REGULATORY INCENTIVES, OPPORTUNITIES AND BARRIERS

Arkadi D. Ursul and **Valery N. Lopatin,**
Department for Ecology and Environmental Management, The Russian Academy of State Service under the President of the Russian Federation, Russia

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Contents

Summary

This article reviews major regulatory incentives, possibilities for and barriers to Industrial Ecology, with consideration of world practices. Specifies key instruments of regulation are described, including regulatory, economic, and administrative; environmental impact assessment; environmental expertise; analysis and environmental risk management. Modern tendencies for eco-development, socio-economic and environmental requirements are taken into account.

1. Role of Regulatory Incentives, Opportunities and Barriers in Environmental Management

In any country the major regulators of environmental behavior are the basic social institutions. They differ in their national, ethical, social, political, economic, and governmental peculiarities, with due allowance also for the specific climate, environmental and resource-related conditions that help to characterize a society.

Creation of incentives, preferences, and barriers, on a general society scale, is significantly influenced by characteristics of eco-development, integrated analysis and the attention given to economic and environmental improvement.

At the same time, the most developed countries of the world differ a great deal, in terms of their settled economic opportunities, environmental, energy and resource-related needs, from countries at an intermediate level of development, and very much, from developing countries.

Naturally, regulatory incentives, opportunities and barriers in industrial ecology, and especially their implementation practices in various countries, quite clearly reflect this dependency.

In the development process, macroeconomic issues of environmental management inevitably result from a need to overcome overall (ethical, social, political, environmental, structural and economic) system crisis, and to harmonize interrelations of society and nature in the framework of biosphere carrying capacity.

Firstly a world outlook issue is put forward: the necessity to gain macroeconomic, social and environmental efficiency requires changes in public awareness. In the process of environmental management, for instance, when developing and using mineral and resource-based assets (MRBA), the bowels of the earth and shelves of the oceans and seas cannot support an economy indefinitely, especially an inefficient one.

The well-being of nations and the welfare of humanity will be sustainable only when an economy is able to fully compensate for environmental damage to the environment caused by extraction and use of natural resources. If the immobility of the human mind and his economic structures are taken into account, then the scale, term and complexity of the issue becomes clear enough.

In the second place, there is the issue of organic unity in policy and regulations in the management functions of national and public organizations, with respect to environmental management. This issue requires upgrading of regulations, including resource-based and environmental laws such as laws on minerals, land and other resources, on product sharing, and adjustment of economic regulation and the administrative management complex to modern global conditions, taking into account the specific peculiarities of various countries.

The third issue is associated with the development of convergence of economic and ecological indicators of environmental management (in theory and practice). In this respect the current environmental situation should be changed to comply with sustainability standards specified in political targets for national development. All sediments, sludge, slag and other useless and sometimes harmful substances, i.e. waste in its broadest sense, should be subjected to cost assessment to identify damage while environmental management should be cost efficient, avoiding critical loads on the environment. This tendency can be well reflected when assessing social welfare with application of relevant modern scientific and methodological approaches comprising analysis of all life-supporting aspects (economic, environmental, social, ethical, cultural and political) i.e. everything that can threaten further development of life on Earth.

Finally, the reflection of environmental management strategy (according to the sustainable development concept) in the system of economic, financial and other indicators is the fourth issue that arises when introducing the system to reporting and environmental management analysis.

2. World Practices of Regulation and Administration in Industrial Ecology

Rationing and standardization are the most significant instruments to regulate environmental management and environmental quality management.

The issue of harmonious co-existence of both nature and society can be addressed by optimizing environmental management, through introduction and strict enforcement of environmental limits and standards, and allowing conservation of eco-systems capable of supplying the services and natural resources required by society.

Standards are a scientifically justified limitation of impact from economic and other activities caused to the bio-sphere, the Earth and its life support systems.

Long-term global environmental quality and environmental management standards were developed through a precedent methodology depending on needs arising from the world community and development of its specific social, environmental and production systems.

Compliance of manufacturers with environmental standards in the world economy is already one of the major factors that define competitiveness of products and technologies, at the same time as supporting environmental conservation and improvement. For all this, environmental quality standards are considered as determining (criterion-like) for maximum impact limits, restoration standards for areas damaged by economic activity, and standards to limit and stimulate any kind of environmental management.

Availability of a well-developed system for environmental assessment, environmental rationing and standardization serves as a legal basis for joining global investment processes.

A good example of the application of environmental standards is the DIN Standard System used in Germany." It is enforced through a network of monitoring sites where environmental quality is regularly assessed by a number of parameters of soils, surface and ground water, and air quality. Results of the environmental quality assessment are used for decision-making on the nature and intensity of environmental management. Compulsory application of environmental quality standards is specified in regulations at national and regional levels.

Environmental legislation in France clearly specifies the legal basis for control exercised by environmental authorities. Authority to develop, approve and set procedures for application of environmental standards is delegated to governmental environmental bodies. All environmental standards, and procedures for their application, are introduced through regulations by the Ministry for the Environment and are obligatory for all regional prefectures. Environmental quality control is performed through identification of problematic areas (adverse or suspected of being adverse) in terms of environmental quality. These areas are ranked according to the level of environmental hazard, thus

forming a basis for decision-making on the nature and intensity of environmental management.

The Environmental Standards System in the USA differs from those in the aforementioned countries in terms of availability of less strict national regulations. The regulatory and compulsory status is given to an Independent Expert Opinion, in the form of a respected expert or an expert team to be used for decision-making on the nature and intensity of environmental management.

Environmental quality management in Japan is carried out by direct control measures, which are closely connected and supported by financial and economic incentive tools. A central position in the direct control system is given to standards and limits, but they are characterized by significant flexibility of application.

Pollutant concentration indicators in various media are used as standards in Japanese environmental management practice: A national law prescribes the most important standards—for five substances in air and nine substances in water—and local authorities set the rest. Along with this, emission standards—indicators of absolute pollutant emission to the environment—are widely used. Initially, Japan applied emission indicators to individual pollution sources, but soon it switched, as in other countries, to assessment of overall emissions per area (similar to the "bubble" approach used in USA). On the basis of standards introduced by the Department for Environment, local environmental authorities set limits for major industries, power plants, etc. through agreements where the actual capacity of industries is taken into account.

The following standards are specified in Japan:

- target or advisory standards (similar to Russian MAC, MPD);
- intermediate or current standards (standards by which the actual ambient quality control is maintained);
- interim standards (set for a specific period).

A starting point in development of standards is the level of costs incurred by the private sector to ensure compliance within a specified term. As a rule compliance with new standards requires large lump sum costs. For instance, in the energy sector these costs have amounted to 30% of total investment in some years. For this reason the government determines the scale of state support to companies. Moreover, when costs are too high the government can lower (weaken) the prevailing standards or postpone the introduction of new ones. On the whole, the national standards policy of Japan is characterized as being realistic and based on co-operation with the private sector rather then on confrontation principles. The method of media quality regulation by standards is to a great extend performed by a computerized system of media quality monitoring.

Environmental agreements between business and local authorities are another form of administrative regulation widely used in Japan. To date, more than 25 000 agreements are in operation in the country. They are all based on local regulations. Environmental measures against pollution by company owners are stipulated in 72% of agreements,

52% refer to waste water treatment, 41% to noise and vibration reduction, 32% to smoke, and 28% to smells.

Among sanctions provided for in agreements are: inspections to enterprises (in 75% of cases), enterprise suspension and damage repair (40%), sues (27%). As a rule fines are levied on specific law-breakers but if there is a serious violation, for instance, in cases of illegal waste disposal or wastewater discharge, company employees can receive custodial sentences. The most important tool of direct environmental control, allowing assessment and prevention of possible pollution, is a preliminary environmental impact assessment (EIA). Since the 1970s EIA has been extensively applied in many industrially developed countries.

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Biographical Sketches

A.D. Ursul was born on 28 July 1936 in the Odessa Region (now Ukraine). In 1959 he graduated from the Moscow Aviation Institute named after Ordzhonikidze; he obtained his PhD in 1969 and became a professor in 1971. He is an honored RF scientist (1997), and an academician of the Moldova Academy of Sciences (1984). Since 1991 he has been an academician of the International Academy of Astronautics (Paris). He is also an acting member in a number of new public Academies: the Russian Academy of Natural Science (1995), the Academy of Social Science (1995), the Cosmonautics Academy named after K.A. Tsialkovski, the Russian Environmental Academy (1992), the International Academy of Informatization (1992), the Noosphere Academy (1991) (being the President of the Academy), the Peter Academy of Science and Art (1997), the International Academy of Science (1986, Munich). He is an honored member of the International Academy of Informational Processes and Technologies (1993) and the International Society "Mankind and Space" (1975).

He occupied position as Department Deputy Head at the Philosophy Institute of the USSR Academy of Science (1970-1982), Director of the Philosophy and Law Department at the Academy of Science of Moldavian Soviet Social Republic (1982-1988), Director at the Institute of Social Informatics of the Academy of Public Science (1988-1991), Director at the Noosphere and Environment Institute of the Russian Management Academy (1991-1994). Since 1994 he has occupied a chair at the Ecology and Environment Management Department of the Russian Academy of State Service under the President of the Russian Federation.

He is a significant scientist in terms of philosophy, science and technology, especially in the fields of natural, technical and agricultural sciences, social informatics and cybernetics, cosmonautics and synergetics, social ecology and noospherology. He is an acknowledged leader in some of the scientific areas mentioned above. In recent year he has devoted much attention to developing the scientific basis for transfer of Russia and the whole of civilization to sustainable development, with active involvement in various Russian and international fora, addressing vital issues of science and development. He has received many governmental and scientific awards.

He is the author of over 700 scientific publications including over 70 monographs, books and brochures. He is the responsible editor of over 100 scientific collections and books. Over 200 of his publications have been translated into a dozen foreign languages. He has made over 50 scientific trips to over 30 foreign countries. He prepared over 70 Ph.D and 20 Doctors of Science candidates. He chairs the Council for Ph.D. and Doctoral Degree Theses in Philosophy and Technics at the Russian Academy of State Service under the President of the Russian Federation.

Vladimir N. Lopatin, Ph.D. (technics), is a professor at the Russian Academy of State Service under the President of the Russian Federation, and an academician at the Russian Environmental Academy. The major areas of his activities are: environmental management economics, environmental management, environmental expertise, environmental impact assessment, environmental audit, resources management audit, waste management, regulatory support for environmental management, and international standards. He is the author of over 160 scientific publications. In 1970 he graduated from the Moscow Highest College named after Bauman (Apparatus Building Faculty) and obtained a diploma of Engineering. At the same Highest College he obtained his Ph.D. (technics). In 1989 he obtained a degree of Doctor of Science (technics) with specialization in environmental protection and efficient use of natural resources, at the Academy of the National Economy under the Russian Government. He became a professor in environmental and industrial safety in 1991. His major occupational phases are: Deputy Head of the Technical Department at the State USSR Committee for Hydrometeorology and Environment Control,

Head of the Laboratory for Metrology and Standardization at the Institute of Applied Geophysics named after Academician Fiodorov, Head of the Department for Regional Resources Use and Environmental Protection at the Council for Studies in Production Forces and Economic Co-operation under the Ministry of Economy of the Russian Federation, Head of the Main Department for State Environmental Expertise at the Ministry for Environment Protection and Natural Resources of the Russian Federation, and professor of the Department of Ecology and Environmental Management at the Russian Academy of State Service under the President of the Russian Federation.