

Green Criminology: Study of Crimes against Environment and Lack of Legislation

Ms. Vidita Saini

Assistant Professor of Law, Bharat College of Law, Rurki, Haryana, India

Date of Submission: 05-03-2023

Date of Acceptance: 15-03-2023

ABSTRACT

This paper discusses the concept of 'Green Criminology' that deals with crimes against the environment. The crimes against the environment are increasing rapidly. Sometimes in the name of development and sometimes due to ignorant attitude towards the nature the humans are causing irreversible damage to the environment. The lack of proper legislation in this regard is also making feasible for the opportunists to harm the environment. The punishment prescribed for the offences affecting the environment is also very less which gives the criminals option to save themselves by paying small amount of money. The paper further examines some of the recent practices that are acting like cancer to the mother Earth. In the end, some suggestions are provided to save the environment. However, it is possible only when there are stringent laws and their implementation is also ensured by the appropriate government. Also, the countries must come together to protect the environment and adhere to the principles laid down in the International Conventions relating to environment.

Keywords: Green Criminology, Environment, Green Crimes, Justice, Climate Change, Global Warming

I. INTRODUCTION

Green Criminology is a branch of criminology that involves the study of harms and crimes against the environment broadly conceived, including the study of environmental law and policy, the study of corporate crimes against the environment, and environmental justice from a criminological perspective. The term "green criminology" was introduced by Michael J. Lynch in 1990, and expanded upon in Nancy Frank and Michael J. Lynch's 1992 book, *Corporate Crime, Corporate Violence*, which examined the political economic origins of green crime and injustice, and the scope of environmental law. The term became

more widely used following publication of a special issue on green criminology in the journal *Theoretical Criminology* edited by Piers Beirne and Nigel South in 1998. Green Criminology is radical in 2 Major Ways.

- (a) Rather than focusing on law breaking behavior, it looks at the Causes and consequences of harm done to the environment- even when that harm is legal.
- (b) Unlike most criminology, it is concerned with harm to animals and plants Ecosystems.

There is no agreed definition of 'Harm to the Environment' The notion of harm is 'Inherently Ideological' It is constructed through the Political Process with competing interest groups seeking to have their definition of harm accepted. There are various sociological approaches propounded to understand the role of green criminology:

1. Some criminologists believe we should just focus on the individuals and groups which breach those environmental laws already laid down by government and international bodies. The crimes under this category are called Primary Green Crimes. The crimes which emerge out of flouting the rules designed to protect the environment are termed as Secondary Green Crimes.
2. Other criminologists argue that criminology should focus on any act that harms the environment. That means it will include those acts in its ambit also which aren't illegal.

There could be various theories and definition to Green Criminology. But what it is actually is an attack on an individual's conscience. It is the mirror which is trying to show the ugly face of humanity which we are intentionally and constantly ignoring.

The paper will discuss both the acts whether legal or illegal which causes harm to environments directly or indirectly. However focus is on the acts which should be recognized as crime

as they are the slow poison which are eating up the Mother Earth constantly and consistently.

PROGRESSION OF GREEN CRIMINOLOGY

Green criminology has exploded in the last 15 years. It has exploded in academia. There was need to balance the justice that deals with humans, that deals with ecosystems, that deals with animals, that deals with plants. While figuring out a way to combine environmental justice, ecological justice and species justice in the best way possible which also could be a part of the ethical universe, Green Criminology took place. In the last five years green criminology has taken off worldwide particularly in UK, USA, Europe and Australia. If we look around the world today, what we basically see is pollution- air pollution water pollution, land pollution, degradation of the environment, massive deforestation, climate change, illegal trade in wildlife. We are fishing up the oceans and we are absolutely collectively destroying the environment and unless we see that as a major social and ecological harm then we will have no planet for ourselves, our children and for our grandchildren. So it was the right time that made criminology stand up to take a look at what we're doing and what we've done to the environment. Green Criminology tells us that our mistreatment to environment is a crime and it also aware us that there are many victims of environmental harm.

STRANDS OF GREEN CRIMINOLOGY

Green Criminology is concerned with ecological Justice, Environmental Justice and Species Justice.

1. **Ecological Justice** that deals with ecosystems in the way in which we're decorating ecosystems that are compromised of biotic and abiotic elements. We are destroying mountaintops for example we are destroying rivers, forests and all the creatures that live within these ecosystems.
2. **Environmental Justice** deals with basically humans and the disparities and environments for different population groups whether it's children, the poor, the vulnerable the dispossessed indigenous people.
3. **Species Justice** deals with what's happening to animals. They are being traded legally and illegally and are being abused. Species justice is there to confront animal abuse. It is concerned with the Fundamental issue to the planet such as ecocide which is basically the human life destruction as well as the harm to well beings of species.

IMPORTANCE OF GREEN CRIMINOLOGY

- The importance of what green criminology is that it is acting as public advocate on behalf of nature, on behalf of the environment and trying to stop prevent and protect the Earth from environmental harm.
- Also, by adding it in academics, it tries to train a whole new generation of people to think differently about the planet.
- We must talk about eco justice, we must give thought to an eco centric prospective on our relationship with nature. If we know climate change is happening, if we know that its human caused, then the question is why is it still happening. Because we have foreknowledge of consequence that's where criminology comes in and it comes up with the concepts such as ecocide, that we're destroying the planet, we have concepts such as carbon criminals by which in other words we can actually pin point the specific industries and the specific individuals.
- In fact we are destroying the planet in a sustained systematic way. So green criminology looks at the questions of environmental harm. It looks at not only in terms of climate change but also look at plastics and oceans, water theft. Increasingly water theft associated with droughts, increasingly drought is associated with climate disruption and climate change and so on. So, Green Criminology start making connections between what's happening to the natural environment and what we as a society can do to intervene to mitigate and adapt to those changes.

NEED OF GREEN CRIMINOLOGY

The concept of green criminology is not an age old term. It has come into existence around 30 odd years back but it has now become a burning topic as it directly concerns with the environment we live in. Most Important issue today is the question of silent climate change. Climate change is radically altering the planet every second and every few weeks we hear about the next latest superstorm or super typhoon or super draught or super flood and it is fundamentally changing the game for all of us. It is the crucial issue today and Green Criminology is thus intervening to talk about those dirty industries which are fracking i.e. oil and gas companies are contributing to the carbon emission that are leading to the degradation of environment and causes global warming. Green Criminology frame climate change in the terms of

ecocide that is the destruction of everything that we know and love.

There are some facts and figures which will make one understand that how serious the situation right now is and why we need green criminology to come for rescue of human beings. Further the chapter discusses the issues of climate change and sustainable development.

➤ **FACTS AND FIGURES**

- **Earth Overshoot Day:** It is the day when human consumption level overshoot the Earth's regenerating capacity of its natural resources. This year it was observed on July 29, 2019, 2 months earlier than previous year, making it the earliest overshoot day till now. According to Mathis Wackernagel, a Swiss-born sustainability advocate and President of Global Footprint Network, an international sustainability think tank, at American consumption level, 7 billion people need 3.9 Earths to survive.
- **Groundwater Management System** is one of the most important water sources in India accounting for 63% of all irrigation water and over 80% of the rural and urban domestic water supplies. In fact, the United Nations Educational, Scientific and Cultural Organization (UNESCO) World Water Development Report states that India is the largest extractor of groundwater in the world. According to reports, among UT's, Puducherry has the maximum overexploited groundwater units which is around 25%. Among states, Punjab is on No.1 with 76 % of over exploitation of groundwater followed by Rajasthan(66%) and Delhi(56%) and Haryana(54%)
- **Thawing of Permafrost:** Permafrost is ground which includes rock or soil. Top Layer of soil has this permafrost. For more than two years it remains at or below freezing point of water. In the whole process, Co₂ and Methane gets trapped in between. Found at high altitudes, this permafrost is melting in Russia and it is the warning sign of drastic climate change due to global warming and green house effect.
- 70 % of world population is dependent upon agriculture. Agriculture and its related activities is the largest contributor of green house gases which is around 70%.
- To manufacture 1 T-shirt and 1 Pair of Jean, it takes around 20,000 litres of water. The India's Textile industry is thriving to reduce this consumption.

- Due to collective efforts of India and China, the system of INDC (Intentionally Nationally Determined Contributors) came in 2014 under which countries were supposed to tell the production level of carbon emission in their respective countries. India is ranked 3rd only after US & China in terms of its carbon emissions. India's intended nationally determined contribution state that India will lower emission intensity of its GDP by 33-35%. If the present levels of Carbon Emissions are sustained and even if INDC is completely implemented, the average annual increase in Earth's Temperature would be around 3.5 degree Celsius by 2050.

- Coal Consumption of India today= 15 Times Used by UK and USA years before when they were in developing stage.

➤ **CAUSE OF CLIMATE CHANGE**

According to ancient Civilization, the entire universe including humans is made up of 5 Basic elements land, air, water, fire and ether. And human have taken upon themselves through their actual actions to degrade each and every element out of these five.

• **Single Use Plastic**

Every time a new technology or an invention comes up in scientific world, it is always posed as the game changer, the same happened with plastics. Earlier in 1920, it was said that buildings, cars and roads will be constructed with the help of Plastic. It was shown that it is very beneficial but the only ultimate role that it plays is to devastate our environment. The same can be said for single use plastics as well as Genetic Modified Crops (Corn, Wheat flour, BT Cotton, BT Brinjal). It is a direct attack on indigenous species. GM Crops are robust and steady and in competition with them, native species loses and when there will be breeding of GM crops and Original Crops, the next one will not be either of them and thus a threat to Indian Species.

In India, ban on plastic that came on January, 2017 is not effective as there are neither guidelines nor law that could create a deterrent effect. In producing plastic waste, India ranks four. There could be many solutions like imposed by Countries like France, Rwanda, China, Ireland and Sweden where either there is Plastic ban law or plastic tax is imposed or the prices of plastic bags are kept way too high.

- **Global Warming**

The key role in the global warming is played by release of harmful gases from industries. Air Act, 1981 is a major enactment in the field to tackle the problem of air pollution. For the proper implementation of the act, the SPCB (State Pollution Control Board) is given power of court to inspect and take emergency measures. In Oleum Gas Leak case (M.C. Mehta v. Union of India and Others Writ Petition (Civil) No. 12739 of 1985), the industry was held accountable for the action and the principle of Absolute Liability was laid down. This judgment resulted in Environment Protection Act, 1986 and the policy to abate pollution was also established. In The Ganges Pollution Case (Writ Petition (Civil) No. 3727 of 1985) & The Tajmahal Case (M.C. Mehta v. Union of India and Others Writ Petition (Civil) No. 13381 of 1984) also, the industries operation stopped till they were not operated in environment friendly manner. However despite the number of judicial precedents, the flouting of the law continues to exist.

Also, there is an unnoticed aspect which not only affects the environment but also the health simultaneously. Cooking food on Chulha releases Carbon Monoxide, CO₂ and Methane which result in global warming. Moreover, females inhale it and collect Carbon diseases like asthma, cardiovascular diseases and TB. Though there are various schemes launched and laws are made in favor of woman, yet they continue to suffer. Woman empowerment must be there as that will not only give growth to her or progress to country but in long run will help to reduce global warming level.

- **Coral Beads**

One of the major concerns in bringing climate change is Micro beads which effects marine life, coral reefs, top layer of marine life and thus affecting the life cycle of the earth. Coral reefs act as barrier between ocean and land. The reason behind clean water is coral reefs. Microbeads are the tiny plastic spheres used as exfoliants in face wash, toothpaste, deodorant and just about any other beauty products on the shelves. They also don't biodegrade, so they stay in the ground and waterways virtually forever. A large volume of microbeads are winding up in all the wrong places. Researchers at the University of California Davis and Oregon State University found that roughly 8 trillion microbeads are currently finding their way into streams and oceans in the U.S. every single day. That's enough tiny plastic balls to cover more than 300 tennis courts. And that's only 1 percent of the total microbeads discharged each day.

Though there is recognition of the harmful effects of micro beads, yet no any law is made to tackle this issue. Delhi based lawyer Ashwini Kumar who took this matter to NGT in 2016, could not get any fruitful result out of it. The use of micro beads in cosmetics, textiles is still continued.

- **Temperature Inversion**

Temperature Inversion impacts the environment badly. This is also boosted by stubble burning which has also been done recently by farmers of Punjab and Haryana. The burning of fire crackers ignites the situation. The result is suspension of Particulate Matter 2.5 and 10 in the environment which causes eye irritation and breathing problems as well. The acid rain is another ugly outcome which damages yield and crops. Despite ban and imposition of penalties, the incidents of stubble burning have increased rapidly. Though there is not any punishment for stubble burning yet it has actually become capital punishment for Delhi.

➤ **IMPACT OF CLIMATE CHANGE AND GLOBAL WARMING**

- Submerging of Islands: This will impact the livelihood of people living on islands as they will get submerged by 2050.
- Floods and Famines: On one side we have urban floods in Chennai, Patna and on the other side states like Andhra Pradesh, Telangana and some parts of Tamil Nadu and Madhya Pradesh are fighting with famine. It directly affects the agriculture and farming.

The erratic rainfalls are all result of industrial revolution in the developed countries or the western world of whose burden is now on the shoulders of developing world and its colonies.

Climate change is big issue that humanity is facing at present which if not tackled would make the sustainance of life on Earth difficult. We observe increase in temperature every year, still there is deforestation continuing, The Air Quality Index is getting poorer day-by-day, still the industries are focusing on making profits only, the land is being degraded, still the use of pesticides and fertilizers and incidents of stubble burning are not being stopped. It is not that we do not have laws or enactments to have sanction, there is punishment provided under various legislations like Air Act, 1981 and Water Act but the loopholes are designed by the industries. Since, the penalty imposed on them is way less than the profits they make, they prefer to pay fine instead of obeying the law.

SUSTAINABLE DEVELOPMENT AND THE LAW

Since the beginning of time, man and nature have been in a balance controlled and regulated by nature itself. In the current scenario, the man is taking over this control and not just ruining the future of planet but also of himself. The nature provided for the needs of entire set of species – man and his hegemony has left to a resource crunched Earth. We have maintained the balance, usurped resources assume the position at the top in the food well. By this, ‘anthropogenic’ activity, man has lead to a situation where, imagining economic growth and development without saving the environment has become next to impossible. What would then be the solution to this crisis & the scientists and anthropologists find the term, common in use nowadays, called sustainable development. The world has shifted it’s approach from 1930s crony capitals phase world wars and a couple of more hurdles to reach where it is today. Theses economic hurdles did not merely have impact on the socio-economic life of a common man but also to the environment that we lived in. No one can deny the harmful effects of industrialization during the nineteenth century or the black winters of London or heavily infused particulated matters Solutions (PMs) in the United States. During this industrial revolution, rawmaterial was taken from India, China, Asia and Africa to the industries of US and Europe to achieve economic growth. This all was done at the cost of Environment. This period saw a vicious cycle where man while neglecting his environment went on to achieve economic growth in turn harming the environment itself that we lived in which directly had repercussions on the health of individuals. The term sustainability came in 1992 for the first time in Rio De Janerio- Reo Summit. Manmohan Singh in 2012 in Earth Summit Conference on Sustainable Development brought India on forefront and gave the term Green Economy which envisages concept of Green Bonds (Agriculture Bonds for organic farming) and Green Technology in its ambit.

This all presents a picture that Injustice to Environment is being caused by homo sapiens since decades but it was not given the importance it required. One side we talk about the Sustainable Development, the other side deals Like US-India Nuclear Deal, 2015 are taking place under 123 Agreement in which law pertaining to liability of the companies and countries under FDI is not designed. In the absence of such legal framework, upon whom will the liability be imposed in case of any unfortunate accidents. While establishing the

Nuclear Power plants in India, we need to understand Green Criminology and think about environmental and species justice.

II. SUGGESTIONS

Green Criminology helps us to recognize the actions which are dangerous for the future of Mother Earth. We also need to understand that the resources we are consuming today are not the heritage that we have inherited from our forefathers but it is the loan actually that we have taken from future generation. Development can be sustained for future generation and for this Law must come in front, preventive measures must be taken. The various solutions in different fields that can be adopted are discussed below.

- **Status of Crime:** Actions to be taken against the social norms and new crimes should be recognized which are committed under the veil of social norms and certain white collar crimes. The law of Torts in Common law must recognize the civil wrongs which tamper with the Environment. Stubble burning, use of microbeads should be banned. There should be inspection of industries every 3 years and all the equipments which need replacement must be changed. Stringent laws should be there and strict adherence to the rules and regulations is required. Strict application of already existing provisions should be there like PUC (Pollution Under Control) should be done every 6 months.
- **National Guidelines** on Economic, Social and Environmental Responsibility of Business, 2018 must be followed by all the corporations industries and MSMEs.
- 1. **Hydropodnics:** New concept of Agriculture called Hydropodnics must be promoted. Hydroponics is a subset of hydroculture, which is a method of growing plants without soil by using mineral nutrientsolutions in a water solvent. Terrestrial plants may be grown with only their roots exposed to the nutritious liquid, or the roots may be physically supported by an inert medium such as perlite or gravel.

Inventions could be negative as well as positive. The positive inventions can provide solution to the degradation. The concepts like hydropodnics should be introduced and promoted. The young minds of the nation with the help of science can find solution to the problems if the present generation will give them an environment safe to breathe.

2. **Reducing Carbon Emission Level:** We have to bring down Carbon Emissions upto a mark where the Average Annual temperature of the Earth has only increased by 2 degree Celsius as compared to Pre Industrial Revolution Levels. A coherent approach to Green Criminology can only be constructed when there are global standards regarding the environment; Industries then need to function as per those standards.
 - **National Green Tribunal:** It was held in the case of Subhash Kumar v. State of Bihar 1991 AIR 420 that Right to Life includes right to healthy Environment. National Green Tribunal owes its origin to Article 48-A of the Constitution of India, 1950 which provides that Right to live in a healthy environment is a fundamental right of an individual. The Tribunal is made to ensure speedy and expeditious disposal of cases while protecting the environment. However, it attracts a long list of criticism with respect to jurisdiction, subject matter restricted to only environment and not point source of pollution and silence over Payer's Liability. With back log of the cases, NGT no doubt has played its role very well in environmental matters but it needs to be strengthened more for better results. Green benches should be established in Indian High Courts dealing specifically with environmental cases.
3. **Waste Management:** Solid Waste management rules of 2016 must be adhered with. Recently, with the efforts of OECD, a new approach of extended produce responsibility is being employed to curb the waste especially e-waste. However solid and supportive legislative framework needs to be designed.
4. **C-Sequestration: Carbon sequestration** is the process involved in carbon capture and the long-term storage of atmospheric carbon dioxide or other forms of carbon to mitigate or defer global warming. It has been proposed as a way to slow the atmospheric and marine accumulation of greenhouse gases, which are released by burning fossil fuels. This will die out the concept of global warming and we can live tensionless for another 1000 years.
5. **Saline Agriculture:** Plants generally cannot survive in Lime water. However, Mangrooves, phytoplantons and Pokkali Rice are salt tolerant. They are the examples that salt tolerant Agriculture is possible. Also, salt tolerant grass Kelp can contribute to fight

global warming. This Type of agriculture can utilize the land and water which is unsuitable for salt sensitive crops. Water Salinity increases as the water gets evaporated. Recently in April, 2019 scientists invented a salt tolerant variety of rice using a vitamin called Inositol which can withstand salinity as much as half of that of the world oceans.

6. **Better Use of Land and Ocean:** Rooftop Farming, Tray farming-Multilayer farming, Ocean farming are the future. These should be adopted and we should learn from countries like Japan who makes a judicious use of fellow land. We only have one example at nearby place of Mango Farming in Chandigarh. The sad part is that in India we do use the land but only for beautification and not to generate revenue.
7. **Community Service:** Introducing Community service as punishment in the criminal justice system. It is the future of punishment. When offence is punishable with imprisonment less than 7 years or fine, then emphasis should be on providing compensation to the victim in form of money and to the society in form of community service. State TR. PS. Lodhi Colony v. Sanjeev Nanda (Criminal Appeal No. 1168 of 2012) is an example where accused was directed to do community service for 2 years to be arranged by Ministry of Social Justice and Empowerment.

III. CONCLUSION

Green Criminology actually though not an old concept but it advocates for the age old practices which our forefathers use to perform i.e. to save nature and environment, plants and trees. Due to increased industrialization, deforestation, air pollution, water pollution and land pollution, green criminology has to come to protect the environment by recognizing all the legal and illegal acts which are contributing to degradation of land and environmental pollution. The first challenge people living on land faces of Development v. Environment. We as the residents of Earth, need to understand that there is nothing to hold back Earth except roots, plants, trees etc. The land of forest is being converted to deserts in an era where desertification in itself is a biggest challenge. UN convention to combat Desertification gives stringent measures and is legally binding as well. In such a situation, Mongolia has given world a great example by transforming a cold desert known as Kubuqi desert into a forest. On the other hand, there is also a recent example of Amazon Forest where

in August alone, deforestation more than tripled to 1,700.8 square kilometers (657 square miles).

Various organizations and governments around the world are implementing the schemes and introducing new guidelines. Atal Bhujal Yojana under Ministry of water resources was implemented with the help of World Bank to work on:

1. Sustainable ground water management system.
2. Imbibe Community Participation.

Another Scheme PAHAL has been brought up by Ministry of Petroleum and Natural gas under which women are provided LPG subsidy. It will reduce the usage of chulha and hence reduction in Carbon emission will be there. This is how the woman empowerment can help to decrease the level of global warming. Further, the Odd-Even Scheme implemented in Capital of the Country also deserve applaud.

However, despite all such plans and programs, the facts and figures show that efforts made by human being are not enough to deal with the present situation. We have to use the natural resources judiciously and in compliance with the legal provisions. There has to have strict punishments and proper legal framework and the man should not be on the wrong side of law. Ex-Prime Minister Manmohan Singh who propounded Green Economy advocated way back in 2012 that entire region of the Earth should work on it which includes organic farming. GDP numbers should not be pushed up at the behest of environment. Worshipping the sacred groves (peepal tree, banyan tree, Triveni, Basil) was nothing but indirectly saving the environment. This should be given as much as importance as we give to curbing inflation. Hindus, by paying respect to nature, always remembered its value. They never destroyed their environment. Orthodox Hindus even today begs for pardon, before putting their feet on the ground when they wake up in the morning. It is not that environment is not given attention, we have many no. of judgments, where SC has taken front to save the environment. Eminent lawyers like M.C. Mehta have brought the cases into light wherever there was injustice being caused to environment. The landmark cases include Rural Litigation and Entitlement Kendra v. State of U.P. & Others 1985 AIR 652.

To solve out the problem of environmental degradation, it should be taken at an individual level. Rather than expecting from someone or asking someone to work for the betterment of environment and save planet, one should focus on doing one's bit. This is really personal. This whole exercise of green criminology and looking at

environmental harm is a personal exercise for every single person involved and the truth is that each and every individual is involved. The reason why is that it is our planet. This is a planet that we live on, that where our children live on and where our grandchildren live on. It is the same planet which a dog shares with me. The garden out back in a house is a part of it, the mountain, the rivers is part of it. We must protect and cherish the things that we love and that include the non-human as well as the human.

REFERENCES

- [1]. Frank, Nancy & Michael J. Lynch 1992 Corporate Crime- Corporate Violence, Alabny, NY: Harrow and Hesten
- [2]. South, Nigel; Beirne, Piers (May 1998). "Editors' Introduction". *Theoretical Criminology*. 2 (2): 147–148. doi:10.1177/1362480698002002001. ISSN 1362-4806
- [3]. Water (Prevention and control of Pollution) Act, 1974
- [4]. Air (Prevention and Control of Pollution) Act, 1981
- [5]. National Green Tribunal Act, 2010
- [6]. National Guidelines on Economic, Social and Environmental Responsibility of Business, 2018
- [7]. <https://www.livemint.com/Opinion/h2Rim5gC7OIiFk4PvxIWK/Opinion--Indias-neglected-groundwater-crisis.html>
- [8]. <http://www.fao.org/news/story/en/item/216137/icode/>
- [9]. <https://thelocalindian.com/environment/jains/>
- [10]. https://en.wikipedia.org/wiki/Intended_nationally_determined_contributions
- [11]. <https://swachhindia.ndtv.com/plastic-ban-india-can-learn-countries-6161/>
- [12]. <https://eco-intelligent.com/2018/07/14/air-act-1981-an-overview/>
- [13]. <https://www.newsweek.com/united-states-just-banned-microbeads-those-tiny-plastic-disasters-your-face-410617>
- [14]. <https://www.news18.com/news/india/world-environment-day-despite-being-banned-in-cosmetics-microplastics-still-clog-indias-store-shelves-and-waters-1769603.html>
- [15]. https://www.business-standard.com/article/pti-stories/stubble-burning-has-become-capital-punishment-for-delhi-119110601455_1.html

- [16]. https://en.wikipedia.org/wiki/India%E2%80%93United_States_Civil_Nuclear_Agreement
- [17]. http://www.mca.gov.in/Ministry/pdf/DraftNationalGuidelines2018_20062018.pdf
- [18]. <http://www.indiaenvironmentportal.org.in/content/427824/solid-waste-management-rules-2016/>
- [19]. <https://www.2030spotlight.org/en/book/1883/chapter/sdg-12-initiatives-reduce-production-and-consumption-plastics>
- [20]. Hodrien, Chris (October 24, 2008). Squaring the Circle on Coal – Carbon Capture and Storage. Claverton Energy Group Conference, Bath. Archived from the original (PDF) on May 31, 2009. Retrieved May 9, 2010
- [21]. <https://www.nap.edu/read/1489/chapter/2>
<https://www.researchstash.com/2019/04/18/salt-tolerant-rice-variety/>
- [22]. <https://www.drawdown.org/solutions/coming-attractions/ocean-farming>
- [23]. <https://www.unccd.int/convention/about-convention>
- [24]. <https://archive.shine.cn/feature/In-Kubuqi-turning-vast-desert-into-a-forest/shdaily.shtml>
- [25]. <https://pradhanmantriyojana.co.in/atal-bhujal-yojana/>
- [26]. <https://economictimes.indiatimes.com/news/politics-and-nation/delhi-odd-even-scheme-starts-today-from-8-am/articleshow/71884541.cms>