motu* proceedings is one such contentious issue and has sparked a major debate in legal and environmental circuits. This debate regarding *suo-motu*

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powers acquires relevance primarily because of two main reasons: *first*, because it involves important administrative and constitutional law issues pertaining to the extent of inherent powers of tribunals and the nature and powers of tribunals *vis-à-vis* courts; and *second*, because the final outcome of the debate is bound to have several ramifications on the level and status of environmental protection in India since not only *suo-motu* powers are strongly mandated for a robust, powerful and efficient judicial set-up, but also because the debate regarding *suo-motu* powers entails within itself several important issues concerning with the status of NGT in general. Moreover, the issue gains additional significance due to the fact that the NGT has consistently acted on its own motion in several cases, so much so that this exercise has become part a quintessential of its functions.

The origin of this debate lies in the fact that the National Green Tribunal Act nowhere expressly confers the Tribunal with *suo-motu* powers and it is a generally accepted principle that tribunals and statutory bodies are conferred only with those powers which are expressly mentioned in the statute which created it. Yet NGT has ignored this challenge and has continued to take cognizance of several cases on its own motion. Nevertheless numerous arguments have been advanced both in favour and disfavour of *suo-motu* powers. This essay is an attempt to judicially analyse these arguments with an object to resolve the debate.

2. TRACING THE DEBATE

The debate regarding *suo-motu* powers of NGT is a part of a long standing tussle between the Ministry of Environment and Forests and the National Green Tribunal. The issue came into public attention in September 2013, when the MoEF through an affidavit stated before the Supreme Court that the NGT does not have the powers to act *suo-motu* in environmental cases but has been doing so beyond its remit.[1] This affidavit also revealed that that the Tribunal had written to the government asking for an amendment in law so as to make provisions for *suo-motu* powers at least on two occasions, but these demands were refused by the Ministry. This issue was also raised in Lok Sabha by MP, Neeraj Shekhar, who asked for government intervention against NGT for acting beyond the scope of its powers.[2] The issue revived again in January 2014, when the Madras High Court, while hearing a Public Interest Litigation, passed an order restraining the Tribunal's Southern Zone from initiating *suo-motu*

[1] N. Sethi, *NGT does not have Powers to Act Suo-motu: Government*, The Hindu (11/09/2013), available at http://www.thehindu.com/todayspaper/tpnational/ngtdoesnothavepowerstoactsuomotugovernment/article5114766.ece

[2] Matter under Rule 377 by Neeraj Shekhar, *Need to ensure adherence to powers and functions conferred to National Green Tribunal as per National Green Tribunal Act, 2010*, Lok Sabha (06/05/2013).

proceedings due to the reason that the Tribunal is strictly bound by the NGT Act, 2010 and there was nothing in the act which provided NGT with *suo-motu* powers.[3] Reacting to this order, the chairman of NGT, Justice Swatantar Kumar, while speaking in an interview defended exercise of *suo-motu* powers by NGT, claiming it to be 'an integral feature of the Tribunal for better and effective functioning of the institution'.[4] Although the original petition against exercise of *suo-motu* jurisdiction was dismissed on technical grounds relating to maintainability[5], the question of law raised in the petition still remains unanswered.

3. DESIRABILITY OF SUO-MOTU POWERS

The first question which we must consider before delving into the debate regarding *suo-motu* powers of the Tribunal in detail, is to see whether conferring the green tribunal with *suo-motu* powers is in truth desirable or not. While many would opine that it would be a bare minimum for an adjudicatory body, with functions as crucial for environment protection as NGT, to be imparted with powers to act on its own motion, counter-narratives to this notion exist.

3.1. Judicial Activism?

The most notable criticism of exercise of *suo-motu* powers by courts is the comparison of this power with 'judicial overreach'. It is argued that by taking up cases *suo-motu*, the court transgresses beyond its functions and assumes the role of executive thus obliterating the doctrine of separation of powers. It is also argued that *suo-motu* proceedings are a violation of the principles of natural justice, according to which no-one shall be a judge in his own cause. This is because the outcome of the proceedings may be biased as the judge who decides the issue has at least, if not more than that, an ideological affiliation with the issue. This view is further strengthened from the fact that India is a predominantly adversarial system where the courts have to act as neutral umpires while adjudicating as if it were a game of cricket. Hence, they shall sit idle until the game is set in motion by the parties.

However, it wouldn't be proper to subject Indian courts and tribunals to this limited understanding of adjudication, as our judiciary has not shied away from venturing in the domain of judicial activism. On the other hand, the judiciary has played a proactive role in ensuring realization of civil and political rights as well as socio-economic rights for citizens,

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[3] S. Banerjee, *Madras High Court restrains Green Tribunal from initiating Suo-motu Proceedings,* Down To Earth (08/01/2014), available at http://www.downtoearth.org.in/news/madras-high-court-restrains-green-tribunal-from-initiating-suo-motu-proceedings-4320

[4] *NGT must have suo-motu powers,* Down to Earth (15/11/2014), available at http://www.downtoearth.org.in/interviews/ngt-must-have-suo-motu-powers-47542

[5] P. Sundararajan v. Deputy Registrar, N.G.T., 2015 (4) CTC 353.

by developing the concept of Public Interest Litigations as well as by acting *suo-motu* in several cases. This approach of the judiciary has been often been praised, mostly among the common folks. Justice A.S. Anand, while speaking at the First Judiciary-Executive Conference, 2001 noted that, *'it is my firm belief that judicial activism reinforces the common man's faith in the rule of law and democracy'*[6]. It is widely believed that '*the active participation of the judiciary in either legislative or administrative processes has almost always, brought good to the people'* and that this approach of the judiciary ought to continue.[7] Gopal Sankaranarayanan, an advocate, writes[8], *'I believe that the courts have a duty — nay, an obligation — to step in, suo-motu if necessary, where a breach has occurred in the constitutional edifice'*. Moreover, inroads have been made to the doctrine that adjudication is always adversarial in nature. Adjudication in public interest cases is inquisitorial in nature and the judiciary and government are expected to work hand-in-gloves for attainment of the social objective.[9] Hence, NGT, also being a body having an important public interest purpose to serve shall not be confined within narrow walls of traditional adversarial adjudication.

3.2. *Suo-motu* and Strong Judiciary

Furthermore, an independent and effective judiciary is a *sine qua non* for any legal system to function properly. The Supreme Court in *A.P. Pollution Control Board v. M.V. Nayadu*[10] envisaged adjudicatory machinery in form of 'Environmental Courts' to hear all kinds of environmental cases. The 186th Law Commission Report dealt with the issue in detail and suggested formation of Environmental Courts with paraphernalia of powers, including the power to punish for contempt. The parliament went on to establish NGT, recognizing the need for an expert body dedicated to remedying environmental cases. The NGT Act states that the tribunal is meant for the enforcement of any legal right relating to environment. The Supreme Court on various junctures has stated that the right to clean and pollution-free environment is an integral part of the 'right to life' under Article 21[11], this being recognized by the NGT Act also. Therefore, it may be said that the Tribunal acts as the guardian of

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[6] Justice A.S. Anand, *Extempore Speech delivered at the First Judiciary-Executive Conference at Ranchi on 1st July, 2001*, The Practical Lawyer (2001), available at http://www.supremecourtcases.com/index2.php?option=com_content&itemid=1&do_pdf=1&id=750

[7] P.S. Chowdhury, *From Activism to Restraint: Retrograde Judicial Philosophy or Merely Controverting Judicial Overreach*, 3 G.N.L.U Law Review 17, 30 (2012).

[8] G. Sankaranarayanan, *Man, Damn US*, 9 Supreme Court Cases J- 6, 26 (2009).

[9] Manohar Joshi v. State of Maharashtra, (2012) 3 SCC 619.

[10] A.P. Pollution Control Board v. M.V. Nayadu, (1999) 2 SCC 718.

[11] N.D. Jayal. v. Union of India, (2004) 9 SCC 362.

Fundamental Rights in the sense that it protects citizen's right to environment under Article 21. As the Tribunal is the sole adjudicatory body which specializes in dealing with environmental cases, it is expected of it to have an array of powers with it, including the power to act *suo-motu*.

3.3. Accessibility of the Tribunal

Additionally, we shall also consider the argument that *suo-motu* powers increase accessibility of the Tribunal. The Supreme Court, in reference to *suo-motu* PILs, has observed that, *'the Courts have adopted the said tool so that persons in disadvantaged situation because of certain reasons – social, economic or socio-economic – are in a position to have access to the Court'.*[12] The relative inaccessibility of the green tribunal when compared to other forums has been pointed out as a major weakness impeding the tribunal in performance of its functions.[13] The issue of tribunal's inaccessibility was also raised in the parliament during discussion on the NGT Bill.[14] Whilst the tribunal has benches in five major cities, majority of environmental pollution cases which demand immediate relief originate in remote poverty-stricken regions. Though, at times, these issues manage to find their way in the mainstream through media, yet approaching the tribunal for claiming their rights remains to be a difficult ordeal for people in these regions. It has been pointed out that very little litigation has been initiated from the mineral rich states, even though mass protests against environmental clearances to mining projects are rampant there.[15] Similar has been the case for north-eastern states. Also, there are cases where environmental degradation is apparent, yet due to reasons such as inconvenience, no party approaches the tribunal. In these kinds of cases, it would be justifiable for the tribunal to exercise *suo-motu* jurisdiction. In fact, such exercise ought to be encouraged. Our courts have often stressed on the need for quick action in environmental cases.[16] Taking up cases *suo-motu* helps the court in achieving vision of speedy and universal justice. *Suo-motu* powers won't be a cure-all to the accessibility issue; nevertheless they will facilitate improvement in this regard.

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[12] Joint Secretary, Political Department, Government of Meghalaya v. Registrar, High Court of Meghalaya, Civil Appeal No. 2987 of 2016 (Supreme Court, 18/03/2016) .

[13] See C. Bhushan, *NGT must be strengthened,* Down to Earth (30/11/2014), available at http://www.downtoearth.org.in/coverage/tribunal-on-trial-47400

[14] Discussion on Government Bill by Supriya Sule, *Further discussion on the motion for consideration of the National Green Tribunal Bill, 2009 moved by Shri Jairam Ramesh on the 15th March, 2010 (Bill Passed),* Lok Sabha (30/04/2010).

[15] S.K. Patra & V.V. Krishna, *National Green Tribunal and Environmental Justice in India,* Indian Journal of Geo-Marine Science (forthcoming in Vol. 44 (4), April, 2015).

[16] Suo Motu v. Vatva Industries Association, AIR 2000 Guj 33.

3.4. Pendency Issue

Also, certain critics of *suo-motu* powers argue that since NGT was created in light of enormous backlog of environmental cases plaguing the constitutional courts, the Tribunal shall focus on providing for speedy disposal of already pending cases instead of further increasing pendency by initiating cases on its own. However, this understanding of role of NGT is too narrow. Although, speedy disposal of pending cases is an important part of the Tribunal's functions, the Tribunal also has a greater purpose of ensuring remedy for all violations of legal rights related to environment. It shall also be noted that even though the number of cases being filed before the tribunal are increasing rapidly, the Tribunal so far, has done better than other courts in disposing of cases speedily. As of August 2014, 3,458 cases of the total 6,017 cases instituted before the tribunal were disposed of, at a rate of about 60 per cent.[17] Restraining *suo-motu* initiation of proceedings is not any solution to the problem of pendency facing courts; rather the entire issue necessitates greater deliberation and thought.

3.5. *Suo-motu* so far

The role, which the NGT has played so far, in securement of environmental justice, has received adulation.[18]. In *Court on its own motion v. State of Himachal Pradesh*[19] the court took cognizance of environmental degradation due to tourist activities in eco-sensitive region of Rohtang Pass and issued guidelines in this regard. In *Suo-Motu v. Chief Secretary, Government of Uttarakhand,*[20] the tribunal issued directions to curb pollution in the Kosi River after initiating *suo-motu* proceedings, once the matter came to its knowledge via a letter of the State Human Rights Commission. The tribunal has also *suo-motu* taken up the issue of dumping of debris at various beaches in Chennai[21] and quarrying operations in Satyamangalam Tiger Forest Reserve in Tamil Nadu[22]. The tribunal has also shown concerns about public health and has taken cognizance of supply of poor quality tap water in

[17] Y. Chowdhary, *Tribunal on Trial*, Down to Earth (30/11/2014), available at http://www.downtoearth.org.in/coverage/tribunal-on-trial-47400

[18] Armin Rosencranz, Geetanjoy Sahu, *Assessing the National Green Tribunal after Four Years* 5 Monsoon J.I.L.S. (2014) 191.

[19] Court on its own motion v. State of Himachal Pradesh, Application No. 237 of 2013(THC) (National Green Tribunal, 06/02/2014).

[20] Suo Motu v. Chief Secretary, Government of Uttarakhand, Original Application No. 239 of 2015 (National Green Tribunal, 10/12/2015).

[21] Suo motu v. State of Tamil Nadu, Application No. 204 of 2015(SZ) (National Green Tribunal, 29/01/2016).

[22] Suo Motu v. Union of India, Application No. 165 of 2013(SZ) (National Green Tribunal, 05/03/2013).

Chennai.[23] The tribunal has initiated several other *suo-motu* proceedings, gradually making them quintessential part of its functions. An active and enthusiastic judiciary casts an impression that the legal system is operating properly and thus, is well-received by common citizens. At the same time, several otherwise untouched issues finally receive much-needed attention after decades of governmental neglect and apathy, all thanks to an 'activist' judiciary. In light of these arguments, it may be concluded that conferment of *suo-motu* powers upon NGT is indeed desirable and such exercise, to the best possible extent, shall be encouraged.

4. PERMISSIBILITY UNDER THE NATIONAL GREEN TRIBUNAL ACT, 2010

Although we have seen that it is desirable for the Tribunal to contain with itself *suo-motu* powers, the real conflict underlying the present debate is not the desirability, but the permissibility of exercise of *suo-motu* powers. So, what really needs to be examined is whether *suo-motu* exercises are legally possible under the present setup or not. In order to pursue with our investigation, we will first evaluate the provisions of the NGT Act and then assess what the provisions have to offer about the legality of NGT's *suo-motu* powers.

4.1. Tribunal's Jurisdiction

The Tribunal has the jurisdiction over all civil cases where a substantial question related to environment is involved, including enforcement of any legal right related to environment and such question arises out of implementation of enactments specified in Schedule I.[24] S. 14 of the NGT Act talks about 'applications' to the Tribunal, whereas S. 16 refers to 'appeals'. S. 14(2) states that the tribunal shall hear 'disputes' arising from the questions referred to in S. 14(1) and will settle such 'disputes'. Further, S. 18(1) of the NGT Act reads that 'the applications under S. 14 and 15 or appeals under S. 16 shall be made in the form which may be prescribed'. This form has been prescribed in the NGT (Practice and Procedure) Rules, 2011 and Rule 8 of these rules makes it clear that an application under S. 18, NGT Act shall be made by the 'applicant' or 'appellant'. An 'applicant' is a 'person' making an application to the tribunal under Section 18.[25] Also, Section 19(1) states that Tribunal is not bound by the rules contained in the Civil Procedure Code, 1908, but will be guided by the principles of natural justice. Section 19(2) empowers the Tribunal to regulate its own procedure. Also,

[23] Tribunal on its own motion v. Secretary, Municipal Administration and Water Supply Department, Application No. 182 of 2013(SZ)(National Green Tribunal, 13/01/2016).
[24] S.14(1), National Green Tribunal Act, 2010.
[25] Rule 2(c), National Green Tribunal (Practice and Procedure) Rules, 2011.

Section 19(4) declares that the tribunal shall have the same power as that of civil court in respect of certain matters which are enumerated therein.

4.2. Is existence of 'Dispute' necessary?

A bare perusal of the provisions of NGT Act would reveal to us that none of the provisions of the Act or the Rules anywhere directly read or suggest that the NGT can itself hear a matter or application *suo-motu*. On the other hand, critics of *suo-motu* powers may argue that provisions of the NGT Act suggest that the tribunal shall function strictly in an adversarial manner since the existence of an 'applicant' or 'appellant' is necessary to initiate proceedings before the tribunal. Furthermore, the use of the term 'dispute' in Section 14(2) somewhat strengthens this argument. In an early decision[26], it was held that a true judicial decision presupposes an existing 'dispute' between two or more parties and then involves four requisites, first being presentation of their case by parties to the dispute. So, a dispute involves at least two parties and is required to be presented by these parties to the court. This is not the case with *suo-motu* proceedings. In another case, the Bombay High Court, while determining legality of an order passed by Collector under S. 119 of the Land Revenue Code, where he had *suo-motu* made corrections in the boundary between lands of two neighbours, held that a dispute meant a dispute between two neighbouring owners and not a dispute between the Collector and the owner. Hence the collector's *suo-motu* inquiry was set aside.[27] Again, the Calcutta High Court while commenting upon the Industrial Tribunal said that, *"tribunal has no jurisdiction to find out or discover a dispute of difference, which is not raised by the parties. The Tribunal cannot suo-motu raise any dispute unless raised by either of the parties"*.[28]

However, objections can be made against such narrow interpretation. The tribunal, so far, has adopted an approach of interpreting issues concerning its approachability in the broadest manner possible. For example, in *Samata v. Union of India,*[29] the tribunal while interpreting the term 'aggrieved person' used in the National Environment Appellate Authority Act, 1997, included within the term's scope any person who was likely to be aggrieved or was directly or indirectly aggrieved. The court added: "*In so far as the environmental matters are concerned, it cannot be stated that the person really aggrieved should alone be permitted to*

[26] Cooper v. Wilson, (1937) 2 KB 309; Maqbool Hussian v. State of Bombay, 1953 SCR 630.
[27] Mallikarjuna Deshmukh v. Anandram Deshmukh, AIR 1929 Bom 391.
[28] Indian Bank v. Central Government Industrial Tribunal, (2003) 4 LLN 989.
[29] Samata v. Union of India, Appeal No. 9 of 2011 (National Green Tribunal, 13/12/2013).

initiate an action." Similarly, the term 'dispute' shall not be interpreted in a way which defeats the tribunal's object by excluding cases where the aggrieved party has not approached the court. Rather the term 'dispute' shall be construed in a broader sense, meaning any situation which furnishes ground for legal action. Also, we have already discussed that NGT shall not be bound within restricted confines of adversarial adjudication. To substantiate this point further, the Kerala High Court while commenting on the Motor Vehicles Claims Tribunal has observed that, "*Tribunals called upon to discharge the legislature's mandate of ensuring just and reasonable compensation to the victims cannot function merely as umpires in an adversarial litigative process."*[30] The NGT, quite similarly, also carries the mandate to grant compensation to victims of environmental hazards and disasters. Apart from this, other public interest functions of the tribunal cannot be ignored. Hence, the green tribunal shall not lose its *suo-motu* powers due to a narrow interpretation of its jurisdiction.

4.3. 'Tribunals are bound within four corners of the statute'

The primary argument to show as to why the NGT does not have *suo-motu* powers is that the NGT is vested with only those powers which have been expressly conferred upon it by the NGT Act, 2010, *suo-motu* not being one of these powers. It is a recognized principle of law that tribunals being creation of a statute have limited jurisdiction and are not supposed to overreach that.[31] While exercising a statutory power, the court has to act within the four corners of the statute.[32] The tribunals, on numerous occasions, have been refrained from exercising powers which weren't conferred to them by the statute. For example, it was held that the action of the Labour Appellate Tribunal in hearing an appeal *suo-motu* was hardly legitimate.[33] Similarly, the Supreme Court held that the Copyright Board could not pass an order for interim relief as no express provision conferring such power was mentioned in the Copyright Act, 1957.[34] Also, it was held that the Board of Revenue didn't have the power to take cognizance of a matter *suo-motu,* because the same was not provided in the statute.[35]

Also, critics of *suo-motu* argue that the language used in the NGT, Act is plain and unambiguous, and therefore NGT can't claim *suo-motu* powers. The Bombay High Court has remarked that, *"Power to act suo motu should be spelt out by the provisions and it is*

[30] New India Assurance Company Ltd. v. Pazhaniammal, (2009) 3 KLJ 511.
[31] O.P. Gupta v. Rattan Singh, (1964) 1 S.C.R. 259.
[32] Abdul Basit v. Mohd. Abdul Kadir Choudhary, (2014) 10 SCC 754.
[33] Atherton West & Co. Ltd. v. Suti Mills Mazdoor Union, AIR 1953 SC 241.
[34] Super Cassettes Industries v. Music Broadcast Private Ltd., (2012) 5 SCC 488.
[35] V.K. Ashokan v C.C.E., (2009) 14 SCC 85.

normally difficult to infer such power more so when specific mode to initiate such process is mentioned in the statute itself".[36] Also, it is said that if it was the legislature's intent to confer *suo-motu* powers upon NGT, it would have done so in clear terms. Answering the question whether the Election Tribunal had the power to grant interim stay, the Punjab and Haryana HC[37], observed that: *"If the legislature had so desired nothing prevented it from conferring statutory power upon the Election Tribunal."* Certain statutory bodies such as the Competition Commission of India[38] and Human Rights Commissions[39] have been vested with *suo-motu* powers expressly. Also, under Section 190, Cr.P.C. express power to take *suo-motu* cognizance has been given to magistrates. Similarly, if it was intention of the parliament, it would have expressly conferred it *suo-motu* powers. Since, the tribunal cannot take up cases on its own motion directly; doing the same indirectly shall also not be allowed[40].

4.4. Can *suo-motu* powers be inferred?

Proponents of *suo-motu* powers may argue that merely because the Act is silent with regards to *suo-motu* powers, it doesn't mean that such powers don't exist. On the contrary, there is some evidence to support the claim that *suo-motu* powers may be inferred from the text of the statute.

It can be contended that *suo-motu* powers are not 'powers' *per se*, instead *suo-motu* initiation of proceedings is a matter of procedure As the NGT is not bound by the procedures contained in the CPC and is free to choose its own procedure, there shall be no impediment in its way while taking cases *suo-motu*. One of the purposes behind the formation of any tribunal is so that substantive justice is not lost amidst the chaos due to procedural hassles. *Suo-motu* powers may be legally justified in this way.

However, certain objections may be raised against this argument. *First of all*, although the Tribunal has the power to regulate its own procedure, the same is subject to the provisions of the Act. Also, certain rules, for instance the NGT (Practice and Procedure) Rules of 2011 have been framed in pursuance of the authority conferred under the NGT Act so that the procedure to be followed by the tribunal may be enumerated. Even these rules nowhere expressly mention anything regarding initiation of *suo-motu* proceedings. The Calcutta High

[36] Shrikrishna Sitaramji Fande v. State of Maharashtra, AIR 2008 Bom 64.
[37] Sham Lal v. State Election Commissioner, AIR 1997 P&H 164.
[38] S. 19&20, Competition Act, 2002.
[39] S. 12, Protection of Human Rights Act, 1993.
[40] Rashmi Rekha Thatoi v. State of Orissa, (2012) 5 SCC 690.

Court has held that, "*Tribunals being a creature of statute are required to follow the procedures while deciding appeal strictly".*[41] Similarly, the NGT shall also follow its Rules strictly, while deciding cases and shall not deviate from them. *Secondly,* it is little hard to digest the notion that *suo-motu* is simply a matter of procedure, and not a substantive power. *Suo-motu* exercises seem to a bit more than a mere procedural issue because in effect, they enlarge the jurisdiction of the Tribunal. *Thirdly,* if *suo-motu* is a substantive power indeed, then the Tribunal cannot give itself *suo-motu* powers by using the pretext that it is regulating its procedure as it won't be permissible for it to travel beyond the scope of the enabling act [42]

Another argument which may be offered to support the claim of *suo-motu* stems from the fact that an application may be made to the Tribunal by any 'person'. According to the Act, the term 'person' includes not only individuals, companies, local-authorities and so forth, but also includes every artificial juridical person, not falling within one of the preceding clauses.[43] In this way there has been an attempt to enlarge the number of persons who are eligible to approach the tribunal. Also, there is no bar as such, on who these 'persons' shall be, and the Tribunal has preferred a relaxed rule of *locus standi.* It may be contended that the term 'every artificial juridical person' also includes the Tribunal itself. In this way, the tribunal may initiate proceedings before itself on its own motion, while remaining within the four walls of the statute.

As two interpretations of the statute are possible, one in favour of *suo-motu* and another in disfavour, it is ultimately for the courts to decide which the true interpretation is. Nevertheless, among the two interpretations, one which promotes justice and equity shall be considered[44] and a statute shall be understood in a sense in which it best harmonises with objects of the statute.[45] As we have already considered in detail how *suo-motu* powers will help the tribunal in performing its functions effectively, perhaps the approach of the courts shall also be in favour of conferring the Tribunal with *suo-motu* powers.

5. SUO-MOTU AS AN INHERENT POWER

Suo-motu powers can also be claimed as 'inherent powers' of the NGT. However in order to validate this claim we will have to first determine whether tribunals such as NGT indeed have

[41] Calcutta Municipal Corporation v. Anita Subrewal, C.O. No. 2221 of 2000 (Calcutta High Court, 19/12/2007).
[42] Additional District Magistrate, Delhi Administration v. Shri Ram, AIR 2000 SC 2143.
[43] S. 2(j)(viii), National Green Tribunal Act, 2010.
[44] M. Subba Reddy v. A.P.S.R.T.C., (2004) 6 SCC 729.
[45] New India Sugar Mills v. Commissioner of Sales Tax, Bihar, AIR 1963 SC 1207.

some inherent powers and next, whether *suo-motu* can be said to be one of these powers.

5.1. Do Tribunals have Inherent Powers?

Courts in India, apart from having certain well-defined powers, also have some supplementary 'inherent powers'. These inherent powers are not something which are conferred upon the court, but exist intrinsically for the reason that they are instrumental for the performance of the court's functions. Section 482 of the Cr.P.C. talks about inherent powers of the High Courts with respect of criminal proceedings and Section 151, C.P.C. is in respect of inherent powers of civil courts. These provisions don't grant any new power, but save what already exists with the courts. Similarly, the High Courts and Supreme Court also exercise plenary powers by virtue of Article 226 and 32 respectively.[46] However, the question whether tribunals also possess inherent powers similar to courts, has been a source of contention. It is said that every tribunal cannot be equated to courts because tribunals such as NGT have the same powers as civil courts only for limited purposes. Due to this reason, the Supreme Court in *Transcore v. Union of India*[47] held that the Debt Recovery Tribunal, being creature of a statute had no inherent powers which existed with a civil court.

However, the above understanding of tribunals is subject to dispute. The fact that tribunals are bodies which perform judicial functions cannot be ignored. In *Bharat Bank v. Employees*[48], the Supreme Court distinguished between tribunals which perform solely administrative functions and which perform judicial functions. The latter type has all the trappings of a court. In *Harinagar Sugar Mills v. Shyam Sundar Jhunjhunwala*[49], it was observed that judicial tribunals are not part of the ordinary Courts of Civil Judicature, however it was added that their functions don't differ from courts. It won't be just for one judicial body to have slighter powers than another despite there being no difference in functions, simply because of a difference in nomenclature. The courts have stated on occasions that the tribunal has all those incidental and ancillary powers to make fully effective the express grant of statutory powers.[50] Also, the doctrine of 'implied powers' can be legitimately invoked if a duty has been imposed or power has been conferred by a statute and such duty cannot be discharged or power cannot be exercised unless some incidental and

[46] Common Cause v. Union of India, (1999) 6 SCC 667.
[47] Transcore v. U.O.I., (2008) 1 SCC 125.
[48] Bharat Bank Limited, Delhi v. Employees of Bharat Bank Limited, 1950 SCR 459.
[49] Harinagar Sugar Mills v. Shyam Sundar Jhunjhunwala, AIR 1961 SC 1669.
[50] Union of India v. Paras Laminates (P.) Ltd., (1990) 4 SCC 453.

ancillary power is assumed to exist.[51] Hence, tribunals can be said to have certain inherent powers. Whether these powers are the same as that of civil courts or High Courts is a different question.

5.2. Is *Suo-motu* an Inherent Power?

Critics argue that *suo-motu* powers cannot be treated as inherent powers because doing the same would effectively make the tribunal equivalent to the constitutional courts. While the High Court exercises *suo-motu* powers because of the constitutional mandate under Section 226, there is no equivalent provision for NGT. While someone might say that the legislative intent was to make the tribunal at par with the High Courts, which is evident from Section 22 which declares that the appeal from the tribunal will lie in the Supreme Court, the reality remains that High Courts have powers of superintendence over tribunals[52]. Also, though the legislating authority may vest adjudicatory functions, earlier vested in a superior court, with an alternative court/tribunal by enacting legislation, functions conferred by the constitution itself to a higher court cannot be transferred. [53] *Suo-motu*, being a constitutional exercise cannot be transferred.

The above can be countered by the argument that merely conferring NGT with *suo-motu* powers doesn't make it equivalent to High Courts. The tribunals cannot supplant the High Courts but they may supplement it.[54] By initiating proceedings *suo-motu* the tribunal is helping the High Court in discharge of its duties effectively. It would have been a substitution if the jurisdiction of the High Court in environmental matters was ousted completely; however that is not the case. Moreover, it cannot be said that exercise of *suo-motu* by High Court is entirely a constitutional process The High Courts, in criminal proceedings, also have statutory *suo-motu* powers by virtue of Section 401 and *suo-motu* powers as an inherent power by virtue of Section 482, Cr.P.C[55].

It shall be noted is that Rule 24 of the NGT (Practice and Procedure) Rules, 2011 reads that *'the tribunals may pass such orders to… otherwise secure ends of justice.'* The language used in this rule is analogous to the language used in Section 482 Cr.P.C. If the High Courts can

[51] Bidi, Bidi Leaves and Tobacco Merchants' Association v. State of Bombay, AIR 1962 SC 486.
[52] Art. 227, the Constitution of India.
[53] Union of India v. Madras Bar Association AIR 2015 SC 1571.
[54] L. Chandra Kumar v. Union of India, AIR 1997 SC 1125.
[55] State of Punjab v. C.B.I., (2011) 9 SCC 182.

exercise *suo-motu* jurisdiction as part of their inherent powers, there is no reason why NGT shall not. In *J.K. Synthetics v C.C.E.*[56], the court observed that every tribunal and court has the inherent power to do justice The Supreme Court has also stated that tribunals have inherent powers of choosing their own procedure.[57] It has also been suggested that *suo motu* is part of inherent powers of civil courts.[58] Since NGT may pass any order to secure ends of justice, *suo-motu* proceedings shan't be discouraged.

5.3. *Suo-motu:* An Offshoot of Judicial Review

The power to initiate *suo-motu* proceedings can also emerge from a broad understanding of concept of judicial review. The enlargement of *locus standi* in case of PILs was largely possible because of the notion that administrative and legislative actions which are bad in law cannot escape circumspection of the judiciary. *Suo-motu* proceedings and PILs are two sides of the same coin; both seek to enlarge accessibility of the tribunal.

The National Green Tribunal, being a judicial body, has the power of judicial review. It has been held by the Karnataka High Court that tribunals have power to review executive action as well as statutory rules.[59] Also, the Supreme Court has said: "*There is no reason why the power to test the validity of legislations against the provisions of the Constitution cannot be conferred upon Administrative Tribunals.*"[60] The NGT has also expressly declared its power of judicial review and has acted in furtherance of it.[61] Also, the NGT follows relaxed rule of *locus-standi* and it is permissible to bring PILs before it. It was suggested in the 186th Law Commission Report that the *locus-standi* before the proposed Environment Court in original jurisdiction shall be as wide as it is today before High Court/Supreme Court in the writ jurisdiction.[62] In this light, *suo-motu* proceedings shall be allowed before the Tribunal, just in the way they are allowed before constitutional courts.

6. CONCLUSION

We have seen that although *suo-motu* powers have not been expressly conferred to the National Green Tribunal, they are needed for the effective functioning of the tribunal. *Suo-motu* proceedings not only repose the ordinary man's trust in the system, but also serve the

[56] J.K. Synthetics v. C.C.E., (1996) 6 SCC 92.
[57] B. Prabhakara Rao v. Desari Pankala Rao, (1976) 3 SCC 550.
[58] Harischandra Fulsunge v. Motilal Agrawal, 2000 SCC OnLine Bom 551.
[59] M.S. Ganesh v. H.S. Subramanya, ILR 2002 Karnataka 4123.
[60] L. Chandra Kumar v. Union of India, AIR 1997 SC 1125.
[61] Wilfred v. Ministry of Environment and Forests, 2014 S.C.C. OnLine N.G.T. 6860.
[62] 186th Law Commission of India Report, *Proposal to Constitute Environment Courts*, 167 (2003).

interests of justice in general. Also, it is practicable to allow the Tribunal to have *suo-motu* because if it is now declared that NGT doesn't have *suo-motu* powers, several orders and judgments given in various *suo-motu* proceedings will be rendered *per incurium,* creating a chaotic situation. Despite there being no doubts about the desirability of these powers, the question regarding their permissiveness is not an easy one to answer. Both sides of the debate offer equally strong legal arguments and eventually, a clear perspective to resolve the debate will have to come through legislative action. Nevertheless, the current legislature doesn't seem too keen in expressly declaring that the green tribunal has these much-needed powers. In these circumstances, the onus to bring the debate to its logical conclusion is upon the judiciary. However, the higher judiciary may only declare that the exercise of *suo-motu* powers is valid, when a petition expressing a grievance that this exercise as *ultra vires* is brought before the court. Moreover, given the complexities of the issues involved, the court would be hesitant to pass a conclusive decision on the topic since *firstly*, a decision on this topic would precondition a re-evaluation of all existing jurisprudence, and *secondly*, because a judicial decision may be heavily contested and face burnt of controversies. Hence, an amendment in the NGT Act, authorizing taking up of cases *suo-motu,* would be the most appropriate solution to the entire debate, since legislative action would be utmost authoritative and would not be subject to controversies.

There are several important problems plaguing the Tribunal. For instance, despite having such an important role in environment protection, the Tribunal doesn't have power to punish for its contempt. Another important issue which has often escaped public attention is the fact that NGT only has the jurisdiction to try civil cases. The environmental statutes also impose criminal penalties on environmental defaulters, but the legislative mandate of ensuring criminal prosecutions has often been ignored.[63] In order to achieve complete justice in environmental cases, specialized criminal courts akin to NGT are necessary. Hence, we would like to conclude by saying that instead of reducing NGT's stature by diminution of *suo-motu* powers, focus shall be on strengthening environmental adjudication in the country.

[63] See C.M. Jariwala, *Corporate Environmental Criminal Liability in India: Reality or Myth*, 3-5 RMLNLU J (2011-2013) 98.

INDIAN 'REDD+' READINESS: THE INCLUSIVE CLIMATE CHANGE COMBAT

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Abstract

Stakeholder engagement and participatory evaluation of developmental programs is not a novel concept but has hitherto remained largely unexplored. With the emerging climate change concerns a new perspective of stakeholder participation has surfaced whereby inclusion of indigenous persons is seen not only as a beneficial management approach but also as a human right. Within the climate change combat it is in the UN REDD (Reduction of Emissions from Deforestation and Forest Degradation) Program that this stakeholder approach is applicable. REDD+ is part of a climate change mitigation solution within this UN initiative. REDD+ Readiness reflects a country's capacity and preparedness in this struggle and can be achieved only by engaging indigenous persons, women and youth at all stages of activities including policy development, project design, implementation, oversight, outreach, evaluation etc. First such participatory mission in Democratic Republic of Congo (DRC) which has now entered the implementation phase of its National REDD Programme follows a detailed framework for adequate representation of indigenous groups and civil society. They are at the forefront of conservation efforts and the consequent economic, environmental and social benefits resulting from it. This participation and 'benefit sharing' has an untapped potential in the Indian context. Even the National Action Plan for Climate Change of 2008 does not elaborate upon utilization of this resource. This essay will trace the present position and impact of development in this arena and analyse the prospects of a successful participatory REDD+ programme in India.

1. Introduction

Climate change is a global challenge that needs to be combated by every country largely through local initiatives. Reduction of Emissions from Deforestation and Forest Degradation (REDD) is one of the emerging climate change mitigation solutions launched by UN in 2008.[1] Its importance has been underlined by studies revealing that deforestation and change in land use contribute nearly 20% of the carbon dioxide emissions that are

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[1] See http://www.un-redd.org/

known to be the second largest cause of green-house effect[2], and also by the fact that forests not only hold the key to mitigation of climate change but are also highly vulnerable to it. A report by the UN Forum on Forests suggests that climate change affects the forests as a microcosm of sustainable development. The changing temperatures and patterns of rainfall, erratic outbreaks of forest fires, altered composition of species etc. have affected the forest physiology severely.[3] Emissions from deforestation in developing and least developed countries surpass the world average at 35% and 65% respectively.[4] REDD seeks to offer incentives to developing countries to reduce emissions from forested lands and invest in low-carbon paths to sustainable development. Its extended version, REDD"+", goes beyond deforestation[5] and forest degradation[6], and includes the role of conservation, sustainable management of forests and enhancement of forest carbon stocks. Nine countries including Bolivia, Democratic Republic of Congo, Indonesia, Panama, Papua New Guinea, Paraguay, Tanzania, Vietnam and Zambia have been selected for the pilot REDD programmes.[7] A country's capacity and preparedness to support a REDD+ program is evaluated by REDD+ Readiness and its key parameters are an effective legal and policy framework, robust institutional arrangement for implementation, capacities for monitoring, reporting and verification and secure tenure and community rights.[8] India too is about to implement this program and a REDD+ policy draft has very recently been released. However, the document needs much further detailing and this essay highlights certain key considerations and existing frameworks that can contribute to an effective REDD+ initiative in India.

2. Importance of Stakeholder Involvement in REDD+ Programs

'Stakeholder engagement' is the foundation stone of REDD+ programs. The key stakeholders in this context are the indigenous and forest-dependent communities who

[2] 4th Assessment Report, Intergovernmental Panel on Climate Change, 2007:See http://www.ipcc.ch/pdf/assessment-report/ar4/wg3/ar4_wg3_full_report.pdf

[3] Jan L. McAlpine, 'Forests in a changing environment'. UNFF, 2009; See http://www.un.org/esa/forests/pdf/notes/Nairobi_060409.pdf

[4] *Ibid*.

[5] Deforestation is defined by the UNFCCC as, "..the direct, human-induced conversion of forested land to non-forested land."

[6] Degradation has been defined as "A direct, human-induced, long-term loss (persisting for X years or more) or at least Y% of forest carbon stocks [and forest values] since time T and not qualifying as deforestation" as per a Special Report of the IPCC. Degradation is seen as caused mainly by selective logging, large-scale and open forest fires, collection of fuel-wood and non-timber forest products.

[7] Prof. N. H. Ravindranath and Dr. Afreen&Nitasha Sharma**,** REDD: Policy Issues (2009)

[8] See http://www.un-redd.org/AboutREDD/tabid/102614/Default.aspx

reside in forest fringe villages with their income and day to day survival secured by the forests.[9] The several services availed of the forests include firewood[10] and food requirements, medicinal sources[11], rearing of livestock, fodder needs[12] etc. Extensive involvement of indigenous communities is expected to greatly enrich the climate change mitigation initiative.[13] It is understood that these forest dependent communities contribute little to climate change, but are the ones most severely affected due to the critical livelihood-forest linkage.[14] Due to the close association of the communities to the forests, their experiences and knowledge are considered critical for community based adaptation and sustainability at the local level. Capacity buildings of community institutions may be used for long term protection, regeneration and management of forests, for instance by utilizing their traditional knowledge adaptive cultivation and silvicultural practices, sustainable harvesting techniques, inventorization etc.[15] The United Nations Development Group's Guidelines on Indigenous Peoples' Issues (hereinafter 'the UNDG Guidelines'), laid down clear guidelines to ensure involvement of indigenous persons, traditional communities, women and youth at all stages of activities including policy development, project design, implementation, oversight, outreach, evaluation, etc.[16] Specifically relevant in the context of REDD+ is the right of the indigenous people to give or withhold their free, prior and informed consent to actions that affect their lands, territories and natural resource, as provided under the United Nations Declaration on the Rights of Indigenous

[9] Sadashivappa P, Suryaprakash S, Vijaya Krishna V., Participation Behavior of Indigenous People in Non-Timber Forest Products Extraction and Marketing in the Dry Deciduous Forests of South India. Conference on International Agricultural Research for Development, Tropentag University of Bonn, October 11–13 (2006); Mahapatra K and S. Kant. Tropical Deforestation: A Multinomial Logistic Model and Some Country Specific Policy Prescriptions. Forest Policy and Economics 7: 1-24 (2005)

[10] IPCC. 2007: Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge, UK, 976 pp.

[11] Saha D and Sundriyal R C., Utilization of Non-Timber Forest Products in Humid Tropics: Implications for Management and Livelihood. Forest Policy and Economics 14: 28–40 (2012)

[12] ICFRE (Indian Council of Forestry Research and Education). 2001. Forestry Statistics of India 1987-2001. Dehradun: ICFRE. 234 pp

[13] Springate-Baginski O and Wollenberg E (Eds). REDD. Forest Governance and Rural Livelihoods: The Emerging Agenda. Bogor: CIFOR . (2010) 279 pp

[14] Forest Survey of India. 2011.India State of Forest Report 2011. New Delhi: Ministry of Environment and Forests, Government of India, p. 286; Davidar P, S Sahoo, PC Mammen, P Acharya, J P Puyravaud, M Arjunan, J P Garrigues, and K Roessingh. 2010. 'Assessing the Extent and Causes of Forest Degradation in India: Where Do We Stand?' Biological Conservation 43(12): 2937–2944.

[15] Ministry of Environment and Forests (MoEF) (undated), "India's Forests and REDD+, a Policy Paper".

[16] See http://www.ohchr.org/Documents/Publications/UNDG_training_16EN.pdf

Peoples (UN DRIP) adopted in 2007.[17] These instruments highlight the primacy given to the indigenous communities in matters concerning their well-being and lifestyle.

Generally, the inclusion of stakeholders in international developmental programs and evaluations[18] has been long advocated and applied. Participatory rural appraisal[19], participatory action research, community based participatory research and asset based community development are but a few participatory approaches in developmental programs. Cousins& Earl (1992) define participatory evaluation as "applied social research that involves a partnership between trained and practice based decision makers, organization members with program responsibility, or people with a vital interest in the program."[20] The three goals of a participatory evaluation approach are pragmatic, political and epistemological, whereby the findings will foremost be enriched by the useful inputs of the stakeholders, in addition to improving the fairness quotient of the procedure and its credibility and validity. Pragmatism is ensured by the introduction of contextual considerations by stakeholders of which the evaluators are unaware.[21] In addition, the fairness and the credibility are ensured by the democratization of the process.[22]

However, studies on practising international development evaluators have revealed that it is difficult to conduct a truly participatory evaluation when stakeholders are included in the activities only at later stages.[23] It has also been suggested that if the program itself is participatory in nature, a participatory evaluation approach is likely to work well, although others have emphasized the latter in all cases.[24] Questionnaires and surveys revealed a widespread belief that gathering and eliciting information through stakeholder interviews is a legitimate form of their participation. Here, the interested parties are treated

[17]See http://www.un.org/esa/socdev/unpfii/documents/DRIPS_en.pdf

[18] The concept of participatory approaches to international developmental evaluations was introduced in early 1980s as a response to international development programs that were seemingly mismatched to the needs of their intended beneficiaries. [Chambers, R., 'The origins and practice of participatory rural appraisal', *World Development*, 22, 953-969 (1994)]

[19]Droesch et al., 2008

[20]Cousins. J. B. & Earl, L.M., 'The case of participatory evaluation', *Educational Evaluation and Policy Analysis,14*, p.397-418, (1992)

[21] Brandon, Linberg& Wang, 'Involving program beneficiaries in the early stages of evaluation: Issues of consequencial validity and influence', *Educational Evaluation and Policy Analysis,15*, p.420-428 (1993); Stake &Abma, 'Responsive evaluation', *Encyclopedia of evaluation*, p. 376-379 (2005)

[22] Weaver & Cousins, 2004, 'Unpacking the participatory process', *Journal of MultiDisciplinary Evaluation, 1*, p. 19-40; Weiss,'The stakeholder approach to evaluation: Origins and promise', *New directions for educational evaluation*, p. 145-157 (1986)

[23]Anne E. Cullen, Chris L. S. Coryn, and Jim Rugh , "The Politics and Consequences of including Stakeholders in International Development Evaluation", American Journal of Evaluation, p. 352 (2011)

[24]Cullen, A., *The Politics and Consequences of Stakeholder Participation in International Development Evaluation',* (2009) Unpublished doctoral dissertation ,Western Michigan University, Kalamazoo

as mere informants instead of partners and application of such methods can only be curbed by demonstrating actual impact of true participatory approach.

The traditional and indigenous groups were for the first time officially recognized as 'invaluable' for environmental management in 2009 during Anchorage Summit[25] and most recently in the 5th Annual Report of the Intergovernmental Panel on Climate Change (IPCC), 2014.[26] The choice of stakeholders is crucial since local communities may have conflicting opinions and interests thus hampering the REDD+ agenda. A 'Consultation and Participation Plan' must be prepared in advance, providing details such as the identity of stakeholders, topics and terms of consultation, budget estimation and consequent benefit sharing. The UN guidelines for stakeholder engagement in REDD prescribe that timely consultations be held with interested groups with transparent and prior access to all information regarding proposed activities.[27] Consultations utilizing existing indigenous processes and institutions should primarily facilitate a fruitful exchange of ideas and knowledge along with capacity building of stakeholders.[28]The primary objective is to ensure thorough understanding of the purpose, associated risks and opportunities and the potential role of these groups in the process. Consultations must be carefully planned and begun prior to the design phase of the project, and continue at every stage of the REDD+ process including planning, implementation, monitoring and reporting.

3. Lessons from REDD+ program in DRC

Although much literature is available on REDD+ programme and its initiatives there are very few reports of its implementation. In fact, out of the nine countries selected for the pilot REDD programme few have even begun the ground work. Democratic Republic of Congo (DRC), has reached the stage of implementation within its national participatory REDD framework. Under the DRC framework, the stakeholders are linked by specific agreements, the terms of which define the inputs and contributions, the scope of responsibilities and expectations as well as the rights of the persons involved in the project.[29] These agreements between the parties are lawful and lend a degree of legal

[25]Indigenous Peoples' Global Summit on Climate Change, 2009
[26] See https://ipcc-wg2.gov/AR5/images/uploads/WGIIAR5-PartA_FINAL.pdf
[27]Report from the Global Indigenous Peoples Consultation on REDD, 2008
[28]UN General Assembly, *United Nations Declaration on the Rights of Indigenous Peoples : resolution / adopted by the General Assembly*, 2 October 2007, A/RES/61/295
[29] Readiness Plan for REDD (R-PP) in the Democratic Republic of the Congo, July 2010 version: https://www.forestcarbonpartnership.org/sites/forestcarbonpartnership.org/files/Documents/ PDF/Jul2010/R-PP_V3.1_English_July2010.pdf

certainty to all parties as they settle three issues: the appointment of a sole representative of the project acting on behalf of all other intermediaries; terms of collaboration; scope of responsibilities and obligations attached thereto and; finally, the arrangement to share profits and benefits that accrue to each participant as per a pre-decided clear, verifiable and enforceable criteria.

As per the stakeholder agreements in DRC, the 'Sole Representative' is the unique bearer of the project representing the civil society whereas a 'Feature Project' is a legal person who represents all the legal persons involved i.e. organizations, etc. In terms of 'benefit sharing' arrangements that govern the allocation of resultant benefits of REDD+, these representatives are given the right to the carbon credits generated. This concept of benefit sharing mechanism is derived from the human rights principles that govern the UN at various levels. In terms of REDD these activities should adhere to UN DRIP[30], the UNDG Guidelines[31], and the International Labour Organization Convention No. 169 (Indigenous & Tribal Peoples' Convention)[32]. This includes full and effective participation in, contribution to, and enjoyment of civil, economic, social, cultural and political development by these persons.[33]

Benefit sharing entails not only monetary and non-monetary income such as specific allowances, balance of budget, taxes generated and transfer of technology, capacity building etc. but also societal opportunities such as job creation and local preference in provision for goods and services.[34] These benefits are shared among primarily three categories of stakeholders, i.e. the state, the partners and promoters as well as the affected communities. On one hand these benefits offset the costs of national procedure for the state and on the other hand they act as reimbursement for the capital, expenses, investments, etc. of promoters, developers and service providers. For the affected communities, these benefits also compensate for negative consequences to their livelihoods and property and disrupted access and use of natural resources.

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[30] *Supra* note 28.

[31] United Nations Development Group's Guidelines on Indigenous Peoples' Issues, February 2008, HR/P/PT/16

[32] International Labour Organization (ILO), *Indigenous and Tribal Peoples Convention, C169*, 27 June 1989, C169

[33] *Participation and Inclusion:* Every person and all peoples are entitled to active, free and meaningful participation in, contribution to, and enjoyment of civil, economic, social, cultural and political development in which human rights and fundamental freedoms can be realized. UNDG (2003).

[34] Behr, D. C. *Making benefit sharing arrangements work for forest-dependent communities: overview of insight for REDD+ initiatives*. Program on Forest (PROFOR), Washington, DC. (2012)

Initial funding is the primary source of benefit sharing and it commences first between the different levels of governance from central to state and local bodies in order to support policies, programmes and actions reducing carbon emissions. Initial funds may be obtained in a number of ways. Public funding i.e. bilateral or multilateral funds may be obtained by developing countries.[35] Compliance-driven markets are those where these countries or companies may purchase carbon credits to offset their carbon emissions. Funding can also be obtained by voluntary markets through government, public agencies, NGO's or companies for instance, by way of corporate social responsibility.[36] As seen in DRC, mobilizing private sector to fund REDD requires massive incentives such as settling carbon ownership and carbon rights, etc. Mixed markets are also an option whereby funds are raised from the carbon or other markets. Certain financial institutions funding REDD are UN-REDD, WB Forest Carbon Partnership Facility (FCPF) and WB Forest Investment Program, among few others that aim at participatory and sustainable forest management.[37] Especially WB FCPF operates via the Readiness Mechanism. This REDD+ Fund available to tropical and sub-tropical countries is to facilitate them to calculate carbon stocks, identify emission sources and prepare them for a future national REDD+ strategy.[38] Currently, some 47 countries are a part of FCPF including DRC. India has yet to become a member.

4. India's Readiness for REDD+ ?

India with a global forest area of 2% supports 16% of world's human and 18% of world's cattle population. Despite the existing pressure, India has been able to maintain and even increase its forest cover and tackle deforestation. The carbon stock of Indian forests in 2004 has been estimated by the Forest Survey of India (FSI) to be 6,663 metric tonnes having increased by 592 metric tonnes from 1994 to 2004 due to the involvement of local communities.[39] Nevertheless the last two decades have witnessed about 40% degradation[40] of forest resources primarily due to factors such as population pressure, abject poverty and redundant forest management policies. Such degradation has severe

[35]Pham, T.T., Brockhaus, M., Wong, G., Dung, L.N., Tjajadi, J.S., Loft, L., Luttrell C. and AssembeMvondo, Approaches to benefit sharing: A preliminary comparative analysis of 13 REDD+ countries (2013)
[36]Ravindranath and Sharma; *Supra* note 4
[37]*Ibid*
[38]See https://www.forestcarbonpartnership.org/readiness-fund-0
[39]RidhimaSud, JitendraVir Sharma, Arun Kumar Bansal, Subhash Chandra, 'Institutional Framework for Implementing REDD+ in India'(2012)
[40]Forest Survey of India. 2011.India State of Forest Report 2011. New Delhi: Ministry of Environment and Forests, Government of India, p. 286.

impacts on the indigenous groups and forest dependent communities since forest produce and services are massively affected.

Currently the Clean Development Mechanism (CDM) 41 is functional in India and regulated by the National Clean Development Mechanism Authority (NCDMA). CDM aims at sustainable development through rigorous project clearances and therefore emission reduction is only a long term goal. CDM initiated at COP 3 held in Kyoto in 1997 has a limited scope of addressing drivers of deforestation and forest degradation.[42] India has taken REDD to mean 'Reduction of Deforestation in Developing Countries', Sustainable Forest Management (SFM) and Afforestation and Reforestation (A&R)[43]. This has a wider ambit than CDM and is a comprehensive approach towards immediate decline in emissions. India proposes a 'compensated conservation' approach to REDD wherein results are verified every 5 years and compensation awarded accordingly.[44]

4.1. REDD Pilot Project in Orissa

The first draft of the national REDD+ policy for India has been released very recently in April, 2014, but finer detailing still needs to be done. Nevertheless, the experimental project conducted in Balangir District, Orissa in 1993 by the Regional Centre for Development Cooperation (RCDC) with an objective to consolidate community stake in forest governance is noteworthy. Based on the concept of Community Forest Management (CFM) this project covering over 20,000 hectares of forest was to test the feasibility of REDD+ in the local circumstances and its effect on CFM. This 'Community REDD' was collaboration between Plan Vivo (PV) and Community Forestry International (CFI). CFI worked as a facilitator in helping the local communities in the pilot areas of India to set up the necessary standards at field level that would make them eligible for entry in the carbon credit market. The focus of this experiment was Payment for Ecosystem Services (PES) which saw REDD+ as a potential option for PES.

In the multi-stakeholders' workshop conducted on community forestry and REDD+, urban pressure, unsustainable harvesting and smuggling emerged as drivers of deforestation to be combated by a multi-pronged approach including strengthening

[41]Article 12, Kyoto Protocol

[42] Commission of the European Communities (CEC), 'Proposal for a Directive Establishing a Scheme for Greenhouse Gas Emission Allowance Trading Within the Community in Respect of the Kyoto Protocol's Project Mechanism'. Brussels. (2003)

[43]Annual Report, Ministry of Environment and Forests (2009)

[44]Indian Council of Forestry Research and Education, Newsletter, Issue October-December, 2007, Vol 7 No. 4.

community governance of natural resources; capacity building of communities for forest management; enhancing livelihood options; increasing awareness; assisted natural regeneration; increasing interaction with Forest Department, urban people, etc. and networking/ exposure. Once the deforestation is stopped the 'owner' of such forest is eligible to sell the carbon credits earned. Although 'ownership' is a debatable issue, this project was implemented on a Joint Forest Management (JFM) mode in which the government shares the stake with the communities in forest management and resource sharing. The benefits of the project were nevertheless reserved for the communities alone.

Analysis of this project revealed that the communities were concerned with the sincerity of such protection projects. Since these groups enjoy a symbiotic relation with the forest, monetizing its benefits is not their primary agenda although they are reluctant in selling the carbon credits earned to any culprit. Although the work initiated under this project elicited great public enthusiasm these groups were found to generally prefer their own local informal systems of conservation and were unaware of the larger ambit of REDD+.[45]

4.2. **Existing National Policy and Future Possibilities**

In order to effectively implement REDD+ in India it is critical to understand the existing legal framework dedicated to the conservation of forests. Currently a combination of policies, legislations and national missions govern the field of forestry along with the associated wildlife and biodiversity issues. These include the National Forest Policy, 1988 along with several legislations such as the Indian Forest Act, 1927, Wildlife (Protection) Act, 1972; Forest (Conservation) Act, 1980; the Environment Protection Act, 1986; Biological Diversity Act, 2002, and the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006. Additionally, the National Action Plan on Climate Change launched by the government of India is also an ambitious national initiative in this area.

The National Forest Policy, 1988 implemented with the primary objective of conserving forests to ensure environmental stability and maintain ecological balance includes preservation, sustainable utilization, restoration, and enhancement of forest carbon stock. This agenda is found to supplement the key elements of REDD+. With respect to the use of

[45]'The Orissa Community-REDD Project: A brief report on the accomplishments', Regional Centre for Development Cooperation, (2013)

forest land for non-forest purpose, the consideration of relevant social and environmental costs and benefits is essential. The effect of these projects on indigenous communities is critical and therefore all agencies including Forest Development Corporations are required to engage these people in the process of protection, regeneration, etc. This is in consonance with the UNDG Guidelines. The concept of JFM at the national level in India drew from this National Forest Policy. Since the Forest Protection Committees govern a large forest area, the REDD+ framework could utilize these established and functioning FCPs to effectively engage stakeholders[46]and address issues related to land tenure, gender equity, distribution of power between FCPs and forest department and financial sustainability, etc.[47]

The Indian Forest Act, 1927 consolidates the laws relating to forests, the transit of forest produce, and the duty to be levied on timber etc. It seeks to conserve Reserved Forests as per Section 5 of the Act. Section 28 specifically provides for the formation of 'village forests' by state governments. Under this provision, the rights of the government are transferred to the community for protection of any reserved forest. The duties for protection and management of the forests are expressly provided by the state government.

Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 was enacted to recognize and vest forest rights and rights to occupation of forest land to forest-dwelling Scheduled Tribes who have been residing in such forests for generations, but whose rights could not be recorded; to provide a framework for recording the forests rights so vested; and to determine the nature of evidence required for such recognition and vesting in respect of forest land. The Act elaborately lays down a range of rights enjoyed by the traditional forest dwellers, such as the right to hold and live in the forest land under the individual or common occupation for habitation or for self-cultivation for livelihood; community rights of nistar; right of ownership; access to collect, use, and dispose of minor forest produce; rights of settlement and conversion of all forest villages into revenue villages; right to protect, regenerate, conserve or manage any common forest resources etc. FRA is perhaps the most progressive legislation in terms of integration of indigenous people as primary stakeholders. FRA would be highly pertinent to a REDD+ program in India and the benefit sharing mechanism associated with it, as it has already identified some of the most

[46]MoEF (Ministry of Environment and Forests) and WII (Winrock International India), Proceedings of National Consultative Workshop on Joint Forest Management, p.41 (2005)

[47]AshishAggarwal, Soumitri Das and Varghese Paul, "Developing country participation in climate change-analysing issues and options for India" (2009)

relevant communities as stakeholders. Particularly in the biodiversity rich north eastern states and scheduled areas of India, the REDD+ policies must include active assimilation of traditional knowledge and forest management and protection should primarily be led by traditional conservation practices.

The principles of Strategic Environmental and Social Assessment (SESA)[48]can be incorporated to prevent erosion of rights. It is also important to assess the goals of REDD+ program in the light of local social and environmental parameters. For e.g, the implementation of a REDD+ strategy could disturb the existing socioeconomic and land-related situations, and run the risk of reviving conflicts and social tension on land tenure issues. From an environmental point of view, REDD+ could also lead to other forms of uncontrolled threats on resources and natural habitats that have been preserved so far. This could be due to inadequate compensation to communities or insufficient access to affordable alternatives to domestic energy. An assimilative Readiness Preparation Proposal (R-PP) with SESA inputs will ensure that the REDD+ program is sustainable and contributes to the nation's development objectives.

In light of the Indian national framework as described above, it is noteworthy that the situation in DRC is entirely different in this respect. This is primarily because DRC being a 'fragile state' (lists published by OECD, CIA, and World Bank) is characterised by fragmentation of power and pursuit of private interests rather than the public good.[49] Despite the decentralized power system prescribed in its Constitution, DRC witnesses a constant tussle for power between the state and the center. A series of contradictory laws enacted with respect to the allocation of powers only add to the misery. The Forestry Code, 2002, specifically requires a 40% pay-back of forest revenues to the provinces however they remain deprived despite this entitlement due to poor implementation in addition to contrary provisions in other legislations.[50] Therefore, the government in DRC has little capacity to implement public policies and legislations effectively.

Finally, it can be concluded that India's REDD+ policy will be served favourably by building upon the frameworks for forest protection existing in the country. The

[48]See http://unfccc.int/files/methods/redd/submissions/application/pdf/redd_20100708_drc_1-20100302b.pdf

[49] Karsenty, A., Ongolo, S, Can "fragile states" decide to reduce their deforestation? The inappropriate use of the theory of incentiveswith respect to the REDDmechanism. Forest Policy and Economics (2011)

[50]Fétiveau, J., Mpoyi, A., Political Economy Analysis of REDD+ in DRC (2013); Available on www.forestcarbonpartnership.org.

stakeholders identified by the JFM Guidelines can be directly incorporated into REDD+, while the National Clean Development Mechanism Authority can be included and further empowered if required to ensure and enforce emission reduction and sustainable development in ways outlined by REDD+. The principles of SESA can be integrated with the existing legislative regime for guiding and deciding issues related to benefit sharing. This is likely to facilitate and hasten implementation of REDD+ programs in India to address the pressing issue of climate change through effective carbon sequestration.

BALANCING THE CULTURAL RIGHTS OF INDIGENOUS COMMUNITY AGAINST THE GOAL OF SUSTAINABLE DEVELOPMENT OF SPECIES PROTECTION

Utkarsh Mishra*

Abstract

For the indigenous population, the right to practice is an essential characteristic of living their life in a manner that is identifiable with their community. At certain times, such practices provide a challenge to conservation of biodiversity. An example of this is the rite to adulthood that is practiced by the Saramaka people marking the onset of entering into the adult life in the community – this involves killing of turtles that are in the red list of endangered species of the IUCN. Hence, such a practice is a clear violation of the provisions under the Convention on Biological Diversity and Convention on International Trade in Endangered Species of Wild Fauna and Flora. When viewed strictly from an environmentalist's lens, such practices should be stopped, however, from the lens of indigenous community (who are one of the most marginalized sections of the world population) it is the obligation of the State to protect the cultural practices so that these communities continue to practice their tradition. The need of the hour is to harmonize the differences so as to minimize the destruction that is caused to the species population while providing space to the indigenous people to practice their culture. An alternative approach has been proposed which can be adopted by the State to harmonize the differences, taking into account the concerns of the different the stakeholders.

INTRODUCTION

The discussion on environmentalism is much more concentrated on the conservation of the environment with special emphasis to achieve the global goal of sustainable development.[1]

It is generally understood that local population in a particular area can be one of the most important tools of achieving sustainable development being more aware about the

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1 Report of the World Commission on Environment and Development: Our Common Future (The Brundland Committee Report); Karen Morrow, *Rio+20, the Green Economy and Re-Orienting Sustainable Development*, 14 ENVTL. L. REV. 279 2012 [hereinafter as Morrow].

importance of protecting such resources – having an intrinsic relationship with their local environment. Providing autonomy to the local population can help in generating new resources in the community, promoting social capital that facilitates process resulting in the amelioration[2] of environmental degradation.

The local environment and resources have a direct bearing on the cultural practices that are followed by the local population. Such rituals and customs act as a linking point between the local population and their community.[3]

Common Article 1 of the International Covenant on Economic Social and Cultural Rights as well as the International Covenant on Civil and Political Rights provides for the right of these communities to practice their culture in the form that is known to the local communities, as it adds to the belief that diversity should always be maintained. The United Nations Conference on Environment and Development held at Rio De Janeiro, 1992 identified that the indigenous people have a role that is critical for developing the sustainable development goals.[4]

Notably, the activities the indigenous population on numerous occasions is at loggerheads with the balance of the nature, thereby leading to environment degradation.

Keeping this background into consideration, this article attempts to provide a solution by analyzing the various factors. This note is divided into four parts - The first part contains the discussions regarding the cultural rights and practices, and the people to whom such rights have been granted under International Conventions. The second part contains the discussion regarding cultural practices of the indigenous people and the destruction that is caused to the environment due to the cultural practices of these people. The third paper of the paper will discuss the potential solution that the Government may adopt to resolve this conundrum. Part IV contains the concluding remarks of the author.

I. RITES AND CULTURE

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2 Anthony Bebbington, *Social capital and rural intensification: local organizations and islands of sustainability in the rural Andes*, The Geographic Journal. Vol. 163, No. 2, July 1997, pp. 189-197 at 189.

3 Human Rights Council, Annex to Resolution 5/1, United Nations Human Rights Council: Institution Building, 18 June 2007, at para. 1, available at: ap.ohchr.org/documents/E/HRC/ resolutions/A_HRC_RES_5_1.doc.

4 Rio Declaration on Environment and Development, June 14, 1992, U. N. Doc. A/CONF.151/5/Rev.1 (1992).

(a) Defining Culture

The first attempt to define culture was made in 1871 by Sir Edward Taylor, a British anthropologist as "*that complex whole which includes knowledge, belief, art, law, morals, custom and any other capabilities and habits acquired by man as a member of the society*"[5], noting that modem definitions "*tend to distinguish more clearly between actual behavior on the one hand and the abstract values, beliefs, and perceptions of the world that lie behind that behavior on the other*".[6]

Our viewpoint of culture is predominantly influenced by the factor that culture is something which is not biologically linked with an individual instead it is something which is acquired through customs and by way of living in a society.[7] The culture promotes stability in the society – it is to be understood as a philosophy that members follow and which sets the acceptable limits of practices. To provide a definite standpoint culture is seen as "*a set of rules or standards that, when acted upon by the members of a society, produce behavior that falls within a range of variance that members consider proper and acceptable.*"[8]

International community does accept that there is a need to preserve the cultural practices of the society, and under international law there exists certain "beneficiaries"[9] (indigenous people) who are specially given this right of enjoying and practicing their culture.

(b) Identifying the indigenous population

Owing to the domestic issues that are involved, the characteristics that each State proposes to classify as indigenous varies. However, the most accepted definition in international practice is the one by the United Nations Special Rapporteur Jose Martinez-Cobo who provided that the following definition should be use to characterize the indigenous people:

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5 WILLIAM A. HAVILAND, CULTURAL ANTHROPOLOGY 12 (Andrew Askin et al. eds. 2d ed. 1978) (1975) [hereinafter as Haviland] as cited in Jerry Firestone, Jonathan Lily and Isable Torres de Noronh, *Cultural Diversity, Human Rights, and the Emergence of Indigenous Peoples in International and Comparative Environmental Law*, Vol. 20(2) 2005 AMERICA UNIVERSITY OF INTERNATIONAL L REV. 220 [hereinafter as Firestone et al].

6 Id.

7 William Bradford, *"Save the Whales" v. Save the Makah: Finding Negotiated Solutions to Ethno developmental Disputes in the New International Economic Order*, 13 ST. THOMAS L. REV. 155, 169-70 (2000).

8 HAVILAND, *Supra note* 3.

9 FIRESTONE ET AL, *Supra note 3*, at 222.

> *Indigenous communities, peoples and nations are those which, having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, consider themselves distinct from other sectors of the societies now prevailing in those territories, or parts of them. They form at present non-dominant sectors of society and are determined to preserve, develop and transmit to future generations their ancestral territories, and their ethnic identity, as the basis of their continued existence as peoples, in accordance with their own cultural patterns, social institutions and legal systems.*[10]

However, this definition has met its own share of critics. The blasting criticism of this definition is that such a definition lays greater emphasis on the characteristics of use of land, which may or may not be feasible in the social structure present across such peoples in the international community.[11]

Hence, what has been proposed is a new model definition to recognize indigenous people them being (a) Priority in time; (b) Distinctiveness of the cultural practices; (c) Self-identification and (d) any situation where the group has experienced some kind of marginalized behavior towards itself.[12]

Even if this model definition is adopted over the one proposed by Jose Martinez-Cobo, the problem that exists is what value should be awarded to each of the above mentioned characteristics as these might not do justice with the communities' practices that is in question. Moreover, there might be issues in characterizing those ethnic populations within the parameter of these characteristics, who do not have much connection with the outside society, and with little information of their cultural practices.

Hence, there exists a gap under international law to formulate a proper structure to characterize the indigenous people. The international community is still debating about the formulation that may be done to resolve this problem, however, the solution is far from being

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[10] Jose R. Martinez-Cobo, The Study of the Problem of Discrimination Against Indigenous Populations, U.N. ESCOR, Sub-Comm'n on Prevention of Discrimination And Protection of Minorities, U.N. Doc.E/CN.4/Sub.2/1986/7/Add. 4, 379 (1986).

[11] Erica-Irene Daes, Standard-Setting Activities: Evolution of Standards Concerning the Rights of Indigenous People, U.N. ESCOR, Sub-Comm'n on Prevention of Discrimination And Protection of Minorities, U.N. Doc.E/CN.4/Sub.2/AC.4/1996/2, 26 (1996).

[12] Id.

done.[13] As one commentator notes, "*Debate over establishing definitional standards versus an unlimited right of indigenous self-identification has exposed something of a dilemma over the construction of indigenous identify*."[14]

This is important from the present context because under international law, if there exists a dilemma in providing a standard to identify such indigenous people then it may exclude such groups who are the primary target of such protectionism under the international regime.

Any failure to establish a standard definition could provide us with a situation where any group, which may not be indigenous, may get themselves in a position to take advantages of the rights that are granted under the International Labour Organization Treaty No. 169 and the Universal Declaration on the Rights of the Indigenous People. Such concerns in a different manner have been even raised in the United Nations by the participants of the indigenous population at the various meetings of the World Group of Indigenous People.[15]

II. ENVIRONMENT PROTECTIONISM IN A PIT AGAINST CULTURAL PRACTICES

(a) Safeguarding the cultural identity: Pro-indigenous population approach

Indigenous peoples virtually have no access to societal and economical advantageous enjoyed by other sections of the society. However, for the indigenous people, the lack for basic amenities is not the prime concern and demand - their most fundamental demand is that they should be given the right to preserve their culture which they have practiced for centuries, and through which they identify themselves.

The cultural practices of the indigenous people, form a way of life in their society. They identify themselves through these practices and it is a form of subsistence for them which represents a form of spiritual relationship. Despite not having the basic amenities, this spirituality guides them in their daily life. The importance of such practices was mentioned in

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13 Jeremy Firestone & Jonathan Lilley, *An Endangered Species: Aboriginal Whaling and the Right to Self-Determination and Cultural Heritage in a National and International Context*, 34 ENVT'L. L. REP. (2004) News and Analysis 10763-87.

14 As cited IN FIRESTONE ET AL.

15 The WGIP is the most open forum within the United Nations system. To participate, indigenous delegates merely require a letter from their indigenous nation designating them as official indigenous representatives to the UN Working Group on Indigenous Populations as cited in Jeff. J. Corntassel, *Who is Indigenous? Peoplehood and Ethno nationalist Approaches to Re articulating Indigenous Identity*, University of Victoria, Nationalism and Ethics Policy, Vol 9 (1), Spring 2003, pp. 75,76, (Frank Cass London).

the following words by one of the member representing the indigenous people during the World Commission on Environment and Development:[16]

> *When the government took our land . . . they wanted to give us another place . . . But the State, the government, will never understand that we do not have another place to go. The only possible place for [indigenous] people to live and to re-establish our existence, to speak to our Gods, to speak to our nature, to weave our lives, is where our God created us. . . . We are not idiots to believe that there is possibility of life for us outside of where the origin of our life is. Respect our place of living, do not degrade our living conditions, respect this life. . . . [T]he only thing we have is the right to cry for our dignity and the need to live in our land.*

Hence, in light of the above statement, it can be observed that for the indigenous people, the right to practice their culture in the traditional form is of paramount importantance. Practice of the culture in the traditional form is a method to continue the tradition that has been carried on within such indigenous people from a long period of time[17] and through which their societal norms are constructed. Presence of such practice defines the identity of a member with the community.[18] To illustrate the importance of the practice of indigenous culture, the most suitable benchmark would be the rite of adulthood that is present in the cultural practices of number of indigenous communities.

A rite or passage of adulthood has been defined as the process that has to be adhered by all the people in a community who enter into adulthood as per the traditions, and customs of the society.[19] Adhering to such practices through the standard that has been set by the community makes them socially acceptable within the community. An example of such a rite

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[16] World Commission on Environment and Development (WCED) Public Hearing, Sao Paulo (28–29 Oct. 1985), quoted in World Commission on Environment and Development, Our Common Future (1987),at 4–19 as cited in Siegfried Wiessner, *The Cultural Rights of Indigenous Peoples: Achievements and Continuing Challenges*, The European Journal of International Law Vol. 22 no. EJIL 2011, pp. 121-140.

[17] Peter Poole, *Cultural Mapping and Indigenous People*, A report for UNESCO, March 2003 online at http://www.creativecity.ca/database/files/library/unesco_cultural_mapping.pdf.

[18] Naomi Kipuri, *Chapter II Culture in State of the World's Indigenous Peoples*, United Nations online at http://www.un.org/esa/socdev/unpfii/documents/SOWIP/en/SOWIP_chapter2.pdf.

[19] THOMAS SPEAR, *Introduction in* BEING MAASAI: ETHNICITY AND IDENTITY IN EAST AFRICA 16 (Thomas Spear and Richard Walker (eds.) Athens: Ohio Press 1995); D. Scott, *Rites of Passage in adolescent development: A Re-appreciation*, 27 CYC FORUM 323 (1998).

of passage of adulthood would be one that is practiced in the Caribbean islands,[20] wherein the Saramaka people associate killing of sea turtles with their rite to adulthood. The meat of the sea turtle is used to feed all the other people of the communities to mark the onset of adulthood of the people in the community.[21] It starts the beginning of a new chapter in the life of the people within the community.

Though the cultural practices that are followed by the indigenous people like the ones followed by the Saramaka people are extremely important and should be preserved in all considerations, however, these practices at the same times may produce unfortunate repercussions. For example, the turtles that are killed by the Saramaka people to celebrate the onset of adulthood are endangered species by the IUCN List[22] and are a subject matter of conservator efforts in the Caribbean.[23] Hence, any analysis on protecting the cultural practices of indigenous people is incomplete unless, the specific violations of the legal regimes that protect the species are discussed.

(b) Taking down the species population: A pro-environmental approach against cultural practices

Laws to protect species have undergone tremendous change in the course of last 30 years. Earlier the law was more focused towards protection of single level species, however, as soon it was realized that dwindling of single specie has chain effect on other species in the eco-system, more number of Multi-Lateral Environmental Agreements (hereinafter as "**MEA**") came into picture.

According to a United Nations report, there exist more than 700 MEA[24] currently that addresses conservatory issues of species. The noteworthy MEAs to which most States are parties to are the Convention on International Trade in Endangered Species of Wild Fauna and Flora[25] (hereinafter as "**CITES**") and the Convention on Biological Diversity[26]

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20 RICHARD PRICE AND SALLY PRICE, TWO EVENINGS IN SARAMAKA 283 (University of Chicago Press, 1991).

21 Id.

22 Fabien Barthelat, *Caribbean Red List of Threatened Species: Framework, Aims and Progress*, REPORT PREPARED BY THE IUCN, February 23th, 2012 online at https://cmsdata.iucn.org/downloads/feb24_barthelat_caribbean_red_list.pdf.

23 Inter-American Convention for the Protection and Conservation of Sea Turtles, Dec. 1, 1996, 2164 U.N.T.S. 29.

24 The detailed list is available online at https://www.informea.org/en

25 The Convention on International Trade in Endangered Species of Wild Fauna and Flora, March 3, 1975, 993 U.N.T.S. 243 [hereinafter CITES]

26 Convention on Biological Diversity, art.1, June 5, 1992, 31 I.L.M. 818 (1992) [hereinafter "CBD"].

(hereinafter as "**CBD**"). This part of paper will discuss how killing of species violate the provisions of CITES and CBD in detail.

(i) Violation of CITES and CBD provisions

In order to properly understand the violations that the cultural practices of the indigenous people commit, let us take the example of the Saramaka people, killing sea turtles as a part of their rite to adulthood. In most of the time the turtles are killed in the high seas where no State has any jurisdiction. Therefore, it becomes difficult to conserve the turtles. However, allowing such turtles to come to the port is in itself a violation of CITES.

Under CITES, the Parties are prohibited from internationally trading in species listed in Appendix I[27], wherein all turtle species[28] are present.

The transportation into a state under CITES refers to the state of introduction or the port state where the specimen is landed. The sea turtles are brought into the territory of Saramaka after being captured by the Saramaka people. Hence, the hunting and capturing of sea turtles on the high seas is Introduction From the Sea (hereinafter as "**IFS**") under CITES. Introduction from the sea is defined as "*transportation into a state of any species taken from the marine environment not under the jurisdiction of any state*."[29]

The CBD seeks to conserve biological diversity. Biodiversity is defined as the 'variability' among all living organism and also includes diversity within species and ecosystems.[30] Hence, the sea turtles are an essential element of biodiversity that needs to be protected just like any other specie facing danger of extinction.[31]

The CBD obligates States to ensure integration of conservation of sea turtles into its plans and policies[32], thereby maintaining populations above minimum viable level.[33]

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27 CITES, art.II(1).
28 CITES, *Amendments to Appendices I and II of the Convention*, COP I (Nov. 4, 1976).
29 CITES art.I(e).
30 CBD art.2.
31 Chris Wold, *The Status of Sea Turtles under International Environmental Law and International Environmental Agreements*, 5 J. INT'L. WILDLIFE L. & POL'Y. 11, 30 (2002); ELLIOTT A. NORSE, GLOBAL MARINE BIOLOGICAL DIVERSITY: A STRATEGY FOR BUILDING CONSERVATION INTO DECISION MAKING 54 (1993).
32 CBD art.6(a),(b).
33 CBD art.8(d).

Furthermore, States should implement the precautionary approach for the conservation of the species.[34]

(ii) Violation of erga omnes obligations

The author also submits that such cultural practices may violate the *erga omnes* obligations of a State, where the indigenous population reside. Obligations *erga omnes*, which a particular State owes to the international community in general, are a recognized principle of international law.[35] Following the nature of the obligation, every nation has a legal standing against an abrogation.[36] The Court has evolved the *material* test towards a principle becoming *erga omnes* whereby the importance of a collective right is the standard.[37] A right can be said to be *erga omnes* when (A) it is an essential principle of international law,[38] and (B) is of collective interest legally owed to the international community.[39]

Various authors and courts have held that protecting the environment is an obligation for which all States are collectively responsible.[40] The conservation of biological diversity is an intrinsic and essential part of environmental conservation.[41]

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34 CBD, *Conservation and sustainable use of marine and coastal biological diversity*, COP 2 Decision II/10, Annex I(ix), p.18, U.N. Doc. UNEP/CBD/COP/2/19 (Nov. 6-17, 1995); CBD, *Conservation and sustainable use of marine and coastal biological diversity, including a programme of work*, COP 4 Decision IV/5, U.N. Doc. UNEP/CBD/COP/DEC/IV/5 (May 4-15, 1998); Rio Declaration, *Supra* note 71, Principle 15.

35 Barcelona Traction, Light and Power Company, Limited (Belg. v. Spain), 1970 I.C.J. 32,¶¶33,34 (Feb. 5); Nuclear Tests (N.Z. v. Fr.), 1974 I.C.J. 457,¶52 (Dec. 20); East Timor (Port. v. Austl.), 1995 I.C.J. 90,¶29 (June 20); Application of the Convention on the Prevention and Punishment of the Crime of Genocide (Bosn. & Herz. v. Yugoslavia), 1996 I.C.J. 595,¶31 (July 11); Military and Paramilitary Activities in and against Nicaragua (Nicar. v. U.S.), 1986 I.C.J. 14,¶116 (June 27); ILC, Draft Articles on Responsibility of States for Internationally Wrongful Acts (with commentary), art.48, II Y.B. Int'l. L. Commission 31,126 (2001).

36 CHRISTIAN TAMS, ENFORCING OBLIGATIONS *ERGA OMNES* IN INTERNATIONAL LAW 129 (2005); Barcelona Traction case, at ¶33; *Id.*, at 325-327 (separate opinion of Judge Ammoun).

37 TAMS, *id.*; Barcelona Traction case, *Supra note 36*, at ¶33.

38 Barcelona Traction case, *Supra note 36*, at ¶¶33,34; East Timor case, *Supra note 36*, at ¶29; Nicaragua case, *Supra note 36*, at 198 (separate opinion of Judge Schwebel).

39 G.A. Res. 44/207, U.N. Doc. A/RES/44/207 (Dec. 22, 1989); ALEXANDER GILLESPIE, CONSERVATION, BIODIVERSITY AND INTERNATIONAL LAW 17 (2011).

40 Gabčíkovo-Nagymaros Project (Hung./Slovk.), 1997 I.C.J. 7, 117-118 (Sep. 25) (separate opinion of Judge Weeramantry); Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, 1996 I.C.J. 226, ¶29 (July 8); RENÉ LEFEBER, TRANSBOUNDARY ENVIRONMENTAL INTERFERENCE AND THE ORIGIN OF STATE LIABILITY 113-114 (1998); PATRICIA W. BIRNIE & ALAN E. BOYLE, INTERNATIONAL LAW AND ENVIRONMENT 99-100 (2002); Jutta Brunnée, *"Common Interest" – Echoes from an Empty Shell?*, 49 ZaöRV 791, 800-807 (1989); ALEXANDRE KISS & DINAH SHELTON, INTERNATIONAL ENVIRONMENTAL LAW 24–25 (2000).

41 Agenda 21: Programme of Action for Sustainable Development, ¶15.2, June 14, 1992, U.N. GAOR, 46th Sess., Agenda Item 21, U.N. Doc. A/Conf.151/26 (Vol. II)(1992)[hereinafter "Agenda 21"]; Stockholm Declaration, *Supra* note 71, Principle(s) 2 & 4; Catherine Tinker, *A "New Breed" Of Treaty: The United*

As required by the *Barcelona Traction case*,[42] the principle of conservation of species has found wide acceptance in a number of international instruments of universal or quasi-universal nature.[43] Also, environment is necessary for a complete realization of the right to life[44].[45] *Furthermore*, the principle has also been established as a custom. Hence, it is submitted that the principle of conservation of species is an essential intrinsic principle of international law.

The conservation of the environment,[46] and the conservation of biological diversity,[47] has been held to be the concern of the international community as a whole,[48] irrespective of sovereign jurisdiction over it.[49] Various multilateral instruments have held these principles to be a common concern.[50]

Furthermore, the nature of reactions to the derogation of such norms contributes to the establishment of the norms.[51] States have reacted strongly to derogations from conservation of biological diversity.[52] Thus, the principle of conservation of species is collective interest legally owed to the international community.

Nations Convention on Biological Diversity, 13 PACE ENVTL. L. REV. 191, 192-195 (1995); David Pimentel et al., *Economic and Environmental Benefits of Biodiversity*, 47(11) BIOSCIENCE 747, 748-752 (1997).

42 Barcelona Traction case, *Supra note 36*, at ¶34.

43 *See* CBD; CITES; Convention Concerning The Protection of the World Cultural and Natural Heritage, November 16, 1972, 1037 U.N.T.S. 151[hereinafter World Heritage Convention].

44 Universal Declaration of Human Rights, G.A.Res.217(III)A, art.3, U.N. Doc. A/RES/217(III) (Dec. 10, 1948) [hereinafter UDHR].

45 Rio Declaration, *Supra note 4*, Principle 1.

46 Rio Declaration, *Supra note 4*, Principle 7; Johannesburg Declaration on Sustainable Development, Annex ¶5, Sep. 4, 2002, U.N. Doc. A/CONF.199/20 (2002) [hereinafter Johannesburg Declaration]; G.A.Res.44/207, U.N. Doc. A/RES/44/207 (Dec. 22, 1989); United Nations Framework Convention on Climate Change, Preamble, May 9, 1992, 1771 U.N.T.S. 107 [hereinafter UNFCCC].

47 CBD, Preamble; Convention for the Protection of the Marine Environment of the North-East Atlantic, Preamble, Sep. 22, 1992, 2354 U.N.T.S. 67 (1993).

48 Eva M. Kornicker Uhlmann, S*tate Community Interests, Jus Cogens and Protection Of The Global Environment: Developing Criteria For Peremptory Norms*, 11 GEO. INT'L ENVTL. L. REV. 101, 106-107 (1998).

49 Jimena Murillo, *Common Concern of Humankind and its Implications in International Environmental Law*, 5 MACQUARIE J. INT'L & COMP. ENVTL. L. 133, 146 (2008); JUTTA BRUNNEE, OXFORD HANDBOOK OF INTERNATIONAL ENVIRONMENTAL LAW 564 (2007).

50 UNFCCC, *Supra note 47*, World Heritage Convention, *Supra note 44*, Preamble.

51 Birgit Kessler, DIE DURCHSETZUNG DER GENFER ABKOMMEN VON 1949 IN NICHT-INTERNATIONALEN BEWAFFNETEN KONFLIKTEN AUF GRUNDLAGE IHRES GEMEINSAMEN 45-46 (2001); HUGH W.A. THIRLWAY, *The Sources of International Law*, *in* INTERNATIONAL LAW 117, 142 (Evans ed., 2003).
Apellate Body Report, *United States – Import Prohibition of certain shrimp and shrimp products*, , WTO Doc. WT/DS58/AB/R, reprinted in VII DSR 2755 (Oct. 12, 1998); CITES, *CITES acts to curb smuggling of elephant ivory and rhino horn*, Sixty-Second Meeting of the Standing Committee (July 31, 2012), at http://www.cites.org/eng/news/pr/2012/20120731_SC62_results.php (accessed Sep. 11, 2013); Reuben B.

III. HARMONIZING THE BRIDGE BETWEEN CULTURAL PRACTICES AND SPECIES PROTECTION

There exists a conflict in the international regime on whether the cultural practices of the indigenous people should be allowed or should be stopped owing to the risk on the species population.

While the Government has its obligations to protect the environment under various international conventions and to promote sustainable development, however, at the same time, it also has its obligation to promote the cultural practices of the indigenous people.

If the Government takes a pro-environmentalist approach against these practices, then it is of great possibility that the cultural practices of the indigenous people may vanish. Similarly on the other hand, the Government cannot turn a blind eye to indiscriminate killing of species or more specifically endangered species in the name of cultural practices, as this would cause species population to dwindle down exponentially, going against the principle and goals of sustainable development.[53]

Hence, the challenge before the Government is to find a balanced approach that could be mutually beneficial for both the indigenous population to practice their culture as well as protecting such species within the confinement of such cultural practice.

The alternative method of response that the author proposes here is that the Government should give a free hand to the indigenous communities if the practices involve conservation of environment and natural resources as these communities have the best possible information about the local surroundings in the traditional form. These communities are the biggest stakeholders in protection the natural environment.

In certain exceptional circumstances such as cultural practices like those of the Sarmaka people, the Government can employ modern technologies and monitor their activities. The Government can provide better equipment to communities wherever possible. It is to be understood that for them using the modern weapon is not against their cultural practices. Instead for them, culture practice is killing of those sea turtles because it is what they associate their life with. It is through the struggle of killing a sea turtle that they realize

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Ackerman, *Japanese Whaling in the Pacific Ocean: Defiance of International Whaling Norms in the name of 'Scientific Research', Culture, and Tradition*, 25 B.C. INT'L & COMP. L. REV. 323, 325-331 (2002).

53 MORROW, *Supra note 1.*

the hardships, which they will face in the real life when they have to take care of the family. This practice is to celebrate that struggle.

Nevertheless, it has to be kept in mind that the intervention should not be of threshold that it goes against the setup of protecting the cultural practice. They are part of the subsistence for the people. Too much Government intervention might have harmful impact on the population of the indigenous people - for a red tribe in North America requires feathers of eagle touched to the forehead of a child for it to be accepted to the society. Seeing the dwindling number of eagles, the New Mexico State Government stopped killing of such eagle which saw rapid decrease in the population of that tribe in North America.[54]

IV. CONCLUSION

The main purpose of this paper is to highlight about the issues that the indigenous population have to face in relation to their right to practice culture. For the indigenous people, culture is a way of life that guides them in their life and build societal values. Though international conventions guarantee such rights[55], however, the bigger question of defining a definitive set of characteristics to identify indigenous people still exists without any concrete answer.

Notwithstanding that the question of who are indigenous still remains unanswered in international law, the importance of the cultural practices as subsistence right is uniformly acknowledged.

Space should be given to the indigenous community fto practice their culture in a manner that does not have a negative impact on the environment as such. However, there should be an oversight to conserve the species and not to influence the cultural practices of the indigenous population.

Such steps may be the best possible manner in which the Government can fulfill both its function of developing the goal of sustainable development, and protecting the cultural practices of the indigenous people.

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[54] BRUCE E. BEANS, EAGLE'S PLUME: THE STRUGGLE TO PRESERVE THE LIFE AND HAUNTS OF AMERICA'S BALD EAGLE, 173 (University of Nebraska Press, 1997).

[55] Agenda 21: Programme of Action for Sustainable Development, June 14, 1992, U.N. GAOR, 46th Sess., Agenda Item 21, U. N. Doc. A/Conf.151/26 (Vol. II) (1992).

ATMOSPHERIC TRUST LITIGATION- THE TOOL OF PUBLIC TRUST IN CLIMATE CONCERNS

Pranahita Srinivas*

Abstract

The past few decades have witnessed concerted efforts by countries to address the issue of climate change. Examples are India's active participation in the Clean Development Mechanism and Australia's successful commitment to preventing deforestation and land clearing.[1] The most recent success in this regard is the Paris Climate Change Agreement, 2015. However, many worry that this pace of improvement is glacial and more needs to be done if we are to truly tackle the problem. An innovative strategy to shake obstructionist regimes into doing more is the concept of atmospheric trust litigation (ATL). This theory develops on the popular public trust doctrine (PTD) to allow the judiciary to play an interventionist role in climate protection. In this essay, the author first sketches out the details of ATL and discusses the basis of the theory, i.e. the PTD and its evolution. She then engages with the critiques the theory has elicited and evaluates them in light of established law. The central concerns are four fold; first, recognizing the atmosphere as an asset in public trust and its transnational nature; second, resolving questions of standing in such cases; third and most importantly, tracing the line between judicial intervention and judicial over-reach into essential policy matters; fourth, the implications of a fiduciary understanding of public trust. While acknowledging the arguments raised, the author seeks to assess the viability of the model in India. She concludes that given the Indian judiciary's activist nature and expansive inclusion of public trust assets as well as our relaxed rules on standing through public interest litigations (PILs), it is possible to ensconce ATL in India. However, the author recommends caution, given that; first, public trust matters in India have been concerned more with alienation of public assets and second, the judgment of the National Green Tribunal (NGT) in Indian Council for Enviro-Legal Action (ICELA) v Ministry of Environment and Forests and Climate Change places climate concerns within the purview of statute and obligates the executive to tackle it.

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[1] '*What Countries are Doing to Tackle Climate Change*', available at: http://www.npr.org/2011/12/07/143302823/what-countries-are-doing-to-tackle-climate-change (last viewed on October 1, 2016).

A. INTRODUCTION

"*On climate change, we don't fully appreciate it's a problem- we think it's a problem waiting to happen*."

- Kofi Annan (Former Secretary-General, United Nations)

In 1988, countries recognized that the release of substances considered hitherto innocuous could affect global climate adversely and that too in an irreversible manner. This led to the first step of establishing the Intergovernmental Panel on Climate Change (IPCC).[2] The most recent action is the Paris Climate Change Agreement, 2015, where 195 countries signed the first ever, legally binding global climate deal.[3]

However in the US, the lackadaisical manner in which the State approaches the protection of natural resources and other questions of environmental significance has been extensively criticised by scholars. Reasons for the State's laxness are *first*, absence of concrete, provable harm to the public; *second*, the influence of special interest lobbies that look out for their own interests and *third*, the extensive discretionary power granted to agencies when it comes to resources.[4]

In light of the imminent threat of harm, an innovative response suggested is to pursue 'atmospheric trust litigation' (ATL). As per this theory the atmosphere in its entirety is held by the State as trustee for the people and therefore, must be managed in the best interests of the people.[5] This revolutionary approach caught on quickly with individuals, mostly children, pursuing such claims on behalf of themselves and future generations, to impose an obligation on the State towards the atmosphere.[6] In a move that made headlines, ATL lawsuits were filed before each of the 50 state courts of the US on the same day.[7] 48 these petitions were

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[2] *See* '*History*', available at: https://www.ipcc.ch/organization/organization_history.shtml (last viewed on May 8, 2016).

[3] '*Paris Agreement*', available at: http://ec.europa.eu/clima/policies/international/negotiations/paris/index_en.htm (last viewed on May 8, 2015).

[4] CAROLINE CRESS, '*It's Time to Let Go: Why the Atmospheric Trust Won't Help the World Breathe Easier*' 92 N.C. L. REV 239 (2013).

[5] '*A Legal Call to Arms to Remedy Environmental and Climate Ills*', available at: http://e360.yale.edu/feature/interview_mary_wood_a_legal_call_to_arms_to_fix_environmental_and_climate_ills/2724/ (last viewed on April 28, 2016).

[6] MARY DEMOCKER, '*Interview with Prof. M. C. Wood*', OREGON QUARTERLY (AUTUMN 2014), available at: http://digital.turn-page.com/i/369475-autumn-2014/32 (last viewed on April 29, 2016).

[7] *See* '*Legal Action*', Our Children's Trust, available at: http://ourchildrenstrust.org/Legal (last viewed on April 29, 2016).

denied on procedural grounds and in 2 cases, New Mexico and Texas, the court recognized a public trust duty of the State towards the atmosphere. It is important to note that these were the only two cases where the Court proceeded to review the merits of the petition.[8] Further, at the time of publication of this article, an ATL lawsuit against the federal government is being heard by the U.S District Court at Oregon. The judge denied the government's preliminary motion to dismiss heralding a great victory on procedure for the plaintiffs.[9]

B. THE ATMOSPHERIC TRUST DOCTRINE[10]

This theory was proposed by Dr. Mary C. Wood of the Oregon School of Law in 2011, as a natural extension to the public trust doctrine (PTD). Her framework is simple and twofold: *first,* it places the atmosphere as a whole within the ambit of PTD thereby commanding the judiciary to step in to enforce the constitutional dictum to protect it and *second*, it imposes a duty of *restoration* not merely mitigation on the State. Post extensive consultations with experts on climate change,[11] she concludes that the minimum required reduction of carbon levels per year is 6%. In comparison, the US (without any firm commitments) currently contributes to reducing about 2% every year. Therefore, the practical significance of this theory is demonstrated in the relief sought in each of the lawsuits filed before the states and the federal government in the US- *first,* a declaratory judgment recognizing the public trust duty of the State and *second*, an order directing the government to definitely pursue action against climate change and provide a roadmap based on the statistics provided in the ATL framework.[12]

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[8] MEGAN GLEASON, '*Atmospheric Trust Litigation: Prompting Action through the Courts*' 6 available at: https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794/19058/Thesis%20Final-Gleason%20M.pdf?sequence=1 (last viewed on October 1, 2016).

[9] '*Landmark U.S Federal Climate Lawsuit*' available at: http://www.ourchildrenstrust.org/us/federal-lawsuit/ (last viewed on October 1, 2016).

[10] MARY CHRISTINA WOOD, '*The Planet on the Docket: Atmospheric Trust Litigation to protect Earth's climate system and habitability*' 9(2) FL. A&M UNIV. L. REV. 270-271 (2014); JAMES CONCA, '*Atmospheric Trust Litigation- Can We Sue Ourselves Over Climate Change?*', available at: http://www.forbes.com/sites/jamesconca/2014/11/23/atmospheric-trust-litigation-can-we-sue-ourselves-over-climate-change/#739134ea2317 (last viewed on April 29, 2016).

[11] '*James Hansen, father of climate change awareness, calls Paris talks 'a fraud'*, available at: http://www.theguardian.com/environment/2015/dec/12/james-hansen-climate-change-paris-talks-fraud (last viewed on April 29, 2016); JAMES HANSEN ET AL., '*Assessing "Dangerous Climate Change": Required Reduction of Carbon Emissions to Protect Young People, Future Generations and Nature*', available at: http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0081 648. (last viewed on April 29, 2016).

[12] DAVID BOLLIER, '*Atmospheric Trust Litigation vs. the Obama Administration*', available at: http://bollier.org/atmospheric-trust-litigation-vs-obama-administration (last viewed on October 1, 2016).

A point of interest is that each of the ATL cases was brought by students and the youth-individuals representing the next generation of citizens who are to be most affected by climate change and a polluted atmosphere. This in itself is not a new concept. Previously in *Oposa v Factoran*,[13] the Supreme Court of Phillipines granted standing to children who were representing the generations of tomorrow.

Further, Wood recognizes that the atmosphere is an internationally shared resource unlike riverbeds and wildlife and would require the effort of all nations on the earth to revive it. Therefore, she envisions that every State in the world and within a nation every state, is a 'co-trustee' of the atmospheric trust asset and thereby owes a fiduciary obligation to its citizens to actively protect the resource.

C. THE PUBLIC TRUST DOCTRINE

At this juncture, it becomes crucial to examine the exact contours of the PTD that is being used as the basis for this action. In essence, the doctrine stipulates that the State exercises trusteeship over certain natural resources on behalf of the general public who are the ultimate beneficiaries. Edith Brown Weiss expands this doctrine by describing a 'planetary trust', where all the earth's resources are vested in the world's governments as trust property. A trusteeship is an established form of fiduciary relationship and each government becomes a fiduciary to their own citizens.[14] She draws a parallel with the administration of a charitable trust and exhorts states to do the same.[15]

This relationship results in two significant consequences; *first*, it ensures that the State cannot not deal with the property in any manner prejudicial to the interests of the public[16] and *second*, it allows for the creation of a legally enforceable right in favour of the public.[17]

PTD has three characteristic features. *First*, the property must be held for a public purpose and made available for use by the public. *Second*, the property cannot be sold even at fair market value. *Third*, the property must be held for specific types of purposes.[18]

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[13] G.R. No. 101083 (S.C., July 30, 1993) (Phil.).
[14] EDITH BROWN WEISS, '*The Planetary Trust: Conservation and Intergenerational Equity*', 11 ECOLOGY L.Q. 581 (1983).
[15] *Id* at 502.
[16] JOSEPH L SAX, "*Liberating the Public Trust Doctrine from Its Historical Shackles*", 14 U. C. DAVIS L REV. 185 (1980).
[17] JOSEPH L. SAX, "*The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*", 68 MICH. L. REV. 475 (1970).

The origins of this principle lie in early Roman and English law, where this principle was applied to natural resources such as rivers, sea shore and the sea. The property sought to be brought under the ambit of this doctrine, traditionally referred to as *'res communis'* was to be distinguished from general public property owned by the State that could be alienated by it.[19] The test to distinguish is to assess whether the property was held for use by the general public. The principle achieved consistency in the case of *Illinois Central Railroad Company v Illinois*[20]. Here, the Court emphatically laid out that the State could not alienate the Chicago harbour to private parties as this would be an abdication of the legislature's role to govern and violated the public trust relationship.

The doctrine has been echoed by the Indian judiciary time and time again. In *M.C. Mehta v Kamal Nath*[21], the Supreme Court referred to this principle. Here, the property in question was a portion of the Beas river bank that was alienated by the Himachal Pradesh government for the establishment of a motel. This had an adverse impact on health of the river itself. It was held that such a transaction could not be entered into as the property is trust property by virtue of the discussed doctrine. Courts later have proceeded to innovatively expand the scope of term 'natural resources' under the doctrine. In *Secretary, Ministry of Information and Broadcasting, Government of India and Ors. v Cricket Association of Bengal and Ors*.[22], the Court held government licensed 'air wave frequencies' to be a sparse natural resource subject to the applicability of this doctrine. Further, in *Natural Resources Allocation In re: Special Ref. No.1 of 2012*[23], spectrum was regarded by the Court to be a 'universally accepted, scarce and finite natural resource'. The Courts sourced the basis of the doctrine in Article 39(b) of the Constitution of India which disallows the use of a common resource for uses that do not contribute to public good.[24]

D. FEASIBILITY OF THE ATMOSPHERIC TRUST DOCTRINE- ENGAGING WITH THE CRITIQUES OF THE DOCTRINE

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[18] *Id* at 476.
[19] *Id* at 478.
[20] 146 U.S. 387 (1892).
[21] [1997] 1 SCC 388.
[22] [1995] 2 SCC 161.
[23] [2012] 10 SCC 1.
[24] Art. 39(b) of the CONSTITUTION OF INDIA, 1950 states "*that the ownership and control of the material resources of the community are so distributed as best to subserve the common good*".

Scholars have raised multiple conceptual and practical arguments against the use of ATL. Most of these arguments draw parallels with critiques raised against PTD itself such as an incorrect understanding of the development of PTD since anti-PTD literature believes the doctrine should have been restricted to navigable waters as a resource, concerns of judicial overreach and need to respect private rights in resources.[25] These arguments find their place in anti-ATL literature as well and therefore, I shall address each of these in turn later in this segment.

Anti-ATL literature that I perused put forth three specific concerns regarding the doctrine's applicability in the US. *First*, that the atmosphere may not fulfil the traditional criteria required of a public trust asset; *second*, that the plaintiffs lack the appropriate standing required to approach the courts for relief and *third*, that the relief sought from courts is a transgression into the realm of executive policy-making. To this, I add two further concerns that could possibly be raised namely that appropriate relief is possible under environment protection legislations through tools such as citizen's suits and that the scope of the fiduciary obligation under the PTD is yet unclear.

In this segment I assess each of these arguments to provide clarity on the ability of ATL to succeed as a normative framework for climate protection.

i) The atmosphere as an asset under the public trust

Critics argue that the traditional conception of the PTD was restricted to the protection of navigable water resources, which was later expanded to include water resources in general and associated resources such as river beds, shorelines etc.[26] In situations where courts have considered other resources, its basis cannot directly be attributed to the PTD as such. For example, while courts have considered air as an element of the public domain, it was usually in a nuisance context[27] and with regard to wildlife and game, the legal basis stems from the principle of *parens patriae*.[28]

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[25] JAMES L. HUFFMAN, '*Why Liberating the Public Trust Doctrine is Bad for the Public*' available at: http://elawreview.org/articles/why-liberating-the-public-trust-doctrine-is-bad-for-the-public/ (last viewed on October 1, 2016).

[26] ANDREW BALLENTINE, '*Full of Hot Air: Why the Atmospheric Trust Litigation Theory Is an Unworkable Attempt to Expand the Public Trust Doctrine Beyond Its Common Law Foundations*', 12 DARTMOUTH L. J. 122 (2014).

[27] *United States v Causby* 328 U.S. 256 (1946); *Georgia v Tennessee Copper Co.* 206 U.S. at 230 (1907).

[28] *Geer v Connecticut* 161 U.S. 519 (1896) overruled by *Hughes v Oklahoma* 441 U.S. 322 (1979).

Prof. Wood on the other hand believes that the extension of the doctrine to the atmosphere is a simple and natural progression. This can be traced to largely two sources. *First*, as Prof. Sax contends the doctrine provides a solution and guidance on a range on environmental issues before the legislature and can be expanded to apply to any entitlement accruing to any class of society especially interest groups and underprivileged groups.[29] *Second*, the judgment in *Robinson Township v Commonwealth*[30] appears to assist the case of ATL. Here, the Pennsylvania Supreme Court unanimously overturned portions of a statute that promoted fracking (the process of injecting liquid at extreme pressure into rocks, so as to extract oil or gas by creating fissures), arguing that it violated the constitutional public trust.[31] It is to be noted however, that though the court attempted to lay the basis for this holding in the 'inalienable right to environment' that a citizen had, the argument was buttressed by the fact that the Constitution of Pennsylvania contains a specific provision allowing for the creation of a public trust.[32]

In fact the Robinson holding leads us to two related issues. *First*, within the strong federal structure of the US, every state has a different and possibly competing understanding of what resources would constitute the public trust. For example, states like North Carolina follow a restricted understanding of the scope of the doctrine narrowly encompassing resources such as navigable rivers and river beds etc. as under the traditional judicial position[33] whereas a state like California liberally construed it to include even wildlife.[34]It does not help that the federal Supreme Court believes that public trust law is entirely in the domain of the states and that the US Constitution does not apply to it at all.[35] This would result in the creation of pockets or 'patchworks' across the US where the doctrine is applicable.[36] However, given the ubiquitous nature of air, this really does not address the root of the problem and instead may

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[29] SAX, *Supra* note 17 at 557.

[30] 52 A.3d 463 (Pa. Cmwlth. 2012).

[31] Fracking is an unpopular method of oil production and extraction. *See* '*What is fracking and why is it controversial*' available at: http://www.bbc.com/news/uk-14432401 (last viewed on October 1, 2016).

[32] Art. 1, § 27, CONSTITUTION OF THE STATE OF PENNSYLVANIA.

[33] CRESS, *Supra* note 4 at 269.

[34] *Supra* note 28.

[35] *PPL Montana v Montana*, available at: http://www.supremecourt.gov/opinions/11pdf/10-218.pdf (last viewed on April 29, 2016). *Also see* https://citizenactionmonitor.wordpress.com/2013/05/26/youth-to-appeal-decision-federal-govt-not-bound-to-protect-atmosphere-from-irreversible-damage/ (last viewed on October 1, 2016).

[36] CHRISTOPHER BROWN, '*A Litigious Proposal: A Citizen's Duty to Challenge Climate Change, Lessons from Recent Federal Standing Analysis, and Possible State-Level Remedies Private Citizens Can Pursue*', 25 J. ENVTL. L. & LITIG. 446 (2010).

lead to problems of interstate co-ordination, assignment of liability and can strain relationships. *Second*, assuming a unanimous assumption by all states to support the same thread of PTD, some argue that this could prove counterproductive when attempting to protect other resources by conflating the police power and public trust authority of the State. Whilst the PTD was meant to be a 'trump card' for the judiciary, an expansive interpretation might make a cautious judiciary hesitant to play the card frequently or stringently as they worry about blurring the distinction between the doctrine and policing power of state.[37]

The nature of the atmosphere as a shared resource requires concerted action on the part of all the countries across the world to contribute to the cause in much a similar manner as with the states. Since it is a matter of foreign policy, courts would be hesitant in establishing rigid standards.[38] In the past, international public trusteeship over resources has been established only in regard to the 'common heritage of the deep sea bed'.[39]

Climate change is an international concern and many advocate a strict, binding consensual treaty regime to regulate it. Being of such a systemic nature, it requires multiscalar approaches as well as action at multiple levels. Such action must be at an international platform and not at a court hearing alone.[40]

ii) ATL and procedural requirements of standing

In the American context, before a claim is brought before a court three criteria are required to be met to establish maintainability or standing. There must be an injury caused to the plaintiff which has a causal connection to the alleged harm and can be redressed by a relief granted by the court.[41] The issue of injury and the causal link that such injury has to climate change has not been easily accepted in the past. Without adequate scientific basis to a claim, courts are often unwilling to grant standing to individual litigants. In the context of carbon emissions,

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[37] J. PETER BYRNE, '*The Public Trust Doctrine, Legislation, and Green Property: A Future Convergence?*', 45 U.C. DAVIS L. REV. 915 (2012).

[38] THOMAS M. FRANCK, *'Courts and Foreign Policy'* 83 FOREIGN POLICY 66 (1991). However, for an example of a recent activist stance by the Supreme Court, *see* '*Supreme Court blocks Obama's climate change rules'*, available at: http://edition.cnn.com/2016/02/09/politics/supreme-court-obama-epa-climate-change/ (last viewed on April 29, 2016).

[39] Art. 136 and 157, UN CONVENTION ON THE LAW OF THE SEA (Adopted on 28 July 1994, in force since 28 July 1996). Also for alternate international systems of trusteeship such as multilateral treaties, refer PETER H. SAND, '*International Use of the Public Trust Concept, and its Application to the Ocean*', ECOLOGICAL SOCIETY OF AMERICA, Albuquerque/New Mexico, August 4, 2009.

[40] HARI M. OSOFSKY, '*Is climate change 'international'? Litigation's diagonal regulatory role*' 49(3) VIRGINIA J. INT'L. L. 586 (2009).

[41] *Lujan v Director of Wildlife*, 504 U.S. 555 (1992).

the Environment Protection Agency (EPA) since the Clinton administration has been monitoring whether GHGs can be termed 'pollutants' under the Clean Air Act, 1970.[42] It however, did not act upon it until the decision in *Massachusetts v EPA*.[43]

The SC in *Massachusetts* did subject the plaintiff (the state of Massachusetts) to the 'standing' test. The crucial point to note is that the court conceded that if the parties before it had been private citizens, their claim would not have been accepted. However, since the state of Massachusetts approached them in its capacity as a 'quasi-sovereign', they were accorded 'special solitude' to approach the court.[44]

The larger concern is effective redressal. While the court could order the authority in charge to make concrete efforts to assist in climate change control, it would be impossible to address the actions of another state or nation in the same manner. Given the nature of the resource in question, individual efforts are not enough therefore, judicial redressal may not be successful.

iii) ATL as a transgression into the realm of political policy making

The second requirement to establish maintainability (granting standing) is to prove that the question being dealt with is not a 'political' one. The court's deliberations must not transgress the authority of the other limbs of State in deciding matters they are empowered to. Whilst the court is authorized to issue orders to the executive or legislature to correct any dereliction of duty, it cannot use this power to usurp the decision making power of the organ itself.[45]

Along these lines in *American Electric Power Co. v Connecticut*[46], the Court refused to consider the claim brought before it. It believed that the independent and specially created regulatory body, EPA and the Clean Air Act, 1970 render judicial pronouncements based in federal common law redundant and non-justiciable. Further, the Court argued that these decisions were essential policy decisions to be taken by the expert bodies created.[47] In essence, this is one of the most significant problems with ATL. It not only exhorts the court

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[42] KEITH JOHNSON, *'How Carbon Dioxide became a 'pollutant'*, available at: http://www.wsj.com/articles/SB124001537515830975 (last viewed on April 20, 2014).

[43] 549 U.S. 497 with CJ Roberts (dissenting). [Hereinafter 'Massachusetts'].

[44] *Ibid*.

[45] MARY CHRISTINA WOOD, '*Atmospheric Trust Litigation*', in ADJUDICATING CLIMATE CHANGE: STATE, NATIONAL, AND INTERNATIONAL APPROACHES 100 (2011).

[46] Available at: http://www.supremecourt.gov/opinions/10pdf/10-174.pdf (last viewed on April 29, 2016). [Hereafter 'American Electric Power Co.']

[47] *California v. Gen. Motors Corp*., 2007 WL 2726871 *1 (N.D. Cal. Sept. 17, 2007).

to mandate the executive and legislature to act but also specifies the exact targets there are to achieve in acting. Whilst Prof. Wood might argue that it is only the end goal that her theory prescribes and that the plan of action that the executive chooses to take to achieve that target is up to their discretion, it is still tantamount to usurpation of executive action. Prescribing an appropriate end goal is also within the executive mandate. Moreover, the judiciary in *American Electric Power Co.* understood its limitations and even questioned whether it was possible to find '*judicially discoverable and manageable standards for climate change*'.

iv) Assessing alternative paradigms to achieve climate protection

Prof. Wood agrees that her stated objective is to ultimately see political change.[48] It is inherent in the PTD that the resources it seeks to protect are those of 'public use' and of 'special interest' to the public. Given such importance, should an unelected, countermajoritarian institution like the judiciary be given such exhaustive powers over them? An argument could be furthered that the existing framework of laws is adequately equipped to address concerns of climate change. One aspect would be through existing statutory framework. In *Massachusetts*, which was further reaffirmed in *Coalition for Responsible Regulation v EPA*[49], states were granted standing to litigate cases of dereliction of duty by the EPA. Here, the EPA was asked to put in place effective and comprehensive guidelines on GHGs labelling them 'pollutants' under the expansive definition of the Clean Air Act, 1970. This strategy acquired similar results to ATL however, an action could only be brought by states themselves. Another alternative is to bring forth a claim of nuisance.[50] If a particular individual is affected by any action or non-action on the part of the State, he can bring an independent claim in this regard. For example, increasing quantum of GHGs in the atmosphere might specifically hurt those living on the coasts or island nations. These individuals can then possibly traditionally prove standing and seek relief. However, the concern will remain that the redress may be insufficient and too localized to truly make a difference. What matters most is that some improvement is better than no improvement at all. Last, one could seek to pursue political action and channels of lobbying to seek relief. This may prove to be the most fail safe strategy as it addresses all the concerns laid out above.

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[48] WOOD, *Supra* note 45 at 102.

[49] Available at: http://www.c2es.org/federal/courts/clean-air-act-cases (last viewed on April 29, 2016).

[50] DAVID A. GROSSMAN, '*Warming up to a not so radical idea: Tort based climate change litigation'* 28 COL. J. ENV. L 1 (2003).

This form of political pressure is holistic as it addresses situations of legislative laggardness, agency capture[51] and helps with transnational policy making as well.

v) Defining the scope of the fiduciary obligation of the State

As established earlier, ATL draws from the relationship of the State as a trustee of its people. However, the exact nature of the obligation that the trustee owes to the beneficiaries under the law of obligations is still unsettled. Some posit that a fiduciary obligation does not require a fiduciary to take any positive steps towards the benefit of the beneficiary, however, when placing themselves in a position wherein they conflict with the beneficiary's interest they are required to act in the sole interests of the beneficiary.[52] Others argue that the fiduciary must always act in the perceived best interests of the beneficiary.[53] This debate is complicated further by the fact that these are private law principles that are now to be applied to a public law context thereby treating the *sui generis* State as a fiduciary.[54] Until this debate is resolved, a logical argument could be made that while the State under the PTD cannot deal with resources in a manner that is inimical to the interests of the public, it does not owe a restorative duty to the environment.[55]

E. ATL IN THE INDIAN CONTEXT

Though no ATL case has been filed in India until now, in this section, I intend to test Indian waters for the feasibility of such an action. *First*, Indian courts have construed the PTD very widely so as to encompass a range of non-traditional resource bases. In *M. C. Mehta v Kamal Nath*[56], the court espoused a liberal version of the doctrine. As I pointed out earlier in the article, the scope of the doctrine was broadened to include radiowaves and spectrum.

Second, the question of standing is relatively more relaxed in India given the extensive and successful usage of PILs to achieve the actualization of rights. Indian courts have allowed

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[51] DEMOCKER, *Supra* note 6.

[52] REBECCA LEE, '*Rethinking the Content of the Fiduciary Obligation*' CONVEYANCER AND PROP. LAWYER (2009).

[53] LIONEL SMITH, '*Fiduciary relationships: Ensuring the loyal exercise of judgement on behalf of another*', L. Q. REV. (2014).

[54] *See* PETER H. SAND, '*The Rise of Public Trusteeship in International Environmental Law*', 5-6 available at: http://globaltrust.tau.ac.il/wp-content/uploads/2013/08/Peter-Sand-WPS-3-13-ISSN.pdf (last viewed on April 29, 2016); SETH DAVIS, '*The False Promise of Fiduciary Government*' 89(3) NOTRE DAME L. REV. 1145 (2014).

[55] *Refer* EDITH BROWN WEISS, *'Intergenerational equity: a legal framework for global environmental change*' in ENVIRONMENTAL CHANGE AND INTERNATIONAL LAW: NEW CHALLENGES AND DIMENSIONS (1992).

[56] *Supra* note 21.

public spirited individuals to file applications on behalf certain determinable class of people for a violation of any of their legal rights.[57] In Indian society given the number of people who either do not have access or the means to access justice, this scheme is very popular. Most recently, a group of infants filed a case before the Supreme Court seeking relief against the pollution caused by fireworks.[58]

Third, if a case were to be brought before Indian courts, they would probably locate the individual's right within the 'right to a clean environment' under Article 21 of the Indian Constitution. The right to a clean environment can be read either narrowly or expansively. The narrow right would provide one with an environment free of pollution or the right to a hygienic environment or sanitation.[59] The extensive view would allow climate change mitigation to be seen as a component of human rights protection[60]- an extension of one's right to air, water and life. With GHGs established as pollutants causing climate change, it could be satisfactorily presented that they do adversely affect an individual's quality of life.

Therefore it appears that there would be no hurdles under the Indian PTD to include the atmosphere as a trust asset. The doctrine in combination with India's innovation of the PIL, is a powerful litigation tool to in the hands of the public to actively seek climate justice and environmental accountability from governments. It encourages participation by the public in maintaining oversight over the government by providing them with a voice to counter government impasse.

However, there are two significant caveats to note. *First*, *M. C. Mehta* largely dwelt on the question of the use of the Beas river bed, a traditional trust asset, and the other commercial activities that the public was legitimately entitled to in regard to the resource. In fact, alternative commercial considerations are a strong factor in adjudging a resource a trust asset

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[57] *S. P. Gupta v. Union of India* AIR 1982 SC 149; for an analysis of the success and shortcomings of PILs *see* VARUN GAURI, '*Public Interest Litigation in India: Time for an Audit*', available at: https://casi.sas.upenn.edu/iit/gauri (last viewed on April 29, 2016); M. K. RAMESH, '*Environmental Justice: Courts and Beyond*', available at: http://www.nlsenlaw.org/wp-content/uploads/2013/09/courts_amp_1.pdf (last viewed on April 29, 2016).

[58] *Arjun Gopal v Union of India*, available at: http://www.legallyindia.com/SCOI-Reports/3-delhi-babies-anti-fireworks-case-is-strong-helped-by-lawyer-fathers-gopal-sanks-amit-bhandari-trilegal-bhasin-read-petition (last viewed on April 29, 2016).

[59] LAVANYA RAJAMANI, ' *Rights Based Climate Litigation In The Indian Courts: Potential, Prospects & Potential Problems*', available at: http://www.cprindia.org/sites/default/files/working_papers/Working%20paper%202013_LRajamani_Climate%20Litigation_5.pdf (last viewed on April 29, 2016).

[60] *See* STEPHEN HUMPHREYS, '*Climate Change and Human Rights: A Rough Guide*', THE INTERNATIONAL COUNCIL ON HUMAN RIGHTS POLICY (2008).

and PTD has focussed on this aspect.[61] The cases in the Indian context have dealt with concerns emanating from the alienation of public resources to private enterprise. Additionally, Article 39(b) of the Indian Constitution, believed to be the basis to the Indian PTD focuses solely on ownership and control of natural resources.[62] In regard to the atmosphere, however, it is not the alienation of the resource that is of concern but the efficient management of the resource itself. Focus on the management of a resource under the public trust therefore has not been an independent issue before Indian courts yet. Therefore, despite *M. C. Mehta's* expansive language, no comparable situation has been tested in India yet.

Second, Indian judiciary has demonstrated its proclivity to achieve climate justice through the existing legislative framework. A judgment of the National Green Tribunal (NGT) in *Indian Council for Enviro-Legal Action (ICELA) v Ministry of Environment and Forests and Climate Change*[63] labelled HFC 23 (a potent greenhouse gas (GHG)) as a 'pollutant' under the Environment Protection Act, 1986 even though it was non-toxic and a non-pollutant under the Air (Prevention and Control of Pollution) Act, 1977. As the tribunal stated,

> "*it is clear that environment and atmosphere in general, is covered under the Act of 1986, besides what is specifically covered under the Water, Air and other Environmental Acts. The purpose and object of Act of 1986 is not only to protect the environment, ecology and atmosphere from pollution but there is a direct obligation cast upon the concerned authorities and government to improve the environment. Improvement and protection of the environment would mean to include acts which are necessary of ensuring that the atmosphere and environment is not further polluted. It is nobody's case before the Tribunal that release of HFC in the atmosphere or dealing with it otherwise would have no effect on the environment and atmosphere*."

The Tribunal however, recognized that establishment of exact measures and schemes to combat climate change required scientific expertise, was the subject of various global treaty negotiations and regimes and therefore, was a matter of policy for the executive to decide upon. This position allays the concerns of judicial overreach since the Tribunal specifically

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61 RICHARD A. EPSTEIN, '*The Public Trust Doctrine*', 7 CATO J. 412 (1987).
62 *Supra* note 23.
63 MANU/GT/0216/2015 (dated December 10, 2015). [Hereinafter 'ICELA'].

dealt only with the establishment of the duty of the State but allowed the State to determine how it would execute that duty. This is a striking example of an appropriate balance being drawn between the exercise of judicial power and executive responsibilities. If the State proceeds to perform its duties proactively and take active measures to counter climate change, ATL litigation in India becomes unnecessary. As admitted by Prof. Wood herself, the doctrine was intended to shake lax governments into action.

F. CONCLUSION

It would appear from the above analysis that the concerns plaguing ATL in the USA may be less problematic in the Indian context especially given our relaxed rule of standing and the view of the judiciary on the PTD. The caveats enumerated above however, must be kept in mind. Most importantly, there are two points to remember while applying ATL theory. *First*, the theory was created to jolt ineffective administrative bodies to pursue their responsibility towards the environment seriously. As seen in *Massachusetts* and *ICELA*, this can be achieved through the statutory route thereby sidestepping most criticisms of ATL. *Second*, the theory must work into it an element of transnational application without which the tackling of a resource like the atmosphere will be immensely difficult.

But most importantly, any sort of action, whether it be political or judicial, requires a proactive citizenry and for this the ATL theory has been immensely successful in spreading awareness. By including the youth of today in efforts to fight for their tomorrow, ATL brings the fight to each and every one of our doorsteps, making the crisis impossible to ignore every passing day.

CONSERVATION OF GANGA RIVER- IS PUBLIC PARTICIPATION THE KEY?

Pranav Awasthi*

Abstract

Despite having immense cultural and religious significance, Ganga continues to be severely polluted due to rapid industrialization and a cultural belief in its self- cleansing ability. The primary responsibility to conserve Ganga lies with the executive because the judiciary is institutionally ineffective since environmental issues require quick and forward looking solutions, unlike judiciary which adopts a backward looking or curative approach and where cases drag on for years. It is thus the executive which must take the responsibility to conserve Ganga. Various past attempts of the executive, like the Ganga Action Plan, failed since it, similar to the judiciary, adopted a goal oriented or curative or top down technocratic approach and failed to encourage local participation. Its enforcement was weak on account of shoddy infrastructure. Current initiatives like the National Ganga River Basin Management Plan and Namami Gange suffer from similar flaws. It is proposed that to conserve Ganga, point sources and non- point sources of pollution must be dealt with differently. Regarding point sources, large scale infrastructural upgradation is called for taking into account future needs. Enforcement or proper use of the infrastructure to treat waste can be ensured by offering economic incentives like prohibitively expensive taxation of inefficient technologies and mandatory insurance schemes for operation of treatment plants, etc. Regarding non point sources, local participation must be encouraged during decision making and implementation keeping in mind similar efforts in Germany to conserve Rhine. Local participation can be ensured by establishing Ganga Panchayats on the line of Van Panchayats. Further, given the religious significance of Ganga, local religious leaders must also be encouraged to convince people to cleanse their Ma Ganga.

I. INTRODUCTION

The Ganga river serves as the lifeline of the entire northern plains of India and holds immense cultural significance among Hindus. Considering its importance, it is deplorable that it finds itself in a polluted state, begging for redemption. Various past interventions like the Ganga Action Plan (*hereinafter GAP)* and present ones such as *Namami Gange* have

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failed to tackle the menace of pollution of the holy river. The state must sincerely take up initiatives to clean the river. This begs the question as to with which arm of the state does the primary responsibility lie? Judiciary, due to its backward looking approach, cannot bear the primary responsibility which thus lies with the executive.

This paper attempts to put forth an analysis of the failures of past attempts of the executive to clean the river and suggests the way forward. It argues that the executive must adopt a process oriented approach to clean the river, instead of technocratic goal oriented approach, in which enforcement can be ensured by economic incentives to the industries and which involves locals effectively in the river conservation to sustain the livelihood of people.

Part II gives a brief insight into the socio-economic significance of the river and highlights sources of its pollution. Part III looks in to the question of which organ of the state should take the lead and argues in favour of the executive by arguing judiciary to be institutionally ineffective for conservation of Ganga by examining the judicial response and analysing certain factors for its institutional ineffectiveness. After having established that onus lies on the executive, Part IV provides a theoretical framework for any conservation effort by the executive and Part V applies the framework to analyse failure of past attempts like GAP and *Namami Gange* to clean Ganga and Part VI offers the way forward and also discusses some successful conservation efforts undertaken in Farida village in Uttar Pradesh and in Germany for conservation of Rhine. Part VII concludes the paper.

II. WHY IS THE HOLY RIVER POLLUTED?

Ganga covers 26% of India's landmass, accounts for 30% of its water resources and sustains more than 40% of its population and serves as one of the holiest rivers.[1] Hordes of Hindus come to Ganga to bathe and drink its holy water to attain *moksha* and to cremate their loved ones for their spiritual rebirth.[2] Apart from it being a crucial support for agriculture and industry, its religious significance ensures livelihood along the *ghats* for *pandas*, *ghatias* and

[1] *Environmental And Social Management Framework (ESMF) Volume I - Environmental And Social Analysis*, NATIONAL GANGA RIVER BASIN AUTHORITY, May 2011, available at: http://www.indiawaterportal.org/sites/indiawaterportal.org/files/NGRBA_Environmental%20and%20Social%20Analysis_Vol_I_MoEF_TERI_2011.pdf

[2] *Ganga Case Study*, MANAGING RIVERS WISELY, available at: assets.panda.org/downloads/mrwgangacasestudy.pdf

pujaris who offer their services to pilgrims.[3] It also supports a rich fauna and flora, including the endangered Ganga river dolphin.[4]

Despite having such significance, Ganga remains polluted due to the rapid increase in population and exponential growth of industrialization and urbanization.[5] Inertia in action to reduce pollution comes from the belief of Ganga being a self-cleansing river.[6] Untreated sewage and industrial wastewater represent the primary sources of pollution, with only one-third of the sewage generated receiving treatment before being discharged in the river. This treatment failure is attributed to inadequate wastewater collection and treatment infrastructure or capacity, an issue noted by the CPCB in its 2013 report as per which it is estimated that generation is 2,723.30 MLD, while treatment capacity lags behind at 1,208.80 MLD.[7] Further, non-point sources like run off from rural settlements, pesticides from agricultural fields significantly pollute the river as well. It has been estimated that 10 to 15% of the nutrients added to the soils through fertilizers eventually find their way to the surface water systems.[8] The problem is compounded by hundreds of half burnt or unburnt floating bodies of humans and animals.[9]

Equally important is the issue of reduced water flow due to dams and barrages constructed for storing and diverting water for irrigation, domestic consumption and industry, which has onerous implications for water quality and aquatic life.[10] Further, encroachment of catchment areas by construction activities has also severely reduced the retention capacity of water in the catchment areas due to which the river does not get recharged.[11] This deterioration in

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[3] Priyam Das & Kenneth R. Tamminga, *The Ganges And The GAP: An Assessment Of Efforts To Clean A Sacred River*, available at: www.mdpi.com/2071-1050/4/8/1647/pdf

[4] *Supra* note 2.

[5] *Pollution Threat*, NATIONAL MISSION FOR CLEAN GANGA, MINISTRY OF WATER RESOURCES, RIVER DEVELOPMENT & GANGA REJUVENATION, available at: http://nmcg.nic.in/pollution.aspx

[6] *Ganga Action Plan -A Critical Analysis*, available at: http://www.ecofriends.org/main/eganga/images/Critical%20analysis%20of%20GAP.pdf

[7] Sunita Narain, *Ganga The River, Its Pollution And What We Can Do To Clean It*, CENTRE FOR SCIENCE & ENVIRONMENT, 2014, available at: http://www.cseindia.org/userfiles/ganga-the-river-pollution.pdf

[8] *Supra* note 1.

[9] *Floating Bodies, Funeral On Banks Main Causes Of Ganga Pollution: ITBP*, NEWS18.COM, December 22, 2015, available at: http://www.news18.com/news/india/floating-bodies-funeral-on-banks-main-causes-of-ganga-pollution-itbp-1180103.html

[10] *Status Paper On River Ganga State Of Environment And Water Quality*, NATIONAL RIVER CONSERVATION DIRECTORATE MINISTRY OF ENVIRONMENT & FORESTS, August 2009, available at: http://www.moef.nic.in/sites/default/files/Status%20Paper%20-Ganga_2.pdf

[11] Kumar Sambhav Shrivastava, *Clean Ganga And Yamuna Mission A Failure*, DOWNTOEARTH, May 18, 2012, available at: http://www.downtoearth.org.in/news/clean-ganga-and-yamuna-mission-a-failure-38246

water quality has made the river, particularly during lean seasons, unfit even for bathing[12] and has led to a rise in water borne diseases and has also affected animals, fish, and bird's population, sometimes threatening their very existence.[13] Thus, the issue of Ganga's pollution is a matter of immediate concern. It is more so due to the threat of climate change. There is evidence that glacial retreat coupled with decreasing ice mass, early snowmelt and increased winter stream flow is already affecting the Himalayan ice cover.[14]

III. WHO CAN CONSERVE EFFECTIVELY- EXECUTIVE OR JUDICIARY?

It is the responsibility of the state to conserve the holy river. The question arises as to with whom does the responsibility to conserve the river lie? Is it the judiciary or the executive? This Part answers this question in favour of the executive by arguing judiciary to be institutionally ineffective for conservation of Ganga by first looking into the judicial response and then analysing certain factors for its institutional ineffectiveness.

The development of the environmental jurisprudence by the judiciary is a response to the legislature's and executive's failure to create and effectively enforce laws.[15] The judiciary has time and again stressed on the need for sustainable development which would mean the extent of development which can be sustained by nature with or without mitigation.[16] It has also recognised the importance of preserving resources to meet future needs and has thus stressed on maintaining intergenerational equity.[17]

Regarding Ganga, various cases have been filed as Public Interest Litigation in Supreme Court asking the court to remedy the deplorable situation. In *Kanpur Tanneries,* it was prayed to restrain industries from discharging effluents without treatment. Supreme Court directed closure of those industries who failed to take minimum steps required for treatment of effluents.[18] In a similar factual scenario in the *Kolkata Tanneries* case, Supreme Court, instead of outright ban, directed relocation of the polluting tanneries and imposes fines based

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[12] *Pollution Assessment: River Ganga,* CENTRAL POLLUTION CONTROL BOARD, July 2013, available at: http://cpcb.nic.in/upload/NewItems/NewItem_203_Ganga_report.pdf

[13] *River Pollution: Causes, Actions and Revival*, JANHIT FOUNDATION, available at: http://www.janhitfoundation.in/pdf/booklet/river_pollution_causes_action_and_revival.pdf

[14] Bharat Sharma, *Cleaning The Ganga, Step By Step,* THE HINDU, June 12, 2014, http://www.thehindu.com/opinion/op-ed/cleaning-the-ganga-step-by-step/article6105068.ece

[15] Niyati Mahajan, *Judicial Activism For Environment Protection In India*, INTERNATIONAL RESEARCH JOURNAL OF SOCIAL SCIENCES, Vol. 4(4), pp. 7-14, April 2015.

[16] *Environment Issues And The Judicial Response,* available at: http://ir.inflibnet.ac.in:8080/jspui/bitstream/10603/40571/12/16_chapter7.pdf

[17] *State of Himachal Pradesh v. Ganesh Wood Products,* 1995 SCC (6) 363.

[18] *M.C. Mehta v. Union Of India*, AIR 1988 SC 1037.

on the Polluter Pays principle.[19] Recently, the hearing of issue of Ganga pollution was transferred to the National Green Tribunal[20] (*hereinafter NGT),* for speedy and effective adjudication of the issue, subsequent to which NGT issued a similar order to ban Grossly Polluting Industries along the river basin.[21]

The question arises as to whether such an approach of the judiciary is sufficient to conserve Ganga? It is argued that judiciary is institutionally ineffective to conserve Ganga due to certain factors. *First,* it is clear from the above discussion that judiciary adopts a curative approach and focuses on reversal instead of prevention of harm. Environment conservation, in contrast requires a preventive and forward looking approach, thereby making the courts ill-equipped to deal with such issues.[22] *Second,* Judiciary is further handicapped by the fact that environment conservation is essentially a policy making exercise and it does not have any institutional arrangement for formulating policies and thus any such attempt by the judiciary is made in light of information gaps thereby compounding the problem at hand.[23] *Third,* Environmental conservation requires speedy remedial actions. The judiciary, however, consumes a lot of time in giving out judgement and on an average takes four years to dispose its environmental cases.[24] This coupled with shoddy implementation of the court orders creates a messy situation for dealing with environmental problems.[25] *Fourth,* outright bans imposed by courts in environmental issues, like the *Kanpur Tanneries* case, adversely affect the laborers who are thus rendered jobless. Thus, seen in totality, judicial response is not only inadequate and ineffective to deal with Ganga's pollution but also adversely affects lives of marginalized sections of the society. It is thus argued that the primary responsibility lies with the executive.

IV. HOW SHOULD THE EXECUTIVE APPROACH THE PROBLEM?

It has been established that the primary duty to conserve the river lies with the executive. This Part provides a theoretical framework for development and conservation which the

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[19] *M.C. Mehta v. Union Of India And Ors*, 1997 2 SCC 411.
[20] Apoorva, *SC Asks National Green Tribunal To Try Industries Polluting Ganga,* LIVEMINT, October 30, 2014, available at: http://www.livemint.com/Politics/dnt0r6StVY257bCZ7DHgTM/Cleaning-Ganga-National-Green-Tribunal-to-oversee-industria.html
[21] *2015: NGT Orders On Diesel Cars, Ganga Attract Global Attention*, THE ECONOMIC TIMES, December 28, 2015, available at: http://articles.economictimes.indiatimes.com/2015-12-28/news/69356714_1_ngt-orders-green-panel-clean-ganga-project.
[22] Jean Drèze & Amartya Sen, *India: Development and Participation,* OXFORD UNIVERSITY PRESS, 2002, p. 226.
[23] *Supra* note 15.
[24] *Supra* note 16.
[25] *Ibid*.

executive can adopt to conserve Ganga and ensure development. It argues that the executive can adopt a process oriented approach to clean the river, instead of technocratic goal oriented approach, in which enforcement can be ensured by economic incentives to the industries and which involves locals effectively in the river conservation to sustain the livelihood of people.

Development can be seen as enhancement of human freedom including quality of life which in turn is dependent on quality of environment.[26] Thus, a clean and healthy environment, is necessary for socio-economic growth, in absence of which, development would not be viable in the long run.[27] Thus, preservation of environment calls for ensuring sustainable development so as to meet present needs and not compromise on the future needs.

The focus, then, should be on the process of development and not the developmental goal to be achieved. A large-scale pollution abatement program to clean Ganga would requires not just collaboration with local institutions but also capacity building and public participation to adequately deal with the problem. Thus, a pollution control program instead of a top-down, technocratic approach should adopt an approach that creates inclusive spaces for collaboration and public participation and is centered on the premise that people's relationship with the local environment is central to any effort to restore the environment.[28]

It is seen that centralisation in pollution prevention programs leads to city municipalities finding difficulty to raise revenue to operate and maintain sewage disposal and treatment infrastructure developed under large centrally directed and financed scheme.[29] Decentralisation, thus, should be adopted as the process in the process oriented approach since it offers certain advantages. It increases the proximity between political representatives and citizens and thus enables better mobilization and efficient allocation of local resources. It also stimulates innovative and responsive locally driven programs and presents opportunities for citizens to participate in decision-making.[30] Encouraging non-government actor's participation in planning and implementation process further enhances accountability of the

[26] *Supra* note 22.
[27] *Greening Development Enhancing Capacity For Environmental Management And Governance*, ORGANISATION FOR ECONOMIC COOPERATION AND DEVELOPMENT, 2012, available at: http://www.keepeek.com/Digital-Asset-Management/oecd/development/greening-development_9789264167896-en#page16
[28] *Supra* note 3.
[29] Kelly D. Alley, *Urban Institutions At The Crossroads: Judicial Activism And Pollution Prevention In Kanpur*, available at: http://www.jstor.org/stable/pdf/40553310.pdf?_=1460207751446
[30] *Supra* note 3.

public representatives.[31] Further, because environmental decisions are concerned with establishing rights and responsibilities over the use of common natural resources, laws must require substantial rights of public participation to provide checks and balances on administrative government and to improve the quality of decision making.[32] Such an inclusive process would then build a conservation ethics where people understand that their livelihood depends on health maintenance of the environment.[33]

However, can such an inclusive process by itself ensure enforcement? It is argued that to ensure enforcement, economic incentives must be provided to all stakeholders in the conservation programme. An economic incentives based approach strategy relies on the power of the market system to induce polluters to change their behavior while not imposing them to do so.[34] Economic incentives offer some advantages. They leave the market players free to operate as they please and is thus a less invasive strategy since the mode of production or the amount produced is still left to the producers.[35] Further, the cost benefit analysis is also left to each market player who can then take into account its specific needs. Such incentives do not have adverse effects on innovation and are often cheaper than command and control strategies.[36]

V. WHY HAVE ATTEMPTS TO CLEAN GANGA FAILED?

In light of the framework proposed in Part IV, this Part analyses the reasons for failure of past and present attempts by the executive to conserve Ganga.

The first ever large scale programme to clean Ganga was launched in 1985 and was called the Ganga Action Plan (GAP). Its main or core objective was to establish a series of sewage treatment plants near the main urban centers, renovate all existing sewage pumping and treatment stations, provide wastewater sub-pumping stations at the mouths of open drains not yet linked to existing sewer systems, expand existing sewer networks by connecting unserviced areas, and had its non-core objective as to construct electric crematoriums to

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[31] *Supra* note 27.
[32] Dr. Ross Prizzia, *Community Involvement In Protecting The Environment: The Role Of Restoration Advisory Boards (RABs)*, available at: http://www.innovation.cc/peer-reviewed/prizzia_enviroment_v10i1a3.pdf
[33] Ime Edet Sam & Emeka Samuel Nnaji & Titus E Etifia, *Level Of Community Participation In The Conservation Of Natural Resources In Akamkpa Local Government Area, Southern Cross River State, Nigeria,* available at: http://www.iosrjournals.org/iosr-jrme/papers/Vol-4%20Issue-4/Version-2/G04423035.pdf
[34] Régis Lanneau, *Incentives Matter For Depolluting Rivers: The Case Of The Ganga,* March 18, 2016, available at: ssrn.com/abstract=2750194
[35] *Ibid*.
[36] *Ibid*.

address the issue of improperly cremated human remains along the *ghats*.[37] Its second phase was launched in 1993 to cover 4 tributaries of the river.[38] State River Conservation Authorities constituted in all the concerned states were mandated to function as coordinating and monitoring agencies under GAP.[39] GAP has been successful in preventing further deterioration of water quality of Ganga, even though the pollution load has increased substantially with time. It has also led to an increased public awareness of the need to protect our rivers and other sources of surface water from degradation.[40] However, the Ganga remains to be polluted till date. The forthcoming paragraphs discuss reasons for GAP's failure in light of the developmental framework discussed in Part IV.

Adoption of a technocratic top down approach

GAP superimposed a technocratic approach over a vast, multi-faceted community having its own cultural and religious understandings of pollution and thus produced a different set of results than those envisioned.[41] The role of state government agencies in GAP was minimal and was restricted to maintainenance and execution of central policies. State governments were assigned the task of setting up sewage treatment plants identifying polluters, and enforcing sanctions.[42] Decisions were made in Delhi without taking into account local conditions, including the financial and management capacity of the municipalities that would be responsible for operating and maintaining the new infrastructure.[43] Further, it was also entirely funded by the central government and local government institutions were missing from its organizational structure.[44]

GAP also ignored the social dimensions of river clean-up and failed to recognize the importance of consultation, participation and awareness-raising[45]. Public participation was limited to sporadic *ghat* clean up campaigns. Local governments did not receive support from the center to promote public participation. Similarly, Non -Governmental Organisations

[37] *Supra* note 3.
[38] Basant Rai, *Pollution And Conservation Of Ganga River In Modern India*, available at: http://www.ijsrp.org/research-paper-0413/ijsrp-p1634.pdf
[39] *SWOT Analysis Of Ganga Action Plan GRB EMP: Ganga River Basin Environment Management Plan*, INDIAN INSTITUTES OF TECHNOLOGY, December 2011, available at: http://nmcg.nic.in/writereaddata/fileupload/50_006GEN.pdf
[40] *Supra* note 10.
[41] *Supra* note 3.
[42] *Ibid*.
[43] *Ibid*.
[44] *Ibid*.
[45] *Supra* note 1.

(*hereinafter NGO)* were expected to adopt the *ghats* and maintain them but they did not receive financial support for their work nor were they invited to participate in decision-making.[46] Participation did not involve sharing information about the GAP and its goals with the public, and did not involve inviting for active decision-making.[47]

Lack of implementation due to lack of cooperation and infrastructure

GAP failed due to implementation issues owing to lack of cooperation among governments and that of infrastructure. It failed to create any kind of regional cooperation among the states that the Ganges passes through and did not make adequate provisions for monitoring the implementation process or for penalizing state or local governments for under-performance thereby leading to lack of accountability among state and local government institutions[48]. The agencies tasked with implementation were overwhelmed by the scale and scope of their duties on account of unfamiliarity with on-the-ground realities, and lack of human resources necessary to ensure effective implementation and monitoring.[49]

Regarding infrastructure, little was done to address systemic weaknesses in urban wastewater, solid waste management, environmental monitoring, regulation and water resources management.[50] The infrastructure installed failed to close the gap on the sewage generated and its treatment since along the banks of the Ganga, sewage treatment is 1208.08 million liters per day, while the total wastewater generation is 2723 million liters per day and the existing plants operate at less than 60% of their total capacity.[51] Worse still, operations and maintenance of the plants was marred by lack of uninterrupted power supply, coupled with petty corruption, further reducing treatment efficacy.[52] Due to these issues, there was gross underutilization of funds since by 2000 GAP had achieved only 39% of its proposed target for sewage treatment, consuming 91% of its budget allocation.[53]

GAP ignored maintainenance of ecological flow

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[46] *Supra* note 3.
[47] *Ibid*.
[48] *Supra* note 3.
[49] *Ibid*.
[50] *Supra* note 1.
[51]Shradha Vaid & Animesh Jain, *Cleaning The Ganga – Way Forward,* ARETE ADVISORS LLP, 2014, available at:http://www.arete-advisors.com/pdf/white-papers/151228_Arete_White%20paper_Cleaning%20the%20Ganga%20_%20way%20forward.pdf
[52] Bharat Lal Seth, *Status Paper For River Ganga Past Failures And Current Challenges,* CENTRE FOR SCIENCE & ENVIRONMENT, June 2013, available at: http://www.cseindia.org/userfiles/Status%20Paper%20Ganga%202013.pdf
[53] *Supra* note 3.

About 43% of the total irrigated area in the country is located in the Ganga basin. Almost the entire dry weather flow is diverted to the Upper Ganga Canal at Haridwar and whatever flow is regenerated between Haridwar and Aligarh is again diverted to the Lower Ganga Canal near Narora. As a result of this, there is very little dry weather flow in the Ganga at Kannauj and Kanpur where there is a heavy inflow of pollutants in the river.[54] GAP ignored non-point source pollution, as discussed earlier. Further, it did not focus at all on maintaining ecological flow of Ganga which directly affects the scale of pollution.

Can NGRBP & Namami Gange succeed?

In view of the shortcomings in GAP, a new holistic approach based on river basin as the unit of planning and institutional redesign was required. Thus, the 'National Ganga River Basin Plan' was launched in 2009.[55] However, it has the same approach as that of GAP, that of improving the water quality intercepting the sewage and treating it before discharge into the river.[56] Thus, it is difficult to say if this plan can work since it adopts the same approach. In fact, till date, no change is visible in Ganga's health.[57]

Same is the case for *Namami Gange* as well which was launched in 2014. It focuses on urban sewage and industrial effluents to check pollution at the source[58] and is 100% centrally funded.[59] Till date, only shoddy implantation has been seen.[60]

VI. HOW CAN GANGA BE CLEANED?

It is argued that apart from a major overhaul in the infrastructure currently in place to clean the river, the executive should adopt a process oriented approach in which, enforcement of laws and proper utilization of infrastructure set up to clean the river, can be ensured by economic incentives to the industries and in which locals are involved effectively in the river conservation to sustain the livelihood of people. The forthcoming paragraphs discuss the way forward.

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[54] *Supra* note 6.
[55] *Supra* note 10.
[56] *Supra* note 7.
[57] Sunita Narain, *Can We Save Ganga?*, DOWNTOEARTH, JULY 31, 2014, available at: http://www.downtoearth.org.in/coverage/can-we-save-ganga--45282
[58] *PM Calls For Swift Action To Stop Pollution Of River Ganga*, PMINDIA, January 6, 2015, available at: http://pmindia.gov.in/en/news_updates/pm-calls-for-swift-action-to-stop-pollution-of-river-ganga/
[59] Shyamlal Yadav, *Namami Gange: In The Name of Ganga*, INDIAN EXPRESS, May 18, 2015, available at: http://indianexpress.com/article/explained/in-the-name-of-ganga/
[60] Sushmita Sen Dasgupta, *What Mr. Narendra Modi Needs To Do For Ganga*, DOWNTOEARTH, March 26, 2015, available at: http://www.downtoearth.org.in/blog/what-mr-narendra-modi-needs-to-do-for-ganga-49173

Major infrastructural reform is required

Regarding point source pollution like sewage and industrial effluents, a major institutional reform along with the use of context-appropriate treatment technology is required. Any plan must address the larger issue of the lack of urban environmental services like water supply, sewage systems, and solid waste disposal since otherwise cleaning the Ganga will be adversely hindered.[61] It must also address the mismatch between treatment generation, treatment capacity and actual treatment of sewage and effluents. Attention must be paid to increasing the water flow in the Ganga to maintain the ecology of the river which can be done by de-siltation, removing all mid-stream constructions, and halting construction activity along the river's banks.[62] Further, dams in upper reaches of Ganga must be re-engineered to increase Ganga's ecological flow.[63]

Such an infrastructural reform must also take into account the future and build scenarios for the future. The biggest concern could be population explosion and consequent increase in demand for consumption. This would have huge implications for providing infrastructure and other civic amenities in urban areas and would stress already stressed water resources.[64] Further, the corresponding rise in demand for consumption should also be considered and irrigation potential should be expanded. However, irrigated land could lead to vast pollution's problems in the form of increasing agricultural run offs, which should also be taken into account while overhauling the infrastructure.[65]

Adoption of economic incentives to ensure enforcement

It has been discussed earlier that adopting economic incentives can ensure better enforcement. I propose four ways in which it can be done. *First,* prohibitively expensive tax to discourage the use of inefficient technology should be imposed on all treatment plants.[66] *Second,* mandatory insurance for running a treatment plant or an industry should be introduced since it would push insurance companies to monitor the behavior of the polluters and thus financial incentives they would give to polluters could really induce changes in their

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[61] *Supra* note 3.
[62] Sandipan Sharma, *Modiji Humaari Ganga Maili: Govt's Plan To Clean River Seems Like A Pipe Dream*, FIRSPOST, January 16, 2015, available at: http://www.firstpost.com/india/modiji-humaari-ganga-maili-govts-plan-to-clean-river-seems-like-a-pipe-dream-2048385.html
[63] *Supra* note 7.
[64] *Supra* note 34.
[65] *Ibid*.
[66] *Ibid*.

behavior.[67] *Third,* to make builders interested in the good functioning of the facilities built, a ban for a certain time may be imposed on a defaulter builder or their payment can be made dependent on the well-functioning of the system.[68] *Fourth,* disclosure strategies can be used to name and shame the polluters and force them to adhere to the norm in face of community pressure. For instance, in February 2016, NGT ordered Uttar Pradesh Pollution Control Board to put on its website a list of 1,070 seriously polluting units and also the Environment Ministry to clarify the process of identifying seriously and grossly polluting industrial units in public domain.[69] Adoption of these economic incentives based strategies can thus ensure better compliance.

Strengthen public participation

To tackle non point pollution, public participation must be strengthened. Till date, undue emphasis has been placed on intercepting of sewage and industrial discharge and public involvement has largely been ignored. It is suggested that to clean Ganga, focus should be on building partnerships and sustainable relationships, at the core of which should be representative and collaborative state, civil society, and the private sector.[70] Various mechanisms like citizen's panels, committees, focus groups, public meetings, visioning and scenario-building exercises, and workshops can promote participation in environmental policy decisions with the most effective way being involvement of culturally-sensitive NGOs that can articulate local needs.[71] Public participation through "Ganga Panchayats", on the lines of Van Panchayats, would provide a deliberative platform for the civil society and would help club local knowledge inputs while allowing ordinary citizens to play a role in the planning and implementation process.[72] Further, considering the immense religious significance of Ganga, local religious leaders can be involved who can exhort people to save *Ma Ganga* by highlighting that Hinduism is inextricably linked to caring for environment.[73] "In this way, people realize that their actions conflict with their deepest values. Further, mass

[67] *Ibid*.
[68] *Ibid*.
[69] *Ibid*.
[70] *Supra* note 3.
[71] *Ibid*.
[72] *Ibid*.
[73] Cameron Conaway, *The Ganges River Is Dying Under the Weight of Modern India*, PULITZER CENTRE FOR CRISIS REPORTING, September 23, 2015, available at: http://pulitzercenter.org/reporting/ganges-river-dying-under-weight-modern-india

public awareness programmes need to be undertaken to make people understand the consequences on their own health and their families.[74]

Ganga dolphin and restoration of Rhine river- The success of local participation

An example of successful conservation along with sustainable development with local support can be the conservation of Ganga dolphin in Farida village in Uttar Pradesh by the World Wildlife Fund (*hereinafter WWF).* Massive mass awareness programmes were undertaken with the help of local volunteers to educate and motivate the rural community about the importance of conserving the river and aquatic life therein. Such conservation programmes by WWF motivated people to change their livelihood strategies like reducing fuelwood consumption and fishing activities in the river, as well as shifting from the use of chemical fertilizers and pesticides in their agriculture to organic inputs.[75] The villagers were also made aware of several livelihood improvement schemes of the government and thus started demanding good governance leading to successful implementation of government schemes in the village. Through such campaigns, locals recognised that in the long run they stood to gain from a healthier economic system and thus voluntarily changed their livelihood strategies and thereby contributed to dolphin conservation even though there was no direct economic incentive for the local people to change their attitudes or behaviour in the short run.[76]

Another instance of successful involvement of locals to conserve a river is that of Rhine in Germany. Due to its economic significance, it had been unduly exploited which adversely affected the water quality and harmed its aquatic life.[77] This led to the establishment of the International Commission for the Protection of the Rhine (*hereinafter ICPR)* in 1963 to promote cooperation among states through which Rhine flowed.[78] Rhine's conservation is a

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[74] *Stakeholders For Cleansing Ganga*, available at: https://mygov.in/sites/default/files/user_submission/53bec08db3004e5a8be0441362f21541.pdf

[75] Sandeep Behera & Parikshit Gautam, *For a Living Ganga: Working With People And Aquatic Species,* WORLD WILDLIFE FUND INDIA, October 2011, available at: http://awsassets.wwfindia.org/downloads/for_a_living_ganga__working_with_people_and_aquatic_species.pdf

[76] *Ibid*.

[77] Ralph Philip & Barbara Anton & Francesca Schraffl , *Local Governments And Integrated Water Resources Management In The Rhine River Basin In Germany*, INTERNATIONAL COUNCIL FOR LOCAL ENVIRONMENTAL INITIATIVES, March 2008, available at: http://logowater.iclei-europe.org/fileadmin/user_upload/logowater/wp4/D4.1_German_Rhine_Report_final.pdf

[78] *Ibid*.

striking example of immense cooperation among stakeholders[79], and of measures undertaken by members of ICPR to conserve Rhine one of which has been the implantation of European Union's Water Framework Directive, with which each European Union member must comply with,[80] and which promotes consultation with and involvement of local communities in managing water resources.[81]

There are various instances where the general public has been proactive in the development of plans for conservation of Rhine. For instance, an NGO, *RhineNet,* working under the auspices of local government of Frieburg, so as to comply with the aforesaid Directive, in order to conserve, Dreisam river, a tributary of Rhine, actively encouraged local stakeholders like land-use planners and local farmers, to get involved in creating a management plan for the river.[82]

Local participation gets a fillip from the fact that ICPR allows NGO's to be observers at ICPR thereby allowing them to influence discussions and decision making at the highest level.[83] One of such NGO's is *Cologne Hochwasserschutzzentrale,* comprising of local governments and community-based organisations, and cooperates closely with locals and local governments to prevent flooding from the Rhine across cities and towns and has thus become an effective platform for cooperation in decision making conservation.[84] Lastly, the Heidelberg-Mannheim Neighbourhood Association comprising of various local governments has been formed with the aim of managing water resources and promotes cooperation over environmental protection, land-use planning, economic development and riparian environment management.[85]

Lessons can thus be learnt from the above discussion to conserve Ganga. The process of conservation of Ganga could be broadly based on, *first*, problem identification through information collection from locals in collaboration with NGO's; *second,* creation of a set of

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[79] *Topics*, INTERNATIONAL COMMISSION FOR THE PROTECTION OF THE RHINE, available at: http://www.iksr.org/en/topics/index.html
[80] *Supra* note 77.
[81] *Paragraph 14*, DIRECTIVE 2000/60/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL, available at: http://eur-lex.europa.eu/resource.html?uri=cellar:5c835afb-2ec6-4577-bdf8-756d3d694eeb.0004.02/DOC_1&format=PDF
[82] *Supra* note 77.
[83] *Ibid*.
[84] *Ibid*
[85] *Ibid*.

options and their and finally after evaluation, creating processes for implementation in collaboration with local NGO's, religious leaders and local people.[86]

VII. CONCLUSION

To clean the river, instead of using a technocratic goal oriented approach, a process oriented approach in which enforcement can be ensured by economic incentives to the industries being the point source of pollution and which involves local people effectively in conservation of the river so as to sustain the livelihood of the locals, in so far as the non-point source of pollution is concerned, should be the way forward.

Ganga has been polluted severely due to heavy industrialization and urbanization. Various attempts have been made in the past to clean the river. GAP failed primarily due to its focus on point source of pollution and ignoring the non-point source of pollution. It did not involve public in the decision making or the implementation process. The NGRBP and *Namami Gange* also suffer from the same flaws.

The way forward requires major overhaul in the infrastructure while taking into account future needs. Any plan must address the larger issue of the lack of urban environmental services like water supply, sewage systems, and solid waste disposal since otherwise cleaning the Ganga will be adversely hindered. Further, adoption of economic incentives can ensure better enforcement. The public can be involved in the decision making and implementation process through citizen's panels, committees, focus groups, public meetings, and NGOs. An institution of Ganga Panchayat on the lines of Van Panchayat has been proposed for such involvement. Further, local religious leaders can also be involved to make a religious appeal to people to conserve *Ma Ganga.*

[86] Arnab Bose, *Ganga A Multi Stakeholder Approach*, THE ENERGY & RESOURCES INSTITUTE & YES BANK, September 2014, available at: http://cbs.teriin.org/pdf/Respected_Ganga_Report_Jan_2015.pdf

Environment Law and Practice Review

REGULATION OF AGRICULTURAL BIOTECHNOLOGY IN INDIA: ENVIRONMENTAL LAW AND OTHER POLICY CONSIDERATIONS

Debanshu Khettry and Sreenivasulu N.S.[*]

Abstract

The Green Revolution in India played an important role in achieving self-sufficiency in food grain production, along with infrastructural development. The relevance of agricultural biotechnology arises from the need for infusion of a new round of technological change in the Indian agriculture sector. India's population is growing day by day and new technology is required to feed the teeming millions. Public opinion across the world however, about all forms of biotechnology is divided and the case in India is no different. The emergence of agricultural biotechnology has created a serious debate in the country on its potential to revive the Indian agriculture and risks to bio-safety, bio-diversity and environment. There have been many controversies over genetically modified crops in India, for instance, as seen in the case of Bt Cotton (cash crop) and Bt Brinjal (food crop). These case studies have also revealed that the current legal and regulatory framework in India with respect to agricultural biotechnology is inadequate. The Biotechnology Regulatory Authority Bill has been pending in Parliament for several years now. Even so, the Bill in its present form is lacking in several aspects. The law has failed to address a wide range of issues concerning environmental law, intellectual property law, consumer protection law, human rights law, ethical and religious issues, balance of public and private interests, etc. surrounding agricultural biotechnology. It is seen that besides law and policy, much is required to be done on the infrastructural front and other such areas as well.

Introduction: Agricultural Biotechnology

There are several definitions of Biotechnology. The most commonly accepted definition however is of the United Nations Convention on Biological Diversity that defines biotechnology as "*Any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use.*"[1] Biotechnology is inter-disciplinary, constitutes multiple techniques and has application in

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[1] *See* Article 2, UN Convention on Biological Diversity, 1992.

several areas such as health care, medicine and environment.[2] In the field of agriculture, biotechnology plays an important role in yielding greater amounts of food crop for mass consumption and cash crops for industrial use; yielding improved varieties of existing crops with reduced vulnerabilities, and more.[3]Agriculture sector is essential for everybody's daily lives. Food is required for daily consumption several times a day for our survival. As population grows the demand for agriculture production grows with it. In terms of economy as well, it constitutes almost 20% of our GDP and employs almost 60% of India.[4] With every 5 year plan, concerted efforts are made by the government to spur the growth of the sector. In ancient times, agriculturists used different methods to increase crop production such as tissue culture, crop budding, etc. In the 1960s, the Green Revolution played an important role in achieving self-sufficiency in food grain production.[5] The relevance of biotechnology arises from the need for infusion of a new round of technological change in the Indian agriculture.[6] According to recent reports, India is home to largest number of malnourished children[7] where approximately 3,000 children die daily due to hunger and malnutrition.[8] With rising population, such problems will get aggravated. In order to achieve the millennium goals and fulfil domestic obligations (constitutional and statutory) of food and nutritional security and economic growth, biotechnology is of considerable interest to the society at large. The Indian Department of Biotechnology (under Ministry of Science and Technology) in its vision statement on 'Biotechnology in India' states that it will strive to achieve nutritionally enhanced crops with high yield with the help of agricultural biotechnology.

Potentials and Advantages

[2] Donald J. McKenzie and Morven A. McLean, *Agricultural Biotechnology: A Primer for Policy Makers*, (World Bank Publications, 2004) at 235.

[3] Sreenivasulu N.S, *Biotechnology and Patent Law: Patenting Living Beings*, (Manupatra, 2008) at 6.

[4] Government of India, *Sector: Agriculture (2012)* available at http://india.gov.in/sectors/agriculture/index.php

[5] N. Chandrasekhara Rao and S. Mahendra Dev, *Biotechnology in Indian Agriculture: Potential, Performance and Key Concerns*, (Academic Foundation, 2010) at 28.

[6] *Ibid*.

[7] *See* International Food Policy Research Institute, *Global Hunger Index: 2012*.

[8] Reuters, *India's Hunger Shame: 3,000 Children Die Every Day, despite Economic Growth* (16 February 2012). *See also*, Citizen's Alliance Against Malnutrition, *Hunger and Malnutrition Report: 2011* available at http://hungamaforchange.org/HungamaBKDec11LR.pdf; *See also* Dr. Manmohan Singh, *PM's speech at the release of HUNGaMA (Hunger and Malnutrition) Report* (10 January 2012) available at http://pmindia.nic.in/speech-details.php?nodeid=1125

There is unanimity of opinion on the potential of biotechnology to assist in the development of agriculture.[9] In 1990s it was seen that significant achievements in agricultural biotechnology, especially in recombinant bovine growth hormone, herbicide-tolerant crop varieties and long-storable tomato took place.[10] Application of biotechnology can be a boon for the agriculture sector in various ways[11] such as:

(i) Increase in crop yield;

(ii) Breakdown of agro-climatic constraints to crop production which will ensure stable yield and reduce costs of storage and distribution;[12]

(iii) Genetic manipulation of plants that will close the gap between actual and potential yields and be able to grow under stress conditions as India often faces problems of drought, excessive heat, saline soil, poor quality land along with loss of yield due to pests, etc.;[13]

(iv) Improvement in quality of crops; (in India where malnutrition is a major problem, the quality of produce assumes great significance)

(v) Minimization of damage to crops through disease and pest resistant varieties which will also reduce the use of chemicals;

(vi) Benefits to consumers seeking better quality, taste and more nutritious food;

(vii) Advantages to farmers requiring more efficient methods to grow crops with less impact on the environment;

(viii) Benefits to environment in terms of reduction in use of crop protection chemicals by providing opportunities to decrease soil erosion and greenhouse gas emissions through better farming practices;

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[9] Expert individuals and bodies such as FAO, World Bank support this statement. *See Supra* (n. 5) at 36.

[10] H.D. Kumar, *Modern Concepts of Biotechnology*, 2nd Ed. (Vikas Publishing House, 2001) at 40.

[11] *See generally*, TERI, *Relevance of GM Plants to Indian Agriculture,* (TERI, 2001)

[12] Raj Kapila and Uma Kapila, *Indian Agriculture in the changing Environment*, Vol-1 (Academic Foundation, 2002) at 38.

[13] C.S. Prakash, *The Relevance of Biotechnology to Indian Agriculture* cited in *Supra* (n. 11) at 44.

(ix) Offering the potential for reduction in dependence on non-renewable resources;[14]

(x) Social benefit by providing possibilities of sustainable agriculture.

Concerns, Disadvantages and Associated Risks

Public opinion across the world however, about all forms of biotechnology is divided.[15] In India also, the emergence of agricultural biotechnology has created a serious debate on risks to bio-safety and environment and its potential to revive the Indian agriculture.[16] They are discussed illustratively as follows:

(i) Some critics urge that agricultural biotechnology, as it has developed in recent years, is unlikely to make significant contribution to problems faced by developing countries because most of research is aimed at markets of developed countries and the cost of acquiring technology itself is very high.[17]

(ii) Biotechnology is associated with predictable as well as unpredictable risks. Unpredictable risk relates to the process of genetic modification and the former relates to the end product to be released.[18]

(iii) Potential risk for transgenic crops is the possible loss of biodiversity.

(iv) Health risks for human consumption of transgenic crops include the occurrence of undesirable toxic by-products and unknown allergic reactions due to new proteins entering the food chain.[19]

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[14] Gabrielle J. Persley, *Agricultural Biotechnology: Opportunity for International Development*, (CAB International, 1990) at 308.

[15] Reece Walters, *Economic Crime and GM Food*, (Routledge, 2011) at 54.

[16] *Supra* n.5 at 1.

[17] Ghayur Alam, *Biotechnology, Agriculture and Developing Countries*, Economic and Political Weekly, 23 March, 1996 at 704.

[18] *Supra* (n. 5) at 40.

[19] *Supra* (n. 5) at 41.

(v) Other potential risks include unintended harm to other organisms during interaction, reduced effectiveness of pesticides and unknown effects of cross-breeding.[20]

(vi) Economic concerns relating to biotechnology are that it is a lengthy and costly process without guarantee of success.

(vii) The subject also faces oppositions from various segments of society such as environmental activists, religious organizations, NGOs, etc. Ethicists object on humanistic grounds while environmentalists object on grounds of safety of environment. Religious and other objections are made on problems relating to cross-breeding, for instance a vegetarian cannot eat a crop which has been manipulated by inserting animal genes.

Several studies and committees have however concluded that there is no significant health or environmental harm.[21] Few authors suggest that sometimes opposition towards biotechnology also happens with vested interests such as multinationals, competitors sponsoring protests behind closed doors by colluding with private individuals and other interest groups.[22]

BT Cotton introduction in India

India is one of the largest producers of cotton in the world. The cotton industry in India in early 1990s itself was worth Rs.15,000 crores. However 50% of the crop used to get damaged during cultivation because of bollworm pest. The cost of spraying chemicals to the farmers became enormous.[23] The bt (bacillus thuringiensis) cotton was examined in this backdrop. It was found to be effective against bollworm and led to reduction in cost of spraying chemicals.[24]Between 1994 to 2002, the application of Bt Cotton occurred in India with the help of field trials based on permits, safety assessments, etc. Upon approval in 2002 by GEAC, the Bt Cotton was allowed to be planted in 6 Indian States.[25] On the other hand the

[20] Deborah B. Whitman, *GM Foods: Harmful or Helpful?*, available online at http://www.csa.com/discoveryguides/gmfood/overview.php

[21] *Supra* (n. 5) at 43.

[22] Sharad Joshi, *Down to Earth*, (Academic Foundation, 2007) at 152.

[23] *See Supra* (n. 5).

[24] J.L. Karihaloo and P.A. Kumar, *Bt Cotton in India – A Status Report*, 2nd Ed. (Asia-Pacific Consortium on Agricultural Biotechnology, 2009) at 56.

[25] *Ibid*. Today it is the only commercialized GM crop in India.

highly sceptical NGO sector in India raised many voices against it. Environmental activists claimed that bt seeds might be disastrous for farmers. The large number of suicides of Indian farmers was also attributed to the alleged failure of Bt Cotton. Crops on trials were attacked and destroyed by activists. These factors led to delays in clearance.[26] Today however, it is well established that Bt Cotton has been a successful story in India. It has made India the second largest producer of cotton in the world. The cost for farmers has decreased and the production has increased manifold.[27] The account of Bt Cotton is an example of rapid technology acceptance in India despite rigorous opposition.[28] The episode however, showed the lack of an effective public awareness programs, a well-regulated seed distribution system and conducive market condition in India. The need to have a proper dissemination of reliable data and information about bt produce and their performance is also felt.[29]Moreover, amidst the success of the Bt Cotton, there have been exceptions. Maharashtra has seen a drop in the yield and production of Bt Cotton in the recent years, especially in the dry regions such as Vidarbha, which receive low rainfall. This is despite the fact that 95 % of the total land sown in the area comes under Bt Cotton cultivation.[30] This demonstrates that it is not just monetary packages that will help the farmers but there is a growing need for the government to work towards providing affordable and accessible technologies to the farmers so that they can conserve water and use them during times of drought. [31]The success of Bt Cotton has also led to a rise of a parallel market of illegal or spurious Bt Cotton crops which is extremely dangerous. In some areas, Bt Cotton is being produced where neither the permission is taken nor trials are conducted.[32] The lack of effective control of such illegality has also led to price fluctuations in original Bt Cotton. There is no policy currently through which the government can ensure stability between commodity price for cotton and price that farmers procure in the market.[33]

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[26] *Ibid*.

[27] Vipul Murarka, *From Importer to Exporter*, (Biospectrum) available at http://biospectrumindia.ciol.com/cgi-bin/printer.asp?id=132262

[28] *Ibid*.

[29] Sharad Joshi, *Of Bt Cotton and the Criticism Against it*, (Business Line, 28 November 2007).

[30] Biospectrum Bureau, *India Struggles to keep Bt Cotton Growth Story Going*, (Biospectrum, 21 May 2012).

[31] *Ibid.*

[32] *Supra* (n. 30).

[33] *Supra* (n. 36).

BT Brinjal fiasco

Bt Brinjal is the first GM food crop in India to reach the stage of approval for commercialisation. The transgenic brinjal is created by inserting a gene (Cry1Ac) from the soil bacteria bt. It is said to make the brinjal plant pest and insect resistant. It has raised much controversy in India (especially since it is a food crop). The contentious points revolving around Bt Brinjal are common to any GM crop. The promoters of Bt Brinjal allege that it will increase crop yield and since it is pest resistant it will also decrease the cost for farmers and that is has no health hazard. On the other hand, opposition contends that there could be adverse effects on human health and biosafety.[34]In 2009, the GEAC had given its no objection to Bt Brinjal but due to violent protests the MoEF imposed an indefinite moratorium. It decided to hold national consultations to reach a consensus but it has not received success yet. Recent reports indicate that GEAC was under pressure from lobbyists to approve Bt Brinjal and that now there will be a parliamentary probe against it.[35] This exposes serious gaps in India's regulatory system and irregular technology promotion policies of the government. Such events and the rise in spurious Bt Cotton show that there is an urgent need to counter emerging economic crimes in GM crops. Thus it can be seen from the two case studies that India has yet not been able to establish a favourable environment for law and policy making.

regulation of Agricultural Biotechnology in India

India seems to be one of the few developing countries in the world to perceive the importance of biotechnology much before it became an established industry even in the developed countries. It established the National Biotechnology Promotion Board in 1982 which in 1985 was converted into the Department of Biotechnology (DBT) under Ministry of Science and Technology, one of the earliest such Departments in the world.[36] The DBT and its autonomous institutes like National Agri-Food Biotechnology Institute, Indian Council of Agricultural Research (under the aegis of Ministry of Agriculture), Council of Scientific and Industrial Research, Ministry of Environment and Forest (MoEF) and other research and

[34] MoEF and Centre for Environment Education, *National Consultations on Bt Brinjal: A Primer on Concerns, Issues and Prospects*, (CEE, 2010).

[35] ET Bureau, *Proper Tests Not Done Before Giving Nod to Bt Brinjal: Parliamentary Panel*, (Economic Times, 10 August 2012); *See also* Gargi Parsai, *Bar GM Food Crops, says Parliamentary Panel*, (The Hindu, 10 August 2012).

[36] *Supra* (n. 11) at 120.

educational institutions are actively engaged in research in biotechnology.[37]The MoEF promulgated the Rules and Procedures for the Manufacture, Import, Use, Research and Release of Genetically Modified Organisms in 1989. The aim of these Rules is to ensure adequately that the use of genetically modified products is safe to environment and beneficial for human beings. These Rules have been revised in 1994 (after India signed the CBD Convention) and 1998. They constitute the basic minimum requirements for those involved in research in biotechnology in India. India follows a three-tiered system for maintaining bio-safety. The first is the Institutional Bio-safety Committee (IBSC) which oversees more than 160 institutional bio-safety committees throughout the country including all research organisations, companies and universities engaged in transgenic research. In the second tier is the Review Committee on Genetic Manipulation (RCGM). This committee gives the clearance for conducting clinical trials in ex-situ and in-situ environments. Under the RCGM is a monitoring cum evaluation committee which visits the sites, collects data and evaluates it for risk factors. The third tier is the Genetic Engineering Approval Committee (GEAC) under the MoEF which grants permission for large-scale field trials.[38] India's bio-safety protocols have been appreciated by SAARC countries. The plant varieties in India are protected under the Plant Varieties Protection and Farmer's Rights Act, 2001 under a sui generis system. The said Act provides an effective system for protection of plant varieties, the rights of farmers and plant breeders and encourages the development and cultivation of new varieties of plants. This legislation is in line with TRIPS as well as UPOV Convention. The Department of Agriculture and Co-operation under the Ministry of Agriculture has also passed the Plant Quarantine Order, 2003 under the Destructive Insects and Pests Act, 1914. This aims to prevent the entry, establishment and spread of exotic pests in India. The National Research Centre on Plant Biotechnology was also setup in 1985 under the Department of Agricultural Research and Education (Ministry of Agriculture). Its primary research areas include agricultural biotechnology and it aims to impart biotechnology advantage to Indian agriculture. India has also enacted the National Biodiversity Act, 2002 to give effect to the International Convention on Biodiversity. The Act is aimed at conservation of biological resources and associated knowledge as well as facilitating access to them in a sustainable manner through a just process. For instance the National Bioresource Development Board

[37] C.S. Prakash, *Survey of Indian Agriculture*, (The Hindu, 2004) at 177.

[38] Detailed description of the duties and functions of the committees can be found at MoEF's website: *www.envfor.nic.in*.

under the aegis of Department of Biotechnology has developed an IT database known as 'Jeev Sampada'. The database prepared through collaboration with several institutes and experts is a digital documentation of information on plants, animals, marine and microbial resources of India. The Food Safety and Standards Act, 2006 is the primary legislation amongst others to ensure that GM food produced is fit for human consumption. The Ministry of Consumer Affairs through a gazette notification has made it mandatory to label food containing GM organisms from 1 January, 2013. India also strives to follow the International Codex Alimentarius Guidelines for food quality and standards.[39]

The proposed Biotechnology Regulatory Authority of India (BRAI) Bill:

In order to establish a regulatory body to ensure safe and responsible use of biotechnology and also to meet India's international obligations under Convention on Biological Diversity, 1992 and the Cartagena Protocol on Bio-safety, 2003, the Biotechnology Regulatory Authority of India Bill has been brought about. The Bill was initially introduced in 2008 which got lapsed and later in 2013 again a new draft of the bill was introduced in the parliament which again lapsed. However, the Bill remains to be an attempt by Govt of India in providing for a umbrella legislation and regulatory structure for regulation of biotechnology in India. The Bill is said to be plausibly not in accordance with many established principles.[40] For instance:

i. In accordance with the precautionary approach undertaken in Principle 15 of Rio Declaration, the Cartagena Protocol mentions potential risks associated with modern biotechnology and the need for adequate level of protection and thus the necessity of following precautionary principle. The Bill in its present form however does not seem to have adopted the precautionary principle.

ii. The nodal agency sought to be established is such that it will be effectively controlled by the Department of Biotechnology whose objective is to propagate biotechnology. This leads to possibility of bias and is against law laid down by Supreme Court in a number of cases that there should not be any likelihood of bias itself.[41]

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[39] *See* User's Manual on Codex – India (FAO).

[40] Greenpeace India Society, *BRAI Bill: A Threat to Our Food and Farming: A Legal Assessment*, (Greenpeace, 2012).

[41] *See Justice P.D. Dinakaran v. Hon'ble Judges Inquiry Committee and Others*, (2011) 10 SCR 1064.

iii. The role of state governments is curtailed under the Bill by taking away their power to reject GMOs. This is against principle of federalism.

iv. The statutory committees sought to be set up under the Bill do not include members from economics, public health and social science background. Thus, the does not contain provisions to establish wholesome policies by not having participation from larger section of society.

v. Given that there is still uncertainty over potential impacts of GM crops on human health and environment, it is perhaps essential to have a long term independent bio-safety assessment mechanism which is currently missing.

vi. The Bill curtails participation of public in decision making. This is against various principles and accepted norms of public participation such as those recognised under Article 23 of Cartagena Protocol and Principle 10 of the Rio Declaration.

vii. The punishment for providing wrong and misleading information under the Act is only up to 3 months of imprisonment which does not seem to be a strong enough deterrent. The key deterrent effects such as absolute liability and polluter pays principle on the other hand is also absent.

Concerns in the regulation of agricultural biotechnology

It can be seen that because of its dynamism, law and policy making is a difficult task in this sector. Moreover, while formulating new laws and policies, a balance between existing laws and obligations needs to be drawn. For instance law relating to international human rights vis-a-vis world trade laws vis-a-vis environmental laws, summits, declarations as well as domestic laws. Besides, an even more difficult task is balancing the ethical, social, cultural and religious beliefs of interest groups and stakeholders.[42] In keeping with the spirit of liberalization and the pro-biotechnology agricultural policy, the regulatory system needs to be reviewed periodically in order to address threats and risks of agricultural biotechnology. It must be ensured that there is no over-regulation because it will hamper growth. A simple, transparent and efficient regulatory system will encourage adherence to rules.[43] Since this is a

[42] Mary E. Footer, *Agricultural Biotechnology, Food Security and Human Rights in Biotechnology in International Law*, (Francesco Francioni and Tullio Scovazzi ed., Hart Publishing 2006) at 276.

[43] Arvind Kapur, *The Regulatory Environment in Managing Indian* Biotechnology, cited in *Supra* (n. 11) at 90.

relatively new subject of legislation, proper and thorough policy analysis is necessary.[44]In addition, the government can play a role in development and spread of the biotechnology products though it would be cheaper and more efficient to encourage private sector to do so. The government's intervention will have to be necessarily present in the process but should be confined to regulation and enforcement of rules and standards with a view to ensuring safety and quality of output.[45] Few considerations under specific heads are discussed below:-

Environmental related concerns

Agricultural biotechnology must evolve an environmentally sustainable science and must not introduce anything harmful to the environment. Accordingly, proper health risk assessment should be carried out. In terms of bio-safety India has a strong regulatory system; however the existing system now requires ensuring that all GM crops undergo rigorous reviews and safety assessments prior to their import, field testing or release. What is lacking is an effective implementation mechanism. It is also urged that the penalties prescribed under various laws must be significantly enhanced to create adequate deterrence. A bio-safety regulation specifically for agro-food biotechnology products is the need of the hour. A National Commission on Biotechnology – Biodiversity and Biosafety can be established with State Commissions. It can be an autonomous body and for administrative purposes it could be linked with other agencies dealing with environment, agriculture and biotechnology. It could comprise of members from academics, social sciences, government, scientific community, economics, industry, etc. and the commission could take a case by case approach in deciding merits of activities and events.[46]Some scholars argue that biotechnology is not opposed to biodiversity but it aids in biodiversity through its application and creation of new forms of species.[47]

Consumer concerns

Even though the labelling of GM food has been made mandatory from 2013, the move is not enough to provide for people's right to know, ethical and religious concerns amongst others.

[44] Joachim Braun and Martin Qaim, *Agricultural Biotechnology in Developing Countries: Towards Optimizing the Benefits for the Poor*, (Kluwer Academic Publishers, 2000) at 421.

[45] R.C. Choudhury and R.P. Singh, *Rural Policies and Agricultural Policies and Strategies*, (NIRD, 2000) at 35.

[46] Vibha Dhawan, *Bt for Food and Nutritional* Security, (TERI, 2004).

[47] Jay Kesan, *Agricultural Biotechnology and Intellectual Property: Seeds of Change*, (CAB International, 2007).

This is because more than 90% of our food is unprocessed, unpackaged and comes from the unorganised sector. Firstly, there is no clarity on threshold for presence of GM ingredients[48] and how the government intends to monitor the mechanism and whether the new law is applicable to both primary and processed food.[49] Secondly, many administrative problems have not been addressed. Testing methods have not been revived since several years. Due to the impending BRAI Bill, there is no regime for controlling imports and custom authorities are still not equipped to distinguish a consignment of GMO from that of a non-GMO.[50] At present procedures for evaluating food safety mentioned in the guidelines are closer to studies carried out for chemical pesticides. Scientific experts recommend that food safety guidelines for transgenic crops should be similar to those for food additives.[51] The DBT guidelines for allergenicity needs to be modified and strengthened as the current ones are old and protocols mentioned do not provide full information. The government needs to provide for product liability laws to enforce corporate responsibility. It should be made mandatory for the industry to label transgenic seeds that are sold to farmers.Moreover, even though many laboratories in India follow good practices, there is a pressing need to follow the Good Clinical Laboratories Practice (GCLP)[52] developed by World Health Organization (WHO) in its entirety.[53]

Public Acceptance

Given that perceptions about impact and risks along with costs and benefits of biotechnology are so diverse, it is little wonder that consensus remains elusive when discussions turn to policy. Much of the hindrance in policy making and implementation occurs due to lack of public acceptance. It has been seen that the reason for weak public acceptance in India is largely due to half-truths and deliberate propaganda from interest groups. Surveys undertaken by TERI have proved that there is a serious lack of information and knowledge about biotechnology in the country.[54]Since public acceptance forms a major role in law making and

[48] Jayashree Nandi, *'GM' Label on Packaged Food Soon*, (Times of India, 18 June, 2012).

[49] *Ibid*.

[50] S.R. Khanna, *Genetically Modified Foods: The Consumer's Concern*, cited in *Supra* (n. 11) at 173.

[51] *Ibid*.

[52] R. Selvakumar, *Good Laboratory Practices*, 25(3) Indian J. Clin. Biochem. 2010 at 221.

[53] *See* World Health Organization, *Biosafety Manual*.

[54] S.S. Rao, *Public Acceptance of Genetically Engineered Plants in India: An* Analysis, cited in *Supra* (n. 11) at 113.

implementing in India, it is imperative that their confidence is won by spreading awareness. Research institutions should therefore make their research public and communicate it to public and policy makers to boost confidence. There has to be an increase in the number of bioinformatics networks currently operating in India to cover district level population as well. Local awareness campaigns coupled with enhanced regulatory transparency will prove fruitful in gaining public trust. It must also be understood that throughout human history technological developments have come about in the form of use of electricity, automobile, air travel, etc. and all have posed risks and threats but man has evolved through such risks and it has not prevented humankind from benefitting through such advancement. The fate of biotechnology is no different. In fact it is interesting to note that GM products have been subjected to rigorous testing procedures whereas there was no testing mechanism adopted for conventional methods of agriculture. However this is not to say that there are no unforeseen risks with GM products. Most of the issues can be addressed through appropriate research rather than emotional debates or militant activism.[55]As philosopher John Rawls puts it, while deciding on policy issues, we must put the veil of ignorance in front of us according to which we must be blind to the personal impacts the policy will cause.[56]

Investment Related Considerations

There has not been much expenditure and investment in this sector which is necessary for a higher degree of growth.[57] In order to spur investment, venture capitalism, foreign direct investment, role of private sector units, etc. should be encouraged.[58] Notably, M.S. Swaminathan, the father of India's Green Revolution has suggested an articulation of a mix and match approach, i.e., a bit of biotech, a bit of organic and all pro-poor.[59]Public research systems which are basically state monopolies are starving from funds for research and are also getting strangled due to typical bureaucratic structure in governance. In developed countries, 80-90% of research is funded by private organisations whereas in India the

[55] *Supra* (n. 13) at 49.

[56] *See generally*, John Rawls, *Theory of Justice*, (Harvard University Press, 1971).

[57] P.K. Ghosh, *Biosafety Guidelines: International Comparisons*, cited in *Supra* (n. 11) at 85.

[58] S.R. Rao, *Investment, Capacity and Incentives in Biotechnology: Indian Experience*, cited in Sachin Chaturvedi, *Biotechnology and Development: Challenges & Opportunities for Asia*, (Academic Foundation, 2004) at 138.

[59] Ian Scoones, *Science, Agriculture and the Politics of Policy: The case of Biotechnology in India*, (Orient Longman, 2006) at 43.

situation is just the reverse.[60] There is a need for public-private partnership in research towards agriculture.[61] However, even as research is accelerated, proper testing and safeguard procedures need to be put in place.[62] Some recent effort includes the approval by the Union Cabinet to set up the 'Indian Institute of Agricultural Biotechnology' proposed by the Ministry of Agriculture. Even so, the Government itself acknowledges that there is acute shortage of scientific ability in the area of biotechnology, especially agricultural biotechnology and thus a need is felt to focus on research in agricultural biotechnology, and for capacity building.[63]Biotechnology is highly capital intensive. It has been suggested that donor support is needed to mobilize biotechnology to benefit the poor. Long-term and concerted donor support is essential for providing developing countries like ours, access to biotechnology and allowing them to adapt it to their specific needs.[64] A national biotechnology agency can be created to coordinate within existing institutions while framing national policies and to fund biotechnology.[65]Biotechnology is also knowledge intensive and considerable scientific personnel and investment in training is required to generate the capacity to utilise this knowledge and adapt the technology to suit local conditions.[66] Therefore, use of specialized trainers from developed countries must also be made to the extent possible. The problem of high investment and capital is aggravated in India by the problem of time. The current bio-safety and food safety regulations are such that it takes 10 years to get clearance and in some cases even longer where international obligations are also required to be met. Some researchers suggest that more than the absence of IP regime in India, it is the meeting of bio-safety clearances which has kept the investment from entering.[67] Hence, the legal framework should contain time bound sanctions.[68] To further spur investment, tax abatements, low interest loans and other such incentives can also be

[60] *Supra* (n. 44) at 412.

[61] Ashok Gulati, *Agricultural Diversification in South Asia*, (Academic Foundation, 2007) at 614.

[62] M.S. Swaminathan, *Agriculture cannot wait: New horizons in Indian Agriculture*, (Academic Foundation, 2007) at 100.

[63] Ministry of Agriculture, *Approval of New Institute of 'Indian Institute of Agricultural Biotechnology' Scheme during the XII Plan*, (Press Information Bureau, 23 August 2012).

[64] Donor system has worked well in USA as well. *See Supra* (n. 44) at 388-405.

[65] *Supra* (n. 10) at 52.

[66] *Supra* (n. 14) at 299.

[67] *Supra* (n.11).

[68] *Supra* (n. 44) at 412.

provided. China's Torch Program on setting up of biotechnological enterprises can also be emulated as it has received much success there.[69]

Intellectual Property Law perspectives

Presently the Indian IP law does not allow patenting of agricultural methods.[70] Biotechnological patent in the field of agriculture is improbable under the present law due to the conservative nature of Indian society. New concepts and technology involved in this field take some time to find public acceptance and adaption. Much of the agitation is in fact due to fear of letting MNCs have the monopoly. There are a lot of ethical issues involved as well especially on humanistic grounds. Therefore due to the slow acceptance rate, time will play a crucial role in finding the right balance. Biotechnology as a tool has great potential for overcoming the constraints to increasing agricultural production but for this, substantial investments are required. India needs to ensure a clear regulation of intellectual property rights in order to promote good private sector involvement.[71] Having an IP protection system will incentivise investment and research. The current IP system through compulsory licensing, etc. has enough means to ensure that monopoly is not exploited and thus the law makers should strive to shift the current paradigm by granting IP protection.

Conclusion

It has been noticed that the debate on agricultural biotechnology in India is focussed mainly on issues relating to environmental impacts, bio-safety and intellectual property rights. However, critical issues of harnessing the technology in order to reduce poverty, create employment, achieve nutritional security, and eliminate inequality also needs to be addressed.[72]Studies have proved beyond doubt the potential of biotechnology and it is certain that thus it is certain that the gains from agricultural biotechnology can go to the farmers. Therefore there is a need to create an enabling environment and strengthen the regulatory framework. Country specific cost-benefit analysis should be a major deciding factor in

[69] *Supra* (n. 10) at 387.

[70] *See* Section 3(h), Indian Patents Act, 1970.

[71] *Supra* (n. 10) at 38.

[72] *Supra* (n. 5) at 180. Another view is that since India is already self sufficient in food grains and food production, the real problem is not with finding new technologies to increase production to feed the millions but in ensuring that the present stock reaches the poor (by increasing public distribution system, administrative will, etc.). As a result, biotechnology is to be seen only as a support mechanism and not as a solution to a problem. *See* R.S. Paroda, *Biotechnology and the Future of Indian Agriculture*, cited in *Supra* (n. 11) at 8.

accepting or rejecting a particular product, irrespective of the process that produces the product.[73] Creation of economically viable land-holdings needs to be ensured. Rationalising input subsidies will also go a long way in helping farmers. Farmers should be given benefit of crop insurance on GM crops. The states will also have to play a major role in setting priorities for pro poor agricultural development. Besides this, it must be ensured that ancillary industries are also developed further (such as improved road networks, ensuring better electric supply, continuous supply of water, proper tapping of information and communication, etc.) for the smooth running of biotech processes. It is professed that since the prospects of biotechnology are immense, it will certainly lead to acceptance from the public in times to come. The same is seen in the case of Bt Cotton. However, new technology in the absence of policy and market reforms is likely to make matters worse for many of the people who are especially in need of a lift from poverty. Therefore, there is a need to amend the current National Agricultural Policy or to bring a comprehensive National Agricultural Biotechnology Policy altogether.

[73] V.L. Chopra, *Survey of Indian Agriculture*, (The Hindu, 2002) at 229.