

И особенно вузы, которые готовят экологов, должны быть зачинщиками в убеждении консервативных представителей на всех этапах системы образования в необходимости ввода предмета экологии и оздоровления организма с самого начала – общеобразовательной школы! Только на этом этапе можно выработать привычку потребности быть здоровым, а также просто научить уметь это делать.

Наш опыт занятий с детьми также показал положительные результаты: Су-Джок как игра, к ней тянутся дошкольники и школьники всех возрастов, с интересом смотрят на кисти и стопы, сами находят соответствия и подобию. Положительные результаты лечения вселяют в них уверенность, а также дают им почувствовать причастность к чему-то серьёзному, необходимому и большому: здоровью.

В своём небольшом докладе я пыталась показать фундаментальность этой науки, необходимой в нашем мире постоянных войн и противоречий, но мы, экологи, должны с оптимизмом глядеть вперёд и нести вновь открытые знания и науку в массы.

Изучайте Су-Джок, и вы всё поймёте! Это даёт возможность приблизиться к физической и духовной гармонии!

ЛИТЕРАТУРА

ЛЕКЦИИ ПРОФЕССОРА ПАК ЧЖЕ ВУ

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ENVIRONMENTAL PROTECTION IN THE PROJECT „BALANCED DEVELOPMENT IN THE SPREE-NEISSE-BOBER EUROREGION”

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ABSTRACT. *The Spree-Neisse-Bober Euroregion was established on the Polish and German borderland on September 21, 1993. The statutes, principles of co-operation, aims and tasks were elaborated. In the last seven years a number of investment projects have been carried out: the construction of a sewage treatment plant Gubin – Guben, a number of cross-border projects (founding the Landscape Park Krzesin – Neuzelle, sanctuaries of Nature, ecological grounds). One of the goals of the Spree-Neisse-Bober Euroregion” is to level the existing economic differences between Poland and Germany and to co-operate in the fields of culture, tourism, sports, education and mass media.*

Key words: *the Spree-Nysa-Bober Euroregion, Association of the Polish Communes, European Union, balanced development, environmental protection.*

1. INTRODUCTION

The Spree-Neisse-Bober Euroregion (S-N-B) was established on the Polish-German borderland on September 21, 1993. The members (founders) were representatives of six border communes of the former Zielona Góra administrative province (namely: Lubsko, Jasiień, Brody, Nowogród Bobrzański and Trzebiel), the city of Zielona Góra and the head of the provincial administration, whereas the German party was represented by the Union of Cities and Districts: Forst, Guben, Spremberg and Cottbus. The area and the number of members have been continually growing during the six years of the existence of the Euroregion.

The statute of the S-N-B Euroregion determines, among others, the scope of tasks and principles of co-operation. The goals and tasks which have been worked out aim at effective levelling of the differences in the two parts of the Euroregion. The fundamental objectives are as follows: comprehensive activities for the benefit of borderland areas in Poland and Germany, environmental protection, economic and cultural development, a continuous improvement of conditions of life of its inhabitants, including levelling the existing economic differences. The work of the Euroregion members should be organised following the principle of voluntary co-operation. Programs and projects are realised by joint work in the following work groups in charge of:

- I. economy, transportation and tourism
- II. agriculture, forestry and environmental protection
- III. youth, sports, education and culture
- IV. information.

The work is co-ordinated by the staff of an office in Gubin (the Polish party) and an office in Guben (the German party).

A number of projects and investments have been realised during the six years (II terms of office) of the existence of the Euroregion. The most important of them are as follows: "Balanced Development in the S-N-B Euroregion", a tourist project – biking routes in the Euroregion, the construction of a common sewage treatment plant Gubin – Guben, a project on cross-border forests preservation and protection – EUROLAS, stimulation of cross-border contacts in the fields of culture, tourism, sports, education and mass media, as well as realisation of small euroregional projects within the support and assistance projects of the European Union Phare CBC, the Spree-Neisse-Bober Euroregion Fair, realisation of cross-border youth co-operation (Najbar, Szuszkiewicz, 1998).

2. THE AREA OF THE SPREE-NEISSE-BOBER EUROREGION

As of April 15, 1999 the size of the areas occupied by the Euroregion and the population are as follows:

- Polish part (east): area 7.981 km², population – 639.125, density of population – 80 inhabitants/km²;
- German part (west): area – 1.812 km²; population – 275.782, density of population – 152/km².

The area of the Euroregion is characterised by exceptional values of the natural environment, therefore both in its eastern and western part great emphasis is put on the protection of the environment, particularly on the protection and preservation of wooded areas, swamp and peat areas, the habitat of rare and almost extinct species of plants and



Fig. 1 The Spree-Neisse-Bober Euroregion. A - location, B - area of the Euroregion

-  - communes belonging to the Spree-Neisse-Bober Euroregion
-  - communes which do not belong to the Spree-Neisse-Bober Euroregion

animals. On the Polish side there are three, quite large, landscape parks (of Łagów, Gryżyna and the cross-border park of Krzesin – Neuzelle) occupying the total area of 162,3 km² and the surrounding protective area of 270,24 km². Two more parks are being made ready. Apart from that 19 sanctuaries of nature have been established of the total area of approximately 70,0 km², more than 100 ecological grounds of the total area exceeding 90,0 km² and about 1000 monuments of Nature (Najbar, Jerzak, 1996).

On the German side of the Euroregion (the present district of Spree-Neisse) till the year 1989 there were 17 areas of preserved landscape and 8 sanctuaries of Nature (Schultze, 1998) which constituted approximately 0.12 % of the area of this district. After accepting the preliminary assumptions of the project on balanced development of the Euroregion, the documentation indispensable to undertake preservation of new areas of great values from the point of view of natural science, has been completed very quickly. As a result, 30 sanctuaries of Nature of the total area of 128 km², about 20 areas of preserved landscape of the total area of 415,5 km², and many other areas subject to various forms of preservation, have been established. The preserved areas function as vast, multi-segmental systems of combined biotops. The most precious area of this region, from the point of view of natural science, is the biosphere reserve "Spreewald" located in the north-west part of the Euroregion, being a unique object of this type in the world.

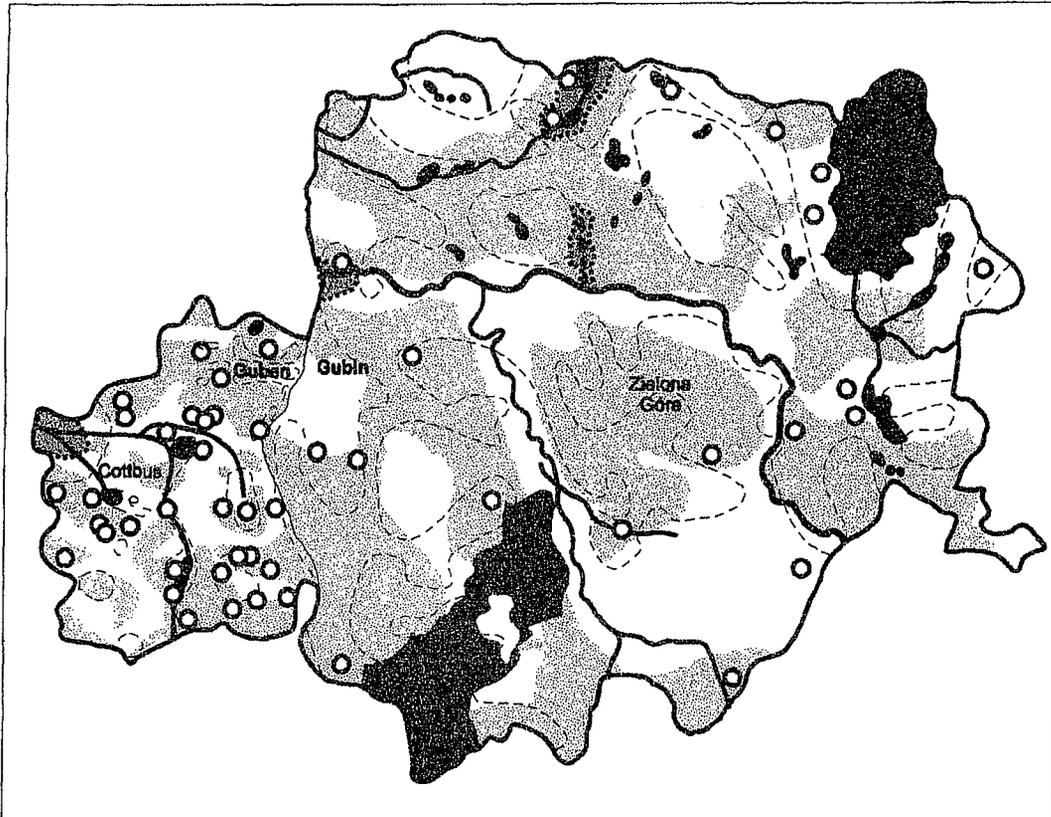


Fig. 2 Map of animated nature resources in the Spree-Neisse-Bober Euroregion

-  - communes belonging to the Spree-Neisse-Bober Euroregion
-  - communes which do not belong to the Spree-Neisse-Bober Euroregion
-  - wooded area,  - preserved landscape area,  - sanctuary of nature,
-  - landscape parks

Vast wooded lands are considered to be one of the most valuable areas of the whole Euroregion. In the Polish part of the Euroregion, woods occupy approximately 48% of the area (more than 4,0 thousand km²) (Fig. 2) (Regional Directorate of State Forests, 1997).

2.1. NATURAL RESOURCES OF THE EUROREGION

Apart from exceptional values from the point of view of natural sciences, the S-N-B Euroregion is rich in deposits of various natural resources. They are used to meet the needs of the local industries, for example in power industry, building, glass-making industry or in foundry. Rich resources and their profitable exploitation affect to a considerable extent the economic development of the region. Due to the fact that the resources are often found on the preserved areas, their mining must be limited.

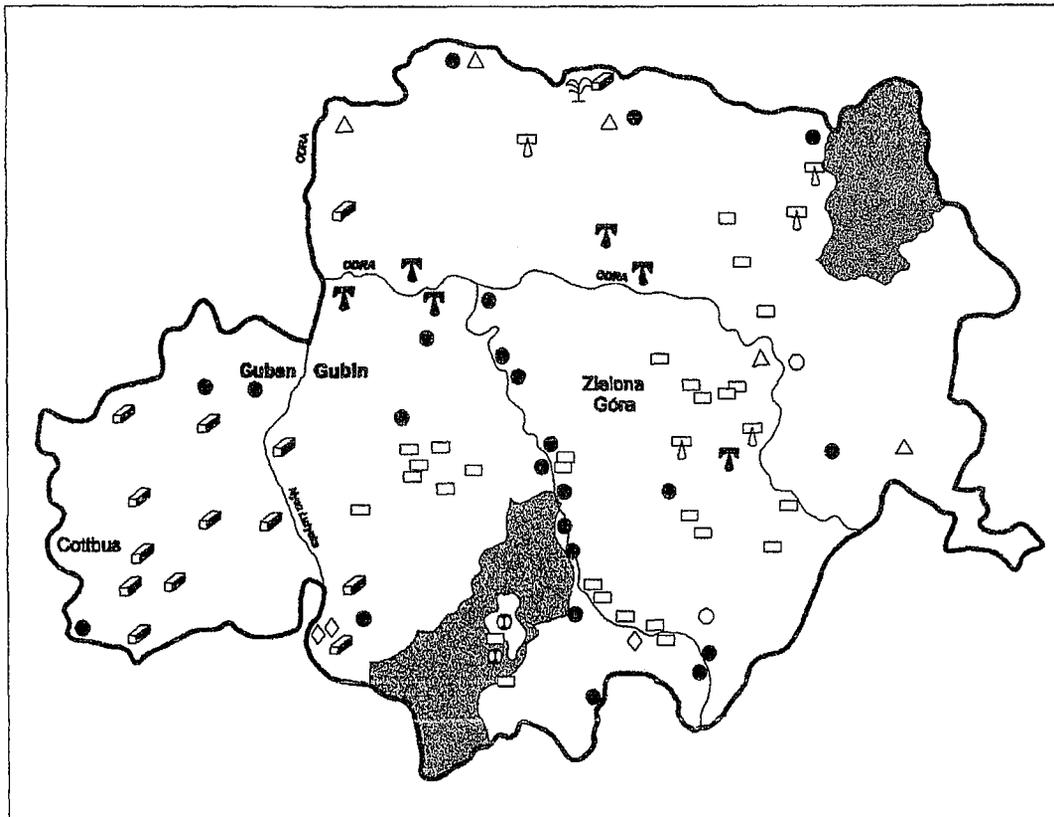


Fig. 3 Map of deposits of mineral resources in the Spree-Neisse-Bober Euroregion

- communes belonging to the Spree-Neisse-Bober Euroregion
- communes which do not belong to the Spree-Neisse-Bober Euroregion
- oil accumulation, - natural gas deposits, - brown coal deposits, - deposits of clay materials for red ceramics, - deposits of clay materials for stone ware and refractory products, - lacustrine chalk, - deposits of glass-making sands, - deposits of high silica sand for the manufacture of calcium-silicate bricks and cellular concrete, - natural aggregate, - mineral water intake.

The magnitude of indicated natural resources is as follows (Kozłowski, 1978). (Dzioba, 1997), (Schultze, 1998):

- the Polish party: oil – in the years 1995-1996 the output was about 37 thousand tons, which is approximately 21% of the national production; natural gas – the magnitude of resources is estimated to be of approximately 6 mln m³; brown coal – about 2 mln tons; clay materials for building ceramics - about 35 mln m³; clay materials for the manufacture of stoneware and refractory products – 8,4 mln tons, lacustrine chalk – over 10 mln tons; glass-making sand – about 494 thousand tons; high silica sand for the manufacture of calcium-silicate bricks and cellular concrete – about 8,4 mln m³; natural aggregate – about 755 mln tons.
- the German party: brown coal in seven strata at the depth of 150 – 200 m under post-glacial piles.

Figure 3 presents the occurrence of natural resources in the Euroregion.

3. THE PROJECT “BALANCED DEVELOPMENT IN THE SPREE-NEISSE-BOBER EUROREGION”

The project was initiated by the Task Team for the matters of Structural Policy in Poland. It was supposed to be a pilot structural programme in which: “*methods, within the framework of the Polish legal conditions and the existing social and cultural environment, to support the changes in the economic structure of the region on the basis of the so called objectives of the European regional policy in the member countries of the European Union*” were elaborated (Association of the Polish Communes, 1997). In September 1997 the programme was

accepted by the Council of Ministers as one of the four projects of the Pilot Regional Development Programme. The other three projects contain the solutions to other problems of regional policy, namely:

- agrarian policy in the "Programme for the Development of the Country and Agriculture in Małopolska",
- restructuring and economic development in the "Regional Programme for Economic Restructuring and Counteracting Unemployment in the Provinces of Northern Poland" and in the "Programme for Restructuring and Development of Economy in the Province of Katowice"

The Pilot Programme of Regional Development was worked out in Poland, in order to prepare the country to implement the structural funds of the European Union. Four projects of the programme have been positively assessed by the specialists from the European Commission and accepted as standard materials to run an Integrated Regional Development Programme PHARE-INRED. The work on the programme started in December 1997 after subscribing financial liabilities – Financial Memorandum (which set forth the objectives and principles of the programme operation) by the European Commission and the government of the Polish Republic. The Polish Agency for Regional Development was appointed the managing body, i.e. an institution administering the programme "Balanced development in the Spree-Neisse-Bober Euroregion.

The programme "Balanced Development in the Spree-Neisse-Bober Euroregion" was financed additionally in the amount of 300 thousand ECU from the PHARE-INRED funds. The money is appropriated mainly for: training, consultancy, purchase of equipment for the regional administration and the leading institutions in the region.

3.1. OBJECTIVES OF THE PROGRAMME "BALANCED DEVELOPMENT IN THE SPREE-NEISSE-BOBER EUROREGION"

The main objective of the programme is: *"to balance economically, socially and culturally the region's development using and maintaining in a rational way the precious values of the natural environment, including its reconstruction in cases balance has been disturbed"* (Association of the Polish Communes, 1997). This will be undertaken in the Polish part of the S-N-B Euroregion in two stages: the first one - in the years 1998 – 2005, whereas the other, long-term stage – till 2010 .

In order to secure the development of the Euroregion to proceed in the predicted and desired direction, other intermediate goals have been set up. They are presented in detail in eight TECHNICAL CHARTERS OF ACTIONS.

1. EDUCATION (objective: improvement of the level of education in the Euroregion, adjustment of the educational structure to the processes of economic restructuring),
2. CHANGING THE ECONOMIC STRUCTURE OF THE "SPREE-NEISSE-BOBER EUROREGION" (objective: to create competitive business activities in the region, to increase the number of innovations in industry),
3. WESTERN INVESTMENT PARK (objective: to attract Polish and foreign investors by offering them an ordered list of localisations in combination with a package of preferences and financial support),
4. TECHNICAL INFRASTRUCTURE OF GENERAL USE (objective: to improve the accessibility of the Euroregion in terms of communication and transportation, to establish an infrastructure favouring the capital inflow, to increase the attractiveness for investments),
5. COMMUNAL TECHNICAL INFRASTRUCTURE (objective: to improve the quality of life in the Euroregion, to improve the quality of economic processes),

6. COUNTRYSIDE – BORDER AREA (objective: deep restructuring of the border sub-region by changing its economic functions),
7. TOURISM (objective: to make use of the natural resources, objects and cultural institutions in order to increase considerably the income from tourism),
8. CULTURE (objective: to use the culture and its material resources to increase the attractiveness of the region for investments and to develop the strategic types of tourism).

Implementation of the programme was initiated by a series of training courses in:

- how to use the assistance and support funds,
- updating and expanding the charters of actions and the diagnostic part of local strategies as well as the Integrated Pilot Programme “Balanced Development in the Spree-Neisse-Bober Euroregion”,
- integration of Poland with the European Union,
- possibilities of obtaining funds for representatives of institutions of small and medium-sized business.
- and others.

4. MAIN THREATS TO REALISATION OF THE PROGRAMME “BALANCED DEVELOPMENT IN THE SPREE-NEISSE-BOBER EUROREGION”

The achievement of the objectives of the programme “Balanced Development in the Spree-Neisse-Bober Euroregion” depends on many factors. One of them is the environmental protection policy in the region. One of the fundamental tasks of this policy is among others to recognise all the possible threats and dangers which affect the environment in a negative way, and then to elaborate a plan of their liquidation. Threats to the environment of the Euroregion are caused mainly by the local industry and to a smaller extent by life activities of the community living there. The situation will be improved when all the towns and communes have sewage treatment plants and an adequate system of waste treatment. The environment of the region is also affected by threats originating from other regions, such as, among others, emissions of noxious gases from the copper mines, for example, pollution of waters, transport of contaminants and dangerous substances, soils contaminated by the soviet army with substances derived from oil, and others.

In order to preserve the precious values of the environment of the region, first of all it should be aimed at solving the problems due to threats generated by:

- the mining industry, first of all mining of brown coal and oil-derivative materials; exploitation of brown coal results in lowering the level of ground waters, it causes that land is excluded from agricultural or forestry use for a dozen years, it results in the formation of under-mine basins (Regionale Planungsgemeinschaft Lausitz – Spreewald, 1998); whereas the exploring for and exploitation of oil-derivative materials may result in an uncontrolled outflow of brine, oil or emission of natural gas or hydrogen sulfide, etc.,
- power industry (excessive emission of noxious gasses and dust),
- industries using chemical compounds in technological processes (Uchman, 1997),
- transport of dangerous substances,
- animal husbandry (disposal of waste, mainly manure),
- cultivation of grassland (eutrophication of lakes).

Figure 4 illustrates the main threats affecting in a negative way the environment of the S-N-B Euroregion.

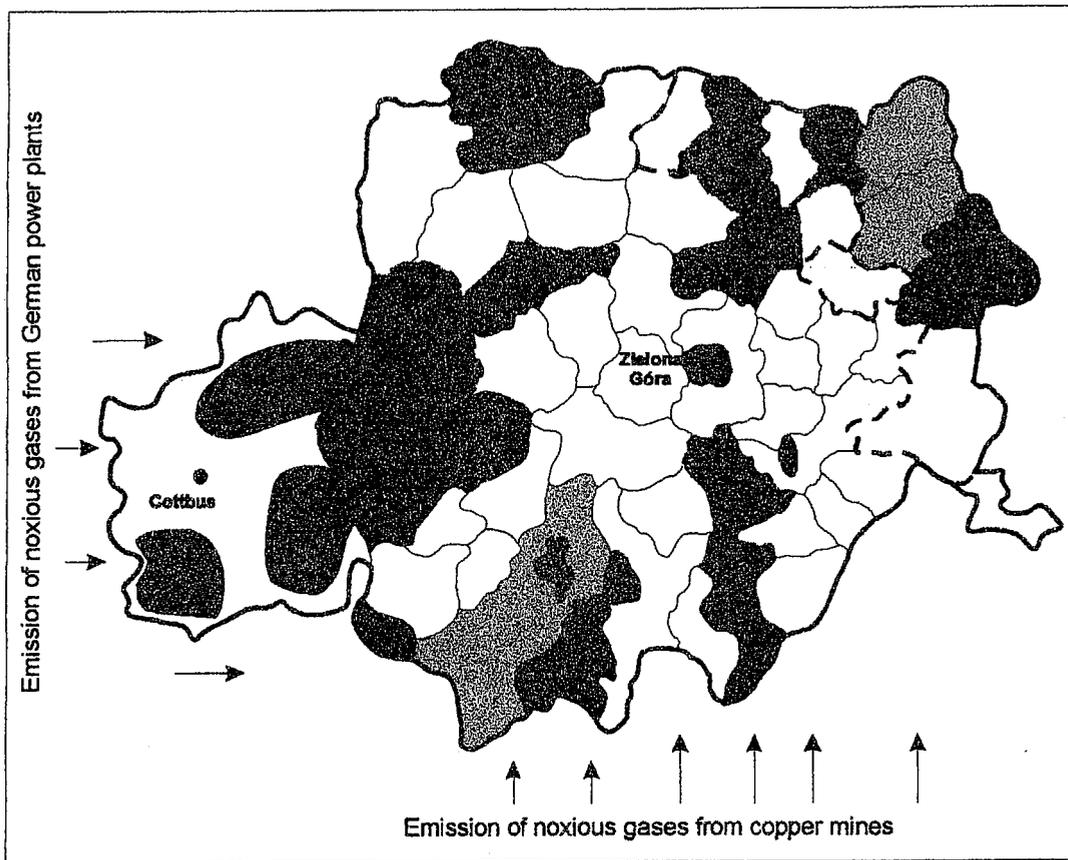


Fig. 4 Main environmental threats in the Spree-Neisse-Bober Euroregion

-  - communes belonging to the Spree-Neisse-Bober Euroregion
-  - communes which do not belong to the Spree-Neisse-Bober Euroregion
-  - industrial districts,  - influence of agriculture (usage of mineral fertilisers),
-  - soil contaminated oil-derivative waste

4.1. ACTIONS REDUCING THE EFFECT OF SOME MORE IMPORTANT THREATS

The issues related to environmental protection are greatly emphasised in the project "Balanced Development of the Spree-Neisse-Bober Euroregion". All Technical Charters of Actions determine the scope of affecting the natural environment by undertaking certain tasks.

The project specifies two main directions of the environmental protection policy in the Euroregion. They cover various areas of life and economy. In the Charter no. 1 – EDUCATION it is planned to organise training courses and workshops in order to increase the level of pro-ecological education and awareness. The Charter No. 2 – CHANGES IN THE ECONOMIC STRUCTURE OF THE EUROREGION specifies the principles of a new economic structure in which the criterion of affecting the environment will be one of the most fundamental criteria deciding upon the location of a given economic subject.

The project includes also a plan of temporary actions which aim at minimising or liquidation of the effects environmental threats exert on particular elements of the environment. So far many undertakings involving investments and aiming at satisfying the

above mentioned objectives have been carried out or are being carried out in the Euroregion. The most important investments include:

- the construction of sewage treatment plants (in 13 communes),
- the construction of industrial and communal waste storage yard in 4 communes
- gasification of selected towns and villages.

Moreover, it is scheduled to continue the project "EUROLAS" which includes a number of undertakings in the following:

- improvement of cross-border communication within the frameworks of preventing, controlling and fighting against forest fires (by means of supplementing the network of radio and telephone communication, providing water for forest fire suppression in wooded areas with no natural water resources, supplementing the stationary network of water tanks for fire suppression with tanks on vehicles),
- exchange of situational reports on forests preservation,
- public relations in the borderland area.

5. CONCLUSIONS

In the newly created Lubuski administrative province (1.01.199) work is in progress on developing the strategy of development. Such development should contribute to economic growth, an improvement in the quality of life of the community, and also to an improvement or maintenance of the present state of the environment and thus none of the undertakings realised within the framework of this strategy of development can affect the environment in a negative way.

Due to a strict co-operation of the officers of the Provincial Administration Office, the S-N-B Euroregion and all the other parties concerned, all objectives and tasks of the strategy of development for the Lubuski administrative province will concur with the assumptions of the project "Balanced development in the Spree-Neisse-Bober Euroregion". Thus, a chance emerges of creating a directed regional policy which would take into consideration the main assumptions of balanced development in accordance with the guidelines of Agenda 21.

Simultaneously with the work on the elaboration of the Lubuski administrative province development strategy, work is going on relating to the development of a Common Planning Document for the S-N-B Euroregion. The grounds for working out this document is, among others, the project "Balanced development in the S-N-B Euroregion". It is supposed to serve as an auxiliary and model project to obtain extra financing for the Polish – German borderland from the funds of PHARE II CBC (for the Polish party) and of Interreg.

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DETERMINATION OF DECISION RULES ON THE BASIS OF GENETIC ALGORITHMS

ARITA TAKAHASHI, ARKADY BORISOV

Genetic algorithms have widely been used in optimization tasks, and there are only a few works that use genetic algorithms to find rules. One of these studies is described [2] as follows: a set of solutions consists of various encoded rules:

$$\begin{aligned} & \text{attribute1} < \text{valueA}; \text{attribute2} > = \text{valueB}; \\ & \text{attribute3} = \text{valueC}. \end{aligned} \quad (1)$$

One symbol string may encode several rules. One should foresee whether they will be combined with a conjunction or with a disjunction (conjunctive or disjunctive method [3]). The task of a genetic algorithm is to determine the preferences according to which a decision maker divided patterns into acceptable and unacceptable ones.

The present work deals with the following issues:

1. how to find the preferences by using only a small part of solution space;
2. how to find the preferences for fuzzy evaluations;
3. how to generate hypotheses for *the best ideal* and *the worst ideal* solutions.

By using the accumulated data base, the genetic algorithm should generate additional objects and rule weights for each object. The rules themselves will look as the hypotheses either affirmed or denied by the genetic algorithm.

If any rule is not to be taken into account, the genetic algorithm should indicate a low weight coefficient for this rule. If the rule should be taken into account to a certain extent, then for this rule the genetic algorithm should generate a large coefficient.

Thus, solutions will be formed from strings of length 15 (9 positions for structure and 6 - for rule weights). Then the weight coefficient for the *i*-th rule (*i*-th criterion) could be computed as follows: