INFORMAL MECHANISMS FOR RAISING PUBLIC AWARENESS AT NATIONAL AND GLOBAL LEVELS AND IMPORTANT RELATED ISSUES

Bhaskar Nath

European Centre for Pollution Research, London

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Contents

Summary

Different informal mechanisms available today for raising public awareness of environmental issues and problems at both national and global levels are discussed in this chapter, together with some of the germane issues that readers ought to know about, including environmental awareness as enabler of effective public participation in decision-making and driver of environmental change.

This generation is blessed with an impressive array of informal mechanisms for raising public awareness of environmental issues and problems as never before. Yet, by all accounts and despite all efforts, the Humankind has been making negative progress towards global environmental sustainability and sustainable development. The reason for this, at least in part, is the failure of environmental awareness to translate into concrete actions the public could take to improve matters. Education in moral and ethical philosophy focusing on children is suggested for making this critical link

between being aware and doing what needs to be done. Unarguably, a moral compass is indispensable to navigating life's sojourn, and so is a strong moral and ethical foundation to ensure nature's abundant benediction to sustain both present and future generations with an acceptable quality of life for all. Merely treating the symptoms of our attitude and behavior to the natural environment, on which policy and initiatives have been focusing, is like an incompetent physician treating the symptoms of a malaise and not the malaise itself causing them in the first place. This is where morality and ethics should come in to engender genuine respect, care and concern for nature and the environment. These issues are also discussed.

1. Introduction

The goal of projects and activities which a government undertakes, and policy it develops and implements, is to improve the quality of life of its citizens and to ensure national security. Therefore, it is eminently reasonable and fair for the public to be able to scrutinize and make inputs to what is being proposed for their good and in their name (in democratic societies) and to participate in the decision-making process. Indeed, in the environmental context broad public participation in decision-making is increasingly mandatory, not an option (e.g. Chapter 23 of Agenda 21; WCED, 1987, page 349).

 However, members of the public cannot participate effectively, neither can they make informed judgment or input, unless they have access to all relevant information and are aware of the parameters and implications of what is being proposed. This underscores the importance of public education and awareness of environmental issues and problems. To this end Chapter 36 of Agenda 21 draws attention to the importance of "Promoting education, public awareness and training" in the context of the relationship between environmental education in the broadest sense and development, while EU Directive 2003/4/EC seeks to strengthen existing rules on public access to environmental information in line with the 1998 Aarhus Convention.

The presumption on which public awareness is founded is that, the more people become aware of the adverse impacts of human activities on the environment and nature's life-support systems, the more enlightened and willing they would become to actively promote environmental sustainability and sustainable development. They would then be willing, it is presumed, voluntarily to adopt life-styles commensurate with the capacity of nature's ecosystems and natural resource reserves to supply; to positively change their behavior and attitude to nature and the environment; and in democratic societies to put pressure on their elected representatives to develop and implement long-term policies for sustainable development. In theory all this sounds excellent and makes much sense too. Unfortunately, in practice and in the real world it is anything but. It just does not work like this due to what is called the "Enlightenment Fallacy" (Berry, 2004) which asserts that enlightenment does not automatically translate into meaningful reduction of anthropogenic pollution. Had the presumption not been fallacious, the rich developed countries, blessed as they are with high literacy rates, educated citizenry, and a high level of environmental education and awareness unlike poor developing countries, should be the most sustainable. But they are not. On the contrary, they are the biggest polluters with unsustainable life-styles to match (e.g. Nath and Kazashka-Hristozova, 2005). Being aware of environmental issues and problems and yet the international

community not willing or able to do what needs to be done explains, at lease in part, why the world of the Johannesburg Earth Summit of 2002 was less sustainable than the world of the Rio Summit of 1992. Indeed, negative progress had been made towards global sustainability during those ten years despite all the political rhetoric, countless conferences and a veritable avalanche of publications, practical efforts made world-wide, and money expended.

With reference to the above, the purpose of this Article is to describe and discuss currently available informal mechanisms for raising public awareness of environmental issues and problems at both national and global levels, and to discuss some of the germane issues that the reader should be aware of, including the following:

- Environmental awareness as enabler of effective public participation
- Environmental awareness as driver of environmental change
- Important environmental issues the public should be aware of

Adopting the meaning of "informal" as given in the Oxford English Dictionary, in what follows "informal mechanisms" will be taken to mean events and activities that are held not in accordance with convention, ceremony or prescribed rules.

2. Why Public Awareness of Environmental Issues and Problems is Important, and the Difficulties

There are two main reasons why public awareness of environmental issues and problems is increasingly important. They are elaborated in 2.1 and 2.2 along with the difficulties associated with them *vis-à-vis* global sustainable development.

2.1. Environmental Awareness as Enabler of Effective Public Participation

Projects and activities undertaken, or policy implemented by local or central governments often impact on the natural environment affecting peoples' quality of life. It is eminently reasonable, therefore, for the public at large to be aware of those impacts and indeed to participate in making decisions on whether or not any planned project, policy or activity is to be implemented, and, if so, how. It is mainly for this reason that ever since the 1972 Stockholm Conference on the Human Environment, which was a ground-breaking event that pushed global environmental concerns to the top of the political agenda, public participation in environmental decision-making has become important as never before. Chapter 23 of Agenda 21, which is a preamble to Section III of that document, stresses both the importance of broad public participation in decision-making and the particular role of the NGOs in the process. Today public participation is mandatory in most countries of the world and increasingly so, not an option. Indeed, the right of the public to environmental information is integral to their fundamental human right "to an environment adequate for their health and well-being", and nation states are obliged to "inform in a timely manner all persons likely to be significantly affected by a planned activity and to grant them equal access and due process in administrative and judicial proceedings" (WCED, 1987, page 349). Typically, the new EU Directive on "Public Access to Environmental Information" (Directive 2003/4/EC), which came into force on 14 February 2005 and is in line with the 1998 Aarhus Convention, is designed

to strengthen existing rules in this area. The Directive also provides for transparency of decision-making and holds decision-makers accountable.

Clearly, members of the public would be in a position to participate effectively in the decision-making process only when they are aware of the likely or probable environmental consequences of implementing planned projects, policy or activities, and for this they must have access to all relevant information. However, experience shows that in many of the developing countries and transition economies, and even in some of the highly developed countries, governments and politicians in power tend to be reticent in divulging information to the public, presumably in deference to the adage "information is power" which characterizes totalitarian regimes everywhere. Indeed, when deemed necessary, they are not averse to manipulating or even manufacturing information to mislead the public in pursuit of their political agenda.

> "Politics, as the word is commonly understood, are nothing but corruptions, and consequently of no use to a good king or a good ministry."

> Jonathan Swift (1667-1745) in *Thoughts on Various Subjects*

Furthermore, in democratic systems of governance politicians appear increasingly to follow public opinion, act reactively, and to shy away from proactive initiatives they consider too radical and therefore fraught with political risks. In political parlance the last is a manifestation of what is called the NIMTOO (Not in My Term Of Office) syndrome which is proving to be a major obstacle to framing effective long-term policy for global sustainable development.

There is a presumption that as public awareness of pressing environmental issues and problems increases, people (the affluent in particular) would become more willing voluntarily to adopt less consumptive (and therefore less polluting) life-styles and environment-friendly behavior and attitude. In other words, a positive correlation is presumed to exist between people's enhanced awareness of pressing environmental problems on one hand, and mitigation of those problems presumed to result from people making necessary changes in their behavior, life-style and attitude on the other. While this may be true for small-scale local initiatives, it is generally not true in the case of global environmental problems — global warming for example — that must be urgently addressed for achieving even a modest degree of global sustainable development. This gap between being aware of an environmental problem and yet failing, or not willing, to do what is needed to address it is the essence of what is called the "Enlightenment Fallacy" (Berry, 2004). Arguably this fallacy, coupled with profligate and hedonistic life-styles of the affluent, is proving to be the nemesis of global sustainable development (Nath, 2003) (also see Section 1 of *Mechanisms for the Continuing Education of the Public*).

2.2. Environmental Awareness as Driver of Environmental Change

In pluralistic democratic societies pressure for any change normally comes from the electorate in the bottom-up fashion. So it is presumed that, with greater awareness of environmental issues and problems the public would exert pressure on their elected

representatives to implement projects and policies and undertake activities aiming at sustainable development. However, this political process is fraught with three main difficulties that do not augur well for global sustainable development.

- The time-horizon of most elected political representatives does not extend beyond the next general election, which is usually 4 or 5 years. Understandably therefore, after being elected they become preoccupied with all the things they consider necessary for promotion and re-election next time round. If the party in power loses the next election, a different party comes to power with a different agenda reflecting its own priorities and ideology and, of course, its obligations of "patron-clientism". Sustainable development, on the other hand, is a long-term process, not an event. It needs development and implementation of consistent and coherent long-term policies — and most importantly continuity, commitment and unwavering political will — to bear fruit. Clearly, under current arrangements there is a mismatch between what is needed and what is on offer.

- General elections are usually won or lost on the "bread-and-butter" issues of taxation, education, healthcare, housing, etc., and seldom if ever on environmental issues and problems. Although during election campaigns major political parties do talk about the need to protect the environment and the importance of achieving sustainable development, they shy away from the crucial issue of sustainable consumption patterns — in particular the need for the affluent to adopt less consumptive life-styles (WCED, 1987) — because they know the public at large equates improving standards of living and quality of life to ever greater consumption of goods and services to which they aspire. And so for a political party to campaign for election on the need to reduce consumption would be tantamount to committing political suicide.

- The prevailing *laissez-faire* economic system, which is universal in its scope today and is being reinforced by increasing pace of globalization, is itself the greatest obstacle to global sustainable development. The system works only when there is uninterrupted growth in production and consumption of goods and services. On the other hand sustainable patterns of production and consumption, meaning production and consumption commensurate with the capacity of earth's ecological systems and raw material reserves to supply, are the core pre-requisites of sustainable development (WCED, 1987; Nath, 2000). Thus trying to achieve sustainable development within the framework of the prevailing *laissez-faire* economic system can be likened to trying to fit a square peg in a round hole. Most politicians know this, and do not discuss it for fear of upsetting their constituents to whom sustainable consumption is euphemism for reduced living standards. And so they project sustainable development in terms of energy efficiency, keeping neighborhoods clean and tidy, and so on. Laudable though such efforts are, and environmentally helpful too, it is hard to see how they could possibly deliver global sustainable development unless the central issues of the affluent adopting less consumptive life-styles and equitable allocation of wealth and natural resources within and between nations are addressed.

    "…Developing countries should strive towards a level of consumption which is

compatible with their need for a basic standard of living while developed countries should implement policies and strategies which encourage changes in unsustainable consumption patterns".

Summary of Chapter 4 of Agenda 21 (Hens, 1996)

2.3. Important Environmental Issues the Public Should be Aware of

While the poor of the world knowingly degrade the natural environment of necessity for sheer survival (often with the connivance of the affluent, for example illegal trade in forest products that have an apparently insatiable demand in the West), the affluent do so knowingly to satisfy the open-ended demands of their profligate and hedonistic life-styles (Nath, 2003; Nath and Kazashka-Hristozova, 2005). The rich of the world will not willingly renounce their material wealth. On the contrary, if necessary they will knowingly and willingly degrade earth's natural environment and life support systems in order to protect and reinforce their hegemony of wealth and power. This is because wealth *is* power, and so presumably without it an individual or a nation would be at a disadvantage *vis-à-vis* the Darwinian imperatives of *natural selection* and *survival of the fittest* (Beer, 1996)..

Arguably the above is the crux of the environmental predicament facing the Humankind on which debate on global sustainable development ought to focus. For what is really needed to achieve even a modest degree of global sustainable development is an environmentally sound global mechanism that ensures fair and equitable allocation of wealth and resources both between and within nations to replace the prevailing paradigm, akin to the proverbial "Law of the jungle", which favours the powerful at the expense of the weak and allows the rich to patronize the weak with uplifting rhetoric on "poverty eradication" and manufactured definitions of "poverty" (e.g. Mestrum, 2003). Or could it be that *homo sapiens* are not yet sufficiently evolved to embrace this eminently fair, reasonable, laudable and enlightened paradigm? If so, it would be futile to pursue the distant dream of global sustainable development, however rich or compelling the political rhetoric might be. What, then, is the value or purpose of raising public awareness if it results in little more than cosmetic initiatives that do not add up to much and fail to address the crucial issues of equity, justice, and how to live within the capacity of earth's ecosystems to provide?

3. Primary Objectives of Raising Public Awareness

If the international community is at all serious about achieving even a modest degree of global sustainable development, rather than indulging in rhetoric and cosmetic initiatives that do not add up to much as unrelenting deterioration of the global environment in practically all fronts would readily confirm, the primary objective of raising public awareness must be to enlighten people in ways that would overcome the "Enlightenment Fallacy" and persuade the affluent to adopt life-styles and behavior commensurate with the capacity of earth's ecological and material resources to supply. And, more importantly, to radically change the attitude (especially of the affluent) to nature and the environment from one of gross exploitation as at present to that of *genuine* respect, concern and care. This radical prescription, which may even appear surreal to some, is not new (for example, see WCED, 1987, page 9; Agenda 21, chapter

4), and it is hard to see how meaningful progress towards global sustainable development could ever be made without it (it would be useful to know about plausible and effective alternatives). Public enlightenment by overcoming the "Enlightenment Fallacy" is crucial because, once people become enlightened in this way, their attitude to nature and the environment would be *genuinely* respectful. They would then exert pressure on their elected representatives to develop and implement effective policies for global sustainable development.

Yet the political process everywhere has been working against the core requirement of global sustainable development, which is to consume within earth's capacity to supply, by vigorously promoting the quintessentially Western "gospel" of rampant consumerism (see Section 2.2 of *Continuing Education for Decision-Makers including Politicians, Senior Government Officials and Chief Executives in Industry*). Arguably, this has been causing the "deep malaise", of which adverse environmental impacts occurring on all fronts are but symptoms (Nath, 2003; also see Section 3 of *Need for Environmental Research*). Curiously, the United Nations (UN), which should be taking the lead in this matter, has been vigorously promoting the flawed *status quo* of exclusively reliance on science and technology to deliver global environmental sustainability and sustainable development. For example, the Johannesburg Plan of Implementation (JPoI) speaks only of science and technology for sustainable development, and fails to mention education in moral and ethical philosophy without which it is hard to see how people's attitude to nature and the environment could be changed to make meaningful progress towards it (Nath, 2003; Nath and Kazashka-Hristozova, 2005). Indeed, exclusive reliance on science and technology seems to characterize the approach of the UN system to addressing problems of environmental protection and sustainability (e.g. Brende, 2004). Therefore, the onus is on the UN to demonstrate if and how science and technology alone could be applied to bring about necessary changes in people's attitude to nature and the natural environment conducive to the realization of global environmental sustainability without which sustainable development cannot be achieved; and to explain why the richest countries, endowed with abundant state-of-the-art science and technology, and financial resources continue to be the biggest polluters (Nath, 2003; Nath and Kazashka-Hristozova, 2005). Interestingly, when directly challenged, UN's response to this is less than convincing (Morita-Lou, 2004). The UN being a political organization, depending as it does on the goodwill of its powerful member states, one can only speculate on the possible existence of a covert agenda, to which we are not privy, for this state of affairs.

> "[Western] philosophers reduced the scope of their inquiries so much that Wittgenstein, the most famous philosopher of this century, said, "The sole remaining task for philosophy is the analysis of language". What a comedown from the great tradition of philosophy from Aristotle to Kant!"
>
> Stephen Hawking (1988), page 191

4. Strategies for Raising Public Awareness

Obviously, the strategies to be adopted should reflect the socio-cultural and even geo-political nuances of the target public. For a strategy, which works well in an ancient and enduring culture that through the ages taught people to genuinely respect earth as

"mother" through mythology, religious observance and rituals, is unlikely to work in a Western industrialized society devoted in the main to gross materialism and largely bereft of such deeply-embedded values and sentiments. Furthermore, from the perspective of psychology, the age of the target public is a fundamental determinant of the strategy to be adopted, as will be seen from what follows. However, in all cases the strategic goal must be to overcome the "Enlightenment Fallacy". In other words, the goal of raising environmental awareness of the public must be to change their behavior and attitude to nature and the natural environment positively and permanently — from one of gross exploitation to that of genuine respect, concern and care. Temporary change as fashion or fad engendered by fleeting enthusiasm is neither desirable nor consequential.

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Bibliography

ANDERSON, J. R., 1995, *Learning and Memory: An Integrated Approach*, Chichester, UK, Wiley. [In this text the author describes the key elements of learning and memory and tries to develop an approach by integrating the two].

ANON, 2001, *Selected Stories from Panchatantra*, New Delhi, Adarsh Books. [Originally written in Sanskrit for young children and attributed to a versatile teacher called *Vishnusharman*, this illustrated English translation depicts mainly through animal stories how one ought to conduct life wisely].

BEER, G., 1996, *Charles Darwin — the Origin of Species*, Oxford, Oxford University Press. [In this publication the author gives a lucid account of Darwin's argument for a material, not divine, origin of species and that new species evolve through "natural selection"].

BERRY, R.J., 2004, Discussion of the paper "Education for sustainable development: the Johannesburg summit and beyond" by B. Nath, *Environment, Development and Sustainability*, Vol. 6, pp. 494-502. [In this discussion the author makes candid comments on some of the key issues raised in the original paper by B. Nath. The discussion also contains author's response to those comments].

BRENDE, B, 2004, "Science for sustainable development: addressing the need for stakeholder involvement", *Environment, Development and Sustainability*, Vol. 6, pp. 487-488. [The author of this short communication is the Norwegian Minister of the Environment and Chair of United Nations Commission on Sustainable Development. In this communication he reaffirms the supremacy of science and technology in dealing with environmental problems, and states the obvious that science and technology alert us to the global problems caused by our polluting behavior and refers to the "remarkable achievements" (his words) of international agreements such as the Kyoto Protocol that are based on strong scientific message and designed to curb such behavior].

COON, D., 1983, *Introduction to Psychology*, Third Edition, St. Paul Minnesota, West Publishing Co [This is a comprehensive text that deals with most of the key aspects at the introductory level].

EISENBURG, N., 1982, 'The development of reason regarding prosocial behaviour', in N. Eisenberg (Ed.) *The Development of Prosocial Behaviour*, New York, Academic Press. [In this chapter the author argues that an understanding of developmental changes in altruism requires an examination of children's reasoning when faced with a conflict between their own needs and those of others when the role of laws,

rules and authority is minimal].

GROSS, R., 2001, *Psychology: The Science of Mind and Behaviour*, Fourth Edition, Hodder & Stoughton, London. [This is a very good text offering a clear introduction to all the key subject areas. In addition, it addresses some of the major applied areas of psychological research].

HAWKING, S., 1988, *A Brief History of Time*, New York, Bantam Books. [In this landmark scientific book, eloquently written for the non-scientist, the author successfully guides the reader through difficult scientific concepts to search for and explain the secrets of space and time in cosmological physics].

HENS, L., 1996, "The Rio Conference and Thereafter", In B.Nath, L. Hens and D.Devuyst (Eds.) *Sustainable Development*, VUB Press, Brussels. [This chapter provides a critical overview of the concept of sustainable development, its historical development, and of some of the issues closely linked to it].

KOCASOY, G. 2000, "Solid waste management in developing countries — a case study of Turkey", in B. Nath, S.K. Stoyanov and Y. Pelovski (Eds.) *Sustainable Solid Waste Management in the Southern Black Sea Region*, Kluwer Academic Publishers, Dordrecht, the Netherlands, pp. 47-68. [This paper describes how relentlessly increasing quantity of solid waste has been degrading both environmental integrity and quality of life in Turkey which is typical of many developing countries].

KOHLBERG, L., 1981, *Essays on Moral Development*, New York, Harper & Row. [Following on the work of Piaget, in this text the author suggests that the moral development of a child progresses through six distinct stages].

MESTRUM, F., 2003, "Poverty reduction and sustainable development", in B. Nath, L. Hens and D. Pimentel (eds.), *Environment, Development & Sustainability*, Vol. 5, pp 41-61, Dordrecht, Kluwer. [This paper explores the "naturalization" of development thinking in its economic and social dimensions and shows how this affects policy options for social protection in the context of sustainable development].

MORITA-LOU, H., 2004, Discussion of the paper "Education for sustainable development: the Johannesburg summit and beyond" (see below) by B. Nath, *Environment, Development and Sustainability*, Vol. 6, pp. 503-504. [In this short communication the author, who is a senior official of the UN Department of Economic and Social Affairs in New York, refers to various UN initiatives on education for sustainable development, but does not respond to Nath's contention that science and technology alone cannot be relied upon to deliver global environmental sustainability of sustainable development].

NATH, B., 2000, "Some issues of intragenerational and intergenerational equity and measurement of sustainable development", in B. Nath, S.K. Stoyanov and Y. Pelovski (eds), *Sustainable Solid Waste Management in the Southern Black Sea Region*, pp. 1-26, Dordrecht, Kluwer. [This book contains a state-of-the-art report on this subject].

NATH, B., 2003, "Education for sustainable development: the Johannesburg summit and beyond", in B. Nath, L. Hens and D. Pimentel (eds.), *Environment, Development & Sustainability*, Vol. 5, pp 231-254, Dordrecht, Kluwer. [Contains a survey of environmental education including recommendations of the Johannesburg Plan of Implementation (JPoI) and advocates inclusion of moral and ethical philosophy *vis-à-vis* the natural environment in formal educational curricula as an essential pre-requisite for achieving global sustainable development].

NATH, B. and KAZASHKA-HRISTOZOVA, K., 2005, "*Quo vadis* global environmental sustainability? A proposal for the environmental education of engineering students", *Int. J. Env. Poll.,* Vol. 23. No.1, pp. 1-15 [In this paper the authors demonstrate the futility of exclusive reliance on science and technology to deliver sustainable development and argue that moral education is needed for this to change human attitude to nature and the natural environment — from one of gross exploitation as at present to that of genuine respect].   .

PHILLIPS, M., 2005, "When will our politicians wake up to the fact it is they who have done more than anyone to create this culture of yobbery?", *The Daily Mail*, 19 May, London. [This article examines the part British politicians have been playing in the evolving "yob" culture plaguing entire communities in the United Kingdom].

PIAGET, J. and INHELDER, B., 1969, *The Psychology of the Child*, London, Routledge and Kegan Paul. [In this authoritative book the authors describe how the psychology of the child develops as it grows up with reference to cognitive and behavioral traits. They assert that there are times when children are especially able to learn particular things as manifestations of what they call "schemas". They define a

"schema" as the "structure of organization of actions as they are transferred or generalized by repetition in similar or analogous circumstances"].

PORRITT, J., 1991, *Save the Earth*, London, Dorling Kinderseley. [This excellent publication contains a large number of short contributions by eminent environmentalists and others concerned with the environment. Much to be recommended for children and adults alike].

RAE, A. I. M., 1993, *Quantum Mechanics*, Third Edition, Bristol, Institute of Physics Publishing. [This text gives a mathematical treatment of Quantum Theory. More interestingly, it also gives an excellent discussion of the various philosophical conclusions that emanate from that theory concerning the human condition, our perception of the world around us, and the concept of the *universal consciousness* to which individual consciousnesses are linked].

SKINNER, B.F., 1953, *Science and Human Behavior*, New York, Macmillan. [This text includes an empiricist approach to child learning. This pioneering author spent about 50 years of his life on experimental psychology, and the book is based on his experience].

WCED (World Commission on Environment and Development), 1987, *Our Common Future*, Oxford, Oxford University Press. [This remarkable document is the report of the Brundtland Commission established by the United Nations in the mid 1980s. It gives much useful data on the state of the global environment and urges nation states to adopt the modalities of sustainable development which, it argues, is the only kind of development that has potential for ensuring a sustainable quality of life for both present and future generations].

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 the Ph.D. degree from the University of Wales, UK, in 1964. In 1983 he was awarded the 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.

After having taught at the University of London for more than 27 years, currently Professor Nath is Director of the European Centre for Pollution Research, London; Executive Director of International Centre for Technical Research, London; Editor of Environment, Development and Sustainability published by Springer; visiting professor to several European universities, and consultant to a number of international companies and organizations. Professor Nath's research interests include Numerical Mathematics, Elasto-Hydrodynamics, Philosophy, Environmental Economics, Sustainable Development, and Environmental Education. He has more than 100 scientific publications in these and related areas including 13 books.