

Malgorzata BURCHARD-DZIUBIŃSKA*

ENVIRONMENTAL DETERMINANTS OF INDUSTRIAL DEVELOPMENT IN TRANSFORMING POLAND

Abstract: This report contains a synthesis of studies which were focused on ecological aspects of the restructuring of Polish industry during the recent period. The studies covered the macro-, mezo-, and microeconomic level and they aimed at describing various determinants and effectiveness of the ecological policy. Due to the fact that a predominant part of all air, water and soil pollutants are of industrial origin, it is in a broadly understood restructuring of industry that ways of solving the problems arising at the intersection of economy and natural environment should be sought. The transformation should encompass both the branch structure and the commodity structure of industry. The period of systemic transformation witnessed by Poland these days has aroused hopes for a joint solution of economic and ecological problems. The present report is an attempt to answer the question whether these expectations can come true.

Key words: environmental policy, industrial restructuring.

1. HISTORICAL OUTLINE

The present process of restructuring the Polish economy was initiated by the so-called 'Round Table' debates in 1989. The decisions taken at that time lay foundations for a number of systemic reforms paving the way for transition from a centrally-planned to a market economy. The transformation of economic system is a long-term process, which also involves a big risk, all the more so as the transformations carried out in Poland are of pioneer character and there is unavailable no earlier experience that could be tapped in the Polish conditions. Decisions about abandoning the economic system based on central commands and allocations were made in the period of deep economic recession and high

* Institute of Economy, University of Łódź, ul. Rewolucji 1905 r. 41, 90-214 Łódź, Poland.

inflation. Unfortunately, the change of principles according to which the country's economy is steered towards allocation of resources through the market does not proceed painlessly. The discussion on pace of changes which has been under way all the time is not finished till today, although more and more persons are inclined to agree with supporters of the shock therapy. A gradual slow down in the speed of reform, absence of a firm stance and consistence in implementation of accepted assumptions prolong the process of systemic transformation. There was lost a short period of social acquiescence for changes.

Ecological investments are known to be usually costly, while the consequences of abandoning them are visible only after some time, sometimes many years. As the command-type economy in the Polish People's Republic had been experiencing for a long time major difficulties connected with shortage of financial and material resources needed to ensure a balanced development, the problems of environment protection were pushed to the margin of economic activities. Apart from some spectacular decisions concerning the establishment of national parks and nature reservations, very little attention was devoted to problems of environment protection when drafting investment plans. It must look like a paradox in the Polish conditions where different laws in the field of environment protection were first adopted in the late 1940s. Those laws needed to be updated with the passage of time, and what is no less important – carefully observed. Due to unavailability of sufficient resources and free interpretation of binding regulations concerning protection of environment, Poland's economy entered the period of systemic transformation with a not too glorious heritage of devastated natural environment.

In highly industrialized countries, a greater interest in ecological issues and more stringent laws in this field date back to the end of the 1960s. In Poland, the new law about protection and control of environment was adopted on 31st January 1980.¹ The law was considered modern by experts. At present there are in force several laws regulating the principles of using natural environment and its resources. Some of these laws were adopted before the Second World War. In later years they were amended to some extent, but the latest version of the law pertaining to this sphere still needs to be discussed and adopted.

Undoubtedly, industry and power engineering pose the biggest threat for natural environment. The long years of centrally-planned economy developed and strengthened a certain scheme of behaviour in industrial enterprises, which was characterized by inertia in decision-making and concentration of activity on the implementation of plans imposed by the Centre. Operation of companies detached from the principles of economic calculus could hardly induce them to

¹ "Dziennik Ustaw", 1980, nr 3, § 6.

take into account the costs of using natural resources and the costs of environment protection when making economic decisions. The system of economic instruments binding in those times was quite ineffective and it could not ensure any serious consideration of ecological problems at any level of decision-making hierarchy.

2. THE ECOLOGICAL POLICY OF THE STATE DURING THE PERIOD OF SYSTEMIC TRANSFORMATION

The process of systemic transformation has brought about a reorientation of the economic policy. Its integral part is the industrial policy. Taking into consideration the key role of industry, it can be said that virtually any influence of the State on the economy influences also industry to a smaller or bigger extent. The relationship between the industrial policy and the ecological policy is of the greatest importance for the present report. The relevant document entitled *The state ecological policy* was adopted in 1991. It says, among others, that:

... there is a close convergence between the ecodevelopment policy and the economic interest of the country and economy. The existing technological gap in tapping, processing and using natural resources ... points at the scale of economic benefits that could be derived through the introduction of modern technologies.

Chances for attaining these benefits are sought in "privatization process of the economy". However, such formulation seems to be a far-reaching simplification of the whole problem. Namely, privatization is not able to solve all problems connected with using natural environment and tapping its resources. There is still unsolved the problem of determining ownership rights to most natural resources, their proper valuation, and imputing negative effects of economic activity to concrete perpetrators. Privatization and subordination of companies to market rules provides an additional stimulus to avoid the costs of environment protection, as a given firm's competitiveness increases when it does not register a part of its costs. The economic practice of countries with a developed market system proves that in relation to natural environment resources the market shows numerous failures, which can be liquidated by means of administrative-legal regulations.

As a basis of the ecological policy, there have been accepted the principles of:

- legality;
- liquidation of pollutants at their source;

- socialization;
- economization (i.e. subordination to the rules of market game with observing the 'Polluter Pays Principle');
- joint resolving of European and global problems of environment protection;
- regional resolving of ecological problems accompanied by broader decision-making rights of the local authorities;
- its gradual introduction with priorities being chosen at each stage (*Polityka ekologiczna...*, 1992).

The adopted document stipulates that the State ecological policy will be implemented through the ecodevelopment and restructuring of the economy. As a priority action in relation to industry there has been recognized the reduction of fuel-metallurgical complex as well as energy-, material-, and water-intensive production, wider introduction of technologies producing small amounts of waste materials and closed water-circulation systems, recycling of waste materials, making production processes more hermetical, using substitutes, etc., as well as creating industries manufacturing environment protection devices, and ensuring appropriate exploitation of equipment reducing pollution. There was also announced a gradual sharpening of requirements concerning produced materials and equipment towards their bigger ecological safety.

The formulations contained in the document in question provide only a general framework. The goals defined in it in a general manner do not arouse, in fact, any doubts as regards their advisability, but the document does not give sufficient information concerning the methods and pace of achieving the goals.

The research perspective of several years allows to draw some conclusions about the effectiveness of ecological policy at all levels.

On the macroeconomic scale, it seems that ecological determinants have been treated not as a chance and objective in drafting the industrial policy but rather as a barrier to the development of industry and a troublesome supplement, which has to be taken into consideration when drafting the plans of restructuring. The implementation of ecological policy, besides the accomplishment of current tasks, involves the necessity of compensating for long years of negligence in this field. It will be possible to solve the existing problems only by adopting a long-term strategy of activity and next implementing it consistently. Meanwhile, the decisions being taken point rather at the lack of consistence in implementation of the ecological policy (and not only ecological) and at preference given to short-term goals. This thesis is confirmed, for instance, by changes in the system of charges collected for using natural environment. In December 1991 there were introduced new charges for the economic use of natural environment, which were much higher than those collected earlier. It was accompanied by the publication of a list of 'polluters', which also contained

an explicit instruction that these firms could no longer postpone their investment decisions aimed at protection of environment, while all their payment arrears in the form of fees and penalties would be ruthlessly executed. Only those firms which had launched appropriate investment projects could count on preferential treatment. However, it was already in November 1992, when under a pressure of companies which were unable to meet the new requirements the Ministry of Environment Protection, Natural Resources and Forestry withdrew from its earlier decisions and decided to reduce the charges. In the justification to this decision, it was written, among others, that "it is not the most opportune moment for restoring a desirable order to ecological issues from the viewpoint of economy". The arrears in this field are enormous and any further delays in adopting concrete resolutions aimed at the improvement of environment quality will involve the necessity of expending more and more money on amelioration of damages. In many regions of Poland, as a result of an excessive emission of harmful substances, pollution of water and soil, the living conditions and health of inhabitants have deteriorated considerably. Those responsible for the economic policy do not seem to remember about synergy effects! Generally speaking, they mean that the final effect of tampering with environment may be and most often is many times bigger than it could be expected from the observation of factors causing its degradation. This multiplication results from interactions occurring between particular components of natural environment. That is why it is extremely difficult to predict precisely the scale of damage done. Postponing the implementation of investments serving protection of environment must lead to increased expenditures for this purpose in the future.

The lack of consistence in collecting higher charges proved to be yet another factor destabilizing the ecological policy at all levels. The already mentioned decisions about reducing the rates affected most adversely these companies which had treated seriously the announcements of the Ministry of Environment Protection and undertaken protective measures. Consequently, companies paid about ten times less than it would have been required by the rates adopted in December 1991. Some companies sought to have a part of earlier payments made by them refunded and their efforts proved to be successful.

The system of charges discussed here is expected to enlarge special target funds allocated for the improvement of natural environment. Thus, the reduction of charges brought about a deficit of resources for protective investment projects planned earlier. In these conditions, companies have to consider a typical 'prisoner's dilemma'. Most generally speaking it concerns a situation, in which particular economic units have a formal possibility of co-participating in supplying a certain public good (e.g. clean air) through investing the resources possessed by them. However, the benefit obtained by a given economic unit is smaller than the sum of benefits derived by all users of the produced

environmental good. The 'producer' of pollution itself may be interested in the improvement of environment quality, but unwillingness to produce an external effect unfavourable for it causes that a company becomes a prisoner of its own situation. The copying of such reasoning by all those polluting environment causes that all become 'prisoners'. At the same time, every company can adopt a strategy of awaiting proecological moves by another firm. Then as 'free-rider' it could have free access to the supply of public goods produced owing to investments made by other economic units.

The lack of consistence in observing regulations on the part of the State operates as an incentive for companies to evade a prompt launching of investments in the field of environment protection. The experience acquired in 1992 teaches that abstaining from an action does not involve any negative consequences (apart from negative consequences for environment), and large companies, posing simultaneously the greatest threat for environment, can easily use their bargaining power in negotiations with the Ministry of Environment Protection. The awareness of big importance of environment protection did not always accompany various discussions on the form of industrial policy either. In documents coming from the Central Planning Office, there can, for example, be found the following statement:

Protection of environment must become one of basic objectives of the development policy in Poland, but it simultaneously constitutes one of its main barriers.

A further analysis of theses concerning the medium-term policy does not shed any more light on the issues discussed earlier. The analysis of the hierarchy of priorities in the Polish industrial policy determined in 1992 shows that priority has been given to export promotion, followed by infrastructure investments: postal services and telecommunications, banking, sea and air ports, and border crossings. These are followed by investments in oil and gas refining industries. The fourth place is held by the modernization of fuel-energy sector, iron metallurgy, cement industry, heavy chemistry, shipbuilding industry and railways, which is the sectors from among which the first four are the biggest sources of pollution in Poland. The approach to ecological problems in the accepted projects arouses also many doubts. For example, in the hard coal mining sector there is envisaged the liquidation of some coal mines, but the problem of salt water disposal and liquidation or recycling of solid wastes coming from still operating mines has been practically left unsolved. As it is known the costs of efficient installations in this field exceed financial capacities not only of coal mines themselves but of the entire coal mining sector. Similarly, political considerations and fear of unemployment growth played a primary role in the evaluation of metallurgical sector rather than hazards carried by these compa-

nies for environment and inhabitants living in their vicinity. A typical example here could be decisions relating to the Sędzimir Steelworks in Nowa Huta.

At the macroeconomic level, the goals of ecological policy easily lose ground to the goals of socio-economic policy not connected with environment protection. Such approach is rather surprising at the time Poland seeks admission to the European Union. The regulations concerning the use of natural environment and its protection are exceptionally stringent there and it is certainly impossible for Poland to attain the standards observed in the European Union at present. However, pushing ecological problems to the margin of restructuring plans cannot pass unnoticed by the authorities of the European Union.

The restructuring of Polish industry is accompanied by major ownership changes. They take place according to several privatization paths. Thus, it is possible to transform a state-owned company into a joint stock company belonging to the State Treasury to privatize it next through a public offering of its shares or through the so-called mass or voucher privatization, or also through restructuring (this concerns companies of special importance for the public economy). A state-owned company can be also liquidated. In the case of liquidation, its assets can be sold, leased or used as a contribution to a partnership. The ownership changes carry a risk that some economic units will try to avoid paying their liabilities including also charges for the use of natural environment or any possible penalties (along with accrued interest). Theoretically, liabilities towards the state budget or local budgets are not subject to limitation, but it may prove difficult to remove the existing barrier when collecting payment arrears. A take-over of companies by the private Polish and foreign capital has never involved taking over all their ecological liabilities. Legal loopholes, absence of precisely defined principles of the economic policy, disputes about competencies, and finally motivations of the top management and self-government organs of privatized companies restrict chances for obtaining positive ecological effects in the restructuring process. It is, therefore, extremely important to carry out obligatory ecological monitoring in the process of privatization. The past economic practice shows that the Ministry of Environment Protection participates in the privatization process to an insignificant degree. The law in force does not forbid the participation of its representatives in the privatization process, however the lack of co-ordination of actions between different ministries excludes a comprehensive supervision over all changes taking place. During the initial stage of ownership transformations, ecological monitoring was done only on the initiative and at an explicit request of foreign investors. There have not been developed appropriate habits in Poland so far that would allow to treat the problem of environment protection as equal in importance with the problems of production or employment.

It is also necessary to regulate the issue of liability for pollution and damages made in the past, as well as interlink the process of ownership transformations with elimination of its most acute negative impact of environment. The change of owner is a superficial solution as it frequently leads to the petrification of an obsolete structure of production.

In February 1993 the Minister of Environment Protection, Natural Resources and Forestry, the Chief Inspector for Environment Protection and the Minister of Privatization signed an agreement on appointing a standing inter-ministerial unit whose task is to ensure that ecological issues are taken into account in the capital privatization programme. It is charged, among others, with determining the scope and methods of ecological monitoring, as well as requirements that should be fulfilled by firms carrying out the monitoring. This move gives some hopes for improvement of the situation in the future, but it would be necessary for this unit to monitor all privatization paths.

3. ROLE OF MESOECONOMIC LEVEL

3.1. The Chorzów Experiment

A large part of the privatization process takes place at the local level. That is why an active involvement of the Provincial Departments of Environment Protection and the Provincial Inspectors of Environment Protection in these processes along with respecting their opinions in practice are extremely important.

It is difficult to give an explicit evaluation concerning ecological determinants of operation of industrial companies at the mesoeconomic level. This is due to a huge differentiation of problems connected with protection of environment, with which the local authorities in particular regions have to deal. In some regions, the local decision-makers display willingness to embark upon a far-reaching co-operation and even apply some nonconventional solutions. An example here could be the Chorzów Experiment concerning the reduction of emissions of dusts and gases by two 'polluters' (Żylicz, 1994). It was initiated by the Economic Department in the Ministry of Environment Protection and it was carried out with an approval of the Minister of Environment Protection and in a close co-operation with the local authorities. Chorzów is among the most polluted cities in Poland. The two companies chosen for the experiment, i.e. the Kościuszko Steelworks and the Chorzów Power Plant are located in the city centre and they are the biggest source of harmful emissions in that area. The power plant is an old company built in the 1950s and earmarked for liquidation

for technical reasons within the next 5 to 6 years. That is why incurring the costs of installing purifying equipment did not look like an effective undertaking in this case. Meanwhile, the steelworks had a restructuring plan accepted by the authorities, whose implementation was to bring about the reduction of emissions after 1995. At the time it joined the experiment, the steelworks coped with financial difficulties while the power plant had a much better financial standing. The power plant received a decision allowing its emission reducing installation to operate without any change, while the steelworks was to accelerate the restructuring process leading also to the reduction of emissions with a financial support from the power plant. Such solution made it possible for the steelworks to continue its modernization and it allowed to improve significantly the quality of air in the centre of Chorzów. Thus, an elastic interpretation of regulations within the framework of the law in force yielded a desirable effect here in the form of cleaner air minimizing also the social costs of this process. Namely, there were preserved jobs in both companies, and financial resources for environment protection were allocated in the place where they could be used most effectively. The experiment can be considered fully successful.

The Polish law does not envisage a trade in emissions, but it permits to give a concession (with approval of the local authorities) for the emission of all or a definite part of pollutants to another economic unit. Such procedure calls, however, for the co-ordination of activities between companies. The co-ordinator's role could be played by the organs charged with environment protection at the administrative province level. It should be possible within a given region (city, administrative district) to agree upon protective undertakings so that modest funds, which usually remain at the disposal of companies, can be more effectively used from the point of view of the entire local community. It is a task of the ecological policy to look after the state of natural environment. This broad approach to the problem allows to seek different ways of achieving such a goal as a desirable quality of environment. All kinds of post-production pollutants are a by-product of the operation of economic microunits, which most often find it very difficult to raise sufficient funds for investments in the field of environment protection. The macrolevel, on the other hand, is too much 'removed' from the sources of pollution. It seems, therefore, that the hitherto underestimated mesoeconomic level has the biggest possibilities. What is meant here is not any centralization of activities but creating conditions for co-operation between economic microunits. At the present time, companies must solve their problems connected with environment protection by themselves, which does not always guarantee a rapid improvement in this field. The success of Chorzów Experiment proves that there can be found better solutions than the most optimal solutions accessible to individual companies.

3.2. The case of Tarnów-Mościce Nitrogen Company

Unfortunately, the cooperation between the provincial environment protection organs and enterprises not always develops without conflicts. Wishing to fulfil social expectations with regard to the quality of natural environment, the local authorities sometimes take rash decisions surpassing the limits of the law binding in Poland. An example here could be the decision of the president of Tarnów Administrative Province, which imposed unusually severe conditions concerning the emission of pollutants on the Tarnów-Mościce Nitrogen Company. The decision was next quashed by the Supreme Administrative Court.

Apart from procedurally faulty acts, the Supreme Administrative Court found that some requirements made by the President of Tarnów Province did not have any legal foundations (the Polish regulations do not specify, for example, freon emission standards). If the President's decision had been sustained, the company would have had to pay penalties of many billion złoty for its failure to observe emission standards. It is worth adding that during the last four years that company spent about 500 billion złoty, which allowed it to reduce considerably the emission of pollutants. Taking into account the financial standing of the company (over ten billion złoty of losses in 1994), the President's decision was synonymous with its bankruptcy. There was violated one of principles of the ecological policy, i.e. a gradual introduction of environment protection devices. The decision could have also undermined the efforts aimed at protection of environment made in the recent period. If a company is very harmful for environment and it does not give any hopes for any improvement of this unfavourable situation it seems more appropriate to take a decision about shutting it down or liquidating it gradually. Prolonging its agony creates unnecessary illusory hopes and encourages a company to adopt a stance of 'wait and see' during a difficult period. Rational decisions can be made only where a clear and stable economic policy is pursued at all levels.

4. THE EXPERIENCE OF INDUSTRIAL COMPANIES – EXAMPLE OF ŁÓDŹ ADMINISTRATIVE PROVINCE

The survey carried out by us aimed at getting an insight into the stance adopted by industrial companies towards the problem of natural environment protection during the period 1989–1993 and their plans for the future. The questionnaire was addressed to 20 companies in the Administrative Province of Łódź. The choice of this region was prompted by several reasons:

1. Degradation of natural environment and a big role of industry in its degradation. Almost 58% of the entire area of this province was classified as an area of ecological hazard. This area is inhabited by 92.6% of the province's population, which with regard to population density rates gives the Łódź area of ecological hazard the first place in Poland (*Rocznik...*, 1993).

2. High level of the region's industrialization – the share of industry in generation of the Gross Regional Product reaches over 50% in selling prices and despite its downward trend it will continue to dominate.

3. Necessity of carrying out deep structural changes in industry. The domination of light industries manufacturing primarily consumer goods caused that the recession in the Administrative Province of Łódź assumed a much more acute form than in the sector of industry as a whole. The drop in sales, employment and profitability was much bigger here than the average indices for the entire Polish industry. This province was considered to be a region especially threatened by structural unemployment and as such as a region requiring a support in the restructuring processes from the Government.

Among the companies under survey, 15 are on the 'black list' of the Environment Protection Department of the Provincial Administrative Office, while the remaining ones due to their type and production volume can pose real threats for natural environment (*State ...*, 1991). Particular industrial branches were represented in the sample as follows: (a) textile industry – 7 companies, (b) food industry – 4 companies, (c) chemical industry – 4 companies, (d) electroengineering industry – 3 companies, (e) power industry – 2 companies.

In this group of companies, 80% were equipped with devices for reduction of dust emission and 40% had their own mechanical sewage treatment plants. In two cases there were discovered neutralizers of waste waters allowing to reduce a too high coefficient of pH, and in one company – the equipment for combustion of liquid wastes. However, the efficiency of installed equipment was not satisfactory, because in as many as 60% of cases penalties were imposed for surpassing admissible norms of dust and gas emissions, and in 75% of cases for surpassing admissible norms of waste waters disposal. In two cases the companies had to close their boiler rooms, from among which in one case it was done to the order of the province's president.

Among the analyzed companies, there can be clearly distinguished two groups. The first can be said to include companies most adversely affected by the economic recession which are on the verge of bankruptcy. These companies since the time their sales collapsed, which is since 1990, have not been paying the rates due to using natural environment and the resulting penalties either. In extreme cases their arrears amount to several billion złoty (without the interest for delayed payments). The companies do not plan any proecological investments quoting most often as the main reasons:

- a) lack of sufficient own funds for this purpose,
- b) lack of external sources of funding,
- c) uncertainty about their own future resulting from prolonging ownership transformations.

In this group are large and ineffective textile companies characterized by obsolescence of their fixed assets and carrying a burden of various socio-welfare facilities (crèches, kindergartens, clinics, and holiday centres). These are structures which do not lend themselves easily for reorganization. Many large textile companies were forced in the past to produce power and technological steam not only for their own consumption. The mixture of industrial and urban infrastructure, especially in smaller urban centres (towns of Konstantynów, Ozorków, Zgierz) does not allow to pursue a rational policy in the field of environment protection. It sometimes leads to paradoxical situations. For example, a textile company heading for bankruptcy based its amelioration programme on the production of thermal energy subsidized from the budget for nearby housing districts. The close interrelationship between a company and an administrative district, which includes also protection of jobs, tends to petrify the old structures. The cases when administrative districts delay with payments for supplied electric power are not so rare. Hence, it is no wonder that companies adopt a passive stance on protection of environment, while the fact that they have a boiler plant providing heating for a big part of the city is treated as a strong bargaining argument in negotiations concerning their restructuring plans.

None of the directors of analyzed companies with a bad or very bad financial standing would try to hide that ecological problems had never been in the centre of their attention while the present critical situation of companies has pushed them even further into the background.

Several companies located in the City of Łódź area would claim that since the mid-1970s they had been contributing substantial amounts of money for the construction of the Collective Sewage Treatment Plant, and hence they could not be blamed for not completing that investment project during 20 years. Unfortunately, the consequences of this situation are very serious, as waste waters deposited through the city sewage system make their way to surface waters in uncleaned state. It should be objectively stated that in most cases building individual sewage treatment plants is impossible due to unavailability of appropriate sites (location of companies among densely populated urban areas), and it is also unjustified economically. A solution of this problem can be sought in installation of modern, water-saving technologies. Some know-how in this field is even available, such as e.g. the method of using warm washery effluents for heating water used in dyeing processes elaborated in co-operation with the Textile Institute. Unfortunately, its installation cost (3.8 billion złoty in the prices of 1993) is an insurmountable barrier for the time being. In the case of

companies in this group, it should be said that resuming production even within new organizational frames but without technological changes will not diminish the burden carried by natural environment. The bad financial standing of these companies makes it impossible for them to take credits, and for most of them the most important problem is obtaining resources allowing to ensure continuity of production and wages for personnel. The two cases of investments aimed at environment protection made by the companies under survey and described in the questionnaires concern joint projects funded by a company and an administrative district. These are: modernization of a boiler plant and construction of a sewage-treatment plant, which will be serving in the future both the company and the city on whose site they are built.

Proecological activities have both an investment and a non-investment character. In all cases described by the respondents they were initiated by the company management sometimes assisted by organizational units within companies directly responsible for protection of environment. It should be noted, however, that they were usually restricted to carrying out postcontrol instructions of the Provincial Inspectorate for Environment Protection. The operation of permanent units for environment protection and emergency actions was reported by only three chemical companies. They were also equipped with laboratories controlling the composition of wastes produced by them. In five other companies – again to an explicit order of the above inspectorate – appropriate instructions concerning procedures to be followed in case of failures creating a threat for natural environment were just being drafted.

Two food companies planned the construction of a sewage-treatment plant. One of them stressed that such decision was prompted by its concern about the company's image. This company sells a large part of its output in the countries of the European Union and it hopes to increase its exports. In this situation, any other solution would compromise and in future also disqualify the company. Still it should be noted that such approach to the ecological issue is quite unique among Polish companies.

Among various measures adopted by companies with a good financial standing and aimed at reducing hazards for natural environment can be found: the suspending of certain types of production such as e.g. technological grease, meat-bone meal, galvanization, or some kinds of acids, esters and dyes. These were sometimes products in big demand in highly developed countries, where their production had been abandoned earlier as a result of more stringent environment protection standards.

Decisions about launching proecological activities were most often justified by the announced more stringent environment protection regulations and the resulting higher fees and penalties. Social reasons were also mentioned as an important factor. A major obstacle to a rapid launching of investments aimed at

protection of environment is the lack of sufficient funds. In most cases a company's own funds are used for this purpose. Only two companies admitted that they had received financial resources from the National Fund of Environment Protection and Water Resources, and one company received a bank credit for this purpose. According to the directors of analyzed companies, preferential funding of proecological investments has not gone beyond the stage of empty declarations.

Most companies adopt a stereotype approach when seeking to diminish harmful effects of their production for natural environment. There predominates by far the concept of perceiving only 'the pipe's outlet', that is cleaning whatever gets out of the company. Meanwhile, modern solutions in the field of environment protection include waste-free technologies, closed-water circulation systems, hermetical production processes, etc.

There should be also positively assessed the state of ecological awareness among most directors and top managers of the companies under survey. They tend to treat seriously economic incentives when planning different activities protecting natural environment. This is a desirable phenomenon at the time the national economy is entering the path of a market economy. Still one can hardly expect that it will be ever possible in the future to subordinate the ecological policy to the market rules. All highly developed countries rely on direct activities of the state administration at different levels alongside the market mechanism. It appears that an intervention of environment protection bodies is indispensable for the elimination of market shortcomings connected, for instance, with operation of negative external environmental effects or developing legal-institutional frames for the use of natural environment and its resources. They are necessary to ensure the observance of a fundamental principle in environment protection, which says 'the polluter pays'.

5. CONCLUSIONS

Particular natural resources are tapped, processed and used by economic micro-units. It is also at this level that different pollutants are produced, which are next returned to environment. Industry is the biggest producer of pollution. That is why it is extremely important to create a climate favourable for solving ecological problems in accordance with social expectations in the external environment of companies. Sometimes this can be a controversial issue. For example, the inhabitants of Silesia voiced very loudly their demands concerning the improvement of dramatically deteriorating environment in that region only to be even more vociferous some time later when protecting their jobs in

companies, which were to be shut down just because of their exceptionally big ecological threat. The transition period from a centrally planned to a market economy gives rise to numerous problems of this kind. They should be solved with a great deal of care, which must be accompanied by consistence in seeking a superior goal such as ecodevelopment.

The assessment of ecological factors determining the operation of industrial companies in Poland during the period of systemic transformation is not fully positive. The industrial policy and the ecological policy are two separate spheres in the Polish economic practice. Such and no other situation is largely a result of the economic structure being a heritage of the previous system – namely, state-owned companies are the biggest polluters. That is why the State, which through its environment protection bodies should play the role of an arbitrator, is actually a side in disputes connected with the solving of ecological problems. The privatization process may also lead to a situation, in which the State Treasury taking over liabilities of a privatized company will become its own debtor (payments for using natural environment are liabilities towards the budget).

In different discussions on problems accompanying the restructuring of industry too little attention is paid to ecological factors. This is largely due to a conviction (not groundless) of those responsible for the industrial policy that a full acceptance of the ecological policy principles may check the development of many industrial branches. Hence, it would seem that ecological determinants affecting the operation of industrial companies in Poland will be evolving in a different way than in developed countries. It was possible to pursue a restrictive ecological policy in those countries as the State performed the role of an arbitrator in relation to private companies dominating in the ownership structure. Such situation will not be possible in Poland for a long time due to a very sluggish process of privatization. An additional impediment is priority given to short-term goals connected with the fight against inflation and unemployment in relation with strategic goals. Such model of economy has its deep justification in the awareness of Polish society shaped by material conditions of life. Meanwhile, qualitative aspects of life are an object of (deliberate) interest only among a relatively small group of Poles. Maybe there will be confirmed here a thesis that an enhanced interest in the 'quality' of life does not appear until a certain level of material needs satisfaction has been achieved. In my opinion, no less important reason are long years of negligence in developing a desirable mentality and in ecological education of the society.

Ecological determinants of the operation of industrial companies are influenced not only by the State policy but also very strongly by social expectations with regard to the quality of environment and by acceptance of the pace of expected changes. The continuation of trends emerging at the present

time implies that the ecological policy will be pushed to the margin of economic activities. A further consequence will be losing the chance of ecodevelopment and an increasing gap dividing Poland from highly developed countries. If that happens, Poland's role in the international division of labour may be that of a producer of goods, whose production involves considerable hazards for environment. It would mean wasting for ever a unique chance offered by the process of systemic transformation started at the end of 1989.

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