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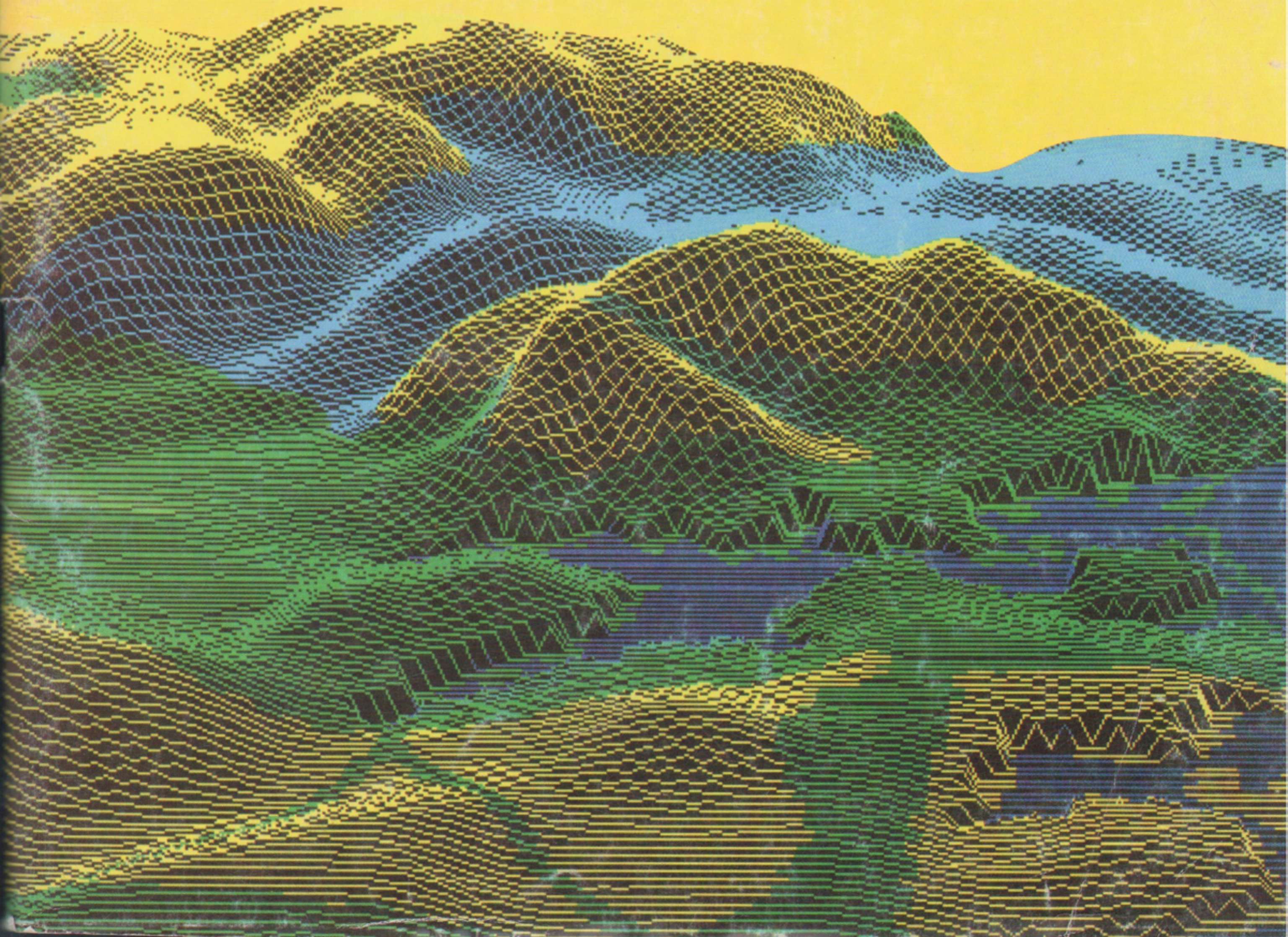

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Contents

Use of the Environment and Resulting Problems in Central and East Europe

Oldřich Mikulík

The map scale of 1 : 3 000 000 required a high degree of generalization, and the density of information already achieved made it necessary to leave out some characteristics although they were well documented and would have lent themselves to inclusion.

The environmental situation described by the maps and text reflects the problems between 1985 and 1989. It must be hoped that the political and economic upheaval in the formerly socialist countries, particularly the events of 1989/90, will change for the better attitudes of the political bodies and the population with regard to environment and hence also to the poor environmental situation as such. Some countries are already taking consistent steps, in others only discussions are under way. Everywhere, the resolution of ecological problems is being felt as a vital concern, and green movements and green parties are emerging. Accessibility of formerly confidential environmental data makes it easier to find solution to environmental problems. Introduction of market economics and taxes for resource use as well as promotion of small and medium-sized companies will result in major structural changes in most economies and enterprises. However, negative effects must also be expected. All these developments together go to underline the importance of environmental research and the mapping of its findings, which may elucidate the interrelationships between various forms of resource use and the resulting problems.

As a major challenge for future policies and economic activities environmental management must strive to conserve natural resources as the basis of a prosperous society, to safeguard the environment as a pre-requisite for human survival and to protect nature in order to preserve our genetic heritage. Man-made environmental change turns into a problem when it makes it more difficult or impossible to pursue traditional uses of resources or when it no longer allows the continuous use of resources and methods hitherto employed.

Impairment of environmental quality as a whole as well as quantitative and/or qualitative impairment of the natural resources are criteria for identification of the problems. Impairment is determined in terms of the extent to which the components of the natural world have been changed and their relative ability to fulfil their socio-economic functions remains intact.

When looking at environmental management, we must also analyse what economic sectors and regions are using what resources as well as look at the intensity of resource exploitation. This is important because in most cases, solution ofthe problem will require economic steps. In this process we must quite generally look at not only reducing the impact on nature, but also to change the sectoral and territorial structure of resource use so that it is more adequate to natural situation.

International nature of environmental problems calls for continued mapping in Central, East and South East Europe and extension of this activity to the western part of the Continent in the shape of a uniform map of the environmental situation in Europe. A team of international experts with long-standing experience both in the methodology and in the practical field work as well as the Laboratory for the Regional Research on Environment in Brno allow us to do just that.

Activities of the Laboratory were interrupted by cancellation of the Institute of Geography. New possibilities to continue in its work are looking for within the Institute of Geonics, Academy of Sciences of the Czech Republic.

We acknowledge cooperation of the following scientists: Tatyana NEFEDOVA (former Soviet Union), editor-in-chief for the manuscripts, was responsible for harmonizing various national contributions. Oldřich MIKULÍK (former Czechoslovakia), László BASSA (Hungary) and Joanna PLIT (Poland), together with the editor-in- chief, formerd the editorial team. National data and manuscripts were compiled by D. DONTCHEV, M. ILIEVA, M. JORDANOVA and St. VELEV (all Bulgarian), K. ČÚZOVÁ, A. VAISHAR (both former Czechoslovakia), G. SCHÖNFELDER (former GDR), M. ŠPES (former Yugoslavia), L. BASSA (Hungary), E. TOMASI (Austria), J. PLIT (Poland), E. ZAVOIANU (Romania), T. NEFEDOVA and I. VOLKOVA (both former Soviet Union).

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Elena OLESHKEVITCH was responsible for cartographic presentation of the entire map manuscript.

T. RUNOVA as an editor of the entire manuscript, T. NEFEDOVA and J. PLIT as authors of the synoptic parts, as well as D. DONTCHEV (Bulgaria), O. MIKULÍK (former Czechoslovakia), M. ŠPES (former Yugoslavia),

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The maps and texts were revised by the editorial team of the Atlas of East and SouthEast Europe. Head of the team: P. JORDAN. Review of contents: P. JORDAN, E. TOMASI. Review of cartography: F. PARTL, K. SCHAPPELWEIN. The maps were produced at the Institute of Cartography and Reproduction Technologies at the Technical University of Vienna under F. KELNHOFER, for the Austrian Institute of East and South-East European Studies. The text were produced at the Austrian Institute of East and South-East European Studies.

The two-sheet map on the environmental situation, edited by the Austrian Institute of East and Sout-East European Studies in conjunction with the Laboratory for the Regional Research on Environment in Brno, are only part of a more comprehensive map project under way at the Institute of Geography of the Academy of Sciences in Moscow. The above map will show, at a 1:2500 000 scale, the section depicted on the maps of the Atlas of East and SouthEast Europe as well as the entire European Soviet Union as far as the Urals.

Cartographic reasons have made it necessary to divide the subject of "Use of the Environment and Resulting Problems" into two parts and, hence, into two maps. The Map A ("Use of the Environment") shows resource use, while the Map B ("Environmental Problems") is devoted to ecological problems.

Map A depicts the types and intensities of natural resource exploitation. Areas under agricultural and silvicultural use as well as little-used areas are shown in areal colours. Areas with a small-scale combination of farming, grassland and woods are grouped as a separate type of use, essentially for reasons of the scale (second line of the legend matrix).

Agricultural use is moreover subdivided according to intensities through colour shading. In order to determine intensities, such characteristics as "percentage of agricultural land", "livestock", use of "commercial fertilizer" and crop yields were used so as to express specialization and productivity and hence the impact of agriculture on the soil. Statistical standardization was used to translate into a synthetic parameter the characteristic data, which were available for the entire area by administrative units of comparable size.

Industrial use of resources is shown on the map by columns for industrial locations with a minimum of 1 000 employees in one of the documented sectors. Height of the column indicates potential impact of the industries on environment (air, water, soil) in a given location. The subdivision into coloured segments highlights the relative contribution of individual sectors (incl. energy production). Extent of the environmental impact was determined by multiplication of the number of employees per industrial sector by an "ecological coefficient" weighting environmental damage caused by an industry according to experiences applying to the entire area. Following "ecological coefficients" were used for the individual sectors of industry: processing of non-ferrous metals 15, chemical industries and petroleum refining 10 – 15 (depending on the type of production), fuel and power production 3 – 10 (depending on the kind of heating), lumber and paper production 1 – 10, iron works 5, mechanical engineering 1, food processing 1, production of building materials 0.7. Since this method does not take into account technological improvements to reduce the environmental impact of individual industrial enterprises, it does not always (particularly in Austria) indicate actual emissions of an industrial location although it does provide an overall picture of the structure and distribution of industrial pollution.

Environmental impact of mining is represented by a two-size triangle. Nuclear power plants are classified as a potential threat to the environment and are thus shown in full, divided into power plants in operation and power plants under construction.

Impact of human settlements on the environment is shown by means of circles proportionate to the number of inhabitants. Solely settlements with more than 50 000 inhabitants are included, smaller communities being depicted only if they are home to major industries or if other emission sources are potential major polluters.

Since tourism and recreation pose a variety of threats to the environment (traffic, sewage, ski runs, trails, etc.), which are usually in addition to other uses already existing, areas with a flourishing tourist sector of travelling and recreational areas around large cities are identified by a grid superimposed on the colours depicting spatial use. They are essentially distinguished by such characteritics as arrivals, overnight stays, traffic density.

Map B shows the kinds of environmental problems occurring. Damage or disturbance to natural resources (soil degradation, damage to forests, lack of water) is shown through a variety of spatial grids.

The damage to soil and forests, caused essentially by inadequate methods of cultivation, is divided into a nearly critical and a critical stage: the former signifies diminishing quality and productivity of resources. Here, the strict control of exploitation would be required. In the critical stage, the extent of damage already inflicted, no longer allows exploitation of a particular resource in the way it has hitherto been applied. The grid for water scarcity identifies areas with limited availability of water caused either by natural and/or anthropogenic factors; it refers to both quantity and quality of water as well as to surfacewater and groundwater.

The large-scale spread of air pollutants (determined on the basis of such indicators as sulphur dioxide, dust, nitrogen oxides) is classified according to "low" (corresponding to "normal air"), "increases", "high", and "very high concentrations" by a succession of yellowish areal colours. Sulphur dioxide (SO_2) is chief indicator because it is the only air pollutant for which data of international comparability are available throughout the entire area. Other indicators such as mostly dust and/or nitrogen oxides (NO_X) were used only at higher concentrations so as to highlight regional and local air pollution peaks more clearly. Forest damage as a result of air pollution is not differentiated according to severity; it is depicted mostly around emission sources. Not included is forest damage caused by long-distance transport of air pollutants, because there is not enough material yet on the long-term cross-frontier effects. Air pollution in larger settlements is caused not only by industrial but also by domestic and traffic-related emissions. Moreover, local meteorology plays quite a significant role. Thus, air pollution in larger settlements sometimes differs substantially from long-range air pollution levels. Like the Map A, Map B shows all settlements with more than 50,000 inhabitants plus those settlements which are major air polluters themselves (immissions) because of large industrial enterprises or other causes.

Pollution of rivers, lakes and coastal waters is identified by coloured bands. Criteria for evaluating water quality are based on classifications differing from country to country in some cases (depending on whether chemical and/or biological criteria are considered). For rivers, the width of coloured bands corresponds to the stream width.

Larger areas with considerable damage caused by strip or underground mining and with at least heavy air and water pollution brought about by mining and industry are identified as areas of massive environmental devastation. The area contaminated by the Chernobyl nuclear disaster (1986) is in the same class with these, for the one accident only. Representation is based on measurements of Caesium – 137, a chief contaminant outside the 30-kilometer zone.

The map was published by the Institute for East and South-East European Studies in Vienna in 1992. It is available at this institution.

Meteorological Dictionary in Six Languages in the Czech Republic

Jan Munzar

"Geographical concept are the nuts and bolts of the discipline, essential for the progress and the means for communication among scholars and nations", wrote professor E. MEYNEN as a motto to German version of the International Geographical Glossary (IGU-CIGT 1985). MEYNEN's words are surely also valid in the case of concepts from other disciplines inclusive the ones of meteorology and climatology.

A year before the Regional Conference 1994 of IGU was held in Prague, the "Meterorological Explanatory and Terminological Dictionary" was issued in this town thanks to financial support from the Ministry of Environment of the Czech Republic – a work that had no analogy within neighbouring countries in Central Europe at that time. Although explications are in the Czech language, the dictionary is being indicated as a six language one because as many as six foreign language equivalents are being presented at individual entries: Czech, Slovak, English, French, German, and Russian. Together with separate, alphabetically arranged indices in Slovak, English, French, German and Russian languages, the new dictionary can be used for both passive and active translation.

Let us mention that the German version of the IGU Dictionary is equipped with equivalents in 7 languages: German, English, Spanish, French, Italian, Japanese, and Russian-but it has no linguistic indices, which makes its use for translation rather difficult. It is only possible to compare the German, English and French equivalents within the areas of individual geographical specializations.

As far as the number of entries is concerned, the IGU geographical dictionary explicates 2 400 terms of which 118 are deviced for the section of climatology. The new Czech meteorological dictionary contains the total of 4 111 entries (arranged by substantives), of which 3 222 are explanatory and

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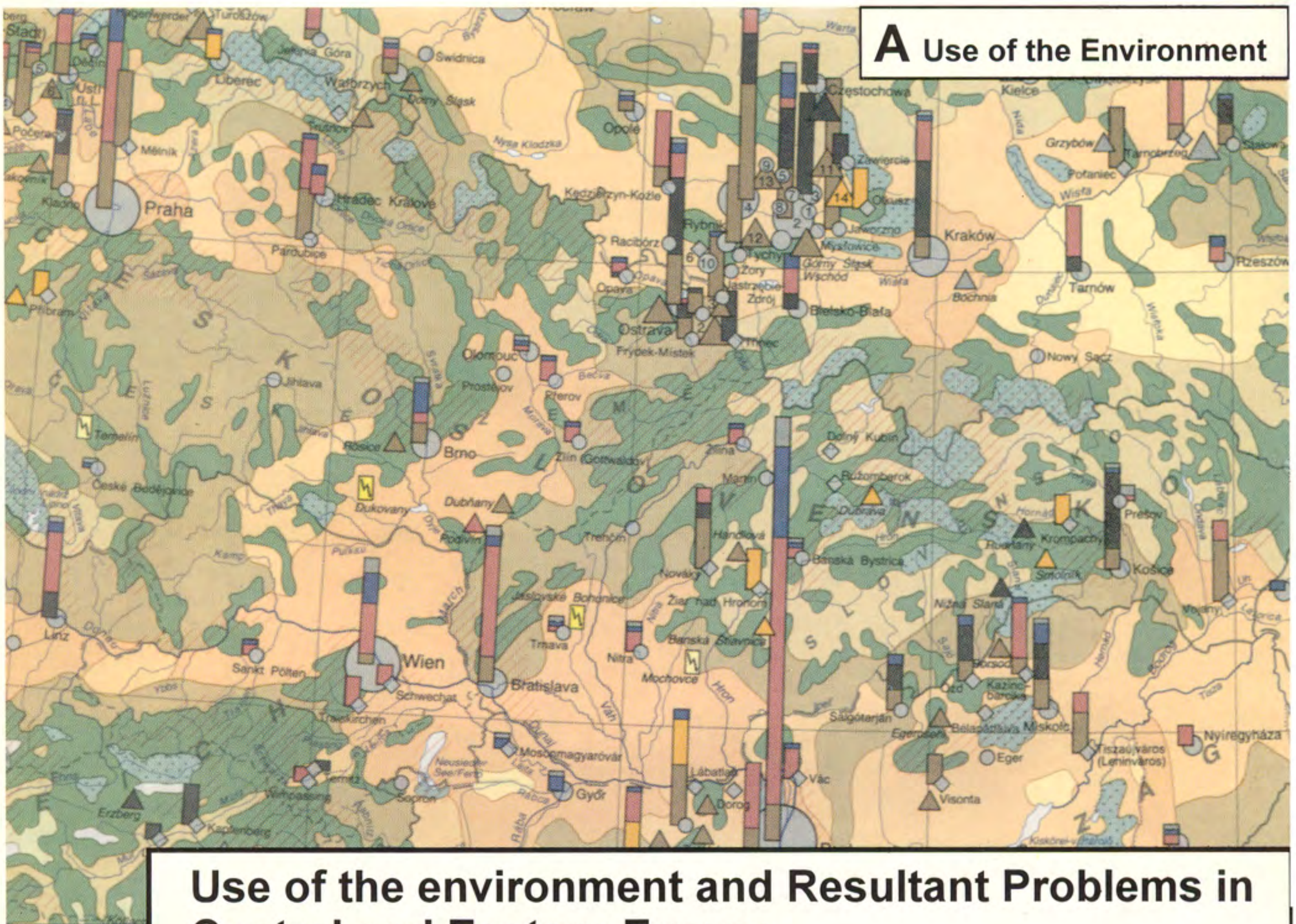
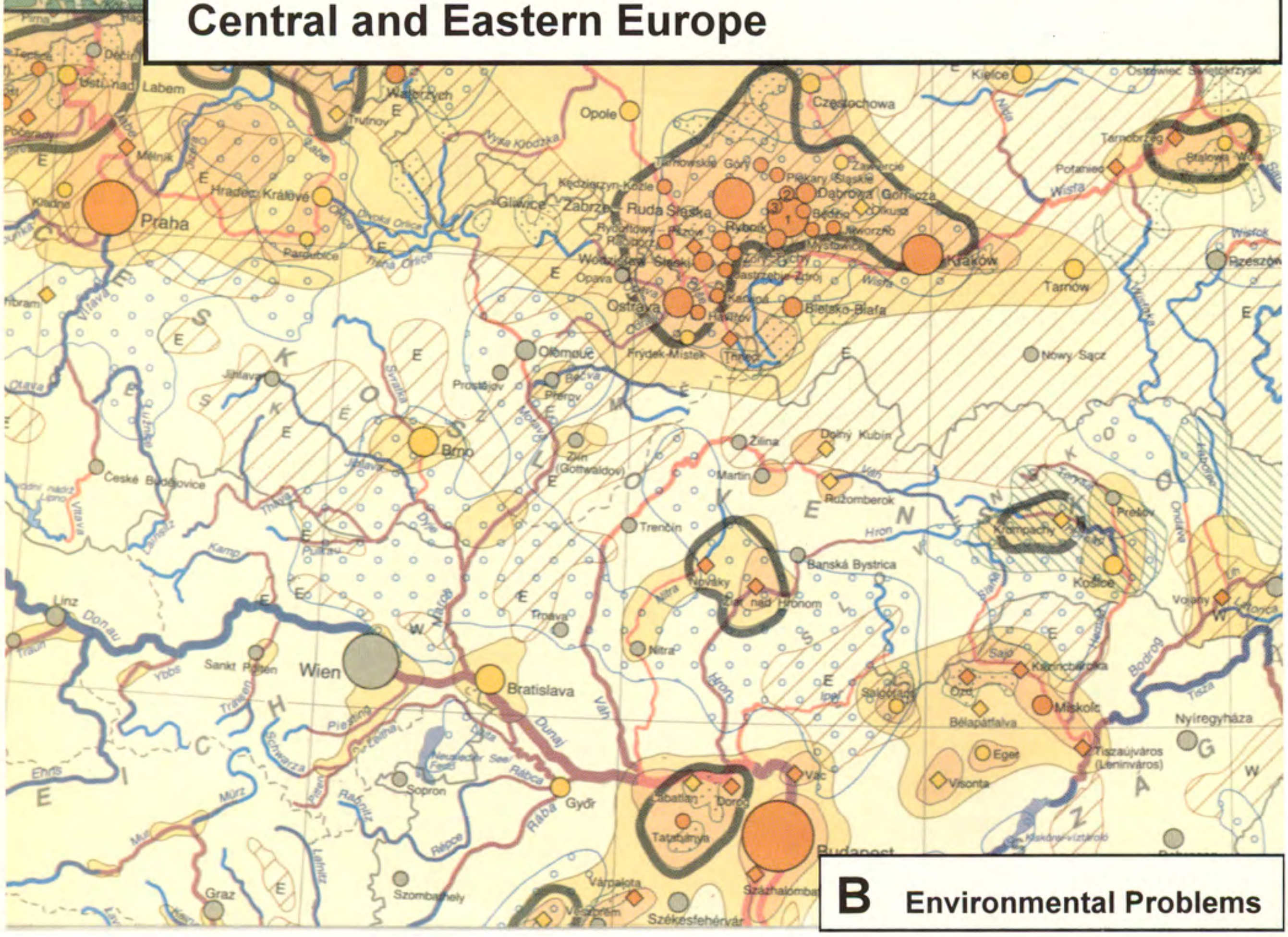


A Use of the Environment



B Environmental Problems

LEGEND A

Intensity of agricultural use

low | medium | high | very high — in regions with

predominantly agricultural area

mixture of agricultural and silvicultural areas

Mining

Coal	Iron ore	Nonferrous ores	Crude oil, natural gas	Other deposits

Impact on the environment

very heavy

medium, heavy

Nuclear power plant in operation

Nuclear power plant under construction

Emission potential of power production and industry

according to the number of persons employed and a sectoral pollution coefficient

84 – 80 – 70 – 60 – 50 – 40 – 30 – 20 – 10 – 0

according to the value classes

≥ 20	very heavy
10 -< 20	heavy
3 - < 10	medium
< 3	low

Other industries

Mechanical engineering

Chemical industries, petroleum refining

Processing of nenferrous metals

Ironworks

Fuel and power production

Predominantly forested area

Nature reserve, national park, other protected areas

Swamp, swampy woodland

Barren land (rock, glacial zone)

Tourist area, recreational area around a city

Not treated thematically

* represented only if heavy impact on the environment

Settlements by '000 inhabitants

< 50* | 50 - 100 | 100 - 250 | 250 - 500 | 500 - 1000 | 1000 - 2000 | > 2000

LEGEND B

near critical | critical

Soil degradation by water erosion (E), wind erosion (W), drainage (D), irrigation (I)

Damage to forests through the present from of industrial use

Damage to forests by air pollution

Lack of surface- and groundwater

no, minimal* | medium | heavy | very heavy

Water pollution

River

Lake

Coastal waters

*or no data available

Air pollution in settlements

minimal, medium | heavy | very heavy

Concentration low | increased | high | very high

Large-scale spread of air pollutants

Inhabitants in '000s

< 50* | 50 - 100 | 100 - 250 | 250 - 500 | 500 - 1000 | 1000 - 2000 | > 2000

* represented only if heavy, mainly self-induced immissions

Massive environmental devastation

in large mining and industrial regions

> 15 curie / sq km
1 - 15 curie / sq km
} by radioactive contamination with caesium-137

Not treated thematically

1 : 3 000 000

50 | 0 | 50 | 100 km

Conical projection
Topographic base according to: Operational Navigation Chart 1 : 1,000,000
For sources see accompanying text