# The Paradox of Environmental Damage in Eastern Europe

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Environmental degradation has emerged as a high priority issue as the 1990s unfold. The 1990 US farm bill reflects the importance of environmental issues. Protection of the environment is less expensive than attempts to reverse the damage once occurred. An illustration of unforseen interaction between environmental damage and agriculture are the acute problems in Eastern Europe, including polluted water and air, contaminated soil, dying forests, and human health problems. This paper addresses environmental issues from the perspective of rearranging the economy while simultaneously upgrading the environmental quality with emphasis on Poland.

Before 1989, censorship prevented news of environmental damage (Charles). The change in Eastern Europe's political configuration led to publication of previously secret documents. An example is the instruction NK/003/47 dated February 6, 1947. This was issued for the NKWD (later KGB) office at the Soviet embassy in Warsaw, Poland (Wprost). The 29th point of the instruction directed the NKWD office to insure that during reconstruction and expansion of industry, industrial wastes go to rivers representing potential sources of drinkable water. Implementation of this instruction in Poland or in other East European countries is unclear. Today however, 95 percent of Poland's rivers are polluted and their water unfit for human consumption. In Czecho-Slovakia, massive pollution affects 70 percent of rivers. Arsenic contaminates drinking water in southern Hungary, and uranium waste pollutes groundwater in the southeastern part of Germany while a third of the country's eastern rivers are biologically dead (*Business Week*).

### *Education, Law, and Economic Realities*

The first Rome Report in 1973 stimulated a discussion in Poland about the importance of protecting the environment. Some universities included

the subject of environmental degradation and protection, most often as a part of existing courses. For example, students majoring in economics learned of the impact of the economy on the environment in economic geography classes. However, little of the knowledge about environmental protection was useful in economic decision making. The short term needs of food supply and industrial production received a higher priority than clean air, water, or soil.

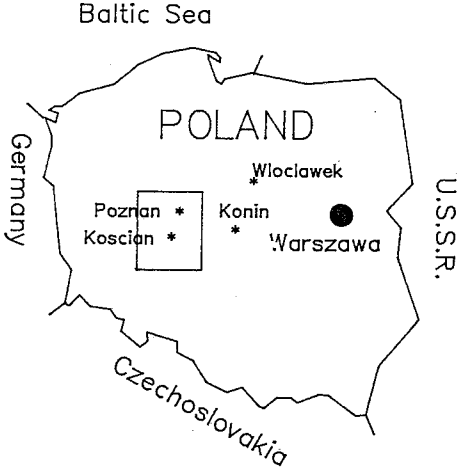
In the early 1970s, the Polish government set up the Ministry of Environmental Protection. Its job was to carry out environmental laws, monitor the impact of economic development on the environment, and gain compliance with existing laws. The record of the Ministry was dismal. The Ministry served as an office that could release a factory from compliance with environmental laws as a result of production pressures. For example, a French contractor completed a factory which produced evaporated and powdered milk in Gostyn (Figure 1) in the mid-1970s. Construction of a waste treatment plant was not completed as scheduled. Yet the Ministry permitted the production of processed milk which released wastes into a local river, which was already polluted by discharge from distilleries and sugar beet processing factories. However, delaying operation of the factory would have denied Polish consumers canned evaporated and powdered low fat milk. The delay would have also withheld earnings of state, cooperative, and private farmers that sold high quality milk to the plant. The need to increase the supply of food was politically motivated by repeated unrest related to food shortages in 1956, 1970, and 1976.

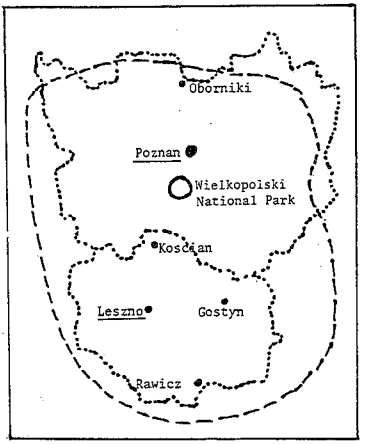
### *Impact of Industrial Development on the Environment*

Industrial and mining projects forced the relocation of some villages leading to a permanent change from agricultural to industrial employment in Poland. Projects in an area of low agricultural productivity produced a change in employment and increased the welfare of the population. Demolition of villages provided residents with an opportunity to move to new modern houses. Industrial jobs raised incomes and induced infrastructure development, increasing the quality of life in the area.

The negative impacts of industrial development on agriculture were evident several years after the end of the projects. Heavy metals contaminated the industrialized Upper Silesia soil. Soil in some vegetable gardens contained 30 to 70 percent more heavy metals than allowed by safety standards (Postel 1988). In all Poland, contamination affects 25 percent of the soil with chemicals at levels making production of safe food impossible (Lasota). The use of lead in gasoline caused concentration of lead in plant dry matter grown 10 meters from heavily used roads 350 times higher than

Figure 1.
*General Location of the Impacted Region and Area of Distorted Water Circulation.*




Central and Southern Districts of Great Poland (Wielkopolska)

Source: Based on Banaszak

------ Area of distorted water circulation
• • • • • Administrative borders

allowed by Polish food safety standards (Sandner). In Warsaw alone, 60 percent of air pollution is from car traffic (Kopta) since lead-free gasoline is unavailable. Individual estimates of air pollution by particulates, gases, and sulphur differ (Karwicka-Rychlewicz). However, all estimates show levels exceeding the ability of the environment to detoxify the air. Chemicals released into the air threaten 11 percent of the country's total area and more than a third of its residents (Jagusiewicz). The threatened area includes the region of Wielkopolska (Figure 1) characterized by the highest agricultural productivity in the country.

Industrial development, agricultural production, and recreation also damage fresh and sea water fisheries. Poland has thousands of lakes, but only a few support commercial fishing. In 1986, the average productivity of lakes was 4.1 percent of the average productivity of fish pond operations. The productivity of fish pond operations is already low. Runoff from feedlots and fields pollutes many lakes—at least 300 large lakes in Poland serve as reservoirs for untreated sewage (Jagusiewicz).

The agri-processing industry is also responsible for river pollution. Levels of pollution vary in response to seasonal peaks of processing sugar beets or milk, but make stocking rivers (*Wiadomosci Koscianskie*) and lakes (Luczek 1985) impractical. Many lakes, and 60 percent of rivers, are unsuitable for recreation, preventing fishing. Analysts expect the central economic plans for the 1990s to include from 400 to 500 sewer plants (Ochremiak). Postponement however is now expected due to the current economic situation in Poland. Limiting water pollution by some food processing plants may require construction of plants equipped with new technology. One example is a plant producing vanillin in Wloclawek (Luczak 1986).

Fisheries along the Baltic Sea suffer from low productivity because of water pollution. Industrial development on the Baltic coast and rivers feeding the Baltic Sea stretches through six countries. In Poland, 75 miles of polluted coast prevents the recreational use of beaches. The quantity and quality of fish from the Baltic decreases, lowering profits. As a result, many small private fisherman abandoned their profession. The costs of fishing increased because most Polish fishing boats operate far from home ports. Statistics show large catches of fish, yet supplies of quality seafood do not reach domestic consumers due to the distance from Polish ports.

The full impact of industry on water quality has been difficult to assess. Purchases of the necessary testing ingredients have been low due to the lack of foreign exchange. In 1983, officials tested only 25 percent of 20,694 water samples for the presence of heavy metals (Banaszkiewicz). Some plants and mines were penalized for environmental pollution (Luczak 1986). However, because of the structure of the economy, managers and industries had little incentive to change the situation. The government collected industry profits and penalties and also controlled investment policy. The government also controlled the purchase of environmentally safe technology, the size of penalties, and any production subsidies which might offset the penalties.

The character of environmental damage in Poland shows that mining and industry are the primary sources of pollution. Agriculture, forestry, and fishery are more frequently a victim of water, air, and soil pollution

associated with the industrial development, than a cause of pollution. The planned development of lignite depositions in the Poznan Trough is an eminent example.

### *Impact of Lignite Mining*

In the southeastern part of Germany, southwestern Poland, and northwestern Czecho-Slovakia many power stations burn lignite high in sulphur. The result is air polluted with sulphur dioxide and acid rain damage. More than one million hectares of forests in the region, spreading through all three countries, are dead or dying (Postel 1984).

In Poland, lignite deposit excavation already ended agriculture in the area of Konin. As a result of mining lignite and generating power for aluminum production, the agriculture of the region suffers from a low water table, polluted air, and contaminated soil. Waste waters released by power stations raised temperatures of nearby lakes, stimulated faster growth of water vegetation, and led to the introduction of exotic fish species to clear lakes. Farmers abandoned fields contaminated by chemicals released from the aluminum plant. Low agricultural productivity before the opening of the region to mining limited the immediate loss of agricultural production. Located in a highly productive agricultural region with some of the best developed agribusiness infrastructure in Poland, the Poznan Trough is different.

The inability to control the water level in the shafts prevented early attempts to excavate lignite deposits in the Poznan Trough (Florkowski 1979). The renewed interest in the deposits grew out of the economic schemes of the 1970s. In 1977, the economic development plan of Leszno district did not support the excavation of deposits because of the priority of agricultural production. The news about the chance of developing the lignite deposits met fierce opposition from the local population and scientists (Florkowski and Zielonka; Florkowski 1988; Wierzbicki). In a rare example of organized opposition in socialist Poland, the local citizenry caused the withdrawal of the project from central economic plans.

The proposed lignite mines would have required the lowering of the water table below 250 meters from the surface of the top soil (Banaszak). Wielkopolska (Great Poland), the location of Leszno and Poznan districts (Figure 1), has experienced changed water circulation evidenced in drier climate (Wodziczko). The area around Koscian was subject to extensive irrigation projects in the 19th century directed at increasing agricultural productivity along the Obra river (Karlowska-Kamzowa). Present-day agricultural productivity of both districts is among the highest in Poland

(Table 1). The average value of the production sold to the government exceeds the country's average sales value by more than 50 percent.

The first impact of lignite excavation in the Poznan Trough would be limiting, and in some areas ending, agricultural production. This in the region of the highest agricultural productivity in Poland. A lower supply of agricultural products would have a negative impact on many agribusinesses and food processing industries of the region, including grain elevators, sugar beet factories, dairies, slaughter houses, canneries, and flour mills, as well as the large agriculture service sector.

A list of direct results of the project had it occurred includes the disappearance of all lakes in the excavation area as well as 105 other lakes totaling 5,280 hectares. Eighty-two villages would have disappeared and 22 major rivers and canals would have been damaged, including over 100 miles of irrigation channels. The project would have destroyed nearly all forests in the region and demolished various historical monuments. Finally, the project would have destroyed the Wielkopolski National Park, the only national park in that part of Poland.

### *Food and Forestry Production May Benefit from Economic Slowdown*

During the transition to a market economy, the economic growth in Eastern Europe will slow. This may be the largest contributor to a decrease in environmental pollution. The free market will close major factories because they will not be cost competitive. As industrial production decreases, so will the quantity of toxic gases, particulates, and sewage. In a secondary wave of effects, decreased consumer income will lower food demand, reducing the chemical inputs and livestock production on state, cooperative, and private farms. Maintaining the level of agricultural production will produce surplus food for export. However, the impact of environmental pollution on food safety may limit potential agricultural exports from East European countries to Western Europe, lowering foreign earnings. A similar situation persisted for a short time following the Chernobyl explosion which halted agricultural exports from Poland and Hungary.

The number and the scope of issues related to environmental damage in Eastern Europe is unprecedented. Financial resources that countries in the region can afford to invest in cleaning the environment are scarce. However, some sectors can expect foreign help designed to lower air and water pollution. Sweden and Finland for example, will provide Poland with environmental aid to clean the Baltic Sea (*Business Week*). The Soviet Union's

paper industry located on the Baltic Sea coasts may also receive Swedish aid to limit water pollution (French).

Fishery industries along the Baltic coast can benefit directly from less polluted waters. Forestry may benefit from a decrease in industrial production and less damage from acid rain. Efforts to end sulphur dioxide levels are under way in eastern Germany and Poland which cooperates with Sweden in that area.

Agriculture will benefit from structural changes in the economy by establishing a land market. Allowing the market to price agricultural land will direct economic development, urban growth, and industrial expansion. Artificially low land prices led to location of housing developments and factories on prime agricultural land in the past.

Table 1.
*Agricultural Production of Leszno and Poznan Districts*

| | Percentage of Poland's average | | Rank among all districts | |
|---|---|---|---|---|
| Year | Leszno | Poznan | Leszno | Poznan |
| *Crop production*[a] | | | | |
| 1981 | NA | NA | — | — |
| 1982 | NA | NA | — | — |
| 1983 | 122 | 113 | 4 | 9 |
| 1984 | 125 | 118 | 2 | 7 |
| 1985 | 126 | 120 | 3 | 6 |
| 1986 | 122 | 117 | 5 | 7 |
| Average | 124 | 117 | — | |
| *Livestock production*[b] | | | | |
| 1981 | NA | NA | — | — |
| 1982 | NA | NA | — | — |
| 1983 | 134 | 117 | 1 | 5 |
| 1984 | 135 | 116 | 1 | 6 |
| 1985 | 140 | 118 | 1 | 4 |
| 1986 | 140 | 118 | 1 | 4 |
| Average | 137 | 117 | — | — |
| *Value of production sold to state*[c] | | | | |
| 1981 | 167 | 169 | 2 | 1 |
| 1982 | 152 | 147 | 2 | 3 |
| 1983 | 149 | 146 | 2 | 3 |
| 1984 | 162 | 155 | 2 | 3 |
| 1985 | 164 | 156 | 2 | 3 |
| 1986 | 160 | 151 | 2 | 3 |
| Average | 159 | 154 | — | — |

[a]Yields of cereals, potatoes, and sugar beets in cereal units per hectare.
[b]Livestock in comparable units per 100 hectares of agricultural land.
[c]Value per hectare of agricultural land, current prices. Until the late 1980s farmers had little opportunity to sell commodities to non-government agencies.
Source: Calculations based on data from *Rocznik Statystyczny.*

*Long Term Impacts of Environmental Damage*

Free information, and accidents such as the explosion in Chernobyl, have changed public attitudes in Poland. The most dramatic demonstration of new attitudes was the decision to abandon the site of nuclear power plant in Zarnowiec. This was after nearly a decade of construction and millions of dollars of investment, although the decision had its opponents (Hrynkiewicz and Kolenda). The abandoning of the Zarnowiec power plant and the closing two nuclear power plants in former East Germany (*Business Week*) was difficult to predict just few years ago (Flavin). In East Germany before unification, and Czecho-Slovakia, public polls showed environmental pollution the number one issue (Charles; *Business Week*).

Because of the damage caused by industry, agriculture often escapes blame for environmental pollution. Agricultural pollution is also either a relatively small local problem or, because of its non-source nature, difficult to identify. The issue of food safety has not yet surfaced in Eastern Europe and concerns about pesticide residue have yet to have an impact on agribusiness. One reason for the limited discussion about health impacts of chemical use in agriculture is the lack of an alternate food supply which would stimulate pesticide-free production. In Poland, a major concern about food safety is microbial contamination. For example, the number of reported Salmonella poisoning cases rapidly increased during the 1980s (*Rocznik Statystyczny*).

Emotional reaction of East European nations to environmental pollution contradicts the desire to advance the level of economic development. The need to cleanse the environment and assure the supply of safe food will require resources which would otherwise go to industrial and agricultural production. A result could be a relatively slow economic growth while the population impatiently awaits increased consumption. The priority of cleaning the environment is necessary for the long term survival of the nations. One third of Poland's population will eventually get one or more environmentally induced illnesses (Brown and Flavin). Environmental pollution combined with suboptimal diets and lifestyles, are the reasons for decreasing the life expectancy to the 1952 level for some population groups.

Energy shortages complicate the economic conditions under which new East European governments must carry out market system reform. The recent economic blockade of Iraq suspended oil shipments to Poland, Bulgaria, and Romania. Before the blockade, Poland and Bulgaria converted their trade surplus with Iraq to import Iraqi oil. This followed the Soviet Union's decision to limit oil shipments to Eastern Europe in 1991. If energy shortages persist and impair economic growth, projects such as the lignite

excavation in Poznan Trough may resurface on the government's agenda and reignite a discussion about agriculture.

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