# ECONOMICS, SOCIAL, LEGAL AND HEALTH IMPLICATIONS

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## Contents





## Summary

Economics should play an important role in public policies about environmental pollution. Empirical information regarding the quantitative impacts and economic losses from environmental pollution can help bring attention to the extent of specific pollution events. However, financial support is inadequate to ensure effective control of pollution by many countries. Poor legislation enforcement by environmental authorities and, hence, compliance by stakeholder groups such as water users is also a problem. In many developing countries, there are no institutional structures or resources to deal with the control of occupational hazards. Noise and exposure to chemicals are among the biggest

threats to workers' health. In some cases, public (and institutional) participation in the protection of the environment is hampered by a difficult socio-economic situation.

Chemicals lie at the heart of most of today's environmental problems. The byproducts of the substances used to improve our health and standard of living have in some instances returned to haunt us by degrading our health and that of plants and animals. In short, our conquest of widespread biological pollution and the increase in our standards of health and material wealth in developed countries have been achieved at the price of the widespread, low-level chemical pollution of the earth.

Global environmental hazards such as air pollution, ozone depletion, climate change, loss of biodiversity, and the cross-border movement of hazardous products and wastes, have adverse impacts on health. These hazards exacerbate the vulnerability of poor countries and communities. In addition, national and local environmental factors directly affect health. National expertise and scientific developments are sufficient for improving pollution control in parallel with economic revival.

## 1. Introduction

Economic development, most often aims to improve quality of life, and, to some extent, most often partially achieves this aim. However, economic development has also frequently resulted in changes in physical and social environments with concomitant adverse impacts on the health and safety of people. Poor planning and regulation of urban growth have led to the overloading of urban infrastructure and services such as shelter, water, sanitation, energy, wastes and transport. Modern practices in agriculture, mining and manufacturing have introduced new chemical and physical health hazards to both the workplace and the general environment. This has resulted in a new set of illnesses that have increased lifestyle-related and psychosocial health problems such as cardiovascular diseases, obesity, hypertension, alcoholism, tobacco and drug abuse, and violence at homes, schools, and workplaces.

The industrial age, starting in the early twentieth century, was the time that toxic exposure first started becoming apparent. With the rise of new inventions, exciting technology, and newly discovered chemicals, the environment started losing the cleanliness and purity it once had. John Ashton, an environmental researcher, wrote: "A hundred years ago, the poisoned vegetation around copper smelters and related industries aroused little cause for concern. In recent times, environmental tragedies have forcefully borne witness to the price paid in terms of human health from the production of the chemical wares of progress." Because safety and chemical awareness in the early 1900s was ignored to make room for technological advancement, society now in the twenty-first century is now reaping the consequences of its ancestors' mistakes.

## 2. Economic implications

Economics should play an important role in public policies about environmental pollution. Empirical information regarding the quantitative impacts and economic losses from environmental pollution can help bring attention to the extent of specific pollution events. Economics is a key method in the evaluation of trade-offs between pollution and economic growth, and the use of scarce resources to manage and control pollution. Although quantitative estimates can lead to controversy, they are necessary in decisions about trade-offs and can help define the bounds of public policy responses. For example, a different set of public policies would be needed to address a specific marine pollution problem that caused $100 000 in losses versus one that caused a $10 million loss.

A growing body of epidemiological studies is identifying substantial economic costs from urban air pollution. Mortality from COPD and ARIs appear substantially higher in developing countries than in developed countries. COPD rates in developing countries may be twice those in the developed world, and ARIs nearly five times.

### 2.1. Economic losses

With the development of society and technology, large amounts of toxic pollutants were introduced into the environment. In some cases these contaminants have caused enormous economic losses. For example, economic losses related to marine pollution consist of obvious reductions in daily beach attendance, and subsequent reductions in user-days or number of beach trips (either being appropriate), lost expenditures, as well as decreases in satisfaction and enjoyment derived from beach use (i.e. net economic value). Much of the shore-based economy is linked closely to marine activities and is dependent upon tourists spending their leisure time and money at the shore during the summer months. Economic losses from recent marine pollution events associated with recreational activities are enormous. During the 1987 and 1988 summer season, marine pollution and debris wash-ups occurred almost simultaneously in New York and New Jersey that resulted in beach closures, decreases in beach use and decreased sportfishing. Aggregate economic losses of the 1988 pollution and washup events to New Jersey were conservatively estimated to range from $379.1 million to $1597.8 million (1987$). In addition, the Hudson River Estuary and New York Bight have been exposed to long-term contamination by toxic substances (PCB, DDT, etc.) that have been detected in finfish from these waters. Effects from eating contaminated fish can result in sizeable economic losses and can provide justification for public policy regarding toxicants in seafood and in the marine environment.

### 2.2. Economic benefits

From the recent scientific findings on the appearance of the ozone holes during the Antarctic spring, and over the Arctic, and those of the Ozone Trends Panel, concern is mounting that emissions of man-made pollutants like CFCs and halons can lead to significant depletion of stratospheric ozone. Depletion of ozone will increase the UV-B at the Earth's surface and will have many adverse effects on people, animals, plants, aquatic life, air quality and materials. CFCs are still increasing in concentration in the background atmosphere. This is in spite of a ban, under the Montreal Protocol, on their production in the developed world since the mid-1990s. Emissions of some kinds of CFCs continue from their large stocks (fixed fire-fighting systems, old refrigeration and air conditioning units) in the developed world and from legal use in an expanding market in the developing world. A review of the Protocol measures requires an appraisal of the costs of substitution of CFCs and halons and the benefits of avoiding ozone depletion. Reducing the use of ozone-depleting substances could have enormous beneficial impacts on human health and the environment in both developed and developing countries. The current state of scientific knowledge makes it very difficult to quantify the magnitude of many of these impacts. Nevertheless, the scientific evidence is mounting that predicted stratospheric ozone depletion will cause increasing1evels of skin cancers, cataracts, immune suppression, and other human health impacts, plus additional effects on plants and animals, among others. This difficulty in economic quantification does not change the basic conclusion of the economics panel that, on a global basis, the monetary value of the benefits of safeguarding the ozone layer is undoubtedly much greater than the costs of CFC and halon reductions. However, developing countries are less able to pay the costs of reducing or phasing out CFCs and halons, and may have other, more immediate concerns such as food supply and economic development. Given the fact that a global CFC reduction is essential for the protection of the ozone layer, diffusion of CFC and halon replacement technology, including recovery and recycling, is necessary and is in the interest of both developed and developing countries alike.



### 2.3. The limits of economics

So far, the quality of water supplied to people in developing countries continues to deteriorate due to lack of funds to maintain and replace existing water supply systems. Due to limited finances for effective pollution control and reclamation measures on a nationwide scale, the only option is to focus on the 'hot spots' as specific environmental priorities. These are very often located in densely populated urban areas.

The costs of reducing or eliminating CFCs and halons depend on a variety of factors including capital costs, research and development costs, operational costs (such as energy and labor costs), and safety and toxicity risks. The development of options for replacing CFCs and halons is progressing rapidly. As economically feasible safe substitutes become available on a global basis, the current costs of CFC and halon reductions are expected to be reduced. Most technical options require initial capital investments, but ultimately, some are less expensive to operate or offer improvements in product quality. The first 50% reduction in the global use of CFCs will require modest new capital investment, will incur little or no net cost, will result in some business disruption, and will require very little capital abandonment. This relatively easy step will be accomplished through reduction in the use of CFCs in the manufacture of flexible foams and as aerosol propellants, the more efficient use of CFCs as solvents, and by reductions in many other applications. Cost estimates for the remaining reductions—mainly in the fields of refrigeration, air conditioning, rigid foam, solvents, and fire protection—vary widely and depend on the availability of near term drop-in and other substitutes, costs of re-engineering equipment and products, and the price, safety and energy efficiency of the substitutes.

Currently, the lack of technical knowledge and financial resources of developing countries inhibits the adoption of certain CFC/halon replacement technologies and the definition and implementation of the best national options for the transition to CFC-free technologies. Some CFC replacement technologies will be adopted in the usual course of economic growth, but at a slow rate. Development assistance will be required in most cases. Funding is needed for the transfer of technology during the transition period because currently available resources are already strained as a result of the world debt problem and the dire economic situation of many countries. Financial assistance can be either bilateral or multilateral, e.g. as a contribution to an international fund.

## 3. Social implications

The potential impacts of development are numerous and cut across many specialist concerns. Most development projects are expected to have beneficial effects on human health by increasing the resources available for food, education, employment, water supplies, sanitation, and health services. Adverse health impacts are most likely to affect the most vulnerable social groups such as the poor, ethnic minorities, women, the elderly and children, since they lack the resources and political power to promote their interests. Such impacts reduce the social and economic benefits expected from the development and transfer the hidden cost to the health sector. This is the advantage of health appraisal at the early stage of a project while the benefits of economic development are felt immediately upon completion of a project, its negative impacts on the environment are only manifested at a much later stage. Thus, political leaders and project proponents are often surprised to find negative environmental impacts showing up five or ten years after project completion.

### 3.1. Loss of natural resources

A relationship can be demonstrated between health, conservation and the protection of forests. Forest fires producing smoke, haze and particulate fall-out in Australia, China, Indonesia and Mongolia caused widespread respiratory problems affecting more than 20 million people.

In 1997, forest fires destroyed about one million hectares of Indonesia's national forests and about 3 million hectares of virgin forests in Mongolia. In Indonesia, the haze produced from several months of burning affected Malaysia, Singapore, southern parts of Thailand and Viet Nam. This caused respiratory problems and acidification in neighboring countries. In urban areas, air pollution from transportation sources is another important source of lead as well as benzene which is a carcinogen.

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