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# Baseline Study of the Mining and Minerals Sector in the Republic of Khakassia

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## Introduction

The project for “Sustainable development and future prospects of the mining industry in the Republic of Khakassia and improvement of social and environmental factors”

Participation in this international project is seen as one of the important mechanisms for integrating the Russian Federation into worldwide, global processes. Basic research in Mining, Minerals and Sustainable Development (MMSD) in the Republic of Khakassia is geared towards bolstering the image of the mining enterprises and promoting their products on international markets.

One of the practical aims of this project is to attract the investments needed to establish resource-saving, low-capacity technologies and methods for the rational use of natural resources in business practice applied by ore-mining enterprises in Khakassia, and also to develop and establish measures aimed at strengthening the mineral raw materials base and the environmentally sustainable development of the Republic of Khakassia in the social and economic sphere.

Research carried out under the MMSD project will make it possible to study the interaction between the mining sector and other sectors of industry (energy, transport, engineering, agriculture etc.).

Researching social and economic issues, human health and environmental health, and seeking out ways to reduce social and economic tension and raise employment levels are significant matters requiring study and analysis.

An analysis of the existing legislative basis is required to develop new draft laws and other regulatory legal enactments to ensure the sustainable development of mining in the Republic of Khakassia.

Over the course of the project, an analysis needs to be made of the possibilities for tax optimization – as this is a factor that affects the development of the sector. MMSD research will make it possible to study matters of licensing, expert assessment and state control.

One of the important issues for the Republic of Khakassia is to restore disturbed landscapes and natural systems. This line of research must answer the question: what can be done about the consequences of industrial workings?

Of no less importance for the Republic of Khakassia are matters associated with protection of the environment and maintaining biological diversity. It is planned that within the framework of the project a study should be made of the interaction between the mining sector and its impact on the various forms of natural resources (forest, water, nature conservation areas, commercial minerals). Moreover, a need has arisen to examine development of the mining sector with due regard to established cultural and historical traditions, questions of ecological education and awareness, and also analysis and proposals on staffing the sector and involving the mass media in its development.

On the whole, the research needed in the Republic of Khakassia has been governed by the following conditions:

1. The need to attract significant volumes of investment.
2. The progressively ageing industrial base of the mining enterprises.
3. The low level of added value in the mining enterprises' products.
4. The need to enhance the legislative, and regulatory base towards further improvement of market mechanisms and creating a favourable investment climate in the ore-mining industry.
5. Difficulties in promoting export production from the ore-mining companies of Khakassia

### **Foreword, by First Deputy President of the Government of the Republic of Khakassia, Mr V.Tsyganok**

#### **The Natural Resources of the Republic of Khakassia and the Prospects for Environmental Protection**

Information about the natural resources of the Republic of Khakassia and the prospects for environmental protection is provided by the First Deputy President of the Government of the Republic of Khakassia, Vassiliy Tsyganok.

The Republic of Khakassia is one of the unique regions of Russia as regards its natural resources. Here, the riches to be found under the earth, the unparalleled structure of the landscape, the abundance of health-giving lakes and the diversity of the flora and fauna come together in an amazing combination.

Whilst being actively involved in preserving its unique natural wealth, the Republic of Khakassia is at the same time making a solid contribution towards the economic development of the country.

This primarily concerns the mining sector. Deposits of coal, iron, molybdenum, gold, barite, bentonite, gemstones and architectural facing stones have been located and are being developed on our territory. In total, the state balance sheet for the Republic of Khakassia includes 166 sites where such deposits exist. There are four fields in the Minusinsk hard coal basin where 5.3 billion tonnes of coal is concentrated, and where 3.6 billion tonnes of that is suitable for opencast mining. In this connection, the development by our Republic of a programme for coordinated mining of coal resources, and also a study into the impact of recovery and processing of types of coal on the environment, have become especially topical.

Eight fields of magnetite ores have been prospected in Khakassia. Of these, three are currently being mined industrially. At one other – the one at Izykhgol – work is in progress in preparation for mining it. Future increases in the volume of iron ore recovered will be associated primarily with the development of the iron ore deposits in the Tyoysk group, but also with the completion of reconstruction work at the Abakan mine.

Reserves of molybdenum in the Republic are significant. But only one site out of three is being industrially mined – the one at Sorsk. In this connection, I would like to point out

that the Limited Liability Company “Sorsk GOK” is the only company in Russia that produces molybdenum concentrate.

Gold has been extracted from our lands since the first half of the 19<sup>th</sup> century. At the present time recovery of gold focuses on the resources of four indigenous deposits and 30 deposits of placer gold. According to the experts’ assessments the forecast gold resources amount to approximately 70 tonnes.

Also, there are confirmed opportunities for Khakassia’s natural mineral wealth to satisfy the needs of Russia’s industrial complex for barite and bentonite, which are currently classified as types of unprocessed minerals in a shortage category. Deposits of natural stones for architectural facing are also being worked successfully.

Alongside this, it should be specially stressed that Khakassia’s potential in resources requires further study. It is possible that targeted work in the context of the programme of geological study of the mineral resources may reveal deposits of antimony, wolfram, lead and zinc ores, and hydrocarbons – oil and gas.

Apart from the mineral deposits being developed and prospected, our Republic has significant resources of underground and surface fresh water.

At the present time we have 26 reservoirs, about 100 ponds, and more than 1,000 lakes. It is estimated that the overall surface area of all Khakassia’s water bodies exceeds 840 square kilometres.

Unfortunately, no broad application for our underground mineral waters can be found for the time being, but reserves are very significant. Scientists from the Tomsk Scientific Research Institute for the study of health resorts and physiotherapy have been commissioned by the Committee on natural resources of the Republic of Khakassia to undertake a wide-ranging assessment of the balneological properties of hydro-mineral resources, and in the future this will serve as the basis for expanding sanatoria and health resorts in the region.

Meanwhile the Republic’s population today is suffering from a shortage of quality drinking water. Water resources in Khakassia are distributed extremely unevenly. The greater part of these resources is concentrated in the valleys of the rivers Yenisey and Abakan, whilst many populated areas of the Bograd, Shirin, Altay, Bey, Ust-Abakan and Askiz regions are located outside the river valleys in areas where the underground, slightly brackish, water is excessively hard.

If we turn our attention to the forests, then they have a special place among our natural resources. The overall area of woodland amounts to 61% of the entire territory of our Republic. The cedar forests are of particular value. For a long time Khakassia worked intensively to supply industrial timber to meet state requirements, and for this reason its forestry resources are significantly depleted at the present time. Fires cause irreparable damage to the forest economy. In this year alone there were more than 200 fires. The situation when everything is taken together undoubtedly demands that adequate and urgent steps be taken to protect the natural richness of the Siberian taiga.

In Khakassia it is the Committee for Natural Resources that works to ensure rational use of forest resources and to increase their potential. With its direct involvement, a programme has been developed for the Republic called “The forests of Khakassia”, which provides for a number of economic measures to be taken in the area of forestry. Tackling the immediate tasks of ensuring state management of water resources has been made easier by a targeted programme adopted by the government of the Republic to study, restore and protect water bodies. The rational use of the region’s mineral raw materials potential, as well as its preservation and restoration, has been a priority in environmental policy. It is precisely to this that the targeted programme of geological and prospecting work for the period 2001 - 2005 is devoted. Additionally, in order to make the ecological situation healthier, an action plan has been approved in Khakassia for the protection of the environment over the next five years. The untold riches of our Republic need reliable protection in our time.

It should be pointed out that in recent years a sound regulatory and legal basis has been developed in Khakassia, allowing the natural potential of the region to be drawn actively into economic output. The initiator and developer of many projects is the government of the Republic of Khakassia.

Today the power structures of the Republic are faced with tasks that are absolutely specific. In particular, we are faced with reinforcing state control in the whole field of the use of natural resources and protection of the natural environment, setting out a system of precise and transparent relationships of authority with the business community that exploits natural resources, and laying the basis of a balanced regional policy on this range of issues. We intend to involve representatives of all interested departments in this work, including the law enforcement and fiscal authorities.

It has to be admitted that we shall have to act in conditions that are not straightforward. Bringing order into the use of natural resources generally runs counter to the interests of powerful oligarchic clans at the regional or federal level, who have become accustomed, without control or accountability, to disposing of that which is rightfully considered the national property of Russia.

Even now, when a study has been made of the situation that has arisen, it turns out that in the current administration of the law, the practice of issuing permits to exploit mineral, timber and water resources, and especially in the practice of monitoring adherence to licensing requirements and withdrawal of licences, there are numerous bottlenecks, frequently leading to a great variety of infringements, above all in the areas of environmental protection, production and fiscal aspects.

We may as well face the fact that it is only in the area of mineral wealth exploitation that there are such frequent cases where prospecting for deposits and mining itself lags many years behind stated programmes, or quite simply the work never gets done at all. Clearly, we shall have to set about reviewing the results of individual tender competitions for the issue of licences. Of course, these actions will be taken particularly within the limits of the legal field of existing legislation. Do not imagine that our task is to take away licences. No, we are not aiming to do that at all. It is just that in all matters linked to the use of natural resources we shall be establishing firm order.

I am sure that environmental protection is not a lost cause if it is applied in a focused and controlled way, as in the implementation of the programmes, plans and concepts adopted.

## **Part I. General Review of the Mining and Industrial Sector**

### ***The Republic of Khakassia. General Information.***

The Republic of Khakassia is a mountainous Central Asian country in the south of Siberia with nine natural climatic zones and an area covering 61.9 thousand sq km (0.4% of the territory of the Russian Federation), a fifth part of which is covered by forest steppe and steppe. It has significant mineral, water and forest resources, well-developed industry and unique natural landscape formations with eco-systems ranging from semi-desert to high Alpine meadows and tundra.

- Nature reserves: the 'Khakassia' State nature reserve.
- Game reserves: 'Bograd' and 'Karartoshsko-Iney'.
- Natural parks: 'Iyuss' and 'Ivanovskiy ozyora'.

The uniqueness of the orogeographic peculiarities of the region, its geological structure and the hydrogeological conditions that characterise of the densely populated Minusinsk basin with its steppe-like landscapes and favourable climate, in combination with the mountain fastness of the Altay-Sayan region with its folding topography (the eastern slopes of the Kuznetsk Alatau and the North Western part of Western Sayan) creates conditions for agriculture that are unique for Siberia, whilst mineral riches predetermine the creation of a formidable industrial and agricultural complex, which is in the development stage.

Despite the impact on the environment of the existing industrial facilities and those under construction, as a whole the ecological situation in the Republic of Khakassia is somewhat better than the average across Russia.

The area of the Abakan-Chernogorsk industrial region suffers the greatest anthropogenic burden. There is a high-level of atmospheric pollution, pollution of underground water by oil and petroleum products, and the problem of utilisation of waste from industrial and domestic sources has not been resolved.

However, a relatively large part of the area of Khakassia still remains untouched by the harmful effects of economic activity.

Emissions of polluting substances from static sources across the Republic as a whole amounted to 102.7 thousand tonnes. By comparison with 1997 there was a decrease in emissions into the atmosphere of 2,000 tonnes.

Considerable impact on surface water pollution is caused by effluent from industrial, agricultural, public and communal enterprises, and diffuse area pollution from fields, agricultural sites, and settlements and industrial facilities that are poorly laid out from the point of view of public health.

In 1994 polluting substances discharged with effluent into the Republic's water bodies amounted to 53.1 thousand tonnes, and in 1998 – to 19.4 thousand tonnes for the year.

Over the last 25 years the annual average losses of humus on the arable lands of Khakassia has amounted to 1.6 tonnes from each hectare. The main losses of humus were caused by wind and water erosion of the soil. For the Republic as a whole, 932 thousand hectares of agricultural land was subject to wind and water erosion, and salt build-up and a high degree of mineralization was apparent on 124 thousand hectares, build-up of sodium salts on 59 thousand hectares and of stoniness on 398 thousand hectares.

Apart from natural factors affecting the condition of the ground, there are ground pollution factors from the products of the extraction and processing industry, and from public, communal and animal husbandry wastes.

Ten kilometres to north-east of the town of Sayanogorsk in the Republic is the Sayan aluminium plant.

There are around 460 thousand hectares of land within its area of influence, including parts of three administrative regions. There are 11 agricultural enterprises, 50 farms and 30 settlements. About 130 thousand hectares of arable land are concentrated here, as are about 150 thousand hectares of land producing fodder and 22 thousand hectares of forestry and surviving pine forest.

Since 1974 the deleterious effects of rocket and space engineering have been felt on the natural environment of Khakassia. An area of around 1,100 sq km in the upper reaches of the river Abakan was constantly in use as a zone where the fragments from the second stages of the heavy Proton type rocket boosters would fall to earth, as was the case with fragments from the nose cones of Zenit booster rockets launched from the Baykonur cosmodrome. When there is a launch, the ground surface is peppered with toxic rocket fuel components and bits of metal.

Opportunities to overcome the above limitations, and the extent to which it is possible, as they bear on this, that or the other trend of development, have predetermined the examination of three possible options for the longer-term development of Khakassia's economy.

Option 1 presupposes maintaining the basic raw materials (nature-intensive) orientation of the economy that has been established in recent years, and the future expansion as a priority of the fuel-and-energy and metallurgical complexes that are virtually the only source of hard currency earnings.

Opportunities for the industrial processing sectors to invest and solve the numerous problems that they have, with their acute shortage of financial resources, will be very limited, all the more so because to support the required levels of export by the raw materials sectors which operate expensive imported equipment, and new technologies that also have to be bought, huge sums of money will be required.

The burden of the economic, technological and management problems that occur in every raw materials sector - the high degree of wear and tear on equipment, high capital requirement for reconstructing existing enterprises and building new plant, outdated and inefficient technologies, heavy loading on the natural environment, lagging behind in geological and prospecting work and the work to conserve the mineral raw materials base -

will make it impossible, despite the priorities, to achieve great acceleration in the development of these sectors and exceed average growth rates for industry.

Intensive development of the nature-intensive industrial sectors may lead to an increase in the burden on the environment generated by technology. The main polluters – energy, the coal industry and metallurgy – will increase the emissions of pollutants into the atmosphere by 40-55% and the discharge of effluent into water bodies by 65-70%, whilst pollution of the soil will increase by 35-45%. The development of new types of production will be held back and the attractiveness of the region for recreation will suffer.

Speeding up the development of engineering and the chemical and petrochemical industries will, most likely, be of a domestic nature and may allow them to increase the proportion of industry they represent well beyond 2010.

The growth in the gross regional product of the Republic under Option 1 may amount to [1]11-113% in 2001-2005, and 115-117% in 2005-2010: in industry - 112-117%, and in agriculture - 113-118%.

Under Option 2, the maximum possible development of the economy has been basically forecast on the back of the sectors that ensure scientific and technical progress in all spheres of the economy. These sectors make products that can compete with the finest examples in the world. It is assumed that the greatest acceleration will be in engineering and in the chemical and petrochemical industries.

The pace of growth in the Fuel and Energy Complex sectors and the metallurgical complex is substantially lower than that for the average across industry, which is because of the ideology of the scenario, as well as other objective limitations associated with the natural preconditions for developing these branches of industry and the prevailing state of the global market.

It is assumed that in Option 2 conditions, progressive changes will be made in industry to bring its structure closer to the optimal state: in 2001-2010 engineering's share will grow by 7%, the food industry's by 4.1%, light industry's by 2.1% and the chemical and petrochemical industry's by 1.6%. The Fuel and Energy Complex's share and that of the metallurgy sector will be substantially reduced.

Growth in the gross regional product may total 124-126% in 2001-2005 and 128-130% in 2005-2010 with a growth in industry as a whole over these periods of up to 126-131%, and in agriculture up to 114-122%.

In the case of Option 2, development is hitched to huge capital costs and possible failures to implement a number of environmental and social programmes.

Therefore, a third option is being forecast that envisages a smoother transition to a post-industrial path of development.

In this third option, a less active dynamic for developing the economy is assumed that puts the accent on accelerated growth of sectors and production orientated towards the consumer market and a relatively swift (2-3 years) return on investments, primarily for the food industry and light industry. It is assumed that engineering and the chemical industry,

whose rates of development are forecast to be above the average across industry, will be geared towards meeting the demand of the priority sectors of industry and agriculture for machines, equipment, fertilizers, chemicals and so on, and also public demand for their products backed by the necessary spending power.

It is assumed that structural changes in industry will be less significant than under Option 2. Nonetheless, we can expect the development of a noticeable tendency in the structure of industry towards a more prominent role for engineering, the food and chemical industries and light industry, with a diminished role for the branches of industry represented by the Fuel and Energy Complex and metallurgy.

Under Option 3, the growth in GDP may total 121-122% for 2001-2005 and 126-127% for 2005-2010; industrial growth up to 122 or 128%, and agriculture 114-120% respectively.

Option 3 is the most acceptable in its economic and environmental aspects. Implementing it allows the necessary volumes of investment in social and environmental programmes to be provided. Positive tendencies will emerge in shaping the branch structure and functional structure of Khakassia's economy. In the overall structure of basic funds, the share represented by market and non-market services will increase from 30.8 to 38-39%, of which a significant proportion (up to 9%) will be down to the health resort and tourist business.

Khakassia has great potential for health resorts and recreation, including climatic conditions that are relatively comfortable for the Siberian region, numerous mineral lakes, therapeutic mineral mud, underground mineral waters, and wide expanses of pristine natural landscape for tourism.

At the present time the natural territories under protection cover some 988 thousand hectares, amounting to 15.9% of the entire area of the Republic. The planned increase in the network of protected natural sites in Khakassia will make it possible in large measure to keep wildlife almost free from human intrusion, with the aim of supporting biological diversity and preserving the genetic stock of rare and endemic plant species and endangered animal species.

The overall volume of investments made by the Republic of Khakassia's ecology fund to nature protection measures in 1998 totalled 14.3 million roubles. In addition, to finance research of a nature conservation character, introduce measures to improve public health, develop the material and technical base of the 'Chazy' and 'Malyi Abakan' state nature reserves, another 2 million roubles were allocated. Implementing Option 3 will create the conditions in the Republic of Khakassia for topping up the ecology fund to 30-35 million roubles. This will make it possible in large measure to carry out nature conservation, and direct more resources towards developing the material and technical basis of the nature reserves and game reserves.

Industry: metallurgy, mining, engineering, food, textile and wood processing industries and the building materials industry.

Agriculture: production of grain, vegetables and fodder, sheep farming, meat and dairy production, animal husbandry and rearing poultry.

The population of the Republic (as at 01.01.2001) – 508,700 people, of whom 84.6% are the active population.

Towns: Abakan with a population of 178,000, Chernogorsk, Sayanogorsk, Sorsk and Abaza.

Seven regional divisions. Settlements of an urban type: Ust-Abakan.

## ***The State of the mineral raw materials base***

### ***Natural mineral resources***

The Republic's mineral resources are represented by deposits of coal, iron, gold, molybdenum, polymetallic ores (lead and zinc), marble, barites, bentonites, limestone, rock phosphorites, asbestos, uranium, gypsum, jadeite, nephrite, and mineral waters.

There are good prospects for discovering deposits of manganese, wolfram, antimony, cobalt, oil, gas and gas condensate.

The twenty main mining enterprises in the Republic contribute almost 20% of the tax revenue to its budget and provide permanent employment for 8% of the population.

Virtually all Russia's molybdenum is mined in the Republic, and recovery of coal, gold and iron ore constitutes respectively 3%, 1.5%, and 4% of the amount for Russia as a whole.

In recent years the world press has given ever more frequent coverage to the opinions of specialists on the role of Russia and its eastern regions – Siberia and the Far East – as world leaders in terms of their reserves of commercial minerals. It is seriously forecast that these resources will be used to supply mineral raw materials to developed countries that have long ago exhausted their own mineral base.

Suffice it to say that the main world reserves of hard coal and lignite are concentrated in Russia and its Siberian regions, whilst hard coal from Tamyр, in terms of reserves, exceeds reserves in the Kanskо-Achin basin and the Minusinsk sub-formations taken together.

Development of the Yenisey-Anabar, Leno-Tungus and Okhotsk oil and gas regions will make it possible to supply the full requirement of all the regions of Siberia and the Far East for hydrocarbons and liquid fuel for many years to come.

The deposits of copper in Udokan, with a Cu content ranging from 0.2 to 4% and more exceed the Chilean reserves.

The reserves of many other commercial minerals have been prospected and assessed, including gold, diamonds, platinum, and rare earth metals.

In this connection, it is necessary to draw attention to a problem from the point of view of the national and economic security of the Russian Federation, to which 'someone' in the West, without asking Russia's opinion, has already ascribed the role of a raw materials storehouse for the global transnational corporations that control the world's financial markets.

Throughout the entire 20th-century Russia lived with the danger of becoming a country that was absolutely dependent on the will of the world's financial oligarchs, and the same concerns have been carried over into the third millennium.

The development of a situation like this, if it were to be assumed, would entail complete collapse of our own heavy industry, which would involve a winding down of the refining sectors and the transfer of all the formerly leading enterprises in the country into the hands of "overseas" owners.

This tendency which has already become apparent over the last ten years is reflected in the state strategy for the economic security of the Russian Federation (Main provisions), adopted under Presidential Edict No 608 dated 29 April 1996.

Certain agreements and contracts that were entered into to get around the legislation in force have been suspended and there has been a re-examination of international guarantees given to doubtful companies and international financial groups by subjects of the Federation (the Republic of Sakha-Yakutiya and others) where natural resources have been mortgaged with provision for their subsequent transfer to control by foreign capital.

Maintaining the domestic mining industry and its systematic development has always been for any state the basis of economic stability for the country and its people.

In the context of this problem, the Republic of Khakassia can also be classified among the resource-rich regions of Russia. The great potential of its mineral raw materials base predetermines its role in the Russian economy, whilst its underdeveloped engineering industry, combined with huge resources of iron ore, predetermines the logical development of enterprises engaged in ferrous metallurgy (a steel mill). The decision to finance the concluding phase in the construction of this plant was taken by the President of the Russian Federation during his visit to the Republic in the year 2000.

Phosphorus, which is so essential to the Republic and nearby regions, can be found at two deposits in the Republic, and must find an application in production of fertilisers for agriculture, which should be set up in the Republic to help the producer of agricultural products to supply the Republic with grain, vegetables, fodder, meat, wool and dairy products, most of which are currently purchased outside Khakassia.

Gold, the demand for which will be rather high in the foreseeable future, must be extracted to ensure hard currency earnings for the federal budget as well as that of the Republic.

The little studied reserves of rare earth metals, which are frequently brought to the surface and stored in old heaps at mines where the commercial deposits are either exhausted or being worked out, may become a widely used financial and mortgaging tool for the enterprises that extract and enrich them, and provide dependable, and possibly even the principal, tax revenues for the Republic's budget.

In this connection, research into the raw materials base of commercial minerals founded on research that has already been carried out and making use of the advantageous state of the geological environment, is more topical than ever.

Concerning the state of the geological environment, there are areas which can be singled out on the territory of the Republic where the environment has changed only slightly or is virtually unchanged – the southern and eastern mountain regions where no mining work is carried out, and also the peripheral parts of the southern and northern Minusinsk basins with their layer waters; sites where the intensity of disturbance has been average - this is a large part of the Republic’s territory where the ground is changed in a stable way over 20-25% of its area; and sites where there has been intensive change in the geological environment – these are territories where industrial and urban agglomerations, mining, and agro-industrial enterprises are concentrated.

***Reserves of commercial minerals (prospected, exhausted, untapped)***

The following resources of prospected commercial minerals are concentrated in the Republic (expressed as a percentage of the reserves of the Russian Federation):

- coal 3%
- iron ores 1%
- molybdenum 25%
- barite 27%
- bentonite 6.5%
- stone for architectural facing 13%

The potential of the prospected reserves of commercial minerals (recorded on the State balance sheet) is concentrated in the following locations:

- five coalfields of hard coal with an energy rating of D or DT in the Minusinsk coal basin, the Minusinsk sub-formations: Bey, Chernogorsk, Izykh, Askiz and Kutent-Buluk coalfields with reserves of 5.3 billion tonnes of coal, of which 3.6 billion tonnes are suitable for recovery by opencast mining;
- eight magnetite ore deposits: Abakan, Tyoysk, Abagass, Yelgentag, Izykhgol, Anzass, Volkov and ‘Samson’, whose total reserves are more than one billion tonnes of ore with an average iron content of 28-44.8%. Occurrences of manganese ores in reserves of more than 20 million tonnes have been found at Chapsordak, Malo-Syrsk and Kazanov;
- three deposits of copper and molybdenum ores: Sorsk, Agaskyr, Ipchul - large in terms of the reserves (590 thousand tonnes), but poor in terms of basic content;
- one deposit of barite ore (Tolcheinsk), where reserves amount to 4.7 million tonnes of ore with a BaSO<sub>4</sub> content of 73%;
- three deposits of natural stone for architectural facing: Kibik-Kordon, Vysogornoye and Izass with total reserves of 74 million cubic m;
- three deposits of indigenous gold: Kommunarov, Saralin and Maysk with reserves of 28.5 tonnes of metal;
- thirty deposits of placer gold with total reserves of 5 tonnes of metal;

- one deposit of secondary rock phosphorites (Oblajan) with reserves of 3.4 million tonnes;
- two deposits of health-giving mineral water for the table (Khankul, Altay) with reserves of more than 400 cubic m / day;
- one deposit of lead and zinc ores (Kazymchin) with lead and zinc reserves amounting to 15.3 and 10.1 thousand tonnes respectively;
- one deposit of refractory clays (Izykh) with predicted reserves of 7.8 million tonnes;
- one deposit of gemstone minerals (nephrite, jadeite) – at Boruss with reserves of 32.3 thousand tonnes of gem-bearing rock and 2 thousand tonnes of gradable gems;
- one deposit of bentonite clays (farmstead No. 10) with reserves of 8.5 million tonnes;
- cobalt contained in iron ores with reserves of 49 thousand tonnes;
- silver, copper and rhenium contained in copper and molybdenum ores with reserves of 570 thousand tonnes, 50 thousand tonnes, and 18.3 thousand tonnes, respectively.

Exhausted reserves of commercial minerals in the Republic are represented, for the most part, by small deposits of placer gold that were worked in the period from the 30s to the 50s of the last century. However, with the emergence of new beneficiation technologies, extraction of the basic metal from worked out spoil heaps does not present any particular difficulties.

The Karasuk deposit of polymetallic ores, mothballed at the beginning of the 60s owing to the absence of efficient ore beneficiation technologies, like the Tuimsk deposit, may be reopened when the conditions are right.

In need of further research are the wolfram deposits at Arykh, Onin and Rodnikovoye with their predicted reserves of about 23 million tonnes. Work is under way to begin mining a number of deposits in gold-bearing regions: Uibat, Balyksin and Anzas-Kizass, which is expected to increase reserves by 9.1 tonnes.

The following deposits of commercial minerals in the Republic have not been mined:

- the Agasyr deposit of copper and molybdenum ores;
- the Anzass, Samson and Volkovskoye deposits of iron ores;
- the Kazymchin deposit of lead and zinc ores;
- the Oblajan deposit of rock phosphorites;
- deposits of building stone;
- deposits of building sand;
- deposits of gypsum and anhydrite;
- deposits of the raw material for expanded clay aggregate;
- deposits of clay for coarse ceramics;

- a deposit of fluxing limestone;
- deposits of carbonate rocks for calcination to quicklime.

The indigenous gold deposits at Ivanovsk, Tumannoye, Kirovskoye, Balakhchinskoye and other deposits with reserves requiring further study have been mothballed.

Underground recovery of iron ore at certain prospected mines at the Tyoysk and Abagass sites in present economic conditions and using existing technologies is unprofitable.

## ***Restoration of the mineral raw materials base***

### ***State support and the resources of the mining enterprises***

Restoration of the mineral raw materials base of the Republic of Khakassia is taking place in accordance with the “Territorial programme for developing the mineral raw materials base of the Republic of Khakassia for the period 2001-2005”.

With the introduction of the Law of the Russian Federation “On mineral wealth”, payments into the fund for the Restoration of the Mineral raw materials Base (VMSB) were the main source for financing geological and prospecting work (GPW). The effective rates of payments have not been changed and are set at the level shown in Federal law No 224-FZ dated 30.12.95. To increase the efficiency of financing GPW, the procedure in force was changed somewhat by Resolution No 1359 of the Government of the Russian Federation dated 30.12.93.

From 1994 mining enterprises that independently carried out (and financed) the work were allowed to finance it out of an existing reduction in payments for VMSB exacted from them. This presupposes a distribution of resources between the budgets of the Russian Federation, the subject of the Russian Federation and the enterprises exploiting the mineral wealth. Under an Edict of the President of the Russian Federation dated 08.05.96, the proportion of funds transferred to the Federal budget must constitute no less than 30% of the overall value of payments for VMSB.

The reason for distributing payments between the budget of the Russian Federation and the budget of the Republic of Khakassia (taking into account payments left to the mining enterprises) is to carry out work under the “Territorial programme for developing the mineral raw materials base of the Republic of Khakassia” as an integral part of the work being carried out within the framework of the “Federal programme for developing the mineral raw materials base of the Russian Federation”.

Examining the results of the work for the current year and using monetary resources from all sources of funding, and also agreeing the programme of geological and prospecting work for the following year, including tasks for sites of federal and territorial significance, and distributing the allocations of payments for VMSB among the budgets, is carried out in September of the calendar year by a commission from the Ministry of Natural Resources of

Russia with participation by representatives of the Ministry of Economics of Russia, the Ministry of Fuel and Energy of Russia and other interested ministries and departments.

The results of this examination and process of coordination, as regards GPW, are drawn up in minutes approved by the administration of the Ministry of Natural Resources of Russia, whilst the summary data about the distribution of the allocations of payments (after they are agreed with the Ministry of Finance of Russia and the Ministry of Economics of Russia) are brought to the attention of the subject [of the Federation] through the State tax inspectorate authorities.

As soon as the Committee for Geology and the Use of Mineral Wealth of the Republic of Khakassia (subsequently transformed into the Committee for Natural Resources of the Republic of Khakassia) was formed, work to increase the allocation of payments for VMSB began. The Russian Committee on Mineral Wealth (Ministry of Natural Resources of Russia) and the Ministry of Economics of Russia concurred with the opinion and rationale of the Council of Ministers of the Republic of Khakassia.

As a result of this work, the “Agreement between the Council of Ministers of the Republic of Khakassia and the Committee of the Russian Federation on Geology and the Use of Mineral Wealth (Roskomnedra) to conserve the mineral raw materials base of the Republic of Khakassia”, appeared. It made provision for financing geological and prospecting work to a level not less than 100% of the sums accumulating in the federal budget from payments made to the VMSB by enterprises in the Republic of Khakassia.

This was further developed in the President of the Russian Federation’s Edict No. 910 dated 15 June 1996 and in Resolution of the Russian Federation No. 870 dated 17 July 1996, which determine “the full amount of payments made for VMSB by those exploiting the mineral wealth at the disposal of the Republic of Khakassia”.

In order to implement this Resolution, the necessary regulatory basis has been developed and adopted to ensure targeted use of payments for VMSB on the territory of the Republic.

Under Resolution No. 68-p passed by the Presidium of the Supreme Council of the Republic of Khakassia: “On the procedure for using payments for conserving the mineral raw materials base”, dated 26 April 1996, all payments remaining at the disposal of the Republic, with the exception of a proportion of the payments transferred to be at the disposal of enterprises independently financing GPW, are put in a special account for the restoration of the mineral raw materials base at the RCC of the town of Abakan. The Committee for Natural Resources for the Republic of Khakassia, jointly with the state tax inspectorate for the Republic of Khakassia, has developed a mechanism to ensure that payments for VMSB are collected, accounted for and controlled. The procedure in force for using payments for VMSB makes it possible to solve the main problem – that of providing stable financing of enterprises that carry out GPW, and ensuring targeted use of the funds.

With the change in the system, the ratio between the geological and prospecting work carried out and the additional payments has grown by 16-17% annually.

It is the role played by restoration of the mineral raw materials base that has predetermined the relative importance of the Republic’s mineral raw materials base in the context of the reserves of commercial minerals for the whole of Russia and in terms of the extraction of

mineral raw materials, and also the major role of the mining enterprises in shaping the budget of the Republic, towns and regions.

In its turn, the potential for mineral raw materials, with conservation and expansion, is directly dependent on the pace at which geological study of the Republic's mineral wealth takes place.

### ***Problem situations with conserving the mineral raw materials base***

The structure of the Republic's mineral raw materials base, in terms of the extent of geological research and preparedness for industrial mining, is favourable for coal, copper/molybdenum and iron ore.

Some 7%, 30.5%, and 50% respectively of these commercial minerals are being mined industrially.

The natural potential of Khakassia's mineral wealth has been fairly reliably proven in respect of extracting barites, bentonites, rock phosphorites, copper, asbestos, uranium, gypsum, limestone for cement, carbide and metallurgical flux.

Predicted reserves of coal are estimated at 15 billion tonnes, and of iron ore – 2 billion tonnes. The period of guaranteed supply from prospected reserves is from 10 to 360 years.

Alongside this, the slump in the economy over the last ten years has had a substantial effect on the development of VMSB.

Delay in the State paying for metal supplied has led to the collapse of mines and gold-mining artels, and an inability to plug the gaps in payments for VMSB, as well as a gradual lowering of the enterprises' guaranteed supply from prospected resources to a year or less.

This situation has been created because of the inability of state enterprises engaged in metal refining to ensure that all volumes of metals supplied can be brought up to international standards, when the output from gold-mining enterprises becomes both a financial and a mortgaging instrument.

Meanwhile, the willingness of Gosznak to issue licences directly to mining enterprises for full metal separation on site, and the unique and well developed technology for modular microbiological recovery of precious and rare earth metals with direct refining to the full quality standard (under a Gosznak licence) will make it possible to prevent such economic clashes from arising and give the state, territorial and national banks used by subjects of the Federation the additional option of providing direct mortgage finance to enterprises in the mining sector.

This matter is all the more topical because the existing legislative and regulatory legal base permits refined products of the majority of metals in the rare earth group to be used as financial instruments, whilst the proposed modular technology is designed to recover metals, several times more valuable than gold and platinum, from spoil heaps at sites where deposits of commercial minerals are already exhausted or being worked out and where the main metals being extracted were copper, zinc, iron, molybdenum and many others, and to obtain a standard product with a content of .9999. This is even more important because the

raw material for the technology can be entirely non-industrial (balanced) reserves with a basic metal content below the industrial level, and also reserves in non-industrial quantities.

The sums previously spent on GPW prospecting for other commercial minerals have not been returned to the budgets of the Federation and the Republic because of a lack of demand for mineral raw materials on the domestic and foreign markets, for a number of objective and non-objective reasons.

Reducing the timescale between delivery to the Geofund and the start of mining at a site is the mainspring for success in developing the sector.

Thus, the rock phosphorite prospected and delivered to the geological fund in 1986 from the Oblajan deposit, containing the active substance  $P_2O_5$  in proportions of 12.3% to 34.7%, was not required by anyone and the costs of GPW were not recovered. Neither were the costs of unfinished GPW on the Tamalyk deposit of rock phosphorites recovered (reserves of which are estimated at almost twice the those of the Oblajan site).

An experimental factory for phosphorite powder in the village of Bograd was given up in 1988. The technology there made no allowance for beneficiation since the content of the active substance in the finished product wholly met the GOST standard. However, the resources needed to mine the deposit were not allocated, and the factory itself passed into the ownership of the road construction authority and produces crushed stone chippings to repair roadways.

A situation like this is anything but conducive to the economic development of the Russian Federation if from the Urals (Tatarstan) to the eastern shores of the Pacific Ocean not a single deposit among the rock phosphorite deposits prospected in this vast expanse has been mined, although the demand for soils for agricultural purposes in these regions is so high that it cannot be supplied from the enterprises already functioning in Russia that mine this one of the three most important components of fertility.

The Syundyukov mineral raw materials base of phosphorites supplies the requirements of Tatarstan itself and its near neighbours. At the Yegorev deposit (in the Moscow region) reserves are already virtually exhausted. The only supplier of unprocessed phosphorites in Russia remains the Kolsky Peninsula, and its apatites are immediately processed into complex mineral fertilizers (super phosphates and ammonia phosphate), which are exported abroad without reaching the Russian consumer, because of the high cost and its banal absence from the domestic market.

The enterprises in Russia producing mineral fertilizers are forced to work for the foreign consumer because of a ten-year lack of orders from the state. Failure over this period to update the technology of the equipment at the plants, which operate in a fairly aggressive environment, could lead to complete loss of the sector's assets.

The situation that has been created has provided a stimulus for the economic development of the mineral raw materials bases of nearby foreign countries – the Kazakh (Karatau) deposits of rock phosphorites, which not only provide for their own internal consumers, but also partially covers the needs of the Chinese market.

Consumers in Siberia and the Far East are forced to purchase Kazakh phosphorites, although their own reserves (Oblajan, Tamalyk, Belkin, Oshurkov) could over 3-4 years become the basis for the production of the phosphate component of fertility, and its main exporter for the Chinese consumer with financial resources.

The return on resources spent on GPW and VMSB to mine prospected and hitherto unexploited deposits entirely removes the problems of restoring the Republic's mineral raw materials base, and ensures the completion of geological and prospecting investigations of postponed and mothballed work and the transfer of the deposits to the Geofund.

After the first part of the Tax Code of the Russian Federation was brought into force (in 1999), four trends were identified out in the area of the taxes on exploiters of mineral wealth:

1. Instead of a systematic annual decrease in the rate of tax for VMSB, it is planned that it should be abolished from 2002. In 2001 the targeted budgetary fund for conserving the mineral raw materials base was excluded from the federal budget. This was connected with the strategy for removing from the taxation system so-called circulating taxes, such as the tax for VMSB and road tax.
2. Splitting the tax on exploiting mineral wealth into two parts:
  - a tax for the right to seek out and prospect commercial minerals (rental), considering it specifically as a tax on (for) exploiting mineral wealth, and maintaining it in the Law 'On mineral wealth' (Chapter 28 of Part 2 of the Tax Code);
  - a tax on mining commercial minerals (a royalty) and reflecting this in the special Chapter 27 of Part 2 of the Tax Code.
3. Combining the taxes on exploiters of mineral wealth;
  - either into a single tax for mining commercial minerals with simultaneous exclusion of excise on oil and gas condensate and of tax on the additional revenue acquired from recovering hydrocarbons (ART – additional revenue tax);
  - or into a special tax regime when oil is recovered from low-yield fields to replace the sum total of federal, regional and local taxes and dues, except for VAT, customs payments and the single social tax (contribution).
4. Gradual and consistent transition to a rent taxation system for exploiters of mineral wealth. Thus, in accordance with the resolution of the college of the Ministry of Natural Resources of Russia dated 21 February 2001, one of the strategic tasks of the ministry for 2001 was "the development of methodical approaches to using rent payments in the exploitation of mineral wealth and testing them under an experimental procedure".

The tax system for mineral wealth, apart from its fiscal functions, must serve to stimulate the development of the mineral raw materials base and mining production.

The endeavours of certain economists to abolish the VMSB tax entirely without replacing it or ensuring continuity will put the whole sector in jeopardy, since the "proposal" will be constantly to cut back, whilst the "demand" will be satisfied progressively less and less.

Carrying out geological and prospecting work at one's own expense, as is the practice in all developed countries, cannot be undertaken by Russian enterprises in the mining industry at the present time, and abolishing VMSB presents a real threat to the economic security of Russia through the working out of prospected reserves of commercial minerals in the industrial regions where prospecting has already taken place. Exhaustion of these sites will force a move to new regions where, apart from the costs of prospecting, there will be the costs of creating new infrastructure.

The demands of the Tax Code concerning the levying of tax payments in a monetary form only (Clause 1, Article 8) will lead to losses in the consolidated budget owing to debts arising in connection with the lack among enterprises of spare monetary resources. As a rule, enterprises operating in the mining industry these days work on extracting mineral raw materials with a high degree of liquidity, instead of working out a mechanism for making contributions to an account for paying the charges for their quota of the volumes of commercial minerals recovered and their sale on the market, as provided for in the Law "On production sharing agreements".

Payment in kind even with a limited list of mineral raw materials being recovered will ensure the following:

- transfer of tax payments to the federal budget in good time and in full, as well as replenishment of the country's gold and currency reserves;
- timely provision of commodity credits for agriculture and the conclusion of forward contracts with agricultural producers for the supply of production to the State Reserve;
- an uninterrupted supply of oil and petroleum products for all branches of the national economy, and also for the regions of the Far North.

Practice of this kind is observed not only in the USA and other developed countries, but was adopted long ago in Azerbaijan, where it is still in force, and it ought to be continued in our country as well.

### ***The Mining Industry (Large and Medium Enterprises in the Sector)***

The mining industry in the Republic of Khakassia is one of the fundamental sectors of the economy. More than 100 enterprises engaged in recovering commercial minerals operate on the territory of the Republic, including two iron ore mines (the Abakan Joint-stock Company and the Tyoyk ore administrations), four gold mines (the Kommunarov, Saralin, Maysk and Chazy-Gol mines), six opencast mines (Chernogorsk, Stepnoy, Abakan, Izykh, Bey and Aksiz) and two pits (Khakass and Yenisey) for recovering hard coal, the Sorsk molybdenum combine, two combines mining for marble and granite (Kibik-Kordon, Yefremkin), more than 30 artels and small enterprises mining gold, 36 enterprises extracting widely distributed commercial minerals, 48 recovering underground water, and two for mineral (health-giving table) water, and six geological organizations.

Out of the total volume mined in Russia, the proportion of commercial minerals mined specifically on the territory of the Republic amounts to: coal – 3%; gold – 1.1%; iron concentrate – 2.2%; molybdenum concentrate – near 100%

Table I. Extraction of mineral raw materials and production of the main types of mineral by the mining industry of the Republic of Khakassia

No.	Name of the commercial mineral	(Units	Volumes recovered by year								
			1992	1993	1994	1995	1996	1997	1998	1999	2000
1	Coal	1000 tonnes	6375	6993	6700	7200	6750	6847	5405	4923	5599
2	Gold	kg	1730	2218	2270	2047	1758	1635	1555	1577	1658
3	Iron: extraction of concentrates	tonnes	2809	2490	2507	2804	1934	3692 2243	2761 1671	3844 2334	2306 1829
4	Molybdenum: concentrate	tonnes	7217	6967	6478	6450	5640	6271	5902	6169	6788
5	Copper: concentrate	tonnes	2537	2557	1806	1967	1970	2265	2064	2269	2554
6	Marble: rock mass slab	1000 m <sup>3</sup>			114.5	113.4	140	58.6	54	55	53.2
		1000 m <sup>2</sup>	313	269	271	242	191	202.6	208.7	205.1	191.0
7	Granite: rock mass slab	1000 m <sup>3</sup>						4.5	5.3	8.0	5.6
		1000 m <sup>2</sup>	17	25	25	17	7	12.7	9.0	9.7	8.0
8	Crushed rock decor.	1000 tonnes	43	22	16	23	11	19.5	13.8	12.0	14.0

The “Sibal” investment and industrial Group, one of the largest in Russia and the CIS, occupies a leading position in the area of management and investments in key branches of production – from metallurgy and raw materials to aviation, transport and construction.

The company is successfully seizing on the most promising lines of business, including motor vehicle manufacture, the electrical equipment industry, chemicals and medicine.

Investments and the basic resources for growth are the most important element in IPG “Sibal’s” strategy for the new millennium. In particular - in the fundamental sectors of industrial production that determine social and economic development and scientific and technical progress - introduction of the latest technologies, especially resource-saving technologies and those that ensure environmental safety of production, in investments, in the development of human resources and in protecting the environment to create the necessary conditions for sustainable development.

Enterprises have extensive ties with the natural monopolies of Russia: the Ministry of Communications, the Regional Joint-stock Company EES of Russia; with large enterprises: the “Severstal” and “Belaz” joint-stock companies; with international companies: Suomen VuokraKontti (the largest Finnish company involved in the sale, rent and leasing of containers), Hempel Group (the leading manufacturer of protective and decorative coverings and paints for seagoing vessels and containers), Shouten Containers (one of the leading suppliers of containers to the world market).

It is a well-known fact that the most important factor in the success of an undertaking is the quality of personnel, united by a common cause, aim and idea.

Quality of personnel also gives a competitive advantage in achieving a leading position in business. Staff costs in enterprises belonging to the Group are viewed as investments.

The constant enhancement of every specialist as they learn from their experience of work, guarantees a personality moulded to display high professional qualities.

The aim of the Group’s personnel policy is to ensure the growth and consolidation of the Group’s position in business on the basis of effective interaction between the managers of the structural subdivisions and the services controlling staff, along the following lines:

- searching for and attracting the most qualified and talented staff to work in the Group;
- developing each employee individually to attain the highest results.

In this connection, achieving economic efficiency in all areas of work with personnel on the basis of a comprehensive consideration of all the factors affecting the employee’s motivation to realise his potential to the fullest extent is the chief aim of personnel policy. It is called upon to ensure the formation of cohesive teams capable of consistently achieving the targets set and thereby facilitating the Group’s retention of its leading position in business.

The personnel policy of IPG “Sibal” is designed to form a system of corporate values.

The Company’s chief asset is its employees, who are distinguished by their competence and professionalism, their knowledge and experience, their talent and probity, their initiative and focus on success, their corporate cohesion and dynamism, their discipline and obedience to the law. It is precisely these qualities in the staff that help the Group to flourish, develop and expand its business, and assimilate new technologies and new types of production.

An important component of the personnel policy is social concern for the employees. The Group takes steps consistently to improve their standard of living and quality of life, and ensure the wellbeing of all its employees.

Safeguarding the environment is an integral part of the daily work of all the enterprises belonging to IPG “Sibal”, directed towards creating environmentally clean conditions.

The Group has its own underlying programme for protecting the environment. In this connection, each of the enterprises belonging to “Sibal” implements its own plan of nature

conservation measures, proceeding on the basis of the special features of the enterprise and local conditions.

IPG “Sibal’s” approach is on principle to move the priorities away from struggling with the consequences of harmful influence on the environment and towards preventing such influence, minimizing damage, and reprocessing waste from production.

The principal lines of environmental policy in the IPG “Sibal” group of enterprises are:

- introduction into the production process of world class methods and technologies that are environmentally safe and save resources;
- certification of production output in accordance with international standards;
- control over solid waste, emissions into the atmosphere and effluent;
- reduction of the level of harmful emissions and sewage;
- solving problems of utilising [*recycling*] solid waste;
- constant monitoring of the ecological situation in the regions where IPG “Sibal” enterprises are located;
- active involvement in the environmental protection movement;
- ‘ecological awareness’ among employees at the Group’s plants, helping to educate and train the people who live where the IPG “Sibal” enterprises are located on the subject of the environment.

In 2000 IPG “Sibal” initiated and founded a national Fund to support the “Country of Nature Reserves” nature reserve project.

The group carries out an extensive charitable programme:

- since 1999 it has paid a grant to the most gifted pupils and students in Russian higher educational establishments;
- implementation has begun of a project to set up computer classes connected to the Internet in institutions of general education in a number of Russia’s regions;
- funding has been provided for construction of the Holy Trinity Church in the city of Abakan (Khakassia);
- sponsorship assistance is being given to the orphanage in the town of Fryazino;
- IPG “Sibal” is the general sponsor of the ‘Kremlin Cup 2000’ tennis tournament;
- charitable assistance has been provided to children’s institutions in the Mytishchi district of Moscow to hold New Year celebrations (December 2000);
- charitable donations have been made to the regional social fund to promote the study of science in the country. Charitable grants have been provided to 210 pupils from all regions of Russia, who are working in seven fields of science: physics and astronomy, chemistry, mathematics and mechanics, biology, earth sciences, engineering technology and the humanities (February 2000);

- funds have been allocated for the reconstruction and creation of a ‘Live’ exhibition at the unique Baikal Museum of the Siberia Department of the Russian Academy of Sciences (August, 2000).

“Soyuzmetallresurs” is a leading controlling company which works with enterprises in the mining industry and in fuel and energy.

Efficient management of business processes, including supply, production and selling products, entering new markets, skilled services in the field of rail shipments, the introduction of modern corporate management procedures, carrying out investment projects and attracting the funds required, applying the optimal financial models for supporting production and trade – these are the tools by which “Soyuzmetallresurs” can ensure a guaranteed improvement in the economic indices and the profitability of the enterprises, raising their competitiveness on the domestic and international markets.

Set up with the support and involvement of the Russian Union of Industrialists and Entrepreneurs (RUIE), the “Soyuzmetallresurs” company makes extensive use of opportunities to pursue business cooperation with RUIE’s foreign and international partners – trading, financial and investment institutions.

Strategic cooperation between “Soyuzmetallresurs” and the largest Russian corporations – the regional joint-stock company EES of Russia and the Ministry of Natural Resources of Russia – guarantees a unique portfolio of exclusive rates for their services.

In the Republic of Khakassia “Soyuzmetallresurs” is represented by two mining enterprises.

The Sorsk mining beneficiation combine became part of “Soyuzmetallresurs” in 1997.

This is the only active producer in Russia of molybdenum concentrate, semi-finished material for producing pure molybdenum and oxides and alloys derived from molybdenum.

Demand for molybdenum is growing steadily on a world scale. Besides molybdenum concentrate (about six thousand base tonnes annually), the combine produces annually two thousand tonnes of copper in concentrate. The enterprise has been in business for 50 years and has about 3,000 employees and specialists on its payroll.

The combine includes a quarry face where the ore is recovered by the opencast method, using highly productive technology – high power excavators and Belaz heavy load vehicles (there are 28 120-tonne dumper trucks alone), capacity for crushing the ore and preliminary beneficiation, and an beneficiation plant.

A programme has been implemented to renovate the heavy load dumper trucks and repair the mining equipment, as a result of which the volume of bulk rock shipments has increased, and the amount of ore supplied from the quarry to the beneficiation plant has grown.

At the end of 1997 production capacity was brought into operation for the preliminary beneficiation of poor quality ores (special spoil heaps) which led not only to extra supplies

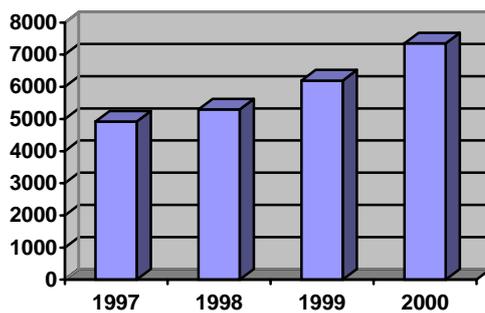
of ore to the beneficiation plant in quantities of 2.5 to 3 million tonnes annually, but also made it possible to organize output of additional production – various grades of crushed rock chippings for construction and road building. From early 1998 this capacity has been operating on a steady basis.

These measures in combination have ensured steady growth in the volumes of ores processed by the beneficiation plant.

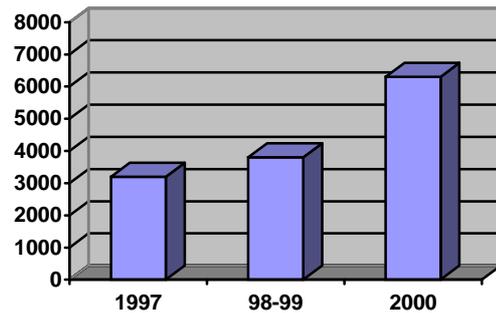
In the near future further modernisation of the combine’s transport organisation will be accomplished. This will make it possible to improve the situation so far as removing the overburden of rock is concerned and to increase supplies of ore to the beneficiation plant. In 2000 the commissioning of additional production capacity to increase the output of molybdenum concentrate to 6.5 thousand base tonnes will be completed.

Construction is continuing to build a plant to produce molybdenum oxide and ferro-molybdenum, and after it is commissioned, overall production will achieve the intended complete cycle of technologies.

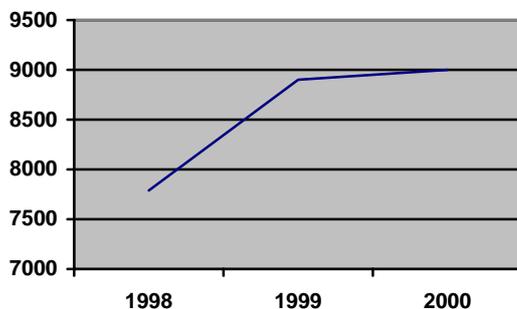
**Growth in ore recovery from the open-cast quarry at the Sorsk beneficiation combine**  
(Volume of ore recovered, 1000 tonnes)



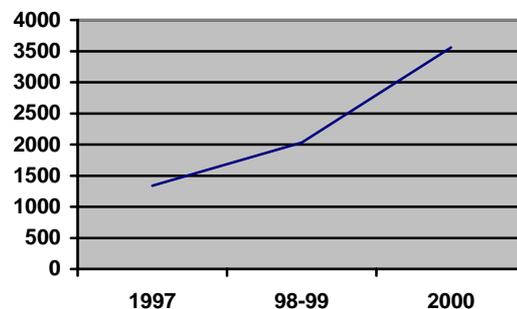
**Growth in shipment volumes of bulk molybdenum ore** (Volume of shipments of bulk rock, 1000m<sup>3</sup>)



**Growth in volumes of ore processed by the beneficiation plant** (Volumen of ore processed, 1000 tones)



**Growth in the amounts of overburden removed** (Amount of overburden removed, 1000 m<sup>3</sup>)



The activities of “Soyuzmetallresurs” to increase efficiency in the operation of their plants and to raise their profitability is based both on its own positive experience in this area, and on the achievements of modern management science.

The company has developed and made practical use of a multi-purpose package of measures to move the enterprises on to an elevated level of ultra-efficient operation, including:

- technological modernisation to turn out products at the world level of quality;
- development and introduction of quality systems that meet international ISO 9000 series standards, and certification of plants;
- increasing labour productivity by optimizing production processes;
- reducing the product cost of production by improving management, procurement and sales procedures, as well as technical re-equipment of production plant;
- increasing the refinement of products and producing highly finished output;
- seeking out new business partners among leading Russian and global corporations;
- organizing new outlets for sales and ensuring a leading position in technological development;
- using the best financial models to support the business of the enterprises and the organization of sales.

In pushing through projects to modernise the plants “Soyuzmetallresurs” makes extensive use of the opportunities offered by its business partners drawn from a number of large Russian and Western corporations, financial and investment institutions, and relies on support from relationships of trust that have been built up with federal and regional state structures.

One of the basic tasks of “Soyuzmetallresurs” is to stabilize and enhance the social situation not only at its own plants, but also in the towns and regions where they are located.

The management of the company supports close contacts with local administrations, helping, as far as possible, to solve their problems – ensuring supply of products, fuel and electrical energy.

In addition, “Soyuzmetallresurs’s” efficiently run enterprises help to improve the social and economic situation in the regions by ensuring the regular payment of wages and taxes to local budgets, and by supporting the social infrastructure of the enterprises and the regions where they are located.

The activities of “Soyuzmetallresurs” have been supported not only by the authorities, but also by the population as a whole in those regions where the company’s enterprises are located.

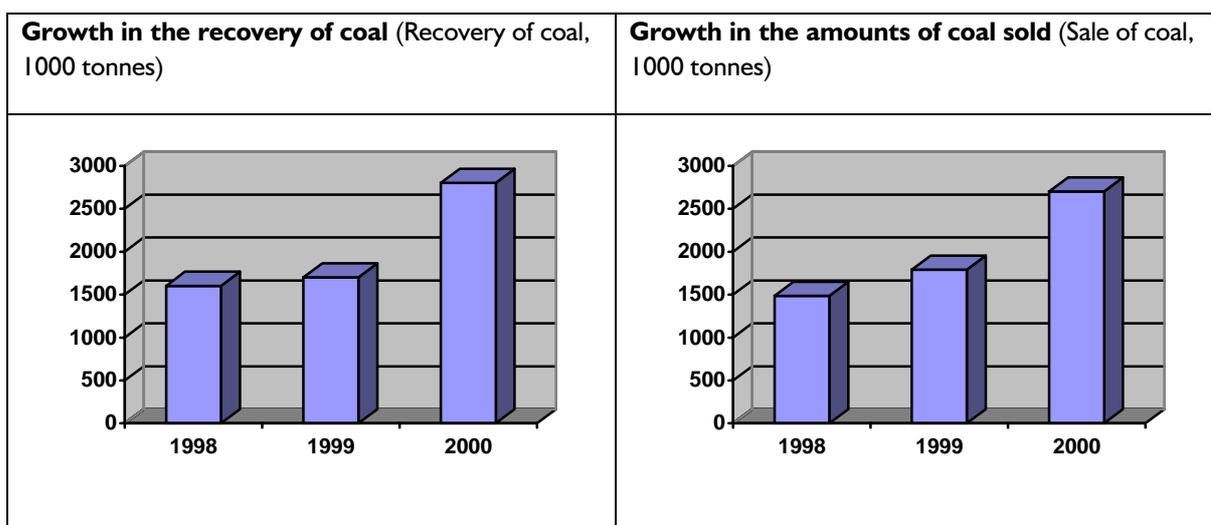
The “Chernogorsk Coal Company” coal-mining enterprise works the largest open-cast coalmine in Khakassia, the “Chernogorsk Colliery”, which is capable of producing more than three million tonnes of coal a year.

The geological reserves of coal in the quarry seam can guarantee steady working for 30 years. The company became part of “Soyuzmetallresurs” in the middle of 1998.

As a result of the programme of technical modernisation of plant implemented by specialists from “Soyuzmetallresurs”, the volume of work to remove overburden has been steadily increasing, mine workings have been brought up to their planned state, and the availability of coal that is ready for extraction makes it possible to carry out consistent extraction on an ever expanding scale.

The mined coal is subjected to effective beneficiation, which guarantees it a wide and permanent market for sale.

Implementation of two investment projects valued at 25 million roubles features in the immediate plans of “Soyuzmetallresurs” specialists. These projects will make it possible to improve the economic indices of the “Chernogorsk Coal Company’s” business.



The entire raw material base of all the gold-mining enterprises is in an unsatisfactory state. 2-4 years is the best forecast for how long reserves of placer gold will last, although possibilities exist for pushing up reserves and discovering new deposits both of mined gold and of placer gold.

In 2000-2001 work was continued to improve the technology in use for processing ores, and on introducing new technologies designed to achieve complete extraction of the useful component, along the following lines:

- The “Kommunarov Mine” Joint-stock Company is applying non-amalgamation technology to extract gold, and is carrying out work to redesign the factory and switch over to “coal in pulp” technology, which will make it possible to increase extraction of gold by 10-15% and significantly raise the productivity of the factory;

- The “Sorsk GOK” private joint-stock company uses preliminary beneficiation technology for poor quality ores before processing them at the beneficiation plant. This technology makes it possible to obtain a product with an above zero, 0.012% molybdenum content and increase its content in ore for subsequent processing by 30-40%. This above-zero content product is used as ballast.
- While working placer on the river Uzhunzhul the “Nemir” prospectors’ Artel uses the ‘Itomak’ (TsKI) centrifugal concentrator to capture fine particles of gold. The introduction of a concentrator for this experimental work makes it possible to increase extraction of gold by a factor of 1.4 times.
- During mining work ores with a dirty content of useful components are recovered as a byproduct and are stored separately in a special heap. At the present time the volume of poor quality ores being stored in heaps totals 43.1 million tonnes (the Sorsk GOK and Kommunarov Mine)

In 2000 the Sorsk GOK recovered and processed 5,088.6 thousand tonnes of ore from these dumps to extract

<b>The volume of recovered mineral raw materials and products produced by the mining enterprises of the Republic of Khakassia in 2000</b>			
No.	Name of commercial mineral	Unit of measurement	Volume mined
1	Hard coal	1000 tonnes	5414
2	Gold	kg	1658
3	Production of concentrate:		
3.1	Iron	1000 tonnes	3220
3.2	Molybdenum	tonne	6799
3.3	Copper in concentrate	tonne	2498
4	Facing materials:		
4.1	Marble slab	1000 cubic m	191
4.2	Granite slab	1000 cubic m	8
5	Decorative crushed rock	1000 tonnes	12
6	Bentonite clays	1000 tonnes	78

Technological research has been carried out at the Kommunarov mine, and operating regulations for the newly purchased equipment have been prepared for working heaps with a dirty gold content. The volume of the heaps that are liable to undergo processing totals 5.5 million tonnes.

In 2000 20.7 thousand tonnes of raw material from heaps, with a gold content of 1.5g/tonne was processed. 31.2 kg of the metal was recovered.

The Mayskgold deposit is being developed using new technology (the glomeroblastic leaching method), and experimental industrial exploitation is being carried out on the Kuznetsk section of the Nemir-Chazygol ore-mining field. The regulations for glomeroblastic leaching in industrial conditions are being defined.

Work to introduce new technologies and improve existing ones is going ahead at a slow pace because of the enterprises' lack of funds.

Work is continuing to restore disturbed land sites (basically, the mine engineering stage of recultivation).

In 2000 active mining enterprises (the "Sorsk GOK" private joint-stock company, the "Kommunarov Mine" joint-stock company, the "Tyoyok Mine Management" joint-stock company and the "Abakan Mine Management" joint-stock company) recovered 9,426 thousand tonnes of ore, and after processing more than 10.8 million tonnes of waste material from the beneficiation plant were generated and placed in tailing dumps.

The overall volume of waste material placed in the tailing dumps as at 01.01.2001 amounted to 291.1 million tonnes.

The tailings were partially used for economic purposes: for production of bricks – 37.7 thousand tonnes and despatched to consumers – 805.8 thousand tonnes. In total the waste materials consumed in 2000 amounted to 831.8 thousand tonnes.

The accumulation of tailings, on the one hand, causes many problems, including environmental ones, but on the other hand, the tailings are reserve potential, which may be profitably used when new technologies are introduced.

Rock overburden is used in small amounts for work on roads and in construction and repair work (73 thousand cubic m.), for backfilling quarries and opencast mines (995.2 cubic m.) and for pouring into and reinforcing dams (478.2 cubic m.).

The total of rock overburden used for general economic purposes is 1,546.4 thousand cubic metres.

## ***State Management of Natural Resources***

### ***General Characteristics of the Eco-Region***

Agricultural and industrial sites are located rather unevenly on the territory of the Republic - among them the Abakan-Chernogorsk and Sayanogorsk agricultural and industrial conurbations feature strongly, with their well developed rail and road transport networks and power transmission lines capable of providing any amount of electricity to the consumer.

The first of these conurbations is located in the steppe zone stretching towards the confluence of the rivers Enisey and Abakan, the second - towards the near-taiga and taiga zone in the south-west of the Republic.

Mining enterprises developing mineral deposits have left behind them open cast mines, sites, spoil heaps, tailing dumps and sludge accumulations.

A landscape shaped by industry [*technogenic*] has been formed in the areas where intensive mining operations have been conducted. Sometimes heaps of rock and tailing dumps appear close to the streets of settlements and towns, for example in Vershina Tei, Sayanogorsk and Abaza.

Rocks mined from great depth, which were formed in remote geological periods, when they are brought to the surface to see the light of day, are destroyed by weathering and harmful chemical compounds leach out of them, which leads to general pollution and poisoning of water courses and rivers on the land surface.

The main factors impacting on the natural environment as a result of mining are: the takeover of agricultural land and tracts of forest, disturbance of the land and landscape, destruction of the fertile soil layer, the widespread presence of stripping rock dumps and tailing dumps, air pollution created by dust and gas emissions containing toxic components, land pollution in the zone of influence of mining enterprises from dust and other components, assumed pollution of underground waters, underflooding of the land surface, interference with the natural regimen of underground waters, pollution of land with petroleum products, emissions of pollutant wastes into the atmosphere during combustion of active and inactive dumps of stripping rock and coal seams.

Taking into account the fact that 60% of Khakassia's territory is covered by forest, and that the Republic is located in the basins of the upper reaches of the largest rivers in the world - the Enisei and the Ob, there is a requirement for the State to regulate the management of natural resources.

### ***State Control***

State Control over the use of natural resources in the Republic of Khakassia is exercised in accordance with nature protection legislation and other regulatory documents of the Russian Federation and the Republic of Khakassia.

Co-ordination of activity is the job of specially authorised state authorities (the Republican Centre for Hydrology, Meteorology and Monitoring the Natural

Environment, the Fish Protection Inspectorate of the Republic of Khakassia, the State Health and Epidemiology Monitoring (Gossanepidnadzor) Centre of the Republic of Khakassia, and the Republic of Khakassia Directorate for the Protection, Control and Regulation of the Use of Animals for Hunting).

In order to identify the maximum number of factors impacting on the natural environment, comprehensive checks are carried out in a planned way. They provide the most reliable and complete picture of the state of natural resources and activities to protect natural environment undertaken by mining enterprises, with optimal expenditure of time and money on organising and carrying out the checks.

One of the functions of such control is the implementation of water protection measures, with attention focussed on the construction and reconstruction of water protection facilities. The basic thrust of State control is working to compile an inventory of residential and industrial waste sites.

In the year 2000 active mining enterprises in the Republic produced and transferred to dumps over 10.8 million tonnes of waste resulting from processing of ore in beneficiation plants. In total, as at 01.01.2001, tailing dumps contain 292.1 million tonnes of waste.

State Control is exercised jointly with other State services, as follows:

1. The State Customs Committee (GTK). Co-operation with the Khakassian Customs Service on the territory of Khakassia covers the following:
  - import (export) of products containing ozone destroying substances (ODS) in the context of Russian Federation Government Decision No.563 dated 08.05.96 ‘On the Regulation of Imports into the Russian Federation of Ozone Destroying Substances and Products Containing them’;
  - cross-border transportation of dangerous wastes within the context of Russian Federation Government Decision No. 766 dated 01.06.96 ‘On State Regulation and Control of Cross-border Transportation of Dangerous Wastes’, and Russian State Committee for Ecology Order No. 788 dated 31.12.98 ‘On Approval of the Procedure for Issuing and Cancelling Permits for Cross-border (transit) Transportation of Dangerous Wastes’ which was registered at the Ministry of Justice of the Russian Federation on 17.02.1999 under No. 1710;
  - export (import) of goods of animal and plant origin in the context of Ministry of the Natural Environment and Natural Resources Order No. 40 dated 05.02.96, ‘On Approval of Provisions on the Procedure for Taking Decisions on Issuing Licences for the Export of Resources of Animal and Plant Origin issued by the Ministry for External Economic Relations of Russia’ registered at the Ministry of Justice of the Russian Federation on 07.03.96 under No. 1048;
  - consumer goods becoming Federal property. In the event that the sale of goods should prove impossible, terms under which work would be carried out to utilise (destroy) substandard products were examined and agreed upon, taking into account environmental factors.

Liaison between the Committee and the State Border Inspectorate on the quarantine of plants in the Republic of Khakassia is within the framework of the ‘Agreement on Liaison with the State Border Inspectorate on the Quarantine of Plants in the Republic of Khakassia and with the Republic’s Traffic Police during Monitoring of Plant Shipments on Major Roads in the Republic’ concluded in 1998 between the State Border Inspectorate for the Quarantine of Plants in the Republic of Khakassia and the Ministry of Internal Affairs of the Republic of Khakassia in co-ordination and after reaching agreement with the Committee.

The Presidium of the Government of the Republic of Khakassia has adopted Resolution No.189-p on ‘Measures to Combat Colorado Beetle’ dated 09.11.2000.

2. Co-operation with the Ministry of Internal Affairs authorities is conducted in many areas of environmental protection, including identification of persons involved in activities that breach nature protection legislation. Jointly with the licensing authority (the Ministry of Finance and Economics of the Republic of Khakassia) and Ministry of

Internal Affairs representatives, raids were carried out in towns and districts of the Republic to identify juridical and physical persons involved in activities to ‘Stockpile, process and sell non ferrous and ferrous metal scrap’, as well as compliance with the terms of licences in the area of environment.

At the Ministry of Internal Affairs of the Republic of Khakassia an Ecological Police force has been established, consisting of 2 officers, and they help to carry out regular checks for compliance with nature protection legislation during disposal (burial) of waste from production and consumption, for compliance with nature protection legislation when raw materials are prepared from wild medicinal herbs and plants, and when rare animal species are removed from their natural environment in the wild, for the transportation of shipments of plant origin, for observance of water protection zones where the Republic’s water bodies are concerned, and for the setting up of car parks and camping sites beside balneological water bodies in the Republic.

3. Jointly with representatives of the Russian Federation Federal Security Service (FSB) Directorate for the Republic of Khakassia, measures are being taken within the framework of the ‘Anti-terror’ programme.
4. Within the framework of checks for compliance with nature protection legislation the Committee liaises with the State Prosecution Service of the Republic of Khakassia in the towns of Abakan, Chernogorsk, Sayanogorsk, and the Askiz, Shirin, Ust’-Abakan, Tashtyp, Bei, Ordzonikidze, Altai and Bograd districts of the Republic.

### ***Expert State Ecological Assessment***

One of the main areas of the Committee’s activity, constituting one of its most important elements, is the mechanism for the preparation and adoption of economic and managerial decisions at the Khakassia Republic level, as a subject of the Federation. Every year the Department for Expert State Ecological Assessment examines documentation relating to over 300 sites planned for location on the Republic’s territory.

According to the results of feasibility study analyses about 25% of the projects for construction, reconstruction, expansion, and technical re-equipment that they examine are rejected.

The basic and most frequently recurring reasons which constitute grounds for refusal are: low quality of project documentation, including the section entitled ‘Environmental Protection’, lack of documentation relating to toxic materials in the natural environment. Considerable numbers of documents which have been initially rejected, following additional work aimed to address comments made by experts, are granted approval by the Expert State Ecological Assessment Board and are recommended for execution as compliant with the requirements of nature protection legislation. One of the special features of the work of expert sub-departments in the regions is the interaction with and inclusion in expert assessment of the territorial authorities for State monitoring and supervision. When particular provisions in the legislation in force for environmental protection are absent or inconsistent, the Expert State Ecological Assessment procedure is one of the most effective

methods of ironing out the contradictions between government departments that arise when documentation is examined.

### **Negative points:**

1. An absence of cadastral assessment of the state of natural resources. The Resolution of the Russian Federation Government on the procedure for managing cadastre is not backed by financial resources, and as a result work in the field progresses very slowly.
2. An inadequate (or obsolete) basis of regulatory documentation, contradictions, and incompatibility of some provisions in the nature protection and natural resources legislation.
3. A mismatch between the scope of work and staffing in the Department resulting from cuts in Committee's financing as a whole. Owing to inadequate staffing in the Department, in some cases the timelines for expert assessment are held back and limited in fact to documentation review by the experts.
4. The regulations in the Federal Law 'On Expert Ecological Assessment' are not fully adhered to by the territorial authorities for Monitoring and Supervision, the authorities exercising executive power or by local self-government:
  - Projects in forestry management, land use and hunting management are not submitted for Expert State Ecological Assessment;
  - Drafts of regulatory legal enactments are proposed and adopted at the level of the Government of the Republic of Khakassia without positive approval by Expert State Ecological Assessment, and their implementation may result in a negative impact on the environment;
  - in some cases local self-government authorities make decisions to permit development of sites without taking into account conclusions arrived at by the Expert State Ecological Assessment Board;
  - during preparation of Tendering terms and conditions for the right to use the subsurface for mining mineral resources and compilation of lists of licensed sites information relating to environmental protection and conditions for the use of natural resources is not presented in full.
5. Materials relating to a subject for Expert State Ecological Assessment involving discussion with citizens and public organisations (associations), organised by local self-government authorities are not used to the full extent.

Control over the implementation of subjects for Expert State Ecological Assessment is carried out by the Department for State Control of Natural Resources and the Environment, which come within the Committee's structure. This control is carried out on the basis of copies of the conclusions drawn by the Expert State Ecological Assessment Board, which are passed by the Expert Assessment Department to the Control Department; this also happens during planned checks and operational monitoring.

## *Licensing*

In accordance with its remit, the Department of Expert State Ecological Assessment carries out its work examining materials and issuing licences in the field of safeguarding the environment.

This work is done on the basis of and in order to implement Resolutions of the Government of the Russian Federation No. 1418 dated 24.12.1994 'On Licensing particular types of activity'; No. 122 dated 08.02.1996 'On licensing activity to gather and sell raw materials originating from wild medicinal plants'; No. 168 dated 26.02.1996 'On Approving the Provision on licensing particular types of activity in the field of safeguarding the environment'; and the following orders of the Russian Federation Ministry for Protecting the Environment and Natural Resources: No. 97 dated 15.03.1996 'On the organisation of work for licensing particular types of activity in the field of safeguarding the environment'; and dated 18.06.1996 'On the procedure for licensing particular types of activity in the field of safeguarding the environment'.

The Government of the Republic of Khakassia has adopted Resolution No. 94 dated 12.05.1997 'On licensing particular types of activity in the field of safeguarding the environment and the use of nature on the territory of the Republic of Khakassia.' This work is carried out taking into account the following Orders of the State Committee for Ecology (Goskomekologia) of Russia: No. 764 dated 14.12.1999 'On the approval of "a procedure for organising the licensing of particular types of activity in the field of safeguarding the environment"; dated 23.02.2000 under No. 102 'On operations (services) for the purpose of nature protection'; Resolution No. 326 of the Government of the Russian Federation dated 11.04.2000 'On licensing particular types of activity'; and of Ministry of Natural Resources letter No. VP-61/6519 dated 01.12.2000 'On the procedure for licensing particular types of activity'.

In conformity with Federal Law No. 158-F3 dated 25.09.98 'On licensing particular types of activity' and in execution of Government of the Russian Federation Resolution No. 822 dated 15.07.99 'On Approval of the Provision on licensing activity involving gathering, processing and selling non-ferrous and ferrous metal scrap' experts from the Department jointly with representatives of the Government of the Republic of Khakassia worked out a draft Resolution 'On Licensing activity involving gathering, processing and selling non-ferrous and ferrous metal scrap on the territory of the Republic of Khakassia', which has become the basis for the adoption of Resolution under No. 71 dated 04.04.2000.

A licensing authority for this type of activity was defined by the Resolution adopted. The Ministry of Finance and Economics of the Republic of Khakassia was given the necessary information and carried out consultations. A specialist from the Department has been transferred to the Licensing Commission set up by the Government of the Republic of Khakassia.

## **Part II. Socio-economic analysis of the industry.**

### ***Preservation of biodiversity. The state of enterprises in the industry. An Analysis of the economic state of enterprises under various forms of ownership.***

The state of enterprises in the mining industry in conditions of a protracted transition to the market economy is characterised by a serious drop in production resulting from transfer (as a rule, repeated transfer) of ownership rights from the state to shareholders and private ownership, loss of markets, reduction in prices for end products, discriminatory measures by competitors which are members of the World Trade Organisation, and general economic recession in the country.

In the Republic's mining industry there are no enterprises in state ownership; in individual enterprises state or municipal entities still have shareholdings, which are gradually being transferred into private hands.

Owners of major enterprises in the industry (open cast collieries, iron mines molybdenum enterprise), as a rule, are not registered in the Republic but the enterprises belong to large monopolist companies and provide their 'raw materials adjunct'.

Such a privatisation 'arrangement' for state owned property ensures a minimal level of stable production, yet concern by the owners for the social conditions of their employees in such enterprises is completely ruled out and results in active resistance by the management (owners) to the preservation of the existing social system.

Towns have ground up around all the large mining enterprises in the Republic.

Having suffered the full cycle of a bankruptcy procedure and several changes of ownership, large enterprises gradually become more stable and increase their volumes of production, enhancing their working culture, and improving production and beneficiation technologies.

On the whole, the right trend in production development is linked to a whole range of factors, which do not depend directly on the desires or actions of the managers of the enterprises.

Thus coal industry enterprises have a guaranteed internal and stable external market due to the fact that Russia is the largest coal supplier (the main industrial energy bearer) on the whole of the Eurasian continent.

There are coal reserves for a 100 years or more, and this makes it possible to forecast development over the long term of any coal producing enterprise; economic 'swings' once they have stabilised after privatisation and repeated transitions have allowed a move towards the concrete steps needed to improve technological processes.

A significant failing in the development of coal producing enterprises in the Republic is the devastated social infrastructure, which even in Soviet times had reached a state of decrepitude, and in the period of transition to the market economy was completely ignored by everybody.

This problem does not affect the newly organised Beysk open cast colliery, however, in the social sphere everything there has to be started from scratch.

In this respect iron ore mines seem to be more stable. At the same time they are completely dependent on quotas for metal sales to metallurgical companies abroad (who, by the way, also own them). Here the largest competitor are US steel companies, which use every means at their disposal to prevent Russian metal reaching external markets. It is cheaper, its quality is not worse than that of North American metal and the volume of ore production is, to all intents and purposes, inexhaustible.

A drop in the production volumes of metallurgical plants in the Kemerovo region, the main consumers of iron ore mined in the Republic, entails to a reduction in quantities of mined ore, a decrease in the sums of payments for conserving the mineral-raw materials base, for development of production and, accordingly, for social needs. Thus, as a result, the situation of these enterprises is somewhat worse than that of coal mining enterprises where a stable market assures their consistent development.

The large gold mining enterprises in the Republic, in addition to these shortcomings, also have a base of guaranteed reserves that is undeveloped.

The period when the state failed to settle bills for the metal supplied dragged on for years, placing all the major enterprises in the industry in the situation of bankrupts with no way of escape, and practically led to a total halt in production, and in the ensuing circumstances to a struggle to protect the assets of enterprises that still remained following such serious upheavals.

By this stage the small gold mining enterprises had all had time to go through their bankruptcy procedures and started to increase their production rates.

The situation in the market, which changed with the shift of power in the country, somewhat stabilised the situation of the large mining enterprises and enabled small enterprises to plan their work in the short term.

Payments to the fund for Restoration of the Mineral raw materials Base (VMSB) are going according to plan, which guarantees a future for the reserves of the enterprise, new production and beneficiation technologies are approved, and home-grown resources are found for use in restoration of the mineral raw materials base of the enterprise.

Stone processing enterprises have a stable market, namely the Moscow Directorate of Glavtonnel'metrostroy, in the person of the chief contractor for the city of Moscow engaged in construction of new stations for the capital's underground railways. The construction of underground railways in other Russian cities is progressing somewhat more slowly; Sayan marble used for architectural facing is their main finishing material. For a number of reasons these enterprises have practically no social problems.

The enterprise that produces bentonite clays has a permanent and stable market; its production rate is stable and the technology used is sufficiently up-to-date.

The enterprises producing mineral (health-giving table) water (Khankul', Shirinskaya) are a completely new thing for the Republic, but they have found their place in the market fairly quickly and easily, and their products are in well deserved demand.

Khakassia's mineral waters possess consistently good balneological characteristics and are suitable both for drinking and for medicinal baths.

The resource base of mineral waters in the Republic is practically unlimited as, over the whole of this territory, there are numerous lenses of host mineralisation with a yield between 100m<sup>3</sup> and 300m<sup>3</sup> per 24-hour period.

The absence of large projects for industrial and civil construction is the reason for the complete failure to develop deposits of construction materials: sand, raw materials for cement, refractory clays, limestone.

A working enterprise extracting carbonate deposits to produce building lime by roasting meets demand on the Republic's internal market, which has decreased almost three-fold in comparison with the 1980s.

Problems of physical change to habitats arising from ever more encroachment on new territories and degradation of natural landscapes have become very acute as a result of widespread technology-driven transformations.

Thus, as a result of the disappearance of some endemic plants, which are the main wild crops for sheep fodder, in particular winter fat, the breed of sheep reared for its meat, with coarse wool, has practically ceased to be bred, though in the past it was Khakassia's main breed.

A general degradation of plant diversity on the steppe has significantly reduced the fodder base for the production of fine wool and forced the enterprise which does primary wool processing to buy wool from Australia.

Ploughing virgin and long-fallow lands has resulted in the forced closure of 3 stud farms breeding horses, which in the past supplied three year old thoroughbreds to London auctions.

Another negative result of ill-considered agrarian policy was progressive water and wind erosion of agricultural arable land, which removed millions of tonnes of humus from an already low fertility horizon. Proof of this comes from an investigation carried out by the Minusinsk geological survey expedition on the bottom deposits at Lake Chernoe in the Shirinskiy district of the Republic, where more than 39 million tonnes of sapropel have been found.

An important aspect in the assessment of the environmental situation is the preservation of the natural structure of ecological communities. The International Convention on Maintaining Biological Diversity has now been adopted. It is usually regarded as the basis to ensure sustainable development.

This means that live natural resources are viewed as important and valuable, including all living species, and in the economic dimension as well. Thanks to this significant efforts are

now being made not only on behalf of natural habitats and ecological communities but also for individual species.

Though these measures are obviously important, a whole range of issues remains, relating both to the approaches used to tackle the problem of maintaining biodiversity and to the applicability of biodiversity assessments to ensure a favourable environmental situation.

It is impossible to assent to the complete disappearance from the Khakassian steppes of the Otididae family, change in the steppe area of distribution of the roe deer to the forest-steppe zone and sub-taiga regions, the shift of the camel and the sarlyk (long haired Tuva yak) to the south and so on.

At the same time, the measures adopted have allowed the population of the common partridge in the submontane steppe regions to be restored and pheasants have reappeared on the steeply sloping spurs of the Kuznetsk Alatau; the population of ruddy sheldrake has been restored and has grown significantly; swans, bullfinches and waxwings have returned to the region.

General changes in the natural environment and the climate in particular have resulted in the expansion of the area of distribution of some species of birds – the oriole and red spotted bluethroat have appeared.

The numbers of bighorn sheep population and of its constant companion, the snow leopard, which were thought to have disappeared, are now growing.

In addition, the habitat boundaries of some species of animals which were not typical of the territory of the Republic in the past, such as badger and wild boar, have changed. These two species of animals have been brought to the Republic to attract foreign tourists to shoot game on drives in the forest.

### ***Resource saving technologies. Restoration of disturbed landscapes and natural systems***

The emerging tendency towards stabilisation of the general economic situation in the country has determined the overall level of technological development in industrial production, including mining.

In this respect the example of Japan is very significant, as a country practically without its own mineral resources.

Thus the first train loaded with coal which departed from the railway station of Berkaitit (Neriungri deposit, Yakutian coal field) to Japan was processed by Japanese specialists in order to achieve full extraction of the silver and rare earth metals contained therein, then made into briquettes, and only after completion of this process was used to obtain energy. This was in 1980.

Production of rare earth metals both of the platinum group and others not lighter than iron was done by the microbiological leaching method, which has been well-known from the middle of the 1970s but so far has not been used in Russia.

There are, however, in present day Russia developed technologies for the extraction of rare earth metals and metals of the platinum group using strains of halophyte bacteria, and they are based on small modules which can be quickly rolled out for the purposes of extraction. These modules in a 3-stage technological circuit are able to bring the metal content in ore, using centrifugal devices, up to 35-40%. Then by means of dry plastic deformation they can achieve beneficiation of 92-93%, and finally, placing the metal in a microbiological reactor they can obtain finely dispersed metal with a content of 99,9999%. There is also another option, which guarantees the same result.

The cost of such devices can be recouped within a period of 10-12 months; they may be used for any reserves (even with total resources and worked out, non-recultivated dumps, depleted deposits with industrial product volumes from 10.0 to 500.0 thous. tonnes and main metal content = 0.01%) ; following depletion they may be partially dismantled and moved to the next plot. Productivity of such technological modules ranges from 100 to 500 tonnes of industrial product in a 24-hour period.

This is especially useful in those places where it is either impossible or unprofitable to build major facilities for beneficiation of gold ore, where transport of industrial product to the beneficiation plant involves building a hard surface road, in old tailing dumps of beneficiation plants, in places remote from settlements etc.

Together with a developed circuit of modular refining complete with the 3-stage circuit on offer it is possible to carry out in field conditions removal of metal in the shape of a standard certified ingot (bar, rod – depending on the standard of metal extracted).

A sale mechanism has been developed to accompany the above method of extraction as well as a financial instrument.

Due to the fact that the cost of the technologies on offer is fairly high (the cost of purchasing an exclusive, or non-exclusive licence where there is lack of interest on the part of the developer himself) specialist technology owners were offered to set up at the expense of the mining enterprise which introduces this technology, a technological circuit, and without selling a licence (copyright is being fully preserved) to service the production facility thus set up using own staff and divide the product obtained according to an agreed share for each participant.

Such an option protects not only the developer and his copyright but also the mining enterprise itself, whose expenses are limited to the manufacture and installation of the equipment and salaries to the team which services it.

The financial instrument in such an option guarantees payment to the developer from his share of metal removed and placed in the bank as collateral goods. As has been mentioned above such an instrument may be used not only for the platinum group of metals but also for the majority of rare earth metals subject to a list approved by the Central bank.

This technology is capable of saving the most resources among all the others used for metal production.

As another example of possible organisation of resource saving production technology, both so far as extraction and technology of ready product manufacture are concerned, one ought to mention the method developed by the Obladzhanskii field of secondary phosphorites and the manufacture of phosphorite containing products to improve the fertility of agricultural soils, and restore phytocoenosis and biodiversity of disturbed and technogenic lands and forest renewal.

Explored balance reserves of phosphorite ores containing  $P_2O_5$  of no less than 20.1% amounts to 3363 thous. tonnes. Total reserves of Malyi, Bol'shoi and Severnyi Obladzhan amount to 6.0 mil. tonnes, and have not been assessed in detail.

A specific feature of Obladzhan phosphorite ores is absence of the ore body. Phosphorite is present in the shape of loose unconsolidated structural secondary lenticular deposits (65% of volume) and hard breccia type formations (35% of volume).

In addition, lenses and breccias containing less than 20% of  $P_2O_5$  and found within the boundaries of the contour of balance reserves in the deposit have not been included in the reserves, and neither has all the phosphorite volume of Severnyi Obladzhan.

In accordance with the classification adopted for the end of the 1980s and developed by the Central team of the Minusinsk geological exploratory expedition before submission of the documents dealing with exploration and studies to the 'Geofond' (State Geological Inventory) this deposit is defined as belonging to the category of non-industrial reserves (i.e. without prospects for the mineral fertiliser industry) for the production of substances to improve soil fertility made of phosphorites for agricultural use by local industry.

The legal owner of the field - the agro-industrial committee of the Khahassian autonomous region commissioned the all Russian Science, Research and Design Institute for Chemicals in Agriculture (VNIPTIKHIM, Moscow, Nemchinovka) to carry out a project for the production of ground phosphate meal from the ores of the Obladzhan field without prior beneficiation and with an annual volume of 138,000 tonnes in accordance with GOST 5716-74 ( $P_2O_5$  content in ground phosphate meal of no less than 18%, upper limit not determined, product with varying content of active ingredient to be sold at a single price).

In 1988 in the city of Abakan a facility of the VNIPTIKHIM (Agricultural Chemicals Research Institute) was tasked with the development of a working technological project to produce ground phosphate meal, oversee the construction of the Bograd experimental ground phosphate meal plant and develop this field.

At the same time the management of the plant under construction was set up and industrial workers recruited to operate crushing and milling equipment.

In the course of designing the Abakan facility for VNIPTIKHIM a mistake made by the representatives of the agro-industrial complex and the Institute in the preliminary selection of milling equipment, a disintegrator produced by an Estonian company, was identified. Production of an experimental industrial quantity of ground phosphate meal confirmed the failure of the Estonian development and it was necessary to replace it with a more efficient

and reliable device. Owing to a lack of local finance the deposit and the plant were transferred to VNIPTIKHIM, however 500.0 thous. roubles earmarked for deposit development had not been spent as had been originally intended. The economic slowdown in the country prevented allocation of additional resources and the plant, which was completed in 1988 and equipped with 2 lines of comprehensive technological equipment as well as the deposit was transferred to the ownership of the local Administration.

Later on the Administration of the Bograd region returned this deposit to the Geology fund and the plant was transferred to DRSU which used the equipment to crush and mill ceolyses from the Pashenskii deposit as an additive to the feed given to poultry at the Berezovskiy poultry plant, and for production of crushed stone of various grades for road repair and covering.

The field is located 3 km to the south of the village Davydkovo and at a distance of 25 km from the regional centre of Bograd (before the period of Soviet power – Tatarskaya Tes’) on the asphalted road Abakan-Bograd-Shira-Krasnoyarsk.

The nearest railway station to the deposit via the existing transport links Davydkovo-Belelik-Bograd-Sonskii is Son (on the rail branch-line Abakan-Achinsk-Krasnoyarsk) 50 km away. Using the Davydkovo-Pushnoe-Sonskii option it is 30 km. The distance to Erbinskaya station in the same direction passing through Bograd-Taezhnaya-Tolcheya-Vershina-Bidzha-Erbinskaya is 78 km, for the most part over dirt roads.

The solution of covering the Davydkovo-Pushnoe road (14 km) giving an outlet to the grader at Bol’shaya Erba-Sonskii seems more rational. However, even more advantages are presented by the option of covering 15 km of the road Davydkovo-limestone quarry located at a distance of 18 km from Erbinskaya station along an asphalt road. And the final option is the construction of 14 km of the road Davydkovo-crossing point Tumanni 14 km along a wide, 12 m asphalt-covered road from the station at Erbinskaya.

The last 2 options require the least expenditure; however, the crossing point at Tumanni is a spa resort zone and has no railway tracks for outloading.

Construction of a railway branch line from the deposit (village of Davydkovo) to the station of Erbinskaya – a distance of 30 km - offers no advantage because of high start-up expenditure on the construction of the branch and own cargo terminal at the line end and the protracted (20-25 year) period for recoupment. In addition, such an option, including the construction of a plant in Davydkovo, would result in a 2-3 year delay in meal production. Erbinskaya station (industrial zone of the town of Sorsk) has a well developed network of approach roads equipped with 30-tonne travelling gantry cranes, the majority of which are not used. The option proposed by ZAO ‘Khakasskhimprom’ amounting to annual production volume of 400.0 thous. tonnes of ore (as well as ground phosphate meal) is calculated for 8-8.5 years, as it provides for the production only of balance reserves and hence the construction of a railway branch line and ground phosphate meal plant in Davydkovo has no economic justification.

The option proposed by OOO ‘Ekoresurs’ (Abakan) to organise ground phosphate meal production with ores from Obladzhan is a minimisation of all the options for location, organisation of separate production stages and possible transport schemes.

The construction of a road from the deposit to Erbinskiy limestone quarry (exit to asphalt covered road as far as Erbinskaya station on the Krasnoyarsk railway) is limited to 7-8 months. Covering the road (with it being planned at the same time) can be done by road building enterprises, which are not very busy, and this, by excluding delays necessary for the procurement of own equipment and organisation of work, could reduce road construction time to 6 months.

Own road construction plant, tractors etc. purchased under a leasing arrangement is commissioned and involved in the road construction. As a result the volume of work carried out using own resources grows, while the cost of work contracted out is reduced.

At the same time, crushing and milling modular equipment is bought in and installed, an ore chute is built, a settlement for employees doing their tour of duty is set up. A mine surveying service for the enterprise is formed, a mining work plan developed, and ore reserves are specified, taking into account the minimum content of active ingredient of 10-12%; compare with the level set in the geological report - 20.1%.

The mining work plan should provide for development without omission of any lenses or breccias with active ingredient content not lower than 10-12% (mining work plans proposed in the geological report provide for removal of low content phosphorite ores to planned dumps, which amounts to about 6 million tonnes) and using the ore to produce phosphate improver for the dilution of high content ground phosphate meal (over 20.1% and 18%  $P_2O_5$ ) to host values and using them in the manufacture of complex organic mineral fertilisers where no harsh criteria exist for the use of host products.

Production of phosphorite ore in the deposit is done without explosives; lens and breccia development uses heavy native bulldozers equipped with rippers and excavators with reverse shovels to excavate the ore from the top.

Outsize (above 350 mm) hard aggregate formations from breccias are spud in and then crushed using special compounds introduced into the blast hole.

Phosphorite ore excavated from breccias and lenses is loaded into pills (loaded directly on to road vehicles) and from there using scrapers is brought to the ore chute (road vehicles transport the ore to the place where it is crushed and milled). Stripping rock may be used to cover the road surface from the deposit to Erbinskiy limestone quarry, for the production site crushing and milling modules, compressor room, fuel and lubricants store, for ready made products and the land area of the settlement for employees doing a tour of duty.

The initial period of deposit development envisages crushing and milling ore, using free equipment at the Sorsk silicates plant, and shipment of ground phosphate meal to foreign customers, using its approach tracks equipped with 30-tonne travelling gantry cranes, in special containers (80 units per volume of 150.0 thous. tonnes) for bulk cargoes with loading from above and face unloading.

As the commissioning of own crushing and milling equipment progresses, volumes of transported ore and ground phosphate meal produced using the Sorsk silicates plant's equipment decreases, and after 18 months ground phosphate meal production is all done on site at the deposit. At the same time up to 30% savings may be made on ore transportation (filling coefficient – 0.7).

Crushing and milling equipment is designed for an annual production volume of ground phosphate meal amounting to 150.0 thous. tonnes using 1 line. The reserve production capacity of the equipment is 10%.

This scheme for organising production excludes capital expenditure and affords complete use of balance lenses and breccias with low concentration found in the deposit and located within its contour (9.3 mil tonnes). In addition, it will allow the development of the total reserves of Severnyi Obladzhan (another 6.0 million tonnes). Thus the period of extraction of ore from the deposit, instead of 7.5 years including railway branch line and plant construction, may be extended to 40 years without construction of major facilities.

Work to extract and produce ground phosphate meal is carried out in 2 shifts, 24 hr. per day, applying the tour of duty method with a flexible timetable and reliefs for permanent staff who are on holiday.

Thus, maximum possible use of tractors and vehicles is ensured and loss of time on production start-up after non-working days is eliminated.

A serious obstacle in selling these products is lack of consumer buying power on the internal market. The most acceptable solution therefore is to ship the main volume of the phosphate meal abroad, with payments made by irrevocable letters of credit for each rolling supply consignment, which will ensure timely repayment of loan funds invested and a stable business for the enterprise.

Increasing the number of possible consumers is linked to provision of the maximum range of products, while using the main product and raw materials base available in the Republic.

The raw materials base of components for improving fertility in the Republic and in neighbouring regions has been studied thoroughly enough. GU SAKHS 'Khakasskaya' data confirm 30 years of experience of manufacturing various formulae for composts made from lignin, hydrolysed malt residue, distiller's wort following addition of yeast, sawdust, chicken and pig manure, cattle dung, wastes from coal mining, sludge from sewage (purification) works after air tank treatment, liquid waste from primary wool processing factories, peat, food processing waste, waste obtained from alumina production and by-products of the coke industry and wood processing, in which ground phosphate meal content ranges from 15 to 20%.

<b>Feasibility indicators of the proposed option to produce 150.0 thous. tonnes per annum of ground phosphate meal with a content of active P<sub>2</sub>O<sub>5</sub> ingredient amounting to 21.5% without expenditure for road construction</b>		
Designation of class of operation	Cost (1000 roubles)	Time scale (months)
1. Equipment (leasing 50%)	28,540	60
2. Current assets	11,022	24
3. Raw materials, materials, components	7,052	24
4. Pre-production expenditure:		
payment for participation in tender	550	4
licence fee	3,600	60
fee for use of resources	1,800	12
5. Total of starting capital credit	35,000	23

6. Credit rate	35% per annum	
7. Sum of repayment	47,250	
8. Period of investment recoupment		23

Possible product volumes of complex mineral and complex organic-mineral fertilisers subject to the Republican programme entitled 'Fertilisers' amount to about 3.0 million tonnes per annum (the proportion of phosphate improver with P<sub>2</sub>O<sub>5</sub> content below 18% is from 450.0 to 600.0 thous. tonnes, manufactured from the total reserves of the deposit). The minimum possible number of products using ground phosphate meal and phosphate improver is 12, and this covers retail, and small and large wholesale, consumers in the internal market.

When implementing this option it would be possible to supply products - to farms and agricultural enterprises, on account against a future harvest - which are useful and competitive in comparison with other mineral fertilisers as far as price and quality are concerned; it would also be possible to restore soil fertility to degraded land and subsequent sell the land through land use departments

A guaranteed internal market for products containing phosphate improver is provided for by biological recultivation of technogenic lands, including the slag heaps of coal-mining enterprises in the Republic of Khakassia, Krasnoyarsk province and the Kemerovo region. Finance for such recultivation has been put aside on deposit in the budgets of various enterprises under costs for storing waste, recycling and measures to protect the environment. Some experience in biological recultivation of 100 hectares has been gained at the Chernogorsk open cast colliery.

In the course of development of the Abakan municipal programme called 'The town's waste' recycling food waste in the production of complex organic-mineral fertilisers is fairly important, because their share of the total volume amounts to about 20% or 100-200 thous. tonnes of fertilisers when 15-20 thous. tonnes of phosphate improver are used.

It is planned to obtain about 100.0 thous. tonnes of fertiliser during the implementation of this programme (the Republican programme called 'Wastes') in the town of Chernogorsk and the same amount in Sayanogorsk. Sale of finished products to the town's public gardens, boulevards and parks, hot houses, and personal allotments is guaranteed, as there is no alternative competitive product. The low cost of new types of fertilisers and their high quality composition have been verified on the fields of the 'Shebayevskaya' Sovkhoz growing maize for silage and in 'Ust'-Abakanskiy' growing beet, carrots, cucumbers and cabbage. The volumes of phosphate improver in fertilisers come to over 50 thous. tonnes., in addition to those mentioned above.

Thus, in a situation where, it would seem, there is no possibility whatsoever of selling phosphorites on the internal market of the Republic, the use of a specific mechanism can solve the problem.

The main reason for the failure to carry out biological recultivation of disturbed land is the fact that it does not figure in mineral deposit development projects, despite the fact that environmental protection laws provide for it to be done on an obligatory basis.

Experience gained from implementation of mining recultivation (planned dumps, partial restoration of disturbed landscapes or the formation of technogenic landscape, flattening steep banks or steeply sloping dumps where stripped rock has an angle of slope etc) goes back several decades and there are specialist planners well versed in these matters.

Biological recultivation of technogenic lands started from afforestation and planting of slag heaps from coal mines in the Donetsk coal basin in the 1940-50s, without their being flattened first.

This useful experience was not supported by government officials in this industry and was not continued. A key, and as was believed at the time, sufficient measure, was natural overgrowing, which took decades.

At the same time individual areas of disturbed landscapes, after seams and ore bodies were exhausted, from time to time underwent restoration of the grass cover and afforestation (mainly to protect dumps from wind erosion).

As a rule such work was carried out near built-up residential areas of mining enterprises under the effect of action taken by local authorities and the general public. Nobody was interested in places hidden from the eyes of the population that were reminiscent of a battlefield after a concentrated artillery bombardment ('barrage fire'). Small rivers, meadows and pasturage for domestic cattle, large areas of taiga, pine forests, mixed forests perished at the hands of prospectors for gold.

Nowhere was there evidence of complete implementation of the biological stage of recultivation, with restoration of changes to disturbed landscapes, hytocoenosis restoration and return of lands to their primordial state.

At the same in the Republic of Khakassia considerable, positive experience was accumulated in implementing the biological stage of recultivation without restoration of landscape changes but with a full (even richer) restoration of phytocoenosis of the dry steppe on the steeply sloping dumps of the Chernogorsk open cast colliery.

Within 4 years the tableland parts of the No.4 dumps on the second plot were completely restored and the diversity of aboriginal grass vegetation and the number of plants growing on the restored area was definitely better than the main part untouched by man.

To prove the suitability of freshly formed rock dumps for biological recultivation, 11 hectares on 2 terrace plots were planted with a garden containing edible buckhorn and wild and cultivated Ussurisk apricot.

Thus, over a period of 8 years about 100 hectares of technogenic land were returned to biocoenosis and the tableland part of the 4<sup>th</sup> dump became excellent pasture for sheep from the 'Krasnoozerno' experimental industrial farm.

A characteristic feature of this experiment is total cessation of internal burning of igneous rocks in the 2<sup>nd</sup> area as early as the 3<sup>rd</sup> year after completion of the first stage of work on planting wild grasses whose seeds had been taken from the tableland and part of dump no 4 where biological recultivation had been completed 2 years before with full restoration of phytocoenosis.

However, the most remarkable element in this work was the use in biological recultivation of slag from magnetite (loadstone) coal beneficiation as underlying rocks and as soil substrate – complex organic-mineral fertilisers which contain 40 to 50% coal production waste (non-steaming coal) from the same Chernogorsk colliery.

Technologies have been developed for covering steep slopes from the upper rim of the tableland part of the dump by sowing the seeds of wild grasses in a thin nutritious substrate which also contained crushed coal waste and for carrying out work during the winter time – by scattering wild grass seed from the upper rim of the dump on to the snow in a substrate of complex organic mineral fertilisers prepared using the platelike rolling method.

However, lack of finance permitted only demonstration experiments with scattering seed granule, and this confirmed the positive initial assumptions.

To implement the project to produce complex mineral organic fertilisers for the internal market in the Republic (restoration of technogenic lands etc) a sum of only 15 million roubles is needed. At the same time fertiliser production will amount to over 1.5 million tonnes per annum, with the main component being waste from coal production, phosphate improver and waste from other industries and agriculture.

All the technologies used in mining industry and which reduce the volumes of waste laid down are resource-saving.

Modern production and beneficiation technologies have been known for a long time and are unable to provide a fundamental solution to the problem of this branch of industry as they lack a comprehensive approach which looks not only at obtaining products from mining, but also at the full and finished cycle from expenditure incurred to recoupment of money invested.

### ***Legal basis for the industry***

The solution to the problems of ownership of subsurface resources in the legislation currently in force in the Russian Federation can not be regarded as fully satisfactory although it does demonstrate some highly balanced approaches from the point view of accounting for the situation as it actually exists in this industry.

The basic regulatory document for subsurface management is Law of the Russian Federation No. 2395-1 ‘On subsurface’ dated 21.02.92 (in the version of Federal Law No. 27-F3 dated 03.03.95).

In the law ‘On subsurface’, in articles 1-2 ‘Ownership of subsurface’ it is laid down that subsurface within the borders of the territory of the RF, including subsurface space and the minerals, energy and other resources contained therein, are

State property. The question of the relationship between rights to subsurface and to the land above remains open. The first part of the Civil Code of the RF (GK RF), which entered into force on 01.01.95, fails to clarify this matter.

Under article 130 real estate subject to civil rights includes plots of land and plots of subsurface. Right of ownership and other material rights to land are regulated by Chapter 17 of the Civil Code which, under the law ‘On the entry into force of part one of the Civil Code of the Russian Federation’, enters into force from the date of entry into force of the Land Code of the Russian Federation adopted by the State Duma of the Federal Assembly of the Russian Federation’. The State Duma however, has not as yet adopted such an act and on the territory of the Russian Federation the land Code of 1991 is still in force. The right to develop the subsurface is granted in conformity with the law ‘On Subsurface’ which is not tied in with the Land Code at present in force.

Consequently, the issue of plots of land located above mineral resources subject to development remains unresolved. According to the Civil Code of the Russian Federation, as has been mentioned above, the same right of ownership covers land and subsurface. In such a legal environment there are no clear legal landmarks for regulating a collision between the right of ownership to subsurface and the right of ownership to a plot of land.

It should be pointed out that the Law ‘On subsurface’ reflects the three level regulation of relations on subsurface use: the Federation level, the level of its subjects and the level of municipal entities.

However, whilst the first and second levels are reflected in this document fairly definitely, regulation at the level of municipal entities is practically absent, which is a logical consequence of the exclusion of municipal property.

A formal exclusion of municipal property is not strengthened by any substantive argument because thanks to the fact that local budgets receive a considerable proportion of their payments for the use of subsurface resources, *de facto* a municipal authority, from the economic point of view, is a subject of joint ownership over mineral resources.

At the same time, declaration of state ownership logically leads to highly significant participation by local authorities in the process of regulating local subsurface resource use, which may be interpreted as limiting the interest of municipal entities.

Clearly, a solution may be achieved in the following way: it is necessary to acknowledge, in principle, municipal ownership, but procedurally to tie in its separation from ownership by a subject of the Federation or from state ownership that is not divided into federal ownership and ownership by a subject of the Federation.

The general provision laid down in the Law concerning the distribution of legal competence in the sphere of regulating use of subsurface (art.1-1) boils down to the fact that delineation of objects of management and powers between authorities in the RF exercising state power in the sphere of state regulation of matters of the use of subsurface is exercised by the Constitution of the Russian Federation as well as by federal and other agreements on the delineation of subjects of management and powers concluded in conformity with the Constitution.

Under the Constitution of the RF, issues of ownership, use and disposal of subsurface are under the joint control of the Federation and its subjects. (art 72,p.‘v’)

However, a procedure for delineating legal competence between the Federation and its subjects has not been decided. Neither has the law ‘On subsurface’ (1995 version) clarified this aspect.

But the provision[s] in the Law concerning delineation of objects of management and powers between authorities exercising the state power of the RF and authorities exercising the state power of its subjects are in force on the territories of the said subjects of the Federation until the conclusion of an agreement on delineating subjects of management and powers in the sphere of regulating matters of the use of subsurface between the Russian Federation and subjects of the Russian Federation.

The practice in use today of concluding agreements on the delineation of subjects of management and powers between subjects at various levels seems ineffective, as such an agreement does not seem able to provide a practical solution to all the issues relating to the management and regulation of use of subsurface.

Because of this, in respect of the majority of issues the provisions are simply declarations and do not constitute an instrument for resolving the many practical problems in this sphere of natural resources relations. Therefore it would be more expedient to reflect in greater detail in the Law ‘On subsurface’ itself the issues of delineation of powers in respect of the regulation of use of subsurface, and also to determine the requirements for the structure and content of agreements on the delineation of functions so that these agreements should lay down the specific rights and obligations of specific subjects exercising power in relation to precisely defined objects of subsurface resources.

In the version of the Law in force at present the provisions determining the legal competence of various levels of power (art.3,4,5) are at times vague and contain lacunae.

For example, art. 3 identifies the following areas of activity in the sphere of joint management by the Federation and its subjects:

- deciding, jointly with subjects of the RF, regional inventories of mineral resources classed as widespread as well as allocating plots of subsurface of federal importance and local importance;
- disposal, jointly with subjects of the RF, of the state subsurface fund, with the exception of areas which are under the exclusive management of the RF;
- determining, jointly with the subjects of the RF, the terms and procedure for charging payment for use of subsurface, including setting maximum levels for groups of minerals, laying down forms and amounts of payment for the use of plots of subsurface of federal significance, as well as confirming agreements on the terms for production sharing.

The text of this article employs the vague term ‘significance’, which replaces the notion of ownership: plots of subsurface of federal, regional and local significance.

Actually the law here is about joint ownership, and of two subjects exercising state ownership at that and, as far as plots of subsurface of local significance are concerned – a

subject exercising municipal ownership is meant. Proposals on how to solve this problem have already been formulated above.

Some issues of dividing legal competence between authorities exercising power at various levels have not been solved in anything like the best possible way. Some of the powers are duplicated with resulting lack of clarity as to which subject exercising power is authorised to carry out which actions.

Thus, the Federation has powers to maintain the State register [*cadastre*] of mineral resources deposits and manifestations of mineral resources; there is state registration of operations carried out to study the subsurface. At the same time subjects of the Federation have the legal competence to compile territorial balances of reserves and registers of useful mineral resources.

The division of functions between the Federation and its subjects in respect of cadastre management should also be made more precise within the framework of joint ownership. Functions relating to methodology and control as well as maintenance of the Federal cadastre should be concentrated at the federal level, whilst the collection and updating of information, management of the cadastre for one's own territory (in the narrow sense of the word) – should be done at the level of the subject of the Federation.

Another example of imprecise delineation of powers, or to be more specific, of dual reproduction in the legal competence of the RF and of its subjects, is the issue of control over the geological study, rational use and protection of subsurface as well as laying down the procedure for conducting it.

The law does not lay down how the duties of the authorities at various levels are delineated in respect of control over who is responsible for restoration of the mineral and raw materials base.

Thus, the most important 'environmental function' is set out in the law in a very vague manner.

A few words must be said about specific problems connected with gas and oil fields. Up to the present time relations arising during the process of seeking, exploring and producing from these most important strategic raw materials have not been regulated. Only general norms relating to the use of subsurface exist, which are regulated by the provisions of the Constitution of the RF, the Civil Code of the RF and the law 'On subsurface. Oil and gas as types of mineral resources come under the concept of 'Subsurface'.

For the first time at a legislative level the draft of the law 'On oil and gas' contains the concept of these types of mineral resources: 'The concept of oil and gas includes all kinds of hydrocarbon compounds, including hard (bitumen, gas hydrates), liquid and gaseous, those arising from mixture, substances contained in hydrocarbon compounds and mixtures of them'. This draft law is based on the provisions of the Constitution and the law 'On subsurface':

1. In accordance with art. 3 of the draft law, oil and gas found in their natural state subsurface are state property.

This provision confirms the provision in art. 1-2 of the Law 'On subsurface'. Oil and gas extracted from the subsurface may be in state, municipal and other forms of ownership. The right of ownership to produced oil and gas is laid down in the licence agreement.

2. It is essential to note that the issues of delineation of legal competence between the RF and its subjects are not reflected at all in this draft law, while in the law 'On subsurface' they are presented very vaguely.
3. One of the key questions is the granting of plots of land in connection with oil and gas field development. Art. 15 of the draft law states: 'When it is impossible to use simultaneously plots of subsurface and areas of land, the government of the RF together with authorities exercising the executive power of subjects of the RF shall determine the priority in granting the right to use land and subsurface on the basis of economic expediency and safety of the natural environment and the population' and on territory where small autochthonous nations and ethnic groups live and work – with their consent and taking into account the interests of their development. 'When acknowledging a priority right to use land and a long term ban on land and subsurface use for commercial purposes the party deprived of the opportunity to use subsurface for commercial purposes shall have the right to receive compensation (including missed profit). If the party which has suffered is the owner or proprietor of the land area, compensation should be paid at the expense of the licence owner.
4. When issuing a licence for oil and gas production the size of the areas of land granted shall be such as is necessary for the construction of infrastructure installations and pipelines to the points where the oil and gas is received into the transport system or by the consumer in accordance with the terms of the licence.
5. The Law on oil and gas employs a reference standard to regulate matters of relations between owners and proprietors of plots of land that arise in connection with use of subsurface. In American mining law the issue of a plot of land above subsurface is regulated on the basis of an agreement with the land owner (Surface Mining Control and Reclamation Act).

Foreign experience testifies to the fact that delineation of legal competence between the Federation is laid down in Law. In the US, for example, the legislative procedure clearly lays down that 'the main state responsibility for development, licensing, and regulation measures' in relation to open cast mining is placed on the states and not on the federal authorities exercising power, 'in view of the diversity in the composition of subsurface, and of climatic, biochemical, chemical and other physical conditions prevailing in mining areas' (par. 1201 of the Law on mining of 1984).

In Russian conditions, in principle, it is possible to resolve problems both at the level of the most rational and effective distribution of powers among state authorities and at the level of delineating ownership rights to mineral and other natural resources, which would serve as the basis for creating a system for managing the use of natural resources that would ensure the conditions necessary for transition to the sustainable type of development.

Environmental legislation of the Republic of Khakassia is very extensive. The following laws are in force in the Republic: 'On safeguarding the natural environment in the Republic of Khakassia', 'On expert ecological assessment', 'On the protection of the population and territory from emergency situations of a natural or manmade character in the Republic of Khakassia', 'On forests', 'On the animal world', 'On specially protected natural territories and sites in the Republic of Khakassia', as well as a large number (several dozen) of administrative regulatory enactments.

The legislation of the Republic of Khakassia may be regarded as one of the most developed systems of regional environmental legislation in the RF.

As early as the beginning of the 1990s a considerable number of regulatory enactments dealing with issues of licensing and payment for the use of nature were adopted: Supreme Soviet of the Republic of Khakassia Resolution No.85-2 dated 6.3.1992 'On general permission to use natural resources in the Republic of Khakassia'; Council of Ministers of Republic of Khakassia Resolution No.215 of 13 July 1992 'On the introduction of licensing for the use (seizure) of natural resources, emissions, discharges of pollutants into the natural environment on the territory of the Republic of Khakassia'; Council of Ministers of the Republic of Khakassia Resolution No.214 of 13 July 1992 'On the introduction of payments for the use of hunting land and water bodies with fisheries in the Republic of Khakassia'. Great attention was given in the Republic to the regulation of forest use. Thus, before the legislation on the Fundamentals of forestry legislation in the RF of 6 May 1993 was issued, the Government of Khakassia on 27 March 1992 adopted Resolution No. 74 'On the improvement of the management and use of forests on the territory of the Republic of Khakassia' including a Temporary Provision on leasing forest reserve land and forest resources on the territory of Republic of Khakassia. Later, after the adoption of the Fundamentals, the Presidium of the Supreme Soviet of the Republic of Khakassia approved, by Resolution No.172p dated 15 December 1993, the 'Provision on the sale of standing timber at sales (auctions) in the Republic of Khakassia'.

For the time these were highly progressive, yet at the same time contradictory enactments, which frequently were not harmonised with the all-Russian legislation, which, by the way, at the time when federative relations were developing before the Constitution, was by no means a rare occurrence.

There is no data on the formal repeal of all these documents dating from the early 1990s on new economic mechanisms in the use of nature, though many of these did in fact lose their validity with the later adoption of the Constitution of the RF and the foundational federal laws in the sphere of forest use, water use, use of the animal world etc.

Among legal enactments in the sphere of environmental control that were adopted in subsequent years the following are of interest: the Provision on State environmental control and the rules for its exercise by officials of the State Committee for the Environment and Natural Resources of the Republic of Khakassia (approved by Resolution No.197 of the Council of Ministers of Republic of Khakassia dated 25 July 1996) as well as the 'Provision on Liaison between the Ministry of Internal Affairs and the State Committee for the Environment and Natural Resources of the Republic of Khakassia attached to the State Environmental Control [Authority] (approved by Resolution No.210 of the Council of Ministers of the Republic of Khakassia dated 11 August 1994), which has no equivalent at

the federal level. At present great attention is being devoted in the Republic to regulatory activity in the field of handling treatment (the following resolutions of the government of the Republic of Khakassia are in force: No.38 dated 4 March 1998 ‘On the procedure for handling wastes from production and consumption on the territory of the Republic of Khakassia’; No.168 dated 21 October 1988 ‘On implementation of the federal law dated 24 June 1998, ‘On wastes from production and consumption’), in the sphere of the special safeguarding of valuable and unique natural territories and sites (the appropriate law is in force and a comprehensive draft law has been prepared, intended to safeguard natural and cultural heritage) etc.

For expert assessment purposes the following have been selected:

- all regulatory legal enactments issued in the form of laws of the Republic of Khakassia;
- the most important administrative enactments which have not lost their legal force and regulate the most significant relationships in respect of the use of natural resources and/or protection of the natural environment;
- all the draft laws submitted to TsEPR

### ***Constitution of the Republic of Khakassia dated 25.05.1995***

*(in the edition of Constitutional Law of the Republic of Khakassia No.20 dated 17.02.1998 and Law of the Republic of Khakassia No.40 dated 17.11.1998)*

Part 2, Article 10 of the Constitution of the Republic of Khakassia: ‘The land and other natural resources of the Republic of Khakassia shall be used and protected as the basis of the life and activity of the people of Khakassia. In the territory of the Republic of Khakassia no burial of ecologically harmful industrial wastes imported from outside the borders of the Republic of Khakassia shall be permitted’.

In the existing federal legislation there is no direct ban on introduction by the regions of such restrictions. However, in accordance with the Constitution of the Russian Federation, in the RF the unity of the economic space, free flow of goods, services and financial resources and freedom of economic activity are all guaranteed (Article 8). On the territory of the Russian Federation no obstacles to free movement of goods, services and financial resources are permitted (Article 74). But waste brought into the Republic for burial can hardly be described as goods. However, at the same time, activity linked with their burial may be considered as a service from the point of view of Civil Law. Accordingly, questions could arise concerning the unconstitutional character of this provision. On the other hand, the objection could be raised that economic activity is limited by the requirement not to cause harm to the environment and the interests of other persons, with a reference to the Constitution of the Russian Federation, Civil Code etc. There are also Federal norms, which do not permit the construction of test ranges without taking into account the views of

local population and consent of local government authorities. This question has no unambiguous solution. It is evident that there is a loophole in the Federal legislation. (In the non-legal context we would add a comment: if all the subjects of the Russian Federation were to introduce such a ban, it could be assumed with certainty that in certain regions of the country a catastrophic situation would arise in relation to the burial of wastes). According to Article 32 ('Citizens and their associations have the right to private ownership of land.

"The terms and procedure for use of land and other natural resources shall be determined by the Law" should be defined more precisely 'on the basis of federal law' in order to comply with Part 3, Article 36 of the Constitution of the Russian Federation.

Other norms of the Constitution of the Republic of Khakassia of an ecological character (Articles 38 and 60, para 'v' and 'd' of Article 61, para 'k' of Article 79 and para 'v' of Article 105) are consistent with the Russian Constitution.

### ***Laws of the Republic of Khakassia***

*Law of the Republic of Khakassia dated 9 June 1993 (in the edition of Law No. 15 dated 29.10.1997) 'On Safeguarding the Natural Environment in the Republic of Khakassia'*

This Law in the majority of its articles coincides textually with the corresponding Law of the RSFSR "On Safeguarding the Natural Environment" dated 19 December 1991. Nonetheless, it is impossible not to note the desire of the regional legislature to regulate some questions in a different way or in more detail. The most significant and most frequently encountered differences concern the grounds and procedure for establishing rights to the use of nature. The particular features of this Law identified through its comparison with the Russian law referred to can be set out under the headings that follow:

*Provisions that are absent in the Law of the RSFSR 'On Safeguarding the Natural Environment'*

1. In Article 3 the basic principles of safeguarding the natural environment include: 'introduction into practice of a unified system of State Ecological Control'.
2. In Article 6 the legal competence of the Supreme Soviet of the Republic of Khakassia [RKh] on safeguarding the environment includes the 'establishment of a legal regime for zones where the ecological situation is exceptional, districts in ecological crisis and where there are ecological disasters, for the legal status of citizens who have suffered, and ensuring a regime for such zones on the territory of the Republic'.
3. In Article 8 the legal competence of the State Committee for Ecology of the RKh includes: 'co-ordination of the activities of local self-government authorities in the sphere of safeguarding the natural environment'. This does not follow from the Russian Law of 1991 or any other Federal legislation. However, in view of the expediency of such co-ordination in the existing managerial situation, it makes sense to strengthen

this provision by an agreement between the Natural Resources Committee for the RKh and local self-government authorities.

4. In Article 12 citizens' duties in the sphere of safeguarding the natural environment include: 'careful regard for the historical and cultural heritage, traditions, and system of nature cults, which constitute an aspect of human relationships with nature, making known ancient nature cult systems contributing to the rebirth and enrichment of the national culture of peoples living in the Republic of Khakassia'. It is obvious that the term 'nature cult systems' is not acceptable for inclusion in an Article of Law. Neither is it possible to impose on the citizen a duty to make them known.
5. In Article 15 the tasks of the economic mechanism for safeguarding the environment include: 'determining the damage to the natural environment on the basis of a forecast assessment of the consequences of economic activity'.
6. In Article 20 there are several additional provisions:
  - 6.1 'The Council of Ministers of the Republic of Khakassia may index standard payments for natural resources, depending on the changes in the costs of plant, raw materials, materials and other factors influencing changes in expenditure connected with implementing measures for the protection and restoration of natural resources'. However, such a right of an executive organ of a subject of the Russian Federation does not follow directly from federal legislation. The procedure for setting rates of payment for natural resources is different. For example, under para 3, Article 4 F3 'On payment for use of water resources' rates of payment for categories of user, depending on the type of use to which the water is put, the condition of the water, and taking into account local conditions for supplying water to the population and economic entities *are set by the legislative (representative) authorities of subjects of the Russian Federation.*

The appropriate Law (duplicating the Federal Law "On Subsurface") has not been adopted in the Republic, and the reason is the incongruity of Federal laws with the various departmental material and the serious contradictions between them. The minimum and maximum rates for use of water resources are set in the above mentioned Federal Law and in Government of the Russian Federation Resolution No. 818 dated 22 of July 1998: 'On approval of minimum and maximum rates of payment for use of water resources in respect of river basins, lakes, seas and economic districts'. There is no mention of the right of the executive authorities of a subject of the Russian Federation to index or otherwise change a payment. In Forestry law the procedure is somewhat different. The Government of the Russian Federation establishes the minimum rate of forest duty for standing timber sold. For other types of forest use minimum rates may be established by authorities exercising the State power of subjects of the Russian Federation. In accordance with Article 104 of the Forestry Code, *specific rates of forestry duties are established by authorities exercising the State power of subjects of the Russian Federation in agreement with the territorial authorities of the federal forestry management authority or are determined as a result of forestry auctions and must not fall below the minima.*

Rates of forestry duties are regularly reviewed. During rate reviews not only changes in the level of product prices received from forest resources are taken into account but also the production costs. This provision of the Russian Federation Law would be worth editing, taking into account the differences in the procedure for setting standards (rates) of payment for various natural resources.

- 6.2 ‘Owners and holders of plots of land who use nature on land belonging to themselves or rented by them under the established procedure directly for their own needs shall be exempt from charges for the right to use their own natural resources’.

Here a dependence on the type of resources exists: for example, this is fair in case of widespread mineral resources, but in relation to trees and shrubs there is a procedure in use which is different, depending on circumstances listed in Article 20 of the Forest Code of the Russian Federation (and payments are based on these provisions).

Equally, exemption from payments is possible only in relation to the part paid to the budget of the Subject of the Federation.

7. In Article 21, in addition to the regulation of environmental funds: ‘resources funds shall be set up to concentrate and centralise monies to provide targeted financing of measures for the restoration and protection of natural resources of the appropriate type. Depending on the particular character of the natural resources potential and the cultural and historical heritage of the Republic of Khakassia the following resource funds may be formed:
- restoration and protection of land resources;
  - restoration and protection of mineral and raw materials base;
  - restoration and protection of water resources;
  - restoration and protection of forestry and not-arboreal plants;
  - restoration and protection of the animal world;
  - protection of natural and reserve funds for sites of historical and cultural heritage’.
8. In Article 24 among the measures for economic encouragement to safeguard the natural environment there is a provision to pay ‘bonuses for production personnel, nature protection services, community organisations, and citizens achieving positive results in nature protection activities’.
9. In Article 27 ‘The maximum permitted loading on the natural environment is laid down by the Council of Ministers of the Republic of Khakassia’.
10. In Article 29 the full impact and priority of the environmental safety of human beings, when decisions are taken about projects, have been included among the principles of expert ecological assessment (later expressed in the Federal Law ‘On expert ecological assessment’).

11. In Article 33 relating to public expert ecological assessment it is said that ‘in individual cases when taking particularly responsible decisions on opening up new lands for development, decisions shall be made taking into account the views of a meeting or referendum of citizens’. There is an obvious confusion of two independent procedures for popular participation in adopting environmental decisions of great significance. Public expert ecological assessment has its own tasks and there is no need or benefit in making the results of specialist expert work dependent on the will of the population. Forms of direct democracy may be exercised independently in all cases.
12. In Article 40, among duties of citizens and juridical persons engaged in agricultural or other activities on allocated plots of land, it is required: ‘to comply with fire safety requirements, and not to burn plants and reeds (in the draft of Law No. 15 dated 29.10.1997).
13. In Article 44 among environmental requirements on the use of radioactive materials there is a ban on importation for storage or burial of radioactive waste and materials from other regions.

From the point of view of point ‘i’ of Article 71 of the Constitution of the Russian Federation taking into account also legal cases dealing with disputes connected with conducting regional referendums on granting permits to build nuclear power stations, this ban contravenes Federal legislation. Also, such a ban can be regarded from the same point of view as the ban relating to other, non-nuclear waste (see above in commentaries relating to the Constitution of the Republic of Khakassia).

Legislation based bans on importation of radioactive waste and materials for storage and burial from other regions is not compliant with the Constitution of the Russian Federation as it encroaches on the competence of Russian Federation (point ‘i’ Article 71) and breaches the unity of economic space (Articles 8, 74).

At the same time decisions in every particular case of importation of waste and materials from other regions should be taken in compliance with established procedures for allocation of lands and mining concessions intended for other land resources which include public participation in the form of direct democracy.

Direct expression of popular will in such situations is obligatory (Article 3, part 1, Article 9, Article 42, of the Constitution of Russian Federation, Article 28 of the Land Code of RSFSR, Article 41 of RSFSR Law ‘On safeguarding the Natural Environment’ and others) and plays a decisive role.

14. The Nature reserve fund of the Republic includes ‘environmental and ethnic and environmental-recreational zones’ (Article 53).
15. In accordance with Article 57 ‘ industrial environmental monitoring services shall go through accreditation conducted by the State Committee for Ecology (Goskomekologia) of the Republic of Khakassia’.
16. There shall be a system of externally staffed environmental monitoring created, attached to Goskomekologia of the Republic of Khakassia.

17. In Article 68 Federal lists of administrative violations shall be supplemented by the following: ‘destruction of vegetation by burning in fields, haymaking areas, steppe areas, reed beds, forests and in natural areas and sites under special protection’, ‘breach of fire safety requirements leading to the spread of fires in natural areas and sites under special protection and adjacent territories, and failure to take measures to extinguish them’) (in the edition in Law No. 15 dated 29.10.1997).

*Regulations which differ from Federal regulations:*

1. Articles 17 and 18 dealing with licensing for the use of nature and contracts for the use of nature differ considerably from Article 18 of the Russian Law.
  - 1.1 Issues of allocation and use of natural resources (sites), which are in joint management by the Russian Federation and the Republic of Khakassia, shall be resolved on *the basis of contracts or agreements* between Russia and Khakassia.
  - 1.2 The granting of licences (permits) for the use of nature is done on the *basis of competitive tendering*;
  - 1.3 On the territory of the Republic a unified procedure for licensing use of natural resources (sites), emissions, discharges of pollutants into the environment and disposal of wastes has been established, as determined by the *Provision* on Licensing of the Use of Nature;
  - 1.4 A subject of economic activity, having concluded a contract, is the *general user of nature* on the relevant territory. The general user of nature has the right, if this is provided for in the Contract, to permit juridical persons and citizens temporary (urgent or one-off) use of a particular type of natural resource under the established procedure.
  - 1.5 For the use of natural resources and pollution of the natural environment without appropriate licences (permits) businesses in any type of ownership will pay into local budgets any profit derived from such activities as well as *a fine amounting to the value of the profit*. The activities of such businesses may be stopped on the basis of a court decision or by a state authority for business arbitration. These provisions are in contravention of the existing order on licensing the use of nature, as established by Federal laws dealing with resources (Forestry Code, Air Code, Law on the Animal World etc.) and are the same for all the subjects of the Russian Federation who are unable by means of their own Act (in this case – Provision) to establish other licensing rules. Similarly, in the Federal legislation no provision is made for a contractual procedure for the granting and use of natural resources – the legal competence of the Russian Federation and subjects of the Russian Federation that corresponds with this is determined by legislation.

As far as sanctions for using natural resources and polluting the natural environment without appropriate licences (permits) are concerned, two mistakes have been made.

First of all, regional law may not establish responsibility for breaches of the law which are already provided for in Federal legislation. Thus, for example, in Articles 63, 68 and

77 of the Administrative Violations Code of the RSFSR sanctions for illegal (without permit) types of forest use and emissions into the air have been established.

Secondly, sanctions amounting to the value of profits obtained are not provided for by the Administrative Violations Code of the RSFSR among types of administrative fines, likewise a subject of the Russian Federation may establish administrative responsibility, applying only cautions and fines.

2. Article 20 on liability for payment for use of natural resources is worded differently.

Apart from remarks made above (see point 6) it is necessary to take into account the changes in the legislation relating to establishment of funds for environmental protection, use of nature and restoration of natural resources.

3. In accordance with Article 58, the Republican Council of the All-Russian Nature Protection Society and other public associations, workers' collectives and gatherings of citizens shall exercise popular environmental control. Article 72 of the Russian law lists trade unions and other public associations, workers' collectives and citizens.

However, the list of bodies involved in public control is defined in this case by the method of addition and thus the Law of the Republic of Khakassia gives a right of control additionally to *gatherings* of citizens.

4. Article 59 'In all secondary, special and higher educational establishments, regardless of type, provision is made for mandatory teaching of the basics of 'Ecology' and protection of the natural environment'.

5. Article 68 sets out other conditions for imposing administrative charges:

- 5.1 In relation to the rates for sanctions for administrative violations it is established that juridical persons are subject to a fine of from ten to one hundred times the minimum wage established in the Russian Federation. Nearly all types of violations, as listed in Article 68 in the Russian Law (Article 84), entail for juridical persons *another sanction as well, which may not be changed by the subject of the Russian Federation*. 'Their own' sanction may be established only for such violations which are not punishable under the Russian Law 'On safeguarding the natural environment', the Administrative Violations Code of the RSFSR etc.

For that reason this Article of the Law of Republic of Khakassia is applicable to juridical persons only in respect of formulations inserted as additional text ("destruction of vegetation by burning in fields, haymaking areas, steppe plots, reed beds, forests and natural areas and sites under special protection", 'breach of fire safety requirements leading to spread of fires in natural areas and sites under special protection and adjacent territories and failure to take measures to extinguish it').

- 5.2 The formulation providing for the administrative responsibility of citizens, persons in authority and juridical persons for 'violations of established regimes in specially protected natural territories and sites' (Article 68), is stated in Article 36 of the Federal Law 'On Specially Protected Natural Territories', where *different* sanctions are

maintained for *citizens* and *persons in authority*. Consequently this part of the Law of Khakassia cannot be applied.

5.3 Almost all types of breaches of law mentioned in Article 68, except for additional ones (see above), are included in Article 84 of the Russian Law ‘On safeguarding the natural environment’.

Taking into account the fact that sanctions for citizens and persons in authority are the same (and it cannot be otherwise), this article makes no particular sense.

#### *Provisions of Russian Law that are not included in the Law of the Republic of Khakassia*

1. Article 39 does not contain the essentially untrue provision (in Russian law this is Article 45) to the effect that trade unions may give instructions to limit, suspend or stop emissions and discharges or other forms of activity causing harm, right up to the point of suspending or terminating the business of enterprises.

2. In Article 42 concerning the environmental requirements imposed on energy facilities, there is no section on atomic power stations (in Russian law this is Part 3, Article 48).

3. In Article 48 concerning protection of the natural environment from wastes, there is no section on radioactive waste (in Russian law this is Part 6, Article 54).

4. There is no regulation protecting the ozone layer.

5. There are no articles concerning specific types of specially protected natural land areas. The Law contains editorial and technical *errors*, for example:

“Financing environmental programmes and measures ... is to be at the expense of ... the *federal* budget of the Republic of Khakassia (article 16). Again - Article 73 has been brought into the Law

“Compensation for harm caused to historic and cultural heritage sites”: Enterprises, organizations, institutions, or individual citizens contributing to or directly causing harm to historic and cultural heritage sites protected by the state shall be obliged voluntarily or by the decision of a court to make compensation for the damage caused. The damage sums needed to restore the site shall be specially determined by Gosnadzor [State Supervision] bodies in the Republic of Khakassia that are authorized to do so”. It is not clear which State Supervision authority is meant here. But the main point is that historic and cultural heritage sites are protected *not by laws to protect the natural environment*, but by other laws.

#### *Law of the Republic of Khakassia dated 21 May 1996, “On the animal world”*

For the most part, the law reproduces the provisions of the Federal Law dated 24 April 1995 “On the animal world”. At the same time, it does not fill in the gaps that exist at the federal level.

For instance: dealing specifically with protected land areas where limited economic activity takes place, compensation is to be paid out to the owner, landlord or lessee in accordance

with the legislation of the Russian Federation and the legislation of the Republic of Khakassia (Article 18). Clearly, the issues of such compensation ought to have been made specific.

In addition, the Law contains a number of [regulatory] norms that establish the authority of the Government of the Russian Federation and other federal bodies. This is senseless in view of the fact that these norms do not have juridical force. For example, in Article 24: the procedure for state accounting for, replenishing, storing, acquiring, selling, forwarding, or exporting from the Russian Federation, or importing into it zoological collections or individual exhibits shall be determined by the Government of the Russian Federation. Similarly, Article 31 runs: the animal world shall be offered for use (in relation to objects of the animal world under federal ownership) by the appropriate, specially authorized body for the protection, control and regulation of the use of objects of the animal world and their habitat on the basis of a decision by the Government of the Russian Federation.

On the other hand, the specific bodies are not named, where this is essential. By way of example, applications to acquire objects of the animal world for use on the territory of the Republic of Khakassia are to be submitted to the *authority with executive power* (which authority?) of the Republic of Khakassia (Article 32). Blanket norms are stated without being made specific, such as those in Article 35 – the use of leg snares for trapping is prohibited, except in instances provided for by the laws and other regulatory enactments of the Republic of Khakassia. If there are such instances, then provide them in this Law.

Article 8 of the Law regulates the involvement of the Northern peoples, who are few in numbers of population, in protecting and making use of objects of the animal world and maintaining and restoring their habitats. However, traditional methods for protecting and using objects of the animal world are not specially regulated by the Law.

*The Law of the Republic of Khakassia dated 21 December 1993 (with amendments dated 18 February 1998) “On forests”*

The Law of the Republic of Khakassia “On forests” was adopted in the period when the Fundamentals of forestry legislation of the Russian Federation, dated 6 March 1993, were in force. The amendments introduced on 18 February 1998 concerned only two articles in it (Articles 4 and 5) that regulated the legal competence of the Supreme Soviet and the Council of Ministers of the Republic of Khakassia, which were acknowledged as having lost their validity (new articles to replace those that had become ineffective, were not introduced). However, because of the large number of amendments to its provisions, *this law needs rewriting*.

The main contradictions that materially affect the content of the Law of the Republic of Khakassia “On forests”, and sharply reduce its regulatory potential, are focused around the following issues:

1. To a certain extent, the starting position of this Law is the provision of Article 2 to the effect that “the forest reserves are under the joint jurisdiction of the Russian Federation and the Republic of Khakassia”, whereas according to Article 47 of the Forestry Code of the Russian Federation, “participation in exercising rights of ownership, use and disposal of forest reserves on the territories of relevant subjects of the Russian Federation” is included

among the powers of subjects of the Russian Federation, among others, which is explained by forest reserves being federal property (Article 19, the Forestry Code of the Russian Federation).

2. The competence of certain authorities of the Republic of Khakassia, in the form in which it is defined by this law, does not always correspond to the Forestry Code of the Russian Federation.

3. A special feature of the way public authority is organised in Khakassia is the fact that, according to the Constitution of the Republic of Khakassia, the territorial authorities exercising state power over districts (Chapter VI) are effective in the districts and in towns of significance to the Republic.

The District Council of Deputies (Article 104) is the territorial representative authority exercising state power in the districts of the Republic of Khakassia.

The District Councils of Deputies, in particular, within the limits of their competence, determine the procedure for utilizing land and other natural resources that are under the jurisdiction of the district (clause c [*Russian 'v'*] of Article 105). The District Administration is the territorial executive authority exercising state power for the districts of the Republic of Khakassia, and is run by the head of administration for the district. The Administration of the district forms part of the system of authorities exercising executive state power in the Republic of Khakassia (Article 106). According to Article 110 of the Constitution of the Republic of Khakassia, local self-government is exercised in urban and village settlements and in other territories within the boundaries of the administrative and territorial units that make up the system of administrative and territorial organization of the Republic of Khakassia. All this determines certain peculiarities in the distribution of legal competence among the authorities exercising power in the sphere of forest use.

4. The outdated concept “owners of the forest reserves” is applied, which has not been included in the new Forestry Code of the Russian Federation.

Under Article 1 of the Forestry Code of the Russian Federation, the laws and other normative legal enactments of subjects of the Russian Federation that regulate forestry matters may not contravene the Code or federal laws adopted in conformity with it. In the event of a contradiction between a federal law governing forestry matters and another enactment adopted in the Russian Federation, the federal law shall operate.

Thus, the greater part of the Laws of the Republic of Khakassia “On Forests” has effectively lost its validity and cannot be applied to regulate forestry matters on the territory of the Republic.

Comments can be made in respect of the majority of articles in the Law (in all, 98 articles). But set out here are just some of the most essential of them.

1. Article 1, Part 2 makes no sense, since it is not just decisions by local self-government bodies that must not contravene this law, but also those taken by all other authorities in the Republic.

2. In Article 2 of Part 1 after the words “all the forests”, the text should be clarified in accordance with Article 7 of the Forestry Code of the Russian Federation: “except for forests situated on defence land and populated land (settlements)”.

3. The legal competence of the Supreme Soviet and Council of Ministers of the Republic of Khakassia is not regulated (the relevant Articles 4 and 5 are acknowledged as having lost their validity).

4. The legal competence of the district (municipal) Councils of People’s Deputies (Article 6) and the district (municipal) administrations (Article 7) includes a number of powers referred by the Forestry Code of the Russian Federation (Article 47) to the authority of subjects of the Russian Federation. Because state power in Khakassia extends down to the level of towns of significance to the Republic and to the districts<sup>1</sup> enumerated in Article 67 of the Constitution of the Russian Federation, transfer of the basic legal competence of a subject of the Federation in the sphere of forest use to the local level of authorities exercising state power does not contravene federal forestry legislation, since this can be considered an internal matter for the subject of the Federation itself. However, individual points in articles 6 and 7 are not consistent with the federal forestry legislation. For instance, Clause 5 of Article 6 on the procedure for taking a decision to lease out areas of forest reserve and Clause 5 of Article 7 contravene Article 34 of the Forestry Code of the Russian Federation, according to which “areas of forest reserve shall be offered for leasing on the basis of decisions made by authorities exercising state power in subjects of the Russian Federation that are adopted *on a representation by* the territorial authorities of the federal forest management authority, or on the results of forestry competitive tenders”. On the one hand, no mention of the owners of forest reserves is made here. (According to the Fundamentals of forestry legislation of 1993 that used to be in force, the forestry enterprises were considered to be the owners). On the other hand, the Forestry Code of the Russian Federation says that the territorial authority of the federal authority *shall make a representation* to the authority of the subject of the Federation for a decision to be taken, whilst the Law of the Republic of Khakassia says: “the involvement of owners of the forest reserves shall be limited to setting terms that correspond to established forestry requirements”.

It is hardly possible, either, to agree with the notion that the District Council can itself decide the forms for selecting a forest user (Clause 7, Article 6, and also Part 2, Article 30), since federal law has already determined the terms on which conferral may be granted without competition.

As a general rule, forest areas are offered for leasing on the results of competitive forestry tendering. Outside the tendering framework, on the basis of decisions made by the authorities exercising state power in subjects of the Russian Federation, forest areas are offered for leasing for a period of one to five years to forest users, who have already been

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<sup>1</sup> The Constitutional Court of the Russian Federation has acknowledged this practice as not contravening the Constitution of the Russian Federation, provided that these authorities exercising state power do not enter the sphere of legal competence of local self-government authorities. See: Constitutional Court of the Russian Federation Resolution No. 1-P dated 24 January 1997 “On the matter of verifying the constitutionality of the Law of the Republic of Udmurtiya dated 17 April 1996 “On the system of authorities exercising state...”

pursuing their business for a long time on the territory in question and have the production capacity to store and process timber and other forest resources, and also to agricultural organizations located on the territory in question (Article 34, the Forestry Code of the Russian Federation).

The holding of forestry auctions has also achieved firm status in federal legislation (Article 43 of the Forestry Code) in connection with short-term use.

5. From Article 8 it could be surmised that the Republic's own forestry enterprises operate, along with its specially authorized bodies as a whole, *in parallel with federal* authorities – the former Rosleskhoz. If this is not the case, and this means all the structures of the Ministry of Natural Resources (Rosleskhoz), then the requirement in Article 52 of the Forestry Code of the Russian Federation must be fulfilled, under which “The authorities exercising executive power in subjects of the Russian Federation shall exercise their powers in the sphere of the use, protection and safeguarding of forest resources and renewing of forests on the territories of subjects of the Russian Federation directly or through the territorial authorities of the federal forest management authority, if this is provided for by an agreement on the transfer of some executive powers between the appropriate federal authorities exercising executive power and the authorities exercising executive power in the subjects of the Russian Federation”.

6. Articles 10 and 11 on owners of forest reserve and their functions have in fact lost their validity with the adoption of the Forestry Code of the Russian Federation. But the functions of forestry enterprises, according to the Forestry Code of the Russian Federation, differ from the functions of owners as they used to exist.

7. According to Part 2, Article 22, when forest land is converted to non-forest land, a payment shall be made by the forest user to the district (municipal) budget. However, according to Part 2, Article 63 of the Forestry Code of the Russian Federation, when forest land is converted into non-forest land for purposes not associated with forestry, those persons in whose interests this conversion and (or) seizure was made, shall be charged a payment to be sent to the forestry enterprise of the federal forestry management authority in order to compensate for forestry losses.

8. In Article 23 of the Law of the Republic of Khakassia, the conversion of forest land into non-forest land for purposes associated with forestry shall be carried out by permission of the state forestry management authorities of the Republic of Khakassia. However, according to Article 64 of the Forestry Code of the Russian Federation, converting land in this way shall be carried out by the appropriate forest enterprise of the federal forestry management authority by permission of the territorial authority of the federal forestry management authority in the subject of the Russian Federation.

9. The procedure for agreeing projects and sites for construction that are not associated with forestry, as established by Article 26 of the Law of the Republic of Khakassia, is not consistent with Article 66 of the Forestry Code of the Russian Federation, according to which work carried out in a forest reserve when it is not associated with forestry and forest use, provided no conversion of forest land into non-forest land or seizure of land is required, shall be carried out on the basis of permission from the forest enterprise of the federal forestry management authority.

10. In Article 28 the term of a lease is set at up to 50 years, whereas under Article 31 of the Forestry Code of the Russian Federation the term of lease is up to 49 years.

11. The Provision in Part 3, Article 30 of the Law of the Republic of Khakassia on “Forestry competitive tenders and bidding shall be organized and held by the district (municipal) administration with the involvement of local subdivisions of the state forestry management authority of the Republic of Khakassia” is not consistent with Part 3, Article 35 of the Forestry Code of the Russian Federation: “Forestry competitive tendering shall be organized and held by the territorial authorities of the federal forestry management authority”.

12. Part 7, Article 30 says that a licence shall be a document certifying the right of the owner to long-term use of areas of forest reserve (a lease), and Article 34 lists the contents of the licence. However, according to the Forestry Code of the Russian Federation this shall not be the contents of the licence, but of the leasing agreement (Articles 31 and 33 of the Forestry Code). The Forestry Code does not regulate licensing, but merely contains a general indication in Article 81 to the effect that “Activities in respect of the use of forest reserves are subject to licensing in accordance with the legislation of the Russian Federation”.

In the light of the Federal Law “On licensing particular forms of activity”, there is legal vagueness over, for instance, whether the lessee should have a licence to carry on the relevant activity, as enshrined in Part 5, Article 34 of the Forestry Code of the Russian Federation.

13. Part 1, Article 33 “Offering areas of forest reserve for long-term use shall be in the form of leasing on the basis of a joint decision by the district (municipal) Council and the owners of the forest reserve. According to Part 1, Article 34 of the Forestry Code of the Russian Federation, “areas of forest reserve are offered for leasing on the basis of decisions by the authorities exercising state power in subjects of the Russian Federation that are taken on representation by the territorial authorities of the federal forestry management authority or on the results of forestry competitive tendering”.

Accordingly, neither are the requirements of the federal legislation in force met by Part 2, Article 33, to the effect that “the transfer of areas of forest reserve under lease on the basis of a licence shall be carried out by forest enterprises, and in the case of forests that are in the ownership of agricultural entities – by these owners of forest reserve”. (See also the Provision on leasing areas of forest reserve (ratified by Resolution No. 345 of the Government of the Russian Federation dated 24 March 1998).

14. Part 4, Article 38 says that if forest reserve land is seized for state or public needs, the forest user shall be compensated in full for all *direct* losses associated with this seizure. But according to Part 3, Article 63 of the Forestry Code of the Russian Federation, “a forest user shall be compensated for losses associated with the seizure of forest reserve land *in full* under the procedure laid down by the Government of the Russian Federation”.

15. In Part 2, Article 39, Clause 1 serves as the basis for prematurely *terminating* the forest user’s rights, but according to Article 26 of the Forestry Code of the Russian Federation, this is the basis for *restricting* or *suspending* the rights of a user of forest reserve areas. In

addition, the other grounds for termination named in Article 39 should be stipulated as they apply to Article 28 of the Forestry Code of the Russian Federation.

16. The procedure for terminating the rights of a forestry user (Article 40) does not fully correspond to the procedure set out in Article 29 of the Forestry Code of the Russian Federation.

17. Article 66 “The peculiarities of forest use in forest belonging to agricultural entities” is not consistent with the new position on the subject of forests that were previously in the possession of agricultural organizations, as regulated by Article 130 of the Forestry Code of the Russian Federation, by the Provision on use, protection and safeguarding of forest reserve and restoration of forests previously in the possession of agricultural organizations (ratified by Resolution No. 1601 of the Government of the Russian Federation dated 19 December 1997), and by the Provision on offering forest reserve areas for unpaid use (ratified by Resolution No. 224 of the Government of the Russian Federation dated 18 February 1998).

18. The Provision in Article 73 on departmental conservation in forests belonging to agricultural entities does not conform fully to federal legislation. According to Article 77 of the Forestry Code of the Russian Federation, state forest conservation is generated in the federal forestry management authority. In instructions No. VSh-3-15/42 and 2-34/85 dated 22 January 1998 that were issued by Rosleskhoz and the Ministry of Agricultural Production of the Russian Federation “On implementing Resolution No. 1601 of the Government of the Russian Federation dated 19 December 1997”, it was decided that the safeguarding and protection of forest was to be implemented by a combined security guard force from the various forestry enterprises, to which Rosleskhoz’s state rights and responsibilities for safeguarding forest would be extended, apart from rights of state control.

19. Section V – “Financial aspects of forestry matters” – is not consistent with Chapter 13 of the Forestry Code of the Russian Federation on “Payments for the use of forest reserve”. Thus, Article 103 of the Forestry Code “Types of payment for the use of forest reserve” determines that “payments for using forest reserve shall be charged in the form of forestry duties or a lease payment”. The payments for renewing, safeguarding and protecting forest are not named here.

20. Distribution of payments (Article 84) is not consistent with Article 106 of the Forestry Code of the Russian Federation, since the fixed part of forestry duties and lease payment goes into the federal budget, or with Article 21 of the Law of the RSFSR on “Safeguarding the natural environment” about funds from legal actions and fines going not into an ecological resources fund for renewing and conserving forest, but into an ecological fund.

21. Article 86 is not consistent with Article 108 of the Forestry Code of the Russian Federation in relation to sources of financing expenditure on state administration in the area of using, safeguarding and protecting forest reserve and renewing forests.

22. Article 93 lists the types of infringement of forestry legislation, but does not identify any types of infringement that are not incorporated in the RSFSR Code of Administrative

Violations. A norm such as this only makes sense if it contains additional types of administrative violation with the sanctions they attract.

23. Part 3, Article 94 to the effect that timber stockpiled without permission is subject to removal and transfer to local self-government authorities for subsequent sale, is not consistent with the procedure set out in the USSR Goskomleskhoz Instructions on the procedure for bringing to account those in breach of forestry legislation (ratified by Goskomleskhoz Resolution No. 1 dated 22 April 1986): illegally procured timber and other forest products are subject to seizure and transfer to the appropriate enterprise, establishment or organization heading the forestry work, or to the forest user if his rights have been infringed. The enterprises, institutions and organizations heading the forestry work can sell the removed products.

24. Article 96 contradicts Article 111 of the Forestry Code determining that the manner for indemnifying damage is to be set by the laws of the Russian Federation, and also by the general provisions of civil law on the reparation of damage.

*The Law of the Republic of Khakassia dated 21 May 1996 "On expert ecological assessment"*

In the textual sense the law is virtually identical with the equivalent federal law "On expert ecological assessment" (1995).

In developing the given Federal Law, Article 11 states the authority of the Supreme Council of the Republic of Khakassia, the President of the Government, and the Government of the Republic in the area of expert ecological assessment.

Individual provisions are worded differently from the Federal Law, which in a number of cases makes it possible to consider them inconsistent with federal law. By way of example, Clause 2, Article 6 grants the State Committee on the Environment the right to receive *free of charge* - from authorities exercising executive power, local self-government authorities and organizations and enterprises - information needed for tasks to be performed in the area of expert ecological assessment (Part 2, Article 6). For comparison: the Federal Law: "On expert ecological assessment" grants the territorial authorities of Goskomekologia the right to receive free of charge information needed to implement tasks in the area of expert ecological assessment from the authorities exercising the executive power of subjects of the Russian Federation and non-commercial organizations (Part 2, Article 8). The question arises, does not the inclusion of local self-government authorities and commercial enterprises in the group of subjects required to provide information free of charge contravene federal law, if we keep in mind that free provision affects the rights of the owner of the information, and in accordance with Article 6 of the Federal Law "On information, informatics and data protection" the position as regards ownership rights to data resources is regulated by the civil law of the Russian Federation, which is, we shall note, in the *jurisdiction of the Federation*? Moreover, the Federal Law "On the general principles for organizing local self-government in the Russian Federation" says that an increase in the costs of local self-government authorities arising as a result of decisions taken by the authorities exercising the state power of subjects of the Russian Federation, is to be reimbursed by the bodies that took the decisions (Article 38). However, there is no mention of any reimbursement in the Law on expert assessment.

*The Law of the Republic of Khakassia dated 20 October 1992 “On specially safeguarded natural territories and sites in the Republic of Khakassia”*

The majority of discrepancies between this law and federal law can be explained by the fact that it was passed earlier than the corresponding Federal Law dated 14 March 1995 “On special conservation areas”. According to Part 2, Article 2 of the same Federal Law, the authorities exercising the executive power of subjects of the Russian Federation and local self-government authorities can establish other categories of special natural conservation areas (areas in which there are green zones, municipal woods, municipal parks, garden and park landscaping, protected shorelines, river systems, natural landscapes, biological research stations, micro nature reserves etc.). In this respect, forms such as special conservation areas, environmental and ethnic zones, green zones, and environmental and recreational zones can be considered not to contravene Federal law. Historic landscape sites are an integrated object of legal protection, and the regime for them must be reinforced simultaneously by laws on the environment and on the preservation of cultural monuments. Therefore, from the technical legal point of view, section 6 cannot be wholly incorporated in this law in respect of the specific area of relations that is the subject of regulation.

Individual observations:

1. Because the state nature reserves and national parks are classified as special conservation areas having a federal significance, they are federal property and are in the jurisdiction of the federal authorities exercising state power (Part 6 and 7, Article 2 of the Federal Law “On natural conservation areas”), but their legal regime is regulated at the federal level and the need for separation falls away.

2. “State nature reserves”. Section 4 “National nature parks” must be revised, keeping in mind the separation of national parks (federal property) and nature parks (the property of subjects of the Russian Federation) – here only the part that regulates the legal regime of nature parks can be left in.

Section 3. “State natural game reserves” contains a number of discrepancies with the Federal law. For example, in Article 11 the provision “State natural game reserves of federal importance shall be created by the Government of the Russian Federation with the agreement of the Government of the Republic of Khakassia; those of significance to the Republic – by the Council of Ministers of the Republic of Khakassia on representation by Goskomecologia of the Republic of Khakassia”. And further on: “declaring an area to be a state game reserve does not entail the seizure of the plot of land occupied by it”. For comparison, in the Federal law: “State natural game reserves of federal importance shall be founded on the decision of the Government of the Russian Federation on the basis of representation by the authorities exercising the executive power of subjects of the Russian Federation and the state authority of the Russian Federation especially authorized for this in the area of environment protection. State natural game reserves of regional importance shall be formed by the authorities exercising the executive power of subjects of the Russian

Federation in agreement with the appropriate local self-government authorities” (Article 23). “Declaring an area as a natural game reserve is permitted, both with seizure and without seizure from users, landlords and owners of the plots of land” (Part 2, Article 22). The law has established the possibility of game reserves being created within the territory occupied by farms (Article 13). However, the Federal law does not contain this type of game reserve.

3. In section 6 “Environmental and ethnic zones” the shortcomings are connected with the fact that there are provisions that do not meet the requirements of the Civil Law of the Russian Federation adopted subsequently, and legislation on local self-government. Thus, the concept “self-financing institution” used in Part 2, Article 24 is obsolete. In Article 25 it is not clear whether the local self-government authorities are meant or the authorities exercising state power at the local (district, municipal) level.

The expression “plots of land ... are partially withheld from economic use” (Article 26) suffers from legal ambiguity – does this mean encumbering the rights of the land user or the actual seizure of the land?

The expression “environmental and ethnic zones, in accordance with the laws of the Russian Federation, are exempt from payment for the right to use the natural resources” (Part 2, Article 27) is legally incorrect since this matter is in the jurisdiction of the Russian Federation, and prescribing privileges of a tax character ‘from below’ is impossible. The Republic may decide on the matter of exemption only for that part of the payment that is owed to its own budget.

4. The Provision of Part 2, Article 29 “In the event that work has to be carried out in historic areas and areas of natural beauty, in consequence of which cultural and historical sites could be destroyed or damaged, the organizations, institutions and juridical persons that permitted this work are obliged to finance measures to restore these sites, and also other compensatory costs on the basis of expert assessment” needs addenda. With the purpose of preserving the most valuable sites it would be advisable to list the acceptable reasons for carrying out such work and define the procedure for agreeing them with the appropriate authorities.

5. Section 7 (Article 32) and 8 (Article 33) do not resolve the matter of reimbursing the costs of subjects of economic activity on whose territory there are, respectively, natural sites and endangered species, costs that are associated with their responsibility for the special safeguarding of these sites.

6. Section 9 “The preservation of the environment in resorts and health treatment zones” is not consistent with the Federal Laws “On specially protected natural territories”, “On natural treatment resources, health treatment localities and resorts”. Resorts and health treatment localities can be of federal, regional or local significance. In particular, this law was supposed to regulate the regime at resorts of local importance: according to Part 2, Article 3 of the Federal Law “On natural treatment resources, health treatment localities and resorts”, an area is recognised as a health treatment locality or resort of local significance in the manner established by the legal enactments of a subject of the Russian Federation.

*The Law of the Republic of Khakassia dated 17 November 1998 “On protecting the general public and territories from emergency situations of a natural and industrially generated character in the Republic of Khakassia”*

The law significantly differs from the Federal law of the same name dated 21 December 1994 “On protecting the general public and territories from emergency situations of a natural and industrially generated character”. Thus the given Law (Article 1) defines the basic concepts that are lacking in Federal Law: eliminating the consequences of emergency situations; the disaster zone; the public in the emergency situation zone; the injured; life support in emergency situations; the source of industrially generated emergency situations; the source of a natural emergency situation; a potentially dangerous facility; unofficial organisations; information concerning protection of the public and the territory from emergency situations, and others. The list of aims for which the law is intended is broader than in the federal law (Article 2).

There is detailed regulation of the activities and tasks of the Republic’s subsystem within the single state system for warning of, and eliminating, emergency situations in the Republic of Khakassia (Articles 4 and 5), the task of the commissions for emergency situations within the executive authorities exercising state power in the Republic of Khakassia, the local self-government authorities of the Republic of Khakassia and organizations (Article 15), the tasks and rights of the Committee for GO [*possibly ‘civil defence’*] and emergency situations in the Republic of Khakassia (Article 16).

However, in certain places the law has not used the reserves of legal control. For example, Part 6, Article 7, duplicates Part 5, Article 6 of the Federal law: the procedure for providing information to the public, the authorities exercising state power, the local self-government authorities in the area of protecting the public and the territories from emergency situations is established by the laws of the Russian Federation and the laws of the Republic of Khakassia. Meanwhile, in the given instance there is every opportunity to establish the procedure directly – Article 6 of the Federal law says that such a procedure can be established by the laws of subjects of the Russian Federation.

It would be beneficial to establish specific administrative sanctions, for instance, for failure to undertake (evasion) of measures intended to warn of emergency situations and minimizing the amount of loss – instead of this in Part 2, Article 9 there is merely a statement of responsibility.

Article 30 of the Law textually duplicates the same blanket article 29 of the Federal Law, which does not make sense. In such conditions the Provision under Part 2 Article 16 will not be applied; this says that the Committee for GO and emergency situations is entitled to “impose a fine on officials for inappropriate execution of a Declaration on the safety of a facility and of orders on matters concerning the protection of the public and the territories from emergency situations”. We shall note that the Federal law in Article 28 has made direct provision for the possibility of establishing administrative liability through the laws of subjects of the Russian Federation, but this possibility has not been realised.

It is not quite clear what is meant in the provision; “the personnel of unofficial formations, and also the emergency medical assistance forces earmarked for eliminating the consequences of emergency situations, are subject to compulsory insurance at the expense of the authorities by which they were formed (Clause 3, Article 20) – is this the compulsory social insurance to be effected under the Federal law dated 16 July 1999 “On the fundamentals of compulsory social insurance” or is it personal insurance in the sense of Chapter 48 of the Civil Code of the Russian Federation? In the latter instance the duty to take out insurance as insurants [*the insuring party*] on the life, health or property of other persons may be imposed, as follows from Part 2, Article 927 and Article 935 of the Civil Code of the Russian Federation, by *federal* but not by regional law.

*Law No. 69 of the Republic of Khakassia dated 29 November 1999 “On Tourism in the Republic of Khakassia”*

It is a well-known fact that the Republic of Khakassia has significant potential in its tourist resources, including natural complexes and sites. Moreover, its attractiveness for tourism can be explained in great part by its beautiful natural landscapes and sites, the diversity of the flora and fauna and by favourable environmental conditions.

Development of the tourist industry in the Republic will unavoidably lead to an increase in the anthropogenic burden on the environment and for that reason must be accompanied by special nature conservancy measures. Meanwhile, environmental tourism is not examined in the draft of this normative enactment either as an independent type of tourism (Article 1), or as a priority trend in the state’s regulation of tourism (Article 6). References to the preservation of the environment and the rational use of the Republic’s natural heritage (Articles 4, 7, 19 and others) are still clearly insufficient to avert the degradation of the region’s environment in the event of the intensive development of tourism.

To give an environmental slant to the Law the following proposals are being introduced to regulated environmental tourism as a type of tourism, and also to safeguard the environment when natural resources are used as tourist resources:

1. In Article 1 of the law, tourist sites are defined as “a territory (plot, site) having a recreational purpose, with its own legal regime”. However, in the next article there is no more specific description of the legal regime. Taking into account the significant recreational potential of the Republic of Khakassia, it would be beneficial to discuss the possibility of establishing a legal regime for recreational areas (land plots and water areas) that can be identified among all existing categories of land, except land set aside for nature reserves, nature conservancy and health and fitness, i.e. those already occupied by nature conservation areas. At the same time as giving them a special status, to develop a mechanism for the contribution of payments for carrying on tourist activity in such areas (economically justifiable sums, the sources of payments and the way that they are spent). As another option – through increasing the lease payment for a plot of land, or plot of forest reserve.

The procedure for using recreational areas is to be established in a separate normative enactment.

2. Article 3 “The principles of state regulation of tourist activity” is to be supplemented by principles (subparagraphs):

- ensuring the preservation of the natural environment;
- harmonizing the interests of the local population and subjects of the tourist business.

3. Add to Article 6 - “Priority trends in the state regulation of tourist activity (subparagraph 1) - the words “and also the creation of specialized environmental tourism”.

4. Taking into account the environmental features of the region, and also because Article 13 of the Federal Law “On the fundamentals of tourism in the Russian Federation” (1996) has not yet been fully developed as regards:

“the procedure for using the tourist resources of the Russian Federation having due regard to the maximum permissible burden on the natural environment shall be determined in accordance with the laws of the Russian Federation”, it is possible to establish this procedure (temporarily) in the legislation of the Republic of Khakassia. Technically this is possible either in the law itself (Chapter VI), or in a separate normative enactment. In this connection, Article 21 should be supplemented as follows: “use shall be made of tourist resources giving due regard to the maximum permissible burden on the environment (and/or the quota of visits), which is to be fixed in accordance with the laws of the Russian Federation and the Republic of Khakassia”.

5. In Article 1, subparagraph 1, beginning with the words “tourist resources...” add after the word ‘spiritual’ the word ‘environmental’. In the next subparagraph (beginning with the word “register...”) insert the word ‘ecological’ after the word ‘economic’.

In the next subparagraph (beginning with the word ‘land survey...’) replace the word ‘recreative’ with ‘recreational’.

6. Add to Article 16 “The responsibilities of the tour operators and tour agents” the subparagraph: “ensure the observation of the norms and rules that regulate the preservation of the natural environment and exclude the degradation and destruction of tourist resources”.

7. Add an indication in Article 21 (“The tourist resources of the Republic of Khakassia”) on the procedure for providing the tourist resources to be used:

- paid or free use;
- who takes the decision for providing it etc.

## **Normative Regulatory Enactments**

*Resolution No. 105-3 of the Supreme Council of the Republic of Khakassia dated 5 June 1992 “On delimiting jurisdiction and authority for the ownership, use and disposal of natural resources (sites) in the Republic of Khakassia”*

Treating the following as areas of joint jurisdiction: nature reserves of federal importance; the reservoirs of Sayano-Shushensk and the Krasnoyarsk hydroelectric power station; the river Yenisey within the frontiers of the Republic of Khakassia; animals and plants recorded in the Red Book of the Russian Federation; and forests in the first and second groups (Clause 1) had no particular legal sense, because it was done unilaterally and after acceptance of the Constitution of the Russian Federation and a number of fundamental federal legal enactments connected with the use of nature and preservation of the environment, this clause has to all intents and purposes lost its force.

All the sites named here come under the criteria of federal ownership as established in Article 36 of the Water Code of the Russian Federation, Article 19 of the Forestry Code of the Russian Federation, Article 2 of the Federal Law “On Specially Protected Natural Territories” and Article 4 of the Federal Law “On the animal world”. Joint jurisdiction as regards natural resources and sites in federal ownership is not provided for under federal law. Moreover, the federal powers exercise their authority in respect of all natural resources, regardless of the form of ownership, proceeding from the basis that matters of ownership, use and disposal of natural resources is in the joint jurisdiction of the Russian Federation and the subjects of the Russian Federation (Article 72 of the Constitution of the Russian Federation).

The main idea of the Resolution resides in dividing up the natural resources according to the ‘criteria’ of jurisdiction. Such an approach is of interest from the point of view of excluding the duplication of management operations, but sits awkwardly with the methods of splitting the powers of the authorities exercising power at different levels that are enshrined in current federal law. Obviously, ‘jurisdiction’ presupposes the resolution of all issues of using the resources in question; however, according to the law, in virtually all management situations, the legal competence of the federal, regional and municipal authorities is exercised simultaneously. Even the forms of ownership for resources do not exclude the legal competence of the authorities exercising power at other levels.

In this Resolution there is absolutely no reflection of the legal competence of municipal bodies. Taking into account the special features of the organisation of state power in the Republic – and specifically the fact that the authorities exercising state power operate at the level of the districts and towns (Articles 104, 105 etc. of the Constitution of the Republic of Khakassia) particularly careful delineation is

needed between their spheres of legal competence, since the authorities exercising state power at the district level cannot exercise authority granted by the Constitution of the Russian Federation and by federal law to local self-government.

“The basic rights of the authorities exercising state power and users of the natural environment”, formulated in the appendix to the resolution, for their part are not based on legislation. Thus, the Supreme Soviet of the Republic of Khakassia and the Councils of

People's Deputies cannot be invested with the rights "to set the types and forms of ownership, use, and disposal of natural resources (sites); determining the procedure for changing the forms and types of ownership, use and disposal of natural resources (sites)", since these forms are determined by federal law. The right to "implement an act of purchase and sale, gift, alienation, mortgage" is not intrinsic to the bodies of representative authority, actions of this kind being carried out by various authorities exercising executive power. The rights of users (Clause 3) are far from being fully listed..

As a whole, the Resolution, although formally not revoked, has very little practical meaning.

*Resolution No. 103 of the Council of Ministers of the Republic of Khakassia dated 23.04.1992 "The status, protection regime and rational use of caves in Khakassia"*

The Resolution approved the Provision "On the status, protection regime, control and rational use of caves in Khakassia" and "The procedure for calling to account those in breach of the conditions for using caves". This legal enactment of the Republic of Khakassia has no counterpart at the federal level, or, according to expert assessments, at the regional level either.

According to Law of the Russian Federation No. 2395-1 dated 21 February 1992 "On the subsurface" (in the version dated 3 March 1995) (with amendments and addenda dated 10 February 1999 and 2 January 2000), the creation of specially protected geological sites of scientific, cultural, aesthetic, medical and health treatment or other significance (such facilities include caves and other underground cavities) are one of the forms of using the subsurface (Article 6, Part 1, Clause 5). Consequently, fundamental to the creation of a normative enactment like this is the federal law on the subsurface. Since the complex of natural caves on the territory of Khakassia has been given the status of specially protected natural territories with a regime under which economic activity is restricted, legal regulation must also be based on the law on specially protected natural territories.

However, a large number of norms do not conform to the federal laws in force:

1. *The conferral on the speleology service of a number of managerial, as well as monitoring, powers that are not intrinsic to economic subjects which are users of nature:*

- the cave complex of Khakassia is in the jurisdiction of the Khakassia speleology service 'Labyrinth', which manages the immediate protection, research and use of the caves of Khakassia (Clause 3 of the Provision on the status, protection regime, control and rational use of caves in Khakassia);
- the speleology service 'Labyrinth' manages the immediate protection of the caves and *monitoring* of their environmental condition (Clause 2 of the Provision on the procedure for calling to account those in breach of the conditions for using caves of Khakassia);
- the speleology service is charged with the responsibility for drawing up enactments (protocols) for infringements, issuing orders to organizations operating in the caves and their protection zone, imposing fines on private individuals, groups and organizations for

any infringements in the caves and their security areas (Clause 2, Provision on the procedure for calling persons to account);

- the speleology service may suspend the activities of organizations operating in the caves, and has the right to countermand the requirements placed upon them, and also in agreement with the Committee for Ecology and the Use of Natural Resources to stop completely any activity that puts the environmental condition of the caves in jeopardy (Clause 2, Provision on the procedure for calling persons to account);

- the speleology service may check the transport sacks of a group on emergence at the surface (Clause 11, Provision on the procedure for calling persons to account).

The speleology service is a juridical person (from the text it is not clear who is the founder) and has general permission to make use of the recreational resources of the caves. In this way, this is an economic subject, which, regardless of its form of ownership and in any other circumstances, *may not exercise the powers of authorities exercising state power*. Questions surrounding the use of the caves are in the joint jurisdiction of a specially authorized federal authority concerned with the use of natural resources and the preservation of the environment and the Government of the Republic of Khakassia. (The juridical nature of general permission requires separate analysis from the point of view of complying with anti-monopoly requirements, and also the principle of competition in the process of granting rights of use.

General permission, enshrined by the laws of the Republic of Khakassia in 1992, does not fully correspond to current federal legislation).

## *2. Setting payments for using the caves for which no provision has been made in federal law:*

- all organizations using the caves for economic and commercial purposes are liable to be charged payment;

- in order to maintain the ecological condition of the caves and the protected area around them, improve the facilities, carry out work to explore new cavities and complete the study of others opened up previously and ensure that rescue work in the caves on the territory of the Republic of Khakassia is effective, payment for the recreational resources of the caves is charged;

- payment for the recreational resources of the caves of Khakassia is calculated in each specific case by the Committee for Ecology and the Use of Nature, depending on the category of importance, and is approved by the Supreme Soviet;

- the sum of the payment for the use of the recreational resources of the caves is transferred to the budget of the Republic of Khakassia (Clauses 13-14 of the Provision on the status, protection regime, monitoring and rational use of caves in Khakassia).

According to Part 7 of the Law of the Russian Federation “On the subsurface”, the procedure and terms for charging payments to use subsurface and the criteria for determining the rates are set by the Government of the Russian Federation.

However, the procedure for charging payments for use of the caves is not established by the Government of the Russian Federation and as a result the question arises of the justification for this.

### *3. Setting administrative sanctions (fines) and their application is at variance with the RSFSR Code of Administrative Violations:*

3.1. Most of the forms of words set out in para 3 of the Provision on the procedure for calling persons to account, are in fact already enshrined in federal law.

For example: “pollution of natural underground landscapes” is only a particular instance of “polluting the environment”, for which there is provision under Article 84 of the RFSR Law “On safeguarding the natural Environment”; similarly, “violation of landscapes in the area of the caves”, “destruction of the caves during excavation of rock, explosive and drilling work” are a particular instance of “spoilage, damage and destruction of natural sites and destruction of natural eco-systems” (the same Article 84 of the Law).

Thus, of importance are only those formulations for which there are no counterparts in federal law; presumably this is “lighting combustible substances in cavities without any need to do so”; “using ecologically polluting sources of lighting and heating (flaming torches, carbide lamps and primus stoves without proper regulation)”;

- “organizing bivouacs in places not designated for this”, etc.

3.2. The speleology service is invested with the right to draw up protocols and impose fines - this too is in gross violation of federal law. A subject of the Federation cannot change by its own decision or add to that circle of authorities and officials on which such rights are conferred by the RSFSR Code of Administrative Violations and other federal laws.

3.3. There are some very material discrepancies with federal law in the manner of calling persons to account (Clause 10):

- fines for any violations are imposed both on the entire group as a whole and on individual members of the group depending on the involvement of the group in the violation (*however, legal responsibility has a personified character*);

- officials (the leader of the group, etc.) bear double responsibility for any violation (*for one infringement of the law there cannot be double liability*);

- measures to exert pressure on the leader are imposed regardless of his involvement in the violation (*without objective and subjective parties there is no corpus delicti*);

- in the event of contractual violation, persons, groups and organizations bear double liability for this violation, and thereafter the amount of the fines grows in geometric progression (*here there is obvious confusion between civil and administrative liability*);

- in the event of violation by minors, liability is transferred to their parents or guardians (*only civil law and in accordance with the norms of the Civil Code of the Russian Federation*).

### *4. Establishing and applying civil liability measures (tariffs) with violation of civil law:*

4.1. Tariffs may be set *only for causing ecological damage*, but as is clear from the list (Clause 6 of the Provision on the procedure for calling persons to account) they are in fact set for the same violations for which administrative responsibility is laid down, including for those which have a formal character, that is, do not cause visible harm – “writing on the walls of a cave”, “using ecologically dirty sources of light”, “constructing enterprises, whose activities entail emissions of effluent”, etc. It is inappropriate to an even greater degree to set statutory tariffs for “visiting the caves without permission”, “commercial and tourist activity without permission” and so on.

4.2. Regional tariffs have a fairly narrow legal field: they may be set only for instances (types, forms) of causing ecological damage that are not covered by federal law. Introducing alternative tariffs cannot be done. Nevertheless, the list includes tariffs for “cutting down trees and shrubs”, “polluting underground water bodies” and other means of causing ecological damage for which federal tariffs and methodologies exist.

There are grounds for allowing a tariff to be applied for “destroying the caves”, “breaking off growing sinter formations”, and certain other ways of causing damage not specially regulated in federal legislation.

4.3. Tariffs (either regional or federal) cannot be set for “despoiling and destroying the property of organizations operating in the caves” since such losses do not have an ecological character and are determined by the general rules (Article 15 of the Civil Code of the Russian Federation).

4.4. Tariffs for “destroying troglodytic species of animals and plants and also the flora and fauna of the cave landscapes” should not contravene “the tariffs for calculating the amount of the penalty charge for damage caused by juridical and physical persons through the illegal procurement or destruction of terrestrial mammals, birds, reptiles, amphibians and terrestrial invertebrates” (ratified by order No. 126 of the Ministry of Nature of the Russian Federation, dated 4 May 1994, “On approving tariffs for calculating the amount of the penalty charged for damage caused by the illegal procurement or destruction of flora and fauna”).

4.5. It is impossible to agree that “compensation for damage caused to the environment and to juridical persons is to be calculated according to the methods and resolutions approved by the present legislation, or in *their working procedure* by organizations with legal competence in these matters”, or that “tariffs may *in working procedure be corrected* by the Committee on Ecology and the Use of Nature on the recommendation of the speleology service (Clause 5, 7 of the Provision on the procedure for calling persons to account). The most important feature of the law is its standard nature, its even scale when applied to various situations and various persons. Such a method of applying the norms of the law would signify the grossest violation of legality.

## Draft Laws

### *Republic of Khakassia - draft Law 'On payments for environmental pollution by mobile sources'*

This draft law aims (as is stated in the preamble) 'to create (improve) the legal basis for collecting payments charged for environmental pollution generated by mobile sources'. However, the name and the declared aims of the law are in fact much wider than its content, because it regulates matters relating to payment collection only for pollutant emissions *into the atmosphere*, while issues of payment for discharges made into water, for waste disposal and for harmful physical impact are not regulated.

The content of the draft law allows the assumption that the Law pursues two goals:

- first, to introduce payments for discharging polluting emissions into the atmosphere for physical persons who are owners of vehicles and
- secondly, to introduce a new procedure of payment collection for discharging polluting emissions into the atmosphere for juridical persons that are owners of vehicles.

The preamble states that the Law shall be adopted in conformity with article 57 of the Constitution of the RF ('Everyone shall be obliged to pay *legally established* taxes and dues...'). However, in relation to citizens such payment (tax, dues) *is not exactly established* by federal legislation. Under part 3, Article 55 of the Constitution of the RF: 'the rights and freedoms of man and of the citizen may be restricted *by federal law* only to the extent necessary to protect the fundamentals of the constitutional regime, morality, health, rights and legitimate interests of other persons or ensure the defence of the country and the security of the state'.

The Law of the RSFSR 'On safeguarding of the natural environment' in article 20 deals with the payment of charges 'by enterprises, institutions, organisations'. In RF Government Resolution No.632 dated 28.8.1992 'On approval of the Procedure for determining payment and the maximum sums chargeable for polluting the natural environment, disposing of waste and other types of harmful impact': those subject to a liability for payment are defined more precisely: enterprises, establishments, organisations, foreign legal and physical persons engaged in any type of activity on the territory of the RF connected with the use of nature. RF citizens were not named here and this limits the introduction of payments by citizens who are vehicle owners at the level of subjects, in the constitutional sense, of the RF. The regional legislator may not independently regulate to plug partial loopholes in the area of charging for the use of nature, because decision making on subjects (introduction of payments for citizens) and on types of impact (at present harmful physical impacts are not covered by liability to charges) is within the legal competence of the *federal* authorities.

Besides, the expediency of introducing payments collected from citizens who are vehicle-owners has been evaluated in many ways. It is worth mentioning here the view expressed in RF Ministry of Finance letter No. 09-05-01/5 dated 24.8.1998, 'On the introduction of payment for polluting the environment with products of motor fuel combustion': 'the Ministry of Finance of the RF at the request of the Government of the RF has examined the proposal from the Administration of the Novosibirsk Region to introduce standard

charges for polluting the environment with products of motor fuel combustion' and their collection from physical and legal persons (owners of vehicles) through the filling stations that sell them the fuel, and gives notice that in legal and regulatory enactments in force at the present time there is acceptance of a definite procedure for setting and collecting payment for polluting the environment. This payment shall be collected from users of nature engaged in production and economic activity and shall be charged to the prime cost of production (work, services) for maximum permissible emissions, discharges of pollutants, disposal of waste and from profit remaining at the disposal of the user of nature, if these maximum values are exceeded. Citizens (physical persons) shall not be direct payers of charges for polluting the environment and *there are no grounds for making them pay such charges*. This is all the more the case because physical persons consuming products (work, services) pay for environmental pollution which is included as a charge in the prime cost of these products at all the stages of their manufacture. Taking this into account, the Ministry of Finance believes that it would not be expedient to introduce payments for environmental pollution for vehicle owners through the petrol stations that sell them fuel'.

In any case, irrespective of the economic grounds for new payments collected from citizens this issue can be resolved only through the adoption of a *federal law*.

Another important aspect of the draft law is connected with the proposal to change the procedure for introducing payments made by enterprises, namely for them to make payments for emissions of pollutants into the atmosphere when they acquire oil products (part 1, article 3). Collection of charges for other forms of pollution remains unchanged. In the part dealing with the specific sums payable, the draft makes reference to the procedure and methods laid down by RF Government Resolution No.632 dated 28.08.1992. However, the way to determine the amount of payment laid down by this Resolution as well as in the Instruction and Methodological Guidelines on charging for environmental pollution (approved by the Ministry of Natural Resources of the RF on 26.1.1993, and registered at the Ministry of Justice of the RF under No. 190, dated 24.3.1993) is not designed for the situation where charges are collected by the organisation selling the fuel. How will the fuel seller be able to execute such points in the Instruction and Methodological Guidelines as the following:

- para. 2.1 'Payment for atmospheric pollution from mobile sources is divided into payment for permissible emissions and payment for emissions exceeding the limits permitted' (the seller is not going to be deciding whether the buyer's emissions exceed permissible limits or not);
- para. 2.7 'Payment for exceeding permissible emissions is calculated by the territorial authorities of the Ministry of Natural Resources of the RF based on the results of monitoring vehicles' compliance with requirements set out in the standards regulating pollutant content in exhaust gases during operation' (similarly, he will not be able, nor has he the right, to do the monitoring);
- para 2.9 'Overall payment for pollutant emissions from mobile sources is determined according to a formula that applies the correlation between the ecological situation and the ecological importance of the atmosphere in the region in question' and so on?

To carry out, for the purpose of monitoring payment of charges (see art. 5 of the draft), a reliable check of the sellers' accounting data against the accounts of the enterprises that own the mobile sources is impossible; the latter may buy their fuel from suppliers outside Khakassia, and so on. How would a basis be laid for the payments applying to automotive transport registered in other regions, beyond Khakassia's borders, and how would they be allocated to the ecofunds of other regions? Moreover, some questions of principle arise: does the seller - the subject of entrepreneurial business - have any right at all to charge payment for emissions, which is a function of State control?

It is not obvious from the draft how the new procedure should be understood: is it being introduced *alongside the existing procedure* for levying charges or does it *replace this procedure*?

In the first case, there is a requirement, in order to avoid duplication in imposing charges, for detailed differentiation from the relevant provisions in the Instruction and Methodological Guidelines on charging for environmental pollution of 1993, which is not achieved in the draft and, in fact, is scarcely achievable at all (particularly in relation to sources [*of pollution*] paying charges for emissions in other regions, for the locations where they are registered).

And in the second case provisions in federal legislation would in fact be countermanded and this is unconstitutional (Part 2, art. 76 of the Russian Constitution). The Law of the City of Moscow dated 24.12.1997 'On payment for pollutant emissions made by mobile sources on the territory of the city of Moscow', acknowledged by a court as invalid, had started off down this road, when it laid down (part 2 art.6) that no other procedure (i.e., procedure laid down by federal enactments - *author's remark*) of paying charges for pollutant emissions was to be applied against organisations using motor fuel for purposes of transport.

From the point of view of the Constitution of the RF, additional regional payments would mean, for juridical persons, a breach in unity of economic space guaranteed by part 1. Art.8 of the Constitution of the RF, whilst for physical persons it would mean a breach of the principle of citizens' equality in the eyes of the law (part 1 art. 19 of the Constitution of the RF) and a reduction in human rights and freedoms (part 2 art. 55 of the Constitution of the RF). The Federal law of 4 May 1999 'On the protection of the atmosphere' classes 'laying down the procedure for setting and collecting a charge for atmospheric pollution' as part of the powers of the authorities exercising the State power of the Russian Federation (art.5). Payment is collected from physical and legal persons for pollution of the atmosphere and any other impact on the atmosphere in conformity with the legislation of the *Russian Federation* (art.28). Thus, *the concept of the law is not based on federal legislation in force, and the draft cannot be recommended for adoption.*

Payment collection from vehicle owners, even if it has economic grounds, should nevertheless be regarded as the main strategic direction in reducing emissions from vehicles and other mobile sources and improvement of environmental conditions. Both federal and regional legislation contains numerous other restrictions of non-fiscal nature aimed at reducing emissions, and first of all 'Restrictions concerning fuel quality'. Federal law 'On the protection of the atmosphere' enables Federation subjects to take measures to reduce atmospheric pollution and have a real impact on the polluters.

Among the powers of authorities exercising the State power of subjects of the Russian Federation is ‘regulation, within the limits of their legal competence, of vehicle movements on the relevant territory in order to reduce emissions of harmful (polluting) substances into the atmosphere’ (art 6).

Art. 15 lays down ‘The general requirements on business or other activity exerting with a harmful impact on atmospheric air’.

- pt.3. Production and use of fuel on the territory of the RF is permitted only when certificates are available which corroborate fuel compliance with atmospheric protection requirements;
- pt.4. Production and use on the territory of the RF of technical or technological installations, engines, transport or other mobile equipment and gear is permissible only when certificates are available which establish the compliance of the content of harmful (polluting) substances in the emissions of the technical or technological installations, engines, transport or other mobile equipment and gear with technical standards set for emissions.
- Pt.5. Certificates confirming compliance of the content of harmful (polluting) substances in emissions of technical or technological installations, engines, transport or other mobile equipment and gear with technical emissions standards as well as certificates confirming compliance of fuel with prescribed standards and requirements for atmospheric protection are issued according to a procedure established by the Government of the RF.
- Pt.6. Authorities exercising the State power of subjects of the Russian Federation may introduce restrictions on the use of oil products and other types of fuel whose combustion results in atmospheric pollution on the relevant territory, and also encourage the production and use of ecologically safe types of fuel and other energy bearers.

Article 17 is devoted specially to regulation of harmful (polluting) emissions into the atmosphere during production and operation of vehicles and other mobile equipment.

1.It is prohibited to produce and operate vehicles and other mobile equipment whose emissions contain higher amounts of harmful substances than those laid down in technical standards for emissions;

2. The government of the RF, authorities exercising the State power of subjects of the Russian Federation are obliged to implement measures to reduce harmful (polluting) emissions into the atmosphere when operating vehicles and other mobile equipment.

3. Authorities exercising the State power of subjects of the Russian Federation may, within the limits of their legal competence, introduce restrictions on the entry of vehicles and other mobile equipment into residential areas, rest and relaxation areas and tourist sites and regulate movement of vehicles.

4. Vehicles and other mobile equipment whose emissions have a harmful effect on the atmosphere are subject to regular checks for compliance of such emissions with technical emissions standards under the procedure laid down by the Government of the RF.

Part 2 art. 30 of the Law reads:

‘juridical persons when producing and operating vehicles and other mobile equipment and gear, and citizens when operating vehicles and other mobile equipment and gear must ensure that emissions for such equipment and gear do not exceed the established technical limits’.

In a number of regions in the country it is prohibited to use certain types of fuel, in particular leaded petrol. (Moscow, Vladimir, Krasnodar region, Tatarstan, Novosibirsk) and in other regions phased cessation of its use is planned (Stavropol province, Moscow region). Normative enactments have been adopted to regulate the application of other measures to reduce emissions.

Thus, on 6.12.1996 the Stavropol Provincial Law ‘On environmental monitoring of compliance on the territory of the Stavropol Province with State toxicity standards (smokiness) of exhaust gases from vehicle engines’ was adopted.

Resolution No. 28 of the Head of the City of Tyumen dated 28.8.1998 ‘On work to reduce the impact of automotive vehicles on the environment’ approved the Provision on the procedure for co-operation between the State Road Safety Inspectorate of the Tyumen region, the State Committee for Safeguarding the Environment of Tyumen Region and the Ecology Committee of the Land Department of the City administration on carrying out monitoring during state technical inspections for compliance with emissions standards for pollutants in exhaust gases from automotive vehicles.’

A Provision on the procedure for issuing endorsements for checks on automobiles for the toxicity and smokiness of their exhaust was approved by Resolution No.148 of the Cabinet of Ministers of the Republic of Bashkortostan dated 20 May 1999.

A number of administrative measures are provided for in the Resolution No.411 of the Head of the Krasnodar Provincial administration dated 9 June 1999 ‘On urgent measures to reduce harmful emissions from automotive transport’.

One could continue this list. Of course, all these documents at the present time need to be compared for compatibility with the new Federal law ‘On the protection of the atmosphere’ and with regulatory enactments not qualifying as laws at the federal level, that have been adopted to ensure its implementation, but, on the whole, their content gives an idea of what measures aimed at preventing and reducing atmospheric pollution may be adopted at the level of subjects of the Federation. In addition, the Federal law ‘On the protection of the atmosphere’, in a whole series of articles (Chapters 5 and 8), lays down a system of monitoring and calling to account atmospheric polluters. Therefore it is difficult to agree with the thesis (para.3 of the Explanatory note to the draft law) that ‘absence of a legislative and normative base in the Republic of Khakassia for monitoring above-limits atmospheric pollution by motor vehicles and of a mechanism for charging the appropriate payment leads to motor vehicles being operated with impunity when their technical characteristics are

unsatisfactory'. The reasons for the high level of pollution from transport lie in another realm.

*Draft law of the Republic of Khakassia 'On the historical, cultural, archaeological and natural heritage of the population of the Republic of Khakassia'*

This draft law is not well founded, from the point of view that it does not have its own subject of legal regulation. The matters included in the sphere of action of the law are, in fact, already regulated by legislation on the protection of the natural environment and legislation on the protection and use of historical and cultural monuments.

To illustrate the fact that the legal regime of 'the population's heritage' (in the terminology of the law being subjected to expert analysis – *author's remark*) has been settled a long time ago and in detail, I will quote from a series of normative legal enactments in force in a way that does not contravene the new Russian legislation.

The Law of the RSFSR dated 15.12.1978 'On the protection and use of historical and cultural monuments' (amended on 18.01.1985) regulates state control and monitoring in the sphere of the protection and use of historical and cultural monuments; the participation of enterprises, establishments, organisations and citizens in safeguarding and using monuments; the state inventory of cultural and historical monuments; ensuring the maintenance of historical and cultural monuments; the procedure and terms for the use of monuments; responsibility for breach of the legislation on protection and use of historical and cultural monuments etc.

According to the Law, historical and cultural monuments are defined as structures, memorial places and objects connected with historical events in the life of the people, the development of society and the State, products of material and spiritual creativity which have historical, scientific, artistic or other cultural value.

Historical and cultural monuments are in the ownership of the State and also of kolkhozes and other co-operative organisations, associations of such bodies, trade unions and other public organisations and in the personal ownership of citizens. The sale, gift or other alienation of historical and cultural monuments is permitted only with mandatory notification given in advance to the State authorities for safeguarding monuments. When monuments are sold the State has first refusal.

In accordance with the Law the following are classed as historical and cultural monuments:

- historical monuments – buildings, structures, memorial places and objects connected with the most important historical events in the life of the people, development of society and the State... as well as with the development of science and technology, the culture and way of life of peoples, with the lives of eminent political, civil and military figures, popular heroes, scientists, writers and artists;
- burial places of those who have died for the freedom and independence of the Mother country;
- archaeological monuments – sites of ancient towns, burial mounds, remains of ancient settlements, fortifications, earthworks, canals, roads, ancient burial places, stone figures,

labyrinths, rock drawings, antique objects, areas where there is a layer of the historical and cultural remains of ancient settlement;

- town buildings and architectural monuments - architectural ensembles and complexes, historic centres, kremlins, quarters, squares, streets, embankments, remains of ancient planning and construction of towns and other settlements;
- civic, industrial, military and religious architectural structures, buildings of popular architecture, and also the works of monumental, representational, decorative and applied art connected with them, gardens and parks and natural landscapes;
- artistic monuments – works of monumental, representational, decorative, applied and other forms of art;
- documentary monuments – acts of authorities exercising State power and the organs of State control, other written and graphic documents, documentary cinematic and sound recordings, as well as ancient and other manuscripts and archives, notes on folklore and music, and rare printed publications.

In order to organise the inventory and safeguard historical and cultural monuments, fixed monuments are divided into monuments of All-union, Republican and local significance.

Citizens who hold in private ownership historical and cultural monuments are obliged to comply with regulations on monument protection, use, inventory and restoration.

Enterprises, organisations, institutions and citizens must ensure the preservation of historical and cultural monuments located on land that is granted for their use.

To ensure the preservation of monuments of history, archaeology, urban building, architecture and monumental art, zones are being set up where they are safeguarded, as well as zones where new building is regulated and zones where natural landscape is protected. Within these conservation zones, zones where new building is regulated and zones of protected natural landscape, it is prohibited to carry out groundwork, construction and other types of work as well as economic activity without permission from the appropriate authorities.

The Law contains regulatory norms on safeguarding historical and cultural conservation areas, nature reserves, gardens and parks and natural landscapes.

State authorities responsible for safeguarding monuments have the right to suspend building, land improvement, road construction and other types of work in cases where danger to historical and cultural monuments or breach of the regulations for their protection arises in the course of this work.

Enterprises, institutions, organisations and citizens causing harm to an historical or cultural monument or a conservation zone around one is obliged to restore the monument or its conservation zone to its previous condition, and if this proves impossible – to make compensation for the damage caused in accordance with the legislation.

Restoration of a monument or its conservation zone is carried out in compliance with the established procedure for restoring historical and cultural monuments.

USSR Council of Ministers Resolution No. 865 dated 16.9.1982 '*On the approval of the Provision on protection and use of historical and cultural monuments*' remains in force (amended 29.12.1989).

The provision regulates:

- State management of its inventory of historical and cultural monuments;
- safeguards for the conservation of historical and cultural monuments;
- use of historical and cultural monuments
- restoration, conservation and repair of historical and cultural monuments
- responsibility for breaches of legislation on the protection and use of historical and cultural monuments

Some of the most important provisions in this document are:

9. State authorities for protecting monuments have the right

- to check compliance with the rules for protection, use, inventory and restoration of historical and cultural monuments, and, if necessary, to study their condition irrespective of whose ownership they are in or who their user is, to draw up protocols of checks on the state of preservation of monuments and to give instructions to eliminate violations that are discovered;
- to suspend construction, land improvement, road building and other works in cases where danger to historical and cultural monuments or a breach of the rules for their protection arises in the course of this work.

13. Historical and cultural monuments are subject to state inventory control irrespective of whose ownership they are in or who their user is.

26. Enterprises, institutions, organisations and citizens are obliged to ensure the preservation of historical and cultural monuments owned or used by them, or situated on lands given to them to use.

32. Within monument conservation zones plots of land may remain in the use of former land users who are charged with the responsibility of complying with the regime established for conservation zones.

34. The preservation of natural and artificial landscapes, and artistically designed parks and gardens classified as monuments of history and culture is guaranteed by State authorities tasked with safeguarding monuments together with other interested authorities.

35. Ensembles and complexes of historical and cultural monuments of special historical, scientific, artistic or other cultural value may be declared historical-cultural reserves whose protection is implemented on the basis of a special decision relating individually to each of them.

57. Use may only be made of historical and cultural monuments for tourism, excursions, exhibitions and other cultural or educational purposes to a degree which ensures their preservation, that of the sites where they are located and their surrounding urban or natural environment.

Fixed historical and cultural monuments (buildings and installations), in addition to being used for scientific, cultural or educational purposes may also be used for economic and other purposes, if this does not damage the monument's state of preservation and does not encroach on its historical or artistic value.

59. The procedure for using historical and cultural monuments and the terms under which they are used are laid down by the State monument protection authorities and are defined for each monument used by or owned by enterprises, institutions, organisations and citizens in the appropriate protection document:

- a protection and leasing agreement or
- a protection agreement or protection obligation.

Responsibility for compliance with the procedure and terms of use laid down for each monument in the protection document is imposed on the managers of the enterprises, institutions and organisations, as well as the citizens, who own or use the monument.

60. Rent is collected for use of monuments on the basis of protection and leasing agreements.

62. Protection obligations are issued to local State monument protection authorities:

- State, co-operative and other public enterprises, establishments and organisations as well as other organisations and persons using cultural and historical monuments for scientific, cultural and educational, tourist and other purposes;
- public bodies and citizens who own fixed monuments;
- enterprises, institutions, organisations and citizens who have been granted use of land with fixed monuments located on it, with the exception of monuments used on the basis of protection and leasing agreements and protection agreements;
- enterprises, institutions, organisations and citizens who own or use movable monuments etc.

63. Enterprises, institutions and organisations which have been granted use of historical or cultural monuments but fail to comply with the terms of protection and leasing agreements, protection agreements and protection obligations pay a penalty under the procedure laid down by the legislation in force.

64. Measures to ensure the preservation of historical and cultural monuments stipulated in protection and leasing agreements, protection agreements and protection obligations are implemented at the expense of the users or owners of these monuments.

65. Measures to ensure the preservation of historical and cultural monuments which have not been handed over for use to enterprises, institutions, organisations and citizens and are not owned by them are implemented at the expense of special funds provided by the State monument protection authorities or the State budget, etc.

66. Movable and fixed cultural and historical monuments owned by enterprises, institutions, organisations and citizens may be used with the permission of the owner for scientific purposes, exhibitions, or other cultural and educational purposes.

67. Fixed cultural and historical monuments that are not being used in keeping with their character and intended purpose and are under threat of being destroyed or spoiled, may be confiscated.

69. If citizens fail to ensure the preservation of cultural or historical monuments in their ownership, these monuments may be confiscated under judicial procedure with appropriate compensation.

An Instruction on the Procedure for the Inventory and Safekeeping of Movable Cultural and Historical Monuments in the Personal Ownership of Citizens' was approved by USSR Ministry of Culture Order No.53 dated 12.2.1986.

Law No. 3612-1 of the RF dated 9.10.1992 and entitled '*The Fundamentals of the legislation of the Russian Federation on culture*' established the duties of the State in respect of safeguarding cultural and historical monuments.

The State is responsible for the identification, inventory, study, restoration and protection of cultural and historical monuments.

Authorities exercising State power and control, and local self-government authorities are obliged to promote the preservation and use of such monuments in private and collective ownership, and to take the most important ones on to the State inventory.

The State has the priority right to acquire valuable cultural items in private ownership and legislates to regulate the rights and duties of owners.

Ukase No.1487 of the President of the RF dated 30 November 1992 '*On particularly valuable sites for the cultural heritage of the peoples of the Russian Federation*' approved the Provision on particularly valuable sites for the cultural heritage of the peoples of the Russian Federation.

It is established that when a specific site is given the status of a particularly valuable site for the cultural heritage of the peoples of the Russian Federation, this means that it belongs to the highest preservation and inventory category, which assumes special forms of State support and its inclusion into the State register of particularly valuable sites for the cultural heritage of the peoples of the Russian Federation.

Under the Provision particularly valuable sites for the cultural heritage of the peoples of the Russian Federation (hereinafter – particularly valuable sites) include historical and cultural and natural complexes, architectural ensembles and structures, cultural enterprises, organisations and institutions as well as other objects representing material, intellectual and artistic values of an exemplary or unique nature.

Particularly valuable sites that have been entered in the State register are exclusively federal property. The property, buildings and structures of organisations, enterprises and institutions classed as particularly valuable sites are under their effective management, and plots of land occupied by them are in their permanent use free of charge.

Organisations, enterprises and institutions actually classed as particularly valuable sites or using such sites are responsible for the preservation of these sites and their proper use.

Ukase No.176 of the President of the RF dated 20.2.1995 approved the List of cultural and historical heritage sites of Federal (all-Russian) importance.

The list of documents could be continued by including many more laws and other normative legal enactments on safeguarding *natural* territories and objects.

The draft law not only fails to look at the subject of the legal regulation, it also *fails to make clear the aims* of adopting it.

Part 2 of article 1 states that the ‘aim is legally to ensure the implementation of the constitutional rights and rights of citizens and persons without citizenship to use the heritage of the population of Khakassia to satisfy scientific, aesthetic, educational, recreational and other needs, to preserve natural complexes, objects of material culture and other sites and objects of value for present and future generations’. However, from this provision it is not clear that the law actually has its *own* aim, as distinct from those aims for the achievement of which the legislation for the protection of the environment and the protection of historical and cultural monuments was drafted and is functioning successfully.

Unfortunately, the draft law is not accompanied by an explanatory note which might have given the grounds for the idea and concept of the law.

It is hardly possible to agree with the statement that ‘... this law lays down the legal regime for sites, which constitute ...the heritage of the population of the Republic of Khakassia; defines the powers of the authorities in the Republic of Khakassia exercising State power local control...’ because, in actual fact, both the legal regime of the sites and the powers of the authorities have already been determined in the federal and, in part, in the Republican (Republic of Khakassia) legislation. Heritage sites of the population of the Republic of Khakassia listed in pt.2 of art.4 have (or may have) the legal regime of specially protected natural territories of federal, Republican or local importance, or that of cultural and historical monuments.

On the whole, the adoption of the Law can only complicate the application of the legislation in force, as differences in the definitions of heritage sites are inevitable (they are also protected natural sites and territories as well historical and cultural monuments), their legal regime etc.

As may be concluded from this text, one of the key tasks of the law, though it is not formulated directly as such, is the legislative strengthening of the budgetary (Republican) financing of targeted programmes and state orders to identify, study, inventorise, restore, conserve, maintain, use and safeguard heritage sites (see par 4 &5 art.8; par 2&3 art.9; par.2&3 art.10; art.19; art.20).

It is obvious that the creation of institutions and enterprises to identify, study, inventorise, restore, conserve, use and safeguard heritage sites on the basis of agreements concluded with authorised bodies (paragraph 6 of art.9 and paragraph 3 of art.10) is being proposed precisely with the purpose of accomplishing these programmes and fulfilling these State orders.

However, to implement such tasks there is no need to adopt a law. A law as a form of legal enactment should be used only when there are weighty reasons for doing so.

In this case the issues can be resolved by means of adopting resolutions of the Government of the Republic of Khakassia.

A line on funding programmes and State orders can be approved by the Supreme Soviet in laws about the budget.

If the legislator nevertheless considers it necessary to adopt a law it would be expedient if a series of inadequacies in it, of which the following are the most notable, were removed:

1. The law is not accompanied by a definition of its main concepts, as is customary in drafting legislation.
2. In art. 5, parts 1 and 2 regulate relations where there is participation by the RF and other subjects of the Federation, and this does not conform to the juridical force of regional law.
3. The text of pt.1of art.6 does not fully correspond to the existing forms of ownership.
4. In art. 8 (paragraph 8) terms from the sphere of international law such as ‘ratification’ and ‘denunciation’ are used in relation to agreements concluded by the Republic with other subjects of the Federation (municipal bodies).
5. In relation to paragraph 5 of art. 9 it would be desirable to specify exactly which existing authorities will be granted additional powers by the Government – Republican authorities or, which is more likely, federal? If the latter, these authorities should be named and it should be stated under what procedure (agreements) the transfer of powers from the Republic of Khakassia to the Russian Federation will take place.
6. In paragraph 8 of art. 10 the provision that specially empowered authorities participate in OVOS [*environmental protection of the atmosphere*] by their planned economic or other activity if it is capable of impacting on heritage sites, is not consistent with the Provisions on the assessment of the impact of planned economic or other activity on the environment in the RF (approved by order No.372 of Goskomekologia [*State Committee for Ecology*] of the RF dated 16.05.2000).

Under paras 1 and 3 of the Provision, an assessment of impact on the environment shall be carried out for planned business or other activity, substantiating documentation for which shall be subject to expert environmental assessment in accordance with the Federal law ‘ On expert environmental assessment’.

7. The award to local authorities of State powers cannot be achieved under agreements as is stated in pt.2 of art.11 (but only by federal and regional laws, art. 6 of the Federal law ‘On the general organisational principles of local self-governing authorities in the RF’).

8. Pt. 2 should be removed from art. 12 (on the rights of workers in protection) as it does not comply with federal legislation.

9. The right of citizens to present demands for decisions to be declared invalid... on the suspension or curtailment of activity which has a negative impact... (paragraph 9, pt.1, art. 15) and the same right on the part of public associations (par. 8, pt.1, art.17) are formulated as copies of articles 12 and 13 of the Law of the RSFSR ‘On safeguarding the natural environment’ and in relation to natural heritage sites they are correct. However, in relation to matters concerning the protection of historical and cultural monuments such powers on the part of citizens and citizens’ associations have not been incorporated in federal legislation have not yet been justified in legal theory (a short substantiation could have been given in an explanatory note).

10. Pt. 3 art. 20 contains the provision ‘customers... *if necessary conduct* competitive tendering and conclude contracts with those who are to perform them’, which encourages monopolisation of economic activity in the sphere of performing work within the framework of a State or municipal order.

Under the Federal law dated 6.5.1999 ‘On tendering for orders to supply goods, carry out work or render services to meet the needs of the State’, the State customer places orders for the supply of goods, for work to be carried out or services rendered to meet State needs *by means of conducting competitive tendering, unless otherwise provided for by the legislation* of the Russian Federation.

11. Art. 21 names sources of financing without specifying their targeted purpose, when the resources, for example, of ecofunds and money received from the sale of confiscated equipment used illegally for the exploitation of natural heritage sites, illegally extracted products etc. are strictly targeted by their nature for certain uses, and combining (mixing) sources of funding for the protection of natural sites and historical and cultural sites is illegal.

In the same article it is necessary to specify what is meant by ‘income obtained from use of heritage sites for entrepreneurial purposes’ in order to exclude restrictions on the civil rights of entrepreneurs who are users of such sites.

12. Provision pt.1 art. 23 must be specified with regard to precisely what activity is carried out under licence on the basis of the Federal law ‘On licensing particular types of activity’.

13. Chapter 5 concerning the legal regime for natural heritage sites should be brought fully into conformity with the law of the Republic of Khakassia ‘On specially protected natural territories and sites’, which, in turn, needs to be edited again (see above).

This can be done in two ways: by repeating the same articles - but there is no sense in this - or by reference to the law of the Republic of Khakassia ‘On specially protected natural territories and sites’. If, however, the legislator opts for rejection of a new edition of the

above-mentioned law, then a description of the regime applied to specially protected natural territories must be given here.

However, in this case there is a collision between the regulations in two laws in force because they set two strongly differing types of protected territories. One option is - in chapter 6 'Concluding provisions' there could be an acknowledgement that the relevant articles of the law of the Republic of Khakassia 'On specially protected natural territories and sites' (or the entire law as a whole) had become invalid.

Similarly, those articles of the draft law which regulate the legal regime of non-natural or mixed sites, and in their sense do not belong to the sphere of environmental legislation (articles 40-46), should be checked against the legislation in force in the Republic on safeguarding historical and cultural monuments.

*Draft of the law of Republic of Khakassia 'On environmental audit in the Republic of Khakassia'.*

The expediency of audits of the state of affairs in enterprises, organisations and other subjects of entrepreneurial activity as regards their compliance with environmental requirements and conditions is not in doubt.

In the absence of a federal legislative base for environmental audit in certain regions of the country, subjects of the Federation have adopted normative legal enactments regulating environmental audit.

Thus, for example, the Head of administration of the Ivanovo region issued resolution No.62 dated 03.2.1999 'On the implementation of an environmental audit procedure on the territory of Ivanovo region' and the Cabinet of Ministers of the Republic of Bashkortostan issued resolution No.292 dated 14.9.1999 which approved the Temporary provision on the procedure for environmental audit in the Republic of Bashkortostan'.

Environmental audits generate many problems, the most significant among them being the issue of the types of audit (voluntary and mandatory).

At present the main normative enactment in this area is Ukase No. 2263 of the President of the RF dated 22.12.1993 'On audit activities in the RF', which approved the Temporary rules for audit activity in the RF.

Under art. 6 of the Temporary rules audit could be mandatory or initiative led. *Mandatory audit is carried out in cases directly laid down in the legislative acts of the RF*: initiative led audit –by decision of the economic subject.

Mandatory audit may be carried out at the instigation of the State authorities defined in the Temporary rules. Thus, mandatory environmental audit as an instrument of State control in the sphere of environmental protection should be introduced at federal level.

Legislative acts of the RF (i.e. *federal* legislation) do not envisage instances of mandatory audit of the nature protection activity of economic subjects, nor do they name authorities in the MPR [*Ministry of Natural Resources*] of Russia (formerly Goskomekologia) system among the authorities which have the right to give the order for a mandatory audit to be carried

out. An indication of the possibility of an audit being carried out on the initiative of MPR authorities is found in the 'Provision on licensing particular types of activity in the area of safeguarding the environment' (approved by Resolution No.168 of the Government of the RF dated 26.02.1996).

As is well known, this Provision lays down the procedure for issuing licences for:

- salvage, waste recovery, removal, disposal, burial and destruction of industrial and other types of waste, materials, substances (except for radioactive substances);
- conducting environmental passportisation, certification and environmental auditing;
- carrying out forms of activity connected with work (services) relating for a nature protection purpose.

At the same time, before taking the decision to issue a licence the licensing authority *shall organise and if necessary carry out* additional (including independent) expert assessment and environmental auditing. (para. 5).

Since regional laws may not introduce mandatory environmental auditing, art. 4 of the draft law should have the provisions introducing *mandatory* environmental audit removed.

In this sense para.42 of the 'Temporary provision on the procedure for environmental audit in the Republic of Bashkortostan' seems more correct:

- environmental audit is voluntary, except for cases provided for by legislation (to be precise here one ought to specify: 'the legislation of the RF').

The draft has a number of shortcomings of a secondary nature, which could profitably be removed.

- 1) From art. 1 exclude definitions of sustainable development and environmental safety as regional law may not redefine concepts that have already been defined;
- 2) Specify who is 'a participant in the auditing organisation' (art.1) – founder or employee, taking into account that a founder who does not get involved in audit activity may be not certified either.
- 3) To remove para.3 from art.11.

## **Taxation**

Taxation in the mining industry is carried out in accordance with the requirements of the Law of the Russian Federation 'On the Subsurface' in the edition of Federal Law No. 27-F3 dated 3.3.1995 'On the Introduction of Amendments and Additions to the Law of the Russian Federation 'On the Subsurface' (hereinafter the Law of the Russian Federation 'On the Subsurface'), Federal Law No. 224-F3 dated 30 December 1995 'On the Rates of Deductions for the Restoration of the Mineral and Raw Materials Base', 'Instructions on the procedure and deadlines for payment into the budget of charges for the right to use subsurface' approved by the Ministry of Finance of Russia on 4 February 1993 under No. 8, by the State Taxation Service (Gosnalogsluzhba) of Russia dated 30 of January 1993 under No. 17 and by the State Mining Technical Supervisory authority (Gosgortekhnadzor) of Russia dated 4 of February 1993 under No. 01 –17/41, Instructions 'On the procedure for calculation, payment into the budget and targeted use of deductions for the restoration of the mineral and raw materials base and exempting users of subsurface from these deductions' approved by the State Taxation Service of Russia on 31 of December 1996 under No. 44 with amendments and additions No. VF-3-04/144 dated 16.07.98, in accordance with 'Provision on Federal Mining and Industrial Supervision in Russia' approved by Ukase No. 234 of the President of the Russian Federation dated 18 February, by joint Order No. VA-3-04/87/151 of the State Taxation Service and the State Mining Supervisory authority of Russia dated 08.10.96 'On strengthening co-operation between taxation authorities and the State mining supervisory authorities' and 'Methodological instructions for monitoring the technical substantiation of calculations of payments when subsurface is used' approved by Resolution No.76 (No. RD-07-261-98) of the State Mining Technical Supervisory authority of Russia dated 10 December 1998, agreed with the Ministry of Finance of Russia, the Ministry of Economics of Russia, the Ministry of Natural Resources of Russia and the MNS of Russia and brought into effect from 01.07.99.

Let us examine the basic articles of the Russian Federal Law 'On the Subsurface', which are the guidelines for the taxation services in their work:

1. Article 39, section V, defines the system of payments for the use of the subsurface. Use of the subsurface is subject to payment except for cases provided for by Article 40 of this Law. The following types of payments are made for the use of the subsurface:
  - 1) fee for participation in competitive tendering (auction) and the issue of a licence;
  - 2) payments for the use of the subsurface;
  - 3) deductions for the restoration of the mineral and raw materials base;
  - 4) excise duty

The user of the subsurface also pays taxes, fees and other payments provided for by legislation, including payment for land or water area and sectors of seabed in the territorial sea as well as for geological information about the subsurface. The user of the subsurface may obtain discount on payments for exhausting subsurface under Article 48 of this Law. Levying other payments from the user that are not provided for by the Legislation is not permitted.

Federal Law No. 32-F3 dated 10 February 1999 introduced the following amendments:

when a production sharing agreement is concluded provision shall be made for sharing mined mineral raw materials between the Russian Federation and subsurface user in accordance with the Federal Law 'On Production Sharing Agreements'. The user of the subsurface who is a party to a Production Sharing Agreement, shall be exempt from paying taxes and other mandatory payments in respect of and under the procedure established by this law and the legislation of the Russian Federation. Collection of the said taxes and payments shall be replaced by production sharing in accordance with the terms of the agreement concluded in conformity with this law. Distribution of production received by the State as a result of sharing production in accordance with the terms of the agreement or its equivalent value between the Russian Federation and the subject of the Russian Federation on whose territory the subsurface plot allotted for use, shall be carried out on the basis of agreements concluded by the appropriate authorities exercising the executive power of the Russian Federation and the authorities exercising the executive power of a subject of the Russian Federation.

2. Article 40 defines the list and procedure for payment exemption when using subsurface. Thus, Ministry of Natural Resources letter No. VO-61/3024 dated 18.11.1996 approves the Temporary requirements for keeping [or *'the content of'*] geological and economic materials which support the possibility of partial or full exemption for subsurface users from payments for the use of subsurface.

The following categories of subsurface users in the RF are exempt from payments:

- 1) owners and holders of plots of land who carry out extraction of generally widespread commercial minerals and underground water under established procedures on a plot of land plots belonging to them or leased by them directly for their own needs;
- 2) users of subsurface who carry out regional geological and geophysical work, geological survey or other geological work directed towards general geological study of the subsurface, geological work to forecast earthquakes and study of volcanic activity, engineering and geological prospecting, palaeontological and geo-ecological research, monitoring the state of underground waters and other work conducted without substantial disruption of subsurface integrity.
- 3) subsurface users who have obtained subsurface plots to create specially safeguarded geological sites, as listed in para 4 of part 1 of art. 6 of this Law. In order to encourage development of mineral deposits found in difficult mining and geological conditions or deposits of inferior quality, including deposits containing mineral reserves that are difficult to extract, substandard or have been previously written off, use of overburden or enclosing rocks, mining industry waste and processing production linked to it, as well as for the purpose of introducing environmentally safe technologies and technologies that increase production of the main useful components and byproducts, users of subsurface may be partially or fully exempted from charges for the use of subsurface or be granted deferral of payment of such charges. The decision on deferrals or exemptions from payments shall be taken by the authorities conferring licences for the use of subsurface.

Authorities exercising the representative power of subjects of the RF may establish additional grounds for exempting particular categories of subsurface user from payments made to the budget of the relevant subject of the Russian Federation.

Normative legal enactments and decisions of authorities exercising State power that create unilateral benefits for particular categories of subsurface user are deemed invalid on the basis of this Law under the established procedure.

In actual fact, a subject of the Federation and its authorities have no interest in granting deferrals to any user, on the one hand because it reduces revenues to the budget, and on the other hand they are wary of falling into the accusation of conferring unilateral benefits. Thus during biological re-cultivation of disrupted land in the Chernogorsk Open Cast Mine the management failed to convince authorities that during this work waste from magnetite beneficiation was used as the underlying layer for the re-cultivated area, while to produce soil substrata oxidised carbon selected during mining was used. The user of subsurface failed to obtain either partial or full payment deferral.

### 3. Article 41 defines the list of payments for use of subsurface.

Charges are levied for prospecting and exploration of mineral deposits, their mining and the use of subsurface for other purposes.

The amounts of payments charged for prospecting and exploration are determined depending on economic and geographical conditions, size of the subsurface plot, type of minerals, duration of work, extent to which the territory has been studied geologically and degree of risk. These charges are collected in the form of single and (or) regular contributions for a unit of subsurface plot or area used. The amount of regular contributions, as a rule, increases depending on length of work.

The amounts of payments charged for mining minerals depend on the quantity and quality of the reserves, the natural geographic, technical mining and economic conditions for development of the deposit and the degree of risk.

Payments for mining minerals are collected in the form of a single charge, but also subsequent regular payments after mining has started. The amounts of these payments are included in the prime cost of mineral mining and are determined as a proportion of the value of the minerals and wastes mined during mining that exceed the normative values set by the annual mining work plans agreed with the State Mining Supervisory authorities. In this situation, payments for mining minerals from volumes of wastes exceeding the norms are charged at double the rate.

Payments for mineral exploration within the boundaries of a mining concession granted to a subsurface user to mine a particular mineral are not charged.

Payments for subsurface use for purposes not connected with mineral mining, including building and operation of underground facilities, are levied in the form of single payments and (or) regular payments. Amounts of such payments are determined depending on the

size of subsurface plot awarded for exploitation, the commercial characteristics of the subsurface and the degree of environmental hazard when the minerals are used.

The procedure and terms for levying payments for subsurface use and the criteria for setting rates of contribution are determined at the time the licence is awarded to use subsurface.

As additional documentation in the collection of payments, use is made of the Provision on the procedure and terms for levying charges for the right to use the subsurface, water areas and sectors of seabed, approved by Government of the Russian Federation Resolution No.828 dated 28.10.92.

4. Article 42 determines the proportions of payments for subsurface use

Payments for subsurface use go into the Federal budget, budgets of subjects of the Russian Federation and the appropriate local budgets.

Local budgets receive:

- payments for prospecting and exploration of all mineral deposits and payments for mining generally widespread commercial minerals on the territory of the relevant districts and towns;
- payments for use of the subsurface for purposes not connected with mining minerals;
- a part of the total payments made for mining minerals, apart from generally widespread minerals.

The budgets of subjects of the Federation and the Federation itself receive a part of the total payments for mining minerals, apart from those for which payment goes into local budgets.

Payments for hydrocarbon raw materials production are distributed as follows:

- local budget – 30%
- budget of the subject of the Federation – 30%
- Federal budget – 40%.

Payments for mining other minerals are distributed in the following way:

- local budget – 50%
- budget of the subject of the Federation – 25%
- Federal budget – 25%.

Distribution of payments among budgets at various levels for mining minerals from unique deposits and groups of deposits of Federal significance may be set at other [percentage] proportions. The proportions are established by agreement of all the interested parties. In

cases of dispute the decision on this matter is taken by the Federal Assembly of the Russian Federation.

When subsurface is used in districts inhabited by peoples and ethnic groups with numerically small populations, the part of the payments that goes into the budgets of subjects of the Russian Federation is used for the social and economic development of these groups and peoples.

5. Article 43 defines the forms in which payments for the use of subsurface are made.

Payments for use of the subsurface are charged in the following forms:

- payments in money
- a part of the volume of mined mineral raw material or other production produced by the subsurface user;
- work performed or services rendered;
- paying the sums of upcoming payments due to the Federal budget, budgets of the subjects of the Federation or local budgets as share investment put into the initial capital fund of a mining enterprise that is being started up.

The form of payment is established in the licence for subsurface use.

Federal law No. 32-F3 dated 10 of February 1999 adds the following new provisions:

- forms of collecting payments for the use of subsurface during execution of Production Sharing Agreements shall be established in accordance with such agreements;
- radioactive and other materials or products, disposal of which, in accordance with the legislation of the Russian Federation belongs exclusively within the control of the RF, as well as services of a military character and information constituting a State secret shall not be allowed to be demanded or accepted as payment for use of subsurface;
- demands for information constituting a commercial secret of the subsurface user as payment for use of subsurface shall not be permitted;
- radioactive and other materials, disposal of which belongs exclusively within the control of the RF which are under the exclusive control of the Russian Federation, shall not be allowed to be demanded or accepted as payments.

Here it ought to be mentioned that in the Republic apart from payments in money, practically nothing is being accepted as payment for the use of subsurface, since all the payments planned for periods following the current one are already included in the plan of work for VMSB.

6. Article 48 and Ministry of Natural Resources letter No. VO-61/3024 dated 18.11.1996 on the approval of the Temporary requirements for keeping [or 'the content of'] geological and economic materials which support the possibility of partial or full exemption for subsurface users from payments for the use of subsurface, state that discounts may be granted to:

- a user of subsurface carrying out mining of minerals in short supply with low economic benefit from deposit development which is the result of objective conditions and unconnected with violations of the terms for rational use of surveyed reserves;
- a user of subsurface carrying out mining of minerals from reduced quality residual reserves, with the exception of cases when the quality of mineral reserves has deteriorated as a result of selective working of the deposit.

The decision to establish discounts for exhaustion of subsurface and set the amounts is taken by the authorities awarding the licences for subsurface use.

In actual fact, in the Republic there is no mining of minerals in short supply (the very idea of 'mineral in short supply' requires careful explanation), and to establish that residual reserves in any ore body, layer or lens are of reduced quality demands that experts from a competent authority be brought to the place where these minerals have been discovered, and their effectiveness may be linked solely to their interest in establishing reserves that are already confirmed in respect of their quantity and quality, and reformulating all the documents.

7. Article 44 and Instruction No.44 of the State Taxation Service of the Russian Federation dated 31 December 1996 determine deductions for VMCB:

- subsurface users carrying out mining of all types of minerals surveyed at the expense of State resources provide deductions for VMSB;
- the rates of deduction are set in amounts that supply the expenditure needed for VMSB in the Russian Federation and are uniform for all subsurface users mining a given type of mineral raw material;
- The Federal Assembly of the Russian Federation, on representation from the Government of the RF, sets the amounts for deductions for VMSB.

MNC letter 3 VT-0-04/137 dated 14.2. 2001 determines the amounts of deductions for VMSB as a proportion of the value of the minerals actually mined.

In addition, in RF Government Resolution No. 1213 dated 1.11. 1999 it is stated that part of the total deductions for VMSB amounting to 0.5 – 1.5% shall be directed towards payment of remuneration for the discovery and exploration of mineral deposits. Until now, however, there have been no changes in the procedure for defining a discovery of mineral deposit which would contribute to an operative definition and payment of remuneration, and dozens and hundreds of already explored but still undeveloped deposits do not repay the State the expenditure incurred, neither do they contribute to remunerating the discoverers for their labour.

Joint Order No. VA-3-04/87 of the State Taxation Service of the Russian Federation and No. 151 of the Federal Mining and Industrial Supervisory authority of Russia dated 8.10 1996 'On improving co-operation between taxation authorities and the State Mining Supervisory authorities' regulates a set of measures for operational liaison between the Tax Inspectorate of the RF and the District authorities of the State Mining Technical Supervisory (Gosgortekhnadzor) authority of Russia on accounting for mineral wastes and their being treated as over and above the regulatory norms; makes the accounting system for the movement of minerals harsher; regulates the quality of mining and technical work plans and of their expert assessment, terms for levying charges, developing systems of monitoring and avoiding duplications.

However, as is the case with all the foregoing documents, there are no mechanisms worked out for paying compensation or offering preferential payments (already declared in the above listed documents) for work done to use secondary resources, biological re-cultivation of disrupted land and returning it to its original use.

Methodological Instructions No.76 (No. RP-07-261-98) for Monitoring the Technical Basis for Calculating Payments when Subsurface is Used' dated 10.12 1998 lay down a system of measures for determining the production of minerals and their wastes, for accounting, for resolving disputes and for monitoring work methodology, with enclosures including a list of the main forms of State Federal statistical monitoring in respect of accounting for mineral reserves by mining enterprises and a list of the main normative documents regulating the conduct of geological and mine-survey accounting when mining minerals.

As can be seen from the regulatory base for taxation in the mining industry, it is quite enough to remove the majority of questions concerning payments for subsurface use. However the mechanisms for handing over a proportion of the mineral raw material as payment for subsurface use (apart from Production Sharing Agreements) have not been developed because the mechanism for the competent State authorities to sell the mineral raw material received in payment has itself not been worked out. In addition, the lack of an adequate base for full refining does not encourage the mining of precious metals, in particular gold.

## **Safeguarding the environment**

In an epoch of scientific and technical revolution, mankind's activity is acquiring a scale of geo-ecological processes, and is leading to changes in the natural biogeochemical cycles on earth, and to the disruption of the ecological balance in the biosphere, which in its turn has an effect on man himself. This has led to the current change of emphasis from protecting natural resources to protecting the health of mankind as the main resource and motor of progress. Man's level of health depends to a significant extent on the quality of his surrounding environment. Many writers have suggested that the state of health of mankind is 20-25% determined by environmental factors and that they are second only to the effect of lifestyle.

The impact on the geological environment of mining enterprises (enterprises in the first group of exploiters of nature) consists in the processing of rocks to extract useful material from them, often involving destruction of the integrity of the rock mass to a depth of 200-250 metres. Further it includes creation of dumps of processed rock mass, which often has very specific characteristics, and also the development of depression craters in underground waters, within which changes in both their hydrodynamic and hydro-chemical regimes take place.

In recent times, in the development of hard coal deposits, the issue of self-ignition of coal and coal-bearing rock in rock catchments and dumps has become very serious.

At the "Izykhskiy" open cast colliery, in order to prevent further self-ignition of the coal, they carry out selective extraction of the most coal rich rocks (basically coal argillite and over burden) and then bury them under inert rocks. However, these measures do not always enable the task in hand to be resolved, because the absence of any form of biological recultivation (the dumps are adequately landscaped and left to seed themselves) does not provide a basis for claiming that the possibility of new outbreaks of fire can be completely excluded.

The second group of users of nature includes the following: Energy Enterprises (Sayan-Shushensk and Mainsk Hydroelectric stations, Abakan Thermal Energy Station, Thermal Energy Station Chernogorsk, Sayanogorsk, Sorsk, Abaza and other small boiler plants, the machine construction complex (Joint Stock Company "Abakanvagonmash", Test and Experimental factory, heavy and light metal industry (Sayan aluminium plant, Tuim OTsM [*non-ferrous metal works*], steel foundries and steel rolling mills), microbiological industry (AO "Mibieks), agricultural complex (irrigation systems, poultry processing plants, pig factories, farms, greenhouse growers, butter and cheese factories, meat processing plants) all have an effect on the geological environment over a wide area although the depth of their effect is measured in the first tens of metres.

Changes to the geological environment include the following:

- Pollution of the aeration zone and underground waters by oil products, heavy metals, nitrates ammonium and fluorine;
- A rise in the levels of sub-soil waters;

- Salinisation of the aeration zone and in increase in the mineralisation of sub-surface waters

The geological environment is changed most of all in the regions of the Abakan-Chernogorsk industrial agglomeration in the region of the town of Sayanogorsk.

If in Sayanogorsk the influence of the extraction and processing of the stone processing factories on the overall dustiness of urban and suburban territories is not so great, then in Abakan, Chernogorsk and in Ust-Abakan the coal laden dust of the Chernogorsk and Izykh opencast mines, often after prolonged seasonal (spring and autumn) winds, covers the surface of the territory of towns, population areas and roads along which coal is carried in the bodies of open dumper trucks.

Up until the 1980s during coal mining there was wide use of mercury. Pollution of the rock mass by mercury is seen in all old mines. It should be noted that the level of ecological danger of mercury pollution cannot be evaluated generally. Research available is based on a small volume of data material, and the conclusions often are a matter for conjecture. In Khakassia they are carrying out a well-planned complex evaluation not only of mercury pollution but also an evaluation of the effects of the exploitation of all the mining areas of the republic.

On the whole, in the whole area of the Republic the biggest of all the geological problems is that of conducting monitoring of the geological and the water environment.

In the year 2000 on the territory of the Republic monitoring of the subsurface waters has been carried out on an observation network consisting of 269 boreholes, including 115 boreholes (16 posts) which form the backbone of the Federal network. 154 boreholes (13 posts) – form the territorial observation network. The observation network of 225 boreholes belongs to the Khakassia Republic Directorate of Engineering Protection (KhrDEP), following re-assessment has been given the status of a Departmental network. Also included in the departmental network are 138 boreholes, the observation of which is conducted by the Khakassian hydrogeological reclamation team of the Ministry of Agriculture and Production of the Russian Federation.

In this way, the Government network consists of 363 boreholes. The objective observation network at 1 January 2001 consists of 166 boreholes and one source, situated at 28 points, including 5 industrial sites, at mining and exploitation sites, including SaAZ – 26 boreholes, AO “Abakan Thermal Power Station” – 12 boreholes, the gold mining company “Zolotaya Zvezda” [*Gold Star*] – 14 boreholes, Abakan oil tank farm – 38 boreholes.

In 2000 the site observation network was increased by 42 boreholes situated in the main on private AZC's and at stores of GSM industrial enterprises.

According to the state of affairs as at 01.01.2001 a total of 97 major pollution points of subsurface water were discovered on the territory of the Republic of Khakassia

The location of the centres of sub-surface water pollution, the sources of pollution, the polluting substances, and the intensity of the pollution are shown in the table and in the drawing at the end of the chapter.

So, in this way on 1 January 2001 97 centres of underwater pollution were counted on the territory of the Republic. The intensity of the pollution, measured by separate sources, varied from 1.3 to 137 m.p.c.[maximum permissible concentration].

Sources of pollution of sub surface water are oil refineries and AZCs, sludge and pond fillers, cleansing plants, farms, mining enterprises, and their filtering enterprises, providing septic tank clearance relief of sewage and drainage waters.

Pollutants include oil products, nitrates (after boring and explosive work and the dampening down of the remains of explosive materials) ammonia, heavy metals, (including those left in dust) sulphates, chloride, salts of calcium, magnesium, fluorine, iron and manganese (those being washed out of the rock overburden and then falling back into the subsurface water)

One has to mention separately about the washing of burning coal deposits, when leaving cracks in the ground as a result of low winter temperatures, form sulphur products washed by stale waters on the surface and the subsurface horizons.

The conduct of local monitoring by the majority of enterprises of land and water users (basically for economic reasons) has only reached the level of setting up and does not allow at the present time sufficiently fully study of all sources and centres of pollution of subsurface waters, and the whole list of their pollutants.

The existing observation points looking at the state of subsurface and surface waters are as a rule regional and are not required to solve problems of objective monitoring.

Works on geological study and protection of the geological environment in 2000 were carried out along the following lines:

- Study of the make-up and dynamic of the change of subsurface waters and EGP in natural conditions and under the influence of technogenic action.
- Works on the improvement and development of monitoring systems and removal of the negative influence of exploiting the earth's resources on the geological environment.
- Evaluation of the state of subsurface waters and EGP on large-scale objects of land exploitation.
- Works on strengthening and development of the mineral and raw material base of the Republic of Khakassia.
- Rational and complex opening up of the mineral and raw material base of the Republic of Khakassia

Timely prevention of outbreak of negative processes of change of the geological environment is possible taking account of the normal flow of natural processes, and also on the basis of normalising economic activity in the control of the use of natural resources. Essential information to solve these tasks demands the functioning of a continuously acting service of regular study, analysis, evaluation and forecasting the change of state of the geological environment and also informing government organs responsible for controlling

natural resource exploitation and the populations about these changes, together with recommendations for measures for banning or limiting and overcoming negative consequences (including economic loss), i.e. a service for monitoring the geological environment.

Works on studying regime of underground water and also control of their protection from drying up and pollution on the territory of the Republic of Khakassia have been going on since the beginning of the Sixties.

In the future it is planned to improve the network and method of state monitoring, and also to introduce into practice of economic activity the conduct of monitoring by each exploiter of natural resources at their own expense.

In view of the fact that state monitoring of the geological environment is a base sub-system of EGSEM and functions in conjunction with monitoring of the atmosphere, surface waters, land, soil, plant and animal world, questions of mutual activity of the territorial centre of the GMGS with other sub-systems of the EGSEM on a territorial level acquires a particular significance for its full value functioning.

The procedure for exchange and the character of information of the make up of joint plans of works with the Committee for GO and CHS at the Republic Government, the Khakassia TsGSM, with the State Committee for environmental protection of the Khakassia Republic, SibNIIPIZiM

In 2000 works were continued on monitoring of the eczogenic geological processes. To create a monitoring network works were carried out on an engineering geological research of the Republic's territory, to study the geo-ecological condition of the geological environment, on the improvement and development of the system for monitoring and removal of any negative effect of the land exploiters at 19 sites, which can be divided into three groups:

- Evaluation of the effect of exploitation of resources on the geological environment (3 sites)
- Evaluation of the effect of mining exploitation on the geological environment (13 sites)
- Geo-ecological mapping (2 sites)

On the first group work has been carried out on evaluation on the ecological and geological situation of the Abakano-Chernogorsk urban sprawl, and geoecological research has begun on the zones of mining health protection of the mineral lakes of the Republic of Khakassia.

On the second group of sites a complex ecological and geological evaluation of the effect of mining exploitation in the zones of influence of the mining enterprises of the Republic has been begun. Monitoring networks have been set up and monitoring of the places of mining has been carried out.

Work has continued on studying the effects of use of mercury in gold mining in the Kommunar-Balachinskiy, Anzas-Kazasskiy and Saralinskiy gold mining areas, and an evaluation of the effect of coal extraction as a whole in the Minusinskiy coal rock basin and

on individual coal mines (open casts: Chernogorskij, Stepnoj, Abakanskij, Bejskiy), and also mining factories (Sorskij molybdenum Kombinat, Tejskiy mining directorate)

On the third group of sites geo-ecological research and mapping on a 1 : 200 000 scale within the limits of the state mapping system in the regions of Abakan and Sayanogorsk has been carried out.

To strengthen and develop the mineral and raw material base of the Republic of Khakassia in 2000 in accordance with the Programme of geological survey work it is planned to work on 120 different sites.

Work on rational complex development of the places where mineral deposits are found includes licensing of the mine sites, control over the exploiters observance of the license agreements, carrying out State accounting of the mining fund, which are part of the functional duties of the Committee for Natural Resources of the Republic of Khakassia and are carried out by it.

In addition, on every site, when a licence is issued, provision is made for use of the latest technology to ensure the least damage to the environment.

### ***Assessing the Health of the Environment***

#### **1. Hygiene of Atmospheric air**

In large cities of Russia, where there are already institutes for medical and ecological problems and for evaluation of risk to health, and centres of ecological epidemiology, ecological safety, more and more effort is devoted to studying the risks to damaging health of various groups of the population under the influence of atmospheric pollution. With the help of correlational analysis it has been possible to establish that the clearest connection with factors of atmospheric air pollution factors are illnesses of the respiratory organs, particularly sharp respiratory infection, bronchitis, pneumonia, bronchial asthma. The results of calculation of regression of dependency of the diseases mentioned above of the pathological condition of children has shown that the mostly widely spread in the studied conditions are illnesses directly or indirectly arising under the influence of dust, sulphur anhydride, nitrogen dioxide.

In the year 2000, in the Republic of Khakassia around 170 thousand tonnes of pollutants were released into the air from stationary and autotransport sources. The fundamental part of the effluent studied was concentrated in the towns of the Republic: Abakan, Sayanogorsk, Chernogorsk, and also the settlement of Ust'-Abakan.

In spite of a small decrease in the number of poisonous effluents into the atmosphere in 2000, the level of pollution of the atmosphere of the towns remains high. The collapse of the economy significantly has not affected the improvement of the condition of the atmospheric air. The basic reasons for this are the greater number of days with unfavourable meteorological conditions for dispersing pollutants into the atmosphere, the unstable work of industries etc.

The Republic's climate is severely continental, with a sufficiently severe winter and warm summer. In the cold period of the year over a large part of Eastern Siberia an area of high

pressure is established – The Siberian Anticyclone, thanks to which in the first half of winter the processes of cooling receive wide development, which taking account of the relief of the Republic ensures low winter air and soil temperatures. In the second half of winter there is a predominance of light cloud with light winds and little precipitation.

A characteristic peculiarity of the Republic's climate is the high frequency of temperature inversions, particularly in the cold time of the year (50-80%) playing an important role in the formation of stagnant conditions. The maximum power of an inversion in the winter period reaches the order of three kilometres and higher. In this way, because of these meteorological factors like an inversion, the great repetition of still air and weak winds (on average 2 m/s) the presence of fogs, the overwhelming light precipitation allowing a build up of mixtures, the potential for atmospheric pollution of the Republic is significant.

Control over atmospheric pollution in the republic is carried out the State service for Observation of the condition of the environment in the cities of Abakan, Sayanogorsk, Chernogorsk, the settlement of Ust'-Abakan, where more than 70% of the population live, on 5 stationary posts. Methodic control of the network is carried out by the Krasnoyarsk Centre for monitoring of the environment of the Central Siberian UGMS.

### **1.1. Condition of atmospheric air in the town of Abakan.**

The main contribution to the discharge of pollutants into the atmosphere is made by the following Abakan enterprises:

- Abakan Thermal Energy Station
- The Abakan heat networks
- ООО APK "MaVR"

The contribution by automobiles to the ejection of pollutants into the atmosphere is 72%

Dust. The average yearly concentration has been 0.85 m.p.c. s.s. Within the territory of the city the highest level of pollution has been recorded in the central part of the city. The maximum concentration was 0.700 (1.4 m.p.c. m.r.). Sulphur dioxide. The average yearly concentration was 0.2 m.p.c. s.s., the maximum of various concentrations 0.1 m.p.c. m.r. Nitrogen dioxide and nitrous oxide. The average yearly concentration was 0.2 – 0.4m.p.c. s.s., with a maximum concentration of nitrogen dioxide of 0.9 m.p.c. m.r., and nitrous oxide of 0.18 m.p.c. m.r. Carbon monoxide. The average annual concentration was 0.7 m.p.c. s.s., maximum of various concentrations – 1.2 m.p.c. m.r. (Benz(a)pyrene). Average annual concentration was 2.19 m.p.c. s.s.,with a maximum of 7.4 m.p.c. s.s. Specific mixtures. Observation of hydrogen sulphide and phenols has been made. Average annual and various concentrations of hydrogen sulphide and phenol have not exceeded health norms.

The level of atmospheric air pollution is high ( $IZA_5 = 7.87$ ). The base contribution to the level of atmospheric air pollution of the town is (benz(a)pyrene).

## 1.2. Condition of atmospheric air in the town of Chernogorsk

The main contributors to the issue of pollutants into the atmosphere is made by the following enterprises in the town of Chernogorsk:

- AO “IskozH”;
- OAO “Chernogorsk Energy Directorate”
- AO “SiTeks”;
- Chernogorsk factory ATI;
- MUP “Energetik”.

The contribution by automobile transport to the output of pollutants into the atmosphere is 42%. Dust. Average concentration was 1.1 m.p.c. s.s., maximum concentration was 1.8 m.p.c. m.r. Sulphur dioxide. Average annual concentration was 0.2 m.p.c. s.s., maximum concentration was 0.08 m.p.c. m.r. Carbon monoxide. Average annual concentration 0.8 m.p.c. s.s., maximum was 1.2 m.p.c. m.r. Nitrogen dioxide. Average annual concentration was 0.5 m.p.c. s.s., maximum concentration 0.8 m.p.c. m.r. Hydrogen sulphur, phenol. Level of phenol pollution is low. Average and individual concentrations did not exceed sanitary and hygiene norms. Benzopyrene. Average concentration was 4 m.p.c. s.s., maximum of the average monthly was 9.8 m.p.c. s.s. The level of atmospheric air pollution is high ( $IZA_5 = 13.31$ ). In comparison with 1998 ( $IZA_5 = 7.37$ ) the level of pollution has sharply risen on account of the increase on the emission of (benzopyrene)

## 1.3. Condition of atmospheric air in the town of Sayanogorsk

The main contributors to the emission of pollutants into the atmosphere were the following enterprises in the town of Chernogorsk:

- OAO “Sayan aluminium factory”
- TOO “Teplovik”
- AO “Sayanmramor”

Dust. Average annual concentration was 0.4 m.p.c. s.s., maximum concentration was 0.4 m.p.c. m.r. Sulphur dioxide. Average annual concentration was 0.18 m.p.c. s.s. and maximum concentration was 0.08 m.p.c. m.r. Nitrogen dioxide. Average concentration in a year was 0.35 m.p.c. s.s. and maximum was 0.8 m.p.c. m.r. Benzopyrene. The average annual pollution is high – 1.35 m.p.c. s.s., maximum out of the average monthly concentrations was seen in the winter months and was 5.4 m.p.c. s.s., Fluoridated hydrogen, hard fluorides. Average annual and various concentrations did not exceed sanitary and hygiene norms. Fluoridated hydrogen was 0.7 m.p.c. s.s. and 0.8 m.p.c. m.r., hard fluorides were 0.17 m.p.c. s.s. and 0.10 m.p.c. m.r. respectively. Formaldehyde. Average yearly concentrations were 1.2 m.p.c. s.s., maximum concentration was 0.5 m.p.c. m.r.

The level of atmospheric air pollution is up a little. ( $IZA = 4.33$ )

## 2. Sanitary condition of water sites

In recent years the quality of water provided to population in the Republic of Khakassia has remained stable and is tending towards improvement. However, on certain territories the quality of the water remains low. The quality of water in reservoirs at points of use has improved by microbiological standards. In the first category there were no sub-standard results from analysis in 2000 as against 2.7% in 1999. At points of the second category it is 4.7% as opposed to 5.2% (table 1) By sanitary chemical standards there is also the same tendency: 7.6 % in 1999 and 0.5% in 2000. As well as this in the reservoirs of the Askiz region the share of results not meeting targets for microbiological standards reached 30%.

**Table 1. Change in quality of water in water bodies 1996 – 2000**

	1996	1997	1998	1999	2000
Proportion of tests at Cat 1 water use sites which failed to meet the bacter. Indices, %	4.6	5.7	4.1	2.7	0
- failed to meet the chemical Indices %	0	0	0	0	5.2
Proportion of tests at Cat 2 water use sites which failed to meet the bacter. Indices %	10.2	4.2	4.1	5.2	4.7
- failed to meet the chemical Indices %	23.7	2.5	0.79	7.6	0.5

In spite of the improvement of the quality of water in water bodies [or reservoirs] and the reduction of the amount of untreated drain water being poured into reservoirs, at certain territories a worsening of the water quality of water catchments along sanitary chemical norms has been observed. This is the river Teya, where an increase of 1.5 times in the number of mineral substances has been observed. In the full BPK [*bacteriological water quality indicator*] the increase is 2 times. In the river Sora the increase in the full BPK is 1.5 times, the clarity of the water is reduced by a factor of two. In the river Askiz, the increase in the full BPK is 1.5 times, the reduction in clarity is 2 times. The low quality of water of the water resources of the above-mentioned territories is explained by the low efficiency of work of the sewage treatment plants and the failure to match water supply to their demand. The treatment plants on the upper Teya are in an emergency condition, overloaded plants on the Sckiz, plant on the river Shira work inefficiently and the treatment plants in the settlement of Sov. Khakassia are broken. Until now, there has been no sewage treatment plant in the settlements of Beya, Bograd, Kop'evo, where sewage water is discharged without treatment onto the land or into a cesspit. The Ministry for Town construction and accommodation policy at the Government of the Republic of Khakassia has forecast that in 2001 there will be design and construction of treatment plants in p. Kop'evo. Apart from that, on the existing treatment plants disinfection of water is done with the help of liquid chlorine and chlorine rich substances. Other modern methods of disinfection are not available. Periodically interruptions are seen in the disinfection of water because of the absence of chlorine. As a result of the discharge of insufficiently cleaned and uncleaned sewage water into the water resources and onto the land in the Republic one sees a

worsening in the quality of the water of surface water resources on sanitary and chemical indices, particularly in respect of the content of nitrates and organoleptic [*microbes*] indices. The quality of water has worsened in respect of microbiological indices in the Shirinsk region. A high percentage of results not meeting standards in analyses of water on sanitary and chemical indices have been seen in the Ust'-Abakan region, where 25% of the water does not meet sanitary demands because of the high hardness and presence of nitrates.

**Table 2. Specific weight of water tests of sources of central water supply not meeting hygiene requirements (%) 1996 – 2000**

	1996	1997	1998	1999	2000
<b>All sources:</b>					
Sanitary/chemical indices	14.1	8.3	7.6	18.4	9.2
Microbiological indices	9.7	4.6	7.8	4.2	3.7
<b>Surface sources:</b>					
Sanitary/chemical indices	0	0	0	0	14.2
Microbiological indices	0.11	0.28	0.44	0.12	5.0

In addition, the low level of the quality of water in separate water sources is caused by the low sanitary condition, for example out of 167 sources of domestic drinking water 67 (40.1%) do not meet sanitary demands because of the absence of zones of sanitary defence, and pollution of the surrounding territory by domestic and industrial waste (Askiz, Bejsk, Bograd, Ordzhonikidze regions, s.s. Tashtyp, N-Maryaskovo, Imek and others). There are on the territory of the republic 142 water supplies of which 37 are domestic and 105 industrial. 4 of the main water supplies take water from open water resources (settlements of Mainsk, Cheremushka and Priiskoviy, the "Lake Shira" resort, where in three of them the water treatment is done under a truncated scheme (filtration only). In the settlement of Priiskoviy water flows directly to the consumer. Water quality in the Republic based on sanitary and chemical indices has improved a little, mainly in departmentally piped supplies piped and, using the microbiological indices, in communal supplies, but at the same time it has got worse from a microbiological standpoint.

**Table 3. Quality of drinking water for domestic and office piped water supplies (% of tests not meeting sanitary and hygiene norms)**

Water supplies	According to sanitary & chemical indices					According to microbiological indices				
	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000
Communal	4.7	6.3	7.5	3.6	5.4	8.4	8.9	5.5	6.5	4.9
Departmental	13.7	19.6	8.4	6.8	5.2	8.6	9.1	8.5	2.8	10.0

Below standard results from tests according to sanitary-chemical indices are caused by hardness salts, iron, and nitrates. The presence of heavy metal salts in water supply sources and in supply pipes has not been established. In the Khakassian Republic we have seen a shortfall of fluorine, the concentration of which does not exceed 0.3-0.5 mg/l., although in some villages of the Ust'-Abakan region the content reaches 2.0 mg/l (compared with the norm of 0.7-1.2 mg/l:Krasnoozernoe, Opytnoe.

The low quality of water by microbiological standards (for the settlements at. Kopevo, Beya, Sov. Khakassia, Priiskoviy and others) is caused by the poor technical condition of the water supply network and equipment, the overwhelming part of which has a wear rate 60-100%, as a result of which every year more than 300 accidents are recorded, mending of which takes up to two and more months and causes secondary water pollution. 15-50% of stand-pipes don't work particularly in village areas (V. Teya, N. Maryasovo, Kalinino, and others). Apart from that, 15.5% of the population use water from 249 sources of decentralised water supply, the sanitary technical condition of 18% of which does not meet sanitary standards.

Despite the low quality of water getting to the population, only 9% of water pipes have equipment for disinfecting the water whose technical condition does not meet demands. In particular, additional ozone disinfection of water is essential in the towns of Abakan and Chernogorsk to remove virus pollution. In connection with the insufficient reliability of the quality of water, construction of disinfecting stations is required in the settlements of Kopyevo, Priiskoviy, Ordzhonikidze regions, s.s.Kirovo, Izykhskiy Kopi of the Altai region and the villages of. Tapytsh, Bograd and others. Also needed is reconstruction of the chlorine station in Chernogorsk. Up to now the question of construction of a base chlorine store for supplying the water supply and sewage system for the Khakassian Republic has not been resolved.

The owners of the water supply pipelines and equipment have an extremely poor laboratory basis for control of the quality of drinking water. Only 4.2% of the water supplies (Abakan, Sayanogorsk, and the settlements of Mainsk and Cheremushka). Control over the quality of water is carried out by the TsGSEN in the towns and regions of the Republic. The laboratories do not have the capability to conduct research on selenium, boron, barium and benzo(a)pyrene.

### **3. Sanitary condition of the soil**

Soil is one of the main sources of life of man, and is the only place where the products of man's activities can be buried. The scale of domestic and industrial waste products is continually growing. In the year 2000, the Republic saw registered more than 3866.2 thousand tonnes of waste from production and households. Out of this 10241.6 tonnes of waste were in Danger Class 1 & 2. Utilisation of domestic waste is made on 118 sites, the sanitary technical condition of which is in the main unsatisfactory, particularly in country areas. The majority of places used for burying household and industrial waste have not been authorised by the Chiefs of the local authorities. Sanitary regulations for maintenance of the sites are broken, with the exception of those of the Abakan-Chernogorsk industrial area and the town of Sayanogorsk, where the utilisation of waste products meet sanitary requirements to a significant extent, although the reconstruction of the Abakan – Chernomorsk industrial area has not yet been finished. Mountain culverts, accommodation blocks and tanks for disinfection of transport have not been finished. Not

one site has conducts laboratory research to monitor the state of the environment. It is noted that in the Republic there is insufficient transport for the carriage of waste or tractors for the graded burial of waste at the sites.

At the same time the utilisation of the Republic's industrial waste has not been decided. At the moment, all industrial waste at danger Class 3 & 4 is stored on sites for domestic waste as isolating layers. The only enterprise in the Republic which fully utilises its waste on its own industrial waste sites is the Sayan aluminium factory. The rest of the factories keep their Danger Class 1 & 2 waste on their own territory. Luminous lamps which are in danger class 1 are transported to the town of Krasnoyarsk to a plant specially designed for dealing with this sort of waste. A huge problem is the utilisation of banned or unsuitable pesticides, which are kept on factory sites.

As a result of laboratory control over the quality of soil 4.6% of tests do not meet sanitary demands on sanitary and chemical indicators, 12.5% of soil tests do not meet the demands because of the high content of pesticides. The presence of pesticides in the soil of populated areas above m.p.c. has been noted in 5% of tests. The presence of helminths has been detected in 3.4% of tests. In the soil of accommodation construction helminth has been found in 3.8% of tests.

In 1992 – 1995 the Southern geophysical expedition carried out ecological and geo-chemical sampling in the towns of Chernogorsk, Abakan, and Sorsk. The research carried out showed that in the towns there is a presence of technogenic geo-chemical anomalies. In Abakan zinc forms a group of strong anomalies in the southern accommodation part of the city, beyond the railway and including Mira, Pavshix Kommunar Tsukanova and other streets. Lead is widely distributed in p. MPC with a concentration of 300-3000mg/kg (10-100 m.p.c.). The main culprits producing heavy metals are boiler plants, industrial enterprises and motor transport.

#### **4. The normative, or regulatory, legal base**

One of the most essential factors in the health of the environment is the state of the normative legal base. Inconsistences between State and Federal Law have been discovered.

##### **1. Regarding the Constitution of the Republic of Khakassia:**

1.1 The provision in Part 2 Art. 10 of the Constitution of the RKh: “On the territory of the Republic of Khakassia it is unlawful to bury ecologically dangerous industrial waste imported from outside the boundaries of the Khakassian Republic.

1.2 In Article 32 of the RKh Constitution (“The right of citizens and groups to private ownership of land. The conditions and procedure for use of land and other natural resources are defined by law.”) must be refined: “on the basis of Federal law”, which will agree with Part 3 of Art 36 of the Constitution of the Russian Federation (RF).

2. Regarding the law of the RKh “On Safeguarding the Natural Environment in the Republic of Khakassia”:

2.1 Delete from Art 12 the duty of citizens “to make known ancient nature cult systems...” and from other duties named here remove the phrase “nature cult system” as unacceptable for inclusion in an Article of Law.

2.2 Bring into line with Federal law Articles 17 and 18 licensing the use of land and the procedures and conditions of the giving of rights to the user.

Remove from Art 17 the sentence about taking the income from activity being carried out without a licence (permission) for the use of natural resources and pollution of the environment, and on the fine being the same as the income received, as it contradicts Art 24 of the KoAP RSFSR and other Federal Law.

2.3 Change Art 20:

- in relation to the right of the Council of Ministers of the RKh to index standard payments for natural resources – taking account of the variation in the procedure for setting up the standards (contributions) of payment for various natural resources and from the point of view of competence of the organs of executive and legal powers of the subjects of the Federation;

- in relation to exemption from payment for the right to use natural resources of the owners and the owners of land plots – taking account of the variation of rights of these persons in conformity with the types of resources situated on these plots.

2.4 Take out from Article 33 the sentence about taking account of an enquiry or citizens referendum in the conclusions of a public ecological expert commission, since the participation of the public in the acceptance of ecologically important decisions in this form of direct democracy takes place independently from the conduct or non-conduct of a public expert ecological commission, and has its own legal basis and other tasks.

2.5 Remove from Art 44 the ban on importing radioactive waste or products either for storage or burial from other regions as it does not correspond with the Constitution of the RF. (para. “i” of art.71, art. 8 and 74)

2.6 Bring into line Art 68 with the KoAP RSFSR, Art 84 of the law of the RSFSR “on Protection of the Natural Environment”, art 36 FZ “On specially protected natural territories” by means of removing the sanctions set up in it for juridical persons (for two additional teams which are not in the Federal Law, this sanction can be left), and also by means of removal of the para “infringement of the established regime for specially protected natural territories and sites” used for citizens and authorised personnel.

2.7 Remove from Law art 73 “Rectifying harm, caused to historic and cultural sites” as this belongs to another branch of law.

### 3. Regarding the law of the RKh “On the forest”

A large part of the Law of the RKh “On forest” was introduced before the Forestry Codex of the RF and is in fact no longer valid and cannot be used for controlling forestry issues on the territory of the republic.

3.1 In part 1 of art 2 after the words “all woods” must be clarified in accordance with art 7 of LK RF: “with the exception of woods, situated on Defence land and land where people live (villages)”.

3.2 Bring arts. 6 & 7 into line with Federal forestry law (art 34 LK RF) in the section concerning the procedure for taking the decision to transfer the wood fund to rent and the competence of the forestry enterprise in the procedure of proposing it.

3.3 Remove a number of articles (art10.11, and others) about the functions of owners of the forestry fund

3.4 Remove part 2 of art 22 of the Law in accordance with part 2 of art 63 of LK of the RF in the area of sending payment made for forestry land transfer to the non forestry, forestry enterprise (and not to the regional or town budget) to recompense for the losses of the forestry economy.

3.5 Correct Art 28 regarding the length of lease – 49 instead of 50 years, in accordance with art 31 of the LK of the RF

3.6 Bring art 33 of the Law into line with art 34 of the LK of the RF and with the Decree on lease of plots of forestry (confirmed by decree of the RF Government dated 24 March 1998 No 345) in the part of the authorities offering plots of forestry for rent.

3.7 The procedure for cancelling the right to use forestry (art 40) must be brought into line with the procedure laid down in art 29 of the LK of the RF, as well as the grounds for premature cancellation of the right to use the woods, its limitations or its cancellation (art 39) – arts 26, 27, 28 of the LK RF.

3.8 Art 66. “Specifics for use of forestry in forests of agricultural formations” should be brought into line with art 130 of the LK of the RF, the law on use, safeguarding protection of the forestry fund and the restoration of forests previously belonging to agricultural organisations (confirmed by decree of the Government of the RF dated 19 December 1997 No. 1601), and to the decree on transfer of plots of land for general use (confirmed in Russian Government decree No 224 dated 18 February 1998).

3.9 Section V “Financial aspects to Forestry issues” – bring into line with chapters 13.14 of the LK of the RF in regard to payments and their distribution, and also financing of expenditure on state control in the areas of exploitation and protection of the forestry fund.

3.10 In article 93 leave only types of violations to forestry not included in the KoAP of the RSFSR or in other federal legislation and include the sanctions. In its existing form the norm has no legal sense.

3.11 Bring art 96 into line with art 111 of the LK of the RF, and also with the general articles in civil law on compensation for damage.

4. Refgarding the Law of the RKh “On defending the population and territory from emergency situations both natural and man made in the Republic of Khakassia”.

In this law it makes sense to establish:

- A procedure for providing the population, the organs of State power, the organs of local government with information in the area of protection of the population and the territory from Emergency Situations (ES), since that procedure according to Federal Law can be set up by the legislation of the subjects of the RF;
- Administrative sanctions for failing to carry out, or shirking from carrying out measures meant to warn of ES and to lower the amount of losses and for the types of infringements (Federal Law at art 28 looked directly at the possibility of establishing administrative responsibility by law of the subjects of the RF, but that possibility was not realised)

## 5. Regarding the Law of the RKh “On tourist activity in the territory of the RKh”.

5.1. In art 1 of the Law, tourist objects are defined as “territory (plot, site) for the purpose of recreation with its own legal regime”. However, this legal regime is not defined later. Because of this, taking into account the recreational potential of the territory of RKh, it makes sense to judge the possibility of setting up a legal regime for recreational territories (land plots and water spaces) which could be ascribed to all existing categories of lands with the exception of lands used for natural parks and those used for nature protection and health purposes, that is, those which are already occupied by specially protected natural territories. At the same time in awarding a special status it will be necessary to work out a mechanism for making payments for carrying out tourist activities on such territories (at economic rates, sources of income and areas for their expenditure). An alternative could be through the raising of the rental payment for the land plot, or the forest plot.

The procedure for the use of recreational territory must be established in a separate normative act

5.2 Article 3 “Principles of State regulation of tourist activity” Here add principles (paragraphs):

- ensuring protection of the surrounding environment
- agreeing the interests of the local population and the users of the tourist facilities

5.3 Article 6 “Priorities for State regulation of the tourist industry” add (para 1) the words “and also the formation of specialised ecological tourism”

5.4 Taking account of the ecological specialities of the region and in connection with the fact, that art 13 of the FZ “On the basis of tourist activity in the RF (1996)” has still not yet reached due development in view of the fact that “the procedure for use of tourist resources of the RF taking account of the maximum allowable load on the natural environment is defined in accordance with the law of the RF”, can establish such a law (temporarily) in the legislation of the Republic of Khakassia. Technically this is possible either in the same law (Ch 6) or in a separate normative act. In the latter case, the article 21 should be amended: “use of tourist resources must take account of the maximum allowable loadings on the local environment (and/or the visit quota), which are set up in accordance with the legislation of the RF and the RKh.

## *Health of the population and habitat*

Medical and demographic indices of the health of the population.

Overall number of the resident population of the Republic of Khakassia (on 01.01.2000) was 580 700. Of this number the percentage of children up to 14 was 19.1%, and the percentage of old people (60 and older) has increased up to 15.4%. The specific weighting of the work capable population has remained at the level of 63.5-64% (cf the Russian Federation – 57.8%). The percentage of town population in 2000 was 71.1%. The expected life expectancy in the Republic of Khakassia is up to 63.5 years.

### **Overall number of the resident population of the Republic of Khakassia and the town of Abakan**

Territory	Year				
	1996	1997	1998	1999	2000
Republic of Khakassia	584300	587700	583700	583200	580700
Town of Abakan	163500	165500	168300	169900	169100

In 2000, 5628 people were born in the Republic and 8013 persons died, the natural loss to the population was 2385 persons. The number of the resident population of the Republic went down by 1500 persons, having not compensated for the natural loss.

### **Birth rate and general mortality rate of the population of the Republic of Khakassia (per 1000 persons)**

Index	Year										
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Birth rate	15.2	14.0	11.9	10.5	10.6	9.9	9.8	9.1	9.6	9.1	9.6
Death rate	10.5	10.7	11.8	14.4	16.1	14.0	13.8	13.3	13.5	14.3	13.8

### **Birth rate in the Republic of Khakassia**

In 2000 there were 5628 births registered in the Republic of Khakassia. This is 302 more than in 1999. In comparison with 1999 the birth rate rose in the Altai (12.6) and Beya (11.2) regions and also in the towns of Abakan (10.1), Cheronogorsk (7.7) and Sayanogorsk (8.4). The birth rate index over the republic was on average 9.6 (per 1000 persons).

The tendency for the birth rate to change over the period studied follows the tendency of the birth rate in the Russian Federation: from 1990 a fall in the birth rate has been seen which continues to the present day.

Demographic experts the world over attach more importance to qualitative birth rate indices, than to quantitative ones. The quantitative process of looking at birth rates shows simply an increase or a decrease in the number of newly born. The qualitative accounting process of birth rate gives an idea about which children were born in one or another period.

Specialists are above all interested in the birth rate of those with low birth weights. It is generally accepted that a birth weight of 2499 grammes is a low birth weight.

According to figures from the World Health Organisation the most important cause infant mortality is precisely this index. It causes almost a half of all cases of infant mortality and 70% of cases of death in the course of first four weeks of life. Children with low weight need expensive high-tech medical care and, in addition, for those with low birth weight who manage to survive, there is a significantly increased risk of suffering a birth trauma, a delay in brain development, becoming backward in education, and getting cerebral palsy, development of epilepsy and various health problems.

In the year 2000, 371 babies (281 of them premature) were born in the Republic of Khakassia with a weight less than 2499 grammes. This is 6.5% of the overall number of births.

### **Infant mortality**

The highest rates of infant mortality are in the Shirinsk, Tashtyp and Bograd regions (see table).

### **Dynamic of the index of infant mortality in the Republic of Khakassia from 1985 – 2000 (per 1000 births)**

Territory	Year											
	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Russia	20.7	17.4	17.8	17.0	19.9	18.6	18.1	17.4	17.2	16.5		
Khakassia	18.9	18.6	17.6	20.8	21.4	20.8	24.6	28.6	21.4	25.0	21.7	22.7
Shirinskiy region	17.4	22.7	23.6	16.6	16.8	23.6	23.6	23.7	21.8	40.6	41.0	48.7

The figures in the table show that in Khakassia in the year 2000 out of 1000 live births, 23 babies die before the age of 1 year and in the Shirinskiy region – 49.

Analysis of the pattern of infant mortality for the year 2000 shows that 40.9 % of the overall number of children that died up to the age of one year suffered from various conditions in the perinatal period (including 11% from birth traumas, and 10.2% from respiratory break up syndrome.)

Specialists believe that the index of infant mortality is caused in the late period of pregnancy, at birth and in the first four weeks of life of the newly born. It depends in the main on two various factors: the presence of “high risk “ women in birth and high risk newly born babies (congenital growth defects, slow inter uterine development) and the provision of intensive medical care in pregnancy, birth and the period directly after birth. Regarding the latter, the World Health Organisation has come to the conclusion that the indices of infant mortality are a reflection of the level of obstetric and paediatric help and the effectiveness of the efforts of the community as a whole and community activity in particular.

## The death rate in the population

The negative impact on mankind of socio-economic factors and of the man-made and natural environment which he inhabits has been of an explicit nature over recent years and has a significant impact on the death rate in the population. Ecology, lifestyle and the increased proportion of elderly people are leading to a rise in the death rate in the population.

Since 1990 mortality has been rising both in the Russian Federation and in the Republic of Khakassia, which is leading to a reduction in numbers in the population. Thus, the death rate figure in the Russian Federation in the period 1990-2000 rose 1.5 times. And the Republic of Khakassia is no exception. The dynamic of the overall death rate index for the Republic mirrors the figure for the Russian Federation: the death rate index in 1990 was 10.5 (per 1000 people) and in 2000 – 13.8, with a peak in 1994 of 16.1.

The main reason for the reduction in population numbers remains natural population loss, particularly among those of working age.

The share of deaths represented by people of working age last year was 33%. In 2000 the overall death rate index fell to 13.8 (14.2 in 1999).

The highest index for overall mortality in 2000 (according to Goskomstat [*the State statistics Committee*]) was recorded in Shirinskiy (17.5) and Beya (16.7). The lowest death rate figure was found in the town of Sayanogorsk (8.5).

The pattern of mortality in the population in 2000, as in previous years, was dominated by pathology of the circulatory system (it is mainly stress pathology that underlies the acute haemodynamic disturbances that are causing a rise in mortality in the population), trauma and poisoning, and neoplasms.

Of all the causes of overall mortality in the Republic of Khakassia it is trauma and poisoning that first attracts the attention. Almost 1/5 of the total number of deaths in 2000 fall into this category, including: suicide – 326 cases; alcohol poisoning – 247 cases; road and transport accidents – 137 cases and murder – 226 cases.

## Natural population growth in the Republic of Khakassia

Natural population growth in the Republic of Khakassia, which shows the difference between births and the number of deaths, which was 5.3 (per 1000 persons) in 1985, went over in 1992 to the complete opposite. In 1994 it achieved “minus” 5.4 and now it is a question of population loss (see table)

### Natural growth of the population of the Republic of Khakassia (per 1000 persons)

Year	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Population growth	5.3	4.5	3.5	0.6	-4.0	-5.4	-4.0	-4.1	-4.2	-3.9	-5.2	-4.2

In the year 2000 there was a slight reduction in the natural rate of loss in the Republic's population.

### **Life expectancy**

The fall of the birth rate in the republic as in general in the country, leads to an increase in the number of older people. It is clear that the population is ageing. The proportion of old people has risen by 1% from 1997 to the present day and is now 15.4%.

Only fifteen years ago demographers and doctors noted that in Siberia, and particularly in Khakassia and in the Altai mountain region people live longer than in the middle band of Russia. The centuries old settled life, adaptation to the fierce climate, a measured way of life for generations, the absence of infection and serious complications of chronic illness have defined the longevity of the local population.

Unfortunately, this is all in the past. The social economic crisis, as is well known, hits the old harder than any. From this there has been a lowering of the life expectancy. Today the average life expectancy of men in Khakassia is 57.7 (61.6 in 1991), and of women – 70.5 (72.7 in 1991).

The low material level of life, heavy adaptation both to old age and to the new social economic conditions and loneliness are the basic social problems facing old people and they are closely connected with problems of health.

### **Sickness rate of the population**

In the year 2000, as in the previous year, in the pattern of morbidity for the whole Republic the leading position was taken by ailments of the respiratory organs (23%). In second place are illnesses from infections and parasites (8.7%) and in third place illnesses of the eye and associated organs (7.5%), in fourth place illnesses of the digestive organs – 7.3% and in fifth place diseases of the blood circulation – 7.0%.

It is well known that the respiratory organs are the first to react to pollution of the air by various substances and therefore in the pattern of morbidity both for adults and for teenagers and children a leading place is taken by diseases of the respiratory organs.

The pattern of morbidity in the adult population in the year 2000 looks as follows: in first place are respiratory illnesses – 16.5%; in second place – blood circulation problems – 10.2%; in third place. illnesses of the urinary system – 9.1 %; in fourth place illnesses of the bone and muscular system - 8.9%; and in fifth place - infections parasite illnesses – 8.7% (compared to 1999 there has been a reduction in illnesses due to infection and parasites by 29%).

### **Pattern of morbidity in the population of the Republic of Khakassia in the years 1999-2000**

Ranking	1999	2000
I place	Respiratory illnesses	Respiratory illnesses

II place	Infection and parasitic diseases	Infection and parasitic diseases
III place	Digestive organ illnesses	Defects of the eye and associated organs
IV	Trauma and poisoning	Digestive organ problems
V	Circulatory diseases	Circulatory diseases

Overall illness of the teenage population in the year 2000 decreased by 8.2%. In the pattern of illness of the teenage population first place is taken by defects in respiratory organs – 25.3%, in second place organs of the digestive system – 10.9%, in third place-problems of the eye and its associated organs – 8.4%, and in fourth place – traumas and poisoning – 7.9%, and in fifth place infectious and parasite illnesses – 7.9. The increase in the frequency of eye problems from 7.7% in 1999 to 8.4% in 2000 has caused some concern. Confirmation of this problem is the doubling of the number of children with short sight during school time.

Children are the most vulnerable age group of the population, and are most sensitive to the unpleasant effects of the environment. In the past in the pattern of illness of children, the main significance over a number of years, has been respiratory illness – 40.3%, infectious and parasite diseases – 9.2%, skin and sub cuticle cellular structure – 7.4%, problems with the digestive organs – 7.2% traumas and poisoning –6.1%.

## ***Maintaining biodiversity in the Republic of Khakassia***

Work on ensuring the protection of biodiversity on the basis of specially protected natural territories (OOPT) in Khakassia began to be developed 30 years ago, when the first Tartash hunting game reserve was created. In the 1980s work on identifying and organisation of protected territories was significantly increased and the number of game reserves grew to four, and monuments to nature to 23 (Report of Goskomecology of the Republic of Khakassia.)

In 1992, the law of the Republic of Khakassia on “Specially protected natural territories and sites in the Republic of Khakassia” was passed. The law defined the forms of OOPT, their status, procedure for formation and management, and also the regime for accounting for the natural and social specification.

### ***Forms of OOPT in the Republic of Khakassia***

1. Nature reserves
2. Game reserves
3. National parks
4. Nature parks
5. Monuments of Nature
6. Ecology-ethnic zones
7. Ecology – recreation zones
8. Healing and treatment zones
9. Landscape and historic zones
10. Green zones in towns and industrial settlements
11. Arboretums
12. Botanic gardens

When planning OOPTs tasks are undertaken to ensure that the basic aims are met – maintenance of the natural and biological and landscape character of the region both in the present time and in the future:

- Bring into the specially protected territories all types of the ecosystem of Khakassia with their various crossings
- Include in the OOPT places of mass concentration of animals including rare and vanishing species, in the period of migration and breeding; places of germinating rare endemic and surviving plant forms;

- Include in the territory of the OOPT and their defence zones places with a weak level of antropogen violation for maintaining the course of ecological and evolutionary processes and their ability to compensate for the changes in the environment.
- To create OOPTs of various regimes and ranking for organising ecological monitoring, maintenance of the long term use of natural resources;
- Create an optimal network of OOPTs, which would represent ecological corridors, guaranteeing a high degree of reliability of maintaining the population of all types and ensuring their long survival and evolution;
- Coordinate the activity on creation of the OOPT with specialists from neighbouring areas of the Federation with the aim of creating a unified network of OOPT in the Altai and Sayan region.

In order to maintain the biological and landscape diversity in the Republic of Khakassia in the 1980s the creation of OOPTs was started, and only in August 1991 was the first state natural (Steppe) reserve (Chazy) organised. In 1993 the second, the mountain taiga (cedar) reserve, Maliy Abakan was organised. At the present time these two reserves are united into one – the State Natural Reserve “Khakaskiy”.

The Government of the Republic of Khakassia passed a decree No 53 of 27.03.1998 “on setting up a list of land plots for the organisation of specially protected natural territories, of cultural historic complexes and sites”, where with the active participation of specialists of Goskomecologia, of the reserve, NII and of the university a list of the natural wealth of the Republic of Khakassia was drawn up. Work on establishing particularly valuable sites continues.

The creation of a modern network of OOPTs in the Republic by 2000 can be considered the first stage of painstaking and long lasting work on maintaining biodiversity in the region. As an example of the continuation of work in the area of protection of nature are the new plots of particularly valuable and vulnerable natural complexes. The necessity to work out methods and definition of the amount of rational utilisation of nature for maintaining optimum biodiversity has come to fruition. Jointly with the Centre of Ecological Policy of Russia on the territory of the Republic of Khakassia work is being planned to evaluate the economic worth of the biodiversity.

Within the framework of the association of Yenisey game reserves a programme is being developed to create a unified network of OOPTs in the Altai and Sayan mountain country. In the first stage proposals from scientific departments of the game reserves on widening the network of OOPTs within the framework of Administrative borders have been incorporated as have been proposals on the creation of cross border territories. The programme is scheduled to last several years.

At the present time all research on the search and formation on the territory of the Republic of Khakassia for an optimal network of OOPTs of various regimes of protection and ranking is being done by the Department of the Game reserve “Khakasskiy” with assistance from staff of the NII, state universities and others.

### *Problems of maintaining biodiversity in the “Khakasskiy” game reserve.*

Every game reserve has its own specific programme of maintenance of the natural complexes. The Khakasskiy game reserve has just about all the complexes of biocoenosis peculiar to the Altai – ecoregions. There is the steppe, the forestry steppe, mountain taiga, the plateau, which define the specific of protecting each of the natural components listed.

Analysis of the negative effects on bio-complexes shows that less vulnerable are the mountain taiga and the plateau territories, where, because of poor accessibility, such factors as poaching (hunting and fishing), collection of feral plants and other negative effects are not so important and are usually thought of as one offs. Forest fires pose a significant danger.

It is significantly more difficult to protect the biodiversity on the steppes and in particular those adjacent to water sources, - reservoirs and lakes.

A serious danger for the steppes is fire, which breaks out as a rule, in springtime. In a short space of time a considerable area can burn out. In windy weather (for Khakassia spring storms are characteristic) burning clumps of grass are dispersed distances up to 50 metres creating new fire outbreaks. For this the only fire-fighting equipment consists of brooms. There is no other way of putting out steppe fires.

Putting out fires by water conceals the danger of the equipment being set alight, and the danger does not give the desired effect.

The openness of the area and the plethora of roads makes the territory accessible to visitors (in a car or on foot) and cattle. Picturesque country, lots of sunny days, healing properties of many of the lakes in the steppes attract tens of thousands of people in summer for healing and rest. On Lake Bela it is not only residents of Khakassia who take their holidays. People who live in Krasnoyarsk Province come here, people from the Kemerovo, Tomsk, Novosibirsk, and Irkutsk Regions come here and even people from Ekaterinburg. (by convention we call this “tourism”)

On some areas (more characteristic for wood steppe landscapes) often people come to collect medicinal raw materials. Poaching is discovered rarely, but on the other hand on lakes rich in valuable fish (semga and salmon) such as Itkul and Bela poaching is a common event.

In the situation that has built up, the scientific department jointly with the department of protection have worked out and approved a system of protection of game reserve territories, the essence of which consists of defining the possible factors which could negatively influence the biogeocoenosis according to the seasons of the year and strengthening the protection in one or another part in the defined period.

Practice has shown, the introduction of this system gives a positive result. For example, in the period of mass influx of tourists to Lake Bela, a twenty four hour a day duty patrol has been set up and this significantly lowers the number of violations. In other seasons, with the exception of period when the danger of fires exists in July, a defence patrol is effective. Strengthening protection by this means is achieved by attracting inspectors from other areas where the danger of violation of the biocoenosis is insignificant.

The following main factors are the cause of negative effect on game reserve areas:

1. Fires on the Steppes
2. Tourism
3. Poaching (hunting, fishing)
4. Collecting wild plants

Periods of strengthening one or another factor are shown in tables 1, 2, 3 and 4.

Experience of work in the Khakasskiy game reserve which includes steppe, forest steppe, mountain taiga and plateau allows one to draw the conclusion that to protect the bioceonosis of the steppes demands considerably more effort than for the woods. So, if in 1996 on the mountain taiga enclosure “Maliy Abakan” with an area of 101 thousand hectares were registered 3 violations in all, then on the steppe and wood steppe - 24141 hectares, this number was 215, ie 22% of the indices of all game reserves in Russia. In recent years the number of violations has fallen because a system of differential protection has been introduced and also cars can now enter on payment of a fee and travel through the park is allowed as long as there is no stopping. Payment for driving in the parks is taken to compensate for the indirect damage caused to the natural complexes by visiting the game reserve territory, worked out by the scientific department of the game reserve. (Kustov, 1996)

#### ***The role of the “Khakasskiy” game reserve in the maintenance of the biodiversity of the Altai-Sayan ecoregion***

The “Khakasskiy” game reserve is situated in the central part of the wide Altai – Sayan ecoregion. Its territory consists of 9 clustered plots, the maximum distance of which from one another is about 400 km, which creates several difficulties in protecting its territory. However, such a fragmentation is justified by the fact that it includes practically all the natural belts of the Altai-Sayan mountain country: the hollow basins covered by steppe vegetation, the low mountain ridges and spurs which are a typical wood steppe, sub-taiga, mountain taiga and plateau, make it consider a yardstick for the wild nature of the whole region. Under protection are the most valuable and lightly damaged steppe phaeocenosis, mineral and fresh water (in the steppe) natural historic landscape. Through the territory of the game reserve go the main migration routes of birds and wild animals.

Lake Ulux-Kohl is a key ornithological territory of international status, where young birds from up to 80 pairs of ruddy sheld ducks are reared, 30 sheld duck pairs, up to 100 pairs of avocets (about 50% of the whole nesting population of Central Siberia). Here en masse nest river and diving ducks, sandpipers, sea gulls. The August build up of water birds can reach up to 8 thousand. In the period of the spring and autumn migration thousands of ducks, geese (grey, bean, taiga bean duck, white crested,) make a prolonged stop – up to two thousand – swans, up to 0.8-1 thousand , small swans – up to 3-3.5 thousand. Here were seen also during flighting lesser white fronted geese, swan geese, common crane, black tailed godwit, Asian red-breasted snipe, the Siberian pepper greenshank, and medium

curlew. Irregularly one sees nesting a single whooper swan, and a grey goose, and occasionally flights of flamingo are seen.

Lake Belye is also situated on the migration route for waterborne birds and shore birds. Here various types of duck and geese (bean goose, grey, white fronted, taiga bean goose), swans stop en masse. Occasionally you see lesser white fronted geese, swan geese, and a red-breasted goose. Here you see nesting the sharp nosed scoter (up to 20 pairs), sheld duck, ruddy sheld duck, river and diving ducks sandpipers and flights of the great white heron and flamingo are seen. In summer time on the lake varieties of non-breeding types of water and shore birds and the pre-summer build-up of demoiselle crane and grey stork.

The mountain taiga lands are reservations for the sable and ungulates. Here the Siberian mountain goat passes on its migration path, and also the snow leopard, and you can see flights of the black vulture, the white-headed Egyptian vulture, and the bearded vulture.

The organised cluster of lands “Zaimka Lykovykh” has become a connecting link between the Altai game reserve and the projected cluster park game reserve “Ubsu-Kurskaya basin”. In this way a trans-border game reserve territory is created. On this territory, practically untouched by the activity of man are found the places for overwintering of the maral (Caspian deer), elk, and here the northern deer pass on their migration, and here you see the passage of the snow leopard, and mountain ram argali.

#### ***Modern condition of the biological diversity in the Republic of Khakassia and measures for its protection and maintenance.***

Khakassia is situated in the centre of the Altai – Sayanskiy ecoregion. Based on a complex of natural conditions, this region may be thought of as a yardstick for the nature of the whole region, because on a small territory are concentrated practically all landscape complexes (except deserts) characteristic of the Altai – Sayanskiy mountain country. Steppe islands (Minusinskiy basin), the wood steppe on the ridges of the Western Sayan, the Abakanskiy ridge and the Kuznetskiy Alatau, sub taiga, mountain taiga and mountain ranges. There are many mountain rivers and lakes with clean translucent water, and for the steppe lakes different levels of mineralization are characteristic from fresh to sharply salted. More than 50 steppe lakes possess healing properties. (A.S. Krivosheev, personal report). The steppe lakes are usually surrounded by a boggy edge creating favourable conditions for nesting of water and wading birds. The wood steppe is characterised by a mix of wood masses with wide woodless valleys with well defined layered effect which defines an abundance of wood, steppe, and meadow birds. The 9 cluster areas of the game reserve “Khakassia” are standards for wild nature of all natural complexes of the Republic which creates a fruitful soil for the conduct of scientific flora and fauna research.

The Khakassia Steppe lakes and their flood lands are a “green corridor” for migrating water and wading birds nesting on the wide territory of the eastern and western Siberian North. It is sufficient to say that through Khakassia fly more than 4 thousand (!) small (tundra) swans, the overall number of which in Russia amount to 15 thousand. (Krivenko 1991).

Study of the biodiversity in Khakassia is the work of leading scientific centres of the Republic, and also the towns of Krasnoyarsk, Novosibirsk, Tomsk and others.

On the basis of research carried out and taking into account the importance of maintaining biodiversity in the Republic in 1991 a State game reserve “Chazy” was organised. This is now part of the game reserve “Khakasskiy”. In 1994 a scientific department was created in the game reserve, which soon became the leading scientific centre of Khakassia in the area of study and monitoring of natural complexes. As a result of its activity, two ornithological reserves have been created: “Ulukh-Kol” and “Trekhozerki”, which in 1996 received the status of a KOTR of international significance (Ulukh-Kol in 1998 became part of the game reserve). The following books have been readied for publication: the red book of the Republic of Khakassia, text books of the geography of Khakassia and the Nature of Khakassia; also prepared was a programme of a network of OOPTs in the Republic taking account of bordering them onto to similar sites on neighbouring administrative territories. (Kemerov Oblast, the Republics of Altai and Tyva); a cluster game reserve “Khakasskiy” – “Zaimka Lykovykh” has been created bordering the Altai game reserve and the projected cluster game reserve “Ubsu-Nurskaya basin” where you can still see the black vulture, the white headed vulture, bearded vulture, snow leopard, where the mountain ram argali is a visitor and there are unique plant communities, characteristic of the Altai-Sayan ecoregion.

In the last ten years, the territory of the Khakasskiy game reserve has increased by 11.4 times and has reached 274.6 thousand hectares, taking in steppes, wood steppes, sub-taiga, mountain taiga and a high mountain belt, that is all the natural complexes of the Altai – Sayanskiy mountain country, which allows it to be considered a standard for wild nature over this whole wide ecoregion.

The scientific department of the game reserve has become a centre for planning and organisation of new OOPTs in the Republic. So, in 2000, under its leadership plans were drawn up for two nature parks “Iyusskiy” and “Ivanovskie lakes” (the projects are at the agreement stage)

In accordance with Decree No 53 of the Government of the Republic of Khakassia dated 27 March 1998 “On confirming the list of land areas for the organisation of specially protected natural territories, cultural historic complexes and sites” work on planning and organising new OOPTs will be continued.

Work on the creation of an optimal chain of OOPTs in the Republic is going according to plan with the aim of creating “green corridors” for migrating wild animals and birds and also the creation of “little safety islands” in the breeding season, in the raising season, the resting and migration seasons.

## **Part III Ensuring Sustainable Development in the Mining and Minerals Sector**

### ***Prospects for the development of enterprises in the industry***

The development of operative enterprises in the industry is determined by the harsh constraints of the demand for (sale of) the mineral raw materials mined, and the future increase (or decrease) of demand and wholesale price for a unit of production, and by the technical and financial capabilities of the enterprise to improve processing of the mineral raw material and to increase the useful component in it, and to reduce overall losses in the extraction of mineral resources, on transportation and storage of rock stripped, for payments for the restoration of the mineral and raw material base or independent conduct of measures, on the future of reducing current payment for worked carried out to reduce the volume of storage of waste and payments from them to the Committee for Natural Resources of the Republic of Khakassia on account of any proposed uplift in volume of processing of waste and their use in the form of secondary resources, and also the implementation of measures to return industrial waste lands back to agricultural turnover and a reckoning of expenditure on them during definition of the volume of accumulated waste, requiring payment (the final return of land to the land user and the removal of them from the list of the accumulated volumes which have to be paid for) and so on.

As an example of a leading Control Company “Soyuzmetallresurs”, which works with mining extraction plants in the coal industry and the auto engineering industry, we will look at the measures the company is taking to raise efficiency in its plants:

- Conducting technical modernisation to produce world class products:
- Working out and incorporating quality systems meeting international standards ISO 9000 for certification of enterprises;
- Raising labour productivity by optimising production processes
- Lowering cost of production by improving management, supply and marketing procedures, and by renewing production machinery;
- Increasing the degree of processing and the output of high quality re-work
- Searching for new business partners from leading Russian and world corporations;
- Organisation of new channels for marketing and providing leading edge technological development
- Use of optimal financial systems for support of the plants’ activity and labour management.

As can be seen, there are no specific ecological measures related to biological re-generation, or restoration of scarred landscape, or the return of spoiled land back to agriculture. There are none of these measures in the plans of the Company’s plants

The reasons for this absence is partially explained above, however, in general it is the difference in priorities of management and production which is overcome by a joint deep analysis of production and non-production losses per production unit, and the possibilities of “lobbying” in resolution of problems of a legal and normative basis in the relevant organs of regional and federal authority, and as a result the loss and time and money to solve these problems and the possible gain able to compensate for these losses.

Apart from that, existing mining plants have a well entrenched production infrastructure, and a fundamental change would incur significant losses and might even lead to a complete cessation of production.

Issues regarding restoration of spoiled land are not worked out as part of the production cycle since no mechanism for compensation for the required ecological measures has ever been worked out, including biological re-cultivation, although. As a rule, can be compensated for.

Indicative is the example of a convergence of interests between land user - the experimental industrial farm “Solnechnoe” – and industrial leaseholder - the Chernogorsk open cast coal mining enterprise.

In 1989 relations between land users and leaseholders had reached their apogee in the unwillingness of both sides to find a joint solution to the problems of leasing and return the industrial waste land back to economic use.

The land user protected his position with calculations of the expense to the farm of replacing the pastures that it had handed over for coal development, pointing out the inappropriateness of a one-off lease payment for using land over a period of tens of years, and also practically, the complete failure to return the land to the condition it was in when it was first handed over, and the impossibility of its further use for its direct purpose.

The position of the land user was actively defended by the District Administration, which demanded that the leaseholder should work out what had to be done to return the waste ground back to agricultural use and proposed granting an allotment of land for new development that would be of a size to match the land to be given up after completion of the biological stage of regeneration for new cultivation.

Because the leaseholder had neither a plan for the biological stage of re-cultivation nor the experience to conduct this work, nor even a way out of the situation that had been created, he decided as an experiment, to do the work at his own expense.

The initiator of this decision, with the support of the Agro-industrial Committee of Khakassia, was the Abakan Office of VNIPTIKhIMa (see above) which had carried out some contractual work for the open cast mine on developing Technical Conditions for complex organic and mineral fertiliser based on waste from coal extraction and coal enrichment of hard coals.

The project to turf 38 hectares of rock spoil heap No 4 and the restoration of the phaeocenosis of the pasture was carried out by GU SAKhS “Khakasskaya”, the work on creating the soil substrate and subsequent sowing was carried out by AOZT [*private joint-stock company*] “Ust –Abakan Selkhozkhimia”

This year the amount of oats grown on the re-cultivated plot (about 70 centners/hectare) fully covered the expenditure on the work done for biological regeneration, moreover half of the harvest was taken by the land user, and half by the workers of the mine, who have their own cattle. Integumentary cultures: melilot, Hungarian Brome, left for the following year, must eventually be displaced by indigenous plants which will have developed over three years. The plot was partially sown along the edge of the table part of the dump with acacia, poplar and small leafed elm.

In 1990 on 18 hectares of this dump they carried out similar work and sowed vegetables which reached maturity in one complete vegetation period without additional irrigation. As a result these plots were used with success by the land user for pasture, for large flocks of sheep over several kilometres.

In such a way the first positive experience of mutual benefit in the conduct of biological re-cultivation and the return of lands back to agricultural use gave its results.

Later, in 1994, TOO NPO “Koloss-Bioteknologiya” [*Biotechnology for cereal crops*], which was manufacturing fertiliser based on waste from coal extraction and coal enrichment from this mine under a GU SAKhS “Khakasskaya” project, carried out some work to lay out a garden on (see above), and in 1995 on the grounds next to the garden on the dump, with the application of complex fertilisers made from slurry from enrichment of the output of the mine.

Already, in the second year after carrying out the first works of biological re-cultivation on the plots, appeared the first field mice and fox. and the steppe grey partridge, falcon, hare, and larks. Biodiversity was established.

In 1996-1997 the mine, at the suggestion of TOO NPO “Koloss-Bioteknologiya” works were carried out to prepare a subsoil strata using slurry from the mine’s enrichment factory to plant three wind defensive tree strips and 70 acres under biological re-cultivation where it was proposed to utilise (use in the form of a low fertility soil substrate) around 130 thousand tonnes of slurry from magnetite enrichment at the mine.

These works were not continued and were not completed due to events due to change in ownership of the mine.

During the course of the work a number of circumstances of an organisational and legal nature interfered with completing the work that had been started to develop a mechanism for ecological measures.

And so, the waste products from mining and coal enrichment which had been brought in by the fertiliser factory, were not accounted for in the volume of reduction of harmful(dusty) waste kept in the slurry tanks of the enrichment factory and the mine therefore had to pay for their storage although they were used in the form of secondary resources for preparation of fertiliser and consequently for the biological re-cultivation of the mine.

Legal papers for returning land for agricultural use did not contain recommendations and signatures of the people carrying out the work on biological re-cultivation and also as the lessor had refused to pay for the work for authors surveillance beyond setting up of the

phaetocenosis and the biodiversity after transfer of the land being cultivated to the land user.

The position of the Republic's committee for ecology in this work has remained unchanged:

- Payments of the lessor were not reduced to the sum from reducing the volume of stored harmful (inflammable) waste;
- The lessor was not given guarantees for compensation of his losses for the work carried out on biological re-cultivation on account of his regular payments for land use;
- The people who carried out the work on biological re-cultivation were not given compensation for the utilisation of harmful (dusty) mining and coal enrichment waste and they were not given compensation for the use of waste from other factories, used in the production of advanced complex fertilisers on the basis of mine and mine enrichment waste;
- Planning organisations (Vostsibuglerazvedka, Irkutsk) were not offered (on the basis of their seven year experience) the chance to provide the transfer of project documentation for complete development of the coal reserve (including biological re-cultivation and the return of the land to agricultural use);
- No plans were made for the biological re-cultivation of the waste land in other factories of the mining industry of the Republic and there are no such plans now.

Specialists from the TOO NPO "Kolos Biotechnologia", having built up a certain amount of experience in the conduct of biological regeneration have worked out the Republic's programme "Fertiliser" which forecasts production of 3.0 million tonnes of a new type of fertiliser which will contain: coal mining and coal enrichment waste, hydrolysed lignium, post yeast spoilage, distillery waste, outflow from wool primary processing factories, poultry plants, pig complexes, meat factories, or cleansing plants of the Abakan Chernogorsk industrial network, waste from wood processing, waste from the production of sulphate of ammonia ( unconditional containable waste with a nitrogen content from 17.5 to 12 % of the Kuznetsk metallurgical kombinat) and waste from the production of sulphates of potassium and chlorinated potassium (unconditioned containable waste with a potassium content of 19.5 – 15% from the Achin clay kombinat) and others. The proportion of mining and mining enrichment waste in the production of these fertilisers is estimated at 1.0 – 1.2 million tonnes. The fertilisers were tested in agricultural laboratory and field trials and accepted by Government Commissions.

In 1994 the programme was defended in the Russian Minselkhozprod [*Ministry of agricultural production*] and the Ministry of the Economy and was recommended by Prime Minister V.S. Chernomyrdin for introduction into production and included in the Federal Programme "Raising the fertility of Russia's soil" (which has not yet been funded).

1995 saw the registration of the invention "Fertiliser on the basis of wastes from coal mining and enrichment" (a pioneering announcement for a group of inventions) approved by the Russian Academy of Agricultural Sciences.

In the difficult conditions caused by failure to finance the programme, the Republic's Committee for Ecology did not make the corresponding changes to the Law and did not give back drawback credit for development of production. No money was given for opening up and working the Obladzhan phosphorite deposits without which it is impossible to support the necessary level of phosphorus in the fertiliser.

The use of fertiliser is seen above all in the biological regeneration of industrial wastelands and degraded land to grow agricultural and wild plants in normal and in greenhouse conditions, for the regeneration of phaeocenosis, and the lost biodiversity of the bioecological systems, including those in re-afforestation.

The difficulties of the Republic's existing mining industry plants in development depends on what production technology has already been chosen, and at the same time the newly organised ones do not carry the same load of worries on improving old technologies, re-cultivation of lands, with the problems of piling up waste and so on.

The question of loss of mineral deposits and compensation for their extremely large volume is deeply affecting the leading plants of the coal mining industry. So, at the Beya coal mine they have bought and are testing a self propelled coal combine for open processing of coal (basically, the development of large coal cutting and excavating equipment to dig trenches and cut faces is still continuing) there, where the use of loading equipment 6 cu m in volume and larger is difficult. The self propelled module for coal mining is made in Germany at a daughter company of the famous engineering company "Wirth", testing its mountain tunnelling equipment in the North Muisk tunnel of BAM [*the Baikal-Amur railway*] and has earned the praise of specialists from Russia's Glavtonnelmetrostoi [*Chief Tunnel and Metro Construction body*].

This example is indicative from the point of view of use of mobile machinery capable of achieving a high standard of the useful component with minimal expenditure on buildings and their construction.

In this way, most of all, the future development of the mining plants in the near future will be directed at using both big and medium tonnage mobile equipment in large and medium plants.

On small plants it is sensible to use only mobile equipment without any capital equipment and without construction of enrichment factories.

The system which has already begun of formation of special rock dumps (with low content of the basic component, with other useful minerals that have not been extracted, with reserves of inert materials for the production of building materials, repair and road-construction work and so on) forces the need to make wider use of selective abstraction of rock stripping and mixed rock and to work out a mechanism for their later use as secondary materials.

Resolution of ecological questions is impossible without restoring biodiversity, and industrial wasteland, and phaeocenosis of vegetation. Old plants in the industry which have not finished work on returning land back to agricultural use on time, are today burdened with many hundreds of hectares of unreturned land, compensation for which or sanctions will bring nothing but losses in the pace of development and a rise in the cost of

production. One has to remember, that for these plants it is essential to find new plots to work which demand new expenditure, and this creates additional difficulties for them.

Ideal for the development of the industry could be the organisation of a system of planned work on biological regeneration and return of the land to agricultural use which must demand creation of the production of a soil substrate on the basis of the waste products of these companies, specialised mobile brigades, able to work all year round.

In this case, even those areas of land which have no industrial-wasteland-creating culprit to blame because there is no actual juridical person of that kind could be restored and returned to agricultural use using the contributions made for VMSB.

Another way would be to equip specialised brigades with modules (equipment?) for extracting rare metals and working out a mechanism of realisation, providing the necessary financial instrument.

In this case it would be possible to have a full exploitation of the many abandoned dumps and tailing dumps and the return of all abandoned industrial wasteland and degraded lands, including agricultural land which has lost its fertility and is in a state of being past the meadow stage and almost up to virgin territory condition.

Incidentally, one has to say that at the present moment, like never before, there is a most favourable situation in the market for phosphorites and this means for the organisation of production of fertiliser on the basis of waste products from coal mining and enrichment.

The future for the development of the industry cannot be limited only by production and ecological programmes but it must be accompanied by the solution of social problems and programmes, as a basis for stimulating the labour activity of the population.

In particular, this affects the gold mining companies, whose villages from time immemorial have reminded one of temporary accommodation and have not had elementary services and have not had a satisfactory social infrastructure.

Small mining factories, where the volume of the mineral resources mined is limited by the difficult conditions of volumes of demand cannot have the problems with the development of infrastructure on the original land because of the watch system of work. However, its development (investment, sacking, wage increases and so on) even in a small factory must not lag behind production.

The most pressing problem is for factories whose mineral reserves are limited (even predicted) by time to 10-15 years.

For a factory whose reserves of mineral deposits will run out in 15 – 25 years, the most sensible thing to do is to build up the money intended for development of the social infrastructure and put it into long term pension funds for its own personnel.

## ***Using the Resources of the Mass Media, Authorities Exercising Executive and Legislative Power and the Representatives of Business***

The mass media resources that deal with questions of the problems of the mining industry in Khakassia are: the television programme “Ecological Herald”; the newspaper “Zapovedano” [*“Protected by a conservation order”*] and the newspaper “The Natural Resources Herald of Khakassia”, which discuss issues of ecology.

The Republican Natural Resources Committee for the Republic of Khakassia publishes, in the newspaper “Khakassia” official communications on the competitive tenders and auctions to be held for the right to develop mineral deposits commercially.

The role of public opinion in the mining industry in the Republic is minor. There have been cases, however, when in 1988-1990 public opinion in the town of Bograd, which is the centre for a district, had a negative effect on the preliminary development of the Oblajan phosphorites deposit and the launch of an experimental phosphorite meal plant. The nub of the matter was increased background radiation on the territory occupied by the plant created by outcrops of low content lenses and breccias in secondary beds on land adjacent to the plant. A Commission of the Institute of Physics and Hard Body Chemistry of the SO of the Russian Academy of Sciences proved that the episodic manifestations of increased background radiation had no connection with the deposit. However, the time that had elapsed swallowed the resources allocated and the deposit is not being exploited.

The State legislative authorities pass laws for the Republic of Khakassia designed to develop the mineral raw materials base and examine questions of the use of VMSB funds from the point of view of their compliance with legislation in force in the Republic of Khakassia and the Russian Federation.

The authorities exercising State executive power monitor the development of the Republic’s mineral raw materials base and work out measures designed to conserve it, calculate reserves and develop new deposits of commercial minerals. They prepare and conduct competitive tendering and auctions for the right to develop deposits of commercial minerals on the basis of considerations of maximum economic effectiveness for the Republic’s economy.

The involvement of big managing companies and industrial finance groups in the exploitation of deposits of commercial minerals in the Republic has its positive results.

Thus, the Chernogorsk coal company, by attracting investment capital, has begun to operate on a steady and stable basis both on the internal and the foreign market.

The Sorsk mining beneficiation combine is building up the rate of reconstruction of its production.

Iron ore enterprises: the Abakan and Teysk Ore Boards have practically emerged economic recession and are coming up to planned production volumes.

The big enterprises in the gold-mining industry – particularly the Kommunarov mine – which “suffered” the protracted procedure of bankruptcy, are gradually strengthening their production.

### **Training of Specialists.**

In the Republic of Khakassia there is a single specialised professional training establishment for the industry – the Chernogorsk Mining Technical School, which prepares technical mining specialists in the following specialisations:

- open exploitation of commercial minerals;
- beneficiation of commercial minerals;
- operation and repair of electrical and mechanical equipment and automated machinery;
- construction and use of buildings and facilities.

Training of engineering and managerial staffs is carried out at higher education establishments in the cities of Krasnoyarsk, Tomsk, Irkutsk and Novosibirsk.

Information on the numbers of students enrolling at and graduating from the Chernogorsk Mining Technical School for the period 1997 to 2001 is shown in the table below.

Specialisation	1997 enrolled/ graduated	1998 enrolled/ graduated	1999 enrolled/ graduated	2000 enrolled/ graduated	2001 enrolled/ graduated	Total enrolled/ graduated
Open-cast mining of commercial minerals – day department – extramural department	25/33 13/23	225/26 8/10	25/24 16/8	25/19 20/1	25/25 29/8	125/127 86/50
Beneficiation of commercial minerals – day department – extramural department	25/0 -	25/0 -	25/17 -	25/25 -	25/31 -	125/73 -
Operation and repair of electrical and mechanical equipment and automatic machinery – day department – extramural department	50/60 34/64	50/67 20/14	50/51 20/9	50/44 20/23	50/47 20/18	250/269 114/128
Construction and use of buildings and facilities – day department – extramural department	25/32 20/9/	25/19 20/17	25/20 20/13	25/19 20/14	25/24 20/16	125/114 100/69
Total – day department – extramural department	125/125 67/96	125/112 48/41	125/112 56/30	125/107 60/38	125/127 69/42	625/583 300/247

Thus, over five years the Technical School turned out 583 specialists from full-time training and 268 specialists trained extramurally, the majority of whom are working in mining enterprises in the Republic of Khakassia.

## ***Ecological Education and Awareness.***

The ecological problems of Khakassia spring to a great degree from the ecological ignorance of the population and the low level of culture.

Technical means are insufficient to overcome the modern crisis in relations between man and nature, the natural environmental system and society.

Educating a new generation of people to possessing a deep understanding of their place in nature, and ecological culture in the original sense of these words.

Solid ecological knowledge is the basis for creating ecological cultures. Forming an ecologically cultured human being, ecological education must begin from an early age, as early as when the child acquires its first information about nature. Then at all stages of teaching at school this knowledge must be expanded, deepened and strengthened in practice through a process of nature protection activity.

In intermediate special educational establishments and in higher education institutions, the inculcation and shaping of ecological culture continues, but by this stage includes reinforcement of activity-based and legal elements, and, especially, methodical training of specialists to pursue their professional activity with due regard to a knowledge of the innate ecological imperatives and peculiarities of the region's natural environment.

Analysis of the activity of educational establishments in the Republic of Khakassia shows that a base exists in the pre-school education system for conducting ecological education. There are many pre-school ecological education and awareness programmes from which each kindergarten can choose as it pleases. However, there is no integral or thorough programme of pre-school ecological education that takes into account special regional and national features in the Republic.

At intermediate school in the Republic three trends in the shaping of students' ecological culture are envisaged:

1. Bringing ecology into all school disciplines from the 1<sup>st</sup> to the 3<sup>rd</sup> grade. This is expressed in the consideration only of applied aspects of ecology, without the acquisition of the deep theoretical knowledge, which in summary form is represented by the theme of "Ecology" in the "General biology" section of the school biology syllabus;
2. Including a new subject – "Ecology" – in the school curriculum. A difficulty is the absence of a unified academic programme and approaches to teaching, the absence of methodical supply of textbooks and, in particular, of syllabi and literature that take into account special regional and national features.
3. Putting more effort into working with children out of school and outside the classroom in the field of ecological education by using an active approach (the Republican Centre for Ecology and Nature Study, the Children's Creativity House in the town of Abakan, and the N.G. Domozhakov Republican Library). There have been clear successes here in organising nature protection and nature study activity.

Much of the experience gained in the work of these organisations and establishments should be used in forming an integrated system for ecological education and awareness in the Republic.

Ecological training of specialists at Khakassia State University, which is all the higher education establishments in the Republic combined, is given to specialists at both the higher and the intermediate level of special education in accordance with State educational standards for specialisations approved by the Ministry of General and Professional Education of the Russian Federation.

Despite individual successes and achievements in the sphere of ecological education, the efforts of the various general education structures in shaping the ecological education and ecological culture of the Republic's population, when looked at overall, are of an uncoordinated nature. The reason for this is the absence in the Republic of an officially adopted Concept and Programme for shaping the ecological culture of the population as a whole and a Concept and Programme for the ecological education of the population in particular.

The obvious causes of this situation are:

- the lack of sufficient numbers of qualified specialists with diplomas in ecological education, despite there being a considerable number of very active enthusiasts;
- the lack of an informal coordinating centre dealing with the conduct of work to shape the ecological culture of the population;
- the lack of real funding for the work.

### ***The Programme for Shaping the Ecological Culture of the Population of the Republic of Khakassia***

Khakassia is a territory of enormous wealth. In the opinion of ecologists Khakassia is a place which has not been ruined by civilisation and we live, by comparison with others, in an ecologically favourable region.

The solution to ecological problems in our Republic depends directly on shaping the ecological culture of the population. In order to create in people a well-informed attitude towards ecological problems and to resolve such problems, a coordinated programme has been underway since 2001 for the "Shaping of the Ecological Culture of the Population of the Republic of Khakassia. The programme has been developed by the "Chazy" Ecofund with the support and involvement of the Government of the Republic of Khakassia, the Supreme Soviet of the Republic of Khakassia and the national "Land of Nature Reserves" Fund

The aim of the programme is to create a system for the effective, targeted shaping of the ecological culture of the population across all categories of inhabitants, using all possible tools and institutions to achieve this.

The main tasks of this programme are:

- to form a system of ideas in the population on the value of natural resources and on the problems of maintaining the health of the environment and so on;
- to generate a humane relationship with nature;
- to teach people consciously to use the unique potential that is locked within spiritual communion with the world of nature, for individual personal development;
- to generate in people a demand for active personal support for ideas of sustainable development and support for the health of the environment.

The mechanism for implementing the programme includes involving broad swathes of public opinion, users of nature, specialists dealing with questions of ecology, representatives of legislative and executive authority and the media.

The programme embraces many spheres of the Republic's life and includes various measures aimed at shaping the ecological culture of the population: making the towns of Khakassia green, smartening up roadside sites where people rest and relax, paying attention to clearing up unauthorised rubbish dumps, developing the system of specially safeguarded natural territories, continuous ecological education and so on.

At this stage of the programme's implementation the following projects have been accomplished:

The programme began its active life with a Republican rally of school forestry groups, which took place at the Oktyabrskiy forestry base (in the Shirinsky district) on the site of the children's recreational camp. The aim of the rally was to train a group of young foresters and nurture the generation approaching adulthood.

A Republican competitive review has been held in the context of this programme to look at libraries for the ecological education of the population. Books on ecology and forest management have been purchased and subscriptions to newspapers and journals arranged.

Provision is also made in the programme for ecological information and methodology support to schools in the towns of Abakan, Sayanogorsk and Chernogorsk. For example, first Grammar school No.1 in the town of Abakan received special textbooks for working on the programme called "Ecology and Dialectics", under which studies have been going on at the school for as long as ten years.

A project was developed and implemented that was called "The Ecological Workers' Volunteer Guard" whose aim was to encourage the population (primarily schoolchildren) to address ecological problems. The Volunteer Guard cleaned up streets in the town and cleared rubbish from parks and picnic litter from the outskirts. And together with the commencement of studies in general educational establishments, the Volunteer Guard organised and carried out action to gather up waste paper and have it processed.

Funding for the projects being run under this programme is provided with support from the Government of the Republic of Khakassia and the National "Land of Nature Reserves"

Fund. The programme is for the long term, worked out for the period 2001 to the end of 2004. Everybody can understand how useful this programme is. Ecological culture is part of culture in general. And the norms that apply in ecological culture are necessary to every human being, primarily to enable the individual to understand their place in nature and to learn to treat her with care.

### *Development of ecological Tourism in the Republic of Khakassia*

The integrated Republican programme called “Development of Tourism in the Republic of Khakassia for the years 200-2005” was adopted under Law No.97 of the Supreme Soviet of the Republic of Khakassia dated 23 February 2000.

Implementation of the programme is planned to take place in two stages: the first stage is for 2000-2001 and the second for 2002-2005, with an intermediate 2002 stage.

The future implementation of the programme and its discussion and acceptance for funding are of great significance for the establishment of a modern system of state regulation in the sphere of tourism, and also this is an important stage in changing attitudes towards the development of tourism as an aspect of the economy of the Republic of Khakassia.

Analysis of the state of the tourist business in Khakassia allows the conclusion to be drawn that in respect of issues of improving State management of tourism, the Republic has taken up a stable, planned path of development with a growth trend according to the main indices and in the main areas.

The number of tourism enterprises which have obtained licences to conduct international tourist business is growing. As of today there are 18 firms in the tourism business operating in the Republic, which is 9 times as many as in 1997.

Revenues to the budget of the Republic from the licensing of tourism business amount to 40 thousand roubles.

In 1997-1998 the budget of the Republic received 852 thousand roubles in tax contributions from the activities of firms in the tourism business.

In 1999-2000 the level of tax contributions grew significantly, amounting to 2387.0 thousand roubles, 516.7 thousand roubles of which were paid into the Federal budget, while 719.6 thousand roubles went into the Republic’s budget and local budgets received 1151 thousand roubles.

Financial investments in the development of the material and technical base for tourism are growing, and in 1999-2000 the figure amounted to 8180.1 thousand roubles, including 540.0 thousand roubles from the budget of the Republic and 7640.1 thousand roubles from the tourism enterprises’ own resources.

In the period from 1996 to 2000 Khakassia was visited by 33.9 thousand foreign and Russian tourists and 3.4 thousand tourists had their outward travel arrangements handled by tour firms in the Republic. In 2000 alone 18 thousand tourists were received by enterprises in the Republic’s tourism sector, which is 6 times the same index for 1997.

Interest in our Republic among foreign tourists grows with every year. In the year 2000 Khakassia was visited by , and this is 13.5 times more than the figure for 1997. For the first time the index for inward tourism has exceeded the index for outward tourism by 11.5 times.

When analysing these data it should be taken into account that this information is presented only by those tour enterprises which are registered on the territory of of the Republic and have a licence to pursue international tourist business.

According to Goskomstat [*State Committee for Statistics*] information for the Republic of Khakassia for 1998, 125 juridical and physical persons were registered as contemplating offering tourism services as their business. Of this number probably 25 do offer services in the sphere of tourism. They provide no data on the tourist business. The reason for it being impossible to get accurate data on the development of tourism in Khakassia is the absence at the Federal and regional levels of a single and compulsory system of reporting in the sphere of tourism.

Tourism in the Republic is becoming an important branch of the economy not only thanks to the creation of jobs and tax revenues, but also by virtue of its effect on the development of many other business sectors connected with tourism, including the hotel trade, transport and utilities, construction and agriculture, the retail trade, production of and trade in souvenirs etc., thus acting as a catalyst for the development of these sectors and, considering that the majority of enterprises in the tourism sphere are small (by comparison with industrial and agricultural enterprises) the start-up expenses are very low and the creation, and also the maintenance, of jobs costs much less. Taking into account the limited opportunities for investing in tourism's material base by the use of funds drawn from the budget of the Republic of Khakassia, it is planned to employ various forms of State encouragement to attract private investments in the sphere of tourism, including foreign investment.

It is intended that the problem of training staff for the tourism industry should be solved by what the education system can contribute, but also by widespread use of opportunities at additional educational establishments.

The State has an important role in creating a system to provide scientific and advertising information support and promotion for the tourism product offered by the Republic on the internal and the external market.

Overall, the programme is called upon to assist in warning against and mitigating negative phenomena as well as creating the real prerequisites for solving the problems with which the development of tourism is confronted.

### **The Main Aims, Tasks, Timelines and Stages for Implementing the Programme**

The chief aim of the Programme is to create in the Republic of Khakassia a competitive tourism complex that will provide, on the one hand, wide opportunities for satisfying the requirements of the inhabitants of the Republic of Khakassia and Russia and of foreign nationals in tourist services, and on the other hand to contribute to the development of the Republic, including contributions from the inflow of foreign currency, the increase in

numbers of jobs, and the preservation and rational exploitation of cultural and natural heritage.

The main tasks of the Programme are as follows:

- to form a modern regional market for tourist services on the basis of healthy competition and to create corporate links among the tourism organisations of Khakassia;
- to form a modern normative and legal base for regulating tourist activity in the region, to include within it both the creation and improvement of regulatory enactments and laws by the Republic of Khakassia and the development of proposals to improve and introduce changes to Federal normative enactments and legislation;
- to encourage the development of small and medium entrepreneurship in the tourist industry, and also in the industries economically and technologically connected with tourism;
- to develop inter-regional and international cooperation in the sphere of tourism;
- to encourage the development of the material and technical base for the tourist industry using non-budgetary funding sources, including foreign investments for the reconstruction and new building of tourist sites;
- to create a modern for supplying the tourism business with advertising and information support;
- to create a modern system of constant training, retraining and raising the qualifications of staff for the tourist industry;
- to develop provision of scientific support for the tourist business.

By virtue of the socio-economic conditions that have been created and the significantly limited possibilities of investment, work on the first stage of the tourism development programme for 2000-2001 was directed primarily towards stabilising the basic parameters that characterise the tourist business in Khakassia. In 2002, the transitional stage, work will continue within the framework of the first stage and on the future prospects for 2003-2005.

### *Ecological Training of Specialists*

Non-biology specialists in higher education (subject discipline – “Ecology”).

- the main laws and principles of ecology;
- the structure and functions of ecosystems;
- learning about the biosphere;
- the ecology of man;
- the ecological fundamentals of the rational use of nature and the concept of sustainable development;

- pedagogical ecology and the principles of ecological education.

The minimum in terms of what is required from graduates in these specialisations assumes a grasp of biodiversity, maintaining stability in the biosphere, interaction between the organism and the environment, ecosystems, principles of safeguarding nature and the rational use of nature, the extent of scientific knowledge and understanding, and the place of mankind in the evolution of the Earth.

Thus, KhGU [*Khakassia State University*] graduates in pedagogical non-biology specialisations are prepared for the delivery of ecological education as a subject. An obstacle to their realising their potential is the lack of textbooks for the schoolchildren and the lack of materials for teachers in local conditions that deal with methods of bringing ecology into the school syllabus.

The biological specialisations (the “teacher of biology” category) provide for in-depth training in ecology and the methodology for teaching it. Students have lectures in the disciplines of “Ecology” and “Safeguarding nature” and a number of special courses such as the “Ecology of the lands of Khakassia”, “Ecology of Plants”, “Ecology of Insects”, “ecological Investigations in Entomology”, “Ecological Aspects in Hydrobiology” etc.

Issues of ecological education and awareness and shaping ecological culture in the context of the normative discipline called “Methods of Teaching Biology” are examined in considerable depth. Thus, for example, the following lectures are included in the subject plan for the discipline:

- ecological awareness and education for schoolchildren;
- methods of education in the teaching of biology;
- biology work outside the classroom;
- biology work outside lessons;
- educational standards: biological and ecological education projects;
- the school syllabus for biology and ecology.

In laboratory studies consideration is given to lessons with an ecological content, for example:

- ecological plant groups;
- ecological bird groups;
- ecology trips;
- urban ecology;
- the ecology of Khakassia;
- danger spots on the planet;
- the fate of planet Earth;

Games are being developed with an ecology content.

On special courses on methods of teaching natural sciences the students learn techniques for choosing ecological material that is morally and aesthetically valuable in an educational sense. They also create their own versions of ecology syllabi to include a regional component for grades 5-11 of middle school, and routes are worked out for ecology trails.

Ecology has been introduced to some degree or other in all disciplines in the subject set at the Biology and Chemistry Faculty.

A significant proportion of students under the guidance of scientists and teaching staff at the Faculty are doing scientific research work in ecology and ecological education in the form of course and diploma work, scientific publications and presentations to scientific conferences at a variety of levels.

The majority of course work has been carried out on subjects of current relevance, oriented towards the special aspects and chief problems of the Region, and have scientific, methodological and practical significance.

In the Botany Department study is made of agricultural techniques for the different varieties and yields of vegetable crops in Khakassian conditions, poisonous plants and possibilities for their practical application, families of higher plants of significance in the cenosis of Khakassia's vegetation cover and the influence of anthropogenic action on plant communities on the outskirts of the town of Abakan.

Work on material gathered during practical field studies is distinguished by its topicality. The distribution of various families of higher plants on the territory of the Iyusk national nature park [INP] has been studied and [work] carried out under a contract with the board of directors of the INP.

Of significance is work on the study of the lower plants of Khakassia, and on ecology using the example of the influence of CaAZa on vegetation.

The physiology of plants and microbiology are studied within the discipline: plants living in water and intensity of photosynthesis.

In the methodology for teaching biology, issues are addressed of the cognitive interest of students in the subject during the process of studying biology in school. A logic and methodology analysis has been conducted of the activity of teachers at schools in the town of Abakan.

In the Zoology and General Biology Department study has been made of regional peculiarities of fauna and how they correspond to the scientific orientation of the Department ("The structure and functional organisation of the biocenosis of Khakassia and territories with a common border in connection with peculiarities of the environment and anthropogenic influences")

In the Chemistry Department, work has scientific and applied importance (chemical analysis of objects in nature: soils, water, plants, vegetables, fruits and so on).

There is an ecological orientation in diploma work:

- ways of shaping the ecological culture of pupils in Grade 6-7;
- physical and chemical methods of investigating drinking water in Abakan;
- finding and identifying alkaloids in plants of the Republic of Khakassia;
- mould fungi in the air, their ability to withstand external factors and influence on bacteria;
- creating crop yields of cucumber in covered and open ground in Khakassian conditions;
- creating green areas in accommodation spaces and microflora in the air;
- residual species in the flora of the Iyosk National Park;
- hydrophilous plants in the Tasheba river, their morphological and anatomical indications;
- studying varieties of tomatoes in the conditions found at agrobiological stations.

All the work is of an experimental nature. Techniques used are: photometry, electrometry, spectrometry, chromatography and so on.

It is presumed that the results of certain work will be used in compiling the catalogues called the “Rare and Vanishing Plants of Khakassia”, “Red Book of Khakassia” and “Identification Guide to the Plants of Khakassia”.

The results of the work on “Insects of the dark coniferous forest of the Taiga in the Yermakov district” have been passed to the School of the Biosphere in the City of Krasnoyarsk.

The Institute of Natural Sciences and Mathematics of the KhGU has held:

- “The Ecology of Southern Siberia – the Year 2000” a Siberian science conference of students and young scientists;
- “The Ecology of Southern Siberia” – an International conference of students and young scientists.

The aims of these conferences were:

- integration of higher schooling and academic science in the sphere of scientific research and education;
- integration of the efforts of controlling authorities, enterprises and science for the solution of ecological problems;
- review of the actual state of the environment in the South of Siberia;
- attracting young scientists to ecological research in Khakassia and Southern Siberia with the aim of coordinating and developing it in the future;
- a scientific formulation of the problems of ecological research in Southern Siberia;

- material support for and public acceptance of young people with scientific talent going in for ecological research in the Region;
- concentrating scientific research materials on the ecology of Southern Siberia in the Khakassia State University as the centre for science, education and culture for the Region;
- attracting scientific and teaching staff to jobs in Khakassia with the aim of developing its scientific and productive potential.

Activity to foster the development of ecological education and ecological culture is pursued in mutual coordination with scientific and industrial collectives in other regions as follows:

- Krasnoyarsk State University;
- The Biophysics Institute of the SO [*Siberian Department*] of the RAN [*Russian Academy of Sciences*] in the City of Krasnoyarsk;
- Irkutsk State University;
- Irkutsk State Technical University;
- The Baikal Branch of the International Independent University of Ecology and Politics;
- The Institute of Geography of the SO of the RAN;
- The Vinogradov Geochemistry Institute of the RAN;
- The Siberian Institute of Plant Physiology and Biochemistry;
- Novosibirsk State University;
- Novosibirsk State Pedagogical University;
- The Institute of Agrochemistry of the SO of the RAN;
- The Central Siberian Botanical Garden;
- The Institute of General and Experimental Biology;
- The Krasnoyarsk State Pedagogical University;
- The Krasnoyarsk State Technological Academy;
- The Krasnoyarsk State Agrarian University;
- The Krasnoyarsk State Medical Academy;
- The Krasnoyarsk State Technical University;
- The Siberian Aerospace Academy
- The Biophysics Institute of the SO of the RAN;

- The V.N.Sukachyov Forest Institute of the SO of the RAN;
- Tomsk State University;
- The Siberian State Medical University;
- The Tomsk State Polytechnical University;
- The Siberian Botanical Garden attached to the TGU [*Tomsk State University*]
- The Sayan Aluminium Plant;
- The Gorno-Altai State University;
- The “Khakasskiy” Reserve;
- The Kemerovo State University;
- The Buryat State University;
- The Buryat Institute of Natural Sciences of the RAN SO [*Siberian Branch*];
- The Altai State University;
- The Altai State Medical University;
- The Institute of Water and Ecological Problems (NII) [*Research Institute*];
- The Biy State Pedagogical University/

Representatives of the organisations listed below take part in KhGU [*Khakassia State University*] events to promote ecological education and culture:

- The Supreme Soviet of the Republic of Khakassia;
- The Government of the Republic of Khakassia;
- The State Committee for Natural Resources of the Republic of Khakassia;
- The Khakassian Republican Regional Studies Museum;
- The “Chazy” Khakassian Regional Public Charitable Fund.

Materials entitled “The Ecology of South Siberia” of the South-Siberia regional conference of students and young scientists are published annually in the form of 12 to 20 printed sheets.

### ***The Prospect of Creating an Environmental Culture***

There is a prospect of creating an environmental culture and ecological education for the population of the Republic of Khakassia in:

1. The development of a Concept and Programme of ecological culture for the population of the Republic of Khakassia;
2. The development of programmes for the various stages of creating an ecological culture for the population;
3. The selection, study and description of sites for inclusion in working activity programmes;
4. The creation of teaching and methodological handbooks and programmes;
5. The creation of organisational structures to carry on the creation of an ecoculture for the population of the Republic of Khakassia;
6. The planning and creation of a material base for practical delivery of the programmes.
7. The creation of an “Ecoculture” coordinating council under the aegis of the Khakassia State University.

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