

Impact of the Environmental Requirements on the Industrial Product Prices

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Summary:

In the system of market economy, producers seek to minimize costs and maximize profits, while consumers tend to maximize certain benefits. Doing business under increasingly complex circumstances requires that the manufacturer, or the industrial enterprises, take into account the need to meet growing public demands with regard to achieving a certain level of environmental quality. This means that the environmental component plays an ever more important role in companies' overall costs, as well as in their profit, because their product must be competitive in terms of selling price. If the costs of resolving environmental problems become equal to or exceed an industrial product's selling price, the survival of such products, and thus the company that produces it, is questionable. Therefore, environmental problems should not be dealt with in an "ad hoc" manner, but systematically and systemically. This is

the major hypothesis on which this paper is based. Specifically, this paper is an attempt to prove that the economic optimum is not always equal to the environmental optimum.

Key words: industrial enterprises, costs, profit, environment, industrial products prices, environmental requirements, economic optimum.

JEL: D40, L11, Q51.

1. Introduction

Industrial development, or to be more precise the overall economic development, and the rational management of the natural wealth, i.e. natural resources, represent the complementary goals of global development. Without the appropriate protection of the natural environment, the development of the economy would be endangered, whereas without economic development, every environment policy would be *a priori* bound to fail. However, it is a fact that just economic development, and above all, industrial development have caused serious environmental damages

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The paper was carried out under the project No. 44007 by Ministry of Science and Technological Development of Republic of Serbia.

(see Bošković, 2004, 33). These negative effects can be reduced only with the help of an efficient environmental policy, whereby only the improved social product and national income in industry can provide for the improvement of the effect of environmental management. Hence, it is essential that throughout industrial products' lifetime, environmental parameters should be taken into consideration. If we take into account that the production or usage of finished products can endanger the environment as early as the phase of product development, the chances of avoiding environmental problems (or at least partly preventing them) are much greater than if such risks are considered afterwards. Therefore, in every corporation the attention should be focused on the pollutants related to their specific products and technological processes. This issue is crucial due to the fact that the costs of solving the environmental problems can have a serious influence on production costs, and at the same time, on the prices of the industrial products.

2. Meeting the environmental requirements in industry

While operating on the market under increasingly complicated conditions, industrial corporations have to bear in mind the necessity to satisfy the constantly growing public demands for the given level of environmental quality. The quality of the product and the service, as well as the production technology, is in fact the sum total of their characteristics, which have a direct impact on the quality of living.

The goal of the environmental quality management represents a complex of mutually equal aims, some of which should be specially emphasized: (1) the environmental protection from the negative effects of economic actions, especially industry; (2) the prevention of the damage that can be caused to the environment with an unexpected influence on its structure and quality, and (3) the deliberate action to change the environment with a view to the full satisfaction of the needs of modern society, with regard to both present and future generations (Lješević, 1995, 18).

Pure technologies in industry became the orientation in most of the countries worldwide (especially in the developed ones) and they play a significant role in the transition towards the so-called sustainable development strategies. In fact, the advocacy for new technical and technological means and actions, which in their technical and functional structure increasingly take into consideration the principle of sustainable development, are ever more often taken. Thus, the need to introduce environmental management on all the levels of the governing structure, starting from the international institutions, through the state institutions and organizations up to the companies, has been highlighted.

Corporate responsibility for environmental protection by introducing the 'the pollutant pays' principle has been spread from the cycle of production to the product's entire useful life up to its dismantling and waste treatment. "In the world we have a rising enforcement of new legal approach according to which the pollutant is the one

who is responsible for the environmental damage caused in other economic subjects, as well as due to the fact that he/she deals with risky matters, which means that his activities, even during the accurate and regular business dealings, are a potential danger for the others. In case of damage, the legal institutions start from the presupposition that the potential causer – the accused is a real cause of the damage for which he should answer for the consequences materially even in case of regular and accurate business of its plants (Gereke, 1996, 16-17). With such a powerful legal tool the corporations have come under pressure to start introducing the environmental management system and regularly improve it in a responsible and systematic manner. (*Environmental Management System - EMS*).

It was the International Chamber of Commerce (ICC) that launched the initiative to introduce this system and meet environmental demands. The ICC published the environmental code in 1974, which prescribes specific actions and business policies that corporations should take to ensure the integrity of their environment. In 1989 the ICC published the first systematic manual for eco-audit in a company (carry out an environmental check) which was later on revised. In the ICC Business Charter for sustainable development the emphasis is laid on the fact that fulfilling environmental demands should be a primary task of a company and a key determinant of its sustainable development, whereas environmental management is as important as the performance of other functions as

an integral element of the overall company management.

The European Union adopted the concept of sustainable development in 1990, which was verified at the Second UN Conference on the environment and development, which was held in Rio de Janeiro in 1992. The concept of sustainable development has been institutionalized worldwide, which means that it can be accomplished only through an integral unity of economic, environmental, social, political and cultural components, that is, sustainability. One of the important questions that this Conference addressed was the crucial role of the economy in maintaining the conditions for the accomplishment of sustainable development. In the Declaration on the environment and development, adopted in the Conference in Rio, 27 principles (Agenda 21) were set, which provided the legal and regulatory framework for the management of environmental protection and sustainable development on a global level. Our country has not yet ratified this plan but adopted the Strategy of Sustainable Development of Serbia in 2008, which complies with the EU Strategy for Sustainable Development, the UN Millennium goals of development and National Millennium goals of development of the Republic of Serbia, which the Government of the RS adopted in March 2009 to cover the period from 2009 until 2017.

As the environmental pollution problem has spilled over from the regional to the global level, public awareness of its importance has been growing. In fact, we are now faced with the growing influence

of publicity campaigns on governmental institutions towards increasing the legal regulation of environmental protection issues, the pursuit of environmental policies and the taking of preventive measures against pollutants and imposing sanctions on them. Environmental protection has become more comprehensive: the measures and the standards with regard to the protection of waters, soil and air, the safety of the product and factories for production, are becoming ever more institutionalized through international conventions and (bilateral and multilateral) international agreements.

For these reasons, greater importance is attached to the planning of and control over the environmental pollution at all levels. However, given that pollution of the environment starts primarily during the production process, corporate management is now required to plan and control environmental pollution, which is seen as important as planning the production. This is to say that companies should manage the environmental risks that endanger the environmental quality. The basic tasks in the planning of the environmental risk is to establish the major causes of the pollution, determine the degree of the pollution as well as gain information about the dangerous emissions, expected during the normal process of production. Production planning by drafting plans with various time horizons should take into consideration the environmental risks which the production itself creates, as well as the measures for prevention or depreciation charges related to the environment, if there are any. In that sense, product quality management and,

above all the production process quality management in industrial corporations, is becoming ever more important.

3. Industrial quality management in the function of environmental protection

The improvement of the environmental quality, taking into account the advance of science and technology, as well as customer needs and public expectations, should be a continuous process in every company. To this effect it is necessary to educate the staff, improve their competence and motivation in order to raise their awareness of corporate responsibility towards the environment during the performance of their tasks. Furthermore, new products which satisfy the criteria of the environmental suitability (which pollute the environment less, whose usage is safer, which are more economical in the consumption of raw materials and energy, which can be recycled, re-used or safely dispose as waste) should be developed and introduced. Special attention should be paid to informing and advising buyers and sellers on the products' safe usage, transportation, storage and distribution. Attention must also be paid to encouraging the research aimed at the improvement of the environmental quality, that is, the possible reduction of the dangerous influences on the environment which stem from raw materials, actions, processes and the emission of the waste. In fact, it is essential that environmental parameters should be observed throughout the product's useful life. First of all, the production process should not cause environmental degradation, both within the company and in its surrounding environment. Compliance with all legal

regulations, related to the interior design of the manufacturing premises (temperature, the concentration of dust or dangerous particles in the air, the concentration of dangerous gases) should be ensured. The same goes for the legal regulations related to the company's immediate surroundings. If the process inevitably creates dangerous emissions, appropriate action should be immediately taken and appropriate equipment provided to neutralize the possible adverse effects. If some materials or components that do not satisfy the environmental needs have to be integrated in certain products, the project solution should provide for the 'compensation of the pollution'. For example, automobile manufacturers should develop more environment-friendly engines or envisage the creation of filters to refine exhaust gases.

In order to ensure environmental protection, due attention should be given to the storage of raw materials necessary for the production process, as well as the waste created during the production processes. If the stored raw materials cause environmental degradation (radiation, vaporization of dangerous gases, etc.), then some special actions must be performed in order to protect the environment. In the same manner, we have to predict how and where to store waste materials away from the company. Sometimes the waste materials from one production process can be used as a raw material in other, which is important not only with regard to waste storage, but also to company costs.

The environmental approach must be present not only in the process of projection and creation, but also while using and

dismantling the product. The manufacturer is obliged to study and observe the steps of usage that ensure environmental protection in the manual for the product's usage. For example, in the manual for the usage of automobiles, the manufacturer should warn the user that during oil changing he should take into consideration environmental demands. Besides, a legal regulation should verify whether the user obeys the manual for usage as well as the effective regulations. For instance, during oil changing he should pay attention to the environment. Just as with usage, there should also be a manual of the manufacturer (especially, for the usage and dismantling of some poisonous chemical substances or radioactive materials) regulating the product's dismantling; therefore, there should be a legal regulation which both manufacturers and users of such products should abide by. However, nowadays technological advance is such that it is impossible to get an ideal product, that is, a product that has no negative influence on the environment. Therefore, for example, when defining 'the environmental', that is 'green' products (and during their labeling) we should bear in mind that they are 'real' products. Namely, the 'green product' term is related to the analysis of a product's shelf life, which is up to the standards and criteria for the environmental products. Industrially developed countries, such as the USA, Japan, Canada and Australia, have made progress in the usage of 'green emblems', whereas the countries in transition are at the starting stage of the introduction of the eco-labels. Eco-labels can be obtained based on the standard ISO 14000 and can

be granted only to those products which really deserve the 'safe for nature and the environment' label. In the European Union 'the green flower' has been standardized as the highest acknowledgement of the products and services which do not endanger users' health, the working conditions and the natural environment. The products in our country do not have a national label. Manufacturers and distributors alike tend to put their own eco-marks on their products, which most often do not belong to the standard ISO 14000. This would definitely create additional problems for our products' marketing on the international markets. This is the reason why we should assume that by applying eco-standards our companies should start the production of eco-labels, through which their products would gain recognition on the global market. The situation is similar in Serbia's neighboring countries, such as Bulgaria, FYROM and Albania, which still do not have 'environmentally' certified companies. The situation is a little better in Czech Republic and Hungary. Japan is the country which has the largest number of certified companies, especially those that deal in electronics, whereas Germany has the largest number of certified companies that operate in the food and chemical industry.

However, in early 2009 Serbia adopted the Code regulating the closer conditions and procedures for acquiring the rights to use the environmental sign, elements, appearance and manner of usage of the environmental sign for products, processes and services. According to this Code (10) the right to

use the environmental sign can be granted if the product has been manufactured on the territory of the Republic of Serbia, if it fulfils prescribed criteria and if it meets at least one of the following conditions: (1) reduces energy consumption; (2) reduces the emission of harmful and dangerous elements in the environment; (3) reduces the production of waste; (4) reduces the consumption of natural resources; (5) uses secondary raw materials; (6) uses recycled or partly recycled materials; (7) reduces the emission of noise and vibrations; (8) reduces radioactive emissions in the environment; (9) the products after the usage should be more easily dissolved, deconstructed or resolved; (10) the products could be re-used; (11) the products could be recycled; (12) the products should have less negative influence on the environment than those already placed on the market. Eco-signs must not be granted to substances or products which have been classified as highly toxic, toxic, dangerous towards the environment, carcinogenic, and toxic for the reproduction or mutational, in compliance with the regulations by which the chemicals are being classified.

Hence every industrial corporation should set goals related to the fulfillment of technical requirements and those related to quality, as well as to demands for reducing the costs of the duration of product and the period of product delivery, as they are directly connected with the growth of profit. However, environmental protection requirements often decrease the profit of corporations. This is why their fulfillment should never be left to the companies.

It is state institutions that should ensure that companies meet the requirements by prescribing in laws, standards and regulations the acceptable amounts of some environmental polluters (harmonized on the international level). Also, even though environmental requirements are restricting factors in company activities, nonetheless they should be observed.

4. Including environmental costs in the prices of industrial products

The economic activity of industrial enterprises can have internal and external effects, which can be both positive and negative. Internal effects are caused by decisions of companies, which determine the economic efficiency of their business. "External effects arise from operating industrial companies and are manifested in the immediate or wider environment. They do not have to be incorporated into the calculation of costs and revenues (as well as internal effects, and because of them economic subjects are not taken into account when making decisions about choosing a particular behavior), and can be positive external effects (the external economy effects at, for example, service to others) and negative external effects (the external diseconomy effects) in cases where the cause harm to others, under conditions that preventing compensation (environmental pollution)" (Milenović, 1997, 314-317). Environmental pollution and harmful effects of the economic activity of economic agents to the environment are typical examples of external diseconomies.

With the intensification of industrialization, urban expansion and world population growth, there was a sudden increase in the external diseconomy effects. As a result of

current scope and pace of pollution and environmental degradation, the internal effects are gradually marginalized and external diseconomy effects increase. Some industries that have adopted so-called dirty technology cause more damage to the environment than their realized economic profits. In accordance with the system of market economy, the market does not punish those who disturb this balance, so economic science is called upon to find a solution to the issue of how to remove harmful effects, or reduce them to acceptable levels, taking into account the costs of corrective actions and people's aspirations toward better living conditions. Therefore, the effects or externalities fall into the areas in which the market fails to achieve good results, namely the so-called market errors or market deficiencies. Proponents of government intervention believe the state should prevent this phenomenon by imposing taxes (mainly taxes, subsidies, standards and market permits) on pollutants, i.e. those that produce adverse effects, which would prevent the emergence of external diseconomies. They also believe that the state should provide funding for corrective actions (see Vasić, 2004, 76-103).

The outcomes of use of inputs and creation of outputs in industrial production, which are manifested in the form of pollution and harmful effects to the environment, do not have an overall impact on the costs and revenues of pollutants (see Vasić, 2004, 50). Such is the case, for example, of a chemical product manufacturer, which discharges pollutants into the river. If in this case the river's fauna is destroyed and the river could no longer be used for swimming, then the created damage is not charged to the producer but to other

agents and the public at large. External costs are not included in the market price, but the public should cover these costs through healthcare, the protection of endangered plant and animal species, and other things. Companies and individuals also pay the external costs that they do not arise indirectly through taxes, higher healthcare and social security costs and higher bills for cleaning and maintenance of the environment. In the system of market economy with strong competition companies often try to avoid external costs. The market allows for a number of companies to shift some environmental costs to other actors or to postpone them for future periods. So in these cases, the market is not a good regulator of economic activities, and the role of the state (primarily indirect) for increasing of economic efficiency is more relevant.

The principle of internalization of the external environmental costs adds to the individual costs of pollutants' external costs. Internalization of external costs increases pollutants' prices and thus reduces the demand for this product. This should discourage polluters and force them to reduce pollution as well as step up efforts to introduce and develop new and "cleaner" production processes and technologies. The state can apply legal or economic instruments to force and encourage manufacturers to include all, or most of the external costs in the market price of their products and services, which usually includes nonmarket solutions, such as taxes, premiums and rights to the use of natural resources (more detail: Radukić, Petrović-Ranđelović, 69-79 and Zdravković, Radukić, Petrović-Ranđelović, 643-651).

The pollution control theory deals with

the objectives and instruments to reduce pollution. Removing a small percentage of pollution from the air, water or land, as a rule, does not incur great expense. But, with increasing amounts of pollution removed, the cost per unit records exponential growth, which increases the price per each unit of pollution reduced. From an economic point of view, the optimal quality of a product or service is one in which the difference between quality costs and economic effect is greatest. However, the economically optimal quality may not be the best one from an environmental point of view. This means that the economic optimum is not the same as the environmental optimum. For example, from an environmental standpoint the complete elimination of pollution is optimal, whereas the economic optimum is reached at the level of pollution at which marginal costs of reducing the pollution are equal to marginal benefits of reducing the pollution.

The most reasonable level of pollution should minimize the total damage for the pollutee as well as the costs for polluters related to pollution reduction. This means that the marginal costs of harmful effects for the pollutee must equal the marginal cost of the measures taken by the polluter to reduce pollution. If these conditions are provided, then with the help of the market mechanism, the "optimum" level of pollution and its corresponding distribution of charges in the form of expenses for taxes, premiums and other charges are determined. However, ***the market does not guarantee that there will be funds actually used for compensation of damage of the pollutee by residual pollution.*** This is the main objection to the application of individual instruments for the reduction of pollution, such as taxes.

Figure 1 shows the efficient level of pollution M^* . If pollution is less than M^* , the marginal benefit from pollution (dB/dM) is greater than the marginal damage (dD/dM). Conversely, if the pollution is greater than M^* , the marginal benefits of pollution are lower than the marginal damage from pollution, so

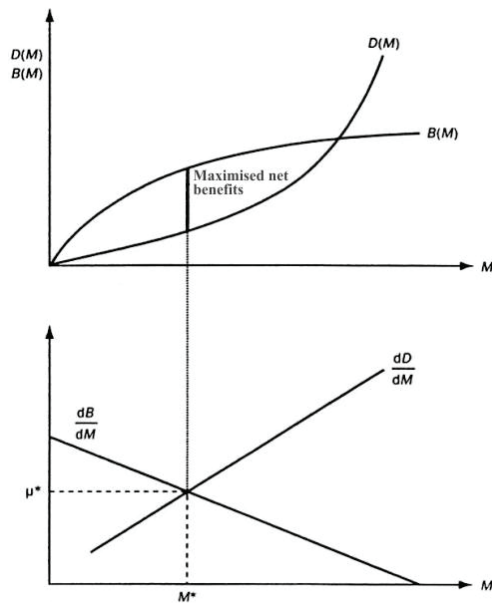


Fig. 1. Functions of the Total and Marginal Damages and Benefits and an Efficient Level of Pollution (Perman, Ma, McGilvray, Common, 2003, 172)

that less pollution will bring more net benefits.

The intersection of the marginal damage function and the marginal benefit function indicated by μ^* in Figure 1 represents the equilibrium "price of pollution". This price is particularly important in terms of the effective tax rate of pollution or subsidy. However, since there is no market for pollution, μ^* is a hypothetical or "shadow price", not one that is actually formed in market transactions. Specifically, "shadow price" appears as a part of the solution of optimization problem (in this case the problem of choosing M to maximize net benefits). Also, μ^* can be

described as a "shadow price" of pollution externality. If there was a market for pollution (thereby internalizing externality), then the companies would have to buy the rights to emit pollution unit, and μ^* would be its efficient market price. So, μ^* is the equilibrium price of permits for pollution, and M^* is the equilibrium number of such permits.

The efficient level of pollution is one that minimizes the overall amount of costs for pollution reduction plus the total costs of damages. In Figure 2 the previously called marginal benefit curve was renamed to the marginal abatement cost of pollution. The logic of this procedure is clear if one takes into account the benefit from the pollution function. Reinterpretation follows from the fact that reducing emissions leads to abatement cost. These (marginal) abatement costs are equal to the marginal benefits if emissions decline. Thus in Figure 2 the level of unrestricted emissions is marked with \bar{M} , while the origin on the left corresponds to increasing levels of pollution abatement. The marginal abatement costs are low at low

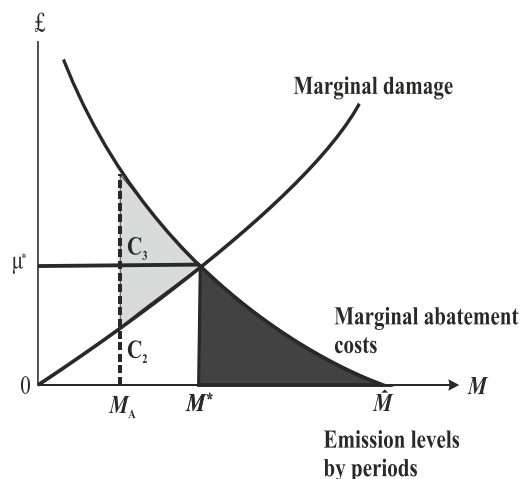


Fig. 2. Economically Efficient Level of Pollution (Perman, Ma, McGilvray, Common, 2003, 173)

levels of abatement and increase with growth rate, whereas the abatement level rises.

To confirm this result to minimize cost, the efficient level of pollution, P^* , realized the sum total of damage costs (area C_2) and total abatement costs (area C_1) that is $C_2 + C_1$. Any other level of emissions can yield higher overall costs. If we produce too little pollution (or take too much abatement) when the flow of pollution is confined to M_A , it can be concluded that the total costs increase on $C_1 + C_2 + C_3$, so C_3 is the loss of efficiency that occurs due to the excessive abatement of pollution. Too much pollution (too little abatement) also results in higher costs than $C_1 + C_2$.

So, it can be concluded from Figure 1 and 2 that an efficient level of pollution will not, in general, be zero. Therefore, an efficient level of abatement of pollution will not, in general, correspond to the complete elimination of pollution.

If environmental solutions drives up the product's market price, profit will decrease. However, if all companies apply the same measures to resolve the environmental problems, the price will be competitive because the environmental part of costs will be approximately or exactly the same. But if a company finds a more efficient system of resolving the environmental problems, it can sell their product in a quantity in which it can also produce it, as it is able to reduce price and increase profit due to the reduced costs. This may stimulate other companies to start finding environmental solutions or use ones already established. Also a special fund should be set up to secure investments in a systemic and systematic approach, which will ensure an efficient return on investments, which could further improve the system of environmental protection.

The Law on Environmental Protection of Republic of Serbia from 2004, which in line with the relevant European Union laws, envisages that a special-purpose fund is established at the national level to provide funding of environmental improvements. In 2009 for the purpose of decentralization amendments to this law were passed, whereby these funds were to be formed at the local levels in order to boost efficiency in solving environmental problems.

The of City of Niš is an example in this respect, where the local parliament in 2009 adopted a Decision for compensation for the protection and improvement of the environment of City of Niš. Article 1 states that "This Decision introduces the compensation for the protection and improvement of the environment in the territory of City of Niš and regulates the manner and criteria of security and use of funds from Fee, in order to create the material preconditions for the realization of the rights and duties of the City of Niš in the area of protection and improvement of environment". Funds collected though such a fee will be used for funding programs and projects in the field of environmental protection. Article 6 Paragraph 2 states that "programs (projects) include: incentives, preventive and remedial programs and projects, environmental monitoring programs and projects, programs for the protection and development of protected natural areas in the City, the scientific research programs and projects, educational activities and awareness raising on the need for environmental protection, information and publishing data on the state and quality of the environment, and the costs of implementing the Program". In the implementation of these programs/projects a company was established and assigned

the special role to carry out functions that ensure the protection and improvement of the environment (public utilities). The City Council drafts programs every year upon the proposal of the competent authorities for environmental protection, but the implementation and supervision of the contractual obligations, as well as programs and projects, is performed by the Directorate for Economy, Sustainable Development and Environmental Protection.

The payment of compensation for the protection and improvement of the environment is the obligation of natural and legal persons. As for legal entities, this fee is paid monthly based on the owned or leased real estate, and the fee is determined by the surface of the business premises (Schedule 2) and ranges from 1 dinar per m² of surface area over 2000 m², up to 2,5 dinars per m² of surface area to 100 m².

The republican environmental inspectors in 2010 was carried out under the control of city and municipal authorities to determine, among other things, the progress in the formation of the local funds for environmental protection. Results show that of 145 municipalities and cities, the majority (117) have a budget fund for environmental protection. Since then the program for using earmarked funds has included only 50 municipalities and cities, of which 34 have approval from the Ministry of Environment and Spatial Planning, 10 have sent a request and are waiting for a response or are bringing their regulations in line with the Law (correction based on observations obtained), while 6 have adopted the program, but without the consent of the Ministry. The Program for Environmental Protection has covers 48 municipalities, and compensation for the protection and improvement of the

environment has been introduced in 91 municipalities and cities. The situation was changed in 2011, so that now only two local governments have not set a budget fund (Jagodina and Sremski Karlovci), and 17 have not given consent to the proposed program for 2011. City of Niš has a budget fund, the consent on the program for the use of budgetary fund, environmental protection program and the Ministry has given a positive opinion about the prescribed fee for environmental protection and improvement.

On the basis of the Program for the use of funds for protection and improvement of the environment of the City of Niš in 2011, the Fund's assets are planned to total 134.92 million dinars. Budgetary resources of the Fund for Environmental Protection of the City of Niš are as follows: 1) compensation for the protection and improvement of the environment based on the eponymous Decisions of the City of Niš (scheduled fee revenue for environmental protection of the City of Niš in the amount of 70 million dinars), 2) the portion of funds based on compensation for environmental pollution, which is due under Article 85 of Law on Environmental Protection as the budget revenue of the Republic of Serbia, that is the amount of 40% returns to local government, and 3) the Fund for the Environmental Protection of the Republic of Serbia. It is envisaged that the Fund will finance the following programs and projects:

1. Programs and Projects of Environmental Monitoring in the City of Niš, in accordance with Article 69 of Law on Environmental Protection - permanent and development;
2. Incentive, prevention and rehabilitation Programs and Projects, as well as co-financing thereof;

3. Programs and projects for the protection and development of protected natural areas in the City of Niš;
4. Investment Programs and Projects of importance for the improvement of environmental quality in the City of Niš (co-financing the purchase of equipment for environmental protection, expanding the network of parks in the City of Niš, co-financing of rural water supply and sewerage networks, etc.);
5. Programs and projects of NGOs in the field of environmental protection;
6. Educational activities, education, printing of advertising material, promotion and raising awareness about the need for environmental protection;
7. Projects related to the scientific-research work in the field of environmental protection;
8. Information and publishing data on the state and quality of the environment.

The main purpose of these projects is to provide regular, timely, complete and objective information to the public on the environmental state, the work of the Department and raising awareness about the importance of environmental protection. Also, the financing of projects for environmental protection and improvement of cities and municipalities from local earmarked funds further increase decentralization and the efficiency of resolving of environmental problems.

5. Conclusion

Environmental pollution has recently become a very important issue in economic theory and practice. In economic theory this term suggests the negative (environmental) external effects (externalities). External

effects are only one aspect of market failures. If negative external effects in the field of environmental protection, thus economic inefficiency, are established, the state should take on an effective regulatory role to solve problems of externalities and complement the market mechanism. Depending on the specific characteristics of pollution, ambitious goals could be set and appropriate instruments selected for exerting control over pollution.

In effect the "optimization" of pollution encounters many difficulties, especially given the disagreement of environmentalists and business people over the assessments of the social costs of the adverse effects and costs caused by the measures to reduce pollution. The admissible "optimal" level of pollution varies depending on the geographical and business areas, types of pollution and other factors. However, there is no doubt that solving environmental problems is a legal requirement for the functioning of industrial enterprises, which must comply with these conditions.

The environmental component plays an increasingly important role in the total costs (which, in turn, affect the profit) companies, because the market price of products must be competitive. The costs of solving of environmental problems in industry should not be equated with the product's sales price, otherwise the product's survival will be threatened, and consequently, so will the survival of its producer company. Therefore companies should not be allowed to resolve environmental problems spontaneously, but adopt a systematic and systemic approach instead. The systemic resolution of environmental problems requires investments, which at the later stages of

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the system's operations have both direct and indirect effects of cost savings, cost reduction and other economic effects (for example, promoting the environmental image of a company or a branch or industry as an economic activity in the national economy).

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