ECOLOGICAL CONFLICTS AND THE PARADIGM OF SUSTAINABLE DEVELOPMENT

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The problems of determination of ecological conflict in the overall system of ecological and economic security. The relationship of ecological conflict with resource regimes defined subject and object are characterized. Based on the analysis of classifications of conflict molded author's typology of ecological conflict. Identified positive and negative functions of environmental conflict, methods and tools to resolve it.

Keywords: deficit, method, mechanism, policy, resource, solution, cooperation, reconciliation, sustainable development, ecological conflict.

1. Introduction: the Basic Approaches to Ecological Conflict Determination

Ecological conflicts (EC) as a social phenomenon arise up during all the history of "society – environment – economics" system existence and it has such personal characteristics:

- on the one hand, EC has the same essence characteristics and development mechanism as any social conflict has [1];
- on the other hand, EC has specific features inherent only for EC: subject and object; origin process, EC development and solving; EC consequences.

As for EC its subject is the problem of natural resource (ecological value) possession or controlling it, that can cause certain benefits (not obligatory financial) to one or more individuals. EC object is a natural resource or ecological value which due to certain circumstances are on the interests crossing of different social or economical individuals which aspire to possession or controlling it. Thus, *ecological conflict* is opposition on governmental and/or intergovernmental levels, caused by incompatible or hostile interests of one or more individuals and by their fight for the natural resources ownership, use (distributing) or their controlling right, accompanied by possible using of violent methods for the aim achievement.

EC socio-economic nature, its subject, object and development dynamics research shows that:

1) both resource deficit and surplus can be potential EC sources;
2) EC can be provoked (or can be the result) by the unequal natural resource access possibilities, its distributing and quality.

Process of EC origin and development, caused by a resource deficit (limitation), is presented on the figure 1.

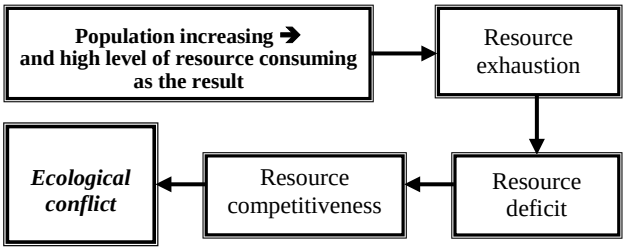

Figure 1 EC origin and development, caused by resource deficit

Capacity for EC solving, guided by resource deficit, is presented on the figure 2. As it is shown, due to the sustainable development (SD) achievement aim the basic role in the EC solving mechanism offered is given to the market instruments (using the market prices on resources) and innovations (technologies and using of resources substitutes).

Ecological and economical analysis guided by EC surplus [2; 3; 4] allows allocating such basic factors of its origin:

- *motivation* – aspiration due to the conflict to get complete (or partial) control on the payments for

the natural resources sale or using;

- *financial means* – conflict financing due to the controlled payments for the natural resources using;
- *indirect effects* – natural resources surplus can provoke negative economic and political effects, for example, non-effective management, slow economy growth, political instability, weak state institutes, social inequality, etc.

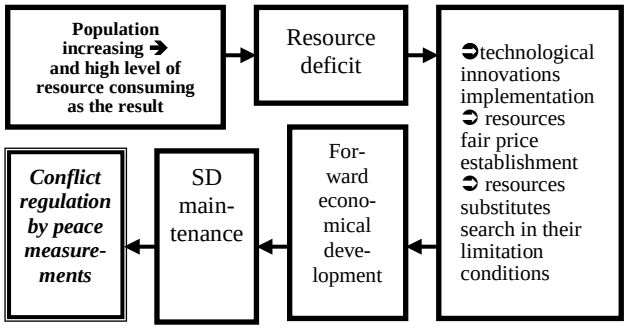

Figure 2 EC solving mechanism, guided by resources deficit, due to the SD achievement aim

Questions and problems associated with fundamentals of SD are an essential part of the "Millennium Development Goals" [5]. Strategic goals of development can be formulated as follows:

1) priority of environmental measures in policy making and national programs;
2) reduction in depletion of ecological resources;
3) improved access to ecological services.

2. Resource Conflicts in SD System

Ecological consequences of globalization such as trans-boundary pollution, solid and liquid wastes, ozone layer depletion, negative ecological aspects of international trade, resource depletion and ocean pollution require adequate approaches and mechanisms. Extensive use of ecosystems in modern technological processes is one of the major sources of potential EC (or the so-called "resource conflicts") which have already become visible at a regional level and very soon can become a global phenomenon [6; 7; 8].

Resource conflicts can be subdivided into 7 groups as follows: 1) land conflicts; 2) water conflicts; 3) forest conflicts; 4) mineral conflicts; 5) food conflicts; 6) assimilation conflicts; 7) complex conflicts (brief description of this classification is presented in table 1; for details, see: [1; 9; 10].

Ecological and economic effects and costs in an EC. A search by industrial societies of new possibilities of socio-economic growth and competitive edges is characterized the origin of serious contradictions. From the one side economic agents fill the obvious necessity of the any competitive edges using for a receipt, foremost, economic benefits, from other – a cardinal revision is required by the systems and mechanisms of redistribution of effects between subjects in the socio-economic systems. Forming of competitive edges by economic subjects takes a place on two basic directions:

1) progressive, is based on modern achievements of science and techniques (technologies) and
2) resource, is based on the use of naturally-resource potential.

In both cases competitive activity and behavior of economic agents on the resources markets acquire the distinct signs of conflict, as a result there is an EC, in basis of which is a conflict of interests, related to the redistribution of socio-ecology-economic effects between the owner of resource, mediator, producer and final consumer.

As a key factor of EC origin in the field of nature use *there* is *an ownership right* on a natural resource. The access modes, managements and resource use, characteristic for the socio-economic system, form rights, possibilities and responsibility of nature use agents.

Intensity, development dynamics and methods of EC settlement, origin reason of which is a right of ownership on a natural resource, depend on the features of economic and legislative relations of nature use agents of in a chainlet to "to own – to dispose – to utilize":

State	⟷	State
State	⟷	Economic agent (enterprise/firm)
State	⟷	Individual
Economic agent (enterprise/firm)	⟷	Economic agent (enterprise/firm)
Economic agent (enterprise/firm)	⟷	Individual
Individual	⟷	Individual

Problem of ownership rights on a natural resource and risks of EC origin in the system "state – economic agent – individual" are determined by the mechanisms of acquisition of such right and it further use. Most conflictable in this connection are procedures of the legislative fixing of ownership rights, their purchase and transmission/delegation.

Acceptability of results of EC settlement determined by distributing between the conflicting sides of additional effects (△B) and costs (△C).

Effects (△B) can be grouped as follows:

a) economic (profit, income, rent, potential benefits from resource possessing, possibilities of resource management, development of production infrastructure, investments, creation of workplaces etc.);

Table 1 Brief description of EC

Conflict type	*Conflict causes*	*Conflict content*	*Examples*	*Conflict resolution*
Land conflict	▪ Issues related to the property rights ▪ Unresolved questions related to territorial frontiers ▪ Imperfect legislation ▪ Property rights associated with exhaustible resources as a consequence of territorial issues ▪ Population growth, poverty, aggressiveness	Conflict over possession/ control over certain territory and/or natural resources which can bring direct or indirect profits	1. Conflict between Ukraine and Romania over the Island Zmeinyy (Ukraine has found considerable oil reserves in the adjacent shelf). 2. Conflict between Japan and Russia over the Kurily Islands (Japan considers the islands to be their territory)	Political, institutional, civil, technological, cultural, market methods of conflict resolution
Water conflict	▪ Issues related to the property rights ▪ Intensive use of water resource by one party ▪ Trans-boundary water pollution ▪ Restricted access to water resources	Conflict over possession/ control over water resources which can bring direct or indirect profit: financial, technological, social, territorial profits	1. Permanent conflicts between Ukraine and Romania over trans-boundary pollution of river Siret by Romanian mines. 2. Trans-boundary pollution of the river Pripyat (Ukraine – Byelorussia)	Political, institutional, market methods of conflict resolution
Forest conflict	▪ Issues related to the property rights ▪ Ecological and social consequences of deforestation ▪ Distribution of profits from sale of timber ▪ Imperfect legislation	Conflict over possession/ control over forest resources which, as a rule, can bring financial, social profits and advantages in armed conflicts	1. Timber as a source of financing national and regional conflicts (Burma, Congo, Liberia, Cote d'Ivoire, Cambodia). 2. Forest as ecosystem and natural habitat for local population (Mexico, Brazil, Venezuela, Indonesia, India, Nepal)	Civil, institutional, technological, and market methods of conflict resolution
Mineral conflict	▪ Access to, control over and trade of mineral resources ▪ Mineral resources ownership as a factor of financial influence ▪ Conflict of interests between mining companies and local population ▪ Macroeconomic dependence on mineral resources, an increase in social and economic vulnerability ▪ Corruption and obstacles to economic development caused by availability of mineral resources and poor control	Conflict over possession/ control over mineral resources which as a rule can bring financial and social profits	1. Most of armed conflicts in Western Africa, (Congo, Angola, Rwanda, Sierra Leone, Liberia – diamonds, gold; Togo – phosphates), Papua New Guinea, Tanzania, South Africa, Zimbabwe, Peru - ore. 2. Armed conflicts in the Middle East (Kuwait, Iraq – oil)	Political, institutional, civil, technological, cultural, market methods of conflict resolution
Food conflict	▪ Scarcity of land resources (arable land, pastures etc.) ▪ Closed economic systems ▪ Lack of appropriate technologies for land cultivation ▪ Lack of harvesting ▪ Poor climatic, weather conditions ▪ Low living standards	Conflict over possession of necessary resources, technologies which as a rule can bring financial and social profits	1. Catastrophic shortage of food in the countries of Central Africa (Somali, Chad, Sudan), South-eastern Asia (Northern Korea). 2. Permanent food crisis caused by ecological disasters (countries of Africa, South-eastern Asia). 3. Trade embargo caused by the armed conflicts (Afghanistan, Iraq)	Political, institutional, civil, technological, cultural, market methods of conflict resolution
Assimilation conflict	▪ Ecosystem assimilation capacity ▪ Imperfect legislation related to trans-boundary pollution ▪ Failure to apply tradable pollution permits	Conflict over possession of necessary resources, technologies which as a rule can bring financial and social profits	1. Greenhouse effect. 2. Trans-boundary pollution caused by the man-made disasters (Chernobyl catastrophe, Bhopal) 3. Uncontrolled deforestation (Transcarpathian forests, Brazilian rainforests)	Political, institutional, civil, technological, cultural, market methods of conflict resolution

b) social (maintenance of certain social level and living standard, development of social infrastructure, providing of social safety, decline of unemployment rate, etc.);
c) ecological (maintenance of naturally-resource potential, ecological safety, material well-being by resources, use of ecological functions of natural resource, settlement of questions of cross-border pollution, etc.);
d) political (settlement of territorial disputes and claims, differentiating of economic activity conduct areas (territories), development of cross-border/international collaboration, international image, etc.);
other types of effects, for example, institutional, technological, legal.

Costs (expenses) (△C), related to EC, are distributed on such basic directions:

- guard and renewal of natural resource (atmosphere, water, soil, bioresources);
- maintenance of socio-economic level development (production, consumption, infrastructure, standard of living, health protection);
- search and bringing in of alternative resources sources or technologies because of exhaustion of naturally-resource potential and/or low quality of resource;
- finding and development of difficult deposits of minerals because of exhaustion superficial and accessible;
- technique and technological modernization of raw materials processing technologies;
- EC settlement;
- finding of new territories, suitable for vital functions, because of its loss/reduction because of EC (submergence, felling, degradation of soils, etc.);
- receiving less of economic value (slowing down of economic development, receiving less of GDP, reduction of workplaces, etc.);
- problems of opportunity costs and long-term ecology-economical decisions making.

Consequently, main problems, the successful and adequate decision of which is able substantially to influence on efficiency of already existing EC settlement and to reduce conflict potential of economic agents conduct in the conditions of resources limitations are ownership rights on natural resources and readiness of economic agents to resource limitations (to receiving less of resource, profit, potential benefits, social effects).

3. Ecopolitical Factor in Providing of International Safety

The beginning of the third millennium is characterized by strengthening of negative tendencies in social and economic development caused by globalization of world economic relations and transformation of social relations. Production and demonstration of qualitative new global problems and challenges is characteristic for post-industrial economy: ecological factor is becoming determining in the formation of world social and economic, and political dynamics.

Three groups of global problems can be marked out: international social and political; international social and economic; ecological and human problems. The peculiarities of global ecological problems are:

1) global development of a number of negative tendencies in nature;
2) development of society mostly according to staid laws;
3) reliability of society management systems owing to possibility of adoption of cardinal solutions by a narrow circle of people [11, p. 23–25].

Contradictions, that appear in the whole system of economic relations in connection with the use of natural resources and ecological goods lead to EC. Nowadays global character of ecological problems is determined by the key directions: 1) *biodiversity conservation*; 2) rational use and protection of *water resources, problems of trans-boundary water resource management*; 3) problems bound up with impact and change of *climate resources;* 4) use of *land resources;* 5) disturbance of atmosphere *assimilation potential*; 6) problems of use and *protection of forest resources*; 7) problems of provision of common *resource safety*; 8) provision of *ecological safety* of economic enterprises and units; 9) *ecological problems of military sphere conversion*; 10) *"ecological discrimination"* as unequal access to main natural resources.

Mentioned ecological problems are characterized by a considerable conflict potential.

In our opinion, key role of ecological factor on the modern stage of international cooperation development is determined by the following:

- in conditions of steady transition to post-industrial society ecological factor through ecologization of political processes is getting political character. As a result, ecologically oriented political space (ecospace) is being formed. Ecospace is becoming an inseparable element of national safety and determines tendencies of global international safety system;
- processes of globalization and strengthening of international cooperation arouse ecological

function of the state, which task is provision of ecological safety, creating and supporting optimal conditions for life. Ecological state policy is an efficient instrument. Foreign state policy (especially of economically developed countries) is becoming a security means of national interests. In the nearest future high conflict potential of ecopolitics can lead to origin and development of many international EC – water, mineral, land, assimilation, food [12; 13];

- ecological contradictions and conflicts are serious destabilizing geopolitical factors. Ecodestructive manifestation of conflict factor is characterized by such basic directions as: scarcity of main raw materials (water, oil, gas, mineral raw materials); scarcity of territories (economic space), useful for living and economic activity; destruction of biodiversity (flora, fauna, ecological functions of ecosystems); increase of population number (demographic pressure on scarce natural resources); ecoimperialism, as means for provision of ecological and national safety by separate states (implementation of aggressive ecological policy directed at capture of ecological goods or their disposal is a direct way to EC).

4. Economic and Legal Mechanisms of EC Setting

Environmental problems and questions of rational nature use play an important role in international and national environmental policy. Environment as the main resource of SD should be integrated and play the key role in decision-making processes, that are directed to reduction of natural resources losses. First of all, it concern to such strategically important environmental resources, as water, land, forest, bio-resources. Connected to this actual task for the nearest future is perfection of the rational nature use policy through the economic and legislative mechanisms, especially its national and international aspects coordination.

Economic and legislative methods of EC setting could have the following orientation:

1) *political* (inter-state agreement, arrangements, joint plans/scenarios);
2) *institutional* (specifications, legal and legislative documents, rules);
3) *technological* (norms, standards, limits, manufactures moving, new technologies implementing);
4) *financial and economic* (tariff and non-tariff regulation, financial flows re-distribution, financial aid, compensation, subsidies);
5) *trade* (licensing, limitation, restrictions);
6) *innovative and informational* (meeting levels of social and economical development, exchange of knowledge, experience and skills, ecological education, access to information, propaganda, consultations);
7) *social and cultural* (common environmental interests, life level increasing, social support).

EC as phenomenon carries out both negative and positive functions in social and economic systems (figure 3).

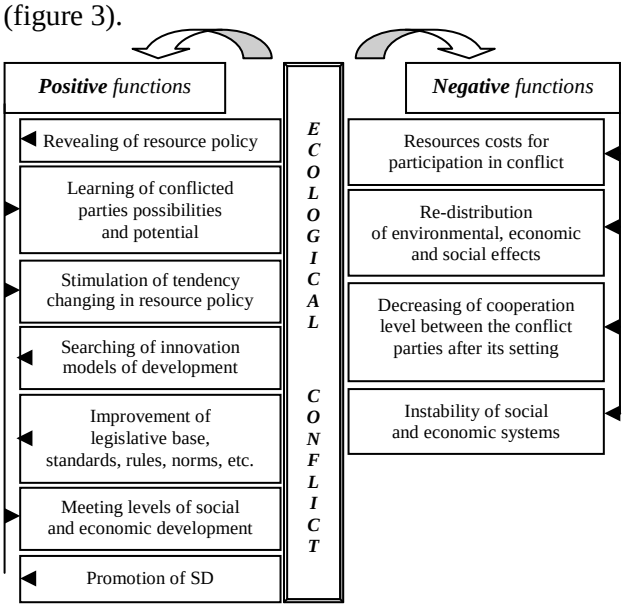

Figure 3 Ecological conflict functions

Efficient methods of EC setting depending on the EC level are presented in table 1.

Table 2 Methods of EC setting

Method \ Level	*Local*	*Regional*	*Inter-national*
Political	–	+ / –	+
Institutional	+	+	+
Financial and economic	+	+	+
Technical and technological	+	+	+ / –
Informational	+	+	+
Social and cultural	+	+	+ / –

Conclusion

EC remain rather urgent for industrially developed countries as well since their geopolitical and economic interests include cooperation with developing countries. Further development will cause an increase and intensification of economic interests, correlation and penetration of production and capital including new forms and subject matter. That is why international cooperation can and must prevent and/or resolve EC with the goal of restoring ecological and economic balance on the basis of SD.

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Экологический конфликт и парадигма устойчивого развития

Исследованы вопросы детерминации экологического конфликта в общей системе эколого-экономической безопасности. Охарактеризованы взаимосвязи экологического конфликта с ресурсными режимами, определены предмет и объект экологического конфликта. На основе анализа классификационных признаков конфликтов сформовано авторскую типологию экологического конфликта. Определены негативные и позитивные функции экологического конфликта, предложены методы и инструменты его урегулирования.

Ключевые слова: дефицит, метод, механизм, политика, ресурс, решение, сотрудничество, урегулирование, устойчивое развитие, экологический конфликт.