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Environmental Degradation: Causes and Consequences

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Abstract

The subject of environmental economics is at the forefront of the green debate: the environment can no longer be viewed as an entity separate from the economy. Environmental degradation is of many types and have many consequences. To address this challenge a number of studies have been conducted in both developing and developed countries applying different methods to capture health benefits from improved environmental quality. Minimizing exposure to environmental risk factors by enhancing air quality and access to improved sources of drinking and bathing water, sanitation and clean energy is found to be associated with significant health benefits and can contribute significantly to the achievement of the Millennium Development Goals of environmental sustainability, health and development. In this paper, I describe the national and global causes and consequences of environmental degradation and social injustice. This paper provides a review of the literature on studies associated with reduced environmental risk and in particular focusing on reduced air pollution, enhanced water quality and climate change mitigation.

Keywords: Environment degradation; consequences; pollution and climate.

Introduction

The environment affects our health in a variety of ways. The interaction between human health and the environment has been extensively studied and environmental risks have been proven to significantly impact human health, either directly by exposing people to harmful agents, or indirectly, by disrupting life-sustaining ecosystems (**Remoundou and Koundouri, 2009**). Environmental degradation is the deterioration of the environment through depletion of natural resources such as air, water and soil; the destruction of ecosystems and the extinction of wildlife. Environmental degradation may be defined as any change or disturbance to the environment perceived to be deleterious or undesirable. Environmental degradation is one of the Ten Threats officially cautioned by the **High Level Threat Panel of the United Nations**. The **United Nations International Strategy for Disaster Reduction** defines environmental degradation as “*The reduction of the capacity of the environment to meet social and ecological*

objectives, and needs". The primary cause of environmental degradation is human disturbance. The degree of the environmental impact varies with the cause, the habitat, and the plants and animals that inhabit it. Humans and their activities are a major source of environmental degradation. (Wikipedia.com)

Worldwide the greatest effects on the health of individuals and populations result from environmental degradation and social injustice. The two operate in consort. (Martin Donohoe, 2003). Causes include overpopulation, air and water pollution, deforestation, global warming, unsustainable agricultural and fishing practices, overconsumption ("affluenza"), maldistribution of wealth, the rise of the corporation, the Third World debt crisis, and militarization and wars. Mining is also a destructive development activity where ecology suffers at the altar of economy. Scientific mining operations accompanied by ecological restoration and regeneration of mined wastelands and judicious use of geological resources, with search for eco-friendly substitutes and alternatives must provide sensational revelation to the impact of mining on human ecosystem (Singh and Chauhan, 2010).

Consequences include increased poverty, overcrowding, famine, weather extremes, species loss, acute and chronic medical illnesses, war and human rights abuses, and an increasingly unstable global situation that portends Malthusian chaos and disaster. Unfortunately, most of the world's governments, guided by self-interest (or self-preservation) have adapted too slowly to environmental changes and as such face decreasing internal stability, their health care systems in crisis. The report also estimates that 24% of the global disease burden (healthy life years lost) and 23% of all deaths (premature mortality) are attributable to environmental factors, with the environmental burden of diseases being 15 times higher in developing countries than in developed countries, due to differences in exposure to environmental risks and access to health care.

The major cause of the environmental pollution are modern urbanization, industrialization, over-population growth, deforestation etc. Environmental pollution refers to the degradation of quality and quantity of natural resources. Different kinds of the human activities are the main reasons of environmental degradation. These has led to environment changes that have become harmful to all living beings. The smoke emitted by the vehicles and factories increases the amount of poisonous gases in the air. Mostly, we can see pollution in urban areas where population is increasing rapidly. The waste products, smoke emitted by vehicles and industries are the main causes of pollution. Unplanned urbanization and industrialization have caused water, air and sound pollution. Urbanization and industrialization help to increase pollution of the sources of water. Similarly, the smoke emitted by vehicles and industries like Chlorofluorocarbon, nitrogen oxide, carbon monoxide and other dust particles pollute air. and another cause of environmental degradation is sound pollution. The main cause of sound pollution are vehicles, loud speaker, mill etc. the excessive use of natural resources diminishes these resources and creates imbalance of the environment. This results in the over consumption of natural resources. Deforestation, over use of pesticides, chemical fertilizer and insecticides, congested housing or unmanaged urbanization, industrialization and production of litters, sewages and garages etc. are the major reasons to deteriorate quality of the environment. Pressure of population is awful in town which results air, water and sound population too. Deforestation provokes the wildlife and other organism to the verge of extinction. The forest areas has been cleared for agricultural land, settlement and to collect the useful herbs. This results in environmental degradation. Global warming is another result of environmental degradation. The temperature of the earth is rising warmer and warmer and due to rise in temperature, the polar icecaps melting and the ice an the colder regions is not thick as it was before. Many species are lost day by day due to various activities of the human beings. The life of the creature will be in danger if environment goes on deteriorating in the same way. The report also estimates that 24% of the global disease burden (healthy life years lost) and 23% of all deaths (premature mortality) are attributable to environmental factors, with the environmental burden of diseases being 15 times higher in developing countries than in developed countries, due to differences in exposure to environmental risks and access to health care. So, to live happy and prosperous life we must conserve our environment and should emphasize on Environmental Degradation and its effects.

Air pollution

Air pollution is unfortunately the common causes of environmental degradation. Pollution introduces contaminants into the environment that can maim or even kill plant and animal species. Industry and automobiles are the primary and secondary contributors to air pollution worldwide (Kay, 1999). Air pollution is a major environmental risk to health and is estimated to cause approximately two million premature deaths worldwide per year [24]. A reduction of air pollution is expected to reduce the global burden of disease from respiratory infections, heart disease, and lung cancer. As air quality is a major concern for both developed and developing countries, a large number of empirical studies attempting to monetize the benefits to health generated by improved air quality have appeared in the literature worldwide (Kyriaki Remoundou and Phoebe Koundouri 2009). For every gallon of gasoline manufactured, distributed, and then burned in a vehicle, 25 pounds of carbon dioxide are produced, along with carbon monoxides, sulfur dioxide, nitrogen dioxide, and particulate matter; these emissions contribute to increased global warming (Martin Donohoe, 2003; Mark, 1997). In the United States, there is one car for every two people, in Mexico one for every eight, and in China one for every 100. The global auto population is expected to double in the next 25–50 years (Mark, 1997). The average number of miles traveled/car/ year in the United States has more than doubled, from 4570 in 1965 to 11,400 in 1999 (Amicus Journal Staff, 1999a). The average fuel efficiency of US automobiles has decreased over the last few years, due in part to stagnant fuel economy standards, relatively low oil prices, and a growing market for low efficiency pick-ups, mini-vans and sports utility vehicles (SUVs, which now outsell cars) (Martin Donohoe, 2003). Current standards are 27.5 miles per gallon (MPG) for passenger cars and 20.7 MPG for light trucks and SUVs (Sierra Magazine Staff, 1997b; PSR Environment & Health Update, 1999a). The nation's 3.3 million diesel trucks and buses, rolling smokestacks, account for almost 3/4 of the estimated cancer risk from auto-related air pollution (Mark & Morey, 2000). In 1997, the Environmental Protection Agency (EPA) proposed new rules that will require diesel manufacturers to build cleaner engines and the oil industry to produce much cleaner fuel. Under these rules, the minimal mile-per-gallon requirements for SUVs could soon match those of automobiles (Kluger, 1999), although the current administration has opposed these changes. The main conclusion from the literature review is that some forms of air pollution, notably inhalable particulate matter and ambient lead, are serious matters for concern in the developing world since they are associated with severe health damages in monetary terms. (Martin Donohoe, 2003).

Water pollution

Microbe contamination of groundwater due to sewage outfalls and high concentration of nutrients in marine and coastal waters due to agricultural runoff are among the most serious threats. Contact with unsafe drinking or bathing water can impose serious risks (both acute and delayed) to human health. While tap water is subject to treatment and is required to meet detailed testing and purity standards, it is not always disinfected of diarrhea inducing microorganisms, as illustrated by waterborne disease outbreaks such as that caused by *Cryptosporidium* in Milwaukee in 1993, which affected over 400,000 people. Furthermore, fecal coliforms are not prohibited in bottled water (Nation Staff, 1996), and water bottled and sold within the same state is not subject to Food and Drug Administration standards (Gross, 1999).

Today 40% of waters are unfit for fishing or swimming, and levels of mercury in fish in 40 states. Clean Water Act of 1972 states to publish a list of all bodies of water that fail to meet water quality standards, and for the states to set pollution limits and scale back pollution in watersheds until standards are met, compliance is negligible and enforcement weak. Discharge of untreated sewage is the single most important cause for pollution of surface and ground water in the India. There is a large gap between generation and treatment of domestic waste water in the India. The problem is not only that India lacks sufficient treatment capacity but also that the sewage treatment plants that exist do not operate and are not maintained.

In a National Resources Defense Council study of the quality of bottled water (Nation Staff, 1996), approximately one-fifth of samples exceeded bacterial purity guidelines and/or safe levels of arsenic or other synthetic organic chemicals (Amicus Journal Staff, 2000a). Between 25% and 40% of bottled water was merely repackaged municipal tap water (Nation Staff, 1996). Dwight *et al.* apply the cost of illness approach and Shuval calculate the disability-adjusted life years (DALY), to quantify the health burden from illnesses associated with exposure to polluted recreational coastal

waters. India is recognised as has having major issues with water pollution, predominately due to untreated sewerage. Rivers such as the Ganges, the Yamuna and Mithi Rivers, all flowing through highly populated areas, thus polluted. Effluents are another by-product of industries which poses threat to the environment, leather and tanning industries, petroleum industries and chemical manufacturing industries create major waste products which are released directly into nearby streams without treatment, creating river pollution and causing harm to aquatic life. The majority of the government-owned sewage treatment plants remain closed most of the time due to improper design or poor maintenance or lack of reliable electricity supply to operate the plants, together with absentee employees and poor management. According to a World Health Organization study, out of the India's 3,119 towns and cities, just 209 have partial sewage treatment facilities, and only 8 have full wastewater treatment facilities. Over 100 Indian cities dump untreated sewage directly into the Ganges River.¹ Investment is needed to bridge the gap between 29000 million litre per day of sewage India generates, and a treatment capacity of mere 6000 million litre per day.

Toxic pollutants

Every year 25 billion pounds of toxic pollutants are added to the environment by factories and mines (Fagin & Lavelle, 1999). Additionally, 2.2 billion pounds per year of pesticides (eight pounds per citizen) are sprayed on our crops (Natural Resources Defense Council Staff, 1995). Annual world production of synthetic organic chemicals has grown exponentially since the early 20 century. The vast majority of artificial chemicals have never been screened for toxicity. Chemical manufacturers are not required to prove safety; instead the legal burden is on the government to prove that a product is dangerous, and testings only done after a substance has been impugned. Certain pesticides that are illegal in the United States are used in other countries on food which is then imported back into the US, exposing Americans to the same health risks faced by individuals in those other countries (Satcher, 2000).

Two million children in the United States are at risk of neurological damage due to elevated lead levels (Hattam, 1998). Other toxic pollutants include dioxin, a by-product of the manufacturer of defoliants such as “Agent Orange”, which is currently produced largely as a byproduct of medical incineration of polyvinyl chloride in intravenous bags and tubing; polychlorinated biphenyls; nitrates and nitrites, mercury and methylmercury; arsenic; trichloroethylene; and vinyl chloride. “Agent Orange” has been lined to diabetes, chloracne, porphyria cutanea tarda, soft-tissue carcinomas, multiple myeloma, and lungand prostate cancers (Maugh, 2000). Forty-five million US citizens live within 4 miles of one of the 1193 Superfund sites (Pope, 1994). These sites, as well as waste dumps and incinerators, are more common in lower socioeconomic status neighborhoods, such as the “Cancer Belt” between Baton Rouge and New Orleans, Louisiana (Mackillop, Zhang-Salomons,)

Fertilizers and pesticides used in agriculture in northwest have been found in rivers, lakes and ground water. Flooding during monsoons worsens India's water pollution problem, as it washes and moves all sorts of solid garbage and contaminated soils into its rivers and wetlands.

Deforestation

Tropical forest constitutes seven percent of world land surface area, yet contains over 50% of all plant and animal species. Half of all tropical forests have been destroyed; by 2010, three-quarters may be lost. Additionally, 20–50% of global wetlands have been destroyed (54% thus far in the US, with an additional 115,000 acres/year), (Sierra Club Staff, 2000). Loss of old growth forest has recently particularly affected the Pacific Northwest and British Columbia, known as the “Brazil of the North”, an allusion to the devastation wrought by the unsustainable, rapacious logging practices of multinational corporations in the Amazon.

Solid waste pollution

Trash and garbage is a common sight in urban and rural areas of India. It is a major source of pollution. Indian cities alone generate more than 100 million tons of solid waste a year. Street corners are piled with trash. Public places and sidewalks are despoiled with filth and litter, rivers and canals act as garbage dumps. In part, India's garbage crisis is from rising consumption. India's waste problem also points to a stunning failure of governance.

In 2000, India's Supreme Court directed all Indian cities to implement a comprehensive waste-management programme that would include household collection of segregated waste, recycling and composting. These directions have simply been ignored. No major city runs a comprehensive programme of the kind envisioned by the Supreme Court.

Indeed, forget waste segregation and recycling directive of the India's Supreme Court, the Organisation for Economic Cooperation and Development estimates that up to 40 percent of municipal waste in India remains simply uncollected. Even medical waste, theoretically controlled by stringent rules that require hospitals to operate incinerators, is routinely dumped with regular municipal garbage. A recent study found that about half of India's medical waste is improperly disposed of.

Municipalities in Indian cities and towns have waste collection employees. However, these are unionised government workers and their work performance is neither measured nor monitored.

Some of the few solid waste landfills India has, near its major cities, are overflowing and poorly managed. They have become significant sources of greenhouse emissions and breeding sites for disease vectors such as flies, mosquitoes, cockroaches, rats, and other pests.

In 2011, several Indian cities embarked on waste-to-energy projects of the type in use in Germany, Switzerland and Japan. For example, New Delhi is implementing two incinerator projects aimed at turning the city's trash problem into electricity resource. These plants are being welcomed for addressing the city's chronic problems of excess untreated waste and a shortage of electric power. They are also being welcomed by those who seek to prevent water pollution, hygiene problems, and eliminate rotting trash that produces potent greenhouse gas methane. The projects are being opposed by waste collection workers and local unions who fear changing technology may deprive them of their livelihood and way of life. Along with waste-to-energy projects, some cities and towns such as Pune, Maharashtra are introducing competition and the privatization of solid waste collection, street cleaning operations and bio-mining to dispose the waste. A scientific study suggests public private partnership is, in Indian context, more useful in solid waste management. According to this study, government and municipal corporations must encourage PPP-based local management through collection, transport and segregation and disposal of solid waste.

Global Warming

"The foremost evidence for worldwide climate change has been global warming." It is one of the important factors contributing to environmental degradation and disasters. Evidence indicates that the Earth's climate system is warming in a way that has no precedent in the history of human civilization. The continuing temperature acceleration might break the balance of a human ecosystem that has been long established at a lower temperature." The latest report of the IPCC estimates a rise in the global average surface temperature from 1990 to 2100 of between 1.8° C and 4° C, although it could possibly be as high as 6.4° C. The sea level has risen between 1993 and 2003 at a rate of 3.1 millimeters per year due to melting polar ice caps and seawater expansion (due to warmer climate); rainfall patterns have been changing with increased droughts in some areas and heavier rain in others; glaciers and snow melting have been increasing water in rivers at certain times; winds are increasing in power and cyclones are shown to be increasing in frequency; and ocean temperatures have been rising.

Global warming is likely to influence the average weather patterns by gradual changes in weather patterns and "increased variability of extreme weather events associated with changes in surface temperature and precipitation. In the last few decades, ninety percent of natural disasters have been caused by climate-related natural hazards; and there is scientific evidence that most of them have their roots in global warming. The effects of warming and drying in some regions will reduce agriculture potential and undermine "ecosystem services" such as clean water and fertile soil.⁶⁵ Thus, the environmental impacts as a result of global warming have a deleterious effect on the living environment of large populations, which ultimately leads to mass migration.

Drought, Desertification, and Water Scarcity

Drought and water scarcity is the third main climate change impact that may significantly contribute to climate-related migration. Droughts, desertification, and water scarcity are likely to increase because of global warming. These phenomena are projected to affect about one-third of

the world's current population. Droughts are likely to displace millions of people all over the world, affecting food insecurity and human livelihoods. Sea level rise will extend areas of salinization of groundwater and estuaries, resulting in a decrease in freshwater availability for humans and ecosystems in coastal areas. Moreover, changing precipitation patterns create pressures on the availability of clean water supplies.

Overview of results

To summarize, the following factors were found to be prominent in the environmental degradation. In a majority of the studies discussed above, we found that activities by the rich and powerful were the primary contributing factors forcing groups living at the margins into environment degradation. Environmental degradation poses a significant threat to human health worldwide. Harmful consequences of this degradation to human health are already being felt and could grow significantly worse over the next 50 years. Because environment and health are so intimately linked, so too should be environmental and health policies. It is an area of research which has had little empirical work done to date and offers the potential for substantial work in the future.

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