SUSTAINABILITY AND REGIONAL ECOLOGICAL DEBT: ECOSYSTEM APPROACH

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This paper describes some attempts and proposals for changes in social and economic mechanisms at the regional level to provide equity in natural resources distribution between present and future generations. It consists of two parts. First one is devoted to natural resource management strategy for a river watershed, which belongs to so called "resource dependent territories" (RDTs) in Eastern Siberia. RDT is a territory, where nature use is the almost only source of economic growth (Ivanov et al., 1996). Pilot project for Khilok river watershed in Lake Baikal basin is considered in second part.

The regular situation in Eastern Siberia is that polluting industries don't cover the environmental damage. Implementation of "polluter pays" principle in proper way would lead to "negative profit" for almost all enterprises, including mining, power stations, forestry etc. Now it is impossible to refuse of nature use - for some territories it means that unemployment will be more than 50 per cent. Under these economic conditions some territories have to be identified as "victims of economic growth". Ecological debt in these local areas will increase during next several years. However, our aim is to look for ways to sustanability in this almost hopeless situation.

Ecological Debt and Reserved Territories

Let us consider a river watershed as an integral ecosystem. We choose two basic principles to attain our objectives:

* Responsibility for integral ecosystem approach;
* Ecological debt (Gofman and Ryumina,1994) for entire ecosystem must be non-increasing

Among tools for attaining of these goals the main one is the creation of "reserved fund of natural capital". It might be achieved by intruducing of special status of "reserved area" for some kinds of territories. It is not the same that a version of status of "protected area". The objective to preserve some species or landscapes is not claimed for such areas. Reserved area is a territory which is remained for nature use of future generations. Its natural resources might be used in future, when new technologies will be able to provide environmentally sound and sustainable ways for development of this area.

Now companies and, partially, local population, try to develop any economic activities is Eastern Siberia, which yields non-negative income, "at whatever environmental costs". The reason is low life-standards and increasing unemployment. The weakness of governmental control gives them an opportunity to use natural resources almost free and not to cover environmental damage properly. At the same time, products of some mining deposits of Siberia have a demand at the resource markets. But most of technologies, available now in Russia, are extremely environmentally damaging. Full covering of this damage leads to situation when the product loses its comparative advantages at markets

because of high price.That is why companies try to avoid it and, unfortunatelly, rather succesfully, because decision-making usually depends of a few persons opinions. It is necessary to create strong criteria to make decisions without bias.

The principle of non-increasing of ecological debt might be one of such criteria. When we decide "to use or not to use" resources of considered territory, we should estimate the gamage not only for separate nature elements, but for integrity of ecosystem. If existing technologies can provide competitiveness of product after covering the full environmental damage, the resource is allowed to be used in economic activity now. In other cases the territory together with its resources should be included in "reserved fund" (Fig.1). For evaluation of ecological debt amount one can use, for example, the "input-output" method, based on Leontief's model (Leontief, 1966).

The procedure needs also some institutional changes in environmental policy on regional level (Soderbaum,1994). We can say that in considered region of Eastern Siberia, Chita oblast, the first step has been already done. In January,1997 the regional parliament has adopted "Chita oblast Law about protected and *reserved* areas". In accordance with this law Register of reserved areas of Chita oblast must be establshed. It also describes a procedure of "giving status" of reserved area. The requirement of involvement of professional scientists and local communities in reserved areas creation process is an important feature of this law.

Khilok River Watershed Project

In the second part we consider Khilok river watershed project of nature resource management. It is based on methodological approach from the first part. Lake Baikal in Siberia contains approximately 20 per sent of pure water of the planet. Khilok river is one of the Lake Baikal eastern tributaries. The total territory of this watershed is 32000 sq.km. Relief of this moutain area is characterized by alternation of intermoutain valleys and mountain-ranges. The territory is rich with diverse natural resources: mineral, forest, recreational etc. It has sharply continental climat and high level of sun insolation during a year around.

The whole zone of flow formation is a very vulnerable criogenic landscapes. At th same time economic activity has been traditionally developing here on river terraces and riverside zones. Such kind of development has caused degradation of several areas. Rivers, being an integral showing of watershed health, have low water quality more and more often. Mountain character of river flows stipulates carrying of polluting subtances on considerable distances. More than 70 per sent of the area is covered by forests. That is why Khilok river watershed has enviromental-forming significance for Lake Baikal ecosystem.

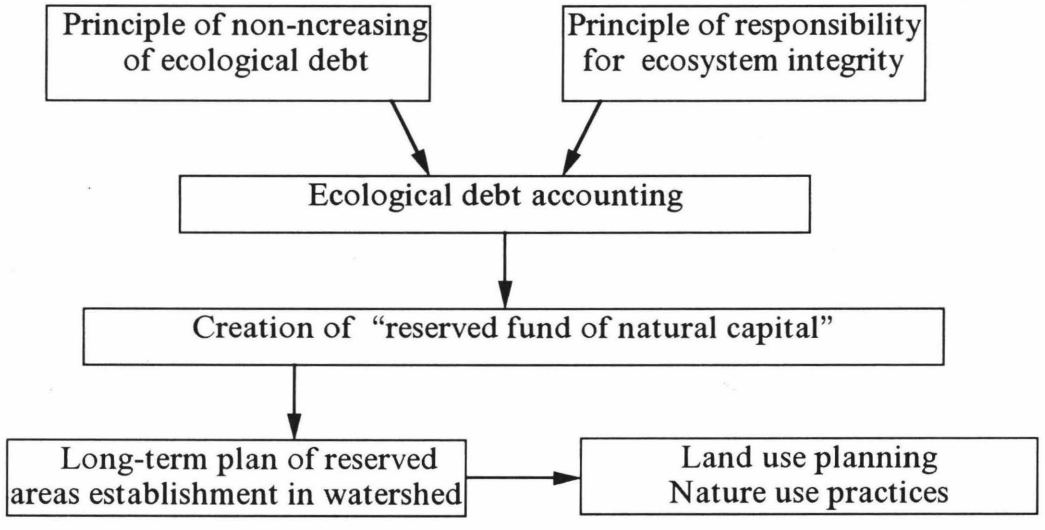
This work is a part of conservation biodiversity project in Lake Baikal basin. The focus points of Khilok project are functional zonning, land use planning, economic and institutional instruments which will be able to provide that nature use processes would be whithin carrying capacity of the ecosystem. It is one of main factors for water quality conservation in Lake Baikal. In the project a comprehensive framework of the system of watershed monitoring will be created. Development of efficient tools of including of the monitoring data in decision-

making procedures is the crucial part of this work Another part is the creation of informational system, including GIS, which will support the decision-making processes to provide "direct and inverse connections" with respect to implementation practices. One of the project objectives is the long-term plan of reserved areas establishment in Khilok river watershed.

Substantial attention is paid to social "concerted understanding achievement". Project contains a special program of local communities involvement into project activities.

One of the most important aims is an establlishment of "bridges between scientific ideas (about sustainable development, "ecologization" of economy, biodiversity conservation) and real processes in nature use. Though the problem of attaining the sustainability can hardly be solved as a result of this project implementation, but there is a hope that the effects, which could be identified as " necessary elements of sustainability" will begin to work.

Figure 1.



Scientific substantiation for the project was developed by scientists from Chita Institute of Natural Resource. The project has started in November,1996, with financial support of Global Environmental Facility.

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