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THE SHADOW ECOLOGY OF THE EUROPEAN UNION: THE ENVIRONMENTAL CONSEQUENCES OF EUROPEAN INTEGRATION FOR THE UKRAINE

Introduction

Environmental policy of the developed countries may have significant influence on the state of the natural environment in developing and transitional countries through foreign trade. "Hard" environmental policy significantly diminishes profits of "dirty" production and stimulates their partial shutdown or transfer into developing countries with a "softer" environmental policy in order to raise their revenues. This process is characteristic to the Japanese and USA economies and is called "Shadow Ecology". But the European Union has its own type of "shadow ecology" that is determined by the relationships between the EU states and transitional countries of Eastern Europe. Two features are important here:

- EU countries use processed raw materials produced in transitional countries but do not build their own enterprises like in developing countries, where they realize industrial eco-restructuring through direct investments;
- dirty production in transitional countries is greatly dependent on the state environmental policy, which is in force and may become "harder" any time.

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Eco-restructuring of the EU

The environmental policy of the EU states is characterized by its application of "green taxes". They are the taxes on goods or production processes that pollute, damage or destroy the natural environment. These taxes stimulate the decrease of "dirty" goods production and also promote production of environmentally clean substitutes. Besides, they are the sources of both repairing previous environmental damage and the diminishing of other non-environmental taxes.

By application of these "green taxes", the EU states artificially diminishes the competitiveness of their enterprises involved in environmentally dirty production (iron ore extraction and concentration, steel smelting, mineral fertilizers, pesticides, oil products and electrical energy production). This leads to a reduction in production and export of these goods and products. As a result, "dirty" goods production and their export decrease. Resources that were involved in this type of activities, are used instead in environmentally safe sectors of the economy. Therefore, environmental quality in these countries is improving.

Such structural changes lead to a reduction of the share of dirty sectors in GDP, a process that can be observed today in the EU countries, especially in Great Britain, Germany, Denmark, France, Norway and Italy [Phamonowa, 1999]. This eco-restructuring is considered to be the best way of solving environmental problems. Eco-restructuring is the process of environmentally motivated reorganization of national economy structure, either as a result of decreasing demand of "dirty" production or by modernization of sectors – consumers of "dirty" production output.

Shadow ecology of the EU – dirty production in the Ukraine

Advantages that the "hard" environmental policy of the EU states gives to "dirty" production in the transitional countries with "soft" environmental policy by diminishing the competitiveness of their "dirty" enterprises, are very significant. Consequently, national metallurgy, energy and fuel production and its realization on international markets is increasing in these countries. Financial, natural, labor and energy resources move from environmentally safe national economy sectors to environmentally harmful but more profitable ones. As a result, environmental quality in the transitional countries is deteriorating. This process forms, in our opinion, the "shadow ecology" of the EU: its environmentally safe economy is based upon dirty economies of transitional countries.

In the Ukraine, the structure of industry has been changing significantly for the last ten years (Fig. 1). In 1990, mechanical engineering was the main industry sector in the country. It ensured 30,7% of all industrial output [Zastavniy, 1998]. But in 1999 mechanical engineering accounted only for 13,8% of industrial output, diminishing by more than a factor two [Ukraine in figures, 2000]. Main environmentally harmful sectors such as the metallurgy, energy and fuel industries produced 51,6% of Ukrainian industrial output in 1999 [Ukraine in figures, 2000], though in 1990 they produced only 23,0% [Zastavniy, 1998]. Today the mining and smelting industry takes first place in the Ukrainian economy, in its industrial and export potential. It accounts for 22% of all industry production in the state and 63% of its export, 0,55 mln people work here [Mazur, 2000]. In 1998 its output was approximately 20,2 bln Ukrainian hryvnya (approx. 5 bln USD) and the Ukraine got 4,2 bln USD from metal products export [Mazur, 2000].

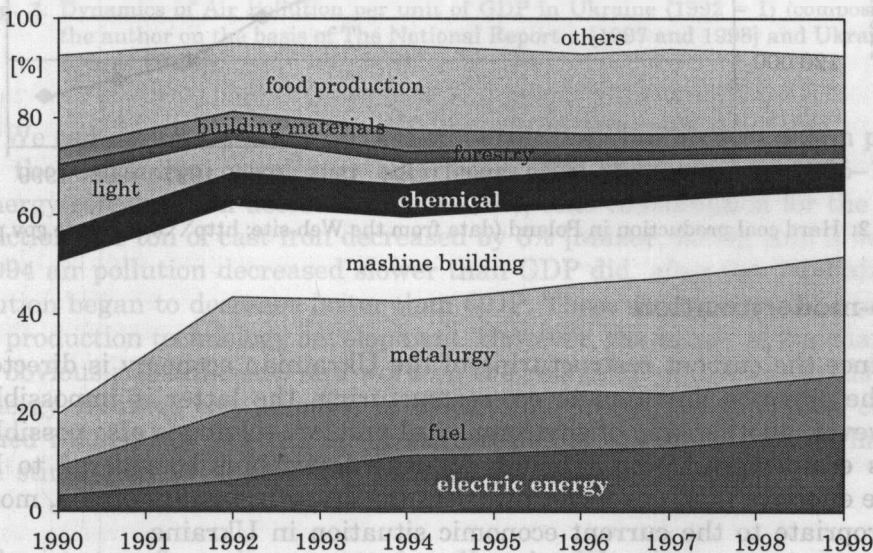


Fig. 1. Industry structure dynamics in the Ukraine (1990–1999) (composed by the author on the basis of Zastavniy [1998] and Ukraine in figures [2000])

Because of the crisis in metal consuming economy sectors (mechanical engineering, construction, transport) in a few years Ukrainian metallurgy has been reoriented from national to foreign markets. Metal production export rates increased from approximately 0 in 1990 to 15 mln tones of rolled iron in 1998 [Mazur, 2000]. World practice has not known such high production reorientation rates before [Ibid., 2000]. Today the

Ukraine exports metal products all over the world, but the main part of the export is directed to European countries.

Poland's, the Czech Republic's and Hungary's application to join the EU puts on them the strict requirements of the high environmental standards that diminish production of dirty output. It will increase demand for dirty production on the international markets and will stimulate an increase in dirty production in the Ukraine and other transitional countries. This process has started already. For instance, in Poland the production of such "dirty" product as hard coal has diminished by approximately 40 mln tonnes in the last decade, and its import increased by a factor of four (Fig. 2).

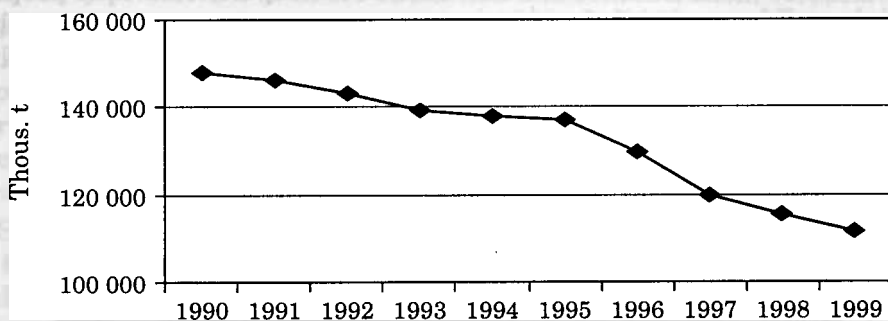


Fig. 2. Hard coal production in Poland (data from the Web-site: <http://www.state.gov.pl>)

Eco-modernization

Since the current restructuring of the Ukrainian economy is directed in the opposite direction to eco-restructuring, the latter is impossible. However, another way of environmental problem solving is also possible. It is eco-modernization. Though eco-restructuring is considered to be more effective than eco-modernization, the latter is, in our opinion, more appropriate to the current economic situation in Ukraine.

Eco-modernization is not about changes between economy sectors, but about the changes within them. These changes are to become the result of technological renovations. A main indicator of such modernization is the reduction of energy, water, fuel, ore and consumption of other resources per unit of GDP. Eco-modernization is characteristic to the most developed countries such as Japan, Germany and Sweden [Phamonowa, 1999].

Today the Ukraine takes one of the first places in the world according to the level of energy, water, iron ore and other mineral consumption per unit of GDP. Therefore eco-modernization of Ukrainian industry has to become a very important part of environmental policy in industry.

Although generally speaking the quality of the environment has been improving for the last decade in the Ukraine, environmental quality per unit of GDP deteriorated. Environmental pollution per unit of GDP may be considered as a main indicator of shadow ecology. Air pollution per unit of GDP had increased by 1999 by a factor of 1.3 in the Ukraine (Fig. 3), showing the influence of shadow ecology.

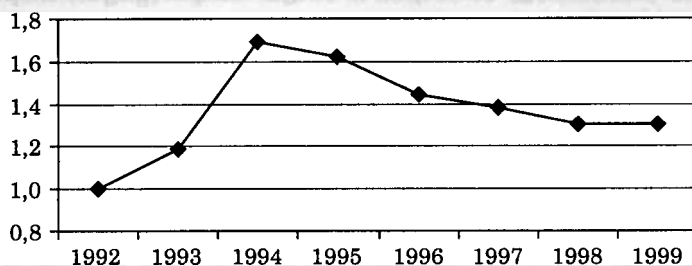


Fig. 3. Dynamics of Air Pollution per unit of GDP in Ukraine (1992 = 1) (composed by the author on the basis of The National Report... [1997 and 1998] and Ukraine in figures [2000]).

We can assume that partial eco-modernization has already taken place in the Ukrainian metallurgy enterprises. For the period of 1995–1999 energy consumption decreased by 10–15%, coke consumption for the production of 1 ton of cast iron decreased by 6% [Mazur, 2000]. And if before 1994 air pollution decreased slower than GDP did, after the 1994 air pollution began to decrease faster than GDP. These are objective indicators of production technology development. However, the extent of the changes is obviously insufficient, and work on the reduction of raw materials and energy resource consumption in metallurgy production should be continued intensively. Further eco-modernization of “dirty” production has to be stimulated by appropriate national environmental policy.

The state of environmental policy in Ukraine

Current Ukrainian environmental policy is characterized not only by deficiencies that prevent full implementation of its objectives, but also by stimulation of “dirty” production. The main environmental policy deficiencies that constrain proper management of industrial environmental impacts are, in our opinion:

- absence of environmental policy integration with other state policies that causes a lack of the sector ministries responsibility for environmental damage;

- absence of a prevention strategy for industrial enterprises;
- insufficient rectification of the damage at source;
- non-prohibition of damaging activity;
- insufficient development of economic instruments.

The act "on the implementation of an economic experiment in the enterprises of the Ukrainian metallurgy industry" was adopted in July 1999. It gave metallurgy enterprises large tax privileges; in particular, the law provides for independent usage of 70% of environmental taxes for environmental purposes, but it does not guarantee the diminishing of the environmental impact of enterprises. In theory high environmental taxes, which depend on the level of pollution, have to make enterprises be interested in decreasing its level of pollution. But by that measure, in our opinion, environmental taxes are lowered. Such environmental policy deficiencies restrain solving environmental problems and show that environmental policy has to be changed.

Necessary environmental policy reforms

A "harder", proven and market-based environmental policy should not only promote achievement of the environmental objectives of the state, but also play a significant role in determining the direction of Ukrainian economic development [Velychko, 2001].

First of all, effective regulation of environmental impacts is needed for the most polluting and most important production sectors, such as electrical energy and metallurgy. They account for 32 and 27 percent of all the emissions from stationary sources and for 19 and 25 percents of discharges to the rivers, lakes and seas of the Ukraine respectively [The national report..., 1997 and 1998].

Experience in other countries shows that tradable pollution permits systems are the most appropriate market-based instruments for the managing of emissions of metallurgy and energy complex enterprises. These instruments exist as a plan stimulating the companies to use highly effective treatment plants. They are based on the difference between real and environmentally appropriate pollution levels. If it is lower than the established limit, then a company that has to buy the permit for environmental pollution can then sell it to other companies. Such systems were adopted in the USA in 1979. They include four items:

- "bubble" policy, which allows the plant or complex to measure its own emissions as an average of all emission points emanating from that plant or complex;
- netting, which allows emissions trading among points within a given source for the same type of pollutant, such that any increase in emis-

- sions due to plant modification is matched by a reduction from another point within the same source;
- offset plan, a program developed for non-attainment areas that allows emission trading between new or modified sources and existing facilities, such that the releases from the new or modified source are more than countered by reductions achieved by existing sources;
 - emissions banking, which allows a source to accumulate emission reduction credits if it reduces emissions more than required by law and "deposit" these through a banking program [Callan, 1996].

Tradable pollution permit systems have significant advantages compared with the current Ukrainian mechanisms of environmental control. Firstly, the price of pollution permits always accounts for the cost of the corresponding treatment stimulating the introduction of environmentally safe technologies and highly effective purification systems. Pollution fees in force in the Ukraine are significantly lower than the costs of the respective purification systems. For instance, the fee for the emission of sulphur dioxide is 55 USD per ton, while establishing sulphur-purification equipment costs 300 USD per ton of sulphur [Velychko, 2001]. Secondly, such systems allow for the development of new, more effective enterprises, while current Ukrainian environmental policy discourages new facilities functioning, when the environmental impact of existing facilities exceeds permissible normative, i.e. new plants do not get emission permits and therefore cannot function if, in result of old facilities, maximum permissible concentrations are exceeded and there are no free pollution permits. Because of these advantages, elaboration of systems similar to the American one is expedient for the management of the environmental impact of metallurgy and energy facilities in the Ukraine. First of all, such systems have to regulate emissions of sulphur dioxide and nitric oxide in the most polluted Ukrainian cities such as Horlovka, Alchevsk, Mariupol, Dzerzhinsk, Donetsk, Zaporozhie, Kryviy Rig, Makievka [Velychko, 2001].

An effluent fee is another instrument that could provide efficient and environmentally safe usage of fresh waters. It is a fee charged to the polluter that varies according to the amount of pollutants released. The main difference of effluent fees from the fee existing in the Ukraine for water pollution is that the former does not include maximum permissible effluents from each point pollution source, and the price per unit of pollution therefore becomes much higher. That allows enterprises to independently appreciate the benefits and costs of pollution abatement and to choose an optimal level of effluents and the extent of their treatment; as a result, an enterprise may choose to change its attitude towards the application of closed schemes of water consumption. A second

condition for the improvement of the efficiency of fresh water usage is an increase in the fees for its consumption. The fee in force in Ukraine is 5–10 times lower than that in the developed countries [Velychko, 2001]. Besides, the fee is lower in the regions with the most polluted water.

The instruments discussed above are the main market-based instruments that could ensure the diminishing of the environmental impact of basic industry sectors by stimulating the development of highly efficient and environmentally safe production.

The proposed market instruments require further development at different levels and a study of the possible consequences of their implementation. However, the workability and necessity of the introduction of such instruments are sufficiently proven by experience.

Conclusion

The accession of Poland, the Czech Republic and Hungary to the EU will have significant environmental consequences for Ukraine by way of enlarging the pressure on the natural environment as a result of increasing primary industrial output. Only an efficient and rational macro environmental economic policy can manage the situation. Politicians have to realize the deep links existing between environmental policy and ways of economic development.

The proposed environmental economic model points to the conclusion that the environmental improvements reached in recent years in developed countries were due to a deteriorating state of the environment in developing countries. That imposes great limitations on sustainable development.

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