



World Conservation Union

East European Programme

# The Environment in Eastern Europe: 1990





IUCN East European Programme

## The Environment in Eastern Europe: 1990

<b>1991</b>	<b>Environmental Research Series</b>	<b>3</b>
-------------	--------------------------------------	----------

The views expressed in this volume do not necessarily reflect those of IUCN. Neither do the presentation of material and geographic designations employed imply any expression of any opinion whatsoever on the part of IUCN concerning the legal status of any country, territory or area, or concerning the delimitation of its frontiers or boundaries.

© 1991 International Union for Conservation of Nature and Natural Resources

Reproduction of material in this volume for educational and other non-commercial purposes is authorised without prior permission from the copyright holder.

Reproduction of material in this volume for resale or other commercial purposes is prohibited without prior permission of the copyright holder.

ISBN 2-8317-0036-1

Camera-ready copy and cover design by  
The Nature Conservation Bureau Ltd.,  
36 Kingfisher Court, Newbury, Berkshire, UK.

Printed by Information Press, Oxford.

# Contents

	<i>Page</i>
<b>Foreword</b> .....	4
<b>Acknowledgements</b> .....	4
<b>Country Accounts</b> .....	6
<b>Albania, the People's Socialist Republic of</b> .....	6
<b>Bulgaria, the People's Republic of</b> .....	11
<b>The Czech and Slovak Federative Republic</b> .....	18
<b>The Eastern Länder of the Federal Republic of Germany</b> <b>[formerly the German Democratic Republic]</b> .....	27
<b>Hungary, the Republic of</b> .....	34
<b>Poland, the Republic of</b> .....	42
<b>Romania</b> .....	51
<b>Yugoslavia, the Socialist Federal Republic of</b> .....	58
 <b>Figure 1: Political map of Central and East Europe</b> .....	 5



# Foreword

During the last two years Eastern Europe has seen more changes than in the last twenty combined. The old communist order has crumbled to be replaced by fledgeling democracies striving to revitalise their national fortunes and ecological balances. This renaissance has come about through a combination of economic and political pressures coupled with a ground swell of popular action.

The appraisal of policies, structures and priorities in all fields is ongoing. However, most notable is the attention and concern being focused on previously disregarded environmental matters. The ravaged ecology and threat to human health are of real concern and are now being addressed.

This document, as part of IUCN East European Programme's Research Series, covers a summary of the environmental situation in each of the East European countries over the period from the beginning of 1988 up to the end of 1990. Its aim is to pull together the important, environment-related changes occurring in the region, and show the overall framework of environmental activities and issues. In this way a view of the past, current and future developments in legislation and status can be given.

## Acknowledgements

The text, compiled by Robert Atkinson, builds on a draft prepared by Graham Drucker. Invaluable assistance has been supplied by: Mira Mileva and Dr Gecco Spiridonov (Bulgaria), Ing. Frantisek Urban (Czechoslovakia), Eva Pongratz (Germany), Dr Zoltan Szilassy (Hungary), Dr Zygmunt Krzeminski (Poland), Liz Hopkins, IUCN EEP (Romania), Sofia Vujanac-Borovnica (Yugoslavia) and Dr Zbigniew Karpowicz (East Europe). Edited by Barbara Karpowicz and proof-read by Alison Suter, typed by Deborah Rothera. Map by Hilary Tye and computer support by Martin Sneary. Overall coordination and 1990/91 material by Dr Z. Karpowicz.

*Political map of Central and East Europe*



**Figure 1. Political map of Central and East Europe**

# The People's Socialist Republic of Albania

## Current Administration

Unlike the rest of Eastern Europe, no sweeping political changes have occurred internally. However, diplomatic relations have been established with a number of countries.

The management of the environment continues to be shared between the Ministry of Agriculture and Fisheries and the Ministry of Forestry. The Ministry of Health's Department of Hygiene and Environmental Protection acts as a watch-dog of environmental norms.

## Natural Resource Priorities

### *Air, Water and Soil*

Air, water and soil pollution is an increasing problem throughout Albania. Polluting industrial complexes include most notably: the Elbasan Metallurgical Combine, along with the oil well and refinery complex at Ballsh-Fier, and the Vlore PVC plant. Water pollution is exacerbated by a lack of water cleaning equipment, as illustrated by the capital, Tirana, where in 1987/88, there were reputed to be no water purification plants (Bouvier and Kempf, 1987).

Tirana has suffered worsening air standards over the last ten years (even so, it is one of the cleaner capitals in Europe), and several polluting industries have now been moved out of the city, including a concrete and asphalt factory. New premises are also being built for the Dynamo Works (Karadimov, 1989). It is recognised that nationally air pollution is rising and preventive measures are required for the entire country. The installation of filtration equipment at the Elbasan Metallurgical Combine is one example of the processes required to restore the environment (EEN, 1990).

Rapid industrial development, and the intensification of agriculture and population growth present serious water pollution problems. Despite measures taken to distribute industrial installations throughout the country, to construct waste water treatment works, to promote the wise use of chemical fertilizers and pesticides, and to treat domestic waste in towns, pollution of surface water in some cases exceeds established levels (Puka, 1988). This is particularly true in the central regions and rivers of the country.

Soils have been degraded by poor agricultural practices, including the use of heavy crawler tractors, large amounts of pesticides, poor desalinisation techniques and disastrous terracing programmes (EEN, 1990). A national undertaking to prevent soil erosion has led

## *Albania*

to the 1987/88 forest expansion and improvement, with 9 million saplings reported planted between December 1987 and January 1988 (Anon., 1987).

An FAO identification mission took place in December 1989. This mission recommended several measures:

- strengthening the knowledge of specialists in the field of saline soil improvement and land reclamation;
- extension of the laboratory of the Institute of Pedology;
- organisation of a seminar on the improvement of saline soils;
- feasibility study on reclaiming the Karavasta area;
- soil survey, scale 1:10,000;
- general feasibility studies;
- pilot project on desalinating saline soils (Kusse and Winkels, 1990).

### *Health Issues*

Drinking water quality is viewed as being of prime importance for human health. The Ninth Congress of the Communist Party resolved to ensure that by 1990 sufficient quantities of drinking water be supplied to all the nation's settlements. In Tirana this plan is reported to have been completed (Karadimov, 1989), but in the rest of the country this is unlikely to have occurred outside major towns.

Radiation is monitored by the Institute of Nuclear Physics, particularly of foodstuffs, as well as air and water. After the Chernobyl accident hundreds of samples were taken, with many showing levels above permissible norms (Dollani, 1988).

### *Biodiversity*

Albania boasts a fairly extensive network of protected areas. The seven national parks are under total state control, so that little human activity is permitted within these areas. In 1988, in view of the country's environmental problems, the authorities adopted a series of tougher environmental measures, including those on management of protected areas, and stronger regulations on hunting, fishing and protection of threatened species (Anon., 1988).

Legislation exists to protect wildlife threatened with extinction. However, many species are thought to be in decline due to continued hunting, extensive wetland modification and destruction of habitats.

### *Energy*

Italy has been negotiating for a joint exploration of Albanian oil deposits (Agip Oil) (EEN, 1990), and following visits by the French deputy foreign minister, the two countries have stepped up economic cooperation, with French engineers helping to build the hydroelectric dam at Koman. Albania is not dependent on energy imports, except for higher grade coal, and in fact supplies electricity to Yugoslavia (Artisien, 1987).

### *Land Use*

Albania has a relatively fast-growing population (2% per annum), this represents a problem in that much of the land is too mountainous for agriculture. There has been a need to extend agricultural land by the improvement of saline coastal lands. Reclamation has been realised by means of a drainage system, and three plans have been developed: the improvement of the process of desalination on the arable land; to gain arable land in lagoons in the coastal area; and gaining land in the sea. These plans have obvious effects on the natural coastal habitats, especially in wetlands (Kusse and Winkels, 1990).

Terracing has occurred on vast areas of hillside, with much of this work being carried out by untrained volunteer brigade labour, it is often of low quality.

In many cases the hillsides should not have been terraced in the first place: the top soil being too shallow, and the scrub too fragile to tamper with, as a result bedrock is appearing in some areas. In realisation of these errors, the terracing programme has virtually stopped and affected areas are being planted-up to prevent further damage (EEN, 1990).

### **Government Action**

Pollution continues to be an important issue and has led to various new government policies. However, a chronic lack of funds and modern technology continues to be a major stumbling-block to progress, and is one of the main causes of pollution in the country. The current period has also seen increasing Albanian involvement in international programmes, along with increased technical and information exchanges.

It is reported that for every year of the current five-year plan, 1985-90, numerous measures of an organisational, scientific and technical nature are being adopted. The economic plan of 1989 maintained that pollution problems are linked directly to socio-economic development. Growth rates in the 1989 plan were pre-set at 6.8% and 16.9%, for industry and agricultural production, respectively. Realistic figures actually indicate that there is falling oil and chrome ore production (officially 700,000 tons, but probably only 500,000 tons), reduced agricultural performance and loss of productivity (EEN, 1989).

## *Albania*

In September 1988, the Balkan Scientific Conference in Bulgaria, "Environmental Protection in the Balkans", led to a series of key environmental papers by Albanian government experts representing official environmental views (Karadimov, 1988). Recently a European Community delegation paid a visit to the Albanian capital for talks with government officials on 20 September 1990, illustrating increased international awareness (Anon., 1990).

### *Pollution Abatement*

In 1988, the planning minister's report on "Economic Performance and the Economic Plan" for the following year outlined few workable solutions to the environment and/or economics as a whole. Yet, other documents of that year declared that the atmospheric environment was "pure without important problems" and that "Albania has a pure natural environment"!

Independent sources recognised that there was a chronic lack of technology. The country's technical expertise and availability of new machinery is deemed entirely inadequate. This has had a direct effect on the economy, leading to extensive pollution and a general harming of the environment. Measures were applied for a more "studied use" of chemical fertilizers in agriculture, in the "scientific treatment" of forests and for protection against erosion. In the September 1988 Balkan Scientific Conference on Environmental Protection, the Albanian delegates stressed that environmental monitoring was well under way and hinted that in the near future scientifically controlled programmes would be implemented to abate pollution problems.

The Presidium of the National Assembly has issued an Anti-pollution Decree, which places all enterprises, institutions and cooperative farms under the obligation to take all necessary measures for the protection of the environment. Administrative sanctions, including recommendations, fines and law suits are imposed on those who violate the law. The decree is supplemented by special instructions issued by the Council of Ministers.

In the 1988 report, under Decision No. 52, a commitment was made:

- (a) to reorganise the Central Commission for the Protection of the Environment against Pollution and set out anti-pollution activities, with plans to integrate all ministerial and institutionalised scientific research efforts;
- (b) to correct the pollution problems of the worst polluters and to actively educate and inform the general public about pollution problems and threats. It has already been shown that pollution can be reduced by 70% by restoring to working order all existing smoke filters, ventilation and purification plants (Anon., 1988).

### **Non-governmental Activity**

Unlike some East European countries, recent unrest in Albania has been centred mainly around economic privations rather than ecology. However, the lack of food surpluses has a direct source from poor environmental management. The recent exodus of citizens through foreign embassies to Italy and Czechoslovakia and disturbances may reflect the general undercurrent of feeling within Albania (EEN, 1990).

An Albanian Ecology Party (known as the Green Party, the second independent party to be formed) was set up in March 1991, after approval by the Justice Ministry on the 7 January 1991 (Anon., 1991).

In September 1988, Dr Liri Dingu indicated the intensification of public-spirited activities for the "creation of an ecologically educated public". At present, environmental groups can only legally exist as branches of established social organisations under the direct and ultimate control of the Party, or as registered independent organisations.

### **References**

- Anon. (1987). *ATA*. Report in English. 09:00 GMT. 5 December 1987.
- Anon. (1988). Editorial on anti-pollution measures. *Albanian Workers Party Daily Newspaper*. 6 August 1988.
- Anon. (1990). Albanian contact. *The Independent*. 28 September 1988.
- Anon. (1991). Ecology party. *The Guardian*. 8 January 1991. P. 9.
- Artisien, P. (1987). *Albania: Recent Developments*. NASEES, Annual Conference. Fitzwilliam College, Cambridge. 28-30 March 1987. 33pp.
- Bouvier, M. and Kempf, C. (1987). La nature en Albanie. *Le courrier de la nature*.
- Dollani, K. (1988). *Control of Radioactivity*. Balkan Scientific Conference. Environmental protection in the Balkans. Abstracts. Varna, Bulgaria. 20-23 September.
- EEN (1989). Albania: the fantasy plan. *East Europe Newsletter* 3(1): 5-6. January.
- EEN (1990). Albania: terminal. *East Europe Newsletter* 4(6): 1-5. March.
- Karadimov, I. (1989). *Balkan Mayors on the Environment*. Sofia Press.
- Kusse, P.J. and Winkels, H.J. (1990). Remarks on desalination and land reclamation in the coastal area of the Peoples Socialist Republic of Albania. Dutch Ministry of Agriculture, Nature Management and Fisheries. Unpublished report. April.
- Puka, V. (1988). *Physical-Chemical Qualities of River Water*. Balkan Scientific Conference. Environmental protection in the Balkans. Abstracts. Varna, Bulgaria, 20-23 September.

# The People's Republic of Bulgaria

## Current Administration

The previously Communist Bulgarian Socialist Party continued to hold control of the Great National Assembly following the political changes that came about late in 1989 and the ensuing 10 and 17 June 1990 elections.

In May 1988, a Politburo decision recommended that KOPS (Committee for Environmental Protection) be merged with the Ministry of Agriculture and Forests to form the new Ministry of Land, Forests and Environmental Protection as the competent authority for environmental matters (Ashley, 1988).

At the beginning of 1990, the Committee of Environmental Protection was replaced by a new Ministry of Environment headed by Professor Dimitar Vodenitcharov. Late in 1990, a consensus reached by all political forces resulted in the election of a coalition non-party government, with technical and scientific experts holding key ministerial positions (e.g. Prime Minister, Minister of Environment).

Local elections and Parliamentary elections due in 1991 are likely to result in a further radical re-structuring of the government machinery. Foremost in the workplan of the current Great National Assembly is the passage into law of a new Constitution and framework laws on privatisation, agricultural land use, environmental policy, health and protected areas (the latter introducing IUCN recognised protected area categories into national legislation).

## Natural Resource Priorities

### *Air, Water and Soil*

Air pollution is reported to affect an estimated 50% of the Bulgarian population. Principal pollutants are: sulphur and nitrogen oxides, dust, lead aerosols, phenol, hydrosulphur, hydrocarbons and carbon monoxide. Particularly troubled areas include: the conurbations of Sofia-Pernik, Ruse, Burgas, Varna, and Plovdiv, as well as the industrial towns of Dimitrograd, Srednogorie, Razlog and Kardzhali (Ivanov, 1989).

Within the existing air pollution monitoring network, just two out of 90 sites (namely Burgas and Varna) are capable of continuous recording of levels of emitted dust, CO<sub>2</sub>, NO<sub>2</sub> and other pollutants such as CO, NH<sub>3</sub>, F<sub>2</sub> and Cl<sub>2</sub>.

Although Bulgaria was one of the first countries to sign the 1979 Convention on Long-Range Transboundary Air Pollution, 44% of the country's entire airshed remains polluted

above European safety levels, especially for nitrogen oxides. The town of Ruse has suffered severe pollution in the past from the Romanian town of Giurgiu, notably from chlorine and sodium, proposals are afoot to control this problem (Carter, 1989).

The middle and lower courses of virtually all large rivers are identified as being heavily polluted. Principal riverine pollutants include: heavy metals, nitrates, oil derivatives and detergents. Nitrate pollution already affects subsoil waters, and the river dumping of refuse from settlements is reported to be widespread. In some Bulgarian rivers, water quality standards are exceeded by a factor of 100 (Cesar, 1990). Three major land-based sources of water pollutants are (in decreasing order): industry, urban agglomerations and agriculture.

More than 7.5% of soils are over-acidic. An estimated 30,000ha adjacent to metallurgical plants are polluted by heavy metals, while another 30,000ha are devastated by mining, industrial, communal and agricultural waste material (Ivanov, 1989).

The transboundary nature of many environmental pollutants in Bulgaria has indicated the need for support in pollution control efforts. However, progress in environmental protection has depended heavily on the socio-economic reshaping of the country and so it is widely believed by independent sources that the feasibility of many ambitious projects could be in question (Ivanov, 1989).

### *Health Issues*

Examples of the degraded state of Bulgaria's environment include quotes of regions with a 50% higher morbidity rate, and thousands of children with twice the recommended lead levels in recorded blood samples (Ekimova-Melnishka, 1990). Revelations from the, previously restricted, "Ecology and Health" report shows that, in comparison to the average population, disease was higher in people living close to heavy industrial complexes. In Ruse, opposite a large metallurgical plant on the Romanian bank of the Danube, lung disease has increased by some 2000% over the last 15 years. More than 17% of the population of Ruse are affected (Cesar, 1990).

With relation to nuclear pollution, Professor Tzvetan Bochev, a nuclear physicist at Sofia State University, estimated that, apart from the Chernobyl area, the Balkans and Bulgaria is one of the most radioactively polluted areas in the world. It has been discovered that the average radionuclide content in Bulgarian lamb was 510 bequerels per kilo (and sometimes as high as 3500 bq per kilo). In milk, measurements of 1000-1100 bq per litre have been recorded. Acceptable levels are up to 350 bq per kilo of meat and 200 bq per litre of milk. According to UN figures the collective equivalent dose of iodine-131 in the thyroid of Bulgarian children is the highest in Europe. For adults Bulgaria reached third place in Europe for iodine-131, and collectively the highest for caesium-137 (Spetter, 1990).

## *Bulgaria*

Public outrage has resulted in the reassessment of the health risks to lead and zinc mine workers (at the *Redki metali* works) with calls for immediate safety measures (Radio Sofia. Programme Ecological Club, 15 January 1991).

Laboratories run by the Ministry of Agriculture monitor produce for pesticides, nitrates and heavy metals. They cooperate closely with the Institute of Sanitation, Hygiene and Epidemic Control. The Ministry of Environment, and its Regional Environmental Protection Inspectorates, enforce waste laws and build treatment facilities (Karadimov, 1989).

### *Biodiversity*

It is estimated that nearly 20% of all vascular plants and vertebrate fauna (excluding marine fish: that is 740 plant and 150 animal species) qualify for inclusion in the national Red Data Book.

Of the national network of protected areas, currently covering some 2% of the country, some 30% are strict nature reserve category (65,000ha). Although the latter go some way to protecting the best of the country's ecosystems and sites of high biodiversity, a figure of 8% protected area coverage by the year 2000 is the goal (G. Spiridonov pers. comm., 1991).

### *Energy*

Bulgaria has an acute shortage of electrical power due to its poor resource base and the excessive use of power by inefficient industries. A large foreign debt (US\$10 billion) and a lack of hard currency prevents the large-scale importation of coal, oil and gas stocks. Therefore, the planned expansion of nuclear power facilities appears to be the only option. Indeed further output increases are envisioned from Kozloduy, Bulgaria's first nuclear station, which currently produces 35.6% of total electrical output, even though the plant has a poor safety record, with unconfirmed reports of radioactive matter escapes (Spetter, 1990).

The official policy towards the utilisation of energy resources continues to prioritise nuclear power, previously regarded as environmentally safer than traditional energy sources. The commission of a second nuclear power station (Belene) would have increased the nuclear share in total electrical output to 48% by 1995, and 55% in 2000. Public opinion appears to be strongly opposed to the further expansion of the country's nuclear installations. This manifested itself through the Belene nuclear plant. When, against expert opinion, initial construction was started, protest reached a climax on 15 February 1990, with residents forming a "human chain" around the construction site (Ekimova-Melnishka,

1990). A subsequent inquiry commission of the National Assembly decided, on 26 February 1990, to halt all work on the plant (Spetter, 1990). Alternative energy sources, such as solar, geothermal and wind power, are planned to account for 0.2% of the total energy balance by the year 2000 (Ivanov, 1989). The consumption of energy and other natural resources is estimated to be three to four times higher than in western countries (pers. comm. from World Bank mission, 1990).

### *Land Use*

Due to so-called "irrational" land-use practices, 80% of cultivatable land has been affected by water and wind erosion; 6.5% has a waterlogged surface layer; 0.7% was salinised; leading to an overall annual loss of 10,000ha of cultivatable land per year. Restructuring and restoration programmes aim to provide, by the year 2000, the recovery of an estimated 3,000,000ha of land lost to water erosion, 120,000ha from wind erosion and 500,000ha lost due to excessive irrigation (Ivanov, 1989).

Policies towards land use include various planned activities aiming to curb:

- (a) the tendency of decreasing soil fertility;
- (b) chemical contamination;
- (c) disintegration of soil mineral content and humus;
- (d) destruction of soil microflora and microfauna;
- (e) to reduce non-agricultural use of cultivatable land.

### **Government Action**

As a result of recent political changes, the nation has become more open to the environmental consequences of development. On 21 April 1990, State President Petar Mladenov admitted that "on the road to progress" Bulgaria has made "significant mistakes and short-sighted decisions" with respect to the environment. Noting that a number of regions in the country were endangered by serious environmental pollution and stressing his responsibility as president, he pledged to do everything possible to rescue the country from "the calamities whose detrimental effects are well known" (Spetter, 1990). Unfortunately, due to the short time period, the ecological situation has little altered. Acid rain and soil erosion are grave problems and, due to the small capacity of sewage plants, pollution remains above acceptable levels (Anon., 1990).

## *Bulgaria*

Responding to a 1988 Politburo declaration, proclaiming the necessity of a new environmental policy, the Socialist government of the day proposed a National Programme for Environment Protection and Restoration until the year 2000, which became operative in late 1989. By the end of the year, the parliament was to pass a new Law for Environment Protection and Restoration (Ivanov, 1989; Bozhinov, 1987).

A National Programme for Urgent Measures to Improve the Environment was recently completed by the Ministry of Environment. Based on a re-appraisal of an existing national programme, the survey provides the best available data on the current environmental situation in the country and proposes the concept of "ecologising" industry.

The Environmental Commission of the Great National Assembly has recently responded to citizens' protests (Ruse, Srednogoric) by commissioning expert technical evaluations, but with apparently limited follow-up action.

The Institute of Ecology, Bulgarian Academy of Sciences, formerly the Research and Coordination Centre for the Conservation and Renewal of the Environment, has become more independent of the Ministry of Forestry (Fisher, 1990). Progress has been achieved on the preparation of a Treaty for Environmental Protection of the Balkans.

Bulgaria has recently applied to become a member of the International Bank for Reconstruction and Development (IBRD), and also to the International Monetary Fund (IMF), which is a prerequisite for World Bank membership (World Bank, 1990).

Future requirements to safeguard the Bulgarian environment include: the successful development of the planned national environmental monitoring and information network; guaranteed public access to environmental data; adoption by the authorities of an increasingly cooperative attitude toward independent environmental groups and organisations; and making better use of the experience of ecologically advanced nations (Ivanov, 1989).

### *Pollution Abatement*

A Deputy Environment Minister reported that a \$3 billion five-year plan has been forwarded to modernise, move or close industrial plants across the country (Friedman, 1990) and during March 1990 the Prime Minister announced a \$1.2 billion plan to combat industrial pollution. However, it has been suggested that the government will find it difficult to raise such large sums (French, 1990). The Environmental Protection Programme plans to bring air pollution levels to below maximum admissible levels by the year 2000. Emissions of sulphur dioxide are expected to drop 30% by 1994, and chemical and biotechnological

industries are to reduce overall emissions of gaseous pollutants to 60% by 1995. Utilisation of 50% of all waste products by 1995 and 70% in the year 2000 is planned, reducing by 10% the overall use of primary natural resources (Ivanov, 1989).

The introduction of new technologies is anticipated to increase sulphur utilisation to 96% by 2000. Additional pollution abatement measures include converting thermal power stations to gas fuel and placing an increased emphasis on electrical public city transport. The planned reprocessing of 80% of all waste waters in 1995 and 95% in 2000 would partially restore the ecosystems of major rivers such as the Iskar, Maritsa, Tundzha, Struma, Yantra, and Vit, as well as to reduce the use of drinkable water for other purposes. In order to help reduce soil and water pollution, a wider variety of fertilizers will be made available, airborne spraying will be abandoned, pesticides will be more strictly regulated and priority will be given to environmentally safe methods of crop protection (Bozhinov, 1987).

### **Non-governmental Activity**

The non-governmental Ecoglasnost, founded on 11 April 1989, has been fundamental to the changes in Bulgaria, through pressure exerted during the "Eco-Forum for Peace", held in Sofia during October 1989. The organisation is no longer totally in opposition and has the possibility of entering into party politics. Also, several leaders have split away to form a Green Party; the relationship between both organisations was described as somewhat confused (Fisher, 1990). By 1991 it was considered well coordinated (M. Mileva pers. comm., 1991).

Ecoglasnost is made up of local groupings (originally 50 in Sofia and 30 in the rest of the country, and by 1991 it was proposed to establish 30 groups based on a regional system), with a council residing in Sofia consisting of approximately 15 working groups. Ecoglasnosts' recent successes include:

- stopping water diversion projects in Rila and Mesta;
- ceasing construction of the Belene nuclear power station;
- the closing down of two production lines at the Moussagenitsa pharmaceutical works;
- serious discussions on the future of 20 polluting industrial plants.

The Green Party was founded on 28 December 1989 by former Ecoglasnost secretary Alexander Karakatchanov. It has approximately 2,000 members (in 1991) and contacts with other East European Green Parties. The Green Party suggests a complete restructuring of the economy, with an emphasis on crafts, farming and light industry (Ekimova-Melnishka, 1990).

## *Bulgaria*

The Agricultural Party favours a revival of farming, they recommend that an ecological study should precede the approval of any industrial development and that a nationwide ecological monitoring system should be established (Fisher, 1990).

### References

- Anon. (1989). *Protected natural sites: invaluable natural heritage*. Committee for the Protection of the Environment with the Council of Ministers of the People's Republic of Bulgaria. ECO Facts and Figures. Sofia Press, Bulgaria.
- Anon. (1990). *Green Tree News* 2(10). February.
- Ashley, S. (1988). Politburo assumes "new" ecological policy. *Radio Free Europe* 13(21) 9-13. May.
- Bozhinov, T. (1987). Report to East European regional meeting of the World Commission on Environment and Development. Budapest. May. 10pp. Unpublished report.
- Carter, F. (1989). Bulgaria's dirty smoke-stacks. *Earthwatch* 36: 9.
- Cesar, H. (1990). Environmental issues in Central and Eastern Europe. Description of the environmental situation in Central and Eastern Europe. World Bank Briefing. 22pp. Unpublished report.
- ECE (1986). Meeting, Finland. 25-29 August 1986. ENV/SEM. 16/R.1.
- Ekimova-Melnishka, M. (1990). Ecoglasnost: a breath of fresh air? *Panoscope* 18. May.
- Fisher, D. (1990). Environmental politics in Bulgaria. Ecological Studies Institute. February. Unpublished report.
- French, H.F. (1990). *Green revolutions: environmental reconstruction in eastern Europe and the Soviet Union*. Worldwatch Paper 99. November. 62pp.
- Friedman, J. (1990). Bulgaria's deadly secret. *Newsday*. 22 April.
- Ivanov, L. (1989). On the eco-situation in Bulgaria, report to IUCN. September. 3pp. Unpublished report.
- Karadimov, I. (1989). *Balkan mayors on Environment*. Sofia Press.
- Spetter, H. (1990). Bulgaria under the grave impact of Chernobyl. *Environmental Policy Review, The Soviet Union and Eastern Europe* 4(2): 51-54. July.
- Sword, K. (1990) (Ed.). *The Times Guide to Eastern Europe: the changing face of the Warsaw Pact. A Comprehensive Guidebook*. Times Books, Golden Square, London, UK. 270pp.
- World Bank (1990). Bulgaria applies for membership. *World Bank News*. 1 March.

# The Czech and Slovak Federative Republic

## Current Administration

Following the collapse of the ruling Communist Party, and the ensuing elections, the Civic Forum/Public Against Violence alliance came to power, with almost 50% of the votes polled in the 8 June elections (Sword, 1990).

In June 1990, the federal level State Committee for Environment was formed under the chairmanship of the Federal Minister of the Environment. Civic Forum are reported to want this committee to have powers over all other ministries, similar to a treasury (EEN, 1990). The two constituent republics also have their own environmental bodies respectively: the Czech Ministry of Environmental Protection and the Slovak Commission for Environmental Protection.

## Natural Resource Priorities

### *Air, Water and Soil*

Atmospheric pollution is still one of the gravest environmental threats to the country and has markedly affected the economy. The Czechoslovakian Academy of Sciences (PAS) estimated that acid rain pollution costs the country approximately £1 billion annually. According to figures from 1985 Czechoslovakia emitted 7.6 million tons of gas and solids into the atmosphere, including 3.37 million tons of sulphur dioxide. Foreign sources total 1.73 million tons of sulphur dioxide, with the country transmitting 2.1 million tons abroad (IUCN, 1989). The country will probably fail to fulfil the internationally adopted commitment to reduce, by 1993, the emissions of sulphur dioxide by 30% as compared with 1980 (Vavrousek *et al.*, 1990a).

Czechoslovakia is poorly provided with both surface and underground water resources. Natural lakes are rare, and the ponds and reservoirs that do exist are increasingly polluted. The resources are unevenly distributed and use is highly intensive, with forest damage and urban development upsetting the water balance. Present water consumption in the national economy is approximately 600 million cubic metres per year, the trend in industrial consumption is falling. However, the quality of drinking water is falling and 50% does not meet health norms (which are generally outdated) (Fisher, 1989). Ground water quality is also poor, mostly polluted with nitrates. The contamination of drinking water with nitrates is up to 25 times the standard limit for adults and up to 80 times the limit for sucklings (Cesar, 1990). Over 70% of the rivers are heavily polluted, and approximately 30% have no fish life (Carter, 1989).

## *Czechoslovakia*

Industrialisation and intensification of agriculture have provided higher yields, but have brought several problems including: the impairment of the soil's natural fertility, the drainage of fertilizers into sub-soil waters; the increase of hazardous substances in agricultural produce and up to 1,590,000ha of heavy and compacted soils need improvement. In Czechoslovakia, more than 50% of agricultural land is actively endangered by erosion (Cesar, 1990). The quality of agricultural soil is also affected by acid rain, including: 550,000ha of agricultural land in the Czech Republic, and 170,000ha in the Slovak Republic (Fisher, 1989).

### *Health Issues*

Independent reports implied that pollution was leading to ill health and frequent outbreaks of typhus, cholera and dysentery. In the Czech part of the country only 15% of the area is considered suitable for human habitation, extremely impaired areas represent about 10% of the republic's territory (inhabited by 5.5 million people, or 35% of the total population) (Sniegon, 1989). In Most, northern Bohemia, sulphur dioxide concentrations average 132 micrograms per cubic metre, with peak levels of 1,000. World Health Organisation (WHO) standards allow an average of 40 to 60 micrograms per metre. In Prague this standard is exceeded on 128 days of the year (French, 1990).

In an unofficial technical report published during 1987, it was claimed that in Bratislava the incidence of cancer in the region had risen by 35% in 5 years and that infant mortality was 65% higher than in 1960, which is twice as high as in Sweden and Japan (Cesar, 1990).

A recent government report on the state of the environment, compiled in February 1989, has highlighted the dangers of pollution in foodstuffs, especially the content of lead, mercury, cadmium, and polychlor biphenyls. The authors of the report state that, although information is lacking in some respects, the continuation of present developments is dangerous and totally unacceptable (Anon., 1990).

### *Biodiversity*

Several species have become extinct and many are now seriously threatened by habitat destruction or degradation, especially in wetlands and species-rich meadows. Moreover, 80% of woodland has been converted to coniferous monoculture (Russell, 1990), which, although not a natural ecosystem, still assists the ecological balance of the country. The protected areas total is given as 1,086,900ha in the Czech Republic and 816,300ha in the Slovak Republic (Cerovsky, 1988).

The Czechoslovakian Academy of Sciences has warned that within the next 5 years 20% of the country's flora and 15% of its fauna would perish. Prague, North and Central

Bohemia, and North Moravia are heavily polluted regions. The rest of the country appears to be much less degraded. Acid rain has caused a 13.2% loss of wood production in Czech areas, and 5% in Slovakia, other negative impacts are electromagnetic and radioactive pollution and recreational activities (Fisher, 1989).

### *Energy*

Up to 41% of energy production originates from brown coal fuelled stations, which are notoriously damaging to the environment (French, 1990). With the Soviets cutting oil exports to their satellite nations by 15% in 1990, and 30% in 1991, Czechoslovakia will have to increase its use of the environmentally damaging lignite coal. Sulphur dioxide levels of up to 100 times greater than the acceptable norms have already been recorded, with greater lignite burning this will surely increase (Krushelnycky, 1990).

The Danube Dam scheme was set to provide large amounts of energy for Czechoslovakia. However, with Hungary cancelling its part in the project any significant amounts of energy from this source looks increasingly unlikely, although Slovakia will complete construction of its sector and divert the River Danube.

In 1989, Czechoslovakia had 8 nuclear plants under construction and 8 blocks operating in two power stations (F. Urban pers. comm., 1990). Nuclear power represents an environmental dilemma as the polluting coal-powered stations should be reduced and needs cannot be met without resorting to nuclear power.

At the end of May 1989, an international conference was held and chaired by the chairman of the State Commission for Scientific-Technical and Investment Development. The chairman of the Czechoslovak Commission for Nuclear Energy explained that the nuclear programme of the (then) CSSR as the only possibility to replace brown coal as the main source of electricity. Up until the present, the use of nuclear power has been the main policy of the government in reducing air pollution.

An article by Stanislav Havel and Vaclav Stach entitled "Most important ways in the development of energy, about the possibilities to prevent the devastation of the environment" on the energy policy of the CSSR appeared in the June 1989 edition of *Rude Pravo*. Its main inference was to support and expand the nuclear energy industry (E. Romeijn pers. comm., 1989).

### *Land Use*

Approximately one-third of the area of the CSFR is forested, mainly due to afforestation on uncultivated agricultural land. Methods of forestry have had some negative effects. Overfelling has disturbed the optimal development of age composition of forest stands;

heavy machinery and road construction is also causing erosion to some areas. Drainage networks in 70,000ha need to be reconstructed, while 17,000ha need a new drainage system (Fisher, 1989).

Vavrousek *et al.* (1990b) outlines the programme for care of forests:

- improvement of growing methods and species composition of forests;
- integrated pest management in forests with minimum use of chemicals;
- ecologically friendly felling and hauling technologies in forest husbandry;
- improvement of the non-production functions of forests;
- technology of processing low-quality wood pulp;
- regeneration of forests affected by emissions;
- reduction of roe deer, red deer and wild boar over-population.

### **Government Action**

Only after the political changes in November 1989 could any objective information about living conditions within the country reach the public. Shortly after the Warsaw Pact invasion (1968) a law was passed forbidding scientists to publish research on public health or the environment, and as late as 1987 no paper could be published without the permission of the communist party (Whitehead, 1990).

The initial signs of change in Socialist environment policy occurred in 1985 when the government announced plans to spend £6 million to combat air pollution, followed in 1986 with the allocation of £130 million more to reduce air and water pollution. This was followed in spring 1989, when the Communist Party General Secretary, Milos Jakes, stated that the authorities were drawing up a set of proposals and measures on the environment. Following this statement, in July 1989, the federal government drafted a bill on environmental protection and the rational use of natural resources for the period up to the year 2000 (Anon., 1989a).

The basic goals of the draft plan include a ban on construction without environmental impact assessments and the need for facilities to protect water and atmospheric quality. The resolution also aims to reduce soil erosion by 70% by the year 2000, emissions of sulphur dioxide to less than 60% of the total for 1980, and to increase the recycling of industrial and domestic waste to 60% and 40%, respectively, over the same period. Areas of greatest environmental damage, northern Bohemia and Prague, have been given priority in future clean-up projects (Vavrousek *et al.*, 1990b; CTK, 1988).

Between 1986 and 1990, more than Kcs 17,000 million will be assigned to environmental protection projects, and in the period up to the year 2000, the amount will reach Kcs 100,000 million (Anon., 1989b).

Vavrousek *et al.* (1990b) have formed a system of ecological programmes and projects in the Republic. These programmes correspond to the State Ecological Policy and observe the recommendations of the World Bank made in May 1990 and of the UNDP mission of June 1990, as well as the Government's memorandum to Group 24, adopted by CSFR Government decision No. 81/1990. The ecological programmes are divided into five groups:

- (a) programmes related to the system of environmental control;
- (b) programmes related to the care of the individual components of the environment;
- (c) sectoral ecological programmes;
- (d) programmes of environmental education;
- (e) programmes of research and development related to the environment.

The present state ecological programmes will be complemented by the ecological programmes of both republics, with orientation to the solution of major regional problems (Vavrousek *et al.*, 1990b).

Current legal regulation of environmental protection is scattered into a great number of various acts, mostly dealing with protection of individual environmental components. There is special regulation for: agricultural land protection; air, water, nature protection, forest land and forest protection; mineral resources protection; noise pollution, and nuclear controls. The health protection act concerns environmental problems in a complex form, but it relates only to hygienic aspects and lacks the ecological approach (Vavrousek *et al.*, 1990b). Some legislation relates back to the middle fifties and so, in current terms, is obsolete. At the end of 1989, an amendment to the penal code was passed (Act No. 156/1989) which regulates the criminal liability in relation to the breach of environmental protection acts.

Recently several changes on the central level of the state authorities have been implemented. These follow three principles:

- to concentrate the competence of environmental protection by a special administrative body;
- to remove the existing organisational system based on particular environmental protection;
- to separate the economic aspects on the one hand and the ecological aspects of the environmental management on the other.

The Czech ministry of environmental protection was established by the act of the Czech National Assembly No. 173/1989, and it was defined as the highest state control (supervision) authority in environmental protection. It exercises the state administration in water, air and nature protection and in waste management. The ministry is also competent for land protection (agricultural and forest land) and mineral resource protection.

The Slovak Commission for environmental protection established by the act of the Slovak National Assembly No. 96/1990 on 30 March 1990, exercises a similar responsibility (Adamova, 1990). The purpose of the Slovak Commission for the Environment is to work out concepts and carry out state administration with regard to the care and protection of the environment, including:

- nature conservation;
- protection of the quality and quantity of waters and their rational utilisation;
- protection of air;
- territorial planning and construction order;
- waste disposal.

The commission is setting up a unified information system on the living environment in Slovakia. To aid the Commission in its work the Slovak Inspectorate of the Living Environment, Hydrometeorological Institute, Fund of the Living Environment and Centre for State Nature Conservation have been subordinated to it (O. Hauskrechtova pers. comm., 1990).

The Federal Commission has responsibility for setting priorities and for international cooperation. In response to the growing number of offers of assistance from abroad, the Commission has begun to draw up an overall strategy, from which priorities can be set.

Attitudes towards architecture, town planning and their effects upon the environment have undergone a dynamic evolutionary process, with dependence now on current social needs and the "improvement of the quality of life". To this end the Union of Czechoslovak Architects organised, in November 1989, the Prague Assembly "for disarmament and solving ecological and urgent problems of development" (I. Horky pers. comm., 1989).

The Czechoslovak government signed an environmental agreement with Austria on 15 January 1990. Several areas for cooperation were specified - air, soil, waste disposal, economic and legal aspects of environmental protection, and selected ecological aspects to forest damage. A coordinating centre is to be set up in Bratislava, which will also provide training and information (Fisher, 1990). In addition, the United Nations Development Programme is to provide some technical environmental assistance.

### *Pollution Abatement*

The government confirmed that further pollution caused by burning lignite ought to be halted, especially in northern Bohemia. Under international agreements, including the UN European Economic Commission, emissions of sulphur dioxide must be reduced by 30% by 1993, against those of 1980. The government is attempting to achieve this goal, in part, by construction of desulphurisation filters and partly by gradual transition from conventional to nuclear power sources. It was also noted at the beginning of 1989 that the authorities were introducing new technology in order to reduce water pollution caused by chemical plants on the River Danube. The number of prosecutions increased throughout 1988-89, in order to curb this pollution.

In order to reduce pollution, the government has tried to diminish the production of sulphur dioxide. Reduction was to be brought about by increased use of nuclear power generation and an expansion of gas supplies for both industrial and domestic users (CTK, 1989). Programmes have been implemented concentrating on limiting emissions into the ground layer of the atmosphere from urban areas and from power and district heating stations (Anon., 1989c).

The draft concept of state ecological policy (Vavrousek *et al.*, 1990a) establishes the poor state of the environment and bases the cause on the totally inadequate environmental control of the previous political system. Life expectancy is reported to be 5-7 years less than that of advanced countries, and economic damages and losses caused by this depleted environment are constantly increasing and now equal at least 7% of the total national product. The sheer scale of the problem may require that effort, financial and other sources be concentrated, possibly at the cost of delaying the growth of material consumption, to provide a substantial improvement in the quality of the environment within the next decade. The general goals of environmental control comes from the right that the citizens should live in a healthy and clean environment, and from a general obligation to protect the environment. The strategy of environmental control is ideally based around two mutually complementary strategies, these being: (i) subsequent and compensation measures (to eliminate or attenuate "old" pollution causes), and (ii) preventive measures (to attain relatively closed cycles of production and consumption) (Vavrousek *et al.*, 1990c).

### **Non-governmental Activity**

According to recent opinion polls, 83% of Czechoslovakians consider the improvement of the environment as the most important task for the coming period (Sniegón, 1989). From 1 to 4 June 1989, an international environmental youth meeting was held at Vimperk, organised by the movements Brontosaurus and Tree of Life for the Czechoslovak youth organisation and its international contacts. Discussions, introduced by a wide range of

## *Czechoslovakia*

Czech and Slovak specialists, covered nuclear energy, acid rain, climate changes and the ozone layer, the role of the UN and other international bodies and structures in environmental protection, and the possibilities for cooperation and citizen activities in environmental protection and peace movements (E. Romeijn pers. comm., 1989).

The Green Alternative Party (GAP), founded in September 1989, has a sophisticated programme being based extensively on the 1989 manifesto of the European Greens. The party has a strong moral element and has to contend with its better known counterpart, the Green Party. Within days of the political changes many previously registered organisations became independent of the state, such as: the Czech Union of Nature Conservationists (CSOP) and the Slovak Union of Nature and Landscape Conservationists (SZOPK) (EEN, 1990).

SZOPK published short reports (in English) on the environmental consequences of the Danube water dams Gabčíkovo-Nagymaros; the wide relations and problems of the proposed water canal Danube-Odra-Elbe; the speed in action to be taken to clean up air pollution and the proposals for a Danube river international park (E. Romeijn pers. comm., 1989).

### **References**

- Adamova, E. (1990). *Environmental management in Czechoslovakia*. Institute of Public Administration, Prague. July.
- Anon. (1989a). Czechoslovakia. *The Centre for Our Common Future*. July. P. 18.
- Anon. (1989b). Federal environmental protection plan up to the year 2000. *Prague Home Service*. 22:30 GMT. 2 June.
- Anon. (1989c). Long-term programme to reduce air pollution in Prague and Northern Bohemia approved by Federal Government. *Prague Home Service*. 12:00 GMT. 6 April.
- Anon. (1990). Food and environmental pollution in Czechoslovakia. *Environmental Policy Review: the Soviet Union and Eastern Europe* 4(2): 44-50. July.
- Carter, F. (1989). Czechoslovakia's ecological crisis. *Earthwatch* (36): 8-11.
- Cerovsky, J. (1988) (Ed.). *Nature Conservation in the Socialist Countries of East-Europe*. East-Europe Committee. IUCN Commission on Education, Ministry of Culture of the Czech Socialist Republic, Prague. 116pp.
- Cesar, H. (1990). Environmental issues in central and Eastern Europe. Description of the environmental situation in Central and Eastern Europe. World Bank Briefing. 22pp.
- CTK (1988). Draft long-term federal programme of environmental protection CTK in English, 14:46 GMT. 26 July 1988.
- EEN (1990). *East Europe Newsletter* 4(1). January.
- Fisher, D. (1989). Environmental conditions in Czechoslovakia (summary) Nov. 1988. Ecological Studies Institute. December. Unpublished report.

*The Environment in Eastern Europe: 1990*

- Fisher, D. (1990). Environmental policy in Central Europe (notes). Ecological Studies Institute. August. Unpublished report.
- French, H.F. (1990). *Green revolutions: environmental reconstruction in eastern Europe and Soviet Union. Worldwatch Paper 99*. November. 62pp.
- IUCN (1989). *Environmental Status Reports: 1988/1989. Volume One: Czechoslovakia, Hungary, Poland*. IUCN East European Programme. 127pp.
- Krushelnycky, A. (1990). Bohemian forests wilt under a pall of death. *The European*. 12 September. P. 7.
- Russell, J. (1990). Environmental issues in Eastern Europe: policy implications. First Draft. June. Unpublished report.
- Sniegón, T. (1989/90). Privatising forests and the nuclear dilemma. P. 11.
- Sword, K. (1990) (Ed.). *The Times Guide to Eastern Europe: the changing face of the Warsaw Pact. A Comprehensive Handbook*. Times Books, Golden Square, London, UK. 270pp.
- Vavrousek, J., Moldan, B. and Ondrus, V. (1990a). *Draft Concept of State Ecological Policy*. State Commission for Science, Technology and Investments, Prague. Ministry of Environment of Czech Republic, Prague. Slovak Commission for Environment, Bratislava. 15pp.
- Vavrousek, J., Moldan, B. and Tirpak, I. (1990b). *Ecological programmes and projects, Czech and Slovak Federative Republic*. State Commission for Science, Technology and Investments, Prague. Ministry of Environment of Czech Republic, Prague. Slovak Commission for Environment, Bratislava. Prague-Bratislava. July. 15pp.
- Vavrousek, J. et al. (1990c). *The Environment in Czechoslovakia*. Professional and Technical Editorial Department, UTEIN (Institute of Technical, Economic and Ecological Information), Publishing Department, Prague. May. 105pp.
- Whitehead, C. (1990). The remaking of Czechoslovakian science. *New Scientist*, 3 March.

# The Eastern Länder of the Federal Republic of Germany, [formerly the German Democratic Republic]

## Current Administration

Of all the East European nations, the German Democratic Republic has most been affected by recent political developments, its political system being completely superseded by that of the Federal Republic. The *Bezirke* (regions), in force since July 1952, have gone and the *Länder* (provinces) have reformed. The *neuer Bundesländer* being: Brandenburg, Mecklenburg, Saxony-Anhalt, Saxony and Thuringia (Sword, 1990), and, as a special case, the unified city of Berlin.

The elections held on 18 March 1990 gave the Alliance for Germany 48% of the vote, of this the Christian Democrats held 41% (Sword, 1990). Recently the Christian Democrats gained power in 4 of the 5 *Länder*, the other, Mecklenburg, elected the Socialists to its leadership (E. Pongratz pers. comm., 1990).

Environmental administration now resides within the Federal Republic's Department of Nature Protection, Environment and Health, within the Ministry of Environment, Nature Protection and Nuclear Safety. The individual *Länder* also have their own authorities.

## Natural Resource Priorities

### *Air, Water and Soil*

The old GDR was one of Europe's dirtiest industrial countries, if not the dirtiest. The reason is grounded, historically and literally, in the development of *Mitteldeutschland* and the open-cast mining of brown coal (lignite) reserves. The GDR was the chemical factory of central Europe powered by large-scale electricity generation, itself fuelled on the lignite deposits lying on either side of the River Elbe (Karpowicz, 1989).

Air pollution is severe, with most cities experiencing pollution levels 50 times greater than permitted by the old regulations. Up to 12% of all forest cover was affected in the early 1980s, rising to an estimated 50% by 1987 (Karpowicz, 1989).

Sulphur dioxide emissions are possibly the highest in the world. Indeed, many official figures presented could be viewed with a certain degree of scepticism, as the old administration did not admit the true scale of the disaster, with environmental data being

severely restricted. However, estimates suggest that emissions of sulphur dioxide were at 4.9 to 5.5 million tons annually, with 2.5 million tons falling on the country itself or 35 tons per square metre (Pape, 1990; Pawel, 1990). The remainder is mainly exported into the border junction between the Eastern Länder, Poland and Czechoslovakia ("The Black Triangle"). The 3,520 MW power plant at Boxberg alone emits 500,000 tons of sulphur dioxide every year; an amount greater than the total emissions of Switzerland, Ireland and Norway combined (Karpowicz, 1989).

With emission levels of 2.2 million tons of soot and dust each year, this corresponds to 0.14 tons per capita. In Berlin, this represents up to 74 tons per km<sup>2</sup>, in Cottbus 58 tons, Halle 54 tons and Leipzig 48 tons. However, in other areas the levels are considered to be lower (Pape, 1990). It is estimated that some 22 billion DM are required for cleaning air to western German standards.

Water pollution is so widespread that 80% of rivers are contaminated to a greater or lesser extent (Karpowicz, 1989). Ground water pollution is especially high in the north (Baltic Sea) area; in industrial areas; and along the Czechoslovak border. Nitrate levels can be so high that consumption by children is not recommended. Outlawed (at that time) citizen groups counted 30 deaths from drinking the water in the area around Halle. Soils contaminated by pollutants include 25% of agricultural lands, and agricultural produce (grain and milk) from the Freiburg area is so contaminated by heavy metals from the nearby steelworks to render it unfit for consumption. A cost tag of 25 billion DM is estimated for cleaning water to western German standards.

### *Health Issues*

It is estimated that 6 million people are at risk from environmentally induced cancers and respiratory diseases, and from diseases related to high nitrate intake. In Bittfeld, Böhlen, Bernburg and Espenhain some 90-100% of children suffer from respiratory diseases. Life expectancy in these areas is 3-5 and even 8 years lower than the national average.

### *Biodiversity*

Although the Socialist government of East Germany had not designated any national parks, it had an excellent system of protected areas covering 19% of the country's surface (Karpowicz, 1989) or 2.07 million ha, classified as 766 natural protected areas, 404 landscape protected areas and 9,500 natural monuments (Cerovsky, 1988). Unfortunately, it also had a system of 5,000 waste dumps largely unregistered and uncontrolled, as well as Europe's largest nuclear waste dump just across the border from one of the FRG's power plants (an example of negative environmental cooperation).

## *Eastern Germany*

Plans were being set, by the intermediate government, to put aside 10% of the nations area for nature protection, by utilising lands previously used by the army and former leaders (Steinberg, 1990). The first five national parks and six more Biosphere Reserves were designated by the Volkskammer (GDR parliament) on 12 September 1990. Three nature parks have also been sited, but it is for the new Bundesländer to complete planning and designation. The new biosphere reserves are subject to agreement by Unesco's Man and Biosphere Committee (E. Pongratz pers. comm., 1990; Anon., 1990a). It is seen that these measures will preserve ecologically intact and unique habitats, as well as supporting the programmes for the protection of endangered species of plants and animals (Steinberg, 1990). Problems may arise as to who actually owns the land, claims are already being made for property in the Eastern Länder.

### *Energy*

In the Eastern Länder, 72% of electricity is generated in obsolescent plants burning brown coal (also generated are a million tons of sulphur dioxide and nearly half a million tons of nitrogen oxides) (French, 1990). Five nuclear plants produce only 11% of the GDR's power, and at the same time they emit three times as much radioactive substance as the Federal Republic's twenty plants taken together. This nuclear programme has been developing at a slow pace. Both these forms of power generation represent the dilemma in energy policy (Pawel, 1990).

The membership of the 30% Club (reducing sulphur dioxide emissions by 30% by the year 1993) was based on the planned expansion of the nuclear industry, which required an investment of DM6,000 million by 1993, a commitment now recognised as improbable. The country has not been helped by oil price rises, the withdrawal of higher-grade Polish coal and a decrease in Soviet gas exports (Anon., no date). All these factors caused a reversal in energy policy with greater reliance on brown coal. Brown coal production grew from 258 million tons in 1980, to 312 million tons in 1985, and was planned to reach 330-333 million tons by 1990. An intention to reduce brown coal usage to 260 million tons by 1992 and 160 million tons by the year 2000 was forwarded by the interim government (Steinberg, 1990).

A study of energy consumption in the FRG and the *Länders* now occupying the area that was previously the GDR shows the GDR lands to be the more intensive user. The East German energy and fuel industries take 17% of the power used as against 11% in the west. Manufacturing and power plants take 58% in the east and 51% in the west (consumption statistics 1985) (Scheerer, 1989).

A modernisation of power plants would make it possible to save DM6 billion on fuel, and dropping the subsidies on household electricity a further billion. As regards household consumption of electricity, savings of 10-70% could be made without any sacrifice of

comfort. The gradual introduction of more efficient domestic appliances alone could save approximately 1,000 MW of generating capacity, or one block of the Stendal nuclear power station (Scheerer, 1989).

Modernising coal-fired power stations to double their efficiency would reduce the amount of brown coal needed by 60 million tons a year. This, in turn, would result in an annual saving of more than 800 gigawatt hours in the open-cast mining of brown coal, and thus an additional saving of 1.5 million tons of brown coal for generating power (Scheerer, 1989).

### *Land Use*

With economic and monetary union, the East German economy is under severe pressure and near collapse. The impact has been greatest on the country's over-planned, inefficient collective farms. Farmers cannot sell their produce or livestock, and an estimated 400,000 farmworkers, or half the agricultural workforce, could lose their jobs. It is reported that in some cases crops are being left to rot in the fields (Barber, 1990), in some of the fields around Leipzig this is certainly the case (R. Atkinson pers. comm., 1990).

### **Government Action**

The radical changes in Eastern Europe have affected all states in the region, to a greater or lesser extent. However, the German Democratic Republic, through unification with the Federal Republic, has been affected radically. Its laws are superseded and its government departments have been amalgamated with Western ones or dissolved completely.

From 1982 to 1989, environmental information remained restricted and largely unobtainable. The number of environmental citizen groups continued to increase and become more outspoken, although they remained largely illegal or were represented under the auspices of the church. Now the law of 1982, declaring that "access to environmental data is restricted", has been repealed. This legislation had resulted in a complete censorship on the availability of environmental information in the media or elsewhere.

In March 1989, a national conference on environmental politics and a session of the Advisory Council for Environmental Protection to the GDR Council of Ministers was held in East Berlin to review the environmental policy of the country. A key statement was that the Socialist Government would attempt to adjust its national policies in line with the 1987 Brundtland Report (*Our Common Future*, World Commission on Environment and Development).

With the dramatic ending of single party rule, the 17-year term of office of Hans Reictel, the Environment Minister, ended on the 9 January 1990. He was forced to resign due to

pressure from opposition groups. His reasons were that "conditions are such that someone new should take over the huge challenge of radically reforming the country's environment policy" (Rich, 1990; North and Torday, 1990). The West German Environment Minister, Dr Klaus Toepfer, revealed that pollution in the GDR was worse than anyone had imagined, and that it would take at least a decade to get to grips with the worst of it (North and Torday, 1990). By 1992, 800 million DM will be earmarked for environmental clean-up, this, however, is a small proportion of the 221 billion DM required to complete the job.

The new GDR Minister for the Environment, Nature Conservation, Energy and Nuclear Safety, Karl-Herman Steinberg, revealed recent developments concerning the new environmental policy and strategy at the "Action for a Common Future" conference in Bergen, Norway, on 14-16 May 1990. During the period of reorientation the government had decided to give priority to ecology over the economy. Measures to solve the most urgent environmental problems have already been formed, including: short-term measures such as the closing down and rehabilitation of industrial plants that cause extremely high pollution in the Dresden, Halle and Leipzig areas; medium-term measures aimed at environmentally sound modernisation of large energy-generating and production facilities; as well as long-term measures for the establishment of an environmentally sound industrial and economic structure (Steinberg, 1990).

The old East German Academy of Sciences is now facing the prospect of laying-off many of its scientists due to uncertainties in funding, from both governmental and industrial sources (Hamer, 1990). During 13-14 October 1990, a nature conservation academy (Naturschutzakademie) was founded and inaugurated by the German Minister for the Environment, Dr Klaus Toepfer, on the island of Vilm (Rügen). Dr Hans-Dieter Knapp, former protected areas planner for the GDR, is the director of the academy (E. Pongratz pers. comm., 1990).

Under EC budget lines, 3 million ECU have been earmarked for the establishment of two national parks (Bottenlandschaft and Jasmund) (R Klein pers. comm., 1991).

### *Pollution Abatement*

Air pollution projects are widespread, 36 in the Magdeburg region alone. Although the GDR was a signatory to the 30% Club (reduction of sulphur dioxide emissions of 30% by 1993) there is no indication that pollution levels were being successfully reduced. Interim remedies included changing forest tree species composition to include a higher percentage of resistant spruce along with the use of neutralising mineral fertilizers on 23,000ha of land per year.

It is claimed that plans introduced by the intermediate government will cause emissions to be reduced by more than 85% for sulphur dioxide; for dust by more than 60%; for

nitrogen oxide by more than 40%; and for carbon dioxide by approximately 20% by the year 2000 (Steinberg, 1990).

To reduce CFC emissions, along with the Montreal Protocol on Substances Depleting the Ozone Layer and the London Conference of Parties to the Protocol, all efforts are being put into practice. It has been suggested that approximately 400 undertakings may be closed down for environmental reasons, which would entail a loss of 65,000 jobs (Pape, 1990). The interim government of the GDR decided there was to be a progressive introduction of limits, based on the norms and standards as applied in the European Community. With unification the rate of change may well speed up.

### **Non-governmental Activity**

There are approximately 250 non-governmental, environmental groups and a dozen or so environmental libraries. They distribute information, organise seminars, coordinate local environmental activities and publish and distribute independent newspapers. At a national level these local groups are organised by the ecological Christian network, "Arche", founded at the beginning of 1988.

The GDR's governmental Society for Nature and Environment has a network of local groups which often join in with trade activities. It was created to absorb independent bodies, but at the Society's national congress, in June 1989 in Potsdam, it became the first governmental organisation to put forward its own demands. It urged the government to change its policies, abolish the censorship law of 1982, to make environmental information available, and give priority to solving environmental problems over economic ones.

Conservation organisations from the (then) two Germanys met in Berlin in late January 1990 to consider ways of regenerating the economy and society of both states along ecological lines. It was the opinion of the 1,500 delegates that the serious environmental situation called for immediate measures. Following the meeting, participants called for the creation of a "Green Round Table" comprising representatives of national bodies. This organ would have the right to veto environmental policies (Anon., 1990b).

Support had been given (January 1990) by the Deutsche Jagdschutz Verband DJV (German Hunting Protection Federation) for a scheme to set up a hunters' organisation in the GDR, subject to political changes (Anon., 1990b). On 14 March 1990, the World Wide Fund for Nature opened its first East European office in Potsdam, East Germany (WWF, 1990).

Before the recent elections, the Social Democratic Party (SPD) advocated a "polluter pays" principle as the basis for future environmental legislation. The SPD also wants to drastically reduce the high rate of energy wastage, of which East Germany is the worst in Europe. They plan the stopping of new lignite extraction and its replacement with

## *Eastern Germany*

“environment friendly” energy sources (Pawel, 1990). Since the elections, the Christian Democratic Party (CDU, Conservatives) has gained power in four of the five *Länder*, Mecklenburg having returned a Socialist government (E. Pongratz pers. comm., 1990). The small East German left-wing parties, including Alliance 90 and the Green Party, agreed on 7 August 1990 to run on a joint ticket with the West German Green’s in pan-German elections this year (Anon., 1990c).

### References

- Anon. (undated). The future has already begun. Environmental damage and protection in the GDR. Unpublished report.
- Anon. (1990a). National Parks for Germany, material for building a common European home. *European Bulletin* 28 (107): 10-11.
- Anon. (1990b). *Naturoopa Newsletter* 90(2): 3.
- Anon. (1990c). United Green Front. *The Guardian*. 6 August. P. 4.
- Barber, T. (1990). Western tidal wave drowns East Germany. *The Independent on Sunday*. 5 August. P. 11.
- Cerovsky, J. (1988) (Ed.). *Nature Conservation in the Socialist Countries of East-Europe*. East-Europe Committee, IUCN Commission on Education. Ministry of Culture of the Czech Socialist Republic, Prague. 116pp.
- French, H.F. (1990). *Green revolutions: environmental reconstruction in eastern Europe and the Soviet Union*. Worldwatch paper 99. November. 62pp.
- Hamer, M. (1990). Massive job cuts threaten East German science. *New Scientist*. 7 April. P. 23.
- Karpowicz, Z.J. (1989). A forest of skeletons. *Earthwatch* (36): 10-11.
- North, R. and Torday, P. (1990). East Germany counts pollution cost. *The Independent*. 10 January.
- Pape, R. (1990). Facing up to realities. *Acid News* (3): 11-13. September.
- Pawel, H. (1990). Brown coal, grey country. *Panoscope* 18. May.
- Scheerer, K. (1989). East Germany may need money from West. *Acid News* (1): 10-11. February.
- Steinberg, K.H. (1990). Country address. GDR Minister for the Environment, Nature Conservation, Energy and Nuclear Safety. *Action for a Common Future Conference*, Bergen, Norway. 14-16 May.
- Sword, K. (1990) (Ed.). *The Times Guide to Eastern Europe: the changing face of the Warsaw Pact. A Comprehensive Handbook*. Times Books, Golden Square, London, UK. 270pp.
- WWF (1990). WWF opens office in East Germany. World Wide Fund for Nature, press release. 12:00 GMT. 12 March 1990.

# The Republic of Hungary

## Current Administration

On 23 October 1989, Hungary became a Republic, marking the end of Communist rule and a return to democracy. Its present three major political parties are: the Democratic Forum, the Alliance of Free Democrats and the Independent Smallholders' party. In the elections held on 25 March and 8 April 1990, they gained 42.5%, 23.8% and 11.4% of the vote respectively (Sword, 1990).

The Ministry for Environmental Protection and Water Management (KVM) was superseded by the Ministry of the Environment and Regional Development, which is now known as the Ministry of Environment and Regional Policy.

## Natural Resource Priorities

### *Air, Water and Soil*

Inadequate disposal of waste materials has led to widespread pollution of Hungary's natural resources. Rivers and groundwater suffer from discharges and seepage of untreated waste, and inadequate control of waste products in emissions pollute the atmosphere. Severe problems from leakages of waste, including poisoning and disease, are not uncommon in the country (Jakus, 1990).

Air pollution figures include: 800,000 tons of dust, 1,400,000 tons of sulphur dioxide, 300,000 tons of nitrogen oxide and 2,400,000 tons of carbon monoxide (IUCN, 1990a). Aerial pollution is heaviest in the large industrial cities due to additional pollution from motor vehicles. In Budapest, 50% of air pollution originates from motor vehicles; this includes 60% of the nitrogen oxides and 45% of carbon monoxide emitted in the city. Heavy vehicles are responsible for over 80% of traffic emissions, many trucks and buses are up to 20-25 years old with inefficient engines. Overall air pollution in Budapest in rush hours is 30 times higher than acceptable limits (Cesar, 1990). It is estimated that 35% of traffic pollution is due to obsolete technology and poor maintenance (Hinrichsen, 1989).

The Tiszasasvari chemical factory is currently of concern due to grossly inadequate safety provisions and the form of chemicals held there. Containers are poorly marked and according to some environmentalists, the factory holds chemicals and pesticides which are prohibited over all of Western Europe (IUCN, 1990b).

Many of the country's rivers and lakes have been identified as being polluted, according to recent studies (Jakus, 1990) 60% of underground water supplies are threatened by pollution. In lake Hevis water levels have been falling due to nearby bauxite mining and the rivers Szamos, Tisza and Maros are being affected by developments and pollution (IUCN,

## *Hungary*

1990b). The government planned a project to extract the heavy metals in water supplies, at an estimated cost of four million forints.

In 1984, there were 275 dumps and infill sites used by municipal services but many more illegal ones exist. Buried wastes have been found in various parts of the country, the most disturbing was found within a Biosphere Reserve (Jakus, 1990). Due to the Red Army's precipitate withdrawal, several degraded areas have become apparent within Kiskunsag National Park. Parts of the park have been used for firing ranges and munitions dumps. Damage has also been caused by the pulling-up of cables and the reduction of blockhouses. The cost of the clean-up is estimated at being tens of millions of forints over several years (Rich, 1990).

Paks, the country's only nuclear power plant, has had difficulties in disposing of its nuclear waste. The inhabitants of Ofalu, a village in south-western Hungary, refused to have the dangerous isotopes buried near the settlement. A panel of independent experts established that the ground near the village did not meet the necessary safety regulations and, through pressure from the local population, the local council refused permission for waste storage (MTI, 1989a; IUCN, 1990b).

### *Health Issues*

In early 1989, the director of the Hungarian Public Health Institute estimated that 44.3% of the population lived in regions where atmospheric pollution exceeds permitted levels. Indeed, Hungary has the highest rate of cancer-related disease and fatality in Europe (Jakus, 1990). The economic consequences of this air pollution are regarded as leading to an annual financial loss of 3,700 million forints in agriculture and forestry, together with a loss of 1,300 million forints in expenditure on public health (MTI, 1989b). In May 1989, the drinking water of 76 settlements in southern Hungary (450,000 inhabitants) was identified as being contaminated with arsenic to a level exceeding that permitted by environmental norms (French, 1990). Of the 3,000 towns and villages in Hungary, 800 (approximately 800,000 people) have no potable water and the permitted levels of organic matter in drinking water are three times those allowed in Western Europe (Jakus, 1990).

### *Biodiversity*

The Hungarian landscape has been exploited for thousands of years, having large expanses of loess-covered plain and an economy dominated until relatively recently by agriculture. However, safeguarding remaining habitats for plant and animal species is one of the primary objectives of establishing protected areas. The habitats of more than 90% of protected vascular plant species and 100% of protected animal species are defended (IUCN, 1990a; IUCN 1990b).

Between 1750 and 1986, 36 plant species became extinct in Hungary; 20 before 1950, nine between 1954 and 1975, and seven between 1976 and 1986. Before 1950, 70% of these losses were due to the regulation of waterways, this being a major period of canal-building and dyking. Since 1950, 38% of species have been lost as a result of the latter, and a further 33% by changes in cultivation. All the extinctions are due in some way to man's activities. Fifty-three animal species have become extinct and 1,130 species are threatened (Jakus, 1990).

### *Energy*

The State Secretary of the Industrial Ministry declared, at a news conference in Budapest, that Hungary did not need any more nuclear power plants before the end of the century. According to information sources, Hungary has also suspended earlier agreements with the Soviets to build atomic power plants. Two planned 1000 MW reactors are not required if the country's energy consumption does not increase by more than 1.5% per year. The secretary stated that better utilisation of existing power stations could supply the required energy (IUCN, 1990b).

One problem inherent in Hungary's resource base is the high proportion of brown coal and lignite consumed. Apart from energy inefficiency, these fuel sources also have a high sulphur content (c. 2%) and sulphur dioxide emissions per unit of GDP is much higher than in the market economies. However, compared with the other European members of the CMEA, Hungary has, overall, one of the lowest rates of energy consumption (IUCN, 1990b).

Oil and natural gas reserves are sufficient for the next 20 years based on current levels of exploitation, but Hungary is not self-sufficient in energy and imports about 30% of its electricity. Coal reserves are sufficient for about 170 years at present levels of exploitation. However, economic and environmentally acceptable extraction has not been possible over the last decade. Of Hungary's coal reserves, 14.6% is black coal, 15.3% is good quality brown, 6.5% poor quality brown and 63.6% lignite (IUCN, 1990b).

Since June 1988, there have been numerous meetings and demonstrations against the Danube dam project. In May 1989, the environmental debate between the Hungarian government and Workers Party decided on a moratorium on the construction of a hydroelectric power station near Nagymaros. Construction was stopped for two months in order to collect new research material and to see what financial claims would follow from Austria and Czechoslovakia if the project was cancelled. The entire dam project was finally scrapped later in November 1989, and appeared as a great victory for the campaigning Danube Circle (IUCN, 1990b).

### *Land Use*

The amount of agricultural land has been decreasing (although 70% of the country's surface area is used) so that targets have been set to increase the amount of marginal land used for agriculture, including reclaiming areas which have suffered from soil erosion (IUCN, 1990b). Similarly, an effort is being made to increase the forest estate, even though the quality of standing wood is affected by air pollution and disease, with 26% of forests severely damaged, amounting to nearly half of the Hungarian Oak (Jakus, 1990).

### **Government Action**

In 1987, the National Authority on Nature and Environmental Protection was merged with the National Office of Water Management, resulting in the establishment, on 1 January 1988, of the Ministry for Environmental Protection and Water Management. This reflected an upgrading of environmental issues by the new cabinet. However, the merging of environmental matters with the huge and powerful water sector had provoked some concern. In the last year the ministry has twice been reformed, initially as the Ministry of the Environment and Regional Development and subsequently into the Ministry of Environment and Regional Policy (IUCN, 1988; IUCN, 1990b).

The main directions of long-term research and development projects of the Ministry of Environmental Protection and Water Management were as follows:

- further development of an information system to facilitate decision-making;
- analysis of protected and threatened areas for determining necessary interventions;
- technical development of measures for environmental protection;
- intensive development of solutions to preserve environmental infrastructure;
- resolution of conflicts between environmental protection and the utilisation of social resources;
- continuous improvement of the methods of preparing environmental impact assessments for large projects;
- research and development of coordinated long-term measures for balancing urban development and the carrying capacity of the natural environment (IUCN, 1990a; IUCN, 1990b).

It is assumed that the new ministry will follow the same path, environmentally, as outlined above for its predecessor. However, the internal structure may be radically different with the powerful water management sector no longer attached.

An agreement signed between the US Environmental Protection Agency and the Hungarian Ministry for Foreign Affairs endorsed, on 25 January 1990, the setting up of a Regional Environmental Centre for Central and Eastern Europe. This is an independent, non-advocacy, non-profit-making organisation which is a source of information and assistance for citizens of the region on environmental problems, and fosters the capability to address national and regional issues. This will involve the active participation of NGOs from the countries of the region and from further afield. The centre began its operation on 6 September 1990, with support given in the following fields:

- data collection and dissemination;
- development of institutional capability, including promoting public participation, inter-organisational communication, conservation of resources and minimisation of wastes and the introduction of environmentally sound technology;
- education;
- clearing-house functions, including matching resources, donated equipment, and for other exchanges of finance, equipment or expertise (IUCN, 1990b).

The period has seen Hungary's increasing involvement in international programmes and cooperation agreements with neighbouring countries. At present, Hungary is a party to the following international environmental and water management agreements:

- the Geneva Convention on long-range transboundary air pollution, which Hungary was among the first to ratify in April 1979, including the Helsinki protocol on 30% reduction in sulphur dioxide emissions up to 1993;
- the Vienna Agreement, signed in 1988, on the protection of the ozone layer. Hungary also signed the agreement in London in March 1989 aimed at stopping or reducing the use of main substances which are thought to be depleting the ozone layer: chlorofluorocarbons (CFCs) and halons;
- the Hague Proclamation on the protection of the atmosphere, among 24 states signing on 11 March 1989;
- Hungary took part in the conference which launched the Basle Convention on hazardous waste in autumn 1989;
- the agreement on the protection of the River Tisza and its tributaries against contamination, signed by five countries in 1985;
- the joint proclamation of cooperation between the eight Danube states on management of the river and particularly on the protection of the Danube against pollution signed in 1985;
- the Ramsar Wetlands Convention ratified in 1979, responsible for the existence of 13 Ramsar sites in Hungary;

## *Hungary*

- under Unesco's MAB Programme, five sites, covering a total of 128,000ha, have so far been registered as biosphere reserves, the first in 1982;
- the Bonn Convention on the Conservation of Migratory Species in 1983;
- the CITES Washington Convention in 1985, regulating trade in endangered species;
- Hungary applied for membership of the Council of Europe and acceded to the Bern Convention on 16 November 1989 (Anon., 1989a);
- the Paris Convention on the Conservation of World Cultural and Natural Heritage (IUCN, 1990b).

The Fourth International Conference on Environmental Future: Surviving with the Biosphere, was held in Budapest on 22-27 April 1990.

### *Pollution Abatement*

Proposals to reduce pollution levels include using pollution control technology on existing industries, gradually increasing efficiency and turning away from polluting activities. The Reko Environmental Company, a West German-Austrian-Hungarian joint venture, formed in 1988 to treat and recycle hazardous waste, is an illustration of this procedure (MTI, 1988).

According to the Central Statistical Office, state companies and cooperatives spent more than Ft 12,000 million in 1988 on building stores for harmful wastes, purifying sewage and reducing air pollution. This was 1.4% less than in the previous year. The shortfall in environmental investments meant that their share of the national income and GDP fell from 1% and 1.3% respectively in 1986-87, to 1.0% and 0.9% in 1987-88. Water quality protection still took the largest share of 50%, although this was 6% less than in the previous year and had a financial realisation of 12% less (IUCN, 1990b).

Standards do exist for water purity, beyond which fines can be imposed. Emission levels of air pollutants have also been set down, according to the type of area in which the emitter is located. Permissible noise and vibration levels are also set down by law. With regard to vehicle emissions, some standards exist for buses, but they are generally ignored (IUCN, 1990b).

Waste disposal is the responsibility of the Department of Waste Management within the Environment Ministry. In a report dated 15 August 1989, three main ways were identified to decrease industrial waste: first, the introduction of technology which would produce less waste and exploit resources more efficiently; secondly, an increasingly wide-scale re-use of wastes, and thirdly, the neutralisation of unutilised wastes to prevent pollution. Regarding communal wastes, the report stated that waste disposal methods did

not correspond to Hungary's state of development. The level of waste collection has worsened, due to out-of-date vehicles and disposal machinery. From 1990 to 1992, governmental and legal intervention, economic incentives and market forces will be involved to improve waste management (IUCN, 1990b).

It is estimated that approximately US\$2-3 billion are required to install the equipment needed to ensure adequate sewerage and sanitation treatment throughout Hungary; the USA has recently offered US\$30 million to Hungary for environmental problems. The priorities in water management are:

- to provide safe drinking water. Organic micro-pollutants are increasing and not all water treatment plants can handle these;
- chlorination. There are no regeneration plants in existence so that the raw materials for this process have to be continually bought, using large amounts of foreign currency;
- to decrease the gap between water supply and sewage treatment (IUCN, 1990a).

One significant example of the plans used to reduce air pollution is the DIMAG (formerly Lenin) Metallurgical Works in Miskolc, which will involve a massive investment of Ft650 billion. Modern equipment should reduce emissions of carbon dioxide by 65%, nitrogen oxide by 61% and dust by 62% at the end of 1991. This is to be financed partly by loans over 15 years from the World Bank and also from environmental funds and fines. In response to the immense problems and losses caused by pollution, the government has allocated Ft6 billion during the next five years for air pollution control programmes (IUCN, 1990b; World Bank Mission, 1990).

Coal-fired power stations are significant contributors to air pollution; these are being rehabilitated under the World Bank's Power Project. Power stations at Gagarin, Ajka and Pecs are being reconstructed and the electrostatic precipitators and desulphurising units rehabilitated or replaced. This will reduce emissions from the present 1000-1900 mg/Ncu. m to 100-150 mg/Ncu. m. Even though production will also increase, emissions will not exceed long-range transboundary levels laid down by United Nations protocol. Many more industrial sources of pollution are now being fitted with filters to reduce emissions, and between 1981 and 1985 there was a 30% reduction in solid air pollutants. The lead content of car fuel will also be reduced by 60% through a refinery reform project (IUCN, 1990b; World Bank Mission, 1990).

### **Non-governmental Activity**

In recent years (1988-90), environmental issues have continued to be of major concern. During this time, it became no longer a legal requirement to register citizen groups. Public

## Hungary

debate, open discussions and pressure from citizen groups were seen to start influencing Government environmental policies and lead to increased liberalisation.

Hungary has had a relatively strong unofficial environmental movement, it was orientated and mainly focused on the issue of the Danube dam at Nagymaros, pursued by the Danube Circle organisation (including a 200,000 signature petition for a referendum (Jakus, 1990)), but, otherwise, national coordination on environmental issues in Hungary is regarded as being weak. Other environmental NGOs include: Blue list, Ister, the Hungarian Ornithological Society and groups within universities (IUCN, 1990b).

In January 1989, a conference called "Zöld Hullám" (Green Wave) was held in Budapest. The conference dealt with the environmental situation and strategies of the environment movement. In late November 1989, approximately twenty ecology groups met to construct the new "Hungarian Green Party" (Anon., 1989b).

### References

- Anon. (1989a). Bern Convention. *Naturopa Newsletter*. November. P. 2.
- Anon. (1989b). Foundation of an ecology party. *Naturopa Newsletter*. November. P. 4.
- Cesar, H. (1990). Environmental issues in Central and Eastern Europe. Description of the environmental situation in Central and Eastern Europe. World Bank Briefing. 22pp.
- French, H.F. (1990). *Green revolutions: environmental reconstruction in eastern Europe and the Soviet Union*. Worldwatch paper 99. November. 62pp.
- Hinrichsen, D. (1989). Will the sun ever shine on Budapest? *International Wildlife* 19(5): 18-23. October/November.
- IUCN (1988). *Environmental Protection Profile of Hungary*. IUCN, Budapest.
- IUCN (1990a). *Environmental Status Reports: 1988/1989(1): Czechoslovakia, Hungary, Poland*. IUCN East European Programme. 127pp.
- IUCN (1990b). Hungary, environmental study report. Draft for the World Bank. 117pp.
- Jakus, I. (1990). One victory, many failures... FOCUS: East Europe. *Panoscope* 18. May. Pp. 20-21.
- MTI (1988). *MTI*. Report in English. 08:22 GMT. 14 December 1988.
- MTI (1989a). Villagers protest over nuclear dump site proposal. *MTI*. Report in English. 14.15 GMT. 7 April 1989.
- MTI (1989b). Data on air pollution. *MTI*. Report in English. 12:18 GMT. 24 April 1989.
- Rich, V. (1990). Departing Red Army leaves rubbish behind. *New Scientist*. 2 June. P. 25.
- Sword, K. (1990). *The Times guide to Eastern Europe, the changing face of the Warsaw Pact. A Comprehensive Handbook*. Times Books, Golden Square, London, UK. 270pp.

# The Republic of Poland

## Current Administration

At the elections held on 4 and 18 June 1989, Solidarity, the Polish Peasants Party and the Polish United Workers Party (Communists) became the three main political parties in the Sejm. Solidarity won 99 of the 100 seats in the Upper House (Senate). Since these elections, allegiances have changed radically, with the make-up of the Sejm altering greatly (Sword, 1990). The presidency of Poland has now been filled, after the elections on 9 December 1990, by Solidarity leader Lech Walesa.

The competent authority for environmental matters is the Ministry of Environmental Protection, Natural Resources and Forestry.

## Natural Resource Priorities

### *Air, Water and Soil*

The Environment Ministry has indicated that economically induced costs of environmental damage are in the vicinity of 400-500 billion zlotys annually, equivalent to 8-10% of the annual national income. The minimum annual losses of raw materials are costed at 30 billion zl.; losses in water resources at 40 billion zl.; and losses due to air pollution at 300 billion zl. (Kabala, 1988; IUCN, 1989a).

The most threatened areas are found in the southern and western parts, especially in the Karkonosze mountains, Krakow, Walbrzych and the Jelenia Gora Voivodships. To date, the government has designated 27 areas of ecological damage which includes complete agglomerations (this was only made public in 1988). Ecologically damaged areas cover 11% of the country and are inhabited by 35% of the population. These tend to be industrial and urban zones where the state of environmental degradation is such that there is a potential threat to human health and socio-economic development. Stefan Kozlowski, of the Parliamentary Commission on Environment Protection, states that Poland is totally unprepared for the economic changes that have taken place since January. Liberal new rules have increased threats to the environment, for instance, the exploitation of peat bogs (Kabala, 1988; Pudlis, 1990).

The National Programme for the Protection of the Environment, gives figures suggesting that the highest concentrations and deposits of sulphur compounds in Europe occur in south-west Poland and neighbouring regions of East Germany and Czechoslovakia (IUCN, 1990a).

Twenty percent of Poland's land area is heavily polluted with sulphur dioxide, and 80% is polluted to a level in which damage to conifers will initially occur. Official figures for emissions in 1986, were: 2.8 million tons of dust, 4.3 million tons of sulphur dioxide, 1.5 million tons of nitrogen oxide and 3.1 million tons of carbon monoxide (IUCN, 1990a).

Air pollution in almost all major cities is reported to be 50 times higher than permissible norms. The Polish authorities have recently evacuated five villages in Silesia as they were unfit to be lived in (Cesar, 1990).

Some 30,000km of rivers (out of a total of 90,000km) are intensively used by industry. In 1986, only 13,615km were monitored. Of these (using physiochemical criteria), 4.8% were considered class I (clean), 30.3% are class II, 27.8% are class III, 37.1% are beyond classification. Water pollution can be illustrated by only 4% of monitored rivers and 1% of lakes and reservoirs considered to be "clean" water; and almost 40% of river water and 53% of lake and reservoir water is significantly polluted. Large stretches of the Vistula River are classified as being unfit even for use by industry (without further treatment) due to pollutants in the water (IUCN, 1989a; Republic of Poland, 1990).

In 1987, some 6.5% of soils were damaged by industry, and a further 39% were threatened by erosion, 26% were highly acidic (less than 4.5pH) and 33% were acidic. Threats exist to nine national parks (some of them are 100% degraded); and six landscape parks.

It is reported that several western companies are attempting to dump millions of tons of toxic waste in Poland. A Greenpeace report, released on 12 October 1990, revealed 64 cases of dumping in Poland over the last two years. Much has been rejected, but an estimated 46,000 tons of waste, including: liquid chemicals, sewage sludge, radioactive materials and scrapped electronics had entered Poland, most coming from West Germany. Approximately 22 million tons of toxic waste has been offered to the country since it was opened up to western companies in 1989 (Wolf, 1990).

### *Health Issues*

Examples of health risks can be realised by viewing the poor state of the environment: 23 health resorts are threatened by pollution; in Krakow, infant mortality is now 25.8 per thousand; water pollution has resulted in the Vistula becoming an "open sewer"; in the Krakow area 60% of food produced is unfit for human consumption due to heavy metal contamination; and aerial pollution in the industrial regions of Upper Silesia is now "a direct threat to human life" (Cesar, 1990).

It is reported that in Silesia, situated within the degraded "Black Triangle" (on the Polish, Czechoslovakian and German border), infant mortality is 30 per 1000, and that locally grown food products are contaminated with heavy metals, whilst air pollution forms a permanent cloud. All these factors combine to make the average Silesian's life-span three years shorter than that of the average Pole (Pudlis, 1990).

### *Biodiversity*

Historically, Polish conservationists developed several major advanced concepts including the development of the Tatra National Park in 1885, only 13 years after Yellowstone National Park was created (IUCN, 1990b).

In 1990, the total area protected in the 17 national parks amounted to 141,414ha, 985 nature reserves accounted for 116,788ha, the 54 landscape parks totalled 1,992,753ha and 159 protected landscape areas covered 3,479,150ha (IUCN, 1990b). Five north-eastern voivodships have signed agreements to create an ecologically protected region, with assistance from the US Environment Protection Agency.

### *Energy*

Over 80% of primary energy and 90% of electricity comes from burning coal. The first nuclear power plant was being built at Zarnowiec, but is now unlikely to be constructed. Other proposals have included nuclear power plants in the area of the Vistula and at Klempicze that also appear to be cancelled (PAP, 1989). The original plan for nuclear power was to replace polluting coal burning. However, it is now considered to be more economic to develop sulphur dioxide abatement technology than to construct nuclear plants (Anon., 1989).

In terms of energy policy it has been shown that several measures should be taken to improve the situation in Poland:

- a gradual change in the structure of energy from raw materials, from reliance on coal utilisation to other sources of energy;
- modernisation of combustion technologies in all coal-fired power plants;
- radical improvement in the quality of coal, initially through coal cleaning and pyrite removal;
- development of a hydropower industry;
- consideration of the possibilities in the development of nuclear power, being a move towards nuclear generation of electricity (15% by the year 2000) (Republic of Poland, 1990).

### Land Use

Forested areas cover 28% of the total surface area, and, of the 49 voivodships 25 have less than a quarter of land under forests. Due to logging, Polish forests are generally young, 44% being less than 40 years old and 18% are less than 20 years (Mazurski, 1990).

Losses in agriculture due to environmental degradation have been estimated at some 150 billion zł., a sum surpassing the 50 billion zł. of damage caused to forests (680,000ha are under stress from air pollution). Approximately 53 billion zł. of agricultural damage are a direct result of industrial action (Anon., 1989).

### Government Action

The legal basis for environmental policy continues to be the Environmental Protection Act of 1980, which has still been only partially implemented and is to be replaced by new policy structures. On 12 November 1985, a law created the Ministry for Conservation of the Environment and Natural Resources, which was headed, from September 1989, by Bronislaw Kaminski, a member of the PSL (Polish Peasant Party). Kaminski was recently replaced in January 1991, by Maciej Nowicki. In 1990, the ministry was restructured to become the Ministry of Environmental Protection, Natural Resources and Forestry (IUCN, 1989a).

Past criticism of the Ministry, for being too docile with regard to the industrial lobby and for introducing only cosmetic measures, is now being acted upon. High-level Polish authorities have significantly changed their attitude to environmental problems, as witnessed by the special meeting of the environmental advisory council to the State Council held in October 1988 and headed by the then head of state General Wojciech Jaruzelski. The meeting discussed the national programme to the year 2010 (IUCN, 1989a).

The priorities for work set out by Prime Minister Mazowiecki's government, as presented in the concluding documentation of the *Protocol of the Sub-Assembly for Ecological Affairs of the Round Table*, are: the classification of the country into four basic management zones, (a) ecologically devastated and degenerated areas, (b) areas in severe ecological danger, (c) areas in balance and, (d) protected areas; the removal of censorship on ecological issues; achieving the WHO air pollution standard levels; setting up a trial example of a production plant and three coal mines in the Upper Silesian region which would demonstrate the methods of prevention of ecological damage; the alternative National Programme prepared in late 1988, presenting independent ecological ideas and representing the popular image; and the initiation and imposition of serious fines for ecological crimes. The capital investment in environmental protection was increased in the years 1980-85, during the severest economic crisis. Budgets were 66% for water management (36% for sewage), 20% for air and 14% for soil rehabilitation and waste control (IUCN, 1989b).

At the Bergen Conference (8-16 May 1990) Poland presented its national report, which in essence was an overview of the state of the environment. It comprised six parts:

- (1) state of the environment in Poland and aims for its protection;
- (2) economic settings for policy of sustainable development (accepted December 1990);
- (3) sustainable utilisation of energy;
- (4) sustainable development of industry;
- (5) awareness raising and public participation;
- (6) international conditions of the policy of sustainable development (Republic of Poland, 1990).

The strategic aim is to stabilise unfavourable trends and to reverse existing attitudes towards exploitation and pollution. It is also necessary to eliminate factors hindering sustainable and balanced development in the short and long term (e.g. water deficit, forest and soil degradation, losses in gene resources, reduction of agricultural land and exhaustion of mineral resources). Another aim is to decrease the transboundary negative impacts on the environment (Republic of Poland, 1990).

Minister Kaminski stated at the Bergen conference that cleaning up Poland would cost an initial US\$20 billion. He stressed that to "do business" with Poland was the realistic solution (MacKenzie, 1990). At the same conference, Marian Kania of the Ministry of State outlined that the reformation of environmental protection is a vital part in the process of state and economic improvement, as is the thorough reformation of the environmental law. However, it is planned to retain and strengthen some of the old administration. Poland also aims to use technology which will bring it closer to processes of sustainable development, and to ensure that all investments implemented in Poland be subjected to environmental impact assessments (EIA) (Republic of Poland, 1990).

The necessary structural changes in the country's political and economic system will take 15-20 years, with probably the whole body of legislation changing. Reconstruction of the energy sector is highlighted by a 600% rise in energy prices in January 1991.

The National Programme for Environmental Planning to the year 2010, has the following strategic aims:

- to reduce sulphur emission by 30% by 2000 on the 1980 level, and by a further 35% by 2010 to 2 million tons per year;
- to check, by 1995, growth trends in emissions of nitrogen oxide, hydrocarbons, heavy metals, benzopyrenes and other aromatics;

## *Poland*

- by 2000, to equip all industrial and municipal power plants with efficient dust-collection equipment;
- to convert all motor vehicles to use lead-free petrol by 2000;
- to obtain a Class I-III classification by 2010 for water nationwide;
- to reduce waste generation, especially that earmarked for land-fill, by 60% in 2010;
- to stop forest degradation processes by 2000, and gradually reconstruct to increase timber reserves by 30% by 2010;
- to bring about the protection and restoration of arable soils.

The National Environmental Policy was adopted by the government on 19 November 1990 and approved by the Council of Ministers. This makes policy more specific, with emphasis on economic instruments such as the 'polluter pays principle' and interministerial projects. It is clear to experts and advisors that implementation depends on the state of the economy and on plans accepted for socio-economic development (Russell, 1990). Due to issues such as reconstruction, ownership and market forces, the economy has tended to become divorced from the environment in the short term, but in the long term, all changes in economy are likely also to achieve environmental benefits. The key issue is the government's energy policy. There is strong pressure to introduce sustainability into policies and move towards self-help in environmental technology provision. Linked to the devolution of powers from the central level to regional level is the greater need for involvement of NGOs.

The National Conservation Strategy has been prepared in draft. This important document for nature conservation is soon to be accepted by the Minister of Environmental Protection, Nature Reserves and Forestry.

A US\$45 billion debt in 1990, has meant a curtailment of outlays on environmental protection, such as water and air purification plants. The need to earn hard currency by increasing major exports, for example, of high-grade coal may be replaced on the domestic market with the more polluting lignite. The major problem is funding the environmental clean-up. The country cannot meet the 30% Club goal on sulphur emissions, or reduce nitrogen pollution. This inability is linked to the problem of technology transfer. Western filters for coal power plants guarantee a 40-50% cut in nitrogen oxide emissions. Eastern European equipment only produces 10-15% reduction and the COCOM restrictions had stopped the transfer of anti-nitrogen technology. A clear example of this is the modernisation programme for the Krakow Nowa Huta steelworks, which had a budget in 1988 of 71,700 million zł. for the next five years, which would reduce pollution only by a 50% decrease in dust emissions. In 1990, the new environment ministry ordered the steelworks to reduce emissions to an agreed level within four years (IUCN, 1989a).

One bright point was Poland's accession, in 1987, to membership of the World Bank and prospects of the Bank making substantial loans to Poland. Conversion of Poland's foreign debt for ecological aims may become a useful instrument for regional cooperation. Conversion can be motivated by assignment of capital released in this way to pollution abatement activities (Republic of Poland, 1990). In April 1991, the Paris Club of leading industrialised nations agreed to write off up to 50% of Poland's debts with further cuts on a bilateral basis. This has led to an interministerial committee setting up an investigation, headed by the Senate Cooperation Fund, into the possibility of debt for environment swaps valued at one billion US\$ annually, for initially five years.

During the 41st session of the Parliamentary Assembly, Poland officially applied to join the Council of Europe (30 January 1990) (Anon., 1990), and on 30 July 1990, the EC provided Poland with 50 million ECU (£36 million) to help modernise its gas industry and cut back on air pollution.

#### *Pollution Abatement*

Despite being the only country (except Romania) not to have signed the 30% Club's agreement, Poland has put forward proposals that emissions be reduced by 30% in a 150km radius of where the borders of Poland meet the eastern *Länders* of Germany, and Czechoslovakia.

The country has been divided into three categories according to ambient air emissions:

- protected areas (90% of Poland);
- special protected areas (national parks, natural reserves, landscape parks, landscape protected areas: 2-3% of Poland);
- areas immediately adjacent to industrial processes where occupational health standards apply, displacing environmental legislation.

Ambient standards became stricter in February of 1990 (in accordance to a law passed five years ago). In the same month new emission standards were set. These standards will not apply immediately, there being a long-term (10-15 years) negotiation procedure. Eighty enterprises have been identified for special scrutiny and another 120 will be added to this list by the Ministry of Environment in 1991. Using a World Bank loan the government will begin to set up a monitoring system to support the new regulatory framework (Fisher, 1990).

It has been agreed, with the World Bank, that European Community standards will apply for all new plants, and that old polluting industries must adapt within the next seven years. It is recognised that Poland will be unable to fulfil the conditions of the ECE 30% protocol for sulphur. However, over the next five years sulphur dioxide emissions are to be reduced by 10-12% (Pape, 1990).

## *Poland*

The United States Department of Energy is to spend \$10 million over three years to retrofit a Krakow power plant. The advanced clean coal technology is to be fitted under the US Support for East European Democracy (SEED 1) Act of 1989. Clean-coal technology is expected to reduce sulphur content of the flue gas by 50-60%, and possibly reduce nitrogen oxides (Ember, 1990).

### **Non-governmental Activity**

Until 1980 when the Solidarity movement was created, ecological information was scrupulously censored. However, the environmental problems facing the country have now been openly acknowledged by the central authorities. There are now some 2,000 officially sanctioned bodies, including the largest, the League for the Protection of Nature, which was becoming more critical of the socialist government. In 1988 a Green Party was created, of which there are now 3 groupings (IUCN, 1989a).

Active environmental organisations include: the Polish Ecological Club, which, has developed into a nationwide network of 17 branches with approximately 3,000 members; Freedom and Peace, a dissident pacifist movement, also active in the environmental field; the League for the Protection of Nature, an official voluntary organisation active in encouraging environmental awareness through environmental education and concern promotion; and the Nature Conservation Guards who carry out a form of private wardening or "citizen control" of the countryside, enforcing conservation laws.

In autumn 1990, the Polish Ecological Club formed a special office in Katowice for dealing with the problems of air pollution. It provides information, environmental education, organises seminars, and supplies guides for visiting foreigners. Now known as ICAP (Information Centre for Air Protection), the office serves local environmental groups over much of Polish Upper Silesia, and will eventually cover the whole of the nation (Pape, 1990).

During Earth Day, 22 April 1990, environmental activity in Upper Silesia reached a peak. Almost every town and village saw some kind of action, with protests, performances and theatre. The Bishop of Katowice issued a special prayer for the environment, to be read out in all churches (Pape, 1990).

### **References**

- Anon. (1989). Draft. Poland - the environment. Background paper. June. Industry and Energy Operations Division. Europe Country department IV: Europe, Middle East and North Africa Region. 177pp.
- Anon. (1990). Council of Europe. *Naturopa Newsletter* (90): 2.

## *The Environment in Eastern Europe: 1990*

- Cesar, H. (1990). Environmental issues in Central and Eastern Europe. Description of the environmental situation in Central and Eastern Europe. World Bank Briefing. Unpublished report. 22pp.
- Ember, L.R. (1990). Pollution chokes east-bloc nations. *Chemical and Engineering News*. 16 April. Pp. 7-16.
- Fisher, D. (1990). Environmental policy in central Europe (notes). Ecological Studies Institute. August. Unpublished report.
- IUCN (1989a). Briefing notes on the state of the environment in Poland. IUCN East European Programme. Unpublished report.
- IUCN (1989b). Protocol of the Sub-Assembly for Ecological Affairs of the Round Table. Round Table Talks, Warsaw. March. Unpublished report. IUCN East European Programme. August.
- IUCN (1990a). *Environmental Status Reports: 1988/1989(1): Czechoslovakia, Hungary, Poland*. IUCN East European Programme. 127pp.
- IUCN (1990b). *Protected areas in Eastern and Central Europe and the USSR. Environmental Research Series 1*. IUCN East European Programme. 100pp.
- Kabala, S.J. (1988). Draft. The state of environmental affairs in Poland: regulation, activities, and public concern in a centrally planned system. Graduate School of Public and International Affairs, University of Pittsburgh, Pittsburgh, Pennsylvania, USA. May. 22pp.
- MacKenzie, D. (1990). Green ministers agree to act despite "scientific uncertainty". *New Scientist*. 26 May.
- Mazurski, K.R. (1990). Industrial pollution: the threat to Polish forests. *Ambio* 19(2): 70-74. April.
- PAP (1989). Preparation for construction of Warta nuclear power station halted by minister. PAP. Report in English. 15:15 GMT. 30 April 1989.
- Pape, E. (1990). Indignation aroused. Poland's coming needs. *Acid News*. (3): 14-15. September.
- Pudlis, R. (1990). Who will pay for the clean-up? *Panoscope* 18. May.
- Republic of Poland (1990). *National Report of Poland*. "Action for a Common Future", regional conference, Bergen, Norway, 14-16 May. Republic of Poland, Ministry of Environmental Protection, Natural Resources and Forests. January. 24pp.
- Russell, J. (1990). Environmental issues in eastern Europe: policy implications. Unpublished report.
- Sword, K. (1990). *The Times Guide to Eastern Europe. The changing face of the Warsaw Pact. A Comprehensive Handbook*. Times Books, Golden Square, London, UK. 270pp.
- Wolf, J. (1990). Poland "used as dumping ground" for toxic waste. *The Guardian*. 12 October.

# Romania

## Current Administration

Following the dramatic revolution of Christmas 1989, the National Salvation Front (NSF) emerged as the nation's interim government. The elections on 20 May 1990, gave the NSF 66.3% of the vote, or 263 of the 387 seats in the Romanian Chamber of Deputies, and therefore making it the controlling party in government (Sword, 1990).

The competent authority for environmental matters is the Department of the Environment, within the Ministry of Water Management, Forests and the Environment.

## Natural Resource Priorities

### *Air, Water and Soil*

Pollution sources and types include: uncontrolled emissions of smoke, dust, soot and noxious odours; uncontrolled air and waterborne releases of lead, carbon oxides, sulphur dioxide, acid, petroleum residues, fluorine, chlorides, phosphates, ammonia, cyanide, mercury, cadmium, and dyes; and dumping of hazardous wastes into rivers and into groundfill sites (Jenkins, 1990).

Some 97% of air pollution is of home origin and a small extent originates from neighbouring territories. Approximately 1,762,000 tons of sulphur dioxide is emitted yearly. The majority of this comes from coking plants, from petroleum and crude oil preparation and desulphurisation industries, from solid fuel power stations and car exhaust fumes. Other large-scale atmospheric pollutants include: 5,450 tons of carbon disulphide (from steel plants), 8,500 tons of ammonia, and 2,300 tons of phenols (IUCN, 1991).

The worst affected areas are the main industrial regions of Bacau-Piatra Neamt, Transylvania-Cluj-Brasov, Hunedoara-Nadrag-Resita, Prahova-Vilcea and Galati. The steel industry heavily contributes to pollution, most notably at Hunedoara, Resita, Galati, Targoviste and Calarasi. The aluminium industry also lacks filtering systems leading to pollution by fluorine and sulphur, such as at the Slatina aluminium works. In the counties of Prahova, Suceava, Timis and Hunedoara sedimenting powders have reached ten times the maximum permissible quantities (17g/m<sup>2</sup>/year). Large quantities of sulphur dioxide have been recorded in Hunedoara, Maramures, Sorj and Sibiu (over 3mg/m<sup>2</sup>/day). Carbon disulphide reaches very high concentrations at Suceava, where 0.757mg/m<sup>2</sup>/day have been recorded, the maximum permissible being 0.01mg/m<sup>2</sup>/day (IUCN, 1991). Chemical works, armament and dye factories, petroleum and natural gas plants and paper mills are all recorded as seriously damaging air and ground water resources. Despite the claims of the

pre-revolutionary government that the native deciduous trees were more resistant to pollution than the evergreen trees of Central Europe, over 7% of forest cover has been lost (Jenkins, 1990).

No plan has been published for the disposal of radioactive waste from the nuclear plant at Cernavoda. Unsubstantiated reports indicate that whilst awaiting completion of this nuclear generator, uranium ore was being stockpiled, with no radiation safety programme, in open fields near the city of Petru Groza.

Of the 70,000km of rivers in the country, 20,000km used for water supplies are affected by toxic substances, 2,800km are devoid of all plant and animal life. Those waters earmarked for the irrigation of land (200,000ha) fall far short of prescribed quality conditions. Indeed, the analysis of 20,000km of river length shows that: 7,800km (39% of investigated waterways) correspond to Category I, 6,100km (30.5%) are classified Category II, 2,400km (12%) are Quality Category III, whilst 3,700km (18.5%) are totally polluted (IUCN, 1991). It is estimated (Cesar, 1990) that 80% of Romania's main rivers are unable to supply drinkable water.

Agricultural practices have caused advanced deterioration and erosion of the soil, already impoverished by decades of single crop cultivation and uncontrolled use of chemical fertilizers. Soil erosion is estimated to affect 30% of arable land, and is aggravated in some areas by large irrigation projects (Jenkins, 1990).

### *Health Issues*

The Ministry of Health has its own control network, set up, in 1973, by the Institute for Hygiene and Public Health. In 1987, the network incorporated 84 measurement stations for 16 polluting substances. The concentrations of airborne dust and gas pollutants are determined by the laboratories of the county sanitary/anti-epidemic centres or by the territorial epidemiological laboratories in accordance with standardised testing methods, as applied by the Department of Water in the Ministry for the Environment (IUCN, 1991).

### *Biodiversity*

Given the degree of naturalness remaining in the country, the greatest need is for a professional body at the national level which would contribute to the definition of a regional structure and assist in the long-term choice of priorities (A. Vadineanu pers. comm., 1991).

Until 1989 there was just one designated national park (Retezat), with 11 in preparation (Cerovsky, 1988). In 1990, all 11 new national parks were created by Decree. It is hoped that up to 5-6% of the country will eventually be under protected area status, including the Danube Delta (which alone constitutes 2%) (IUCN, 1991).

## *Romania*

The total area of these new national parks was 664,057ha (2.79% of the country), this includes buffer and pre-park zones and proposed extensions to Retezat National Park. The Danube Delta Biosphere Reserve set up by Decree No. 983, 27 August 1990, went for approval to a parliamentary vote. This is the fourth biosphere reserve in Romania, the previous three having been designated in 1979 (IUCN, 1990). In 1990 the Danube Delta was nominated for World Heritage status and in April 1991 for Ramsar wetland site listing, for the same area as the Biosphere Reserve (674,000ha).

A decree on 24 April 1991 subordinated all 16 "commercial societies" of the Delta to the Biosphere Reserve authority (A. Vadineanu pers. comm., 1991).

### *Energy*

The country is largely dependent upon oil and gas, coal-fired power stations and a number of hydroelectric programmes, although firewood is used domestically. Romania is regionally an oil-rich nation (producing 8 million tons of oil annually). However, its oil policy is poorly organised. Due to a massive over-refining capacity, the country has to import large quantities of oil to enable the refineries to function at capacity. The "Gulf Crisis" has particularly affected Romania as the nation previously imported 25% of its oil requirement from Iraq (EEN, 1990).

The Candu nuclear power plant under construction at Cernavoda, using Canadian technology (Canadian Atomic Energy Agency), will operate 5 generators, and will raise water temperature in the Danube-Black Sea canal by 4-6°C. However, the plant is unlikely to be commissioned within the next two or three years. Enriched uranium to fuel the 3,500 MW plant, is likely to be imported (EEN, 1990).

There are major problems in increasing the number of dams, for hydroelectric power generation. Especially in attempting to avoid the organic overloading of lakes and the excessive sedimentation, which causes oxygen depletion (IUCN, 1990).

### *Land Use*

Of a total country surface area of 23,000,000ha, 46% of the land is under cultivation, 19% meadow land and 28% forest (figures have remained at this level since the early 1960s). Agricultural mechanisation has risen sharply since the 1970s, for example, from 121,000 tractors in 1974 to 175,000 by 1985. Past major projects included the Danube Delta Agricultural Development Project, which aimed to reclaim some 300,000ha of land in the delta. As of autumn 1989, little work had actually been undertaken and it has now been cancelled. So has the systematisation programme, in which 8,000 of Romania's 13,123 villages were to be bulldozed and formed into agro-industrial communes (Jenkins, 1990).

Crop yields throughout the country have risen over the last two decades from 1,854kg/ha in 1964 to 3,821kg/ha in 1986. The area of irrigated land has risen from a total of 16% in 1974, to almost 30% in 1986, an area of 2,856,000ha. This increase in yield and land area has been at the cost of soil deterioration.

Forestry continues to be a major industry, with 7,300,000 cubic metres exploited per year, a 14% rise from the 1970s. An additional 407,000 cubic metres was used as fuelwood and 113,000 tons of charcoal; Romania is reputed to be the second largest producer of charcoal in Europe (Jenkins, 1990).

### **Government Action**

The Supreme Council for the Protection of the Environment, attached to the Council of Ministers, was operative until 1989. However, it was ineffective, reliant as it was on voluntary work and having no budget. Due to this loose structure consensus was difficult to obtain, and departmental rivalries featured strongly. Local commissions for the protection of the environment operating within county councils were in some respects more effective (IUCN, 1991).

The existing Department of Environment, incorporated in the Ministry of Water Management, Forests and the Environment, holds improvement and development of the natural resources as a priority. The Commission for the Environment and Ecological Balance was set up at the level of the Legislature and it functioned attached to the House of Deputies. Its members are all deputies, but it has the support of a team of technical experts in environmental problems (IUCN, 1991). In April 1991, Decree 264 established a new Ministerial structure consisting of six departments (Departments of Biodiversity and Habitat Conservation, Integrated Monitoring, Systems of Research and Impact Assessment, Forestry and Water, Enforcement and Public Relations and Risk Assessment in Nuclear Plants (A. Vadineanu pers. comm., 1991).

The main thrust of current government policy is emission clean-up using new technology. Twenty-five percent of total short-term government investment is targeted on environmental protection, restoration and clean-up. From April 1990, a Commission has operated in each region to monitor industrial activity and analyse the general environmental situation. The Environment Department of the Ministry is also assisting the Legislative Commission of the Council for National Unity (Fisher, 1990).

Specific action has been taken to reverse the previous programmes set up by the old regime, for example, declaring the unique Danube Delta a biosphere reserve. Decree No. 103 of 7 February 1990 prohibits new reclamation works in the Delta, such works have destroyed over 10% of the area resulting in erosion, salination and desiccation. Data are being collected by a national group, bringing together the former parliamentary Committee

## *Romania*

for Ecology, comprising elected members of parliament, with scientists from a number of institutions (IUCN EEP, 1990).

A law on Environmental Impact Assessment will be drawn up after the national nature protection law has been passed. However, within the Danube Delta Biosphere Reserve no new projects will be allowed without the prior approval of the Scientific Council for the Delta Reserve (E. Hopkins pers. comm., 1990).

The Academy of Science's longer-term programmes include the preparation of red data books and threatened species lists. The first draft list covering birds was produced in 1984. In 1990, a new quarterly magazine, "The Environment", was brought out by the Ministry of the Environment.

External assistance has materialised in the form of EC PHARE projects covering integrated monitoring systems and legislative support, as well as a number of bilateral agreements (with the USSR and Bulgaria).

### *Pollution Abatement*

The Communist authorities claimed to have an automatic system for monitoring air pollution consisting of six stations in 1988, although scientific data and results were classified and there is evidence that some stations never operated. Throughout the country, there is extremely limited air filtration equipment, although the authorities claimed there are approximately 4,500 water purifying stations and 10,000 air purifiers, mostly of Romanian design. However, in 1988, a report by Romanian Democratic Action indicated that these often operated below capacity or not at all. Attempts had been made to install filters at the Targoviste steelworks with little success (RTE, 1989).

Only rarely did the previous regime permit environmental pollution fines to become public, as in the "show trials" of the summer of 1988, when dramatic punishments were pronounced in the toxic waste scandal at Sulina, on the Danube Delta (Glenny, 1988).

One Romania watcher suggests that past and current problems are not primarily caused by poor environmental laws and institutions, rather, by inadequate enforcement of laws and the inadequate empowerment of institutions (Jenkins, 1990).

### **Non-governmental Activity**

Almost all environmental protest was completely suppressed under the previous regime. However, several groups formed to surreptitiously discuss and publish environmental information. One group, Romanian Democratic Action, produced a document in 1988, which outspokenly criticized ecological conditions (Jenkins, 1990).

The Ecological Movement of Romania (*MER - Miscarea Ecologista Din Romana*) is a large national body concerned with environmental issues. The movement has 112 local groups and possibly 100,000 members, it also has a range of 'commissions' or small topic-related working groups (29 in total). The organisation is highly developed and has a political element. Priorities for the movement following the elections are: campaigning for a World Institute of Ecology; setting up a Free University of Ecology; producing an ecological map of the country and one of the ecology of the threatened Black Sea coast (Fisher, 1990).

The Romanian Ornithological Society (*Societatea Ornitologica Romana*) was founded on 23 February 1990. The major aims of the society include: the promotion of research; to foster interest in ornithology; to establish scientific links abroad and to aid the protection of birds (R. Liroff pers. comm., 1990).

Before the elections of 20 May 1990, several other smaller parties were evident: the Ecological Party, the Ecological-Cultural Party in Bucharest, and the Ecological Humanist Party in Arad. Since then, several new NGOs have formed including: the Ecological Association for the Danube Delta, based in Tulcea and the Ecological Cooperation Group.

Proposals put forward by independent groups include: introduction into the Romanian constitution of a principle of respect for the environment; establishment of a ministry or a government commission for the environment; creation of a central institute of the environment and of a legal code; improvement of technology and the urgent installation of filtering equipment (RFE, 1988).

## References

- Cerovsky, J. (1988). *Nature Conservation in the Socialist Countries of East-Europe*. East-Europe Committee, IUCN Commission on Education, Ministry of Culture of the Czech Socialist Republic, Prague.
- Cesar, H. (1990). Environmental issues in Central and Eastern Europe. Description of the environmental situation in Central and Eastern Europe. World Bank Briefing. 22pp.
- EEN (1990). The oil disaster. *Eastern Europe Newsletter* 4(20): 1-5. October.
- Fisher, D. (1990). Developments within the environmental movement. Ecological Studies Institute. 10-12 March 1990, 28 March-8 April 1990. Unpublished report.
- Glenny, M. (1988). Gaol for Romanian Seven. *The Guardian*. 20 July. P. 8.
- IUCN (1990). *Protected Areas in Eastern and Central Europe and the USSR. Environmental Research Series 1*. IUCN East European Programme. 100pp.
- IUCN (1991). *Environmental Status Reports: 1990(2): Albania, Bulgaria, Romania, Yugoslavia*. IUCN East European Programme.
- IUCN EEP (1990). Conservation activities on Romanian sections of the Danube. Second meeting, 29 June, Montreux, Switzerland.

## *Romania*

- Jenkins, P.T. (1990). *New Romania: A preliminary assessment of high priority problems in environmental policy and natural resources management and a proposal to prepare an action plan*. March. Yale School of Forestry and Environmental Studies. Unpublished report.
- RFE (1988). The "Romanian Democratic Action" group on the environment. *Radio Free Europe* 13(25): 41-45. Pt II. 28 June.
- Sword, K. (1990) (Ed.). *The Times Guide to Eastern Europe: the changing face of the Warsaw Pact. A Comprehensive Handbook*. Times Books, Golden Square, London, UK. 270pp.

# Yugoslavia

## Current Administration

Due to the federal system in Yugoslavia, centralised political will is unclear. Each of the republics have their own individual political situations, so resulting in a multitude of policies.

The environmental administration is formed around a decentralised public authority structure within each of the republics (Bosnia and Hercegovina, Croatia, Macedonia, Montenegro, Serbia and Slovenia). The republics' powers extend to setting up a council for the protection of the environment to coordinate the activities of other environmental agencies. These councils are federated together in the Jugoslavenski Savez za Zastitu i Unapredivante Covekove Sredine (SAVEZ) (IUCN, 1990).

## Natural Resource Priorities

### *Air, Water and Soil*

As with other nations in the region, Yugoslavia's environment suffers considerably from its economic activities. In 1987, it was established that 33% of its trees were damaged, 58% of the damage being due to air pollution. The most recent estimates suggested that nearly half the nation's coniferous forests were damaged. Stations discovered that 10-40% of annual precipitation falls into the category of "acid rain" with increasing acidity (IUCN, 1991).

Over 150 industrial polluters discharged their waste waters into the Danube on its route through Yugoslavia. The most serious polluters of the Danube in Yugoslavia were Novi Sad, Zemun, Belgrade, as well as Pancevo, Smederevo and Prahovo and their respective industrial plants. Pollution of water courses by agro-industry, use of pesticides, herbicides and fertilizers, continue to be a serious concern. Contamination of waters also occurred in the international rivers (Mura, Drava, Danube, Tisa, Tamis, Begej, Vardar, Bojana) and other waters (Ohrid and Skadar Lakes). A high concentration of phenol, ammonia and organic substances were also detected. After the Chernobyl nuclear disaster, the radioactivity levels in surface waters increased considerably, but did not, however, go beyond the permitted levels (IUCN, 1991).

The state of the water in the coastal Adriatic zone is unsatisfactory and in some areas does not reach the standards set for tourism and recreation. Due to low volumes of nearshore waters, shallow sea water near the coast (with depths of 10-30m and some 200-300m from the shore), which is used for tourist pursuits, is particularly affected by waste discharges. Major problems are bacteriological pollution and eutrophication, resulting from the growth in the tourist economy (IUCN, 1991).

## *Yugoslavia*

The more serious causes of recent land degradation are erosion, open pit-mining, construction of land-fills, construction of industrial infrastructure and expansion of urban areas. Additionally, pollution of the soil has occurred through the utilisation of fertilizers, pesticides, plant-growth stimulators and plant-development substances. The application of mineral fertilizers, particularly nitrogen, is increasing (IUCN, 1991).

### *Health Issues*

Medical services observed air pollution in 126 towns (IUCN, 1991). In Zenica (Bosnia and Hercegovina) a steel mill produces large amounts of pollution. As a result, the population of 130,000 experiences chronic respiratory disorders and life expectancy is below average. The factory exceeds WHO air quality guidance levels by several hundred percent (Kronja-Stanic, 1990).

### *Biodiversity*

The first Inventory of Protected Natural Resources in Yugoslavia was carried out in 1976. In that year, preparation of the Red Book of Animal and Plant Species of Yugoslavia was initiated, a revised version is currently being prepared to provide a basis for standardising species protection (IUCN, 1991). Data on protected natural regions and monuments were collected in 1987 from the republican and provincial nature conservation institutes, this revealed a growth in protected areas from 1,008 in 1976 to 1,313 in 1987. Numbers of national parks had also risen, from 16 to 22, totalling 524,784ha (Institute for Nature Conservation of the SR of Serbia, 1988). By the year 2000, it is planned that protected areas should amount to 2,472,403ha (Vujanac-Borovnica, 1990).

Many of the large number of endemic, relict and endangered species found in Yugoslavia are listed under nature conservation legislation (providing permanent protection), or by hunting or fisheries acts (for the permanent prohibition of hunting or the imposition of closed seasons). Each republic and province has its own legislation and lists of protected species. As many as 120 mammals may be endangered in the country, as are 187 bird species (IUCN, 1991).

### *Energy*

Coal deposits, which constitute the largest energy source, provide the basic fuel requirement. Large lignite reserves are found in various parts of the country and are utilised for electricity generation and for the production of gas, semi-coke, liquefaction and carbo-chemistry. Indeed, potential new lignite reserves have been identified, posing a threat to the environment through increased sulphur dioxide emissions. In 1988, the authorities declared

a moratorium, up to the year 2000, on the construction of four previously planned nuclear power plants (Kronja-Stanic, 1990). However, uses of hydro-energy resources have subsequently been increasing and electricity has been imported from Albania.

### *Land Use*

According to data from the Federal Statistics Office, every year 300,000ha can not be used for agriculture due to salination. Approximately 0.2% (32,000ha) of Yugoslavia's arable land is taken out of production each year and used for non-agricultural purposes (IUCN, 1991). In order to expand its forest areas in the future, the federal authorities aim to undertake afforestation programmes in an area of 60,000ha annually, primarily on erosion-susceptible terrain (Anon., 1987).

### **Government Action**

The federal government has few powers concerning environmental protection, with no federal environment ministry or effective central coercive organ. However, various important proposals are now being implemented at federal level:

- in December 1989, environmental protection was incorporated for the first time into Yugoslavian development policy;
- during May 1990, a federal strategy for the environment was debated in the Federal Parliament;
- an environmental law is to be drawn up which will ensure an information system, compulsory EIA for all investments, with a clear focus of environmental responsibility at federal level, and funds designated for environmental protection. Emphasis is on law implementation, especially with respect to European Community laws.

The case for these measures is that many environmental problems are transboundary in nature and should not be viewed in isolation by the individual republics (Fisher, 1990a).

Section 6.2 of the Development Policy in 1990, of the Socialist Federal Republic of Yugoslavia ascertains environmental protection and promotion policies: "economic policy measures in 1990, shall ensure the treatment of environmental protection and promotion as an integral part of socio-economic development in all segments". Policies are to be implemented through: "the modernisation and rationalisation of production and its harmonisation with the realistic possibilities of space and of the environment; the preservation and rational use of natural resources and the prevention of their degradation, and the replacement of scarce natural resources by renewable and alternative ones; the prevention of further environmental pollution and degradation and remedial action in

instances when pollution and degradation have already occurred; the creation of conditions for the healthy life of people, primarily by the provision of adequate sources of clean water and air and of wholesome food; the preservation and rational use of natural resources and goods in common use, as well as of immobile property and other goods of special cultural and historic significance and of man-made values" (Fisher, 1990b).

Work has also been started on the formation of an information system to encompass all the current partial monitoring of the environmental situation, and to coordinate and adjust it to higher-level needs in the country and in international cooperation.

A common methodology for assessing the socio-economic justification of investments that incorporates criteria for environmental protection, and a uniform methodology for ascertaining the extent of forest drying as an integral part of the Compact on the protection of forests against drying, have been adopted; a methodology for the study of influences on the environment and the principles of a methodology for the drafting and mutual harmonisation of landscaping plans of republics and autonomous provinces are also in preparation (Vujanac-Borovnica pers. comm., 1990).

Authorities dealing with the protection and promotion of natural heritage in Yugoslavia established the following priority tasks:

- to follow-up the professional activities on the establishment of the unique bases for protection, especially: criteria, procedures, regimes and other long-term activities in the field of protection of valuable monuments;
- the adoption of the Long-Term Projection of the Protection and Promotion of the Cultural Heritage of Yugoslavia;
- the revision and supplementation of the Inventory of the Protected Natural and Cultural Heritage in line with the criteria established in the Agreement and the Long-term Projection (Fisher, 1990a).

At the level of federal government, the initiative had already been launched for the adoption of three vital conceptual documents in the field of environmental protection:

- the Strategy on Environmental Protection;
- programme of Activities on the Protection and Promotion of the Natural and Cultural Heritage;
- criteria for Protection and Promotion of the Natural and Cultural Heritage of Yugoslavia (Fisher, 1990a).

The current period has seen an increase in the interaction of the country in international programmes, cooperation and agreements. Federal authorities have been drafting a revised Agreement on the Basis of the Protection of the Natural and Cultural Heritage of

Yugoslavia by the Year 2000. Following the recent production of the official *Basis of the Long-Term Prospects of the Conservation and Management of the Natural Heritage of Yugoslavia*, reports, social plans as well as other documents and consultations of experts and information have been provided by the relevant institutes for nature conservation. The most important planning solutions were being implemented through a broader social agreement on certain environmental issues (for example, Sarajevo, Celje, conservation of the Sava River, rehabilitation of the areas endangered by earthquakes and floods), or by concrete solutions in the economy. The scarcity of financial assets impeded environmental management and the solution of the problems (Lah, 1988).

In Croatia where the new government has formed under the Croatia Democratic Union, the environment is likely to constitute a part of its policies. Serbia formed a small environmental ministry in 1990, and according to policy documents it is to focus on: inspection, monitoring and enforcement of legislation. The two departments that constitute the ministry are natural resources protection, and inspection/monitoring. The Serbian parliament is preparing an environmental law and has accepted a programme of environmental policies (Fisher, 1990a).

#### *Pollution Abatement*

In addition to improvements being made in the legislation of republics and autonomous provinces, which have most competence in this field, work is under way on the preparation of federal laws regulating air protection, the regime of waters, ionising radiation, transport of dangerous materials, and a law under which the building of nuclear power stations in Yugoslavia is to be postponed.

A federal law governing air pollution control and the establishment of a system of monitoring that is to include emission, air quality and pollution effects on the environment, has been adopted. In the past, policy focused to a greater extent on legislative and restrictive planning than on anticipative strategy, with greater concern on existing threats than preventing emerging new threats. The state of air quality is monitored regularly by 130 meteorological stations and Yugoslavia actively participates in the international system of monitoring transboundary and planetary transmissions of pollutants in the atmosphere. The majority of stations monitored the atmosphere content of sulphur dioxide (IUCN, 1991).

The Social Compact stipulated that the costs for the protection and promotion of the environment were to be planned as a portion of the overall costs of production and services and as an element of investments. It provides for the harmonisation of republican and provincial legislation, the elimination of partial approaches in legislation, and the equalisation of regulations and norms regarding the quality of the environment. Another

aspect of this policy is encouraging the use of cleaner technologies as well as technologies producing less waste by providing industry with soft credits and allowing the customs-free import of needed equipment (Vujanac-Borovnica pers. comm., 1990).

According to the 1989 report to the IUCN East European Programme, Yugoslavia planned to procure funds for environmental protection by imposing a contribution for that purpose from new investments. Industrial facilities which constituted the largest polluters are obliged to take adequate measures immediately.

### **Non-governmental Activity**

Throughout 1990, the success of environmental movements had been influenced by increasing democratisation, which favoured a certain recognition of the constituent republics over the central state.

The environmental politics of the republics all have very different dimensions, with the movements functioning quite independently of each other. In Serbia, the important organisations are: the Green Party (founded 10 February 1990), the Green Movement (initiated at a conference in Nis, 10 May 1990) and Green Spot (associated with the Green Party but based in Pancevo). In Slovenia, there is the Green Party (formed on 15 January 1990, out of the Union of Greens, previously created on 11 June 1989, from the Youth Alliance), the Green Section of the Party of Democratic Renewal (former Communist Party), and the Society for the Protection of Nature. Green Action Zagreb (formed on 20 January 1990), Green Alliance of Croatia (attempting to be an umbrella group), and Green-Peace Forum for Croatia (a media-related body) are important in the Croatian republic (Fisher, 1990a).

The Green Party of Slovenia has very powerful representation. Among its members, it can claim a deputy prime minister, an environment minister, the minister for science, universities and technology and a deputy president of the republic. The party entered the recent elections within a seven party coalition, headed by the Democratic United Opposition of Slovenia. Conditions of the coalition meant that DEMOS would accept the ecological aims of the Green Party, including: the gradual closure of Krsko nuclear power station by 1995, the closure of uranium mines and, by 1993, the reduction of sulphur dioxide emissions by 90% (Fisher, 1990a).

The Green Party took 9% of the votes, and gained 8 seats in the Socio-Political Chamber (80 seats), 8 in the Chamber of Municipalities (80 seats), and one in the Chamber of Associated Labour (80 seats) (Fisher, 1990a). However, some environmental groups prefer to remain outside the political scene (Kronja-Stanic, 1990).

**References**

- Anon. (1987). *The state of and policies for the protection and promotion of the human environment in the SFR of Yugoslavia*. Belgrade. January.
- Fisher, D. (1990a). Environmental politics in Yugoslavia. *Environmental Policy Review, the Soviet Union and Eastern Europe* 4(2): 55-59. July.
- Fisher, D. (1990b). Developments within the environmental movement. Report on a visit to Yugoslavia, 15-23 May. Ecological Studies Institute. Unpublished report.
- Institute for Nature Conservation of the SR of Serbia (1988). Report of Yugoslavia. East European Task Force Meeting, Krakow, Poland, October. Institute for Nature Conservation of the SR of Serbia for IUCN East European Programme, Gland, Switzerland.
- IUCN (1990). *Protected areas in Eastern and Central Europe and the USSR. Environmental Research Series 1*. IUCN East European Programme. 100pp.
- IUCN (1991). *Environmental Status Reports: 1990(2): Albania, Bulgaria, Romania, Yugoslavia*. IUCN East European Programme.
- Kronja-Stanic, N. (1990). Farming forbidden in poisoned valley. *Panoscope* 18. May.
- Lah, A. (1988). Research and environmental protection in Yugoslavia. Balkan Scientific Conference. Environmental protection in the Balkans, Abstracts. Varna, Bulgaria. 20-23 September. Pp. 15-18.
- Vujanac-Borovnica, S. (1990). Towards a Yugoslavian NCS. Inter-European meeting on national conservation strategies. Brussels. 21-22 April 1988.



## **IUCN - The World Conservation Union**

Founded in 1948, IUCN - the World Conservation Union - is a membership organisation comprising governments, non-governmental organisations (NGOs), research institutions and conservation agencies in 120 countries. The Union's objective is to promote and encourage the protection and sustainable utilisation of living resources.

Several thousand scientists and experts from all continents form part of a network supporting the work of IUCN's six Commissions: threatened species, protected areas, ecology, sustainable development, environmental law, and environmental education and training. The Union's thematic programmes include tropical forests, wetlands, marine ecosystems, plants, the Sahel, Antarctica, population and sustainable development and women in conservation. These activities enable IUCN and its members to develop sound policies and programmes for the conservation of biological diversity and sustainable development of natural resources.

### **East European Programme**

IUCN's long history of activity in Eastern Europe provided the foundations for an integrated East European Programme, established in 1987. The aims of the Programme are to promote environmentally sound planning in accordance with the aims of the World Conservation Strategy and the Report of the World Commission on Environment and Development, participate in international conservation affairs and to promote and support the application of restoration ecology. The Programme has built up an unparalleled store of information on conservation issues in eastern, central and south-eastern Europe. Dissemination of this information is being carried forward through the EEP Report and Research Series.

Published by IUCN



This book is part of  
**THE IUCN CONSERVATION LIBRARY**

For a free copy of the complete catalogue please write to:

IUCN Publications Unit, World Conservation Monitoring Centre,  
219c Huntingdon Road, Cambridge, CB3 0DL, UK