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Issues of Environmental Protection in Selected Sectoral Programs for the Restructurization of Polish Industry

Abstract

The issues presented in this text concern approaches to environmental protection problems undertaken in selected sectoral programs proposed for the restructurization of Polish industry. These programs are analyzed taking into account their compatibility with the strategy of sustainable development, declared to be leading aim in guiding Poland's future social and economic development. Innovation in Polish industry and its capacity to undertake pro-ecological restructuring are also investigated. The institutional conditions placed on the implementation of sectoral policies reflected in governmental documents and legal regulations also need to be taken into account. In conclusion an assessment is offered of the ecological effectiveness of the sectoral industrial restructurization programs and suggested changes are offered to increase their so-far limited effectiveness.

1. Introduction

The strategy of sustainable development has been declared to be the leading aim guiding Poland's future long-term social and economic development. This general formulation, however, needs to be transposed into concrete medium – and short-term steps which will lead to achievement of the agreed-upon social and economic goals. Implementation of the concepts must be done in such a way as to lead to harmonious economic, social, and environmental development, and the institutions constructed to guide the process must lead to systematic increases in the overall prosperity and standard of living

of Polish citizens. At present one of the fundamental tasks facing policy makers is securing the rational use of natural resources and simultaneously protecting the natural environment. The state of the environment is instrumental in the fulfillment of various fundamental human needs and affects health, workplace safety, and recreation. Minimalization of the harmful side effects which accompany intensive economic development must be recognized as a priority task. A significant role in its implementation is played by the sectoral programs of industrial development, which should be integrated with environmental policy.

This text examines policies and activities undertaken in the energy industry and in selected sectors of Polish industry such as bituminous coal mining, sulfur mining and processing, and iron and steel production. The analyses conducted are aimed at determining whether their restructuring programs are consistent with the concept of sustainable development and whether the strategies adopted for the development of these industries sufficiently take into account ecological issues.

2. Sectoral programs of environmental protection contained in government documents

Specific aims and action plans associated with the ecological aspect of sectoral industrial policies are contained in various governmental documents and papers connected with the implementation of economic policies over various periods of time. The two most important such long-term documents, taking into consideration the subject of the within paper, are: *Long-term strategy for sustainable development – Poland 2025*, and *The Second National Environmental Policy*, both of which were officially adopted in the year 2000.

The Second National Environmental Policy stressed the need to integrate the policies outlined with the industrial sectoral programs undertaken. In particular the following industries were identified: energy, industry, transportation, municipal management, construction, agriculture, forestry, tourism, and others creating pressures on the environment. The specific aims and action plans connected with ecological policies for specific industrial sectors are outlined in the *Long-term strategy for sustainable development – Poland 2025*¹. The chapter devoted to the restructuring of the traditional areas

¹ *Long-term strategy for sustainable development – Poland 2025* is a document compiled by Poland's Governmental Centre for Strategic Studies in cooperation with the Ministry of Environmental Affairs and approved in June, 2000 by the Polish Council of Ministers.

of production makes the assertion, among others, that from the point of view of environmental protection and implementation of the principle of sustainable development the restructurization of industry was of key significance. Among other things, it should lead to:

- implementation of patterns and models of industrial production assuring minimalization of the negative effects of industrial processes on the environment and human health and safety;
- taking optimal advantage of defined developmental opportunities having in mind access to natural resources, human capital, and available permanent assets;
- restricting the activities of heavy industrial production in such a way as to promote growth of the most technologically advanced industries in accordance with the trends occurring in the industrially advanced countries;
- restricting the activities of the most environmentally harmful industries in highly industrialized and urbanized areas
- achievement by the year 2025 of energy-consumption, resources-consumption, and water-consumption indices in Poland similar to those prevailing in the industrially advanced countries of the EU and the OECD;
- compliance with the environmental-protection requirements set forth in legal regulations and binding administrative decisions based on EU regulations as well as the international obligations undertaken by Poland within the context of international treaties, conventions, and protocols.

In order for Polish industry to comply with the above-outlined structure and maintain its level of production, implementation of the following tasks are envisioned:

- finishing the financial, organizational, and technological restructuring processes in the traditional areas of processing in order to significantly increase work efficiency and eliminate financial losses;
- implementation of mechanisms which would permit quick reaction to environmental challenges arising from the implementation of new technologies and would block the implementation of scientific achievements and technologies which would produce negative environmental effects;
- implementation of practices in Polish industry corresponding to those at the same level in the EU and OECD countries concerning voluntary compliance with pro-environmental policies, linking ecological and economic effects;
- encouragement and formation of public awareness among industry, public institutions, and consumers of their shared common responsibility for the state of the environment.

It has been agreed that fulfillment of the above tasks requires, inter alia, the implementation of standardized systems of environmental management, elaboration and implementation of clean „production programs”, ecological labeling, transferable permits for emissions, ecological insurance, voluntary agreements, and consultation between the appropriate organs of public administration and representative social groups.

In *The Second National Environmental Policy* the priority method set forth for implementing pro-ecological sectoral policies is to combine good economic practices and systems of environmental management. As regards the industrial and energy sectors a series of ambitious tasks are set forth encompassing a wide spectrum of planning, management, and organizational activities including those associated with technological changes. In particular these tasks involve improvement of energy-efficiency, the use of alternative resources as well as the use of alternative and renewable energy sources, increasing water-efficiency relating to production methods and abandonment of the use of underground water sources for industrial purposes (with some specially regulated exceptions), increase in the production of products complying with ecological labels, and an increase in the number of industrial organizations cooperating in voluntary programs.

At the present time implementation of the tasks outlined in *Medium-term Concepts for National Development until 2002* is coming to an end. The major aim of the program outlined in this document was preparation of the Polish economy for accession to the European Union at the end of the year 2002, in particular by reducing the structural and developmental gaps between the Polish economy and the economies of the European Union countries as well as by increasing the competitiveness of the Polish economy². A fundamental principle of this strategy was to limit the interventionist role of the Polish government to areas with significant social consequences, as for example the restructurization of difficult industrial sectors and environmental protection³. The fundamental significance of achieving sustainable development was underscored in this document.

A similar approach is taken in the 1999 paper elaborated by the Ministry of Economic Affairs – in cooperation with other ministries – known as the *Preliminary National Development Plan for 2000–2002*, the aim of which was identification of the major differences in development between Poland and the European Union and preparations for making use of pre-accession funds and creation of the conditions for permanent and sustainable development through

² *Medium-term Concepts for National Development until 2002*, p. 7.

³ *Ibid*, p. 9.

modernization as well as the development of an infrastructure for environmental protection, recognized as an essential element of economic activity.

In conclusion it can be seen that the issues of environmental protection and the rational use of natural resources are already permanent elements of the most important Polish governmental documents concerning short-term, medium-term, and long-term development.

3. Environmental protection in problem sectors

Polish industry is faced with a significant number of persistent problems. Among them one can list the low technical and technological levels of many industrial sectors, inability to compete on the international market, reflected in Poland's high trade deficit, high levels of energy consumption in production, and lack of significant progress in the restructurization of such problem industrial sectors as coal-mining, iron metallurgy, shipbuilding, textiles, defense, fuels, energy, and heavy chemical synthetics. These sectors are characterized by a significant disproportion between supply and demand, old and obsolete production equipment requiring large capital expenditures for modernization, a weak and declining competitive position, ever-increasing financial difficulties, and the use of labor intensive procedures, the elimination of which brings about negative changes in the national and regional labor markets⁴.

The economic condition of these sectors ranges from weak to very weak. Without governmental intervention the process of their restructuring will be very slow and in many instances will result in the bankruptcy of sectoral enterprises, with all the accompanying difficult social consequences. At the same time these sectors are, in most instances, those with significant ecological problems which often require immediate resolution. As a result conflicts of interest naturally arise between social, economic, and environmental needs. These conflicts are particularly difficult to resolve in the context of the declared aim of sustainable development. Restructurization programs have been developed for each of these problem sectors, in some cases even in several versions. Analysis of the elaborated programs however reveals a number of weaknesses, despite their correct formulation of the goals and tasks at hand. Among the major weaknesses one may mention: their revindicative character; lack of financial means to accomplish the tasks identified; lack of consistency and consequence in the

⁴ S. Krajewski, *Restrukturyzacja sektorów problemowych* EU Monitoring III (Restructurization of Problem Sectors, EU Monitoring III) Friedrich Ebert Stiftung representative in Poland.

programs elaborated and approved; and the allocation of significant sums of money to subsidize the continued existence of deficit enterprises rather than to support their restructuring⁵.

In the restructuring programs analyzed social and economic questions connected with the ongoing process of property ownership transformation are treated as of key significance. Mention of environmental protection issues is limited to a general acknowledgement of environmental problems and of the need for significant action. One would search in vain, however, for details regarding the specific environmental threats posed by particular industrial sectors or for a list of priorities concerning their elimination. Rather the environmental problems are thrown back on the specific enterprises concerned based on the polluter pays principle. The failure to identify the nature of the harm however makes it more difficult to prove both the harm as well as its scale and effect. This in turn makes it difficult to estimate the costs of its cleanup and/or elimination.

In order to illustrate the nature of the above-mentioned problems we will examine the ecological issues involved in restructurization of the energy, bituminous coal-mining, sulfur mining, and iron and steel production sectors.

3.1. The Energy Sector

Satisfying energy needs is of key significance for the development of every economy. Within the context of Polish energy policy the following priorities have been acknowledged:

- securing sufficient energy supply to cover the current and projected future fuel and energy needs of end-users in a technologically and economically justified fashion taking into account adequate environmental protections⁶,
- improving the competitive position of Polish enterprises and the products and services they offer on both the domestic and international markets,
- protecting the natural environment from harmful effects associated with energy production and supply by, inter alia, programming energy activities to protect resources for the current and future generations⁷.

⁵ Ibid.

⁶ Art. 3 Par. 16 of the Energy Law.

⁷ National Energy Policy, www.mg.gov.pl

In the early years of the systemic transformation period, 1990–1992, power supply companies already began implementation of programs designed to decrease pressures on the environment. These programs encompassed:

- limiting dust emissions by the modernization or replacement of electro-filters and the use of coal with reduced ash content,
- limiting nitrogen dioxide emissions by using low emission burners and modernizing combustion technologies,
- limiting sulfur dioxide emissions by the construction of sulfur-removal furnaces and the use of higher-quality coal with reduced sulfur content.

In addition a program entitled *National Program for the Reduction of Sulfur Dioxide by the Year 2010* has been developed and is being realized. The aim of this program is to achieve the emission levels of sulfur dioxide established for Poland in the Sulfur Protocol II. Specific levels for sulfur dioxide in the power companies' sector were formulated and accepted in a 1996 program which is being implemented. This program envisions the reduction of pollution emissions in the power companies' sector to a level of 700,000 tons in the year 2010, which would constitute about 50% of the allowable emissions limit established for Poland.

Government documents for the year 2000⁸ envision that by the year 2010 7.5% of the energy produced in Poland should originate from renewable energy sources and that by the year 2025 the percentage of energy produced in Poland from renewable energy sources should be on the same level as that prevailing in the countries of the European Union. The Ministry of Economic Affairs has required all energy power enterprises, beginning in the year 2001, to purchase a minimum of 2.4% of its necessary electrical power from ecological power sources – mainly from suppliers using wind- and water-generated sources. Unfortunately the electrical power coming from such sources continues to be significantly more expensive than electric power generated from traditional sources.

The newly-formulated assumptions underlying national energy policy in Poland stress that „current governmental policies take into account the postulate that energy should be developed to the extent possible using domestic natural energy resources, including bituminous coal, lignite coal, natural gas, and bio-fuels”. Polish energy policy will thus continue to be based primarily on coal. In upcoming years plans will be focused on increasing the extraction of lignite coal, which is the cheapest natural resource and in addition abundantly available in Poland. In addition it is planned to encourage maximal use of domestic

⁸ The Second National Environmental Policy, Ministry of Environmental Affairs, Warsaw, 2000, and Strategies for the Development of Renewable Energy Sources, www.mos.gov.pl

natural gas resources to satisfy the national demand for natural gas. Natural gas, however, is more expensive than coal as an energy source and in many instances existing electric power stations require costly investments in order to adapt their plant to its use.

Thus it may be concluded that in relation to the program outlined in the early 1990's a certain regress has occurred with regard to choices of fuel. The assumptions giving priority treatment to coal as an energy supply fuel are in contradiction to the assumptions regarding reduction in pollution emissions. Energy based on coal has the highest pollution index. Although effective methods for sulfur-removal and limiting dust emissions are well known today, construction of the appropriate plant installations is expensive and the costs incurred are not always recoverable. The burden of adaptation rests on the electric power stations. The majority of them are state-owned joint stock companies and their full privatization is not envisioned.

3.2. The Bituminous Coal Mining Industry

Beginning in 1993 an ongoing series of governmental programs for restructurization of the bituminous coal mining industry have been prepared. The continual changes thereto reflect the fact that they have not managed to fulfill the hopes invested in them and have not kept up with the changes taking place in the mining industry. In the case of bituminous coal mining they have focused on productivity and on assuring the efficiency of mining companies⁹. Assumptions underlying the reform of this sector include limiting its production capacity and extraction to sufficient levels to meet domestic needs and economically justified export demands, adaptation of the mines and equipment to enable them to function in market conditions, privatization of some mines, integrating the activities of the various social groups associated with mining such as trade unions, local self-governing organizations, and political and economic units to focus on regional problems, and finally, improving the environmental state of the industry and repairing environmental damage. The most frequent criticisms of the restructurization programs in the coal mining industry include the slow and complicated process for liquidating unprofitable mines, the introduction of solutions which maintain the monopolistic character of the industry and relieve coal mining companies of accountability for their economic performance, the allocation of significant resources to the maintenance of unprofitable mines and keeping up employment in the industry

⁹ Reform in the bituminous coal mining industry in Poland between 1998–2002, www.mg.gov.pl

instead of on restructurization, the failure to integrate restructurization plans with regional needs and concerns, and the lack of a clear concept for future privatization within the industry. Most mines are heavily indebted and in some exceptional cases their debt exceeds the value of the entire enterprise. They consistently fail to fulfill their tax and social security obligations and completely ignore environmental damage cost assessments and penalties. Given this situation the discussion concerning the implementation of environmentally-friendly programs in the industry remains just talk. The only decrease in pressures on the environment stems from the decrease in the levels of extraction. Given the government's declared reliance on coal as a basic fuel for the energy sector, one may expect the continued operation of the bituminous coal mines and the continued artificial maintenance of jobs in the industry.

3.3. The sulfur mining industry

In the years 1962–1992 the mining and processing of sulfur comprised one of the most dynamic sectors of Polish industry. The reasons were twofold: the increasing demand for sulfur and the fact that Poland possesses one of the largest native sulfur (brimstone) deposits in the world.

Beginning in the mid-1980's however the demand for Polish sulfur sharply declined owing to the increased availability of cheap sulfur obtained from the sulfur-removal processes associated with the production and processing of crude oil, natural gas, and coal. This sharp decline in the price of sulfur on the world markets brought about the necessity to restrict sulfur extraction in Poland. Thus paradoxically the availability and implementation of environmental protection technologies designed to limit the emissions of sulfur dioxide (mainly associated with the burning of mineral fuels) led to a severe disruption in a sector of the Polish mining industry which was functioning well. As mined sulfur was continually replaced by sulfur obtained by sulfur-removal techniques it became necessary to close sulfur mines. This liquidation of sulfur mines and the recultivation of the mining areas associated therewith have required heavy financial expenditures. At the end of the year 2000 approximately 400 million PLN (approximately 100 million USD) have been allocated therefore from the Polish national budget. These expenditures are nevertheless insufficient to cover the costs of pumping out sulfurized water in order to finally close the mines. Taking into account the environmental dangers created by the operation of open and pit sulfur mines it has been estimated that at least 900 million PLN will be required to complete the restructurization program in this mining sector by the year 2010.

3.4. The iron and steel industry

The major aim of the restructurization program adopted for the iron and steel metallurgy industries is to increase the economic efficiency of selected plants. In the government's *Restructurization Program for the Iron and Steel Industries in Poland* the total costs for restructurization between 1998–2005 are estimated at 12 million PLN, with 8.4 million envisioned for capital investment, 2.5 million for equity investment, 0.8 million for social programs, and 0.3 million for environmental protection.

Implementation of the program assumes achievement of international competitiveness by modernizing technology and lowering energy consumption, decreasing harmful environmental effects, improving product quality and production structures, and adjusting processing potential and employment levels to meet actual demands.

4. The Role of Innovation in „Greening” of Enterprises

The structure and state of fixed capital assets are the primary factors determining the delivery of contemporary and competitive products. The operation of used and outdated productive assets, the application of obsolete technologies, and the inability to adapt production processes to changing demands constitute the major barriers to increased industrial growth in Poland and in addition contribute to excessive pressures on the natural environment.

The overall indicator for the degree of wear of permanent assets in the Polish economy in 1997 stood at 49%, with the mining and extraction sector's indicator being the highest at 62.9%, while the overall industrial production indicator was 55.5%, with the highest sector indicators demonstrated in the metals' sector (65.3%), woven fabrics' sector (64%), and coke and crude oil-based processing sector (62.9%). Particularly high degree of wear indicators were visible in the case of machinery and technical plant and equipment (67.1%) as well as in the case of transportation equipment (61.3%).

The increased emphasis on capital investment which has taken place since 1992 has enabled the partial modernization of permanent assets. Between 1992–1997 the real value of investments in permanent assets rose by 15.8%,

including an 11.2% increase in building and plant and a 34.5% increase in investments in machinery and technical equipment¹⁰.

In order to obtain its desired competitive position on the international market Poland is in dire need of innovation – understood as technological, managerial, and organizational solutions leading to the commercial success of Polish enterprises. The present instruments and means designed to lead to the necessary innovation are insufficient to meet demands, and the minimal amounts allocated to scientific research and development – constituting approximately 0.5% of annual GNP – make it impossible to realize the necessary R&D programs.

The analysis of technological progress and development carried out by the highly industrialized countries underscore the need for strategic technological development of an interdisciplinary character which would lead to sustainable development. This is confirmed by scope of the R&D programs adopted by the leading economic countries. The Fifth Framework Program for Research and Technological Development elaborated by the EU for the years 1998-2002 envisions financial support for technological development and improvement of living standards via the appropriate allocation of biological resources leading to improvement in the competitive position of products and the achievement of permanent economic growth while simultaneously maintaining the preservation of eco-systems and meeting energy demands.

In Poland high hopes for the modernization and updating of production techniques were connected with the twin processes of economic transformation and the implementation of a free market system. From the perspective of several years, however, one may conclude that the expected results were framed too optimistically. Based on a research project involving 200 enterprises conducted by the Institute of Economics of the Polish Academy of Science (PAN) between 1997–2000 it was clearly concluded that the opening of the Polish economy and introduction of a free market system did not lead to the automatic implementation of innovative activities among Polish enterprises. Many market factors affect innovation, including structure, ownership, and governmental policy. A hierarchy of the investment aims of the investigated enterprises is set forth below in Table 1.

¹⁰ A Concept for Medium-term National Development until 2002, p. 26.

Table 1. Investment Aims according to Enterprise Structure (in %)

Investment aims	State-owned Enterprises	Privatized Enterprises	Overall Percentage
Increase in production potential	24.7	30.3	27.8
Lowering production costs	11.1	14.1	12.8
Improving quality and updating existing products	37.0	26.3	31.1
Introduction of new products	8.6	7.1	7.8
Increasing exports	--	6.1	3.3
Undertaking export production	2.5	--	1.1
Diversification of products	1.2	2.0	1.7
Environmental protection	7.4	5.1	6.1
Creation or development of distribution networks	3.7	3.0	3.3
Improvement of working conditions	1.2	2.0	1.7
Other aims	2.5	4.0	3.3

Source: S. Szwedowski, *Changes in the ownership structure ad innovative activities of enterprises contained in: The Restructurization of Enterprises in the Transformation Process in the Polish Economy*, E. Mączyńska (ed.), INE PAN DiG Publishing, Warsaw, 2001.

It can be seen from Table 1 that the main investment aims were „Improving quality and updating existing products” (31.1%) and „Increasing production potential” (27.8%). Environmental protection, expressed as an investment aim by 6.1% of respondents, finds itself in fifth place. Investment activities connected with environmental protection were undertaken by both stated-owned and private enterprises, although state-owned enterprises predominated by 2.3 percentage points¹¹.

It's reasonable to conclude that achievement of the remaining investment aims would also lessen environmental pressures, even though their enumeration in the research did not require that environmental aspects be taken into consideration. This is particularly true of factors such as lowering production costs, improving the quality of products, the introduction of new products, and the undertaking of production designed for export.

¹¹ S. Szwedowski, *Changes in the ownership structure ad innovative activities of enterprises contained in: The Restructurization of Enterprises in the Transformation Process in the Polish Economy*, E. Mączyńska (ed.), INE PAN DiG Publishing, Warsaw, 2001.

It remains for the Ministry of Economic Affairs to elaborate an integrated program concerning the introduction of selected products in selected markets and to support scientific research. In many respects the aim of increasing the competitiveness of the Polish economy is consistent with achieving ecological goals. For example a reduction in the energy consumption associated with production would also decrease the costs of processing and increase the competitive pricing of products on the market. The elaboration of technologies considered to be essential for energy policy constitutes a good example of this thesis. They include the implementation of highly-efficient energy currents and lighting systems, development of renewable sources of energy for construction, technologies for recovering energy in construction and industry as well as combining heat and electrical energy in buildings of various types¹².

5. Ecological Instruments for the Realization of Sectoral Policies

With regard to the Polish economy the overall main aim is to enter a period of extensive growth based on the exploitation of domestic natural resources and Polish labor. It is envisioned that this period of growth will be characterized by the efficient use of both investment capital and human resources as well as the use of innovative technologies based on science-intensive industries. In addition to increasing the global competitiveness of Polish goods this should lead to rationalization of the use of natural resources and to a reduction in man-made pressures on the environment. A number of recommendations intended to achieve these aims may be found in governmental programs designed to appropriately elaborate and implement those factors of development which will have a positive effect on economic policies. The success of these initiatives depends on choosing the appropriate methods and instruments for their implementation. These instruments may be divided into three groups:

- direct regulation
- indirect regulation (economic/fiscal policies)
- supporting programs

The instruments of **direct regulation** encompasses legal regulations, decrees, injunctions, licenses, norms and standards established by legal authorities for business enterprises. In the area of environmental protection

¹² National Energy Policy, www.mg.gov.pl

direct regulation is sometimes a preferred method, but its scope should be limited to the essential minimum (health and phyto-sanitation measures, protection of unique natural environmental treasures, exploitation of natural resources, etc.).

The instruments of **indirect regulation** affect the economic results of business enterprises and act as a stimulus to enforce good practices in accordance with the intent of the legislative authors. The mechanisms of the market economy offer a fertile field for the use of indirect regulation. Polish ecological policy envisions the implementation of environmental emissions' fees, penalties, subsidies, the imposition of an environmental tax on the use of fuels and/or coal, both mandatory and voluntary systems of civil insurance against environmental damage, the creation of ecological security funds, a preferential tax system in accordance with the solutions applied in the EU, as well as the creation of a market of transferable licenses for emissions¹³.

The emissions' fees for air and water pollution contained in the system presently in place in Poland are among the highest in the world and are universally criticized by business enterprises for the high costs they generate. The payment systems in place in other countries, in particular those of the EU, the law of which Poland is attempting to assimilate, are on a much smaller scale and do not constitute a stimulus to reduced emissions. The high level of emissions' fees in Poland negatively affects the competitiveness of Polish products and undoubtedly worsens the situation of Polish businesses in foreign markets. This funneling of money from businesses into specially established ecological funds deprives businesses of monies they could otherwise use for pro-ecological investments. The procedures for obtaining subsidies or preferential loans from the funds are burdensome and highly bureaucratized. It would be much simpler if the charges for pollution emissions were simply suspended on the condition that they be applied to pro-ecological investments designed to reduce the pollution based on which the payments originated. A similar program in place with regard to environmental fines and penalties is highly assessed by the business community. Such a system would of course be highly disadvantageous to the ecological funds, whose income would be drastically reduced, and may seriously disrupt their functioning. Keeping in mind however that more than 50% of the NFOSiGW (The National Fund for Environmental Protection and Water Management) income at present comes from installment repayments of principal and interest on loans, one may assume that its existence is taking on the nature of a revolving credit institution.

¹³ The Second National Environmental Policy, Ministry of Environmental Affairs, Warsaw, 2000, p. 57.

Another significant factor affecting the course of pro-ecological restructuring of the Polish economy is governmental price intervention, particularly with regard to its fixing of prices for energy and energy suppliers. The process of raising these prices to bring them into line with those charged in the EU countries is proceeding slowly, the justification for the lower charges in Poland being based on the low income level of its citizens and overall difficult financial situation existing in the country. The liberalization process underway of price levels for electricity and heating is also hampered by the over appraisal of plant assets, which leads to the establishment of price levels not economically or ecologically justified. This in turn can lead to excessive energy use in the Polish economy. Lowering energy consumption would bring about not only ecological benefits but would also increase the competitiveness of Polish domestic products by lowering production costs.

Supporting programs encompass those activities designed to provide access to information and know-how concerning the latest technological innovations and support for R&D programs and education. There is a great interest in environmental technologies in the world market. Design, production, and sales of such technologies would have a triple positive effect: significantly increasing the competitiveness of Polish industry, expanding its economic base, and providing for a cleaner environment.

5. Conclusions

The analysis conducted of governmental documents and papers and the sectoral programs for industrial restructuring permit the formulation of a number of conclusions.

All the sectoral programs devised for various problem sectors of Polish industry contain appropriate recommendations for taking environmental issues into account. They are formulated so generally, however, that they raise the suspicion that the programs' authors were not aware of the true scale and nature of existing ecological problems.

Practically speaking all the responsibility for resolving environmental problems is put on the shoulders of the enterprises. This accords with the fundamental principle that those industries which pollute are responsible for the cleanup (the polluter pays principle), but in light of the fact that a number of state-owned enterprises are operating on the verge of bankruptcy one may question whether the proposed solution is feasible.

Interest in and concern about environmental problems has significantly increased throughout Polish industry owing to the fact that Polish industry will soon be required to conform to EU standards. In addition the Polish government and individual enterprises recognize that their compliance with international environmental standards is necessary to gain access to international markets.

The instruments chosen to implement ecological policies are generally proper taking into account the nature of the problem. Nevertheless some of the environmental pollution charges are too high. Their level in Poland exceeds that of analogous charges in the EU and negatively affects the competitiveness of Polish industrial production. A better solution would seem to be exempting enterprises from environmental pollution charges in the event they invest the amount involved in solutions designed to reduce or eliminate the pollution on which the charges are based.

Analysis of the development programs elaborated for selected sectors of Polish industry demonstrate a conflict between social and ecological goals. The concept of sustainable development is based on equal treatment of the economic, social, and environmental spheres. Plans for the continued operation of some enterprises based primarily on the need to maintain employment levels in some cases conflicts with the need to reduce the harmful effects on the environment. In addition these enterprises frequently do not pay the fines and environmental charges assessed on them. This practice, common in industrial problem sectors, is in violation of the law and ought not to be tolerated.

In assessing implementation of the sectoral programs concerning environmental protection it is difficult not to notice the discrepancy between words and actions. The pro-ecological activities contained in the programs are not implemented primarily owing to lack of financing therefore. There is also, however, a mentality barrier whereby the role and significance of protecting the natural environment to raise the standard of living of future generations is simply not appreciated. In such a case long-term gains are foregone in favor of short-term advantages.

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