ENVIRONMENTAL REGULATIONS AND STANDARD SETTING

Bhaskar Nath
European Centre for Pollution Research, London, United Kingdom

Keywords: environmental standards; enforcement; regulation; environmental issues; sustainable development; intragenerational and intergenerational equity; political will.

Contents

1. Introduction
1.1. What is an Environmental Standard?
1.2. Why Environmental Standards?
1.2.1. Production, Consumption, and Waste
1.2.2. Environmental Issues and Problems
1.2.3. The North–South Divide
1.2.4. Sustainable Development: A Realistic Hope?
1.3. Sustainable Development and Standard Setting
2. Problems Encountered in Setting Standards
2.1. Economic Considerations
2.2. Scale of the Problem
2.3. The Problem of Secondary Compounds
2.4. Problems of Enforcement
2.5. Political Will
2.6. Where Do We Go From Here?
3. Conclusion
Glossary
Bibliography
Biographical Sketch

Summary

All human activities generate wastes that must be disposed of. When the amounts and/or toxicity of these wastes exceed levels which the regenerative processes of nature can accommodate, the accumulation of material itself, and its interactions with other substances present in wastes and/or in the natural environment, can cause harm both to human health and the environment.

Industrialization is increasingly the dominant modality for socio-economic development worldwide. As a result, both liquid and solid wastes of increasing complexity are being discharged into the environment in ever-increasing quantities. Consequently, both the natural environment and earth's life support systems are being degraded relentlessly.

Setting and enforcing environmental standards—whether voluntary or legal—seeks to regulate and reduce the amounts and/or complexity of wastes discharged to the environment, with the ultimate objective of achieving at least some degree of sustainability. The process is fraught with problems and difficulties, however. These emanate mainly from the tensions between the competing interests of business and

industry on one hand, and environmental protection on the other. Furthermore, while the rich developed countries have the skills and resources to devote to environmental protection through the setting and enforcing of stringent standards, poor developing countries generally cannot do so. Of necessity, their priority is with the mundane concerns of life and living, not environmental protection. Even so, considering that national, regional, and even local pollution issues often acquire global significance in the long term, the setting and enforcement of realistic and effective environmental standards is probably the only way in which at least some meaningful degree of sustainability might be achieved.

1. Introduction

1.1. What is an Environmental Standard?

All human activities generate pollution which contaminates one or more environmental "compartments" (air, water, land, ecosystems). When the concentration of a given pollutant in the environment becomes too high, it can cause serious environmental damage and/or health impacts depending on its toxicity. In order to protect both health and the environment, it becomes necessary to regulate the amount of the pollutant that can be released without causing unacceptable harm to health or the environment. Regulation in this way involves setting a permissible limit, called a standard, on the concentration of a harmful or potentially harmful pollutant which can be released into the environment. Standards are also imposed on all kinds of manufactured goods, processes, consumer goods and services, and other commodities.

As a typical example, the EC Drinking Water Directive stipulates that the maximum permissible concentration of iron in drinking water shall not exceed 200 $\mu g l^{-1}$. This limit of 200 $\mu g l^{-1}$ is a "standard" in this case. It is to be noted that a single-substance standard such as this is seldom stipulated: usually standards cover a range of pollutants. For example, the aforementioned directive sets a standard (permissible limit) for several properties of drinking water, including acidity, color, turbidity, and iron, manganese, aluminum, and lead content.

According to the USEPA, regulation with what are called "primary" standards is carried out to protect health, while "secondary standards" are intended to prevent damage to property and the environment. A geographic area that meets the primary standard criteria (or exceeds them) is called an "attainment area;" an area that does not is called a "non-attainment area."

Clearly checks should be made on polluters to determine whether or not they are complying with a standard, and this is normally the responsibility of the regulatory agency concerned. It is also clear that those who violate a standard must be punished, and that all polluters should be encouraged (through incentives, for example) to keep emission levels below the set standard, for it is only then that the best results can be achieved. In order to be effective, standards must therefore be set and operated within a regulatory framework, and supported by the due processes of law.

1.2. Why Environmental Standards?

Understanding why the setting of environmental standards is now becoming important as never before is dependent upon a thorough understanding of the scope and depth of the damage which human societies are causing to the environment, in their relentless pursuit of what is perceived as socio-economic development. Remarkably even many environmental professionals seem unaware of, or even blasé about, the severity of the environmental consequences of the industrial activities upon which the prevailing socio-economic development model is based: let alone the “man in the street” who is, more likely than not, blissfully ignorant.

To a large extent we are denied a wider appreciation of the likely future consequences of socio-economic development because most of us—especially academics who work in a particular discipline—tend, due to the very nature of our work, to specialize in a relatively narrow subdisciplinary area. This often leads to a kind of “tunnel vision,” emphasizing individual specialisms but denying a proper perspective on the totality of the subject or problem of which these specialisms are mere components. Furthermore science is exclusively concerned with finding *how* things work, and not *why* they work. This approach does not accord with the “real world” of the environment which functions as a delicately balanced “organic whole” composed of a multitude of interacting components, not one of which can be manipulated without affecting the others. Also, it is not clear how a proper understanding of the “whole” could be achieved without knowing both *how* and *why* (Nath ed., 1991).

Sections 1.2.1–1.2.3 below offer an account of the mounting damage being inflicted upon the environment by various human activities, of issues relating to this damage, and of its consequences in terms of both intra-generational and inter-generational equity.

1.2.1. Production, Consumption, and Waste

The following excerpt from the WCED document *Our Common Future* provides much food for thought on the future of earth’s environmental integrity:

The world manufactures seven times more goods today than it did as recently as 1950. Given population growth rates, a five- to ten-fold increase in manufacturing output will be needed just to raise developing-world consumption of manufactured goods to industrialized world levels by the time population growth rates level off next century.

(WCED, 1987, p. 15)

“Today” here refers to the mid-1980s. Increasingly greater production and consumption of goods and services means corresponding increases in the consumption of finite raw materials (notwithstanding recycling and re-use efforts) and energy, and the generation of mounting quantities of post-consumption waste whose safe and proper disposal is becoming increasingly difficult, especially in developing countries.

The origin of this growing problem can be traced back to the “throw-away” consumer culture of North America which began in earnest in the 1950s. It is now pervasive and becoming international in its scope, thanks to the gathering pace of globalization. People everywhere now aspire to an increasingly higher standard of living, inspired by what is perceived as the "American way of life," which they expect to be delivered mainly through industrial development. But can the earth's resources support this open-ended demand for greater production and consumption of goods, which is a necessary pre-condition for ever-rising standards of living in the material sense?

The population of the USA represents only about 5 percent of the world's population. Yet it consumes about 26 percent of the world's resources, and creates about 28 percent of the world's pollution, in order to maintain its "American way of life." Now suppose that it was possible, by some magic, to make everyone in the world enjoy the same standard of living instantly. Could the earth still supply the natural resources that would be needed for this to be possible without seriously compromising the ability of future generations to meet their own needs? And what would be the environmental consequences of this? Would the world still be a fit place to live in? The proposition would appear to be absurd, even viewed from the standpoint of basic thermodynamic considerations. The following excerpt encapsulates our present situation and its extrapolation to the future with regard to relentlessly growing production, consumption, and waste:

Man has wiped out a third of the natural world in the last thirty years and soon will have to start looking for a new planet to live on. . . . The scale of devastation is so great that man will have used up all the Earth's natural resources by 2075. . . . If every human alive today continues to consume resources and produce carbon dioxide at the same rate as the average Briton, we will need to colonize at least two Earths to survive. . . .

Our current rate of consumption is eroding the very fabric of our planet and will ultimately threaten our long-term survival.

(*The Living Planet Report 2000*, World Wildlife Fund)

-
-
-

Bibliography

DeSombre, E. R. 1998. International Environmental Policy. In: B. Nath; L. Hens; P. Compton; D. Devuyst (eds.), *Environmental Management in Practice*, Vol. 1, pp. 361–76. London, Routledge. [An excellent account of how international environmental policies are made and applied, and their limitations.]

George, S.; Sabelli, F. 1994. *Faith and Credit: the World Bank's Secular Empire*. London, Penguin. [This book contains an excellent discussion of the impacts of various World Bank projects in developing countries.]

Glegg, G.; Johnston, P. 1993. The Policy Implications of Effluent Complexity. In: B. Nath; L. Candela; L. Hens; J. P. Robinson (eds.), *Proceedinds of International Conference on Environmental Pollution (ICEP.2)*, Vol. 1. London, European Centre for Pollution Research. [Contains a survey of the chemical composition of industrial effluent discharged to UK coastal and estuarine waters, and considers the policy implications of effluent complexity with reference to the precautionary principle.]

Lesser, J. A.; Dodds, D. E.; Zerbe; R. O. 1997. *Environmental Economics and Policy*. New York, Addison-Wesley. [A very good text, covering a wide range of issues and topics.]

Nath, B. (ed.) 1991. Preface. In: *Proc. Int. Conf. Env. Poll. (ICEP.1)*, Vol. 1. London, European Centre for Pollution Research. [Concise summary of the environmental problems and issues confronting human societies.]

Nath, B.; Talay, I. 1996. Man, Science, Technology, and Sustainable Development. In: B. Nath; L. Hens; D. Devuyst (eds.), *Sustainable Development*, pp. 17–56. Brussels, VUB. [This chapter contains a provocative discussion of the ethical, philosophical and economic background to sustainable development.]

Nath, B.; Stoyanov, S.; Pelovski, Y. 2000. *Sustainable Solid Waste Management in the Countries of the Black Sea Region*. Dordrecht, Kluwer. [This book contains a state-of-the-art report on this subject.]

Oslo and Paris Commissions for the Prevention of Marine Pollution. 1992. *Final Declaration of the Ministerial Meeting*, Annex 2, September 21–22.

Pimentel, D.; Bailey, O.; Kim, P.; Mullaney, E.; Calabrese, J.; Walman, L.; Nelson, F.; Yao, X. 1999. Will Limits of Earth's Resources Control Human Numbers? In: B. Nath; L. Hens; D. Pimentel (eds.), *Environment, Development and Sustainability*, Vol. 1, pp. 3–18. Dordrecht, Kluwer. [This paper examines earth's available resources in relation to population growth.]

World Commission on Environment and Development (WCED). 1987. *Our Common Future. Report of the Brundtland Commission*. Oxford, University Press. [This UN Report firmly placed sustainable development at the top of the political agenda as the only kind of development capable of delivering inter-generational and intra-generational equity.]

Biographical Sketch

Professor Bhaskar Nath received his Bachelor's degree in Civil Engineering from the Indian Institute of Technology, Kharagpur (India) in 1960, followed by a Ph.D. from the University of Wales, UK, in 1964. In 1983 he was awarded a D.Sc. degree by the University of London for his outstanding original research (according to citation) in numerical mathematics. In 2001 he was awarded the *Doctor Honoris Causa* (Dr.H.C.) by the University of Chemical Technology and Metallurgy, Sofia (Bulgaria), for his contribution to environmental education.

Prof. Nath taught at the University of London for twenty-seven years till 1994. Currently he is the Director of the European Centre for Pollution Research (ECPR) and Executive Director of the International Centre for Technical Research, London. He is also consultant to a number of UK and US companies.

He has organized eleven international postgraduate teaching and training programs and four major international conferences and fifteen dedicated short courses in various European countries.
Professor Nath's professional interests include elasto-hydrodynamics, numerical mathematics, philosophy, environmental protection, environmental management, environmental education, and sustainable development and related issues. His publications on these subjects number over 100, including sixteen books. He has been founder and editor of three international journals, including *Environment, Development and Sustainability*.