

of iron shown at picture 1. Therefore, it is most likely that humanity faces technogenus geochemical cycles.

Unfortunately, only 1-5% of this giant flow of raw material come up to consumers. The rest is waste. This is efficiency of involving nature mineral resources using technogenus geochemical cycle. Afraid, a tendency of consumption of nature resources in other fields is similar to the above mentioned example. Strong arguments to support this assumption could be found in the work of R. Costanza, R. d'Arge, R.de Groot and other. These authors show, that the biosphere has a limit of natural capital stocks. These are estimated to be in the range of US\$ 16-54 trillion per year. Global gross national product total is around US\$18 trillion per year⁴. The value of annual irreversible changes in the environment is comparable to the annual productivity of our biosphere.

Thus, the **second limit of globalization is Paleolithic "modus operandi" not a limit of nature resources.**

Why there is such a low progress in this field?

The development of the globalization determinate an issue of difference between market and non-market objects of natural resource. For example: The iron ore reserves in mineral deposits have a definite market value. We do need iron today and, consequently, do not look for an economic evaluation of other mineral resources in the same deposits. Obviously those resources do not have the major market characteristic – its value in our eyes. Today this is a waste for we do not need this mineral resource.

Next example: it is possible to assess a damage from acid rain or other kind of air pollution. How would we assess a clear sky? We should recognize that nature is outside of the market space. Mineral resources, as a part of Nature, are also outside of it. The driving force of globalisation is a modern economy system. Today, economists use many techniques of capital expenditure appraisal, estimating of financial damage, cost estimating, determination of income and so on. It is possible, within the bounds of economy system, to estimate an income flow but it is impossible to do this with technogenus geochemical flow. It is very important to mention that environmental assessment of profit, damage or usage of nature resources is limited by methods of economy. Integrity objects such, as biosphere, landscape, mineral deposits and so on cannot be evaluated in the context of economy, using discrete criterions and scales. Perhaps this simple but not always evident fact is a key to an efficiency of technogenus geochemical cycle. Both traditional economic techniques, like those mentioned above, and non-costs criteria should be used in complex to evaluate business to meet a new global reality.

Science has been involving non-costs criteria since years already. Just to mention few of them like IHD, quality of life indicators, entropy and others. This is problem of "human qualities"⁵

A search for the new "Quality of Life" is a reflection of the deep processes of human evolution. It causes a change of evaluation criteria for global decision-making. The decisions taken by top politicians and managers should be rather moral and fine then economically efficient only. This is one more reason why the traditional economics criteria are not sufficient.

A. Shvatcher at begin of XX centuries defined ethics as an "infinite responsibility for everything living" (*author's translation of Russian text*)⁶. I'm sure, that ethics is finally a key to a successful overcome of limits of globalisation.

⁴ The value of the world's ecosystem services and natural capital. - R. Costanza, R. d'Arge, R. de Groot, S. Farber, M. Grasso, B. Hannon, K. Limburg, S. Naeem, R. O'Neill, J. Paruelo, G. Raskin, P. Sutton, M/van den Belt. - Nature/ vol.387. May 1997. -p.253-260.

⁵ (Pechel A.) *Якість життя. Хроніка світової екології. - І.: Інститут екології, 1985. - 312 н.*

⁶ (Shvatcher A.) *Етична відповідальність за все живе. - І.: Інститут екології, 1973. - 344 н.; page 308*



