

Peculiarities of Regulation of Nature-Using in Mining Regions of Kazakhstan

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ABSTRACT: Development of economy of the Republic of Kazakhstan is based on development of mineral raw materials basis. In new economic and ecological conditions it is very important forming of the system of regulation of nature-using for subjects of mining production. Elements of this system are presented in the paper.

I INTRODUCTION

Mineral resource, including power-generating fuel, ferrous and non-ferrous metals, oil-chemical mineral raw materials, mineral raw materials for industry of structural materials and agronomic-industrial complex, which are necessary for life's work of society, influence the level of economic development of any country as a whole. Today the main factors of humanity development are studying of ensuring of life's work of society and forecasting of its needs in mineral resources. In the end mineral resources are the basis, characterizing economic, social, ecological problems of progress of modern economy.

As known, total volume of moved rock mass all over the world is more then 100 milliard tons. Technical-in-genesis mass (artificially formed mass, including overburden rocks, ore tailings and metallurgical slag) specifically effect on biosphere of regions. Areas of alienated and broken lands reach several thousand hectares for some kinds of mining enterprises. Substantial losses are characteristic for mining complex, connecting with low level of complex processing of mineral raw materials. In the former USSR up to 5 milliard tons of overburden rocks, 0.7 milliard tons ore tailings, 0.15 milliard tons of ash were stored, and only 2 percents of them were utilized.

2 DETAILS OF STUDY

In a process of integration of the Republic of Kazakhstan in world economic society the special place is given to mining-and-metallurgical complex, as the main branch of industry, having powerful export potential. For the nearest future mineral raw materi-

als will be the basis of our economy. Total volume of investments to 2005 will be more than \$2 milliard. The increase of volume in production of mining-and-metallurgical complex will be 17 % for non-ferrous metals, 7.5 % for ferrous metals, 36.8 % for iron ore and 70 % precious metals. Sustainable development of mining-and-metallurgical complex proposes the following problems: taking inventory of natural-resource potential of the mining enterprises and the related branches; determination of standards on multi-component mineral raw materials in evaluating the reserves of deposits; bringing competitiveness to mining raw materials and producing their products, solving problems associated with sale of metals produced; analysis and using of accumulated wastes as one of reserves of strengthening of mineral raw materials basis; value estimation of wastes as a potential mineral raw material for the following using; justification of optimal variant of complex using of multi-component ores.

The last decade economic condition of Kazakhstan practically full depends on results of mining and processing of geo-resources. However it is necessary to establish a fact that positive improvement is absence in the country in a field of ecological safety when exploiting bowels of the Earth. Development of specific nature-conservation measures is caused by specific nature of mining production, mining resources, peculiarities of mined part of bowels of the Earth and territory of location of a source of the resources. Taking place changes of mining parts of bowels of the Earth, very substantial in a form and in a scale, have no systematic registration and estimation. Forms of displaying of global ecological problems as a result of exploitation of resources of bowels of the Earth are numerous and varied. As a result of these changes historical pollu-

non takes place with annual their increase by 1 milliard tons. Waste forming in mining industry is (in milliard tons): in non-ferrous metallurgy - 6.9; in ferrous metallurgy - 3.6; in heating power engineering- 1.35. From total 21 milliard tons of accumulated waste about 5.2 milliard tons are toxic waste. Volumes and structure waste of mining industry is presented on Figure 1.

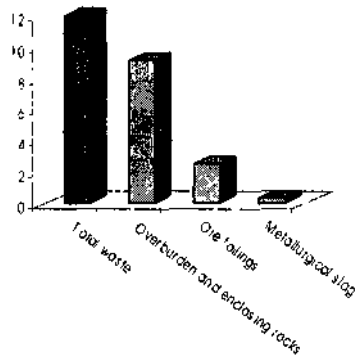


Figure 1. Volume and structure of mining waste production

The most part of waste of mining-and-metallurgical enterprises is potential mineral raw materials for increasing of production of non-ferrous and precious metals, rare elements. From total volume of waste about 189f are waste, including lead and its compounds, 2% includes arsenic and its compounds, more than 36 mill.t of waste include radio-active matters: more than 5H mill.t are phosphorous-containing waste and 1.2 mill.l are waste, including fluorine compounds and so on. Branch proportion of discharges of pollutants is presented on figure 2.

As we can see from Figure 3 volume of discharges of stationary sources of pollution in the last years decreases but it is connected with decrease of production in the country and not with improving of ecological situation in the country.

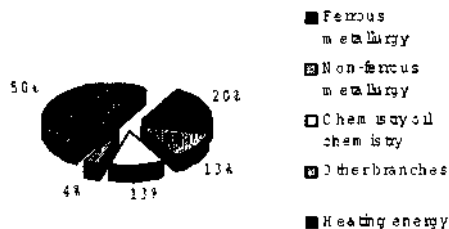


Figure 2. Share of branches of industry in total discharges of pollutants

As it is well known ensuring of ecological safety consisted in decreasing of a level danger of mining waste. But today, in our opinion, we must say about ecological orientation of mining industry: decreasing of per unit consumption of resources of production, due account of deficit and limit of many kinds of resources, rehabilitation of lands and parts of bowels of the Earth, which were broken by mining operations in mining regions. It is possible when working out of unified strategy ensuring of ecological safety of running in and exploiting of resources of a region, because modern practice of nature using gives evidence of ecologically dangerous consequences, for example, teehnical-in-genesis earthquakes take place in regions of oil-mining in Western Kazakhstan. The main principles of this strategy are:

- ensuring of life's work of society depends first of all on ecological consequences of its activity;
- ecological safety is possible when joint studying of all stages and processes of mining production: search and exploring of resources - mining - processing - utilization of waste - liquidation of consequences of mining operations;
- ensuring of ecological safety is possible when effective regulation interaction and interconnections in specific ecological-economic system, arising when running in and exploiting of resources of a region.

Function of this system is based on normative-legal supplying of using of bowels of the Earth, economic mechanism of regulation of nature using, creation of scientific-technical and industrial-technological programs on ecological safely, ecological audit and control, licensing and so on. This strategy causes working out a system of ecological safety ensuring when running in and exploiting of resources of a region, the main principles of which are:

- determination of normative of ecologically permissible running out and using of nature-resource potential of a region, due account of ecological balance in a region;
- improving of ecology of an area and saving of life quality in a region of resources running in (Figure 4).

Becoming sharp of conflict in a system "human-society-nature" shows that the further economic growth in conditions of limit and deficit of many kinds of nature resources must cause to global catastrophe. And it may be marked by three intersecting factors - economy, resources and ecology. Conception of sustainable development was a attempt of a search a way to working out of common to all system of behavior. Solving of ecological problems has two approaches: global and regional.

Studying analysis and stable evaluations of ecological pressure of technical systems on environment were loimed and operate at interstate and global levels. However mechanism of environment protection is showed through specific subject. That is why subjects must guarantee ensuring of ecological safety in a region. If as a whole environment protection is a point of state rank separate practical problems must be solved in those regions where they arise and where there is necessary information about

pollution. Coming from such information measures are worked out to improving of sanitary conditions of environment. All industrial-economic activity in any region must be coordinated with common strategy of pollution prevention. Stabilization and improvement of ecological situation are possible when forming of state ecological policy, taking account of social-economic development of regions, then economic significance perspectives of development and ecological condition

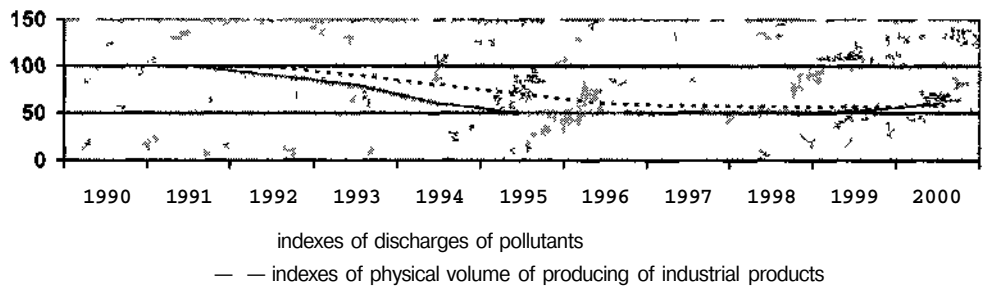


Figure 4? Dependence of decreasing volumes of pollutant discharges on decreasing production

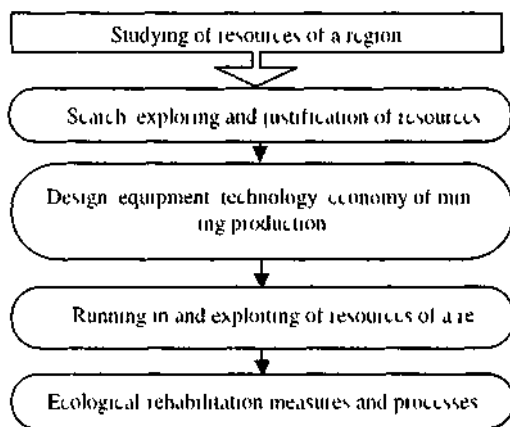


Figure 4 Scheme of ensuring of ecological safety in mining regions

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The main elements of this system in our opinion are the following: estimation of real ecological situation in a region taking account of historical and modern pollution; for example, solid waste collection or size of payments for pollution of environment of regions with due account of ecological conditions in any region. Realization of these main principles of the system is based on an arrangement of mining regions by ecological condition. The criterion for the arrangement is quality of human life. In establishing of regional evaluation of condition of environment the important place is given to working out of ecological-economic registration document of region/enterprise. It represents real pollution of biosphere especially to mining regions sources of pollution and then characteristic levels of using of nature resources levels and volumes of development of branches of economy of mining regions, differentiating of zones of a region with due account of the region's economic activity and ecological load

Market respects and different forms of property dictate necessity of working out of normative evaluations of ecological limits, including:

- ecological limits - pollution of biosphere of mining regions by different kinds of waste: determination of ecologically permissible limits of nature using in mining regions;
- economic limits - rational, possible and necessary for mining regions structure of branches of economy with due account of food, ecological and economic safety,
- solving problems of possibility of carrying out and limiting of economic activity in mining regions.
- Offered by us estimation of effect of mining industry on environment proceeds from the following principles:
- analysis, estimation and taking account of existing condition of environment in mining regions with due account of historical pollution;
- estimation of stability of elements of biosphere (atmosphere, soils, lands, bio-resources) to forecasting technical-in-gensis effects of mining enterprises on environment;
- complex approach to evaluation of technical-in-gensis influence on biosphere of all operating economic objects in mining regions;
- taking into account social, economic factors and parameters of development of mining regions with analysis if their economy and consequences of operating of enterprises and productions, located in this area, demographic situation and health of population.

Mining practice must include prevention of negative ecological consequences, liquidation and decreasing their danger. Modern conditions of environment require creation of scientific principles of control by ecological situation. The important attention is paid to studying of possibilities of arising of ecological danger in mining regions because of activity of technical-in-gensis geo-systems, working out of methods of evaluation of ecological situation, methods and measuring devices for control of ecological parameters, creation of standard ecological systems, which confirm to normative of nature using. All negative influences on ecological systems of mining regions effect immediately on parameters of ensuring of life's work of bio-resources (Figure 5).

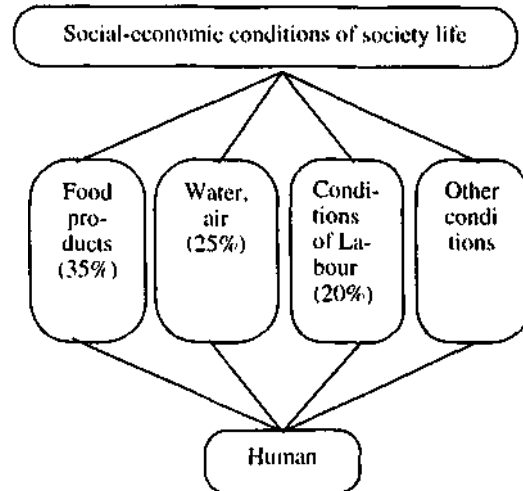


Figure 5. Forming of conditions of life's work.

3 CONCLUSIONS

In difficult ecological-economic conditions for mining regions of Kazakhstan it is necessary and very important forming of system of regulation of nature using by subjects of mining production. The main elements of this system, in our opinion, are the following: estimation of real ecological situation in any mining region; taking account of historical and modern pollution, for example, solid mining waste; correction of size of payments for pollution of environment with due account of ecological conditions in any region. Realization of these main principles of the system is based on an arrangement of mining regions by ecological condition. The criterion for the arrangement is quality of human life in mining regions in accordance with the main parameters of human life's work in a zone of location of subjects of mining industry.