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The regeneration of mining and industrial areas

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EXPLANATORY MEMORANDUM

1 - INTRODUCTION

During the year 2004, the Rapporteur, Mrs Svetlana Orlova made a proposal to include the question of "Regeneration of mining and industrial regions" in the work programme of the Committee on Sustainable Development.

The idea was to deal, above all, with regions with a developed coal industry where concentrations of heavy industry enterprises grew up around the extraction and conversion of coal: electric power, ferrous and non-ferrous metals, chemicals, defence industry and heavy engineering.

One of the most characteristic regions of this kind in Russia is Kemerovo *oblast* (or province), where the huge Kuznetsk coal basin, the Kuzbass, is to be found. The Rapporteur represents this region in the Federation Council, which is the upper chamber of Russia's parliament, or Federal Assembly.

Russia has a number of other large mining and industrial regions, which have grown up around the extraction of coal, oil, gas and ferrous and non-ferrous metal ore. These are the Russian parts of the Donbass (the Donets coal basin in the Rostov *oblast*), industrial regions in the Urals, the Vorkutinsk coal basin in the far north of the European part of Russia, the huge oil and gas fields in western Siberia, and a number of regions in eastern Siberia and Russia's far east.

In those regions there are serious problems linked to the need to improve the surrounding environment, recultivate the land, restructure industry, diversify and develop social partnership.

But these are really acute problems for a number of regions in central and east European states, these being the Donets coal basin (the Donbass) in Ukraine, Upper Silesia in Poland, and regions with coal and ore mining industries in Romania, the Czech Republic, Slovakia and other countries. A specific part of this report is in fact based on the experience of the Voivoda of Silesia in Poland, described by the rapporteur, Mrs Jolanta Marcinkowska.

Efforts to resolve the serious problems in those regions could benefit from the experience gained in restructuring industry, recultivating land and running ecological programmes in the "old industrial" coal and steel producing regions of Germany (the Ruhr and the Saar), Great Britain (Lancashire, Yorkshire, Northumberland, Durham, South Wales), France (Lorraine), Belgium (Charleroi and Liège) and Luxembourg. There has already been a restructuring of industry in those places with what we regard as tangible positive results in terms of sustainable development. To achieve results like that we still have a tough road ahead.

All the aspects of the practical work carried out in the mining and "old industrial" regions of western Europe to regenerate their economy and environment and promote sustainable development are of great interest to the industrial regions of Russia and the states of central and eastern Europe.

Obviously, the restructuring of the western regions' economies has entailed negative aspects too, linked to the closing of enterprises, local employment and ecological problems.

The aim is to find the most effective means of resolving those problems in regions of eastern Europe and Russia, avoiding as far as possible any repetition of errors and identifying the most effective ways of restructuring using the experience at our disposal.

It would also be useful to exploit experience gained in carrying out ecological/economic programmes to achieve sustainable development in the lignite and coal producing regions of east Germany, where use has been made of German federal and European programmes as well as the experience of regions in west Germany.

There is no doubt that it is important to pay attention to the very worthwhile experience in sustainable development gained by regions of Norway and the United Kingdom in opening up the oil and gas deposits on the North Sea shelf.

In Russian regions too, there have been successful ecological/economic projects aimed at sustainable development. One such example is Kemerovo *oblast*, and it is important to share this experience with other countries.

Examination of these questions is also important in the light of the Resolution on the sustainable spatial development of the European continent passed by the Congress on 27 March 2004.

Working on this report on the "regeneration of mining and industrial regions" implied the preparation of a preliminary draft resolution and a preliminary draft recommendation that the Committee on sustainable development of the Congress adopted unanimously during its meeting of 16 March 2005.

The report has been structured along the following lines:

- analysis of the ecological/economic situation that has developed and existing problems of sustainable development of mining and industrial regions of Council of Europe member states;
- focus on experience in regenerating mining and industrial regions and implementing ecological programmes and programmes aimed at restructuring industry, diversification, developing transport systems and harmonising the social and economic needs of a region with its ecological and cultural needs;
- assessment of the sustainable development prospects for the regions considered;
- conclusions of the analysis and prospect assessment that lay the foundations for the draft recommendation and the draft resolution of the Congress.

The draft texts proposed and presented for adoption contain detailed proposals for resolving the problems faced by mining and industrial regions in their efforts to achieve sustainable development in the long term, including:

- recommendations to be directly implemented by the mining and industrial regions themselves;
- recommendations on developing inter-regional cooperation;
- recommendations to the governments of Council of Europe member states;
- recommendations to the Council of Europe Committee of Ministers.

2 - THE RUSSIAN FEDERATION'S MINING REGION - KEMEROVO *OBLAST*

Kemerovo *oblast* (province) was established in 1943 by decree of the Presidium of the Supreme Soviet of the USSR, but the opening up of the Kuznetsk territory's natural assets began much earlier, at the beginning of the 17th century, when the towns of Tomsk (1604) and Kuznetsk (1618) were founded.

Kemerovo *oblast* covers an area of 95,700 km², which is 4% of the territory of western Siberia and 0.56% of the territory of Russia. In terms of surface area, Kemerovo *oblast* is the smallest in Western Siberia; even so it is larger than a number of west and central European countries, such as Hungary, Portugal, Austria, Ireland, Norway, Switzerland or Belgium.

Kemerovo *oblast* is located in the south-eastern part of Western Siberia and is almost equidistant from the Russian Federation's western and eastern borders. The Kuzbass lies halfway between Moscow and Vladivostok, in the Greenwich plus 6 time-band. The *oblast* encompasses the areas of the Kuznetsk basin and the mountain massifs of the Kuznetskiy Altay (altitude 2178 m), Gornaya Shoriya and Salairskiy ridge. To the north and north-west it takes in the southern part of the West Siberian plains. While smaller in area than nearly all the territories and provinces of Siberia and the Urals, the *oblast* is one of the most densely populated and heavily built-up regions in the Russian Federation and has the highest population density of the Urals (31 inhabitants per square kilometre).

The population of Kemerovo *oblast* is 2,918,900 (2003 figure), with the urban population accounting for 86.9% of that number. The population is made up of 47.1% men and 52.9% women. More than 100 nationalities live in the *oblast:* Russians (90.5%), Ukrainians (2.1%), Tatars (2.0%), indigenous Shorets and Teleut ethnic peoples (0.5%), others (4.9%). Natural population shrinkage is 7.4 per 1,000 individuals.

People of working age account for 61.1% of the population, and pensioners 27.8%. The number of workers has increased by a factor of 2.1 since the *oblast* was established, with 397,000 people working in industry, 81,000 in construction, 56,000 in agriculture and 85,000 in transport.

Kemerovo *oblast* contains 20 towns and 46 urban districts. The administrative centre is Kemerovo (526,000 inhabitants). The largest town is Novokuznetsk (pop. 564,000). There are 7 towns with over 100,000 inhabitants in the *oblast* (Novokuznetsk, Kemerovo, Prokopevsk, Belovo, Kiselevsk, Leninsk-Kuznetsk, Mezhdurechensk), placing it second within the Russian Federation in this respect after the Moscow *oblast*.

The annual average temperature varies between -1.4° and +1.0°C. The average monthly temperature in Kemerovo stands at -19.2°C in January and +18.6°C in July. The highest summer air temperature reached in Kemerovo *oblast* is 38°C, and the lowest winter temperature is down to -54°C in the south and -57°C in the north. Rainfall is 300-500 mm a year. The rivers belong to the Ob basin, and the largest river is the Tom.

The *oblast*'s mineral deposits include reserves of coal (Kuznetskiy coal field), iron ore, manganese and complex metal ores.

The following industrial sectors are developed in Kemerovo *oblast*: iron and steel (Kuznetskiy and Western Siberian complexes) and non-ferrous metals, chemicals (mineral fertiliser, man-made fibres, synthetic resins and plastics), heavy engineering machinery (equipment for mining and chemical industry etc) and metalworking, building materials, light industry, foods and wood processing. The *oblast* is also the site of the Tom-Usinkaya, Keremovskaya, Belovskaya and Yuzhno-Kuzbasskaya state district power stations. There is shipping along the river Tom.

Large manganese reserves have been prospected in the *oblast*, constituting 98.5 million tonnes (67% of Russia's reserves) but are not extracted. Russia's needs are satisfied by importing manganese ore, chiefly from Ukraine.

The iron ore reserves amount to 999.2 million tonnes (2% of Russia's reserves), phosphate ore 43.7 million tonnes (0.6%), nepheline ore 152.4 million tonnes (3%) and bituminous slate 43 million tonnes (2%).

Coal is the *oblast*'s main mineral deposit. The Kuznetskiy coal field and Western Kansk-Achinsk lignite field are in the Kuzbass area.

The Kuzbass is one of Russia's biggest coal basins in terms of deposits and extraction volumes, and a main supplier, and in some cases sole supplier, region in the country for certain materials used by Russian industry.

The standard quality coal reserves in the Kuzbass are over seven times greater than the entire world reserves of oil and natural gas (in terms of comparison fuel) and amount to 693 billion tonnes, of which 207 billion tonnes are coking coal. By way of comparison, coking coal reserves in the Donbass amount to 25 billion tonnes, in the Pechorsk coalfield 9 billion tonnes and in the Karagandinskiy region 13 billion tonnes.

At present the coking coal reserves of the Kuzbass constitute 94% of the total volume of coking coal reserves in Russia's prospected coalfields, and over 70% of Russia's coking coal comes from the Kuzbass. Its reserves could supply the whole of Russia with raw material for coke production for over 1,200 years.

Non-coking fuel coal forms 31.3% of the total coal reserves in the Kuzbass. The remaining coals are unique in the sense that they are able to clinker and may therefore be used, depending on their enrichment, for both chemical recovery and fuel. Virtually all the grades and groups of coal are represented, from lignite to anthracite. But most importantly, their natural advantage over coals from other coalfields around the world lies in their combination of qualitative indicators, such as high combustion heat (6,250 kcal/kg), low sulphur content (0.4-0.6%), insignificant moisture content (7.8%-10%) and medium ash content (15.3-23.2%). These indicators are substantially superior to the averages for Russia and the world as a whole.

Particularly noteworthy are the unique Kuzbass coals known as sapro-mixites from the Barzasskiy seam, which contain high amounts of low-phenol resin (up to 38%) and provide a valuable chemical substance for the production of benzene products and asphalt.

There are over 20 peat deposits, indicating the presence of oil and natural gas.

There are currently over 90 seams and 20 ore occurrences of various metals open within the Kuzbass, these being gold, silver, iron, aluminium, manganese, zinc, lead, copper, titanium, chrome, tungsten, molybdenum, mercury, antimony, uranium and thorium. They are concentrated chiefly in the Gornaya Shoriya and Kuznetskiy Altay.

The iron ore potential for the Gornaya Shoriya is estimated at 2,169 million tonnes. The balance reserves amount to 808.2 million tonnes. There are enough iron ore reserves in the Gornaya Shoriya alone to last 50 years.

Concessions have been granted at various times for the large seams in this group (Tashtagolskoye, Sheregeshkoye, Shalymskoye, Kazskoye), which form a fundamental base of raw materials for the large metal enterprises in the *oblast*.

The total iron ore potential for Kemerovo *oblast* is put at 5.25 billion tonnes, with about 1 billion tonnes of that amount of industrial grade. The *oblast*'s iron ores are constituted mainly by magnesite and are high-grade ores with a high pure iron content of between 34% and 48%.

Ore taking the form of utrites contains a high amount of alum (28%) and alkali (12%) and requires no processing. Seventeen aluminium-rich bauxite ore seams have been prospected in the *oblast*, but are unexploited for the time being.

At present the mineral resource base for gold extraction is provided by 9 ore occurrences and 77 placer deposits. The balance reserves of gold amount to hundreds of millions of cubic metres with an ore metal content of between 153 mg to 0.7 g per cubic metre.

Lead and zinc ore has been extracted from the north-eastern face of the Salairskiy ridge since the end of the 18th century. At present, 5 occurrences of barite, lead and zinc ore, 3 of copper and zinc ore and one of copper and sulphide ore are prospected there. All the complex metal ores in these occurrences are high-grade. An occurrence of barrel copper is open and prospected in the Gornaya Shoriya.

Geological deposits of all complex metal ores combined are evaluated at hundreds of millions of tonnes.

There is an extremely rich occurrence of manganese in the *oblast*.
A raw materials base of non-metalliferous minerals for the metallurgical industry has been created in Kemerovo oblast: fluxing limestone, quartzites, dolomites, fire-stone and moulding sand.

Particularly important among the natural raw material supplied to the building industry is marble which, in the opinion of the specialists, is the best of Russia's marbles in terms of colour and veining.

Another valuable raw material for industry is fluoride, used as flux for aluminium smelting.

The basalts of Gornaya Shoriya and the Saltymakovskiy range of the Kuznetskiy Altay are a most valuable material for producing super-fine artificial fibres. There is high-quality talc from the south of the Kuznetskiy Altay and the tremolites of the Mezhdurechensk district, used by the electrical engineering industry, as well as graphite, asbestos, expanded clay aggregate, zeolite and other industrial materials.

Valuable chemicals are to be found in deposits of mineral colours, barites and complex ore borates. In addition to the minerals listed, our region is rich in semi-precious stones: amethyst, jasper, agate, carneol and others, providing valuable ornamental and jewellery materials.

In terms of economic potential, Kemerovo *oblast* forms a large territorial production unit within the Russian Federation.

Small in size but compact, with a well developed road network and a strong multi-sector economy, Kemerovo *oblast* plays a leading role in the economy of Siberia.

Today the Kuzbass accounts for 44% of coal mining in Russia, over 70% of all coking coal mining and the full 100% of the particularly valuable grades of coking coal. In addition, the Kuzbass gives Russia: over 13% of its iron and steel, 23% of its graded rolled steel, over 11% of its aluminium and 17% of its coke, 53% of its ferrosilicon and all its shaft conveyors.

Kemerovo *oblast* exports 1,200 types of industrial product to 80 countries around the world: coal, coke, rolled iron, cast iron, aluminium, zinc, ferro-alloys, slate, cement, glass, nitrous fertilisers, plastics, man-made fibres, synthetic resins, electrical engineering products and heavy engineering machinery.

Its northern part is crossed by the Trans-Siberian railway and its southern part by the South-Siberian. The Kuzbass has direct rail links to every region in the country. The Kemerovo and Novokuznetsk aviation companies fly directly to dozens of Russian towns and neighbouring countries in eastern Europe.

In 2003 144.3 million tonnes of coal were mined in the *oblast*. The region's coal industry employs over 200,000 people. There are over 52 mineshafts and 37 open pits mining coal and another 17 enterprises engaged in coal conversion.

The leading mining method is still underground mechanical extraction. The biggest enterprises involved in underground extraction are the "Raspadskaya" shaft, the "Kuzbassugol" coal company, "Yuzhkuzbassugol", "Prokopevskugol", "Kiselevskugol", "Oblkemerovougol", the "Sokolovskaya" investment company, the "Kirov" shaft and the "Kapitalnaya" shaft.

The biggest open pits in the area are "Chernigovets", "Krasnogorskiy", the "50 years of October" pit, "Sibirginskiy", "Mezhdureche" and "Kedrovskiy". Hydraulic mining has been used to extract coal since 1952. The "Tyrganskaya", "Yubileynaya" and "Yesaulskaya" shafts are the leading companies involved in hydraulic extraction.

Underground coal gasification is carried out in the Kuzbass by the "Podzemgas" station in south Abinsk. Up to 2 million tonnes are processed in this way, delivering nearly 4 billion cubic metres of gas. The cost of a tonne of fuel equivalent is lower than that of open-cast coal mining.

Growth in the area's coal mining will depend on securing the most favourable mining and geological and also economic and geographical balance for two very substantial deposits, the Uropsko-Karakanskiy and Yerunakovskiy coal-fields.

The most important branches of heavy industry include the ferrous and non-ferrous metal industry, which is the second most important sector in the Kuzbass and has a very marked specialisation in supplying all Russia's needs.

Metal industry enterprises account for up to one third of the *oblast*'s total industrial production.

The biggest metalworks are the West Siberian and Kuznetsk plants, and the "Kuznetskiy ferrosplavy", "Novokuznetskiy alyuminiyevyy zavod" and "Koks" joint stock companies.

The mining and metallurgical industry is represented by the Abagursk and Mundybashsk sintering plants and the Tashtagolskiy, Kazskiy, Sheregeshskiy and Temirtausskiy iron ore mines.

The West Siberian Metallurgy Combine joint stock company is the sector's largest enterprise in the Siberian region of the country and has the task of supplying foreign and domestic markets with rolled metal profiles for the building and heavy machinery industries.

The plant's products are delivered to 7,000 companies in CIS member states and exported to thirty or so countries around the world.

The quality of its products has been recognised through numerous national and international awards.

The plant is the leading producer of basic types of rolled metal for construction. Its share of the reinforcement market amounts to 44.3% of Russia's total production and it has a 44.6% share of the standard quality wire market.

The Kuznetsk metalworks has been in operation since 1932. It produces 15 different gauges of rail track and anchorage fittings for them. It is also Russia's only manufacturer of tram rails and underground train rails.

The non-ferrous metal industry of the Kuzbass is represented by the Novokuznetsk aluminium factory, the Belovsk zinc smelting factory, the Salairskiy mineral conversion plant, the Kiya-Shaltyrsk nepheline mine as well as the numerous gold mines in the Mariinskaya Taiga, Gornaya Shoriya and Salairskiy ridge areas.

The centre of the chemicals industry in the Kuzbass is the city of Kemerovo. The chemicals sector accounts for 6% of the *oblast*'s total production.

Over 100 named chemicals are produced in the Kuzbass. The "Azot" joint stock company (established in 1956) is the biggest manufacturer of nitrous fertilisers, ammonia, caprolactam, diaphene FP, sulphenamide C and other chemicals.

The "Khimprom" joint stock company (1939) was the region's first-born chemicals enterprise and manufactures chlorine products, soft cable compound and chemicals for the motor industry.

The "Khimvolokno-Amtel-Kuzbass" joint stock company (1972) produces high-strength cord fabrics, synthetic fibres and threads for tyre manufacturing and light industry. The "Tokem" joint stock company (1942) manufactures textiles, phenol resins, phenol laminates and cation-exchange resins. The "Znamya" joint stock company (1943) manufactures industrial explosives. The "Organika" association (1962) is the biggest producer of pharmaceutical preparations and pharmaceuticals in ready form:, analgesics, anaesthetics, cardiovascular preparations, tranquilisers and vitamins. The "Asfarma" joint stock company (1942) manufactures pharmaceuticals in ready form and galenic preparations.

The Kuzbass mechanical engineering sector includes 97 engineering plants manufacturing mining machinery, ore processing machinery, electrical appliances, chemical plants, machine tools, instruments and bearings, instrumentation, machinery for light industry and the food industry, sanitary and bathroom equipment, gas recovery equipment and road-building equipment. The main areas of mechanical engineering are the manufacture of mining machinery (20%) and electrical appliances (24%).

The main types of item produced are explosion-proof electric motors, low voltage apparatus, direct current machinery, chemical plants, scraper conveyers, powered supports, wagons and winches for mines, weight gauges, boring apparatus and lifting gear.

The biggest companies in this sector include the Anzherskiy mechanical engineering corporation, the Yurginskiy mechanical engineering and grinding works, "SibElcom", "Sibtenzopribor", the Siberian Bearings Company, "Elektromashina-M", the Kuznetsk machinery works, the "KemerovoKhimmash" limited liability company and the "Kuzbasselektromotor" financial industrial group.

In the building materials industry, the biggest enterprises are the Topkinskiy Cement limited liability company, the Kuznetskiy Cement factory, large house-building combines and modern brick factories, as well as companies producing glass and rolled roofing material or extracting non-metal materials for building concerns both within and outside the *oblast*.

The light industry companies of the Kuzbass specialise in the production of artificial silk and woollen fabrics, leather footwear, knitted and sewn items, porcelain ware and other goods. There are 40 major light industry companies operating in the Kuzbass.

The textile industry is of key importance, the two major textile enterprises being the "Orton" joint stock company and the Leninsk-Kuznetsk worsted fabric and cloth factory.

The *oblast*'s 32 sewing factories produce a wide variety of items. The major companies in this area are the "Tom" joint stock company (Kemerovo), the "Berezka" joint stock company (Novokuznetsk), the "Gornyachka" joint stock company (Prokopevsk), the "Odezhda" joint stock company (Leninsk-Kuznetsk) and the "Istok" limited liability company (Belovo).

The Prokopevsk porcelain factory also operates in the *oblast*.

Of the four shoe factories the two main manufacturers are the "Kuzbassobuv" limited liability company in Kiselevsk and the "Temp" factory in Kemerovo.

The food industry in the Kuzbass includes confectionery combines and factories in Kemerovo, Novokuznetsk and Kiselevsk. The meat industry is represented by meat combines, the largest being in Kemerovo, Novokuznetsk, Prokopevsk and Mariinsk. Poultry meat is processed by the Plotnikovskaya and Kamyshinskaya poultry factories, and there are two fish processing plants in Kemerovo and Prokopevsk. The dairy industry includes 20 milk plants (Kemerovo, Novokuznetsk, Anzhero-Sudzhensk), butter-making factories and a milk cannery. There are a number of flour mills and feed milling plants in Novokuznetsk, Kemerovo, Anzhero-Sudzhensk, Myski and elsewhere. Production of protein and vitamin additives has begun in factories in Anzhero-Sudzhensk and Topki and of premixes in the Chistogorsk experimental plant.

2.1 – Regeneration of the Kemerevo Oblast

Here, specific aspects of the regeneration of mining and industrial regions are considered using the example of the Kemerovo *oblast* (province) - the Kuzbass.

For the Kemerovo *oblast* the first half of the 1990s was marked by deep economic crisis and the total collapse of industrial production. By 1997 we had seen the closure of 42 mining companies in the Kuzbass that previously produced 21 million tonnes of coal per annum. In total, 188 mineshafts and open pits were closed in Russia during those years.

There had never been such a rate of mining company closures anywhere in the world.

Consequently, by 1996 the volume of production in the Kuzbass had dropped to 92 million tonnes (compared to 159 million in 1988). Auxiliary businesses included, some 150,000 people lost their jobs. The result was mass strikes, hunger-strikes, the blocking of the Trans-Siberian railway, rallies, wages and pensions not being paid for years, terrible crime rates and the uncontrolled illegal sale of coal.
By 1997 the Kuzbass was one of the country's most depressed areas and resembled a lit fuse about to go off.

Extraordinary measures were necessary in the situation that had come about.
In 1997, when Aman Tuleyev became *oblast* governor, there was a move towards reviving the coal sector by rebuilding active shafts and pits and building new ones.
The leading idea was to devise a unified industrial strategy for developing the region and give impetus to the development of the base sectors of coal, metals and chemicals. It was realised that if those sectors began to function, all the other sectors of the economy would gain and the social sphere would be able to develop.

The key issue, which was resolved, involved replacing ineffective owners, and in most cases this entailed replacing unscrupulous owners.

Owners with an interest in developing and broadening their business and creating new jobs are the greatest asset in regenerating an industrial region.

Also important are the measures taken by the government of a region to optimise the sphere of supply and distribution and limit the number of intermediaries between production and the end user. Of 2,200 intermediaries in the Kemerovo *oblast*, only 100 remained.

There was special emphasis on the restoration of links between economic sectors.
As a result of all these measures, from the second half of 1998 onwards, the economy of the Kuzbass began to regenerate.

A powerful spur to the development of the coal industry of Russia and the Kuzbass and a new benchmark for it was the holding of a State Council session there, in Mezhdurechensk, at the "Raspadskaya" shaft, on 29 August 2002.

The State Council arrived at a conclusion of fundamental importance, namely that in Russia's energy strategy for the period up to 2020, priority would be given to increasing the share of coal in the country's fuel energy balance.

And today the coal sector is one of the most dynamically developing branches of Russia's economy.

Since 1999, production levels in the Kuzbass have been constantly on the increase. The miners of the Kuzbass now produce 56% of all the country's coal and 81% of the highest coking grades of coal.

So the Kuzbass coal industry is the only such sector in Russia to have been completely restructured and taken a path of intensive development. The first sector has become profitable for the first time.

The course steered by the government of the Kuzbass is the construction of modern, safe coal enterprises and the modernisation of active shafts and pits.

Fifteen billion roubles have been invested in coal sector development in 2004, a third higher than the previous year's amount. From the beginning of 2004, 4 shafts and 4 pits were brought into service. In total, for 2004 it is planned to bring 9 new enterprises into service, with a total projected capacity of 15 million tonnes of coal a year.

2004 has been a record year for both the number of enterprises constructed and the injection of projected capacity.

In the last six years a total of 10 shafts and 15 open pits have been constructed and brought into service, with a total projected capacity of 37 million tonnes of coal per annum and the creation of over 12,000 new jobs.

In 2004 it is planned to extract over 150 million tonnes of coal.
The steady efforts of the coal companies in 2004 alone have made it possible to increase miners' wages by 35%, to 11,000 roubles.

The volume of tax contributions from fuel and energy companies to the *oblast* budget stands at 8.4 billion roubles, or 53.8% of all contributions from industrial enterprises and 33% of all tax revenue.

The production of conversion products is of key importance for the regeneration of mining industry regions. The further development of the coal sector in the Kuzbass is linked in with the high-level processing of coal. This is the future of the coal industry. A whole host of conversion products can be made from coal: resins, ethers, benzines and other conversion products, which are in great demand domestically and on foreign markets. They are worth ten times the value of coal that has already been cleaned.

Over 64% of the coal mined is now processed in concentration plants in the Kuzbass, compared with 43.6% in 1988. In the last five years 4 new concentration plants and 2 cleaning plants capable of processing 10 million tonnes of altogether coal have been brought into service, and another 2 concentration plants are being built in the town of Mezhdurechensk with a total processing capacity of 8 million tonnes. In all, the new concentration and cleaning plants have increased the *oblast*'s coal conversion capacity by 12 million tonnes per annum.

The task we have set ourselves is to clean practically all the coal mined in the Kuzbass by 2010.

Developing the transport infrastructure plays an enormous role in the successful development of a mining region.

In connection with the accelerated development of the coal sector in the Kemerovo *oblast*, there is special emphasis on eliminating bottlenecks in railway transport operations. This is also necessary for expanding coal exports.

Our forecasts indicate that by 2010 the volume of coal exported from the Kuzbass could reach 75 to 80 million tonnes per annum. For that reason it is important to develop the transport infrastructure not only within the Kuzbass but also beyond its boundaries. Work is ongoing to build a coal terminal in the town of Ust-Luga (Leningradskaya *oblast*), and the public joint-stock coal company "UK Kuzbassrazrezugol" is actively contributing to the development of sea ports in the towns of Nakhodka, Vysotsk, Murmansk and Vyborg.

In 2004 the "Siberian Business Council", a confederation of industrial companies, is to embark on the building of a coal terminal with an annual capacity of 10 million tonnes in the port of Yuzhnyy (in Ukraine).

Already in the coming years, increased terminal capacities will enable our miners to send no less than 75 million tonnes of coal abroad. Compared with 2003, when 42.8 million tonnes were sold for export, 55 million tonnes were sold in 2004.

For the sustainable development of mining regions it is important to create a system of incentives for high productivity, and this is an area receiving close attention.

In 2004 ten socio-economic partnership agreements were concluded with owners of mining companies. In addition, a general agreement was signed between the *oblast* authorities and the main shareholders and directors of coal companies in the Kuzbass. As a result, investment in the coal sector will increase by 6 billion roubles in 2004. Very close attention indeed is paid in these agreements to assistance for veterans of labour and low-income families and also for the health and education of children in deceased miners' families.

For 2005 it is planned to increase coal extraction to 160 million tonnes, which is more than in any previous year. 18 billion roubles are being invested in developing the sector.

There are also plans to commission 5 shafts with a total projected capacity of 4.8 million tonnes of coal and 3 concentration plants for the conversion of 15.5 million tonnes of coal. This will generate 3,000 new jobs.

Estimates by specialists suggest that over 13 trillion cubic metres of methane are concentrated in the depths of the Kuzbass. Experimental work in the *oblast* to extract this gas from coal seams is now in its fourth year.

In the course of 2004, in a drilling ground in the Yerunakovskiy mineral production area, four pilot wells have been bored to depths of between 640 and 950 metres. Real benefits will be reaped already in 2006 from this project, when it is planned to extract some 1.5 billion cubic metres of gas.

This has a tangible economic impact. Extracting methane from coal seams reduces the dangers linked to that gas in coal extraction. And that means many miners' lives possibly saved, greater profitability for the shaft and an improved ecological situation in the *oblast*.

Industrial safety demands particular care when developing the coal sector. Whereas 2002 saw a fall in fatal accidents, the figure rose to 61 cases in 2003 - an increase of 18 incidents. And in 2004 there were 109 fatalities, including 66 people in accidents caused by exploding mixes of methane and air: 6 in the "Sibirskaya" shaft, 47 in the "Tayzhina" shaft and 13 in the "Listvyazhnaya" shaft. There are various reasons for such tragedies: methane gas explosions; companies' technical equipment may not meet the requirements of the current safety regulations; the human factor.

In an effort to resolve the problem of making miners' work safer, priority is being given to open-cast coal mining and speeding up the construction of open pits. When restructuring work in the coal sector first began there were 23 open pits, and there are now 43. All in all, they account for over half of the total volume of coal mined in the region. For the first ten months of 2004 there were only 2 fatal accidents in open-cast operations.

Work is currently under way to build new enterprises of a new technological standard meeting the requirements of efficiency and safety. The "Kotinskaya" shaft and the "Raspadskiy" pit commissioned in 2004, for example, combine open and underground operations in a single high-tech complex. Unique technology is used in the complex, where the deep mining of seams is managed from the surface and uses unmanned extraction machinery. The complex is operated by 4 people, and in 6 months it has produced 1.2 million tonnes of coal.

But what is important, of course, is the new standard of safety for carrying out underground operations. The robust construction of modern shafts and pits is making greater demands on the level of qualifications of workers and specialists.

The housing problem remains an acute one for coal mining towns and districts. In the Kemerovo *oblast* over 40,000 families are living in dilapidated, ramshackle housing, including 13,500 families in areas where underground operations are carried out. In ten years of restructuring it has been possible to resettle only 4,727 families, which is 27% of that figure. At that rate, it would take 30 or 40 years to resolve the housing problem. Appropriations from the federal budget must be increased in this respect.

The ecological problems of mining regions require special attention. The Kuzbass already supplies all Russia's coal for energy production and in 2005 it will cover all the needs of the country's metal producers in terms of high-quality coking coal. The coal enterprises built in the Kemerovo *oblast* in recent years (since 1998) - a total of 25 (10 shafts and 15 open pits) plus 14 new enterprises currently in construction - make it possible to increase total coal production by 10 million tonnes each year. In addition, it is intended to open up 29 new mining claims, which implies a heavy technical and ecological load on the region.

River courses have been shortened by over 100 km.
More than 200 streams have been wiped out.
65,000 ha of land have been damaged, while less than 20,000 ha have been recultivated.
The Kuzbass area resembles a lunar landscape. Each year the shafts and open pits discard over 700 million cubic metres of water, causing areas to dry out.

Volumes of methane discharged each year have reached 3.5 billion cubic metres. The Altay earthquake of 2003 prompted consideration of how the intensive mining work is affecting seismic activity in the Kuzbass.

The big industry sectors of metal production, heavy machinery and energy also have adverse effects on the region's ecology.

There are no real levers for influencing the issue of permits and the choice of who obtains new mining claims.

The specialists believe that at present only development of enterprises that are active or in construction is possible; these will yield 170 million tonnes of coal (by 2010), and that level of extraction is sufficient to cover all Russia's coal needs. In addition, more investment is needed in coal conversion and the repair of ecological damage.

3 - THE VOIVODA OF SILESIA IN POLAND

The case study of the voivodia of Silesia in Poland has been specifically analysed by the co-rapporteur, Mrs Jolanta Marcinkowska.

The voivodia of Silesia is characterised by the heaviest concentration of industry in Poland, located in industrial centres that are situated close to one another. Of the 93 285 hectares of industrial sites in Poland, 19 046 are in this voivodia. The distribution and number of industrial sites, in hectares, are shown in **Map 1**. The largest sites are found in Katowice, Ruda Slaska, Bytom, Gliwice, Dabrowa Gornicza and Czestochowa.

Given the huge changes taking place in the national economy, resulting in the restructuring of the mining and steel industries, the voivodia is one the regions with the largest numbers of problems in Poland. Economic changes are resulting in an increasing number of derelict industrial sites, creating a need for renovation, repair and redevelopment. According to the 2001 statistical review (Environmental Protection, 2002, GUS), 5863 ha were occupied by degraded and derelict sites requiring rehabilitation and redevelopment. In 2001, a total of 270.75 ha were rehabilitated, 15.93 of these for agriculture and 199.65 for reafforestation. In the same year, a total of 159.33 ha were redeveloped, 12.37 ha of these for agricultural use and 117.32 for woodland.
At the current pace of the redevelopment of the sites that are presently degraded, the problem might take some 20 years to resolve.
One further difficulty is the heavy accumulation of industrial waste, averaging 63 592 tonnes per km^2.

3.1 Influence of underground coalmining on the environment

Mining beneath the sites being redeveloped still creates technical, economic and social problems. These take the form of additional costs of operation to cover damage to the environment and the infrastructure. Over the last 50 years, 3 billion tonnes of coal have been extracted from beneath built-up areas; half has come from beneath urban inhabited areas, 20% from beneath industrial buildings, and 30% from beneath lines of communication (roads, rivers and railways).

The nature and scale of the impact of mining on the environment and the consequent changes to the land around mining sites have varied according to the volume, and over time. The shift is probably due more to the effectiveness of preventive activities associated with technology and the organisation of work rather than to the rehabilitation of so-called post-industrial sites.

In any consideration the influence of underground coalmining on the environment, the following factors should be borne in mind, in no particular order:

- presence of shallow workings,
- production of significant amounts of waste,
- discharge of salt water from mines into rivers,
- emission of methane,
- dangers of radiation,
- changes in the water table,
- submerged areas with no outlet,
- Deformation of the surface in mining areas.

Shallow workings, dating from the late 19th and early 20th centuries and lacking clear records of their location, or completely unrecorded, have led to widespread subsidence. Shallow mines (up to 80 metres deep) are documented or presumed to exist in 50 areas, and their total surface area is 16 300 ha, of which only 1 560 ha (9.5%) have been studied (cf Annexe 1). It should be pointed out that uncontrolled shallow mining is currently taking place on the site known as the "paupers' pit", which will increase the risk of uncontrolled subsidence in the future

The problem of waste

The problem of waste will be explored more fully later in the report. It should merely be stated here that in the mining industry which, together with the mineral concentration and energy industries, produces more than 90% of all industrial waste, coalmining occupies first place, producing 39 million tonnes of waste each year (2001). For this reason, the proper management of the waste produced by mining itself and by third parties in underground coalmines is a major issue. Over the last few years, as a result of ecological protests and the financial pressure of taxes on environmental consumption, there is evidence of a growing trend towards use being made of the waste outside the industry (from 20% in the mid-1990s to 63% now).

In view of the limited supply of surface dumps for industrial bulk waste, especially from the mining, energy and steel industries, and their destructive influence on the environment, there has been a search for new economic solutions in underground mining technology.

Waste from coalmines is dumped both on-site and at centralised locations (eg the "Maczki Bór" sand quarry, where the slag from a number of mines is used to back-fill sand pits.

As a result of the restructuring of the coal industry, extraction is limited, reducing the volume of waste produced. On the other hand, the ever stricter requirements pertaining to the quality of coal are increasing the quantity of the most harmful elements of the waste following the extraction of sulphur and concentration. This waste may contain up to 12% of pyretic sulphur. The waste accumulated in slag heaps is very valuable as a source of recycling materials, the value being put at several hundred million dollars: 25% - coal, 35% - zinc, lead, iron and other metals, and 40% - clay, ash, rock debris, granulates, etc (cf Annexe 2 for the management of mining waste).

The problem of salt water

The salt water from mines run off into surface waters leads to a higher salt content than is usual in the waters of the basins feeding into the Upper Vistula and the Oder. In some rivers and streams in Silesia, this content is several ten times higher than the acceptable limits. The results of the continuous analysis of the waters in the voivodia of Silesia that has been carried out by the Centre for the Study and Monitoring of the Environment in Katowice since 1991, by taking measurements at fixed sites, show that there has been a fall since 1998 in the salt content of the waters in the basins draining into the Vistula and the Oder.

The problem of methane

Polish legislation does not provide for regulation of acceptable concentrations of methane in the air. Total emission of methane is made up of the following:

- ventilation,
- demethanisation plants (extraction and discharge),
- processes taking place after extraction (storage of coal and waste).

In 2000, according to statistical data from mines producing methane, the mining industry released 741 million m^3 of methane, 219 million m^3 of which (approx. 30%) were captured for demethanisation and 124 million m^3, or 57%, were used (cf Annexe 3).

Radioactive contamination of water

There are two main sources of radioactive contamination of the environment in Upper Silesia: water containing radium pumped out from coalmines, and waste dumped in slag heaps.

The salt water present in the coalmines in Upper Silesia often contains natural radioactive isotopes, especially radium isotopes. Concentrations of ^{226}Ra in water flowing out of underground workings can rise as high as 390 kBq/m^3, while the concentration of this isotope in surface water does not normally exceed 0.1 kBq/m^3. The high concentration of radium found in Polish mines is seldom observed in nature. The water containing radium and barium is termed type A radium water. The second type of water, known as type B, does not contain barium ions but sulphate, $S0_4^{2-}$. The presence of barium in water influences the behaviour of the radium. Radium in type A water (with barium) will sooner or later be precipitated together with the barium, once this water has become mixed with the sulphate-bearing water which is frequently found naturally. The concentration of ^{226}Ra in the sediments formed in this way can rise to 400 kBq/kg, while the normal concentration in the soil is 25 Bq/kg. The precipitation of radioactive sediments may occur not only underground but also on the surface in water channels and conduits. This may give rise to radioactive contamination of the environment and technical difficulties in making use of salt water conduits and collectors.

The environmental pollution generated by water with a high radium content, and its sedimentation, are restricted to the surface of the water outlets from mines, the surface water channels by means of which water used to be, and still is, pumped out of mines, and – to a lesser extent – to the waters and sediments of the Vistula. The activity of radium isotopes discharged with the salt water into rivers is of the order of 225 MBq per day (80 GBq/year), while at ^{228}Ra this figure is 380 MBq/day (140 GBq per year). Almost 70% of the total of ^{226}Ra in underground workings takes the form of radium-barium sulphate sediments, while at ^{228}Ra this proportion is appreciably lower – only 35%.

The problem of purifying type B radium-bearing water is far from simple. This water contains radium and sulphate ions, but no barium ions. In the two largest mines in Upper Silesia (“Piast – Ruch I” together with Ruch II and “Ziemowit”) the total volume of water needing purification is around 65 000 m^3 per day, with 250 MBq of ^{226}Ra and 500 MBq of ^{228}Ra. The Piast water purification plant has been in operation since 1999.

The waste, in the form of the mass of rock extracted during coalmining, typically has a slightly increased content of natural radioactive isotopes. The radium isotope content is two to three times higher (100 Bq/kg) than that found on the surface. There is therefore a slight increase in the dosage of gamma radiation from this waste (up to around 150 nGy/h). This restricts the possibilities of using this land for building.

Underground mining causes changes in the tension in the rock, resulting in fissures and movement. One of the consequences of this phenomenon is disruption to water courses and changes in both water and soil conditions. The scale, size and mechanisms of these changes depend in large measure on the nature and extent of the mining, as well as on geological, hydrogeological and hydrographic conditions.

Changes in underground water levels have a particularly harmful impact on the environment, giving rise to excessive hydration of the soil, flooding and waterlogging. A number of factors are particularly significant in the creation of these negative effects:

- little morphological variation in the landscape,
- the presence at shallow depth of the first layer of underground water directly fed by precipitation,
- the presence in coal seams of a dense complex of clay sediments, thus effectively isolating surface water and water tables,
- intensive exploitation of coal seams by means of their collapse.

Prolonged mining gives rise to significant morphological changes in the landscape, creating so-called cisterns with no outflows which – in the majority of cases and because of the phenomena cited above – fill with water. Upper Silesia has 328 submerged sites of this type, with a surface area of 939 ha (cf Annexe 4).

Changes in underground water levels alter the retention capacity of the basins feeding them. In areas where the water table rises to ground level, the retention capacity becomes minimal as soon as there is precipitation, after which all further precipitation becomes surface run-off (discounting evaporation). This situation alters the way in which flood waves form, but this phenomenon needs to be examined individually on each occasion. It would appear that the danger of flooding is not significantly affected by the degree to which the gully in a depression is filled, except in certain some specific cases. One exception may be the irruption of run-off water towards shallow workings which are still operating.

The range of ways of calculating flood waters does not take account of the specific circumstances of mining sites. In most cases, the methods used are adapted to suit Polish circumstances, but they are largely based on the statistical distribution of the probability of various states of water and rates of flow. Forecasts based on events recorded in the past must give rise to doubts where flows and retention are changing as rapidly as in mining areas. For these areas, methods of calculation that take local conditions into account should be adopted.

3.2 – Rehabilitation through Spatial planning in Silesia

The call for planning applications has brought forth applications from only two Mining Restructuring Companies, Mines Offices or Coal Companies. These describe (as at the start of 2002) the state of development of the sites which they own, and set out the relevant direction of redevelopment work.

The Mining Restructuring Companies, which are physically winding up mining operations, have identified the industrial and post-industrial sites to be redeveloped as sites for service, manufacturing and commercial activities. These comprise industrial sites (former pits and industrial production buildings), associated social buildings (canteens and baths), and land not built on. The other sites used as slag heaps, for storage (stockpiling) and run-offs have been recommended for redevelopment as green sites. These post-mining sites may be handed over for management by the local authorities.

The surface areas of these sites, divided between communes, are shown in **Map 2**. The largest sites shown on the map are at Jaworzno, Bytom, Zabrze, Będzin, Sosnowiec, Piekary Śląskie, Godów and Pszów.

The sites have been proposed by the following operators:
Bytom Mining Restructuring Company (comprising the sites of the following establishments: Powstańców Śląskich Coalmine, Centrum Szombierki Coalmine, Andaluzja-Julian Coalmine, Bobrek-Miechowice Coalmine, Pstrowski Coalmine, Paryż Coalmine, Grodziec Coalmine and Jowisz Coalmine).
Katowice Mining Restructuring Company (sites: Maja 1 Coalmine, Dębieńsko Coalmine, Gliwice Coalmine, Jan Kanty Coalmine, Morcinek Coalmine, Moszczenica Coalmine, Siemianowice Coalmine, Czeladź Coalmine, and the urban districts of Jaworzno, Pszow and Orzesz and the commune of Goczałkowice-Zdrój – the sites proposed for renewal are dominated by derelict bituminous coalmines. These sites are already included in local spatial plans as available sites or sites to be rehabilitated.)

A separate group of applications made to the planning authorities of the voivodia is made up of sites for storage and recycling of mining waste, submitted by the Mines Offices of Katowice, Gliwice and Rybnik, identifying the means of rehabilitation chosen or the recommended method of redevelopment. In this case these sites are mostly to be reafforested. The surface areas of these sites, set out in hectares and by commune, are shown in **Map 3**. The largest sites are situated at Sosnowiec, Rybnik and Mszana.

The communes in the voivodia of Silesia have no documentation on either the degree of damage to the surface of the sites, the speed at which negative phenomena are spreading, or an assessment of the size of the sites deformed by various types of athropopression, all of which information is vital for the drafting of local spatial plans. What is lacking above all is any evaluation of the degree of soil degradation, and the relevant documentation.

The work done on the spatial plan of the voivodia takes account of the sites to be redeveloped, which are categorised in the “Analysis of the spatial structure of existing mining establishments – identification of sites destined for redevelopment” and “Analysis of the spatial structure of existing steel industry establishments – identification of post-industrial sites destined for redevelopment” carried out by the Regional Development Board in Katowice. The analyses mentioned cover the sites of mines that have been closed down or may be closed in the near future. The sites listed do not include those transferred to coal companies or recovered by those companies. The sites identified by the companies (as at 2000) are set out in the documents of the Regional Development Board referred to above, and are sub-divided into five categories, from “easy” to “very difficult”. The criteria for evaluation are as follows: state of development, accessibility, technical infrastructure and potential for redevelopment or replacement, topography and surroundings.

Mines and steelworks occupy around 16 860 hectares, including all the sites used by them for housing, recreational use, storage, etc. Approx. 4 860 ha are sites which the mining and steel companies identify as being for sale or to rent – **Map 4**. The largest number of sites – works that are derelict and destined for redevelopment – are in Ruda Sląska, Bytom, Piekary Sląskie, Sosnowiec, and Jastrzębie Zdrój. The derelict industrial sites abandoned voluntarily by enterprises will be restructured as part of the spatial planning that has been put in train alongside economic restructuring. Since these sites vary considerably, the methods of redevelopment may also vary. The easy and relatively easy sites, where redevelopment should not pose any major problem, have a surface area of around 1 564 ha – **Map 5**. These sites are concentrated in Katowice, Sosnowiec, Ruda Sląska, Bytom and Jastrzębie Zdroj, and may provide an opportunity for the development of new economic activities or other new undertakings (associated with the economy). A large proportion of these sites are situated in urban areas, which should make it easier to treat them as a reservoir for urban uses.

The difficult sites account for 2 787 ha – **Map 6**. These sites are concentrated particularly in Jastrzębie Zdroj, Ruda Sląska, Zabrzu, Bytom, Piekary Sląskie and Sosnowiec. These are principally slag heaps and storage sites which could most easily be turned into green sites. It is also important to examine the geological and mining situation of the sites previously used for mining. Not all the sites in question can be used for every type of activity.

One of the initiatives associated with the restructuring of industry and industrial sites is the creation of the Katowice Special Economic Zone – established by decree of the Council of Ministers in 1996. This was set up to support and speed up the restructuring process and the creation of new jobs. The Katowice Zone is widely scattered and made up of sub-zones: Gliwice, Sosnowiec-Dąbrowa, Tychy, Jastrzębie-Żory, Częstochowa and Bielsko. The total surface area of these zones is 863 ha (cf Annexe 5).

Industry parks

Since the creation of the Katowice Special Economic Zone, initiatives have been launched to set up new zones of economic activity – industry parks.
The Mining Restructuring Companies have suggested locating the industry parks on the sites of former coalmines. The largest of these zones will be in Bytom – 144 ha. The location of the industry parks is shown in **Map 7**. An industry park was recently established on the site of the Częstochowa steelworks, and the authorities in Ruda Slaska and Swietochlowice are also preparing to create new parks.

Derelict industrial sites are not only an ecological problem, but they also attract little economic interest. If spatial planning is to be handled effectively, attention needs to be given to re-using these sites, which are situated in excellent locations, and to inviting investment in them. Re-using them would help to limit the number of sites taken over for other purposes.

Site redevelopment policy

When the site redevelopment policy was established as part of the voivodia spatial plan, the problems of derelict industrial sites were taken into account in the following objectives, focuses and actions:

Objective I. To reinvigorate and restructure the voivodia
Focus: support for local enterprise development, economic innovation and technology transfer
Action: create industry parks to attract entrepreneurs, especially small and medium-sized enterprises, by making use of derelict industrial sites

Objective II. To strengthen the way in which centres of habitation operate

Focus: promotion of high-density urban areas, making effective use of land
Action: revitalise degraded and post-industrial sites in urban areas, including adaptation of industrial and technological monuments

Objective III. To protect and strengthen the system of protected areas and to develop open spaces for multiple uses
Focus: protection for sites of major biological and cultural value that demonstrate the specific features of the region
Action: protect landscapes typical of the region – coalmining, and iron-ore, silver and lead mining
Draw on the resources of the cultural heritage (including industrial monuments) and use these to promote tourism

Objective IV. To stimulate innovation in the regional spatial planning system
Focus: promotion of innovative methods of spatial planning
Action: develop and implement pilot projects testing new methods of planning in the field of rehabilitation and redevelopment of post-industrial sites

4. GENERAL CONSIDERATIONS

The introduction of a system of economic incentives for making production more environmentally friendly is of paramount importance in the running of a region's economy geared to sustainable development on the basis of a balance between economic development and ecology.

Firstly, it is necessary to improve the system of tax breaks rewarding efforts to protect and regenerate nature and to introduce nature-friendly and ecologically clean technologies and installations. The co-rapporteur's recommendations on this point consider the pioneering experience of regions and states and the future tasks entailed in sustainable development and preservation of the environment.

The setting up a system of ecological certification of enterprises and technologies and also a system for managing the surrounding environment of enterprises in tandem with improvements to the system of taxation, credit and ecological insurance is considered important by the co-rapporteur. Ecological certification of companies giving them certain financial advantages has to be made a criterion of effective business.

There should be special emphasis on recommendations on developing new resource-saving, low-waste and ecologically friendly technologies and the gradual replacement of the raw materials, fuel and energy currently used.

It is particularly important to draw up recommendations on coordinating the different ecological/economic programmes for the regeneration and sustainable development of mining and industrial regions run by different state and local authorities, also covering the co-financing of such programmes.

Accordingly, the rapporteurs proposed recommending measures to regional and local authorities that could usefully be applied in the form of general state regulations and, possibly, for decision-making at the level of organs of the European Union, the Commonwealth of Independent States and the Council of Europe Committee of Ministers.

It is conceivable that recommendations on developing inter-regional cooperation might include proposals for the setting up of a pan-European association of mining and industrial regions. Such an association, formed on a voluntary basis, would make it possible to substantially strengthen bilateral and multilateral cooperation between regions of Council of Europe member states and set mechanisms in motion for exchanging information, technologies and know-how and preparing agreed activities.

It could be usefully recommended to exploit the possibilities of transfrontier cooperation and creation of Euro-regions formed to tackle common problems of sustainable development. One such Euro-region might be the Donbass, formed from the Donetsk and Lugansk *oblast*s of Ukraine and the Rostov *oblast* of Russia or individual districts of those *oblast*s located on the territory of the same mining basin.

The rapporteurs wish to carry out further work and counting on your backing and support of the Committee secretariat.

The rapporteurs believe that the task is not only to carry out substantial work in preparing, examining and adopting the report, recommendation and resolution within the Congress but also to continue having an active input in the implementation of the decisions we propose.

INDUSTRY

AS RECORDED BY THE KEMEROVO OBLAST STATE STATISTICS COMMITTEE

Table 1.

BASIC INDUSTRY INDICATORS

	2000	2001	2002	2003	I п/г 2004
Index of industrial production, as % of previous year	**110**	**104**	**99**	**107**	**103**
Number of employees in industry, in thousands of people	**392**	**387**	**368**	**366**	**364.6**

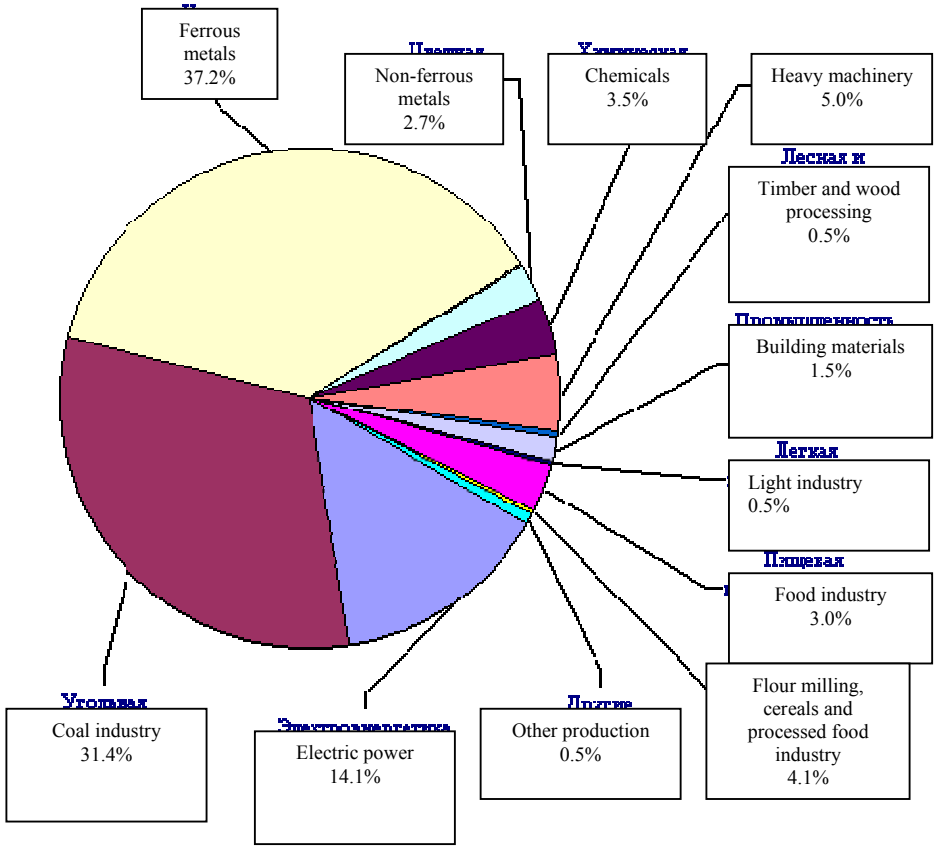


Figure 1. Breakdown of production by industrial sector

Table 2.

Production of major industrial materials

	2000	2001	2002	2003	1st half 2004
Electric power, billions of Kw.hours	27.2	27.1	27.9	25.6	12.6
Coal - total, in million tonnes	115	126	131	144	76.2
of which: for coking	45.5	48.7	49.5	54.5	28.9
Coal concentrate, in million tonnes	37	39	41	46.6	26.4
Iron ore, in million tonnes	3.3	3.5	5.2	3.5	1.8
Cast iron, in million tonnes	7.1	7.3	6.8	7.1	3.3
Steel, in million tonnes	9.2	9.4	8.3	8.6	4.2
Finished steel, in million tonnes	7.4	7.5	6.8	7.1	3.4
Coke with 6% moisture content, in million tonnes	6.2	6.3	6.4	6.6	3.1
Direct current machinery, in thousand items	2.3	2	1.4	1.7	0.95
Wheel-mounted cranes, units	89	56	31	25	12
Mineral fertiliser, in thousand tonnes	450	491	563	584	284
Caustic soda, in thousand tonnes	40	37	36.2	34.7	18.6
Man-made fibres and yarns, in thousand tonnes	15.6	14.2	17.3	20.8	9.8
Synthetic resins and plastics, in thousand tonnes	114	118	117	120	63.3
Cement, in thousand tonnes	1158	1665	1732	1711	639
Building brick, in million comparison brick units	97.8	109	104	99.1	40.5
Fabrics, in million square metres	15.4	21.9	16.3	14.1	10.9
Meat, including category-1 by-products, in thousand tonnes	6.1	5.4	5.5	5.7	3.9
Animal fats, in thousand tonnes	2.9	2.4	3	3.4	1.3
Bread and bakery products, in thousand tonnes	166	165	156	151	79.7
Vodka and alcoholic beverages, in million decalitres	2.3	2.6	3.1	2920	1008

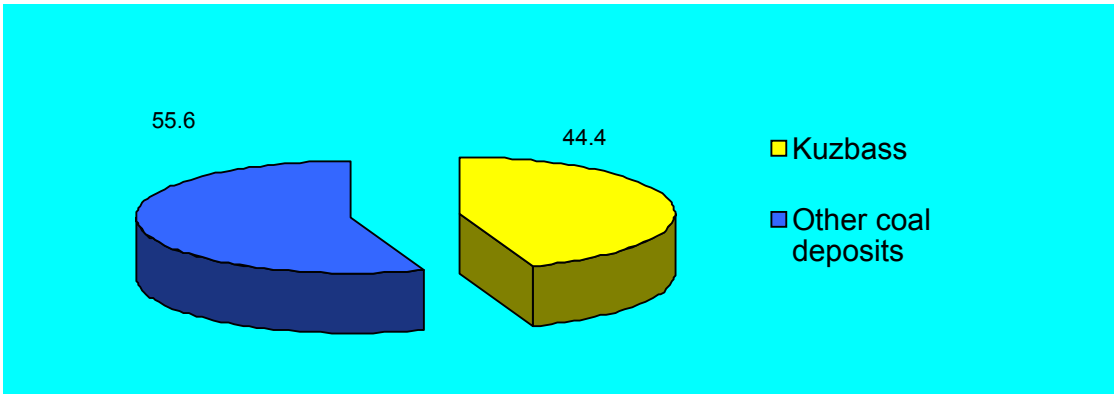


Figure 2. Kuzbass Basin's share of Russia's balance coal reserves, %

A total of 25.4 billion tonnes have been prospected and prepared for industrial development, including 12.4 billion tonnes of coking coal.

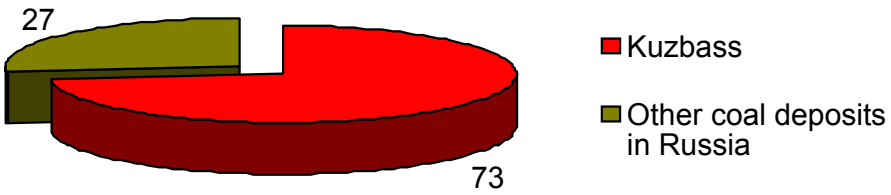


Figure 3. Kuzbass Basin's share of Russia's coking coal reserves, %

As before, the most promising mining district remains the Yerunakovskiy district, where large reserves of coking coal (4 billion tonnes) and fuel coal (4.7 billion tonnes) are concentrated, with favourable mining and geological conditions, allowing both underground and open-cast mining with high technical and economic yields.

At present 18 mining enterprises are in the process of being built (13 shafts and 5 open pits) with a total projected capacity of 24 million tonnes of coal.

Distribution of mining in Russia by coal region

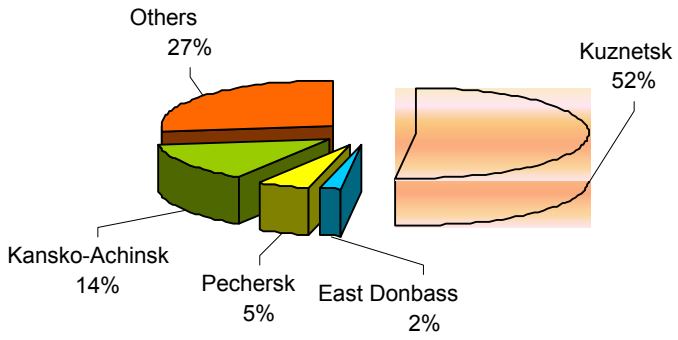


Figure 4. Coal extraction by regions of Russia, %

On 1 January 2004 coal-mining enterprises numbered a total of 46 shafts and 36 open pits. The share of the Kuzbass of total coal extraction stood at 52%, and at 83% for coking coal, including underground extraction – 72%, and open-cast – 42%.

Distribution of coking coal mining in Russia by coal region

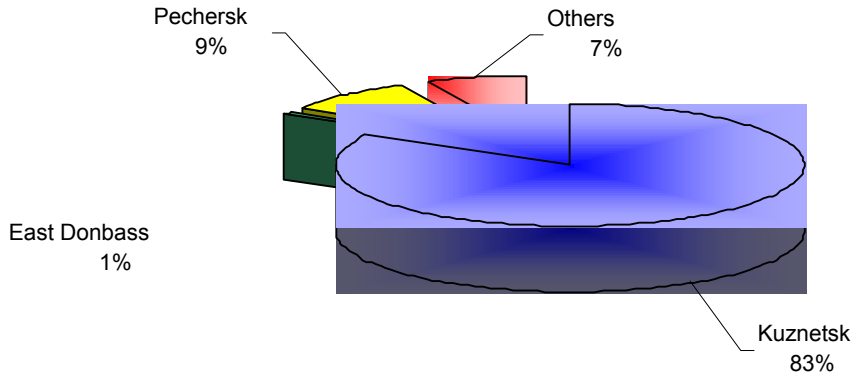


Figure 5. Coking coal extraction by regions of Russia, %

In the last 5 years coal mining in the basin has increased by 46.7 million tonnes or 47.8 %.

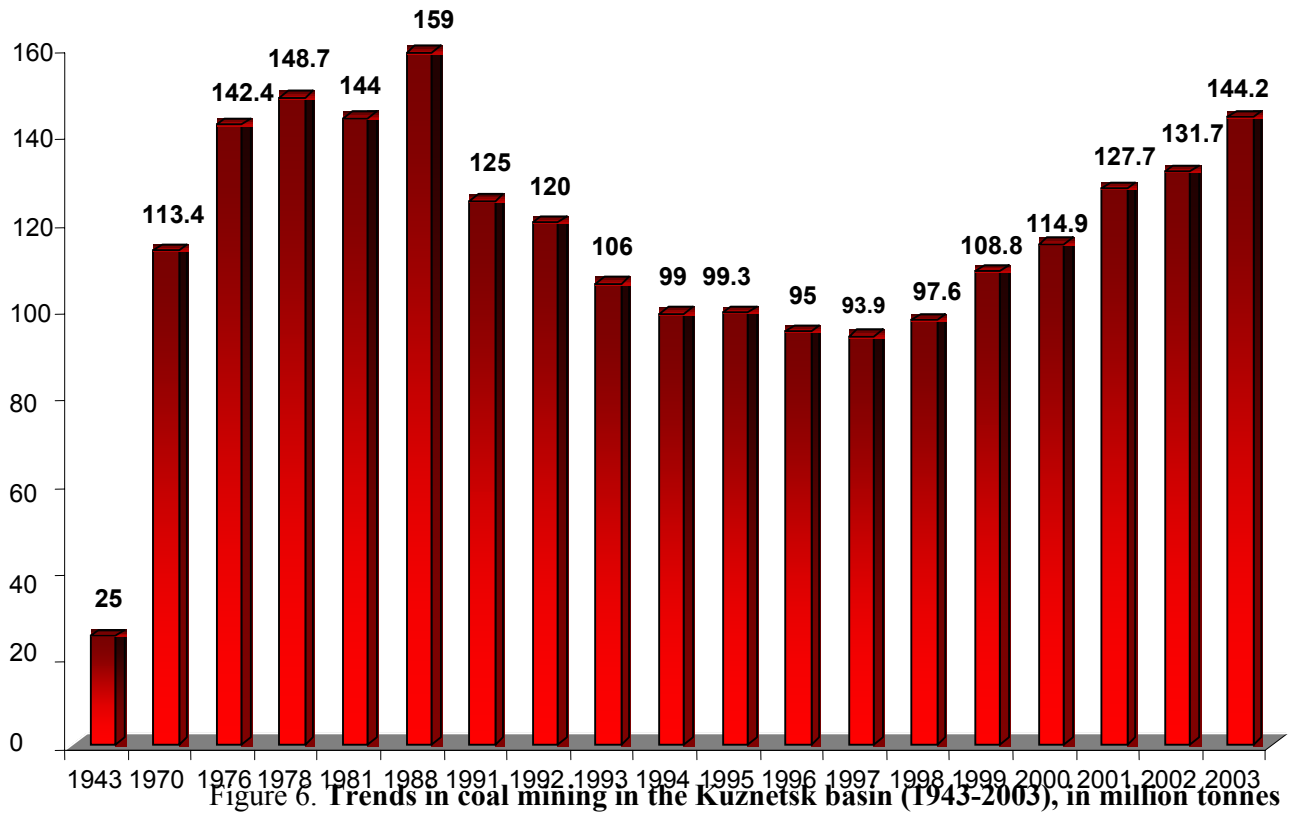


Figure 6. **Trends in coal mining in the Kuznetsk basin (1943-2003), in million tonnes**

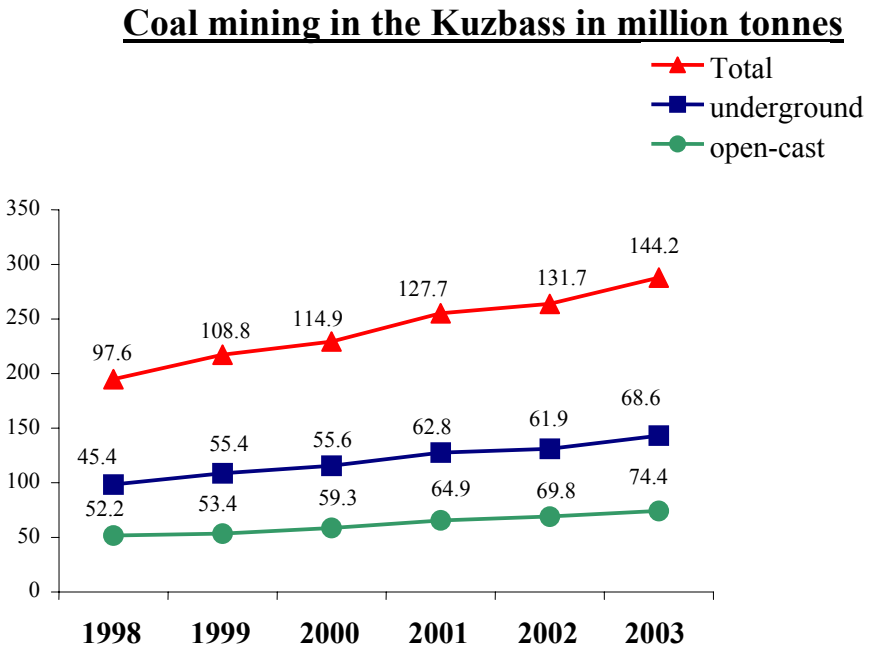


Figure 7. **Trends in coal mining in the Kuznetsk basin (1998-2003), in million tonnes**

Coal mining

by coal companies and enterprises

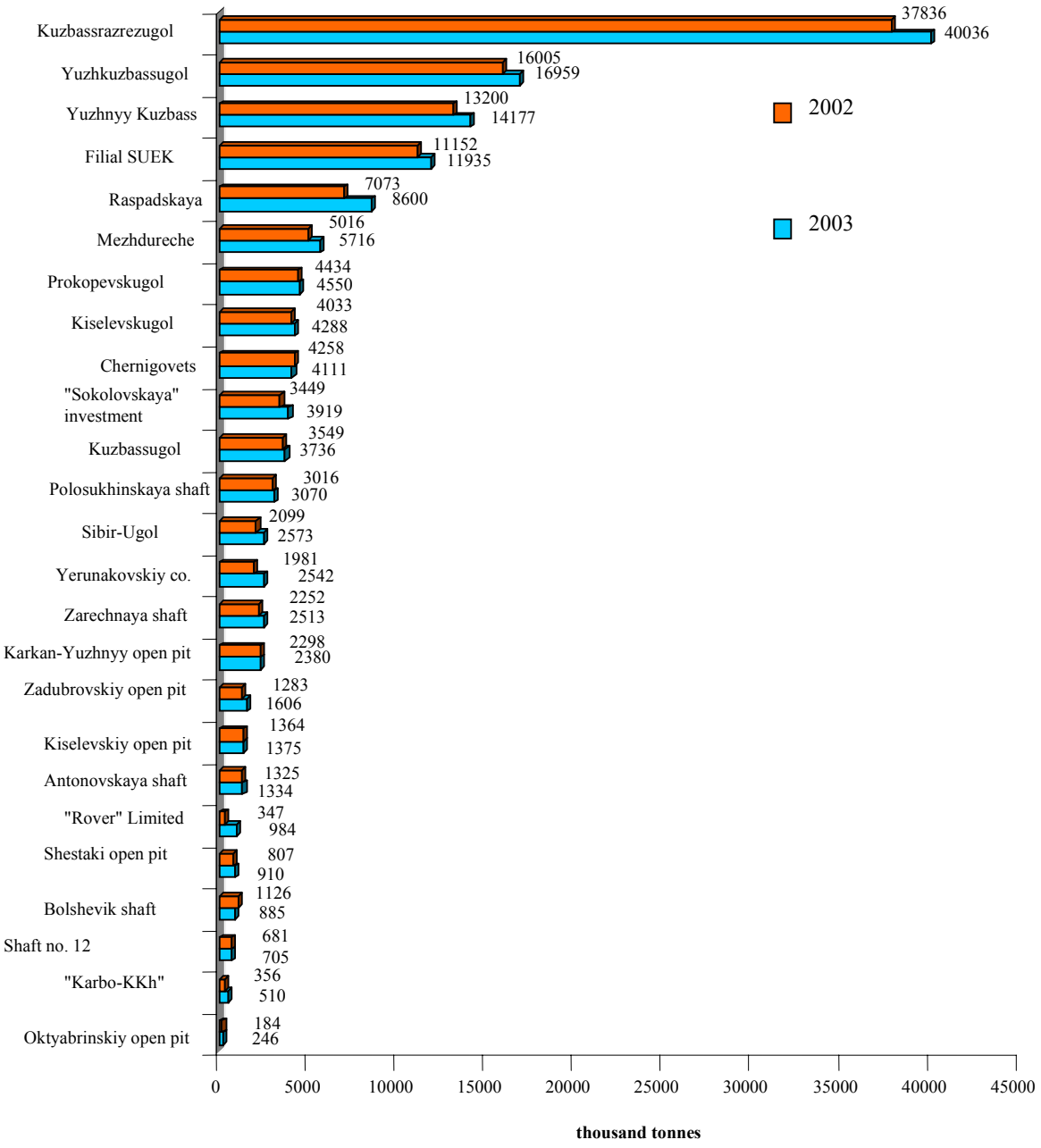


Figure 8. Coal mining by coal companies and enterprises, 2002-2003

Average daily coal extraction from a single working face

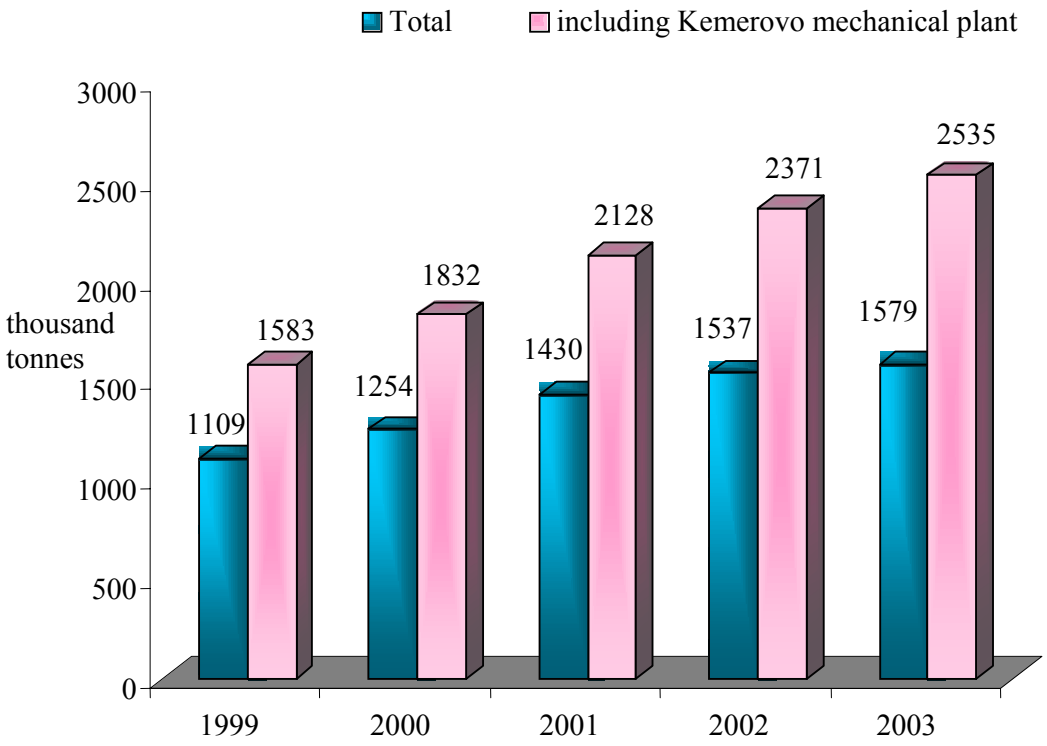


Figure 9. Average daily coal extraction from a single working face, in million tonnes

The highest rate of production from a single face was achieved by the "Raspadskaya" shaft – 4961 tonnes a day with an average daily production of 192.2 tonnes per person. High daily production rates per face were also achieved by the "Polosukhinskaya" shaft – 3916 tonnes, the "Zarechnaya" shaft – 3597 tonnes, and the "Sokolovskaya" mining investment company – 3799 tonnes. Among the coal companies, the highest production rate for a face was achieved by the "Yerunakovskiy" company and the "Yuzhkuzbassugol" company, standing at 2985 and 2904 tonnes a day respectively.

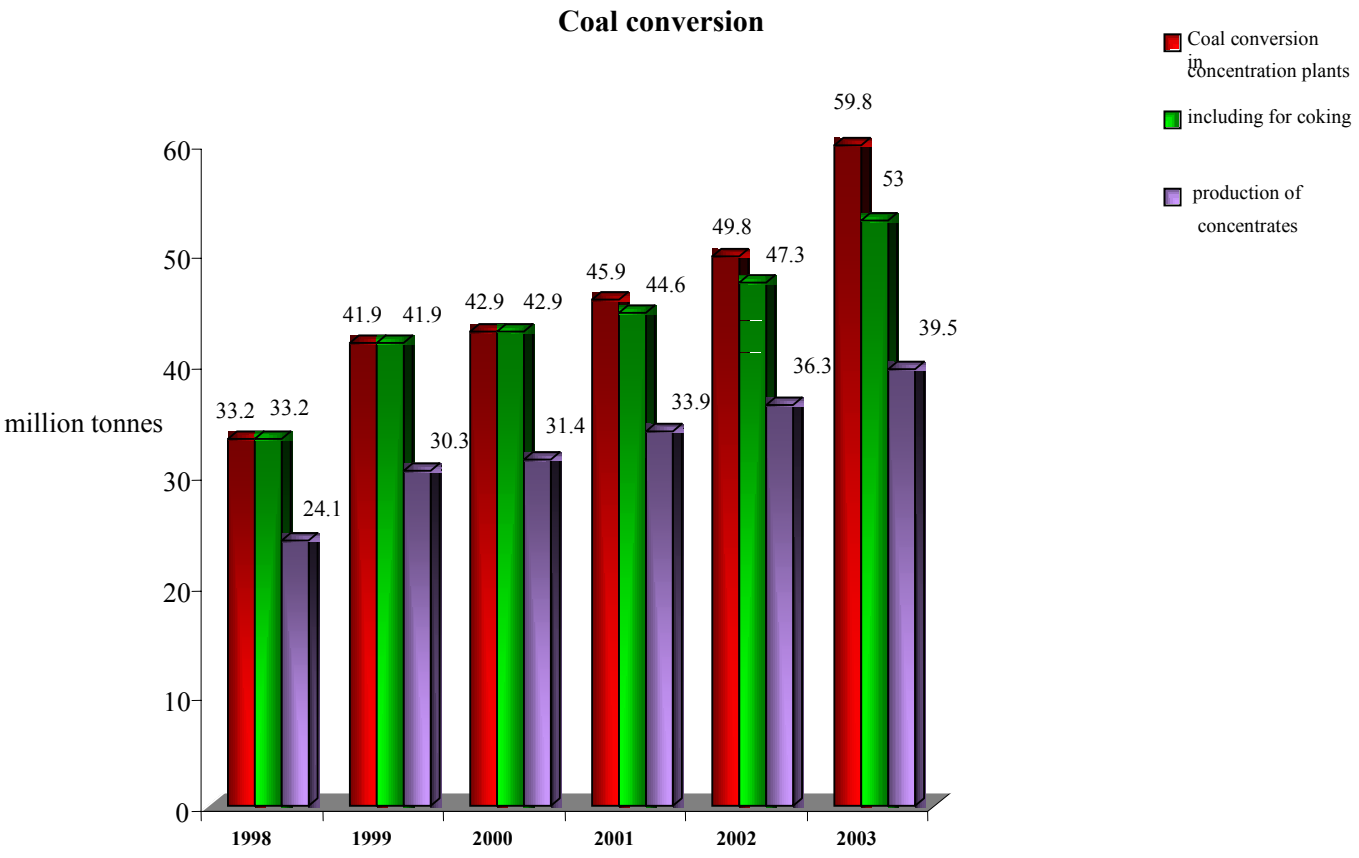


Figure 10. Coal conversion in concentration plants in Kemerovo oblast, in million tonnes

In 2003 59.8 million tonnes of coal were converted in concentration plants in the Kuzbass - an increase of 10 million tonnes (20%) on 2002 - including 53 million tonnes of coal converted for coking - an increase of 5.7 million tonnes on the previous year.

43 million tonnes of concentrate were produced, including 39.5 million tonnes of high-quality concentrate for coking.

Annexe 1

Shallow coalmining sites

Mine	Surface area of shallow mining [ha]		% of the surface area of shallow mining	Redevelopment of shallow mining sites [ha]			
	Total	Studied		Building	Forest	Agric.	Other
1	2	3	4	5	6	7	8
Porąbka-Klimontów	166		10	96	52	15	3
Kazimierz-Juliusz	41	22	2	9	15	9	7
Saturn	231	100	8	48	53	54	76
Paryż	295	295	11	180	30	55	30
Grodziec	326	0	10	146	3	96	81
Jowisz	11	0	1	0	0	11	0
ZG Wojkowice	1	0	0	1	0	0	0
Siemianowice	438	25	18	127	41	52	218
Niwka-Modrzejów	310	45	16	194	10	1	105
Sosnowiec	126	25	6	102	0	0	24
Ziemowit	379	25	6	83	0	296	0
Piast	60	60	1	30	30	0	0
Jan Kanty	760	0	24	0	0	0	760
Siersza	202	25	5	61	58	16	67
Jaworzno	597	150	12	325	78	87	107
Janina	4	0	0	4	0	0	0
Powstańców Śl.	440	0	25	22	198	40	180
Śląsk – Matylda	314	0	44	157	3	3	151
Bobrek – Miechowice	460	0	19	91	87	110	73
Centrum – Szombierki	964	0	60	540	34	34	35
Rozbark (with ZG Bytom II)	661	8	57	382	0	25	254
Bielszowice	528	51	15	353	74	67	34
Andaluzja (with ZG Brzeziny)	414	0	50	73	0	217	124
Julian (with ZG Piekary)	207	0	21	41	0	0	166
Polska – Wirek (with the Wawel mine)	982	30	31	487	293	0	202
Pokój	860	51	37	630	0	80	150
Halemba (without Panewniki field)	57	0	3	5	0	40	12
Śląsk (without Panewniki field)	38	0	5	0	38	0	0
Marcel (without Maja 1 mine)	80	0	1	16	20	33	11
Rydułtowy	549	100	12	376	122	31	20

Chwałowice (with Rymer mine)	6	0	0	1	2	2	1
Jankowice	50	0	3	25	0	25	0
Anna	34	0	1	3	0	27	4
Katowice – Kleofas	225	0	14	193	0	0	32
Mysłowice	135	2	12	55	36	2	42
Wieczorek	280	28	17	162	118	0	0
Staszic	204	1	12	6	197	0	0
Wesoła	1 106	10	24	188	685	233	42
Murcki	863	8	17	114	685	23	42
Wujek	156	0	20	30	126	0	0
Dębieńsko	116	0	3	15	92	0	9
Pstrowski	369	369	6	50	0	124	195
ZWSM Jadwiga	127	127	16	24	0	24	79
Bolesław Śmiały	2 120	0	28	510	702	908	0
Makoszowy	14	0	0,5	14	0	0	0

Annexe 2

Management of mining waste in the coalmines of the Upper Silesia Mining Basin in 1995-2000

Years / millions of tonnes	1995	1996	1997	1998	1999	2000
Increase in direct waste from mining	54.0	52.9	52.2	45.7	39.8	37.5
Industrial use:	5.9	6.9	6.1	5.7	3.2	2.7
- left underground	0.5	0.3	0.4	0.4	0.2	0.6
- backfill	4.0	4.1	4.4	3.7	2.4	1.8
- recovery of coal and minerals	0.6	0.8	0.7	0.7	0.2	0.1
- production of building materials	0.2	0.05	0.02	0.1	0.0	0.0
- recovery by other operators	-	-	-	0.8	0.4	0.2
Industrial use:	11.4	12.4	13.8	15.8	25.2	28.4
- Civil engineering	8.6	9.3	10.4	10.1	18.8	19.6
- Other	2.8	3.1	3.4	5.7	6.4	8.8
Storage in the environment	36.6	33.6	32.3	24.2	11.4	6.4
- earthworks	8.5	8.2	8.4	9.4	-	-
- centralised storage	7.9	6.2	5.5	3.8	1.5	1.0
- own storage areas	20.2	19.2	18.4	11.0	9.8	5.4
- temporary storage	-	-	-	-	0.1	0.02
Use of waste from third parties in underground workings	4.0	4.2	4.3	3.9	3.5	4.2

Annexe 3

Presence of methane in coalmines in 2000

Mine	Capture of methane	Use	Absolute quantity of methane
	[millions m^3CH_4/an]	[%]	[millions m^3CH_4/an]
Anna	-	-	4.5
Bielszowice	8.9	0	29.7
Borynia	2.0	44	16.0
Brzeszcze	29.5	100	101.4
Budryk	18.2	0	49.8
Chwałowice	4.8	0	13.8
Halemba	3.3	100	27.7
Jankowice	7.7	10	13.2
Jas-Mos	10.6	94	37.8
Katowice - Kleofas	-	-	8.7
Knurów	-	-	5.6
Krupiński	12.8	74	30.7
Makoszowy	-	-	2.3
Marcel	11.1	67	36.0
Mysłowice	-	-	10.2
Niwka - Modrzejów	-	-	2.4
Pniówek	51.1	64	125.3
Pokój	-	-	0.5
Polska - Wirek	-	-	1.1
Rydułtowy	-	-	2.6
Silesia	5.8	98	34.6
Sośnica	9.6	0	47.4
Staszic	8.3	43	20.4
Śląsk	3.3	0	8.8
Wesoła	12.4	19	43.4
Wieczorek	-	-	21.3
ZG Bytom III	-	-	0.2
Zofiówka	20.0	94	45.1

Annexe 4

Mining company (as at 31/12/2002)	***Submerged sites***		
	Quantity	Surface area	% of surface area
	[Units]	[ha]	Total
Bytomska Spółka Węglowa Co.	57	83	8,8
Gliwicka Spółka Węglowa Co.	56	261	27,8
Jastrzębska Spółka Węglowa Co.	34	67	7,2
Katowicki Holding Węglowy Co.	58	170	18,1
Nadwiślańska Spółka Węglowa Co.	25	168	17,9
Rudzka Spółka Węglowa Co.	60	129	13,7
Rybnicka Spółka Węglowa Co.	21	22	2,3
Independent mines	17	39	4,2

Annexe 5

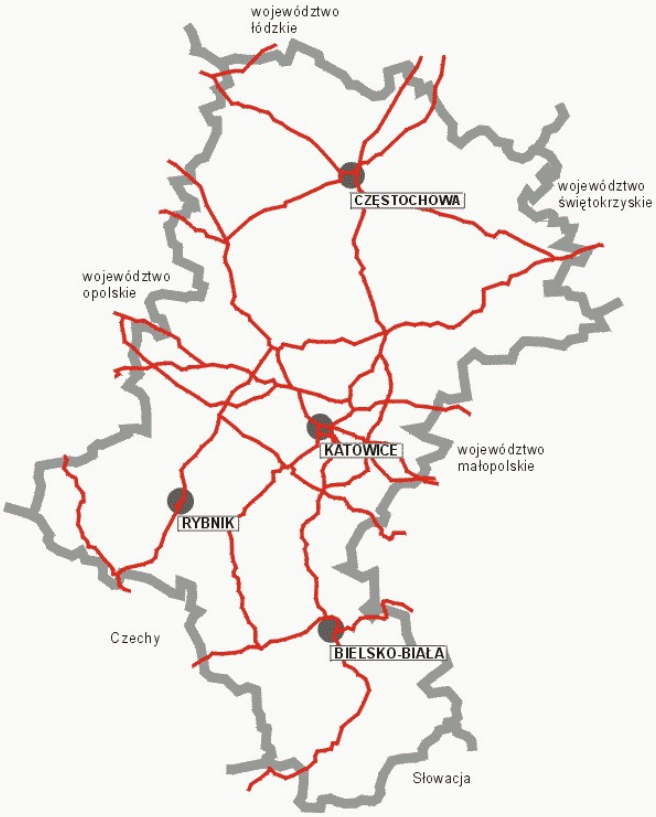
Commune	**Zone**	**Surface area – hectares**
Tychy sub-zone		
Tychy	Eastern Zone	129.0
Tychy	Technopark	9.2
Gliwice sub-zone		
Gliwice	Northern Zone	310.4
Gliwice	Bojkowska	26.0
Jastrzębie-Zory sub-zone		
Godów (Skrzyszów)	Pole Gołkowskie	33.5
Zory-Pawłowice	Pole Warszowice	42.0
Jastrzębie Zdrój	Pole Bzie	21.0
Jastrzębie Zdrój	Pole Moszczenica	9.5
Jastrzębie Zdrój	Zone Ruptawa	6.8
Sosnowiec-Dąbrowa sub-zone		
Sosnowiec	Milowice	25.6
Sosnowiec	Dańdówka	16.4
Sosnowiec	Niwka-Modrzejów	14.0
Sosnowiec	Kazimierz-Juliusz	3.3
Dąbrowa Górnicza	Paryż	8.3
Dąbrowa Górnicza	Bankowa	24.6

Dąbrowa Górnicza	Zaplecze Huty Katowice	77.8
Dąbrowa Górnicza	Koksownia	48.2
Dąbrowa Górnicza	Gołonóg	0.9
Dąbrowa Górnicza	Jamki	2.7
Częstochowa sub-zone		
Częstochowa	Zone Legionów	10.0
Częstochowa	Zone Walcownia	20.0
Bielsko sub-zone		
Bielsko-Biała		35.0
Bielsko-Biała		

Source: Regional Development Board in Katowice

PLAN
ZAGOSPODAROWANIA PRZESTRZENNEGO WOJEWÓDZTWA ŚLĄSKIEGO

Problematyka terenów poprzemysłowych - materiały na III posiedzenie Zespołu Zadaniowego ds. Planu Zagospodarowania Przestrzennego Województwa Śląskiego



KATOWICE, 7 PAŹDZIERNIKA 2003

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42-200 Częstochowa, ul. Sobieskiego 7, tel./fax 0-34 324 73 36, tel. 0-34 324 35 81, biuropp_czwa @ poczta.onet.pl

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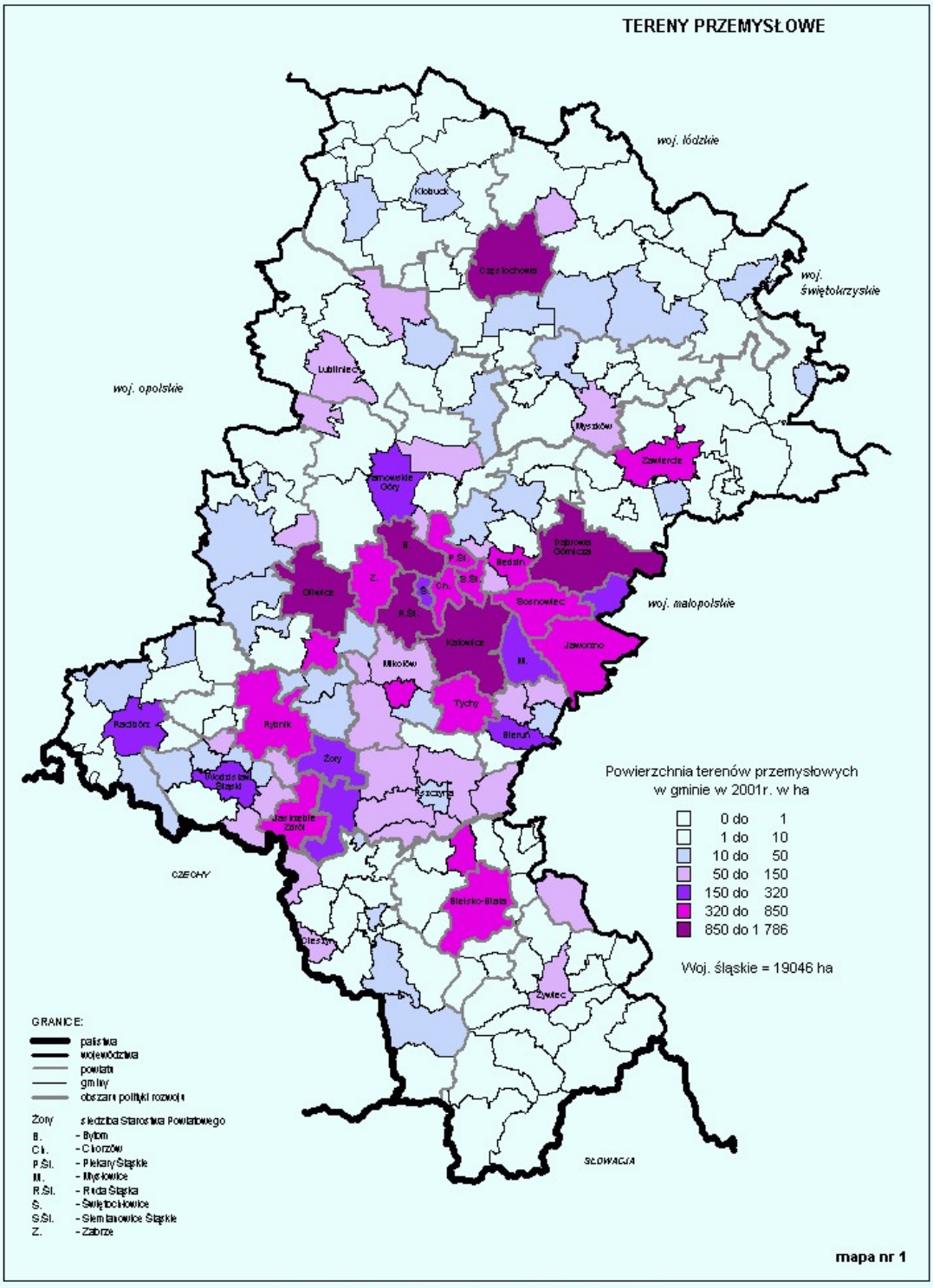

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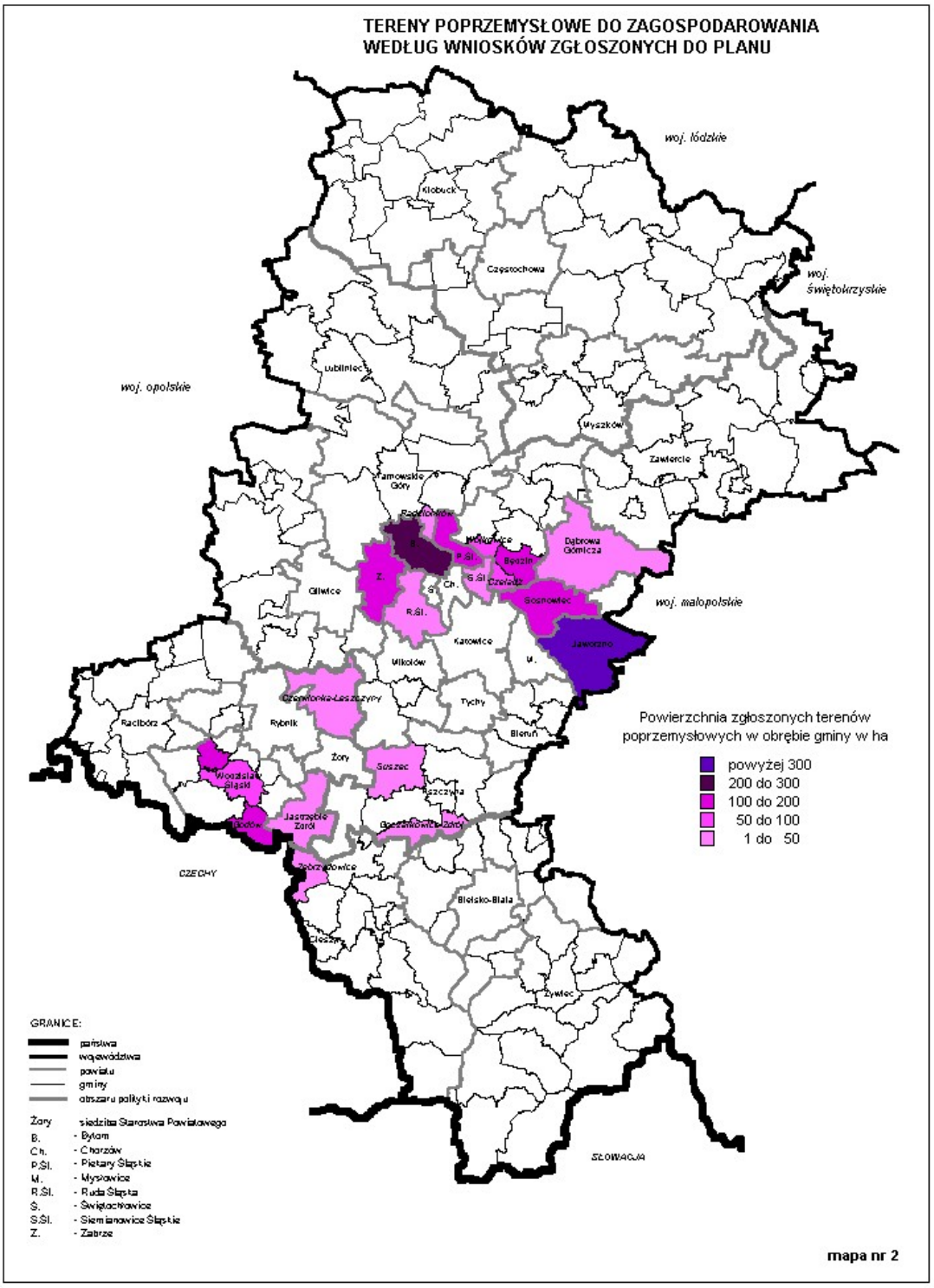

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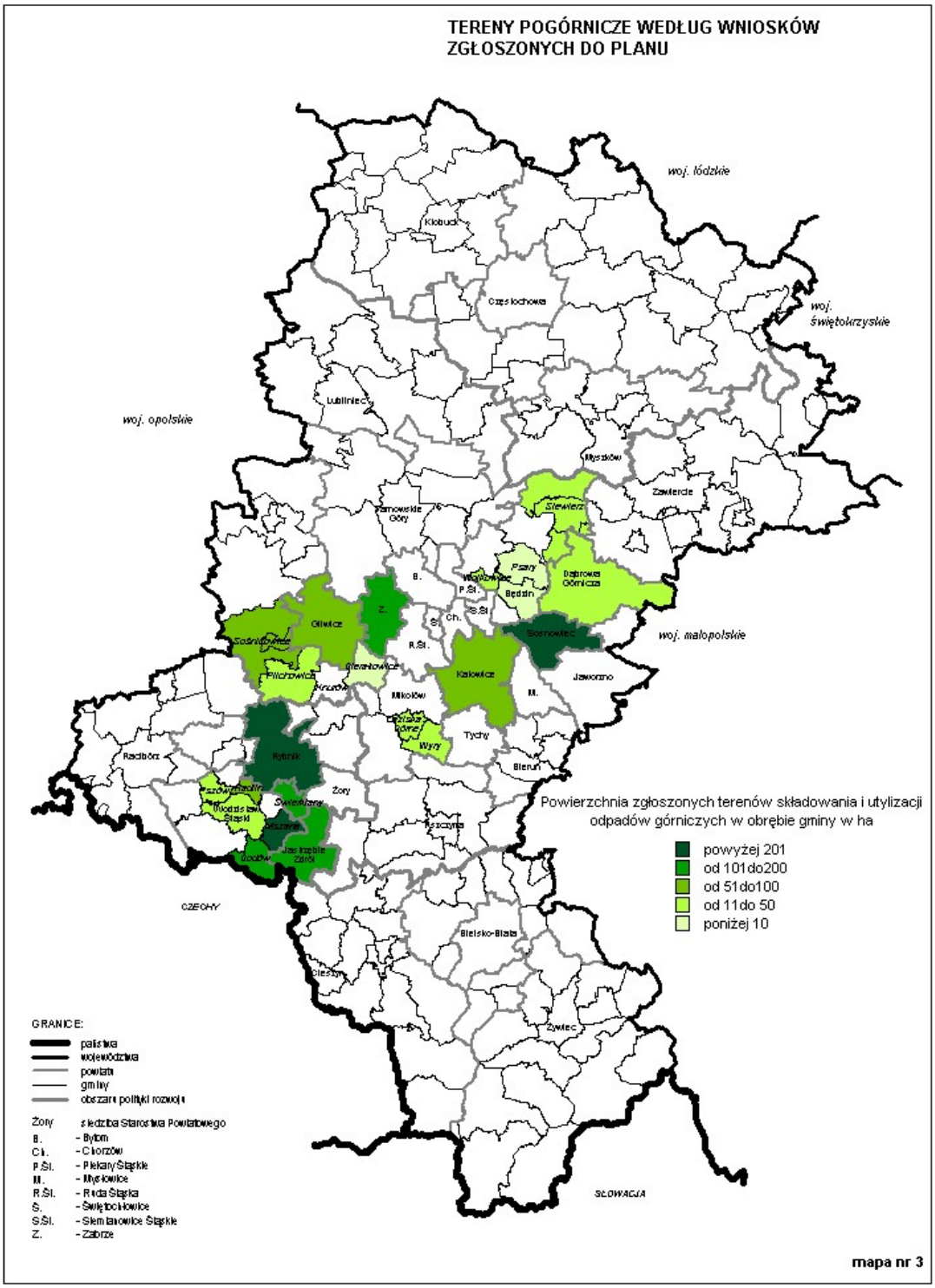

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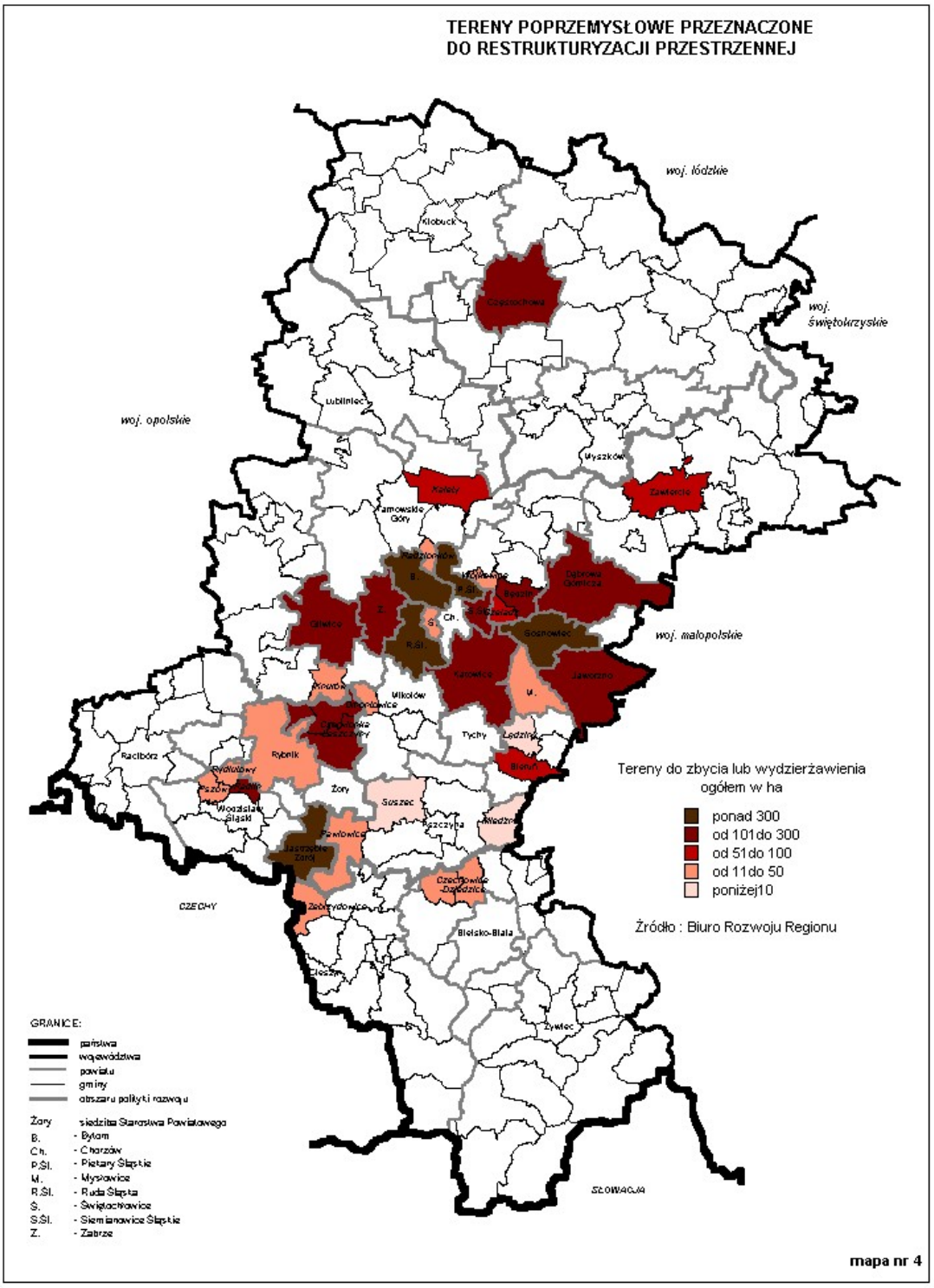

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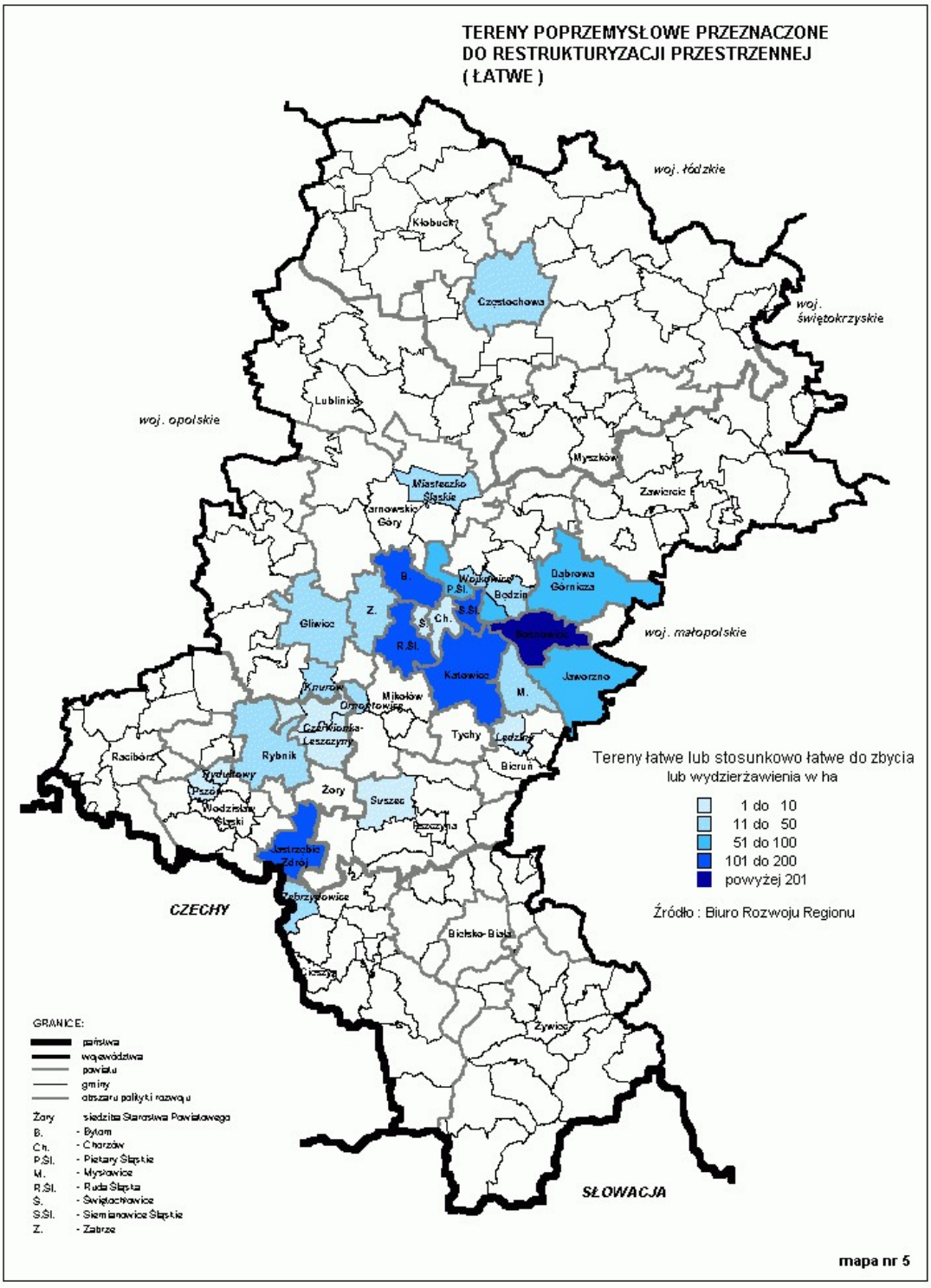

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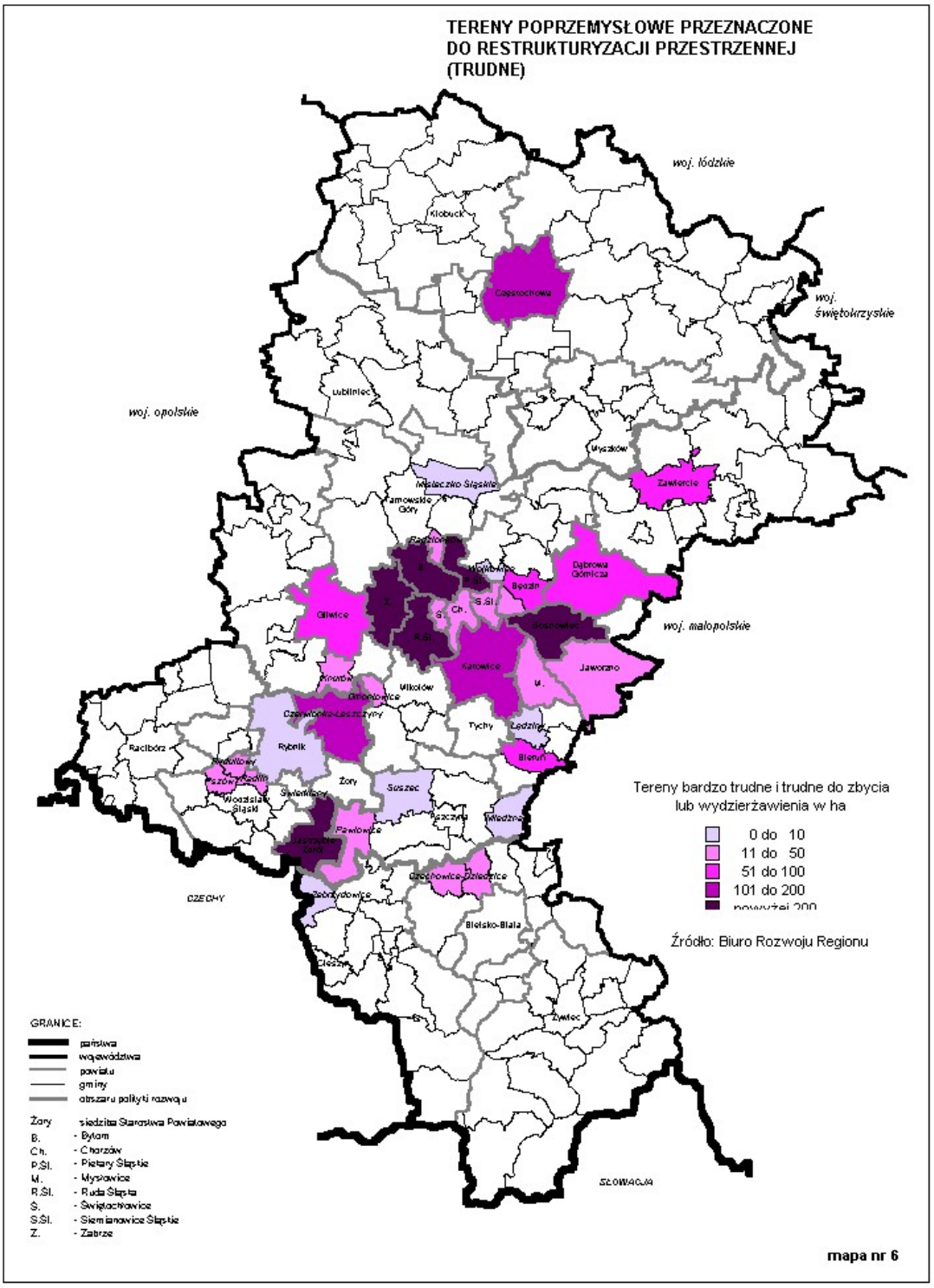

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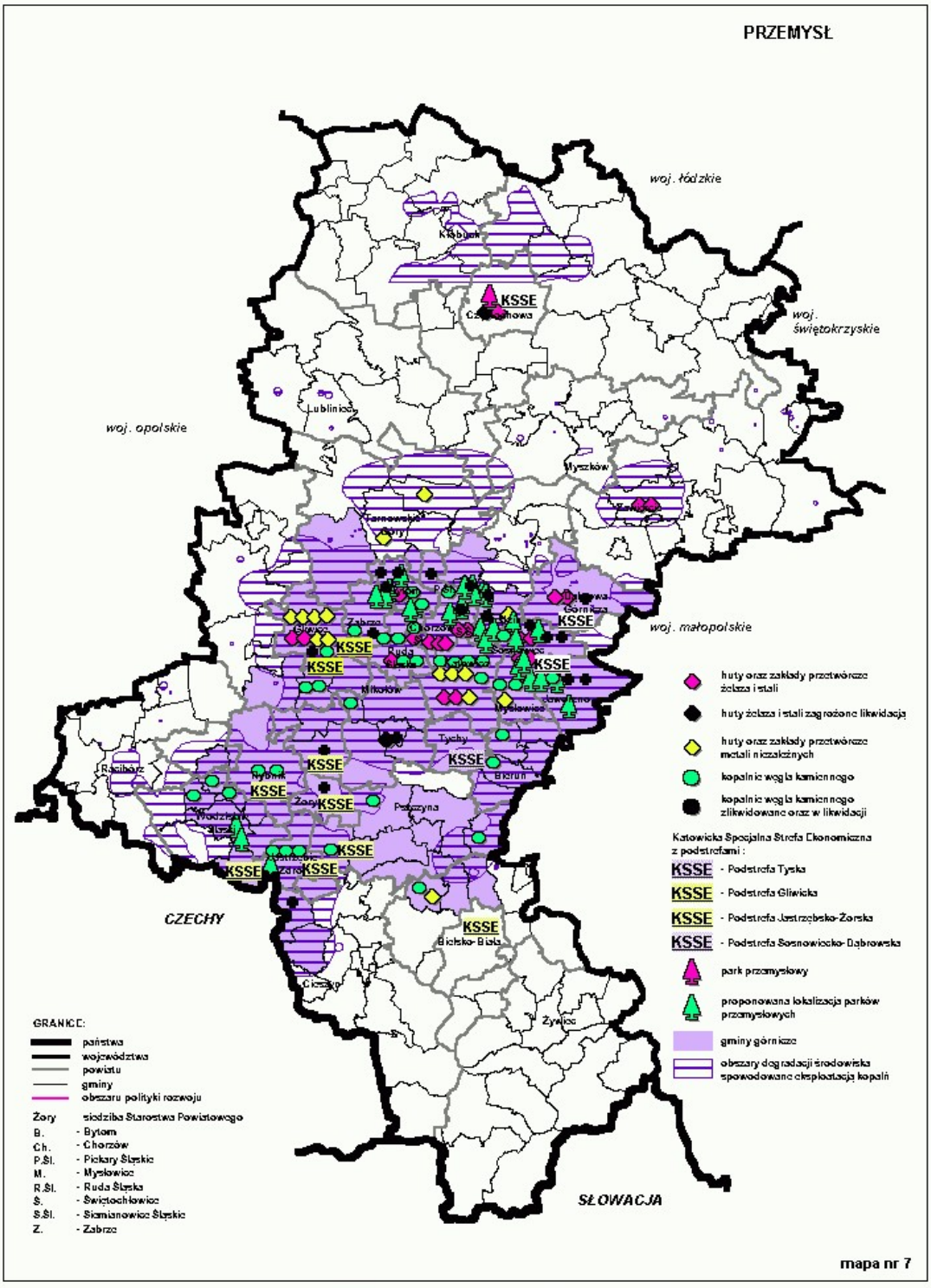

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