

POTENTIALS AND LIMITATIONS OF SPATIAL AND DEMOGRAPHIC DEVELOPMENT IN KOSOVO- METOHIJA LIGNITE BASIN ¹

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The initial research carried out for the purpose of elaborating the Spatial Plan for Kosovo-Metohija Lignite Basin indicated the need to address numerous conflicts and opposing interests in the area concerned. This required the Plan to focus on harmonizing the economic, social and spatial aspects of developing a mining-energy-industrial system (hereinafter MEIS) and its surroundings, devising the new ways for the protection of local population interests and use of novel approaches in dealing with the environmental consequences of lignite exploitation and processing. The area wherein Kosovo-Metohija lignite deposits are found is replete with diverse conflicting interests, including insufficient and uneven development, extremely large overall and especially agrarian population density (among the highest in Europe), unemployment and a sizable portion of the grey economy, low level and quality of services of public interest, ethnic conflicts and polarization, etc. The environmental effects of MEIS activities in a situation of this kind were revealed by the early stages of research in all segments of economic, social and spatial development, along with a high degree of environmental degradation. The main conflict in the Plan area is the one between mining and agriculture, i.e. open pit lignite mining and high-fertility soil covering lignite deposits. The conflict is additionally aggravated by the remarkable density of agricultural population on this territory and high selling prices of the land. Therefore, a substantial part of the Plan's propositions was related to the conditions of settlement and infrastructure relocation, population resettlement and measures to relieve the tensions and prevent the outbreak of potential conflicts in implementing the Plan. The Spatial Plan is conceived as a complex and comprehensive document defining the framework, basic principles, starting points and measures tackling the numerous development conflicts, spatial, social and ecological limitations, including the relevant analytical and data bases deriving from field research and surveys.

Despite the fact that under the UN SC Resolution 1244, the Autonomous Province of Kosovo and Metohija has been under the jurisdiction of the United Nations since June 1999, we believe that the Draft of the Spatial Plan and the research work done for its purpose are still valid, since to this date there have been no attempts to start the formation of new open pits in Kosovo lignite basin.

Key words: large lignite basins, degradation of the ecosystem, resettling of population, settlement network, environmental pollution.

INTRODUCTION

The limited availability of non-renewable natural resources, promotion of human rights (civil and political, economic, social and cultural, environmental) and the increasing environmental problems, are the three most important factors in the modern world arising the awareness of the need for planned development and offsetting of numerous development conflicts. Development problems

are particularly prominent in areas of intensive exploitation and processing of energy mineral raw materials, most strikingly in large lignite basins. The high intensity, scope and spread of these processes and environmental degradation, along with numerous developmental conflicts in the above mentioned areas add to the role and importance of the institution of planning (1,5).

Relative scarcity of primary energy sources, and the fact that over 70 percent of overall available energy potentials on Serbia's territory are found in two lignite basins (Kosovo-Metohija and Kolubara) bespeak the importance of these basins for energy sector development, and stress the need for rational utilization of available energy sources. Planning is thus faced with a delicate and difficult task of solving the problems inherent in major

¹ This paper was completed as a part of the project "Spatial, social and ecological aspects of development in great mining basins" which has been financed by the Serbian Ministry of Science and Technological development
The paper is based on the findings of extensive research carried out within the elaboration of the Spatial Plan for Kosovo-Metohija Lignite Basin (1987-1990 and 1998 -1999).

structural changes in space, as well as adverse external effects and irrationalities resulting from intensive exploitation of lignite, development problems in the zone of MEIS influence, numerous conflicts and the large scope of environmental degradation (2,6).

The work on the Spatial Plan for Kosovo-Metohija Lignite Basin (hereinafter Spatial Plan) started over two decades ago. Stage one took place in 1987-1990 and stage two in 1998-1999 period. In early 1999 the draft of the Plan was completed, but after June 1999 all activities related to this project were discontinued. Meanwhile, several texts based on preparatory work and the draft itself have been published, offering analyses of specific problems along with possible solutions (4,10-13). The authors of this text believe that today, and in the context of current developments in Kosovo and Metohija, it would be auspicious to present the public with the starting points, concepts, propositions and solutions of the Plan, bearing in mind that they are still topical and, moreover, that the approach to this undertaking fully observed the democratic principles and procedures in defining both the basic premises of the Plan and measures for its implementation (15). That is all the more advisable since the results of field research and comprehensive surveys carried out in 57 settlements in the Kosovo basin range among the few empirical research efforts made in this area over the past two decades. Furthermore, the Draft Spatial Plan of Kosovo-Metohija Lignite Basin in its 1999 form has, to this date, been one of the rare sources on that particular subject (11).

The Spatial Plan was conceived and prepared as a regional spatial plan for an area marked by a large influence of a single activity, i.e. production function (lignite exploitation and processing). The Plan sought to relativize the existing and expected conflicts and opposing interests by harmonizing the economic, social and spatial aspects of MEIS and its surroundings' development, while leaving room for improvements in technical-technological development and lignite processing, as well as novel approaches to resolving the ecological consequences of this development.

Strategic concepts in the energy sector are based on long-term prognoses (for the period of 30, 50 or more years), while long-term prognoses in other fields, especially economy and social development, are considered unreliable. The Plan has dealt with this discord by using different levels of detailed forecasting for different time periods. Thereby more detailed and reliable solutions were proposed for shorter horizons, while longer-term proposals offer only tentative solutions, are often limited to the objectives and main premises, and sometimes presented in several variants. It is assumed that these long-term prognoses will be reexamined in the subsequent cycles of research and planning (7).

We believe that changes in demographic developments, competencies for decision-making on development in general and energy development in particular, do not substantially impair the relevance of research findings and topicality of proposed propositions, which is yet another reason why they should be presented to the professional and academic public.

MAIN CHARACTERISTICS OF KOSOVO-METOHILJA LIGNITE BASIN

The subject of research in elaborating the Spatial Plan is an area the organization, arrangement and use of which is influenced by the exploitation of an energy resource, i.e. lignite. That is why the development of MEIS, the conditions of obtaining the basic raw materials and the manner of their processing were important factors in deciding on the concept of organization, arrangement and utilization of space. The possible variants for the MEIS development in production, technological and ecological terms, essentially influenced the selection of concepts for the organization, revitalization and use of space in both its immediate and wider surroundings. That is why an evaluation of the proposed MEIS development from the point of spatial organization and arrangement was important as well as necessary. Concentration of mining, energy and industrial facilities in the zone of Kosovo-Metohija lignite deposits today, and in the next 20-30 years, suggests that the evaluation of development variants and the

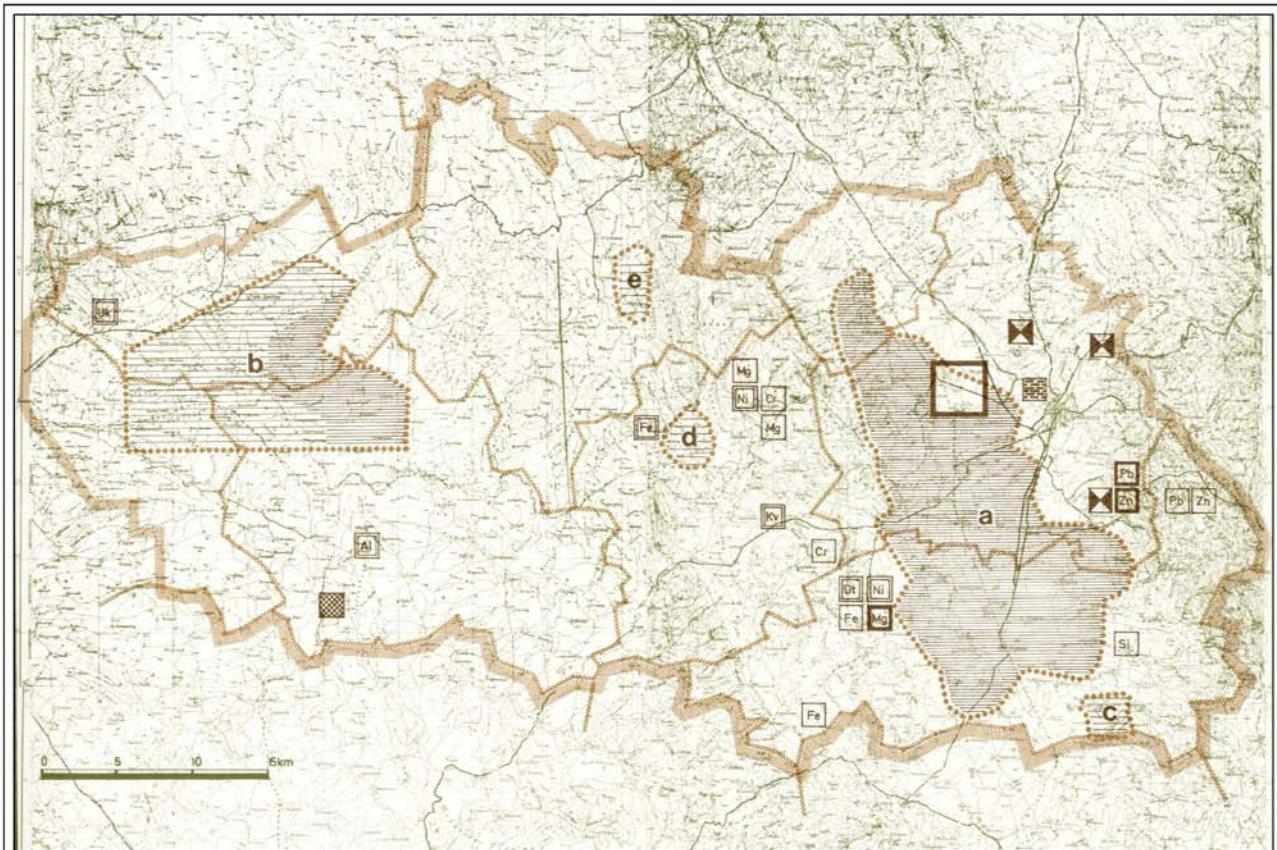
adopted concept and solutions in this zone will essentially influence the concept of the Spatial Plan as a whole.

The Spatial Plan, in addition to the existing, also addressed the prospective limitations related to the development of transportation and other large infrastructure, the system of settlements, agriculture, distribution of the population etc. in the future MEIS zone. Therefore the need to perceive the MEIS development after the year 2020, until the final depletion of lignite deposits.

The Spatial Plan area may be divided into two specific entities, different from one another in terms of their population, overall development and degree of urbanization.



a) The first entity is that of Priština with several urban, suburban and adjacent village settlements, which, taken together, account for almost half the total number of the population in the Spatial Plan area (401 settlements). This entity is also characterized by a relatively large concentration of economic and other activities, high level of settlement and infrastructure construction, etc. That is also where all MEIS plants are located which, together with Trepča and other industrial centers in immediate vicinity, contribute to the inferior condition of the environment.

b) The second entity, which includes the remaining part of the Spatial Plan area, is characterized by a predominantly rural nature of the whole area, existence of several smaller centers (Lipjan, Glogovac, Srbica, Klina, Mališevo) with industrial plants and high population density (typical of the entire Province) that displays an upward trend in lowland settlements, despite the population's migration to more developed centers.




LEGEND:







LIGNITE DEPOSITS

-  DEPOSITS OF THE LOWER DEGREE OF RESEARCH
-  DEPOSITS OF THE HIGHER DEGREE OF RESEARCH

- a** KOSOVO DEPOSIT 268 km²
- b** METOHIJA DEPOSIT 162 km²
- c** DEPOSIT GLAVICA 6 km²
- d** DEPOSIT GLOGOVAC 8 km²
- e** DEPOSIT SRBICA 8 km²

-  ENERGY-INDUSTIAL COMPLEX IN OBILIĆ
(fertilizer factory, separation, TE power plant, gassification, heating plant)

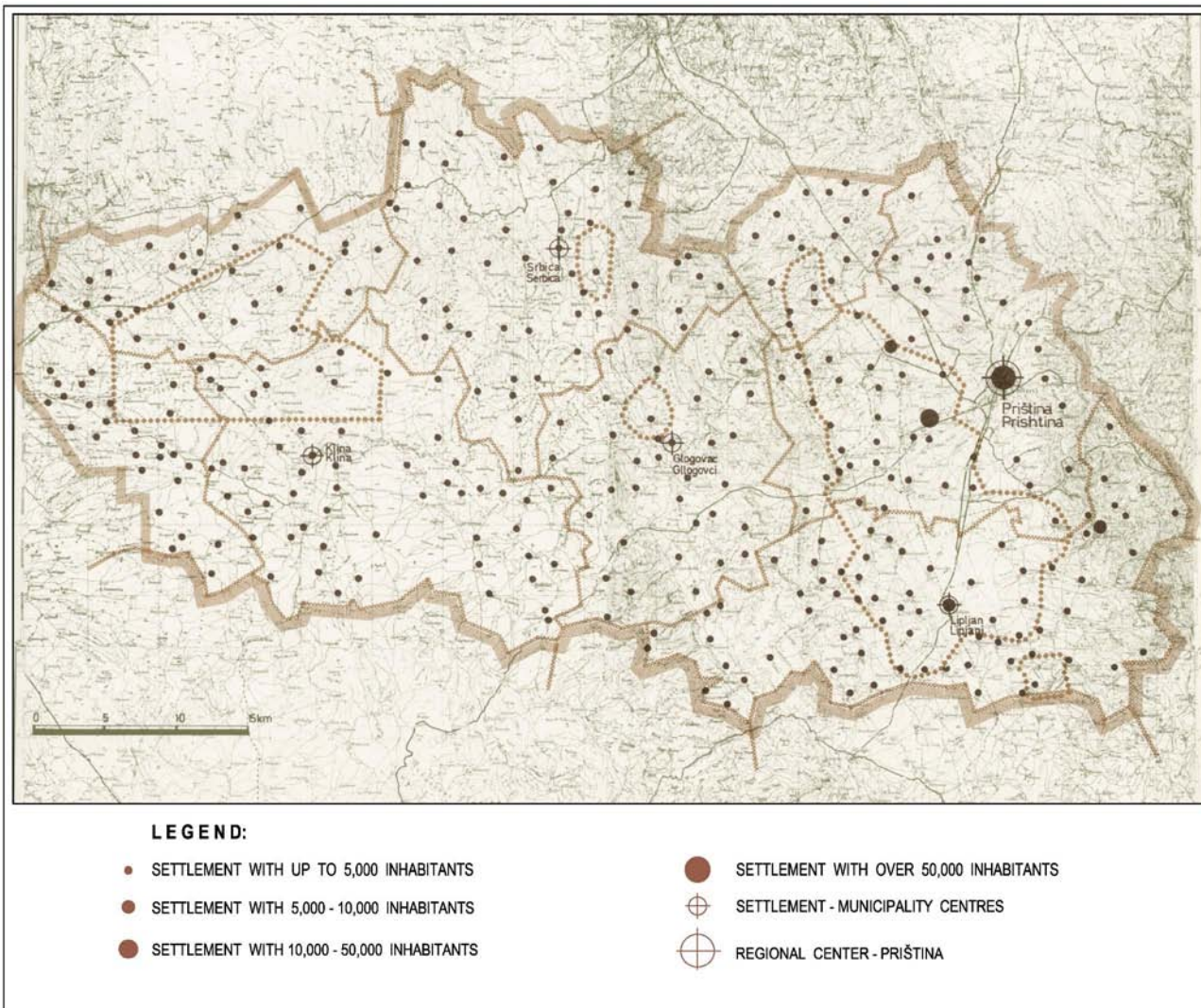
DEPOSIT OF MINERAL AND METAL RESOURCES

-  DEPOSIT IN EXPLOITATION
-  RESEARCHED OR DEPOSIT UNDER THE RESEARCH
-  OCCURENCE OF MINERAL AND METAL RESOURCES
-  QUARRY - STONE PIT
-  GRAVEL PIT
-  CLAY FOR BRICKS AND TILES

- | | |
|-----------------------|------------------|
| Mg - magnesite | Kv - quarcit |
| Ni - nickel | Du - dunit |
| Fe - iron | Pb - lead |
| Uk - decoration stone | Zn - zinc |
| Al - boxite | Si - quartz sand |

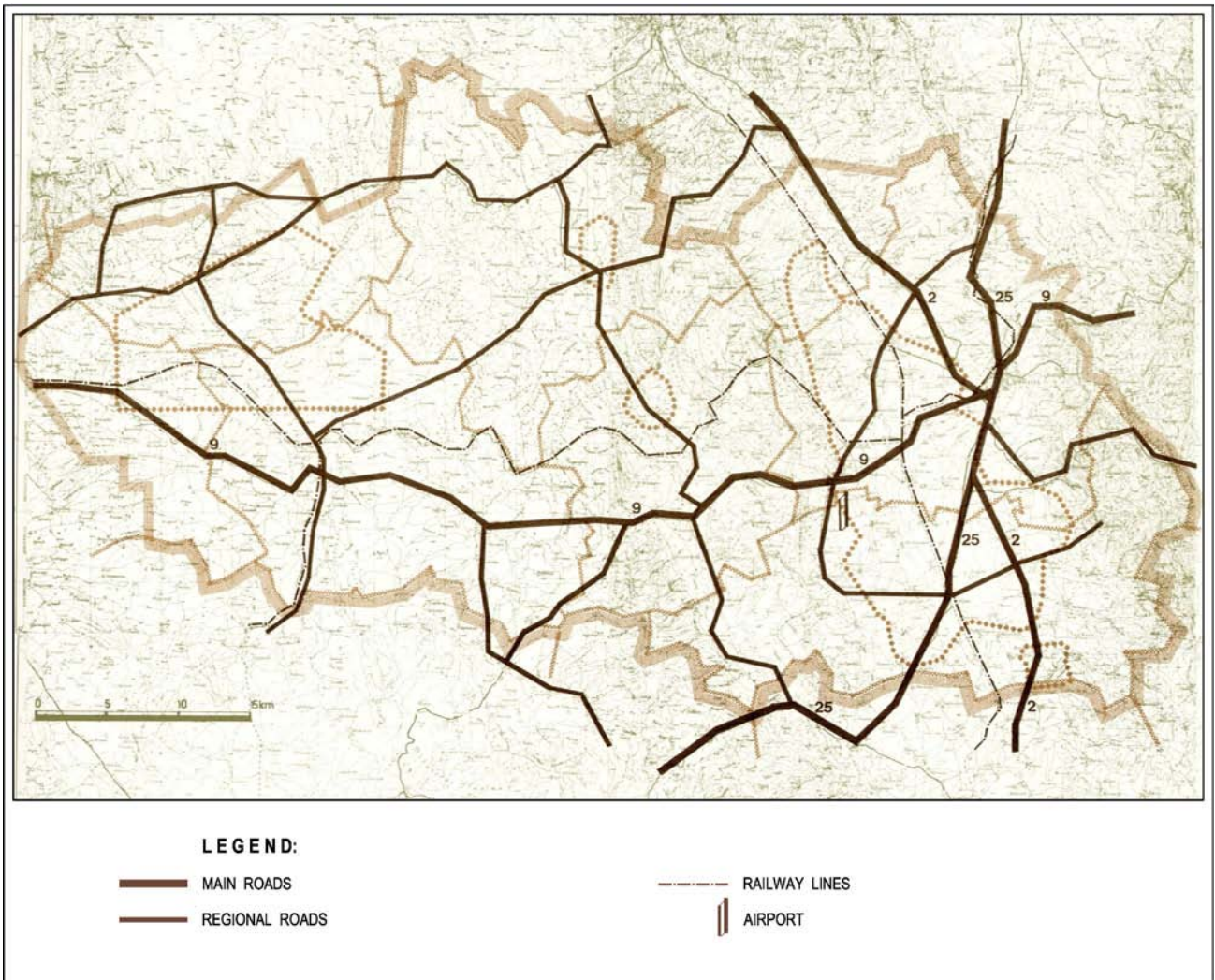
Source: *Prostorni plan područja Kosovsko-metohijskog lignitskog basena, Nacr, IAUS, Beograd, 1999.*

Map 1 – Energy, Mineral and Metal Resources



Source: *Prostorni plan područja Kosovsko-metohijskog lignitskog basena, Nacr, IAUS, Beograd, 1999.*

Map 2 – Settlements Network in the Area of Spatial Plan



Source: Prostorni plan područja Kosovsko-metohijskog lignitskog basena, Nacr, IAUS, Beograd, 1999.

Map 3 – Existing Transport Network

Table 1: Lignite reserves in Serbia

Basin	Exploitable RESERVES (* 10 ⁶ t)	GEOLOGICAL RESERVES	THERMAL VALUE (kJ/kg)	STATE OF ACTIVITY %
Kosovo	8200	10491	7200	0,011
Kolubara	2675	3635	7400	0,354
Metohija	1551	2730	7400	0,000
Kostolac	645	1569	7600	0,351
Kovin	197	240	7600	0,03
Drenica	74	134	7200	0,000
Sjenica	50	184	14200	0,05
TOTAL	13392	18983	7400	

Table 2: Kosovo lignite deposit – population projection in settlements potentially endangered by open pit exploitation over the next 30 years

SETTLEMENT	POPULATION							HOUSEHOLDS						
	1988.	1996.	2001.	2006.	2011.	2016.	2021.	1988.	1996.	2001.	2006.	2011.	2016.	2021.
S	1400	1885	2020	2155	2290	2425	2560	175	250	295	340	390	450	510
Sibovac	1935	2630	2805	2980	3155	3330	3505	205	320	395	460	525	605	700
Ade	1040	1310	1395	1475	1560	1640	1725	135	175	200	230	260	310	345
Dobri Dub	505	535	540	540	545	550	550	99	105	110	120	125	130	140
Kuzmin	1630	1865	1980	2100	2220	2356	2455	236	290	325	355	390	435	490
Crkvena Vodica	1005	1155	1230	1305	1380	1455	1530	123	150	170	195	220	260	305
Leskov i	1710	2270	1445	2620	2795	2970	3140	263	360	410	460	510	570	630
Kruševac	3160	3790	4115	4435	4755	5075	5400	376	480	555	650	780	925	1080
V.Bela evac														

The largest population growth is registered in urban settlements of the first zone, followed by urban settlements and municipal centers in the second and, finally, villages in the lowlands. Changes in the number of population are accompanied by changes in its ethnical composition, including the villages, and the the statistical censuses (1961-1981) as well as a Household survey carried out in 1988, registered a continuous decrease in the number of ethnic Serbs and Montenegrins in the entire Spatial Plan area. The rationale of a balanced regional development indicates the need to discourage further intensive growth of Priština and "conurbation", in favour of long-term development of smaller municipal and village community centers.

The availability and accessibility of Kosovo and Metohija lignite, and its share in Serbia's energy potential suggest the necessity of their future exploitation regardless of the numerous limitations and conflicts related to that course of action. The Republic will not have an alternative to Kosovo and other coals for a long time yet, at least until the world has come up with new unconventional energy sources.

Kosovo-Metohija lignite deposits are located in the central part of the Province. The deposits

and their immediate surroundings are crossed by main and regional traffic arteries and main lines of other major infrastructural facilities. That is why infrastructure corridors are envisaged for the prospective relocation of the facilities existing in the zone of mining activity and the construction of new ones. Construction of a highway between the southern part of Serbia and Montenegro, across the province, may become topical in the near future. Due to the high capital investments involved and in order to avoid possible relocation, this highway should be routed outside the planned zone of lignite deposits exploitation. The master project of the highway and the relevant feasibility study should examine a number of variants.

Exploitation boundaries of Kosovo lignite deposits (encircling the area of about 270.00 ha) will of necessity be corrected due to the high degree of completed construction and density of population above them, as well as the continuing trend of further construction and settlement. The economy of exploitation of the entire deposit has already become questionable due to intensive growth of urban and numerous village settlements. Unless further growth of settlements above the lignite

layer is not limited, exploitation of a large part of the deposit may be endangered.

The present degree of exploration of the Kosovo lignite deposit allows us to fairly confidently speak of the final contours of strip mining in the Kosovo lignite deposit.

These circumstances indicate that the total coal production in Kosovo deposit might be concentrated in 2-4 large open pits ("North" and "South Kosovo").

In the period of the next 40-50 years strip mining will cover only 1/5 to 1/6 of the Kosovo lignite deposit area, thus endangering about ten or so settlements. Towards the end of that period the relocation of part of the railways and the main highway from Kosovo Polje to Glogovac may be required.

Concentration and congregation of MEIS plants is a process that will continue in future. The question of the optimal degree of concentration of Kosovo-Metohija MAIS facilities, is a difficult one to answer, primarily in view of the danger for the environment. In principle, a certain deconcentration of thermal power plants will be necessary in stage I. That is primarily related to "Kosovo C" thermal electric power plant, which has been planned

on a new location (Glogovac), so as not to increase the concentration of pollutants in the zone of Priština, Obili and Kosovo Polje. However, dealing with the problem of environmental pollution by means of dispersing MAIS plants will not be acceptable in future. The only true solution is a rigorous control and limitation of overall emissions of damaging waste and other pollutants from MEIS plants, by using new technologies. That is particularly important for Kosovo and Metohija due to the proximity of several national parks and reservations, present and future tourist regions (Mts Kopaonik, Šara, Prokletije, Mokra Gora, etc.), and a large number of settlements.

It is clear that many issues of the development, organization, arrangement and use of space in the MEIS area are still outstanding, while and the solutions for some others have only been indicated. That is due to the absence of a sufficiently clearly defined long-term energy development strategy on the national level as well as the non-existence of a development strategy of the Province. The degree of exploration in certain areas is still insufficient for a well-argued proposal of more reliable and precisely defined solutions to many problems, including the ones of key importance for the exploitation of lignite deposits, relativization of development conflicts, environmental protection, etc. That is why the adoption of the Spatial Plan should be followed by research in all fields required to define the long-term strategies, plans and programmes for spatial development and arrangement, revitalization of natural environment, etc.

CONFLICTS, LIMITATIONS, POTENTIALS AND PRIORITIES OF SPATIAL DEVELOPMENT

Conflicts in large lignite basins emerge in consequence of large-scale exploitation and transformation of coal, but that does not exclude other causes of conflicting interests in these areas. The area of Kosovo-Metohija lignite basin most prominently reveals the following conflicting interests: insufficient and uneven development, exceptionally high overall and especially agrarian population density (among the highest in Europe),

unemployment and a sizable portion of the grey economy, along with a low level and quality of services of public interests, ethnic conflicts and polarization, etc. The consequences of developing MEIS in these circumstances are the most pronounced in economic, social, spatial and ecological spheres, which is why the conflicts thus caused are the most complex, especially since they add to those already existing in other spheres of development (8).

The main conflict in the Plan area is the one between mining and agriculture, i.e. open pit lignite mining and high-fertility soil covering lignite deposits. The conflict is additionally aggravated by the remarkable density of agricultural population on this territory and high selling prices of the land, bearing in mind that replacement of the existing technology of strip lignite mining with a new one that could mitigate this conflict is not expected in foreseeable future. It is therefore necessary that plans for future exploitation took into account the following requirements:

- provision of the required institutional, organizational, technical-technological and other conditions for as efficient as possible recultivation of the damaged land and its soonest restoration to its initial purpose;
- occupation of land for mining purposes should not exceed a period of ten years;
- implementation of protective measures at the time of occupation of agricultural land (including the need to reduce external dumps to a minimum). The distance between excavation and recultivation fronts should also be reduced to the absolute minimum which does not endanger normal production;
- recultivation and revitalization of reproductive land potential should be carried out on the basis of thoroughly developed long term plans and projects, etc.

Another important conflict emerges between mining, on the one hand, and settlements, industrial, infrastructural, water supply and other facilities in the zones planned for open-pit exploitation, on the other. The problem is extremely delicate and requires professional, serious and just approach. There is a series of institutional, organizational, normative and legal conditions that have to be provided before hand. The Spatial Plan has adopted the

following starting points in addressing this problem:

- conditions of resettlement should not place the endangered population into a less favourable situation; on the contrary, it would be desirable if the new settlement offered better living conditions;
- the population to be resettled should be offered a choice of compensation, place of resettlement, construction and arrangement of the new settlement, etc.; furthermore, every effort should be made to meet all reasonable requests by the households, if they fit into the agreed (prescribed) scope of compensation;
- the programme for relocation of settlements, industrial, infrastructure and other facilities must ensure the functioning of existing settlements systems until the relocation is completed;
- in view of the scarcity and high value of agricultural land, as well as domination of agricultural households in settlements above lignite deposits, provisions should be made to appropriately substitute the expropriated land of the households concerned; and
- bearing in mind the existing social, ethnic, religious and other tensions in Kosovo, efforts to solve the resettlement problems must take into account these specific circumstances.

Large-scale strip mining also has other negative effects on the environment, e.g. by reducing the level of underground waters in the vicinity of pits, disrupting the existing ecosystems in the zone of mining operations, affecting the cultural heritage and ambient whole, etc. In the area Kosovo MEIS these influences must be continuously monitored and examined, especially with respect to prospective substantial increase in coal production.

The third important conflict is created by the development and functioning of the energy-industry complex, wherein thermal electric power plants have the most important role. This conflict is generally of ecological importance and is manifested in the pollution of air, soil, surface and underground waters predominantly by aggressive gases (SO₂, NO_x, etc.), flue and furnace slag ashes,

environmental "thermal burden", etc. The solution to this problem is generally twofold and implies the application of acceptable technical devices to control the aggressive pollutants and the selection of appropriate sites for facilities of that kind. In relation to this conflict, the concept of the Spatial Plan has adopted the following criteria:

- balancing of requests for concentration of energy and industrial facilities based on economic and technological grounds and for their space-wise dispersion based on ecology and security of production in extraordinary circumstances;
- sites for new facilities must be selected in a way ensuring that the propagation of their operations' negative influences will, for the most part, spare the zones of concentration of settlements, i.e. population, good agricultural land, valuable natural and cultural heritage and zones which are at present marked by a high degree of environmental pollution; and
- sites for the new facilities must also fulfill certain conditions related to the relief, soil stability, microclimate, degree of completed construction on the site and its immediate surroundings, transport infrastructure, water supply, etc.

Development and construction of settlements above lignite deposits pose a delicate problem the Spatial Plan had to clearly perceive. The conflict derives from the request to prohibit further construction and settlement on the territory above lignite deposits in order to protect an important energy source (coal), on the one hand, without stopping the development and functioning of a quality everyday life, on the other. In that relation it was necessary to accept a compromise depending on the planned dynamics of open pit exploitation.

Large capital investments in the energy sector bring relatively few new jobs in primary production. In view of the large problem of unemployment in Kosovo and Metohija, the program of investments into new energy facilities must address the problem of productive employment of the existing facilities surplus labour, as well as of the unemployed population, especially in the zones where the settlements and households would be

relocated. In that relation the concept of the Spatial Plan included the following criteria:

- construction of new production plants for productive employment should be harmonized with the concept for the development of the settlement network, direction of the urbanization process and incentives for the development of small settlement centers;
- support for the opening of new jobs outside primary energy production in the MEIS area should be channelled towards the zones of settlement, i.e. reception of the population moved out of open pit exploitation sites;
- construction of new industrial facilities should not be planned in the immediate proximity of MEIS plants, and especially not within the lignite deposits exploitation boundaries; and
- employment programs, including additional training and re-training should, in addition to MAIS production plants be oriented towards civil engineering, public utility and housing construction, recultivation and arrangement of the damaged land, tertiary sector and services of public interest.

Uneven regional development as well as the trend of increasing concentration of the population, activities, investments, and construction of settlements, economic, infrastructure, public and other facilities in Priština and its surroundings, as well as negative consequences of that development are important issues clearly defined by the Spatial Plan. In line with the general concept of the Spatial Plan of the Republic of Serbia (1991 working version, adopted in 1996), a view was adopted to encourage the development of smaller municipal centers, as well as centers of village communities (rural provincial towns), and conversely to discourage further extensive growth and expansion of Priština.

This premise was particularly important in the selection of sites to resettle the population from the zones of mining activities. Development of smaller urban settlements and village centers is encouraged by allocation of investments, improved transport infrastructure, public utilities and construction of social

standard facilities, taxing policy, policy of limiting investments, etc.

Comparison of space suitability indicators for specific purposes clearly reveals that suitability ratings for certain basic purposes (agriculture, settlement, industry and energy) in the predominant part of the territory covered by the Spatial Plan, overlap, meaning that the zones of best agricultural land are simultaneously suitable for the construction of settlements, industrial and energy facilities and infrastructure. Part of this space is located above lignite deposits and is therefore also important for mining. That is a particularly clear example of opposing (conflicting) interests in relation to the same space, which is why priorities for the use thereof must be defined. In a long term, the order of priorities is as follows: 1) agricultural land, 2) settlement construction, and 3) industry, energy, infrastructure. This order of priorities means that lasting occupation of land of first and second grade fertility for construction purposes should be prevented, and that construction of industrial, energy and infrastructure facilities must not aggravate the conditions of development, life and housing in the existing and planned (new) settlements.

A similar approach applies to the establishment of priorities in the use of some other important resources, e.g. water. Settlements and population, along with agriculture, have the priority over industry and energy where use of high quality water is concerned (7).

ORGANIZATION, ARRANGEMENT AND USE OF SPACE

The degree of exploration of the Kosovo lignite deposit enabled the Plan to establish the final contours of open pit exploitation with a high degree of reliability, which was not the case with other lignite reserves in Kosovo and Metohija.

As already mentioned, depending on the dynamics of lignite exploitation, i.e. construction of appropriate energy and industrial facilities using coal, it is estimated that the period of exploitation of Kosovo and Metohija's deposits ranges between 140 and 240 years. That is a very long period of time

and is impossible to cover by prognoses of technological economic and social development. However, the above-mentioned estimate of the life-time of deposits allows us to draw some conclusions of importance for the solutions proposed for the period until the year 2020, as well as the immediately following years:

- MEIS development in these areas is viewed in a long term perspective; at the same time, it is expected that future modernization of production (based on automation and robotization) will lead to decreasing labour requirements per unit of production, and necessitate the transfer of surplus labour into other sectors;
- Optimum exploitation boundaries of the Kosovo lignite deposit (with the surface of about 270.00 ha), have been adjusted to the high degree of completed construction and settlement above the deposit, as well as the trend of future construction and settlement: the economy of exploiting the whole deposit is questioned due to intensive growth of urban (Obilić, Kosovo Polje, Lipjani) and other, smaller settlements; unless the growth of settlements above the lignite deposit is restricted, exploitation of a large part of the deposit will be endangered;
- In order to protect the deposit from unplanned construction, a regime of minor or major restrictions of construction and spatial expansion will have to be applied to about 100 settlements above the lignite deposits; these limitations have to be offset by advantages in terms of population employment, increased transportation accessibility, availability of public utilities, construction of facilities with public functions in settlements, etc.;
- Construction of settlements and other building projects, require stabilization of landfills in overburden dumps of large thickness in a period of over 50 years, which means that construction of new settlements on landfills after lignite exploitation cannot be counted upon in due course; the period of land stabilization required for construction of transport infrastructure may be reduced, but that would require the use of special measures during landfilling and control of land stabilization in internal dumps; that is

currently the case of internal dumps in the existing open-pits "Dobro selo" and "Bela evac", where an infrastructure corridor is anticipated;

- Control of construction above the lignite layer will result in more intensive settlement and construction on the rims of lignite basins; that would require coordination of planning and construction in these zones so as to avoid uncontrolled concentration of construction and linear conurbation on both sides of the infrastructure corridor to be formed along the eastern rim of the Kosovo deposit;
- The availability and accessibility for exploitation of Kosovo-Metohija lignites, indicate that their exploitation in the future is a certainty, despite the numerous accompanying limitations and conflicts;
- Kosovo-Metohija lignites are covered by high fertility agricultural land; the predominant part of the land taken for the need of mining will be restored to agriculture by means of planned measures of recultivation and revitalization; the long term concept for the development of open-pits must ensure continuous filling of all depressions created by strip mining, so that at the end of exploitation of the lignite deposit there will be only one or two depressions left which could then be filled with water and turned into artificial lakes.

Also important for the concept of spatial organization and arrangement in this area is the estimate that more substantial changes in technologies of open-pit coal mining will not be forthcoming in due course, and that only their improvement could be expected, including:

- concentration of production within large excavation sites, to ensure greater efficiency of the deposits, rational use of occupied land, improved economy of the mine, etc.;
- introduction of automated production, control mechanism and appropriate information system, and better conditions for successful recultivation of the damaged land (3).

Development of thermal power plants in this area was based on the increase of unit and overall capacities, improvement of combustion technologies (for better utilization of thermal

power of coal) as well as technologies for the control of harmful emissions of effluents. Chemical industry in Obilić was closed down and its reopening in foreseeable future is unlikely. We must bear in mind that development of new technologies for coal exploitation and processing is not a certainty worldwide, and that radical changes may be triggered by substantial alterations in prices of main energy products.

Large lignite basins are ones of capital intensive investments. The principles of rationality and economy demand concentration of production plants into large systems, leading to concentration of investments. The specific nature of lignite transformation into electrical energy contributes to the monofunctional character of economic structure in the given area. That is why the MEIS development with this structure and concentration of investments has territorially limited positive effects (income, employment) in a relatively small space and relatively small scope, bearing in mind that its economic effects are manifested extraterritorially and materialized in the process of "productive consumption" (9,10,11,12,13).

Contrary to the urban area of Priština, Obilić and Kosovo Polje, the remaining part of the Spatial Plan area is characterized by a low degree of urbanization, insufficiently developed urban centres, low level of tertiary sector activities and relatively poor supply of urban services. Low development level of services and the small percentage of employment in the tertiary sector are characteristic of the entire MEIS area, except Priština, and can be explained by the following factors:

- capital investments, channelled predominantly into exploitation of energy raw materials and their primary transformation, and the monopoly of state actors in the entire public sector discouraging organization of other economic and service activities in this area;
- proximity of large urban centres (Priština, K.Mitrovica, Pe) and their functional domination contributed to the slow emancipation of other, smaller centres; the population depended on these larger centres for higher quality services, and this trend is realistically expected to continue, unless

appropriate incentive measures are taken to stimulate development of smaller settlements.

Development of settlement and urban centers network was not observed only within the limits of the Spatial Plan, but also on the entire territory of the Province and Serbia. The settlement system in Kosovo comprises: one center of provincial importance (Priština) and six (sub)regional centers (K.Mitrovica, Pe , akovica, Prizren, Uroševac and Gnjilane) with their gravitation areas and networks of municipal and village centers. The system of settlements and centres functioning on the provincial level is fairly balanced. However, observation of the centres' network in the MEIS area, highlights the dominance of Priština with second-rank centers in its immediate vicinity (Kosovo Polje, Obili , Gra anica). The expected population of these centers in 2010 will account for about 33% of the total population in the Spatial Plan area, or approximately 85% of the expected number of inhabitants of urban municipal centers in that area. In that relation, development of smaller municipal and urban centers in the Spatial Plan area, as well as centres of village communities should be encouraged in the coming period (17,18,21).

POPULATION MIGRATION AND DISTRIBUTION

The Spatial Plan area is characterized by a powerful population expansion, contrary to demographic trends on the territory of Serbia, which has been undergoing demographic transition with low reproduction and small population growth since the 1960s. The population of the entire zone of MEIS influence (10 municipalities) grew from 369,000 (1961) to 818,000 (1991 estimate), at an average annual rate of 2.77%. At the same time, concentration of the population also increased from 38.3 % in 1951 to 40.3% of the total provincial population in 1981. At the time of elaboration of this Spatial Plan it was estimated that should the trend of population growth continue, the total number of inhabitants in the Spatial Plan area would increase by over 50% until the year 2011, and that the corresponding upward trend in urban (and municipal) centers would be still more prominent.

Strong population dynamics is characteristics of all municipalities in the Spatial Plan area, with growth indices of about 200.0 points. The strongest expansion is found in Priština municipality (Index 406.5), and population growth above the provincial average has also been registered in Glogovac and Pe municipalities. Population expansion rests on a high natural rate of growth (of primarily Albanian and Roma population) and is due to a sustained high natality under conditions of improved health care and reduced death rate of the population, especially children of up to five years of age.

Fast population growth and trend of population concentration over the past decades are also found in settlements in the zone of lignite exploitation, especially in the immediate vicinity of excavation sites in Bela evac and Dobro Selo, Obili thermal power plant and Priština surroundings, i.e. precisely in spaces where indicators of environmental quality have substantially aggravated. The zone of the MEIS (Kosovo lignite deposit) in 1948 had the population of 26.500, compared with 72,000 in 1988, with the index of growth of 235.5 points, above that of the Province (216.10). This population dynamics in settlements in the MEIS zone is due to the high natural growth as well as to immigration into the zones of mining and industrial activities.

These projections indicate that continuing demographic trends on the territory of the proper and wider zone of the MEIS, will substantially increase the population potential, especially in terms of younger population, and add to the already pronounced overpopulation of the space, and thus sharpen the conflicts between the population growth and economic, social, cultural and spatial development. A special problem is the substantial spatial differentiation of demographic development by settlements, due to the characteristics of their ethnic structure, as well as consequences of the related processes. Active demographic policy would imply a higher degree of education and social engagement of Albanian and other ethnic groups (especially young female population), measures to discourage births, changes in social policy (education, health care) and higher employment. With respect to the concentration and distribution of

the population, in addition to incentive measures of the investment policy (distribution of jobs) in order to reduce the pressure in the MEIS, Priština and Pe zones, specific urban measures and control of their implementation are also required.

At the time when this Spatial Plan was worked out, the share of non-Albanian population in this area in the total population was higher than on the level of the entire province, and was particularly prominent in the zone of lignite deposits.

Results of a survey carried out in 1988 in settlements above Kosovo lignite deposits confirmed the process of ethnic homogenization („ethnic cleansing of settlements“) noted in 1971 and 1981 censuses. This process developed in almost all settlements, including those with a dominant ethnic group and ethnically mixed environments. In ethnically mixed settlements, the change of ethnic structure invariably developed towards an increased share of the Albanian ethnic group and the decreased share of others.

According to the findings of this survey, the Spatial Plan area has several groups of settlements with predominantly non-Albanian population. The largest two groups are in the zone of Kosovo-Metohija lignite deposits. The group of settlements with predominantly non-Albanian population in the zone of Kosovo deposit includes: Plemetina, Priluzje, Grace, Devet Jugovi a, Donja Brnjica, Kosovo Polje, Bresje, Kuzmin, Ugljare, Preoce, Laplje Selo, Sušica, Batuše, Radevo, Lepina, Skulanovo, Sivi Do, Liva e, Gra anica, Badovac, Okosnica, Janjevo, Gornja Gušterica, Donja Gušterica, Lipljan, Dobrotin and Staro Gracko.

The group of settlements with predominantly non-Albanian population in Metohija zone of the deposit includes: Tu epo, Osojane, Poljana, Leskovac, Šaljinovac, Opraška, Berlovo, Vidanje, Klina and Dolac. ²

² The period after the signing of Kumanovo Agreement and introduction of international administration into the Province in June 1999, witnessed major territorial shifts of ethnic population groups. Non-Albanian population predominantly moved out,

Table 3. Population projection in the wider area – zone of MEIS influence, 1991-2021 (*) based on the 1971-1981 trend)

Municipality	Population projection						
	1991(*)	1996	2001	2006	2011	2016	2021
Istok	50085	55557	61029	66501	71973	77445	82917
Glogovac	33511	36103	38695	41287	438799	46471	49063
Klina	52314	57064	61815	66565	71316	76066	80816
Lipljan	70709	76045	81381	76717	92053	97399	102735
Pe	34143	36579	39015	41451	43887	46323	48759
Priština	244376	273470	302564	331658	360752	389846	418940
Srbica	57248	62370	67493	72615	77738	82860	87983
Vu itm	22358	24196	26035	27873	29713	31551	33390
Mališevo	16018	17477	18937	20396	21856	23315	24775
Total	580762	638861	696964	745063	813167	871276	929378

Source: Spatial Plan of Kosovo-Metohija Lignite Basin, draft, IAUS, Beograd 1999.

Table 4. Population projection in the wider area – zone of MEIS influence, 1991-2021 (**)(*) based on the 1961-1981 trend)

Municipality	Population projection						
	1991.(*)	1996.	2001.	2006.	2011.	2016.	2021.
Glogovac	48162	52668	57174	61680	66186	70692	75198
Istok	32943	35251	37559	39867	42175	44483	46791
Klina	50649	54567	58485	62403	66321	70239	74157
Lipljan	70021	75013	80005	84997	89989	94981	99973
Pe	34441	37016	39591	42166	44741	47316	49891
Priština	240022	266915	293808	320701	347594	374487	401380
Srbica	55436	59662	63888	68114	72340	76566	80792
Vu itm	21819	23393	24967	26541	28115	29689	31263
Mališevo	15793	17140	18487	19834	21181	22528	23875
Total	569286	621625	673964	726303	778642	830981	883320

Source: Spatial Plan of Kosovo-Metohija Lignite Basin, draft, IAUS, Beograd 1999.

Tabela 5: Ethnic structure of the provincial population in the zone of Kosovo lignite deposits

Ethnic structure in %		Albanians	Serbs	Montenegrins	Turks	Roma	Yugoslavs	Muslims	Others
Total population of the Province	1971.	72,0	18,2	4,4	0,5	1,7			3,2
	1981.	76,4	13,1	3,1	0,3	3,1	0,2	2,7	1,1
Kosovo lignite deposit, 1981	Population	60,6	26,8	1,6	0,07	3,4	0,8	1,7	0,1
	Households	51,4	37,2	2,4	0,07	5,8	0,2	1,5	0,2

Source: Spatial Plan of Kosovo-Metohija Lignite Basin, draft, IAUS, Beograd 1999.

It is to be expected that further development of open pit exploitation of lignite will influence the increase of international tensions in this area. It is therefore necessary to approach the problems of relocation of endangered settlements from the mining zone very carefully, and offer solutions based on thorough preparations and detailed

especially from ethnically mixed and lone settlements. Non-Albanian ethnic groups (Serbian, Montenegrin and Roma population) was almost entirely moved out of the Metohija zone of the lignite deposit, while this proces was somewhat slower in the Kosovo zone, due to territorially grouped settlements with the majority Serbian population. More reliable data on the present ethnic structure are unavailable.

consultations, as well as appreciation of requests of both the resettling population and the host community. Particular note should be made of the fact that settlements above the Kosovo deposit that will potentially be relocated in the next 50 years (Table 1) are predominantly inhabited by the Serbian population, which requires complete transparency and respect of international pacts and conventions (Aarhus Convention, International Pact on Civil and Political, as well as Economic, Social and Cultural Rights, etc.) in order to prevent the abuse and manipulation with lignite exploitation for other purposes (10-13).

RELOCATION OF SETTLEMENTS AND POPULATION RESETTLEMENT

Situation, limitations and potentials

High population density and socio-economic characteristics of the population living in the Spatial Plan area, and especially above the Kosovo lignite deposit, substantially limit the use of lignite for electricity production. In addition to the clashing utilization of the two main natural resources in this area – lignite and agricultural land – with exploitation of one limiting the use of the other, there is yet another limiting factor – the population. Two important features define the population's limiting role in this area. The first one is its

numerical size, reflected in the large density of population, in consequence of a high natural growth rate and low intensity of migrations. The second is the highly unfavourable socio-economic structure of the population characterised by a low level of education, unfavourable structure of qualifications, domination of traditional patterns and systems of values, exclusion and static primary forms of groups, etc.

Under the present circumstances it is impossible to plan the resettlement of population from the lignite mining area to more distant parts. This limitation is, on the one hand, imposed by the political situation and poor interethnic relations, and, on the other, by the low educational structure, inferior labour skills and closed nature of primary groups, all of which reduce individual territorial mobility of families and households to be resettled due to expansion of lignite mining.

The Spatial Plan offers the following modalities for resettlement:

- Organised resettlement of parts or whole settlements, either by establishing and arranging new settlements, or by expanding (settling) the marginal zones of the existing settlements, which in terms of their spatial and other relevant characteristics may receive new households; organized resettlement requires the provision of building lots for new construction;
- Individual resettlement of households, with provision of land to substitute the expropriated one in zones where the required agricultural land can be provided for this exchange (by purchase from the private sector, conversion of state-owned land into private ownership, recultivation and upgrading of lower fertility categories of socially owned land) and
- Individual resettlement of households opting for payment of the expropriated land and real estate.

The high density of agricultural population and scarcity of cultivable land under circumstances of territorially immobile population, result in continuing expansion to land of inferior fertility, and especially that which is traditionally used for pasture, as well as forest land, etc.

Due to the scarcity of land and its extremely high selling prices, appropriate measures are necessary to stimulate the change of occupation of purely agricultural households towards activities demanding smaller surfaces of land and enabling the use of low-skilled labour, especially of the female population. There is no doubt that the traditional organization of households and their size - particularly prominent among the Albanian population - creates enormous difficulties and interferes with the change of professional orientations of households and their transfer from agricultural to non-agricultural activities. Therefore the change of occupation of households would have to be gradual (tax and other facilities and incentives to invest part of the compensation for expropriated real estate into production and other non-agricultural activities, etc.).

The housing fund in Kosovo lignite deposit (57 settlements) is of a recent nature. Four fifths of housing buildings were constructed in the past 30 years. A half of residential buildings are of good quality and meet the modern standards. The average housing surface per member of household (of about 13 square meters) is fairly favourable in view of the overall housing situation in the Province. Other housing buildings are of post and petrail type (filled with earth or unburnt brick 17.2%, and burnt brick 31.3%), and the overall surface of this category of buildings accounts for about 40% of the total housing surface on the territory observed.

Possible concepts and solutions

On the whole territory of the Spatial Plan there are three basic groups of settlements that should be distinguished by the degree of exposure to threat from expansion of lignite mining and its transformation into electricity.

The first group is composed of settlements on the pits, on their rims and in the zone of intensive influence of thermal power plants. These settlements are directly endangered by mining operations, either because of resettlement due to expansion of excavations, or due to various, as a rule negative, consequences for everyday life and economic activity etc. According to different variants for the expansion of open pits in the MEIS area

until the year 2020, directly endangered settlements are: Sibovac, Ade, Dobri Dub, Vragolja and Kuzmin. To this group we should also add Crkvene Vodice, located in the vicinity of an open pit, as well as Kruševac and Obili, both suffering the consequences of pollution (coal transport, dumps, etc.). Under the present conditions of mining and processing of lignite in Kosovo thermal power plants, the life of the population in this group of settlements is extremely difficult. People are exposed to diverse forms of pollution (transport of coal and other material required for the excavation and processing, emissions of gases and particles, open dumps, chemical and mechanical pollution of agricultural land and the river Sitnica, etc.). On the other hand, due to limitations for the development and construction of settlements (in view of the prospective relocation) the quality of life in them is stagnating or worsening.

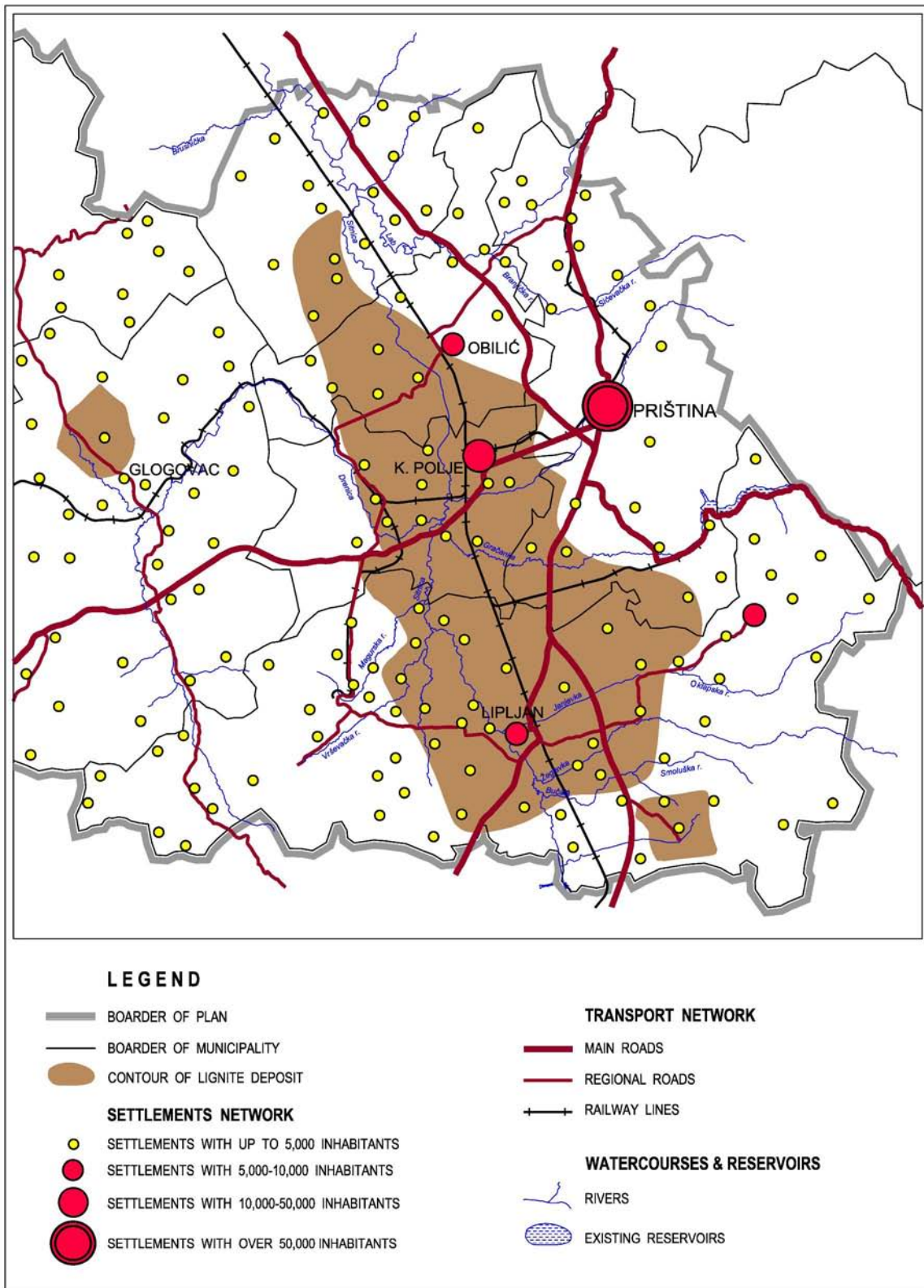
Conceptions and solutions proposed for this group of settlements are based on two views:

The first view expects that the required level of technological discipline in the work of the MEIS (emission standards) will soon be achieved, and will thereby reduce, at least to the tolerable level, the damaging influence on the environment and enable the continuing of settlements in the zones of excavation pits rims and zones of intensive influence of thermal power plants and their auxiliary facilities.

The second view assumes that the existing practice in the operation of MEIS in Kosovo and Metohija and the competent state and parastatal services will continue, as will the regulations that subordinate the local population to the proponents of the so-called general interests.

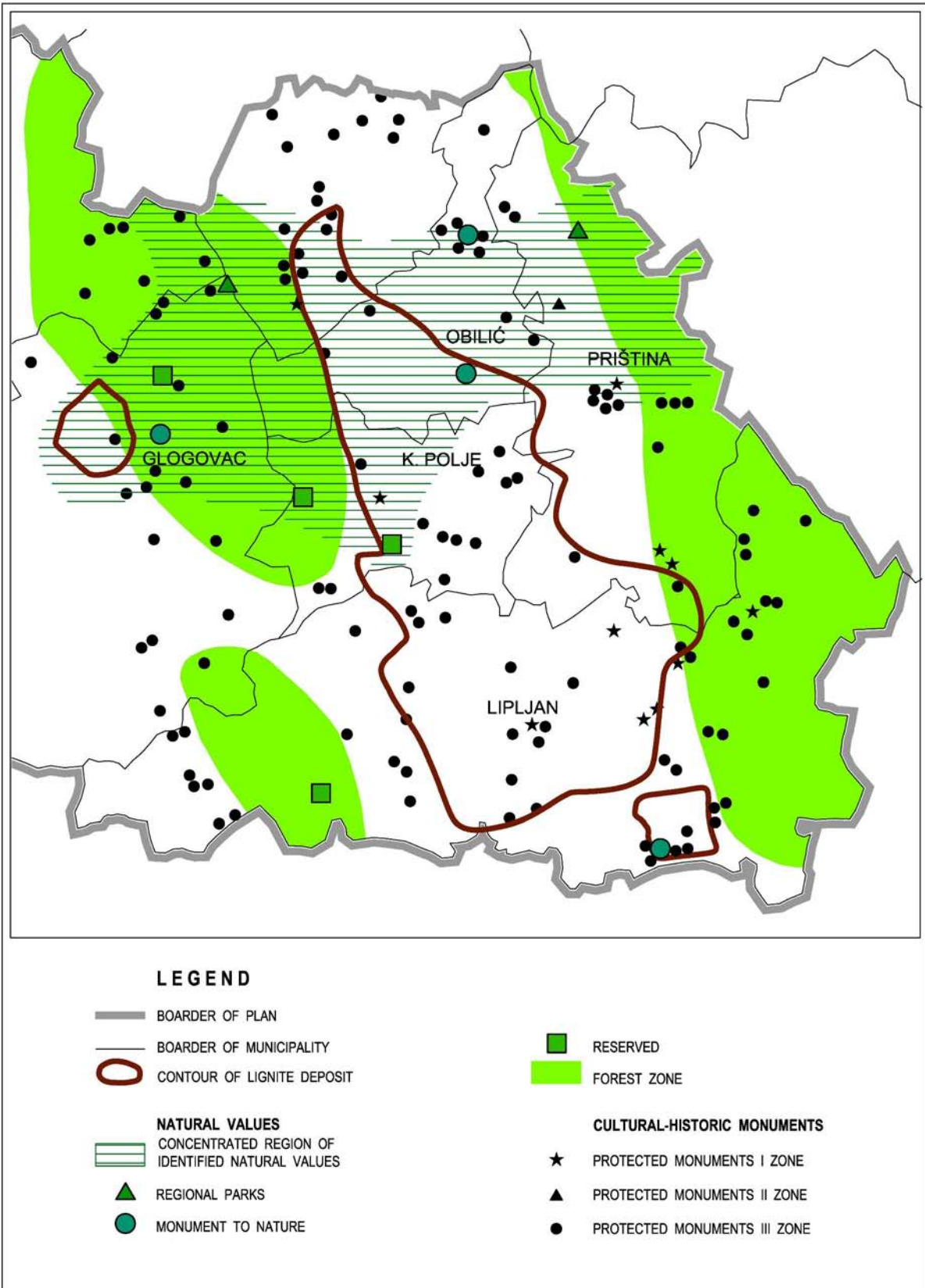
Households resettled from settlements in this group tend to move to more developed parts or municipal centres in the vicinity (Priština, Kosovo Polje, etc), due, in particular, to the following reasons:

- The so-called fair compensation for expropriated land is insufficient to buy appropriate lots of agricultural land at market prices; that is why the households concerned tend towards the purchase of lots in peripheral zones and (unlicensed) construction of houses in urban settlements;

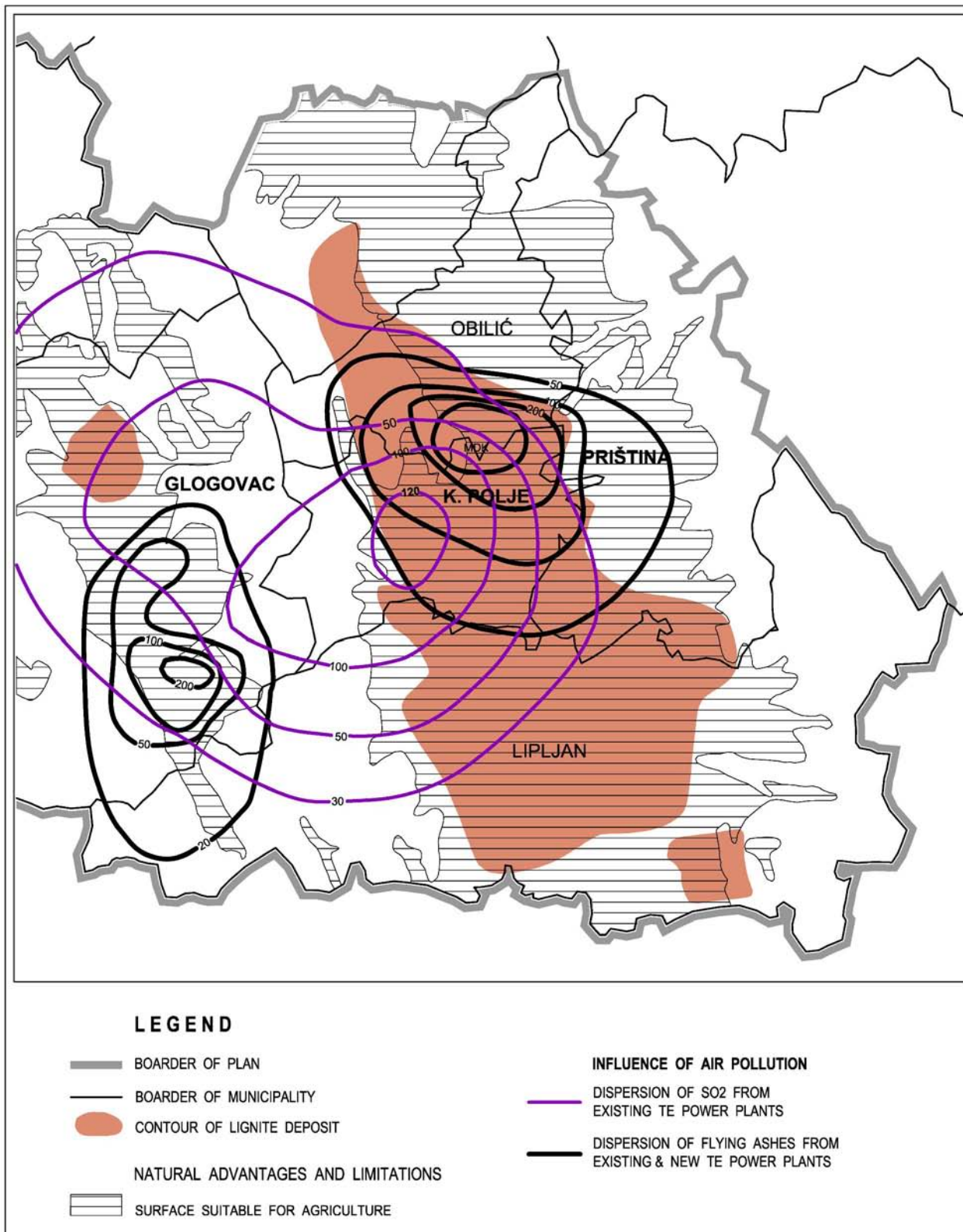


Source: *Prostorni plan područja Kosovsko-metohijskog lignitskog basena, Nacr. IAUS, Beograd, 1999.*

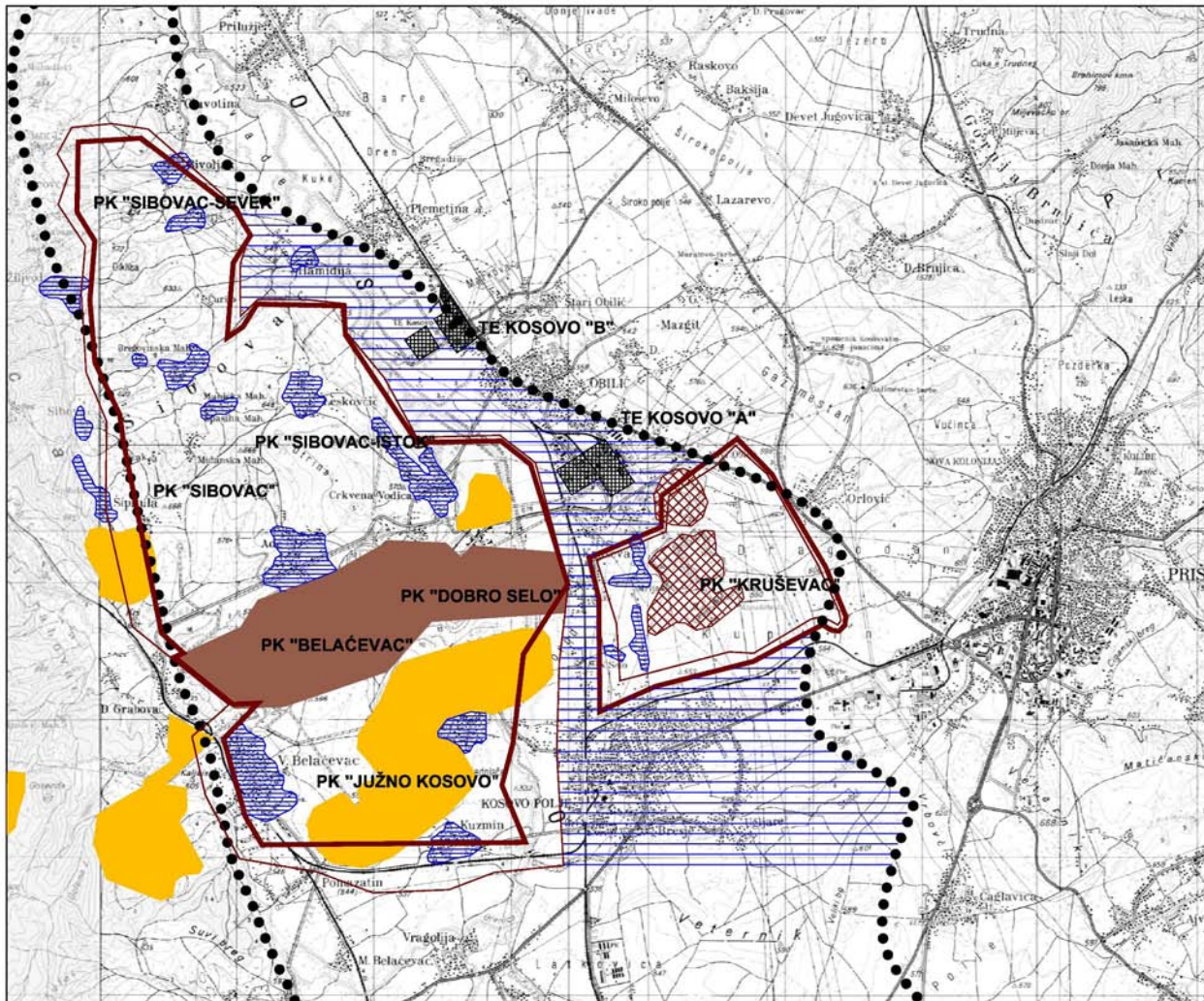
Map 4 – Limitations and conflicts in exploitation of Kosovo lignite basins – construction completeness of space, relocation of settlements and infrastructural systems



Source: Prostorni plan područja Kosovsko-metohijskog lignitskog basena, Nacr. IAUS, Beograd, 1999.
 Map 5 – Limitations and conflicts in exploitation of Kosovo lignite basin – natural values, cultural-historic monuments



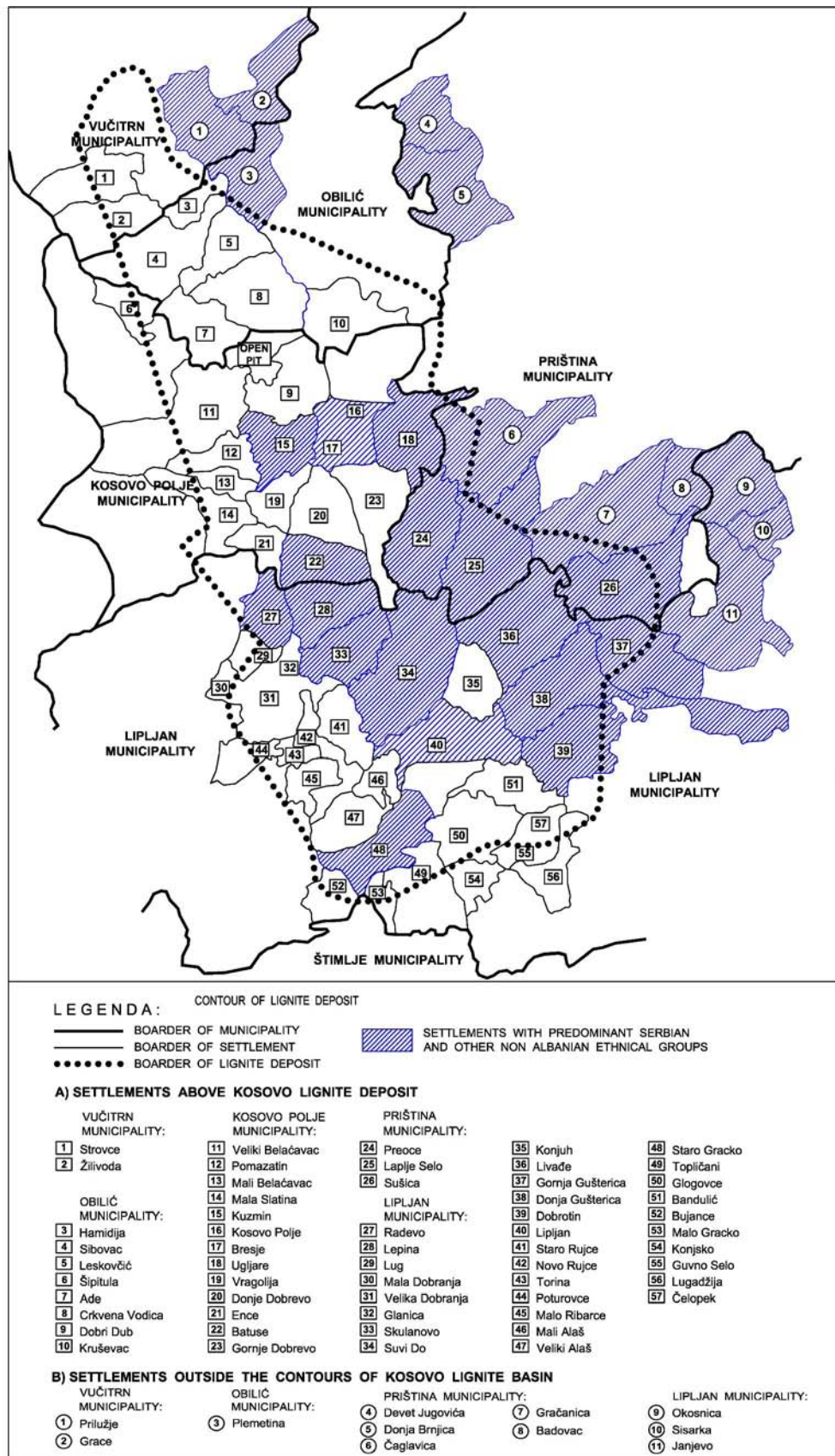
Source: *Prostorni plan područja Kosovsko-metohijskog lignitskog basena, Nacr. IAUS, Beograd, 1999.*
 Map 6 – Limitations and conflicts in exploitation of Kosovo Lignite basin – agriculture, air pollution from TE power plants



LEGEND:

- | | | | |
|-------|--------------------------------------|---|--|
| ●●●●● | BOARDER OF KOSOVO LIGNITE DEPOSIT | ▨ | ENERGETIC-INDUSTRIAL COMPLEX |
| ■ | EXISTING OPEN PIT | ▧ | SETTLEMENTS AT THE "PROTECTED PILLAR"
(EXCLUDED FROM THE EXPLOITATIONAL BOARDERS) |
| ■ | EXISTING WASTE ROCK DUMP | ▩ | SETTLEMENTS ENDANGERED
BY SURFACE EXPLOITATION |
| ▨ | EXISTING ASH DUMP | | |
| ▬ | PERSPECTIVE OPEN PIT
(UNTIL 2050) | | |

Source: *Prostorni plan područja Kosovsko-metohijskog lignitskog basena, Nacr, IAUS, Beograd, 1999.*
 Map 7 – Division of Kosovo Lignite Deposit on Spoil Fields



Source: JP "Elektroprivreda Srbije", Beograd, 2001

Map 8 – Settlements with Serbian and Other Non Albanian Ethnic Groups – Estamation for 2001 base on survey in 1988

- An additional motivation for a household to remain in the vicinity of the MEIS is the policy of offsetting the inadequate compensation by an offer of employment; in order to allay the dissatisfaction with the compensation received for the expropriated land and real estate, which falls short of its market value, the expropriation beneficiaries provide employment for one (or two) members of the household resettled (or subject to expropriation), and thus keep the household on a daily gravitational isochrone between the place of living and place of work; and

- An independent factor for the selection of the place of living and work after the expropriation of real estate and land holding is the aspiration for a socially and economically more developed environment (settlement) offering larger chances for employment, earning (and often illegal transfer to the grey economy, more profitable in densely populated and larger settlements), education, health care, social welfare, etc.

The second group is composed of settlements indirectly threatened by lignite mining and processing works. Indirect threats to settlements include all forms of environmental pollution, difficulties in transportation, pressure on settlement funds on the part of population resettled from the mining area, increased demand for building lots and real estate, prohibition and limitations to licensed construction due to prospective expansion of excavations, etc. Settlements belonging to this group are more numerous and include even municipal centres, and in particular Priština. In order to reduce the danger for the second group of settlements it would be necessary to: (a) ensure the required level of technological discipline in the work of the MEIS and thereby reduce, if not eliminate, the negative consequences for the life and work in the settlements concerned; and (b) encourage the economic and social development of other settlements in the Spatial Plan area and other parts of Kosovo-Metohija, to make them attractive destinations for housing and economic activity of households relocated from excavation sites or their rims.

These potentially immigration settlements form the third group of settlements in the Spatial

Plan area. The term immigration settlements denotes the settlements receiving the displaced population, either through organised relocation of entire settlement or parts thereof (mahala), or through spontaneous and independent settlement of displaced households.

Organised resettlement of households from the pit sites is the more desirable variant:

- A large number of heads of households in settlements directly endangered by lignite mining (Ade, Crkvena Vodica, etc.) believe that the MEIS and competent municipal services are obliged to ensure organised relocation of entire quarters; in addition to being more efficient, this kind of relocation is also supported by strong social, psychological, cultural and economic reasons for ensuring space-wise proximity of the population on the new location; the life in these local communities is relatively poorly individualised and they are still dominated by the collective and communal spirit even in primary groups, as a form of economic and social protection and safety, as well as social control and preservation of traditional values in the primary group and local community; in any case this attitude is legitimate from the point of view of rights and interests of the local community and needs to be observed as much as possible, and particularly in cases when it represents a specific request of the local community; and

- Organized resettlement of households is an acceptable variant for immigration settlements as well, providing that the set rules are observed, and in the first place those related to public utility and infrastructural conditions on new lots and participation in the cost of public utility provisioning and increasing the quality of life in the settlement as a whole; serious conflicts between the domicile population and settlers emerge because the newly arrived population starts to use public utility and other settlement funds (public standard facilities, infrastructure and equipment, etc.), without previously participating in the cost of their construction, without paying an appropriate compensation for their use or a compensation different from that of the domicile population which, as a rule,

contributed to the construction of these funds in villages and smaller municipal centres.

Organised resettlement and appropriation of part of compensation funds for equipment of immigration settlements (public utilities, infrastructure, public standard) i.e. upgrading of public utility and other standards of immigration settlements, would reduce the cause for conflicts and intolerance between the domicile population and settlers, and channel the investment of funds provided as fair compensation, into immigration settlements.

Equipping of immigration settlements and spatial arrangement in settlements close to open pits

As the cases of previous displacement of the population due to open-pit mining of lignite and other activities (formation of reservoirs, etc.) reveal numerous solutions to the detriment of the local inhabitants, the related propositions of the Spatial Plan attach special importance to these considerations.

Field research and surveys show that the majority of households opted for the so-called collective, organized form of resettlement, implying that the beneficiary of expropriation, i.e. the competent state service, should provide the conditions for all households (or those who so wish) from one quarter, or part of the settlement, to move together to another location. This kind of resettlement obliges the beneficiary of expropriation to ensure timely provision of the land (building sites) to be allotted to households, construction of settlement infrastructure, suprastructure, etc.

The main danger related to immigration settlements is reflected in the lower quality of life, due to the large pressure of resettled households. The estimate of fair compensation for expropriated real-estate owned by households and evaluation of the value of settlement funds in settlements relocated due to expansion of lignite mining, need to show the value of citizens' real-estate, resulting from the public utility standard and quality of life in the settlement separately from the value of settlement funds. The part of compensation for settlement funds, public utility and other infrastructure should be channelled into public

utility equipment and increase in the living standards of immigration settlements.

Notwithstanding the fact that resettlement to immigration settlements will follow the market criteria (purchase of building lots etc.) it would be necessary to timely obtain the agreement of the immigration settlement's local community, which would only be possible with a consistent and financially arranged plan for that settlement's expansion, construction and completion of settlement infrastructure and suprastructure and appropriate financing secured for this purpose.

Channelling of financing into settlement funds of potentially immigration settlements (public utility and other infrastructure, public standard, etc.) should be organised, or at least coordinated, at the level of the Republic or the Province. That could be done through a special fund for the disbursement of compensation for settlement funds (relocated settlements) and part of funds for public utility equipment of settlements and individual lots, to immigration or new settlements according to the established (and verified) programs for the arrangement and construction of settlements (provision of zones for housing construction, etc.).

It would also be desirable to elaborate a methodological instruction for the development of regulation and other urban plans, in view of the specifics bound to emerge in immigration or newly-formed settlements (formation of new lots, improvement of public utility equipment of settlements, etc.). This instruction should comprise the basic elements for the arrangement of lots, minimum equipment standards and organization of households' lots, etc, in order to avoid the high costs which inevitably result from unprofessional construction, and inferior results obtained in that kind of urbanisation and equipping of settlements.

Status of the local population in settlements endangered by open pits

The status of the local population must be more precisely defined from the point of view of their resettlement, or survival in the zones of MEIS influence. In that relation, the following requirements are considered essential:

Formulation of long and medium term (at least ten-year) settlement relocation programs, precisely defining the boundaries of open pits, limits and areas of protective zones, dynamics of resettlement and boundaries of thermal power plants influence (all forms of pollution, material transport, etc.);

Clear and precise definition of the conditions of expropriation for households, as well as the rights and obligations of the local population, conditions of resettlement (with a choice of different options with respect to directions of resettlement) and construction, provision of agricultural land, building lots, etc.; in other words, clear and easily understandable review of resettlement conditions and the population's rights under the law; and

Definition of the protective belt between the pits and thermal power plants, on the one hand, and settlement area, on the other, so as to prevent the former from endangering the life and work of the population in settlements on the rims of excavations, or in the vicinity of thermal electric power plants; field research at the time of Spatial Plan elaboration revealed numerous difficulties for the local population and inadequate protection from lignite mining activities: open pits encroach on the settlement area, cross the holdings and plots of households, reduce the size of holdings through the so-called partial expropriation³, and in different ways endanger the life of the local population (drained wells, cattle falling into the pits, dangers for the movement and playing of children, landslides, etc.); protective

³ Partial expropriation is permitted by the Law on Expropriation and implies the expropriation of a part of a household's real estate, usually agricultural land, while the house with gardens remains the property of the household. Partial expropriation is favourable for its beneficiaries (state owned firms), because the expropriation price of agricultural land was even five to ten times lower than the market price (prices of agricultural land on the territory of Kosovo and Metohija were substantially higher than in other parts of the Republic) and the compensation for the house and gardens was calculated on the basis of real market prices. The local authorities were obliged to advise the uninformed and uneducated owners of real estate of their rights, including the right to refuse partial expropriation, which the authorities often failed to do regardless of their or the expropriated citizens' ethnic affiliation.

belt must be wide enough to secure the settlement from the negative influences and ecological damage and ensure unobstructed everyday life and safe communication of the settlement with its surroundings; the settlements which due to the expansion of mining excavations find themselves within the boundaries of the protected zone, must have the same status – the right to relocation – as those directly endangered by open pits and thus anticipated for relocation (22).

APPROACH TO IMPLEMENTATION OF THE PLAN'S CONCEPTS

Priorities for the development of MEIS until 2020 have to do with the construction of new thermal power plants of 12000 MW and, in that relation the opening of new open pits („North“ and „South“ Kosovo), as well as reconstruction, i.e. expansion of thermal power plants „Kosovo A“ and „Kosovo B“, reconstruction and possible expansion of the coal drying plant, construction of auxiliary facilities and plants, etc. These capital investment efforts will be preceded by extensive research, elaboration of development and technical documentation, adoption of a Spatial Plan, etc. In that same period numerous accompanying activities will also take place, being highly important from the point of view or spatial organization and arrangement, e.g. relocation of several settlements, and the river Sitnica and its tributaries, construction of reservoirs, relocation of a part of major infrastructure and other facilities, formation of internal spoil dumps, start up of organised recultivation of the damaged land, etc. In this period the MEIS area will also be the scene for the solution of numerous general development problems, including most importantly: uneven regional development, unemployment, communal equipping of settlements, construction of social standard facilities, especially in villages, etc.

Implementation of the lignite deposit exploitation plan as well as the above mentioned development priorities must be supported by appropriate policies to be pursued by the competent state bodies and organizations. Guidelines for the definition of development policies include: regional development, investments, taxes, credits and other forms of stimulations; energy,

agriculture, water management, industry, services, etc., development of settlements, protection and promotion of the environment; social and individual standard, etc. (19,20).

The inadequacy and disparateness of the existing legal regulations governing the development of MEIS, along with numerous problems and conflicts requiring specific legal solutions, indicate the need to address the aspects of the current and future development of the MAIS and its immediate surrounding in a single legislation. This does not exclude the need to work out the implementing by-laws and harmonize the existing regulations of direct or indirect bearing on the development and arrangement of the MEIS area.

The Spatial Plan will be implemented through national, regional or sectoral development plans, programs and projects, spatial plans of smaller territorial unites, urban plans of settlements and technical documentation for the MAIS plants, major infrastructure, management of watercourses, redistribution and arrangement of agricultural land, recultivation and revitalization of damaged land, etc.

All aspects of development of the MEIS and its surroundings, must be the subject of continuing research. In that relation it would be necessary to elaborate and occasionally update long and medium term, as well as annual, research programs and establish special funds for this purpose.

Continuing research work, development planning, monitoring and control require the development of a specific segment of the information system and monitoring of the MAIS area. Development and use of the information system, organization and monitoring of research, development planning, arrangement and revitalization of space and solution of development conflicts in this area demand appropriate institutional solutions. These in the first place include the establishment of a special agency, committee or permanent commission to coordinate the work related to MEIS development. Experience of developed countries points to the establishment of a special fund (or funds) replenished from the prices of produced energy and used to deal with the above mentioned development

conflicts (resettlement, recultivation, environmental protection, etc.).

CONCLUSION

Relative scarcity of electric energy sources in Serbia and its surroundings, compared with other countries, and the fact that over 40 % of the total available energy potentials of the country is located in two large lignite basins (Kosovo-Metohija and Kolubara) speak of the exceptional interest of these basins for energy development and thereby also for the overall development of the country.

These circumstances suggest that rational utilization of this kind of energy sources is necessary. Capital investments are involved in the construction of mining and energy facilities, and the effects thereof are not fully manifested until these facilities have become operation. The negative effects of investments into exploitation and use of lignite are revealed in a relatively narrow space, while the positive, external effects are spread wider through energy consumption. Investments by themselves do not produce "negative" external effects, which in fact appear indirectly, as consequences of inappropriate technologies, violation of regulations and non-existence of a long term energy development strategy. A number of negative external effects are manifested in a relatively short time (occupation of space, destruction of agricultural land) while the other (larger) part are only revealed in a longer term (degradation of natural resources, environmental pollution, endangered functioning of everyday life of surrounding settlements, social-economic transformations and relocation of household and settlements, ecological consequences of harmful emissions etc.). Negative external effects are phenomena that have not been sufficiently examined even in other countries, which is why it is difficult to be precise about the time of their manifestation. However, it is certain that their manifestations are of a predominantly long term nature.

The area of influence of coal exploitation and use in large lignite basins is relatively limited and local (capital investments, occupation of land) in some aspects, somewhat wider in others (degradation of the environment, relocation of settlements, negative external

effects), and in others still goes beyond regional boundaries (energy use). This suggests that the problems of long term development, manifested in large lignite basins (large structural changes, monofunctional economic development, degradation of natural resources and the environment as a whole, resettlement etc.) cannot be perceived and solved in local frameworks, but only in the context of overall development of wider territorial units, thus within regional development. Therefore, long term development of large MAIS, and long term policy for spatial arrangement and rehabilitation in zones of their influence, in terms of their contents, importance, nature, forms and area of manifestation belong to the sphere of regional planning.

The long term nature of large MEIS, as well as structural changes, conflicts and negative effects in the zones of their influence, impose the need for long term planning, on the one hand, while on the other, the specific development characteristics and consequences of mining activities and energy production on a wider territorial scale call for regional planning. Long term planning in large lignite basins is also important in view of the large number of actors and the need to harmonize their interests and activities. Furthermore, the regional approach also provides the most appropriate platform to mitigate structural disproportion in development, neutralize development conflicts and perceive (positive and negative) external effects. That is why long-term regional planning is indispensable for planned orientation of future development of large MEIS and for rational arrangement, rehabilitation and use of space in the zones of their influence.

The work done in the research and planning for the Spatial Plan of Kosovo-Metohija basin in the 1987-1990 and 1998-1999 periods provides important experience in methodological, organisational and technical – technological terms. A potentially large MEIS is faced with numerous limitations, related primarily to the relocation of settlements and infrastructure, resettlement of the population in a situation marked by a high degree of completed construction and population density in the space above lignite deposits, large share of agricultural population, its multiethnic

composition and pronounced ethnic tensions. The Spatial Plan has offered the basic premises to resolve the ongoing and future development conflicts, spatial, social and ecological limitations, including the relevant analytical basis and data base resulting from field research and surveys.

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