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ABOUT LEX TERRA

“Lex Terra is an initiative by the members of Centre for Environmental Law, Advocacy and Research (CELAR) of National Law University and Judicial Academy, Assam. Through Lex Terra, we are making an effort to put forward the various facets related to Environment from different sources which is published every fortnight among the society so that a community of environment from different sources which is published every fortnight among the society so that a community of environmentally conscious people emerge out of the legal and non-legal fraternity. Each edition of Lex Terra highlights some noteworthy eco-news, both at global as well as national arena. This newsletter is extensively prepared by the members and researchers of CELAR, members of NLUJAA.

ABOUT CELAR

The primary mission of Centre for Environmental Law, Advocacy and Research (CELAR) of National Law University, Assam is to engage in advocacy and research on public interest environmental issues. For the purpose, it will organize workshops and seminars to educate and develop skills, convene conferences to promote exchange of ideas, conduct training programmes for capacity building in environmental law issues, undertake research on legal concerns and publish periodically, newsletters and journals. The objectives of the CELAR are as follows:

- To inspire and educate students by providing hand-on advocacy experience and direct exposure to the issues.
- Strengthen access to justice by undertaking high quality multi- disciplinary research on contemporary legal issues pertaining to environment.
- Advocate for reforms in environmental law through scientifically sound legislative proposals. • Organise training programmes for strengthening the legal capacity building on environmental laws for civil servants, law enforcement authorities, non-governmental organizations and media personnel.
- Publish periodically journals and newsletters on environmental law.

-Prof. (Dr.) Yugal Kishore,
Centre Head, CELAR

MESSAGE FROM TEAM LEX TERRA

We the editorial team of CELAR present to the world the 31st edition of Lex terra with immense pleasure. Environmental Law has come a long way since its very inception in our country. Authorities around the world have started initiating procedures to protect the environment. While the Northeastern states of India have abundant natural resources in its pocket, there are minimal legislation that govern them. At the same time, several legislation collide with each other over jurisdiction matters thereby creating several conflicts among the population and local authorities of the region . ThroughLex terra we aim to contribute to the existing literature of environmental matters in every minimal way possible. We thoroughly believe that research is the very foundation of every big movement and theoretical papers contribute to actual practical developments to greener and a cleaner environment. The current four articles of the magazine aims to cover as many subject matter as possible. We hope that you enjoy the articles!

Please keep pouring down your support and concern for mother nature.

Thank you!

Happy Reading!

ENVIRONMENT PROTECTION AND JUDICIAL ACTIVISM IN INDIA: A JOURNEY OF WISDOM

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ABSTRACT

Environment squalor is the outcome of the human inattentiveness. For the environmental enrichment and protection, several legislative milestones were built. But the degradation of environmental balance is the main challenge for the human race. Indian Constitution framed special provision/s for the protection of the environment under fundamental duties. Many other acts like environmental protection act, water pollution act, air pollution act, etc. came in force to balance the imbalance. In the year 1980, the department of environment was formed for the safeguard and later it became the Indian Ministry of Environment and Forests in 1985.

In the last few years, the Indian judiciary has played a vital role in the protection of the environment from the air, water, noise pollution. It has also played a special role in the protection of wildlife and forest areas. The main objective of the paper is to categorize the contemporary situation and to examine the level of activism in the court decisions and judicial process for the protection of the environment.

Key Words: *Pollution, Environmental Protection, Sustainable Development, Public Interest Litigation, Judiciary.*

INTRODUCTION

In the recent legislative structure of environmental protection, there are many provisions, statutes and acts providing a right to a better environment for the citizen of India. The environment is the complex system and the interaction of the human with the environment give rise to degradation which leads to an imbalance in the atmosphere. It can be witnessed from the rapid growth of industries, urban population, industrial pollutants and constant reduction of natural resources.¹ The Indian traditional culture and ancient scholarly evidences like Gita, Ramayana, and Upanishad etc. represented the admiration of the ecological system. The period of the Mughal Empire and Ashoka also has shown enthusiasm in the ecology protection.² The major cause of environmental degradation is the poverty which leads to the loss of natural resources and forest areas.³ The air pollution leads degradation of human health and infection with the increase of toxic combinations like Sulphur dioxide oxide of nitrogen, carbon dioxide etc. Noise increase also creating problems for human majorly for elder and sick people. To curb the problem Indian judiciary is playing a major role in providing guidelines and direction.⁴ The current study will try to analyze the activism of Indian judiciary in the achieving this aim. The foremost impartial overdue in the present research is to categorize the contemporary situation and analyses the environmental development through court judgments. It will also cover judicial remedies for the protection of the environment. The anticipated secondary data based study will be expected to provide more evocative and complete knowledge of the laws governing environment and related policies in India. It will also focus on the role of the apex court in combating the problem of environmental degradation.

1. CONSTITUTIONAL AND LEGISLATIVE PROVISIONS OF ENVIRONMENT PROTECTION

It is openly specified in the Constitution of India that it is the duty of the state to ‘protect and improve the environment and to safeguard the forests and wildlife of the country’. The shadow of environmental responsibility is also evident from the directive principles of state policy and fundamental rights in the Constitution. The 42nd amendment of the Indian Constitution inserted

¹ Mostafa K. Tolba, *Saving our planet: Challenges and Hopes*, 1 (Chapman and Hall, London, 1992).

² O.P Dwivedi, *India's Environmental Policies, Programmes and Stewardship*, 51 (St. Martin's Press, New York, 1997).

³ *Year Book of Energy -Environmental Statistic (YES)*, 373 (New Delhi, 1998).

⁴ DR Singh, "India", in Anna Alvazzidel Frate and Jennifer Norberry (eds.), *Environmental Crime, Sanctioning Strategies and Sustainable Development*, Publication No. 50, 1993, p.316.

the Article-48A in the state policy to protect forests and the environment. It was the impact of global talk on the environment protection in the 1970s and also changed the seventh schedule of the constitution where term Forest and Wildlife has been moved to the concurrent list.

Article 246 of the Indian Constitution defines the area of legislation formation between the state and the centre. The concurrent list covers the environment where both have the power to legislate provisions. It will help both tackle environmental problems at the local and national level. Article 14 also in many ways protects the citizen's rights to a healthy environment. The random decisions of government against the environmental degradation may be challenged.

The emergence of the Environment Protection Act, 1986 under Article-253 of the Constitution of India is the result of Bhopal gas tragedy and to fill the gap of legislation. The main objective of the act is to protect the nature under the guidelines and decisions of the United Nations Conference on the Human Environments. The Environment Protection Act, 1986 work as an umbrella legislation of previous laws like water act and air act etc.

1. ADMINISTRATIVE STRUCTURE OF ENVIRONMENT LAWS IN INDIA

The nodal agency constituted for the administrative working for the environmental protection is the Ministry of Environment, Forest and Climate Change. The major task of the MoEFCC is to overall control on policy implementation and promotion of education. It also coordinates with international organizations working for the promotion of the environmental protection and preservation activities like United Nations Environment Programme, South Asia Co-operative Environment Programme, and International Centre for Integrated Mountain Development and for the follow-up of the United Nations Conference on Environment and Development. National Conservation Strategy and Policy Statement on Environment and Development, 1992, National Forest Policy, 1988, Policy Statement on Abatement of Pollution, 1992, and the National Environment Policy, 2006 play a foremost supportive role in the collective working of the Environment ministry.

2. CORNER OF JUDICIAL ACTIVISM

In the case of *Municipal Council, Ratlam v. Shri Vardhichand and Ors.*⁵ the Supreme Court of India has taken a severe view of the condition and interpreted Section 133 Criminal Procedure Code. It is quoted that the mandatory duty of the magistrate is to eliminate nuisance in case of

⁵ AIR 1980 SC 1622.

requirement. The Municipal Council, Ratlam could not use financial constraint as an excuse for not being able to perform its most basic duty of maintenance of health and hygiene of the public. In *Bangalore Medical Trust v. B.S. Muddappa and others*,⁶ the apportionment of land to a private hospital which was allotted for public gardens, challenged by the inhabitants of the city. The Supreme Court held that surrendering the interest of the common public and their right to a clean and pollution free environment, for the interests of a private organization was indefensible. Hence, the Bangalore Development Authority orders were confirmed null and void.

In *State of H.P. v. Ganesh Wood Products*,⁷ the conflicting issue was mechanical Katha manufacturing units, the major cause of the falling of Khair trees in the State of H.P. The Supreme Court contended that the approach of the state government was “myopic” and that a proper assessment of the number of Khair trees should be made before granting any licenses to the manufacturers. In *Consumer Education and Research Centre and Others. v. Union of India and Others*⁸ the Supreme Court gave certain guidelines for the mining and asbestos industries. It was for shielding the healthiness of the workers. These guidelines comprised maintenance of permanent health records of all workers for up to 40 years and the adoption of “The membranous filter test”. It was to identify some ailment in the human lungs and to provide compulsory insurance to all workers where the industry is not shielded either by the Employee State Insurance Act, 1948 or the Workman’s Compensation Act, 1923. The Court also directed the rechecking of all workers who were found to be suffering from Asbestosis. Lastly, a committee was formed and directed to determine the permissible limits of exposure to the workers.

In *Dr. B.L. Wadhera v. Union of India and Ors*,⁹ the petition sought directions to the Government to perform their statutory duties, in particular, the collection, removal and disposal of garbage and other waste in the city of Delhi. The Supreme Court of India looked into the details of the work done and also directed the bodies to report the development and give a comprehensive account of the financial support required to finish the project in the city of Delhi.

In *S. Jagannath v. Union of India*,¹⁰ the matter was the prevention of intensive and semi-intensive shrimp farming in ecologically sensitive areas. The Supreme Court allowed as per the

⁶ AIR 1991 SC 1902.

⁷ JT 1995 (6) SC 485.

⁸ AIR 1995 SC 922.

⁹ AIR 1996 SC 2969.

¹⁰ AIR 1997 SC 811.

recommendation of Alagarswami Report only to traditional and improved types of shrimp farming to continue. This type of farming was held to be contamination free and not of detriment to the atmosphere. The intensive and semi-intensive farming was directed to be stopped as it was harmful to the ecological balance. The court also engaged the central government to establish an authority under Section-3 of the Environment Protection Act, 1986 to shield the ecosystem of the seaside areas.

In *M. C. Mehta v. Kamal Nath*¹¹, the main issue was the unlawful use of government possessions by Kamal Nath in Himachal Pradesh and a resulting damage to the environment. The Apex Court quashes all prior approval and leases granted by the government to the motel. The court applied the principles of "Polluter Pays" and "Sustainable Development" and also the English doctrine of Public Trust. The Government of Himachal Pradesh was directed to restore the river bed and the forest area to its unique situation. The Court further directed the motel to pay reimbursement for the harm to the environment and also to build a wall between the river bed and the motel and, finally, to leave the riverbed and river basin alone.

In another case of *M. C. Mehta v. Union of India and Others*¹² the Supreme Court ordered that the 292 industries switch to the natural gas as an manufacturing energy. For any reason, the industries which were not in a position to obtain gas connections, to stop functioning with the aid of coke or coal in the Taj Trapezium Zone and/or relocate themselves. The "onus of proof" is on the industry to show that its operation with the aid of coke or coal is environmentally benign.

In *Consumer Education and Research Society v. Union of India and Others*¹³ the Supreme Court quashed the petition and gave an interim order to let mining activities be conducted in the area for a limited period and the effects be recorded. A committee was directed to make a comprehensive study of the environmental impact. Also, that no mining activity was to be carried on within 10 kilometres of the reserve. The apex court was of the opinion that the decision was not taken by the Government but by the State Legislature and it would be assumed that the matter had been duly deliberated upon before arriving at the decision. It was further stated that economic development of the backward Kutch region was also necessary.

¹¹ (1997) 1 SCC 388.

¹² AIR 1997 SC 734.

¹³ AIR 2000 SC 975.

In *Ramji Patel & Ors. v. Nagrik Upbhokta Marg Darshak Manch & Ors.*¹⁴ the presence of dairies near drinking water supply pipes, a health hazard for citizens as the animal wastes tend to contaminate the water. Court contemplated upon the possible solutions. Petition of dairy owners against an order to shift the dairies to another location. The Apex Court took a serious view of the situation and ordered the removal of all dairies from that location within a period of two months. In *U. P. Pollution Control Board v. Mohan Meakins Ltd*¹⁵ the issues where the pollution caused to the river Gomti, in Lucknow, due to the effluents and discharges of the respondent liquor company. The Supreme Court held that the pollution of the air and water is a grave concern and any default or deliberate negligence should be dealt with sternly. Also, directed the trial court to proceed with the case in conformity with the law and the directors of the company should be prosecuted expeditiously.

In *M.C. Mehta v. Union of India*¹⁶ the apex court held that the owners of hazardous industries, whose land had to be surrendered, must do so and either relocate or close down. The concern of the community was held to be of supreme significance. In *Fertilizers and Chemicals Travancore Ltd. Employees Association and Ors. v. Law Society of India and Ors*¹⁷ the Supreme Court held that such chemical plants are a need for the welfare of the society. The Court highlighted that an equilibrium was needed between the public utilities and human protection conditions and we have to live with such risks which are counterbalanced by services and amenities provided by these utilities. The apex court permitted the ammonia tank to function, stating that risks of potential calamities should not discourage public utilities from running.

In *Research Foundation for Science Technology and Natural Resources Policy v. Union of India and Anr*¹⁸ the Supreme Court held that “precautionary principle” and “polluter pay principle” as a part of the environmental law of India. There is a constitutional directive to protect and improve the environment of the nation. In order to accomplish the constitutional directive, several legislations have been passed to attempt to solve the problem of environmental degradation in India. These principles were held to be fully applicable in the current case. Directions were given by the Supreme Court for the destruction of 133 containers expeditiously by incineration at the

¹⁴ (2000) 3 SCC 29.

¹⁵ AIR 2000 SC 1456.

¹⁶ AIR 2001 SC 1544.

¹⁷ 2004 4 SCC 420.

¹⁸ (2005) 13 SCC 186.

cost of importers. Importers were held accountable to pay amounts to be spent for destroying hazardous waste on the basis of the precautionary principle and the polluter pays principle. It has also been observed that the principle of good governance is an acknowledged principle of international and domestic laws.

5. CONCLUSIONS

It is evident from the above study that the Indian judiciary is more vigilant toward the environmental degradation and its preservation. Indian Judiciary in the recent judgments has shown activism to protect the environment by pronouncing strict judgments in the favours of natural balance. After the passing of the environment protection act, legislations related to the environmental protection come under the one umbrella and helpful in the execution of the environmental policies. The formation of the national environmental tribunal fulfilled the ideology of the effective and expeditious disposal of cases occurs due to the health hazardous substances. The main objective is also fulfilled to provide relief to the affected individuals for the hazardous substances.

PUBLIC ENVIRONMENTAL LITIGATION IN INDIA: A JUDICIAL INNOVATION TO ENVIRONMENTAL PROTECTION

Hamza Khan¹

INTRODUCTION

The term ‘environment’ generally refers to ‘natural surroundings which cover the physical surroundings that are common to all living beings and includes air-space, water, land, plants, wildlife, flora-fauna etc.

Section 2(a) of the Environment Protection Act, 1986 defines ‘Environment’ which includes “water, air and land and the inter-relationship which exists among and between them and human beings, living creatures, plants, micro-organisms and property”.

According to Black’ dictionary, the environment in its widest sense includes an aggregation of all those economic, social, cultural and natural conditions and facts which influence human life and other living organisms.

Today’s world is modern which involves the use of high technology in every system. Therefore, there arises a requirement for a comprehensive analysis of the protection of the environment. In recent years, there has been a sustained focus on the role played by the higher judiciary in monitoring the implementation of measures for pollution control, conservation of forests and wildlife protection. Many of these judicial interventions have been triggered by the persistent collapse in policymaking as well as the lack of capacity-building amongst the executive agencies. Devices such as Public Interest Litigation (PIL) have been prominently relied upon to tackle environmental problems, and this approach has its supporters as well as critics.² So now the question of environmental protection is a matter of worldwide concern connecting countries all over the globe.³

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² Dr. Jai Jai Ram Upadhyay, *Environmental Law*, 2 (Central Law Agency, Allahabad, 2005).

³The Role of Indian Judiciary in Protection of Environment in India, School of Law, *available at*: <https://www.lawctopus.com/academike/role-indian-judiciary-protection-environment-india/> (last visited on 14/04/2018)

1. DEVELOPMENT OF ENVIRONMENTAL LAW

The talk about preservation of environment or abatement of pollution commences today with the Stockholm Declaration, 1972. It can even date back to British Raj in India. Our history books depiction of environmental law thoroughly the ancient Asian literature is replete with provisions to preserve the environment from degradation. Modern industrial development is the outcome of the 1st century. Hence, there is no mention of ancient literature.

However, the seeds of the modern Indian environmental law were sown at the United Nations Conference on the Human Environment held at Stockholm in 1972 where India participated actively. The development of Indian environmental law has happened mostly over the last three decades. Legislative schemes and rules have been created in most areas of the world involving matters related to environment protection. The essence of the existing law relating to the environment has developed through legislative and judicial initiatives.

2. THE RULE OF *LOCUS STANDI*

Locus standi may be interpreted in two ways: *Firstly*, the competence to act, for example, to appear in court as a plaintiff or a respondent in which case factors such as legal capacity, mental capacity and age must be considered; *Secondly*, a person's competence to present himself as a party in a court as a result of a particular interest in the case.⁴ The discussion will deal with *locus standi* in its latter interpretation.

In practice, however, the question of *locus standi* and the substantive law has become closely connected and it has become increasingly common to consider locus standi together with the merits of the claim. Standing is thus also recognised in consequence of the alleged illegality being proven illegal.⁵

⁴ W Bray, "The Comparative and International Law Journal of Southern Africa" [1989], Vol. 22, No.1, available at <https://www.jstor.org/stable/23248379> (last visited on 05/05/2018).

⁵*Dalrymple v. Colonial Treasurer* 1910 TS 372 at 396 it was mentioned that "it is difficult to do justice to the important question which does arise for decision (namely, whether the applicants are competent plaintiffs) without considering at least to some extent whether a prima facie grievance is established."

The judiciary in India on the environment has begun with the relaxation of the rule of *locus standi*.⁶ The relaxation of the rule led to some important consequences, which were particularly related to environmental matters. *Firstly*, since it was possible that there could be several petitioners for the same set of facts dealing with an environmental hazard or disaster, the court was able to look at the matter from the point of view of an environmental problem to be solved, rather than a dispute between two parties⁷. *Secondly*, the rule took care of the several interests that went unrepresented. The relaxation of *locus standi*, in effect, created a new form of legal action, variously termed as public interest litigation which is also social action litigation.

3. EMERGENCE OF PIL: JUDICIAL INNOVATION

Public Interest Litigation (PIL) may be defined as ‘litigation undertaken for the purpose of the redressing public injury, enforcing public duty, protecting social, collective ‘diffused’ rights and interests or vindicating the public interest.’ Our system of administration of justice is based on the cardinal principle of ‘equal justice for all’. Though equality before the law is an essential quality of our legal system, yet beneath this surface of equality, there remains a profound inequality in the actual working of the legal system by reason of the indifference of the law to the inequality.

Public Interest Litigation's explicit purpose is to alienate the suffering of all those who have borne the brunt of insensitive treatment at the hands of fellow human beings. Transparency in public life and fair judicial action are the right answer to check increasing menace of violation of legal rights. Traditional rule was that the right to move the Supreme Court is only available to those whose fundamental rights are infringed.⁸

The Supreme Court in *Ratlam Municipal Council v. Vardhichand*,⁹ case upheld the social justice component of the rule of law by fixing liability on statutory authorities to discharge their legal obligation to the people in abating public nuisance and making the environmental pollution free even if there are a budgetary constraints., *J. Krishna Iyer* observed that, ” social justice is due to and therefore the people must be able to trigger off the jurisdiction vested for their benefit to any

⁶ *Mumbai Kamagar Sabha v. Abdulbhai*, AIR 1976 SC 1455.

⁷Justice B.N. Kirpa, *Environmental Justice In India*, 2002 available at: <http://www.ebc-india.com/lawyer/articles/2002v7a1.htm> (last visited on 05/05/2018).

⁸ What is Public Interest Litigation? available at: <http://www.thehansindia.com/posts/index/Civil-Services/2016-07-25/What-is-Public-Interest-Litigation/244611> (last visited on 14/04/2018).

⁹ AIR 1980 SC 1622

public functioning.” Thus he recognized Public Interest Limitation as a Constitutional obligation of the courts of India.

Similarly, in *Goa Foundation v State of Goa*,¹⁰ the court held that a society registered under the Registration of Societies Act has the *locus standi* to file a PIL for directing the authorities to perform their duties under Article 51-A(g) similar to a citizen of the Constitution of India.

4. PIL AND DEVELOPMENT OF ENVIRONMENTAL LAW PRINCIPLES

At present most environmental actions in India are brought under Articles 32 and 226 of the Constitution. The writ procedure is preferred over the conventional suit because it is speedy, reasonably priced and offers direct access to the highest courts of the land. Nevertheless, class action suits also have their own advantages. The powers of the Supreme Court to issue directions under Article 32 of the Supreme Court and that of the High Courts under Article 226 have attained greater significance in environmental litigation. The Court of India, while administering justice, has evolved certain principles and doctrines within and at times outside the framework of the existing environmental law. Environmental principles, such as sustainable development, polluter pays principle, precautionary principle, public trust doctrine etc which were considered, while prioritizing the environment over development, from landmark cases in environmental justice such as *Vellore Welfare Forum v. Union of India*, *M.C. Mehta v. Union of India* etc.

4.1. The Precautionary Principle

Historically, it was during the early 1970's that the term '*versorge prinzip*' was used in Germany's industrial sector, which literally means 'foresight principle', requiring the industrial establishments to take precautionary steps to prevent any likely catastrophic disaster. The principle is founded on the premises that much of the environmental degradation can be prevented if timely precautionary measures are taken at the initial stage of installation of the industry or factory or any hazardous undertaking or activity. This, in other words, it connotes that the onus of proof is on the industrialist and the management to demonstrate that their action was kind and does not cause harm to the environment.

¹⁰ AIR 2001 Bom. 318.

Polluters often try to hide behind the need for scientific certainty. Precautionary principle does not brook this hide and seek a policy of the polluters and potential polluters. The ‘precautionary principle’ was accepted as part of the legal system in the *Sludge Case*¹¹ and the *Vellore Citizens Welfare Forum*¹² case, where the court directed the assessment of the damage to the ecology and the environment and imposed on the polluters the responsibility of paying compensation.¹³ Though in latter case, the Supreme Court ordered the closure of tanneries in certain districts, which were not connected with common effluents treatment plants (CETPs), the precautionary principle came to be directly applied in *M.C Mehta v Union of India*¹⁴ for protecting the Taj Mahal from air pollution in which the Taj Trapezium (TTZ) had a damaging effect on the Taj. The Court observed that there is a need to find an immediate solution to the tragedy and to protect ‘the wonder in marble’ from further degradation. The Court continued by stating that the onus of proof is on the industry to show that its operation with the aid of coke/coal is environmentally kind.¹⁵

Explaining the concept of the precautionary principle, the Supreme Court in *Research Foundation for Science v. Union of India*¹⁶ observed:-

“Precautionary principle generally describes an approach to the protection of the environment or human health based on precaution even when there is no clear evidence of harm or risk of harm from an activity or substance. It is a part of sustainable development and provides for taking precautions against specific environmental hazards by avoiding or reducing environmental risks before specific harms are caused.”

4.2.The “Polluter Pays” Principle

The Polluter pays principle was considered to be the one of the best method for prevention of pollution and save the country from threats posed by environmental pollution in modern industrialized societies. Therefore, the principle has been recognized as an integral part of the sustainable development by the international community and it has been incorporated as *Principle 16* of the Earth Summit Declaration, 1992. In fact, this principle was already accepted in the *Stockholm Declaration* of 1972 and included as *Principle 4* of the Declaration but it received legal

¹¹ *Indian Council for Enviro-legal Action v. Union of India*, AIR 1996 SC 1446.

¹² *Vellore Citizens Welfare Forum v. Union of India*, AIR 1996 SC 2715.

¹³ *M C Mehta v Kamal Nath*, (1997) SCC 338.

¹⁴ AIR 1997 SC 734.

¹⁵ AIR 1997 SC 734, p 762.

¹⁶ (2005) 15 SCC 186.

recognition as a substantive principle of environmental law only after it was incorporated as Principle 16 in Rio earth Summit Declaration 1992.

In India, the Polluter Pays Principle has been statutorily recognized in the Environmental (Pollution) Act, 1986 and governmental policy to prevent and control environmental pollution. The object is to prevent the cause which is likely to result in damaging the environment at its source so that the damage does not occur. The expenses incurred in adopting measures to prevent pollution should be recovered from the polluting industry/unit.

The Supreme Court in *Research Foundation for Science v Union of India*¹⁷ made it clear that the ‘polluter pays’ principle should not be misunderstood to mean that the polluter (industry) can be allowed to cause damage by not following the environmental norms and the made to pay after the damage is caused. The principles basically presuppose that industrialist/producer of goods should be held liable for the cost of preventing or dealing with any pollution that the manufacturing unit causes.¹⁸

4.3. Sustainable Development And Intergenerational Equity

The basic principles of Sustainable development have been described in ‘Brundtland Report’. The concept of ‘Sustainable Development’ is not a new concept. The doctrine had come to be known as early as in 1972 in the Stockholm Declaration. ‘Brundtland Report’ defines the sustainable development as “*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*”. Sustainability¹⁹ is generally accepted as doing things that can be continued over a long period without facing the unacceptable consequences.

Similarly, the Inter-generational Equity principle pre-supposes the right of each generation of human beings to benefit from cultural and natural resources of the past generations as well as an obligation to preserve such heritage for future generations. The principle emphasizes conservation of biodiversity resources of the renewable sources like water, soil, forests, etc.²⁰

The genesis of inter-generational equity principle lies I *Principles 1 and 2* of the Stockholm declaration, 1972 in which environment has been considered as a resource basis for the survival of

¹⁷ (2005) 3 SCC 186; *M C Mehta v Union of India* (2006) 3 SCC 399.

¹⁸ AIR 1987 SC 965.

¹⁹ The term, sustainability, is problematic since it is used to describe many different attributes including the success of a particular business or its succession plans and state of an economy more generally.

²⁰ P.S. Jaswal and Nistha Jaswal, *Environmental Law*, 120 (Allahabad Law Agency, Allahabad, 2013).

the present generation and future generation's right to beneficial use of these resources. Intergenerational equity is a notion that views the human community as a partnership among all generations. Each generation has the right to inherit the same diversity in natural and cultural resources enjoyed by previous generations and to equitable access to the use and benefits of these resources. At the same time, the present generation is a custodian of the planet for future generations, obliged to conserve this legacy so that future generations may also enjoy these same rights. In this way, intergenerational equity extends the scope of social justice into the future.²¹

The Supreme Court of India, realizing the tremendous danger posed by environmentally harmful activities, has stepped into the game adopting the role of an activist. This activism has led to the inclusion of several environmental rights within Fundamental Rights. Rights such as that of a clean and healthy environment, of a wholesome environment and of livelihood have been read into the Right to Life and Personal Liberty under Article 21 of the Constitution. One such right is the evolving right to Intergenerational Equity. In *State of Himachal Pradesh v Ganesh Wood Products*²², the Supreme Court observed, "It is also violative of the National Forest Policy and the State Forest policy evolved by the Government of India and the Himachal Pradesh Government respectively - besides the fact that it is contrary to public interest involved in preserving forest wealth, maintenance of environment and ecology and *considerations of sustainable growth and inter-generational equity. After all, the present generation has no right to deplete all the existing forests and leave nothing for the next and future generations.*"

Further the principle of "Inter-Generational Equity" has also been adopted while determining cases involving environmental issues. In the case of *A.P. Pollution Control Board v. M.V. Nayudu and Ors*²³, the Supreme Court held as under:

²¹J. K. Summers, The Role of Social and Intergenerational Equity in Making Changes in Human Well-Being Sustainable, 2000 available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4165836/> (last visited on 18/04/2018).

²² (1995) 3 SCC 363.

²³ 1999 (2) SCC 718.

“The principle of inter-generational equity is of recent origin. The 1972 Stockholm Declaration refers to it in the respective principles 1²⁴ and 2.²⁵ In this context, the environment is viewed more as a resource basis for the survival of the present and future generations”.

4.4. Doctrine Of Public Trust

According to the doctrine of public trust, the state is not the absolute owner but merely a trustee of all the natural resources, which are by nature meant for public use and enjoyment, subject to reasonable conditions necessary to protect the legitimate interest of large number of people, or for the matters of strategic national interest.

The public trust doctrine envisages that natural resources such as water, air, land, sea, forest, lakes etc. being the gift of nature to mankind, should be freely available for the use of everyone as there can be no private ownership on these resources. The public trust doctrine enjoins a duty upon the State to protect these natural resources for the use of public and not to permit private ownership thereof. It pre-supposes that the State holds the natural resources as a trustee for the benefit of the people who are the real beneficiaries of the natural resources property.²⁶

Recognition of this public doctrine for the protection of natural resources is another judicial innovation. In *MC Mehta v Kamal Nath*,²⁷ the apex court did not hide its rage in extending facilities by permitting a motel to deviate the flow of a river and using the forest for non-forest purpose. Approving the doctrine for the first time and imposing on motel the responsibility of restoration of environment and ecology of the area, the Supreme Court observed:

‘Our legal system is based in the English common law which includes the public trust doctrine as part of its jurisprudence. The State is the trustee of all the natural resources, which are by nature meant for public use and enjoyment²⁸. The public at large is the beneficiary of the sea-shore, running waters, air, forest and ecologically fragile lands. The State as a trustee is under a legal

²⁴ Principle 1 - Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of quality that permits a life of dignity and well-being, and he bears a solemn responsibility to protect and improve the environment for the present and future generations.

²⁵ Principle 2 - The natural resources of the earth, including the air, water, lands, flora and fauna and especially representative samples of natural ecosystems, must be safeguarded for the benefit of the present and future generations through careful planning or management, as appropriate.

²⁶ *Formento Resorts & Hotels Ltd. v. Minguel Martins* (2009) 3 SCC 571.

²⁷ (1997) 1 SCC 388.

²⁸ Environment law in India - an overview, available at: http://www.cms-lawnow.com/ealerts/1999/11/environment-law-in-india-an-overview?cc_lang=en (last visited on 07/05/2018).

duty to protect the natural resources. These resources meant for public use cannot be converted into private ownership.²⁹

5. CONCLUSION

The Supreme Court has, through intense judicial activism, the proponents claim, become a symbol of hope for the people of India. India's judicial activism on environmental issues has, others suggest, had adverse consequences³⁰. Public interest cases are repeatedly filed to block infrastructure projects aimed at solving environmental issues in India, such as but not limited to waterworks, expressways, land acquisition for projects, and electricity power generation projects. The litigation routinely delays such projects, often for years, while rampant pollution continues in India, and tens of thousands die from the unintended effects of pollution³¹. In other cases, the interpretations and directives have preserved industry protection, labor practices and highly polluting state-owned companies detrimental to the environmental quality of India. Thus, even a cursory study of the judgments of the Indian courts especially the Supreme Court would reflect the consistent commitment of the courts towards the protection of the environment. Very often the courts have had to not only lay down the law but also closely monitor its implementation due to the political compulsions of the Government. The executive needs to show stronger commitment towards the implementation of environment-related laws. However, it needs to be appreciated that the efforts of the courts can only achieve marginal success unless there is a social, political and economic change in the Government as well as of people towards adhering to a model of sustainable development us to maintain our commitment to the protection of our environment.

²⁹ Ibid. p 413.

³⁰ Dr. Minal H. Upadhyay, "P.I.L. and Environment Protection", 2 IJRSML2014, p.1-2

³¹ Environmental Laws of India, available at: <http://www.studymode.com/essays/Environmental-Laws-Of-India-1855662.html> (last visited on 07/05/2018).

EFFICACY OF ENVIRONMENTAL EDUCATION ON SUSTAINABLE DEVELOPMENT

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INTRODUCTION

The main reason for environmental degradation is unethical human interference. Definitely, we all have the freedom to use our natural resources. But people should be aware of how we can utilize the same in a positive and efficient way. Whatsoever wrong has been done by us must be rectified by us only. So it is the primary responsibility of the human population to find out effective safeguards for the protection of the environment by which we will have a healthy life. The term sustainable development emphasizes that development and environment are syntheses of each other. Both are complementary and mutually supportive. For the proper implementation of this concept environmental education is very much relevant. Through this paper, I would like to highlight the relevance of environmental education to ensure sustainable development.

1. SUSTAINABLE DEVELOPMENT

The concept of sustainable development requires the integration of social justice, economic development, and environmental protection. This can be achieved only through consultation, impact and risk assessment and public participation. Economic development cannot be considered an end in itself. At the same time poverty reduction and decent employment opportunities, which are part of our basic rights, cannot be achieved without economic development. So our economic development must have a balance with ecological sustainability. The application and strategic approaches of the principle of sustainable development are not consistent since the world is developing quite speedily. This inconsistency leads to many contradictions in policymaking. By following the principle of sustainable development the present generation can satisfy their needs without affecting the availability of resources. Sustainable development is the development that meets the need of the present generation without compromising the ability of future generations to meet their own needs.¹The concept of sustainable development received approval of over 140

¹*Report of the World Commission on Environment and Development: Our Common Future*, United Nations, 1987, available at

states at the “Earth Summit” in 1992.² Indian Judiciary pointed out the importance of sustainable development through different judgments. A few of them are:

- In *Vellore Citizens Welfare Forum v. Union of India*³, the Supreme Court of India pointed out that sustainable development is a balancing concept between environment and development.
- In *M. C. Mehta v. Union of India*⁴, the Supreme Court observed that Articles 39 (e), 47 and 48-A of the Constitution of India, 1950 (hereinafter, “Constitution”) by themselves and collectively cast a duty on the state to secure the health of the people and to protect the environment.
- In *N. D. Jayal v. Union of India*⁵, the Supreme Court held that sustainable development is to be treated as an integral part of Right to Life under Article 21 of the Constitution.

In *Vellore Citizens*⁶, the Supreme Court also summed up the principles of sustainable development, as applicable in India, as:

- Precautionary principle: - According to this principle, any activity which may cause damage to the environment must be prevented even if there is a lack of scientific certainty for environmental degradation. The person who is causing an activity is responsible to prove that his or her action is environmentally sound and it will not cause any kind of environmental damage.

In *M. C. Mehta v. Union of India*⁷, the Supreme Court applied this principle. In this case, a public interest litigation suit was filed alleging that industries situated in the Taj Trapezium Zone are causing environmental pollution and consequential degradation of the TajMahal. By applying the precautionary principle, the Supreme Court directed that all industries operating in this area must use natural gas as industrial fuel. The industries which

[http://www.exteriores.gob.es/Portal/es/PoliticaExteriorCooperacion/Desarrollosostenible/Documents/Informe%20Brundtland%20\(En%20ingl%C3%A9s\).pdf](http://www.exteriores.gob.es/Portal/es/PoliticaExteriorCooperacion/Desarrollosostenible/Documents/Informe%20Brundtland%20(En%20ingl%C3%A9s).pdf).

²The United Nations Conference on Environment and Development (UNCED), also known as the Rio de Janeiro Earth Summit, the Rio Summit, the Rio Conference, and the Earth Summit was a major [United Nations conference](#) held in [Rio de Janeiro](#) from 3 to 14 June 1992.

³ AIR 1996 SC 2715.

⁴ (2002)4 SCC 356.

⁵ (2004)9 SCC 362.

⁶*Supra* note 3.

⁷ (1997)2 SCC 353.

are not in a position to use natural gas must shift their industries to any other industrial area.

- Polluter pays principle: -The liability for environmental damage extends not only to compensate the victims of pollution but also the cost of restoring the environmental degradation. Here also the burden of proof is upon the polluter.

In *Indian Council for Enviro-Legal Action v. Union of India*, the Supreme Court directed the private industries which caused environmental pollution to make payments for compensation.

- Intergenerational equity:- It implies the right of every generation to benefit from the natural inheritance of its past generations. So every generation has an obligation to pass it on their future generations.

In *State of Himachal Pradesh vs. Ganesh Wood Products*⁸, the Supreme Court pointed out that the present generation has no right to imperil the safety and well-being of the next generation or the generations to come thereafter.

- Use and conservation of natural resources: - For a sustainable tomorrow, the unsustainable method of production and consumption must be prevented. The use of natural resources by the present generation must be in a sustainable manner. That means such use must be after giving consideration to the future generations also.

Sustainable development policies in India are facing many problems like overpopulation, poverty, unemployment, etc. For example, over-exploitation of groundwater may lead India to face a major water crisis in the near future. Realizing this, the central government and some state governments have initiated several measures to overcome such problems. But due to lack of awareness among people and improper implementation mechanisms, such measures have not made any significant impact. So an intellectual clarity is very relevant to achieve the goal of sustainable development. This intellectual clarity can be obtained through effective environmental education.

2. RELEVANCE OF ENVIRONMENTAL EDUCATION

Environmental education is a process that allows individuals to explore environmental issues, engage in problem-solving and take action to improve the environment. As a result,

⁸AIR 1996 SC 149.

individuals develop a deeper understanding of environmental issues and have the skills to make informed and responsible decisions⁹. Environmental education helps to develop awareness, knowledge and understanding about the environment, and a commitment to preserve the same. Environmental education plays a crucial role in the determination of different aspects like.

- (i) A better relationship between the present and future generation.
- (ii) Human impact on the environment.
- (iii) Personal responsibility and dedication to environmental conservation.
- (iv) Sensitivity towards the environmental problem and capacity to get involved in policy formation to solve the same.
- (v) To improve the existing environmental awareness of the people.
- (vi) To provide training in identifying local environmental problems and to make their systematic study.
- (vii) To provide an in-depth training in dealing with new environmental problems by translating implications and developing environmental awareness.

The relevance of environmental education is also reflected in a Supreme Court judgment in *M C Metha v. Union of India*¹⁰ Supreme Court laid down some directions regarding environmental education. They are:

- (i) The Ministry of Information and Broadcasting of the Government of India should without delay starts producing information films of short duration as is being done now on various aspects of environment and pollution bringing out the benefits for society on the environment being protected and the hazards involved in the environment being polluted. Mind catching aspects should be made the central theme of such short films. One such film should be shown, as far as practicable, in one show every day by the cinema halls.
- (ii) It was also suggested to the Attorney General to have a dialogue with the Ministry of Information and Broadcasting as to the manner the All India Radio and Doordarshan can assist this process of education.

⁹What is environmental education?, available at: <http://www.epa.gov/education/what-environment-education>.

¹⁰ AIR (1992) SC 382.

The concept of environmental education developed rapidly because of deteriorating an environment, including deforestation, pollution of water resources, an increase of sulphur dioxide, carbon monoxide and other harmful substance in the air, ozone layer depletion, etc. Environmental education teaches people to analyze different aspects of issues and it enables them to develop their problem solving and decision-making skills through critical thinking. It helps-

- (i) To develop clear awareness and concern about economic, social, political, and ecological interdependence in urban and rural areas.
- (ii) To provide every person with opportunities to acquire the knowledge, values, attitudes, commitment, and skills needed to protect and improve the environment.
- (iii) To create new patterns of behaviour of individuals, groups, and society as a whole towards the environment.¹¹

Environmental education focuses on processes that promote critical thinking, problem-solving, and effective decision-making skills. It utilizes the processes which involve studies in observing, measuring, classifying, experimenting and other data gathering techniques.

Protection, preservation, and conservation of the environment is the primary responsibility of each individual. Environmental education helps to identify how our routine life can make a huge difference to the environment and the reason for the deterioration of the environment. Today, children are completely detached from nature and surroundings as they are always busy with electronic games, mobile phones etc. So they will not be bothered with environmental conservation even in their adult stage. So raising an environmentally educated generation is a matter of concern now. Environmental education aims to produce a citizenry which is knowledgeable, concerning the biophysical environment and its associated problems. It also helps to solve these problems and motivate to work towards their solution.¹²

The condition of our global environment has become a matter of grave concern to the world community in recent years. This is the information age; modern communication and travel bring us into closer contact with every part of the world. Today we recognize that we can save our

¹¹Nicole M. Ardoi, *Environmental Education, A Strategy For The Future*, 3 (Environmental Grantmakers Association, USA, 2009).

¹²William B. Stapp, "The Concept of Environmental Education", 1(1) *Journal of Environmental Education* 1969, p. 30-31.

common environment with all other humans as well as the non-human co-inhabitants. It is hoped that with education, compassion, and hard work we can bring about the necessary changes in our environment and leave a world for our children better than which we had inherited from our parents.¹³

3. FEATURES OF ENVIRONMENTAL EDUCATION

Environmental education can be formal or informal. Formal refers to education that occurs in a traditional school setting. Informal refers to education in a broader public setting such as community centres, social clubs, etc. There is a different range of strategies for effective environmental education including

- (i) Awareness and sensitivity to the environment and environmental challenges.
- (ii) Knowledge and understanding of the environment and environmental challenges.
The attitude of concern for the environment and motivation to improve environmental quality.
- (iii) Skills to identify and help to resolve environmental challenges.
- (iv) Participation in activities which lead to the resolution of environmental challenges.

There are also different agencies for imparting environmental education like government agencies, media, local self-government and, NGOs.

3.1 ENVIRONMENTAL EDUCATION THROUGH NGOs

NGOs are non-governmental organizations usually referred to as organizations which are not part of the government but can be funded by it.¹⁴ The main objective of NGOs is social service and their area of operation is in different fields like environmental protection, human rights protection, the welfare of children, anti-corruption and good governance etc. Role of NGOs in the protection of the environment is much significant because of the changing social situations and human habits. Environmental NGOs are adopting different kinds of methods and mechanisms for the achievement of a pollution free environment. Providing environmental education and creating awareness among the people is the most important and effective method among them.

¹³Importance of Biodiversity Education, *available at: <http://cesorissa.org/Abstracts.asp>.*

¹⁴Syed Tanveer Badruddin, "Role of NGOs in the protection of the Environment", 9(3) Journal of Environmental Research and Development 2015.

In recent years the activities undertaken by the environmental NGOs are at the broad end. They are not limited to creating awareness; their activities include environmental monitoring, promoting environmental education, training and capacity building, implementing demonstration projects, conducting advocacy work in partnership with government and government agencies and promoting regional and international co-operation on environmental protection.

3.2 Environmental Education Through Educational Institutions

Environmental education in this category is of two types: they are environmental education as a disciplinary action and general environmental education to school and college students. The former aims to produce environmental experts and the second aims to help create an informed citizen. Both are important to create a pollution free environment. As a part of formal and also informal education, most of the schools and colleges spread information among student communities regarding organic farming, reasons for environmental pollution, deforestation, its consequences, etc. Many schools have their own organic vegetable farms.

3.3 Environmental Education Through Local Authorities

Both the central and state governments organize many environmental education programs. Apart from this, local authorities are also involved in many activities for environmental awareness among common people. This is more effective because local authorities can make a great influence among people. In India building rules of different states includes mandatory provisions for rainwater harvesting structures in new constructions.

3.4 Environmental Education Through Media

Media has a very significant role in imparting environmental education in India. All prominent media have a separate portal to deal with the spreading of information about environmental aspects. Spreading environmental education among common people will be more effective through the media. Many media houses organize environmental, educational programs in connection with educational institutions, NGO, etc.

India's most important newspapers like Times of India, The Hindu, Hindustan Times and Indian Express have articles on environmental issues frequently. There are many environment journalists who have chosen their subject out of true commitment. Dissemination of environmental

information can be classified into three. They are: (i) print media; (ii) visual media; (iii) social media and the internet. For example, the SEED project of Mathrubhumi.

Student empowerment for environmental development is yet another project, which aims to create awareness among the student community on environmental protection and to enable them to protect the water, air and, soil.

4. EFFECTIVENESS OF ENVIRONMENTAL EDUCATION

Even if the concept of environmental education is given much importance, its implementation still has some problems. Certainly, it is made as a part of formal education, but only a few schools are actively participating in the activities for enhancing environmental awareness. Textbooks prepared for environmental awareness are not properly codified. Discussions within the classrooms may not be adequate for an effective result. Schools often do not organize special seminars regarding specific environmental issues. Teachers often do not attend any special training program conducted by environmental specialists. As far as informal education is concerned, there are some defects which decrease the chance of an effective environmental education. Only interested and dedicated persons are working hard for achieving a pollution free environment. The concept of environmental education should be able to generate a genuine interest and commitment among the people to create a pollution free environment. Environmental education must be more effective for achieving the same.

5. CONCLUSION AND SUGGESTIONS

Right to have a pollution-free environment is an important right among our basic human rights. Such a right is very much essential to protect the health of individuals. Promotion of this interpreted fundamental right can be made through the principle of sustainable development. This principle gives equal importance to the development and environmental sustainability. Environmental education can contribute a more in this regard. Some suggestions are given below.

- (i) The process of environmental education should be activity centred.
- (ii) People should visit some ecologically important places. It will help to create a commitment in their minds.
- (iii) Sufficient funds must be provided by the government.

- (iv) Environment educators must be given proper and effective training from experts.
- (v) Environmental education should consider the environment in its totality, including natural and built, technological, social, political, moral, cultural, historical and aesthetic aspects.
- (vi) Environmental education should be a continuous lifelong process: it should begin at a pre-school level and continue through all formal and non-formal stages.
- (vii) It should promote the value and necessity of local, national and international cooperation in preventing and solving environmental problems.
- (viii) Enable learners to have a role in planning their learning experiences and provide an opportunity for making decisions and accepting consequences.
- (ix) There should be active coordination between NGOs, governmental agencies, media, educational institutions, etc. for an effective environmental education.

CLIMATE CHANGE AND CLIMATE REFUGEES

Ritu Dhingra¹ & Dr. Kanupriya²

Abstract

The Earth's climate is changing at a rate that has exceeded most scientific forecasts. Some families and communities have already started to suffer from the negative side effects of climate change and are forced to leave their homes in search of a new beginning. Climate change has not spared plant and animals species also. Many species are becoming extinct due to climate change a big percentage of plant, animals and human beings are becoming climate refugees as they lose their natural habitat to some or the other natural calamity like flooding. Global warming is taking a toll on the earth's ecosystem as well. Sea levels are rising; glaciers are melting leading to a loss of biodiversity. For UNHCR (UN Refugee Agency) the consequences of climate change are enormous. Scarce natural resources such as drinking water are likely to become even more limited. Many crops, livestock, and even wild animals are unlikely to survive in certain locations if conditions become too hot and dry, or too cold and wet. Food security that is a huge concern will become even more challenging. An enormous number of people are uprooted and lose their livelihoods by natural disasters like desertification, flooding is due to climate change which is a major factor besides earthquakes and tsunamis.³

Keywords: *Climate refugees, loss of biodiversity, ecosystem services, ecological imbalance, rise in temperature, anthropogenic activities, global warming.*

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³ UN Refugee Agency UNCHR, Climate Change, *available at:* <http://www.unhcr.org/pages/49e4a5096.html> (last visited on April 10, 2017).

INTRODUCTION

In the year 1985, the term climate refugees was adopted by the United Nations Environment Programme (UNEP) adopted this term to address those people who have to forcibly leave their traditional homes either temporarily or permanently because of some marked environmental natural or triggered by anthropogenic interference, that risked their existence and affected the quality of their life utterly. People are also displaced due to political reasons as well but that displacement is not due to environmental reasons. Sometimes sudden extreme environmental events like flooding, earthquakes, cloudbursts, heavy rains, volcanic eruptions also force people to leave their habitations and flee to take refuge in some other safe place, sometimes for a temporary period and sometimes permanently. Fourth assessment report of IPCC (AR4) satiates these fact migrations from rural to urban areas is also triggered by the environmental hazards, like tornados, floods, extreme rainfall, the rise in sea levels, earthquakes etc., which these rural people face in their terrains. They found urban areas to be safer than their native homes.⁴ Global warming has increased these incidents even more and has lead to a massive increase in the number of climate refugees.

1. LOSS OF BIODIVERSITY

As York University conservation biologist Chris Thomas says, climate change is putting plants and animals on the run. “These changes are equivalent to animals and plants shifting away from the Equator at around 20 cm per hour, for every hour of the day, for every day of the year. This has been going on for the last 40 years and is set to continue for at least the rest of this century”⁵. This leads to the displacement of many animals and even plants, which also include a microorganism, a huge loss of biodiversity is the ultimate result. Biodiversity loss also leads to an imbalance in the ecosystem on the whole. It is pertinent to note here that once biodiversity is lost, it is lost forever then, no in-situ or ex-situ experimentation can bring it back. As far as human beings are concerned when they are forcibly displaced and become climate refugees they are not even covered by the refugee protection regime, they find themselves in a legal void.” The main reason for this is the imbalance caused in the earth’s ecosystem majorly due to anthropogenic

⁴ Harun Rashid and Bimal Paul, *Climate Change in Bangladesh: Confronting Impending Disasters*, 116 (Lexington Books, U.K., 2013).

⁵ Bryan Walsh, “How Climate Change Is Turning Plants and Animals into Refugees”, *Time*, 19 September 2011, available at: <http://science.time.com/2011/08/19/how-climate-change-is-turning-plants-and-animals-into-refugees/> (last seen on September 12, 2017).

activities. It is a slow war between earth's biome and human beings, who due to their ignorance are ruining the earth's environment. Humans as the most evolved species on earth and have a responsibility to undertake the task of the conservation and preservation of all the floral and faunal species present on this blue planet. But to the contrary, this Homo sapiens species has become the main actor for the extinction of many species on this earth. Due to his anthropogenic actions, a huge loss of biodiversity has taken place and there is no realization of this fact and very small percentage of people are even aware of it leave aside the conservation part. The chief root causes of climate change are the human activities like deforestation, overfishing, over the use of fossil fuels, over mining, destroying of both marine and terrestrial ecosystems.

2. GLOBAL WARMING

Global warming is the most recent epoch of the climate change. The plants, which act as great carbon sinks and the trees trap a huge amount of carbon dioxide in the form of carbon in them till they are alive, once a tree is cut, that carbon again goes back to the environment raising the earth's temperature and leading to either huge precipitation or desertification. Enormous rains lead to flooding, which further destroys the human habitats making them climate refugees. Human activities like burning fossil fuels and cutting down forests contribute to global warming because they release greenhouse gases. CFCs (chlorofluorocarbon) have led to the depletion of the ozone layer, which is triggering this rise in temperature even more. This is a simple equation and a form of justice done by nature and can be understood by this old adage "As you sow, so shall you reap". If the habitat (a tree) of speechless organisms of animal kingdom as well as of plant kingdom is destroyed then it causes an imbalance in the whole ecological cycle and also in the food web of the ecosystem, which in turn leads to displacement of many species and many a times those dislocated species are not able to survive in a changed environment. The same phenomenon is usually seen with the human beings in the form of climate refugees, who have lost their home and belongings for good. To address these global warming challenges, the needs of the human beings to be organized in such a way that it does not leave much carbon footprints and it has been nation state versus a global responsibility.⁶

3. CLIMATE REFUGEES

About 15 million people in Bangladesh alone could be on the move by 2050 because of climate change causing the worst migration in human history. Climate change causes loss of species,

⁶ Mark. Maslin, *Global Warming: A Very Short Introduction*, 147 (Oxford University Press, Oxford, 2004).

which has negative effects on ecosystem services, which is provided by the species living in the forest. Ecosystem services like pollination, natural pest control and many more such services are lost due to the dislocation of the wildlife. The stability, which these species provide to the ecosystem, also get disturbed and the output of the service is reduced. Species loss also has a huge impact on the cultural and religious practices, which are followed by the native people whose generations have been living there for ages. Losses of species can lead to changes in the structure and function of disturbed ecosystems and loss of income and aesthetics.⁷ According to the aid agency report currently, there are an estimated 25 million environmental refugees which are more than all the 22 million officially recognized “conventional” refugees made up of political and economic refugees, the reason being the abnormal anthropogenic activities leading to droughts, flooding, hurricanes, desertification etc. Some of the basic rules of our society must be changed. A sustainable way of lifestyle is to be adopted to reach this aim. Climate change has made the stay of the indigenous people at their native land impossible⁸. In all climate change is converting quite a percentage of species, including human beings living on this earth into climate refugees. The need of the hour is to find solutions to this major problem. In August 2005, Hurricane Katrina, devastated the US Gulf Coast, in the month of October in 2005, an earthquake in northern Pakistan displaced millions of people, who eventually became climate refugees. Many more millions are being displaced every now and then due to major development projects such as the building of dams and an influx of new cities.⁹ Sustainable development is the need of the hour. Nature has to left in its pristine stage.

4. CONCLUSIONS AND SUGGESTIONS

Following the rules of sustainable development is a remedy to this menace of global warming and climate change. Reducing the carbon footprints by afforestation is also extremely important for a sustainable management of natural resources. Natural resources must be used in such a way that the resources are conserved for the coming generations also. A sustainable use of the natural resource is the solution to this problem. A good environmental impact assessment is required

⁷ IPCC, Impacts, Adaptation and Vulnerability, *available at*:
<http://www.ipcc.ch/ipccreports/tar/wg2/index.php?idp=198> (last visited on December 10, 2017).

⁸ IUCN, Climate Change Induced Migration in Bangladesh, *available at*:
http://iucn.org/news_homepage/events/unfccc2/events/2015_paris/?21974/Climate-Change-Induced-Migration-in-Bangladesh (last visited March 10, 2018).

⁹ Khalid Koser, *International Migration: A Very Short Introduction*, 102 (Oxford University Press, New York 2007).

before starting any project like the construction of dams or in laying the foundation of a new city. Gases that trap heat in the atmosphere are known as green house gases and carbon dioxide is one such gas. Afforestation is one of a good alternative to absorb green house gases from the atmosphere especially carbon dioxide. More area covered under forests more shall be the carbon absorption leading to a decrease in the temperatures in the atmosphere. Afforestation, cultivation and forest restoration must be done on the wastelands, deserts and vacant urban lands must be utilised for making small green areas by following the same sustainable development rules. Execution of sustainable cropland management must be done for the management of the croplands. No forestland should be converted to cropland and instead vertical farms must be promoted to avoid the change of land use from forest to cropland. Conservation and restoration of peatlands and wetlands must be done and these ecosystems must be conserved, as they are great carbon sinks and a home for a lot of biodiversities. Alternative sources of energy could be one of the measures that are being taken up in different parts of the world. One of the options that countries are adopting is to develop renewable energy technologies which are considered as clean technologies and do not pollute the atmosphere, unlike the fossil fuels. Renewable energy technologies are of various types and depend on the landscape, financial ability, and technology of industries to adopt such measures. The use of Renewable energy can to a great extent help in controlling the GHG emissions on a global scale. Developing renewable energy technologies, which contribute to sustainable development at an affordable cost, is perhaps the need of the hour. Renewable energy technologies as the name suggests can be used from sources for an infinite period unlike fossil fuels, which are limited in resource. Some of the commonly known renewable energy technologies include solar power, biomass-based power, hydropower, wind power, tidal power, geothermal power. All these technologies generate energy from resources, which are ample and abundant in the natural systems of the earth. Recently, there have also been initiatives to generate power using biomass and organic wastes. These are commonly known as waste to energy projects which often look at utilising organic wastes, land fill wastes to generate energy and power for local needs. Of these solar, wind and hydropower are perhaps one of the most commonly tried out technologies across the world and in India. A large number of industries and institutions are currently engaged in power generation using these technologies apart from innovation and research. For e.g. hydropower utilises rivers and freshwater resources as potential sources of generating power from watershed, catchments and mountain streams and rivers. The recent National action plan on

Climate change promoted by the Government of India has given a new direction to increase the use of solar energy as India is a country with ample sunshine and this vast resource needs to be tapped for generation of power. Renewable energy sources like solar, hydro, wind and geothermal energy must be made available at a large scale and must be made available to the common man at a nominal price. Windmills and solar panels for the home must be developed and be sold at a cost-effective price. Conservation of Agro-biodiversity and the improved farming system must be promoted to meet the ends of the mitigation of climate change. Regular research must be initiated in this field and monitoring of the ongoing schemes for the mitigation of climate change by improving ecosystems by a sustainable management of must be carried on at regular intervals and at the national level. Climate refugees is a problem that is triggered by global warming and natural or manmade disasters. Applying the principles of sustainable development man-made disasters can be mitigated. Cutting down the carbon footprints, leaving the nature in its pristine state and using the natural resources sustainably can be few remedies to this problem. Climate refugees are not only human beings but also animals and plants. Attention must also be given to other life forms, as these species cannot speak for themselves. We human beings, *Homo Sapiens*, the most evolved species on this earth are their voice and must take adequate measures to conserve the other life forms, who have no control on the climatic conditions, natural disasters and climate change. They even cannot protect themselves in a natural calamity. The loss is ours, since if we lose a species today, then our coming generations cannot see them virtually, the only option available would be pictures of these lost life forms. Reducing such anthropogenic activities can curb thus climate change. Nature and the natural resources must be conserved for the intergenerational and intra-generational equity. The earth belongs to all and it must be conserved in its pristine state by following the sustainability rules. If the global warming can be curbed, then, of course, climate change can be reversed and disasters due to climate change can be curbed and the problem of climate refugees can be solved. A check on the anthropogenic activities, which are causing global warming, is one of the solutions to this problem but the natural disasters cannot be controlled.