

## SUSTAINABLE DEVELOPMENT: THE NEW APPROACH INQUIRY

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**Abstract.** The new approach for sustainable development in solving problems and reaching goals has been related with effectively implemented systematic approach which defines necessity to unify state's political, economical, social and ecological system into unitary sustainable development system. Within the framework of publication a model for sustainable development have been worked out by discovering mutual connection and interaction of system elements. For developed system and subsystems included in it there are determined criteria for middle term development, which conform to long-term goals of sustainable development. The publication shows differences of ecological foot in the states with high and low welfare level.

**Keywords:** sustainable development, criteria, world economy, ecology, systematic approach.

### 1. Introduction

Necessity of sustainable development in society becomes more and more topical. Historically it had been connected with economic system development by taking into account an ability of environment to ensure necessary resources for economic growth and to recycle waste caused in each states national economy. Issue of sustainable development becomes also topical in conditions of global financial crisis. In the second half of past century scientifically proved environment degradation, which caused global climate changes, in essence is premessenger for caused global crisis of unbalanced economics development. It spreads over all continents, but bigger impact is to the weaker civilization stage – poorest countries in Africa, Latin America and in the continent of Asia. Recognizing the seriousness of situation, at the end of the last century and at the beginning of 21st century there were efforts to pay world's society attention to sustainable development issues by calling states governments to develop and implement sustainable development measures with aim to diminish unfavourable impact to the environmental issues. Unfortunately these endeavours didn't give expected results and unreasonable exploitation of environment still continues. Every generation in its economic activity spend more and bigger resource quantity thereby continuing to worsen possibilities of next generations to obtain necessary resources that would satisfy their needs. Issue of sustainable development has become topical in Latvia too. For the rapid growth period after the admission in economic system of European Union, national economy of Latvia started rapid recession in the second half of year 2008 and in first three quarters of 2009 gross domestic product (GDP) decreased for

18,4 %, which can be assessed as the biggest in all European Continent. There are many countries involved in this global financial crisis and caused direct losses already have exceeded threshold level – three trillion US dollars. It is obvious evidence for discrepancy of current concept of sustainable economic development to caused challenges of global economics.

### 2. Origin of sustainable development concept and analytical estimate of its content

Although a concept of sustainable development has already consolidated in modern society, in the theory of economics and other scientific fields, origin of it can be found at the end of 60–70 years of past century. At the last century 70th years Club of Rome's was one of first who tried to pay society's attention to environmental issues and to reasonable utilization of natural resources with the help of publication about a model developed within a framework of land resources utilization research "Limits to Growth" (Meadows *et al.* 1972; Muir 1991). This significant research was supplemented with scientific work "The World Conservation Strategy: Living Resource Conservation for Sustainable Development" (IUCN 1980), in which for the first time a logically stated necessity for sustainable development was offered. In this scientific research connection of most essential nature development processes with human economic activity and its destructive influence to the species diversity was proved. Big attention was paid to the preservation of world's genetic potential and for sustainable utilization to achieve the goals of society's socially economic development within the framework of ecosystems.

In wider public range a concept of sustainable development became known with conference in Stockholm, organized by United Nations Organization (UN) on the year 1972, which was dedicated to the development issues, humanity and mutual interaction of environment (McCormick 1992). In this conference scientists offered to the different states politicians to change the attitude to the environment and to pay bigger attention to the issues of environmental protection. In the Stockholm conference was acknowledged a necessity to keep up economic development, but in the same time not to do damage for environmental ability to renew natural resources used in economic activity as well as to keep up diversity of species. With this meeting leaders of UN tried to pay attention of world countries' leaders to the environmental degradation fact and to persuade about economic development probability, but in the same time not worsening survival conditions of flora and fauna species (Stivers 1976). Passed opinions and accepted documents in this conference must be considered for first most serious UN attempt to change economic growth politics of world countries; as a result rapidly worsens conservancy conditions of species diversity.

By continuing to develop intentions to pay world states' leaders attention to reduce poverty and to strengthen environment protection, on 1983 UN General Assembly adopts resolution "Process of preparation of the Environmental Perspective to the Year 2000 and Beyond" (United Nations General Assembly 1983). Within the framework of this resolution was made a decision on separate UN department foundation and activity aim of it was oriented to the necessity to develop long-term strategy of environmental protection in order to achieve sustainable development of social economics and environmental protection. Protection commissions founded by UN or so called Brundtland commission report development was finished on 1987 and published with name "Our common future" (United Nations General Assembly 1987) in which concept and content of sustainable development has been developed and updated. The official concept of sustainable development for wider society was given in such edition: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

As it is seen, sustainable development definition mentioned in the Brundtland Report states a necessity for the society to determine and implement such economic development and welfare level increase goals that the implementation of them wouldn't happen on future generations account. In

this case, question is not about financial debt, which occurs because of state borrowings. In the sustainable development concept, satisfaction of needs as a result of economic activity is connected with prevention of such side effects, which worsens conditions of environment and threatens survival conditions of flora and fauna species. As a main barrier for sustainable development, UN considers poverty and unfairness, which causes both ecological and social crisis. Sustainable development term of different world countries and continents is connected with all world nations desires fulfillment to improve living conditions not in short-term, thus allowing a degradation of environment and pollution, but in long-term, by taking into account biological regeneration capacity of environment and preservation of species diversity (United Nations General Assembly 1987).

In the General Report on the Activities of the European Union 2005 a concept of sustainable development is explained in such edition (European Commission 2005): "Sustainable development can be defined as a better quality of life for all, today and for future generations. It is a vision of progress which embraces economic development, environmental protection and social justice".

Sustainable development definition mentioned in European Union Report substantially differs from one mentioned in Brundtland Report with its uncertainty and general content, which asks questions more than gives clear image about sustainable development in general as well as its close relation with environment. Financial crisis caused by world's developed countries clearly shows that the best quality life standards in some countries pretty often are achieved on the others countries account. Therefore, in this definition European Union has included a social justice, which cannot be ensured at all within the framework of the market economic system.

In the basic regulations of Latvian sustainable development for sustainable development has given such explanation: "Sustainable development is development that ensures needs of modern society, but not making difficulties to ensure future generations their needs. It is development that is oriented to humans and the aim of it is to improve human life condition at the same time preserving nature and environment, therefore it is necessary to respect nature, which ensures humans with resources and all necessary for life... sustainable development means qualitative improvement of human life conditions if appropriate capacity of ecosystem has not been exceeded (The Cabinet of Ministers of the Republic of Latvia 2002)".

In this definition it is allowed that modern generation needs are satisfied and human's life quality has been improved without people free will expression and without their efforts to satisfy their constantly growing needs. If there really was such possibility, then sustainable development problem wouldn't be at all and life quality improvement would be controlled according to condition to preserve nature and environment. And what is the difference between nature and environment? It is not clear about what kind of environment speech is about. It is not difficult to mention that there is logical mistake in definition. Definition allows possibility of people life condition qualitative improvement if an appropriate capacity of ecosystem has been exceeded and life condition unqualitative improvement possibility if an appropriate capacity of ecosystem has not been exceeded. Therefore, nature does not ensure people with all necessary and it is not clear, what does an appropriate capacity of ecosystem mean. It is possible, that those who made this document thinks, that every country has its own ecosystem and that we don't live in unified ecosystem where all elements – all countries are mutually connected.

More precise explanation of sustainable development has been included in Latvian sustainable development strategy for the time period till the year 2030. There sustainable development concept has been explained in such edition (RAPLM 2007): "Sustainable development ... it is development that satisfies needs of current generations, but do not reduce possibilities for future generations to satisfy their needs."

In this definition it is clearly stated a restriction of needs satisfaction that doesn't exist by itself, but it must be ensured by the subject who wants to implement sustainable development scenario and in this case – in state range. In other words, state's or other socially economic system development conforms to sustainable development term if within its framework according individuals satisfies their needs but at the same time they don't do damage to the environment or other system element that could worsen a possibilities for future generations to satisfy analogical needs.

### **3. Content of sustainable development concept and its gap**

In the Brundtland Report sustainable development has been connected with mutual interaction results of economics, environment and occurred side effects (United Nations General Assembly 1987). Later this formulation is supplemented in the conference of higher level world leaders meeting or-

ganized by UN on September 14–16, 2005. In the final document of world leaders meeting it is mentioned that sustainable development is made by three most important pillars – development of economics, social development and environmental protection (United Nations 2005).

Further an idea of sustainable development has been developed in International Environmental Protection Agency which was founded with aim to help politicians of world countries and public organizations to unify their efforts by searching for most appropriate solutions in connection with caused challenges of environmental protection and economic development. In the conference of this organization on 2006, a report was presented by Oxford University professor Adams and he stated content of sustainable development politics elements and mutual interaction in details. In his report he paid big attention to the necessity to connect a socially economic system development with environmental protection progress and nature resource utilization by preserving a biological diversity in the world in common and in every country separately (Adams 2006).

Sustainable development concept and its essence is attracted a big public's attention. Many authors try to reduce a general character of sustainable development and to give a bigger accuracy to this definition. Doctor of philosophy M. Aguirre considers that reduction of sustainable development concept and interpreting it in connection with world's countries development, issues of inhabitant number rise restriction together with the measures of economic development promotion and environmental protection in less developed countries gets the highest priority in the sustainable development context (Aguirre 2002).

As it is seen from model included in Fig. 1, position of sustainable development forms when different environmental, social and economic aspects mutually covers. In its turn, environment in connection with social environment makes bearable position that means that environment doesn't worsen a social situation and social aspects doesn't worsen environmental situation. Economic situation in connection with environment makes viable conditions – human's economic activity doesn't worsen environment and preserves a diversity of species-on the one hand, but on the other hand environment is able to ensure economic activity with necessary renewable natural resources.

In this model sustainable conditions forms in case if environment in contact with social situation achieve bearable situation and in contact with economic activity viable situation is preserved, but economic situation in contact with social situation

makes equitable situation; and by interaction of environmental situation forms sustainable situation.

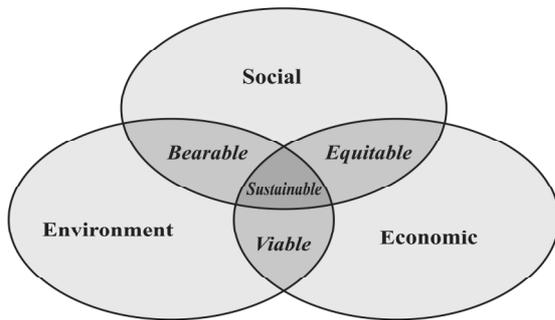


Fig. 1. Sustainable development model (Dréo 2007)

It means that amount of used natural resources conforms to the ability of land to renew these resources in certain time period and environment is able to neutralize waste caused in this time period.

Anderson supplements an opinion of Aguires considering that real aim of sustainable development has been connected with control of inhabitant number rise in the world and it is oriented to the economic development limitation in the economically developed countries (Anderson 2002). Of course, such issue formulation can cause a big resistance of world developed countries politicians, because till now richest countries haven't faced vital substantial limitation of resources. In the world globalization conditions disposable resources of economically strongest countries are not connected with geographical borders of these countries.

Does the content included in sustainable development concept gives possibility to balance inhabitant needs of different development level countries with economic resources available in world? Rather no, than yes. Sustainable development concept in essence has been considered as attempt to change an attitude of world's greatest countries against natural resources in the world in common by taking into account their total and relative limitation. How to solve development issues of world countries in conditions of resource limitation? An answer to this question tries to give an international level journalist and entrepreneur Veon. Paraphrasing what he said (Veon 2004), sustainable development in essence is oriented to necessity to control resources disposable in all countries.

We could agree to the opinion of Veon in point that there is necessity to manage world's resources effectively. But there is still a topical question how to ensure that. What is the infrastructure content offered by Veon and how actually utiliza-

tion of unified world resources will be ensured; and renewal management and accounting and check? No one politician or economist will be able to give answer to this question and this is not a question being in the area of responsibility if journalists. It is possible that Veon proposal is more connected with common approach and common activity questions which are related to economical growth on the one hand and environmental protection within the framework of sustainable development on the other hand.

Sustainable development concept has many critics in connection with its uncertainty and ambiguity. For example, expert of global climate changes Jancovici considers that sustainable development concept is to uncertain for participants of market economy and it makes difficult execution of certain measures which would be compulsory for all participants of worlds economic system and could ensure environment renewal ability by preserving a positive development direction (Jancovici 2002). Opinion of Jancovici is supplemented by famous French philosopher Ferry. He considers that sustainable development is mandatory necessary. But absurd situation in the environmental protection context occurs because concept of sustainable development is too uncertain and doesn't say anything by the essence. Ferry feels sure that if every human in the world do not appeal to the activity type which destroys environment, then appeal for sustainable development is unnecessary. He considers that every activity in the environmental protection field must be supported if it won't cause negative aspects so inherent to environmental administration management (Ferry 2007).

Chairman of the USA Foundation for Research on Economics and the Environment John Baden acknowledges that unconsidered action in connection with sustainable development can cause dangerous situation (Baden 2003). His decision he substantiates with mutual connection of economics and environment. Politics that is not enough substantiated and possible consequences are not evaluated, causes different negative aspects by threatening a preservation of species diversity in environment. He warns about possible expressions of public choice theory in connection with sustainable development, which could be also connected with valuable considerations of politicians, magnification of lobbies pressure and restriction of liberty. John Baden feels sure that environmental quality and protection efficiency is closely connected with market economics and legislation related to property protection. State must create situation where people feel motivated to pay attention to environmental protection measures.

In contradistinction to others supporters and adversaries of sustainable development, Baden tries to pay attention to the causes of environmental degradation and rising pollution, not to the effect. He alludes that implementation of sustainable development concept must be done within the framework of market economic system, by not allowing directive and administrative approach in economic development regulation. With this Baden in a way supplements and doesn't limit Ferry postulated freedom of action when implementing measures of environmental protection in the sustainable development context, without changing essence of market economy in regard to subject freedom of action in certain entrepreneurship environment and content of which is defined by state's legislation and legislation which entrepreneur is stated by himself. Such Ferry and Baden formulation in the issue of sustainable development in a way gives answer to the proposal offered by Veona to make control over disposable resources of world countries and necessity to create infrastructure to manage it in order that consumption of natural resources wouldn't exceed environmental renewal ability in shorter and longer time period.

#### **4. The experience and results of sustainable development**

The sustainable development is not an end in itself, it is oriented to the common public benefit – maintenance of the living space and development of that in a stage, which doesn't endanger natural condition of individual's life – air, water, flora and fauna in all their diversity. It would be interesting to know, how the attitude towards living space and wildlife have changed during last 30 years, since UN and many other public organizations started different activities to reduce the destructive effect of human activities to the environment.

The density of population of the world is growing rapidly. In the last 20 years of the previous century the number of inhabitants increased from 4.12 thousand millions in year 1980 to 6.1 thousand millions in year 2000. As the speed of increase of number of inhabitants is more than 70 million people per year, it is expected that by year 2050 there will be more than 9 thousand million people living all over the world (United Nations Population Division 2009). The absolutely necessary and primary need for every living being is connected with getting the nutrients. This fact concerns people as well, but in a lot of countries all over the world this need is not satisfied in the sufficient level. In the middle of 90th of the previous century the amount of starving people was reduced

to 825 millions, nowadays their amount is increasing, in a year 2008 it reached 915 million and it's expected that in year 2009 it will be more than 1 thousand millions. Taking into account the expansion speed of the economical polarization, in year 2015 the amount of starving people will exceed 1.2 thousand millions (United Nations Population Division 2009). It is important to mention that during last 20 years the amount of overweight people in the world is increasing rapidly and in the 21st century the amount of overweight people exceeds the amount of starving people (msnbc.com news services 2006).

The experts have opinion that to feed the increasing amount of the people all over the world in the nearest 20 years it will be necessary to produce more food than according to the calculations of World Banks in the last 10 thousand years all together, the demand for the food can double by the year 2030 (USAID 2009). But 40% of the landscape suitable for the food product cultivation is debased. According to the information given by UN world countries every year lose fertile farmland because of permanent dryness, flood and disafforestation. The lost fertile farmland every year is larger than territory of the Ukraine, i.e. almost 604 thousand square kilometers, besides this area is continuing to increase (Smith, Edwards 2008).

The indicators of the decrease of forest area in the world are shown in the Table 1 (Food and Agriculture Organization of the United Nations 2005). In Table 1 you can see that during last 15 years the total forest area in the world continents has decreased from 4.1 million ha in year 1990 to 3.9 million ha or by almost 3.1 %. The average decrease of forest area during the period 1990 to 2000 is 8.8 million ha per year or 0.21 %.

The largest decrease in this period is detected in Africa – 4.3 million ha or 48.9 % from the total decrease of forest area in the world. It is important to note that from year 2000 to year 2005 the speed of the decrease of forest area in the world is decreasing to the 7.4 millions – per 6.1 %, in Africa it is decreasing to 4.1 million ha or 4.7 %. The speed of the decrease of forest area is increasing only in South America, where it has reached 4.3 million ha or 10.5 % in period year 2000 to year 2005.

In spite of the decrease in growing logged forest area, the researches made by UN experts show that only about 3 % or 36 million ha of tropical forest are managed according to the principles of sustainable development. In many less developed countries there is a lot of corruption in disafforestation and inequality in division of the forest value. For example, in Indonesia about 70 % of

**Table 1.** The Changes of Forest Area in World Continents (Food and Agriculture Organization of the United Nations 2005)

Continent	Division of forest area by years ( <i>mill .ha</i> )			2005 to 1990 %	2005 to 2000 %
	1990	2000	2005		
Africa	699	656	635	-9,14	-3,08
Asia	574	567	572	-0,51	0,89
Europe	989	998	1 001	1,22	0,33
North America	711	708	706	-0,70	-0,24
Oceania	213	208	206	-2,95	-0,86
South America	891	853	832	-6,65	-2,49
<i>Total</i>	<i>4 077</i>	<i>3 989</i>	<i>3 952</i>	<i>-3,07</i>	<i>-0,92</i>

exported wood refers to illegal deals. As a result the country loses 3.7 thousand millions USD per year.

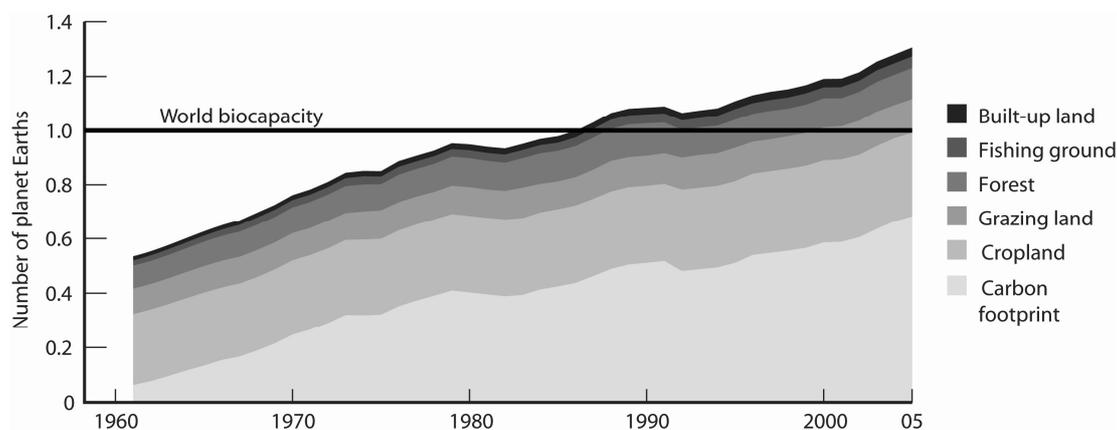
In year 2002 in this country the owner of the forest received 2.2 USD/m<sup>3</sup> for logged wood, dealer of woods received 160 USD/m<sup>3</sup>, but wood exporter received 800 USD/m<sup>3</sup> (Mayers 2006). It means that owner of the forest received just 0.28% from the amount which is paid to exporter. This example clearly shows the huge inequality in distribution of earnings from sold forest resources.

This forces forest owners to increase the amount of logged wood to provide required livelihood. In case the matter is to provide family with living wage people are rarely interested in the long-term consequences which are caused by the increasing disafforestation.

The additional impact of social development to nature could be included in ecological footprint, which shows how much biologically fertile land and water area is necessary to provide resources for the food of one person and manufacturing of consumed products and services. The unit of measurement for the ecological footprint

is global hectare, which is calculated taking into account the land resources used during the year and the area of fertile land and water which are necessary to produce these resources. The changes of ecological footprint has been investigated in the world since 60th of the previous century, the results of the changes are shown in the Fig. 2.

As it can be seen in the model of changes of ecological footprint shown in Fig. 2, at the beginning of 60th of the previous century people all over the world used incomplete 60 % from total amount of world biocapacity. It means at that time to produce consumed products and services for people all over the world, there was left unused about 45 % from the land renewable resources, these resources stayed for next generations. Situation changed substantially in year 2005, when world biocapacity was exceeded by 30 %. Taking into account the increase of amount of consumed products and services, in the second part of 80th of the last century or in about 35 years the parity of demand and supply of natural resources was reached, in the model it is marked by green horizontal line.

**Fig. 2.** The Changes of Ecological Footprint in the World (Global Footprint Network 2008)

In the following years world biocapacity and the ability of nature to get renewed is behind the amount of the consumed resources per year and inhabitants of the world more and more often are living at the next generation account. In year 2005 world ecological footprint reached 17.5 thousand millions global ha or about 2.7 global ha for each inhabitant of the world, but the ability of nature to get renewed or the offer of natural resources satisfies ecological footprint, which doesn't exceed 2.1 global ha. There are available few solutions to keep the balance between demand and supply of natural resources:

a) People of the world should give up consumption of products and services at least per 23.2 % comparing to consumption level in year 2005.

b) The world biocapacity should be increased by 28.6 % that means that the area of fertile land and water which takes part in the world biocapacity should be increased significantly.

Which way to choose? This is one of the urgent topics in the discussion among world's scientists, politicians and social organizations. Unfortunately so far there is no common opinion in this question, it is mainly because the interests, material prosperity, cultural and intellectual levels are too different among the participants of the discussion.

## **5. New approach to sustainable development**

It's nothing new, that there is a need for new approach to provide sustainable development. This need is mentioned in works written by Adams and other scientists (Adams 2006; Barry, Bass 2002). A full exposition of new approach to sustainable development is not a subject of this publication. It is too complicated topic and most probably the society of world will not find acceptable solution for it in the next 5–7 years. But in this research several separate solutions are proposed to solve this global problem of depletion of natural sources and destruction of world biocapacity. Firstly, the solution of the problem can be found in systematic approach to the world countries development problems. Presuming that human being is integral part of natural system, looking from the world biocapacity point of view we should admit that the purpose of this system is not the improvement of well being of people all over the world, but environmental pollution, disafforestation and decrease of accessibility to drinking water, which all leads to the constant decrease of world biocapacity.

If we go into details in model of sustainable development shown in Fig 1, we should admit that

it gives more aesthetic load than describes the content of sustainable development and the probability to implement it. Even though this model includes tree main elements – economical situation, environment and social situation, the interaction of these elements doesn't lead to the stage of sustainable development. The result is opposite – debasement of environment and gradual decrease of world biocapacity. From the point of view of system theory this means that these elements are just formally included in one system, actually the economical subsystem exists as independent system with its own goals – to aggrandize wealth of merchants and in the best case to improve well-being of inhabitants, which is understood differently in different countries. Social and environment protection subsystems are obstructive circumstances, not the conducive once, which help to reach the purpose of economical system. The proof of that is the difference among ecological footprint in developed and less developed countries. Indicators are shown in Table 2.

In the Table 2 column "Overplus" the area of fertile land and water, which is left over or which lacks in the current country to provide resources which are needed to produce products and services consumed by the inhabitants of the particular country is included. From the indicators included in Table 2 it can be seen that ecological footprint among developed countries is much larger than in less developed once.

Moreover in this group of countries just Haiti level of biocapacity is lower than the amount of consumed land resources. The consumption of inhabitants of Latvia is in the size of 3.5 global ha large ecological footprint, moreover biocapacity of Latvia gives opportunity to its inhabitants consume twice more products and services without borrowing resources from other countries.

The Adequacy Coefficient of Ecological Footprint calculates as proportion between the size of ecological footprint and biocapacity overplus. This indicator helps to evaluate how the amount of consumed products and services of the inhabitants of particular country corresponds to the amount of available natural resources of this country. The negative value of this indicator shows that particular country develops at the costs of other countries, because the biopotential of every land is limited in the middle time period. The largest negative values of ecological footprint refers to United Arab Emirates, Denmark and USA – within -0.5 to -0.9, but the largest positive values refers to Congo Democratic Republic and Republic of Congo, accordingly 6.0 and 26.6.

**Table 2.** Assessment of ecological footprint in world countries (Global Footprint Network 2008)

Name of the country	Countries with the largest ecological footprint			Name of the country	Countries with the smallest ecological footprint		
	EF (global ha/inh)	Overplus (global ha/inh)	EFA <sub>K</sub>		EF (global ha/inh)	Overplus (global ha/inh)	EFA <sub>K</sub>
UAE	9.5	-8.4	-0.9	Congo DR	0.6	3.6	6.0
USA	9.4	-4.4	-0.5	Afghanistan	0.5	0.3	0.6
Kuwait	8.9	-8.4	-0.9	Congo Repub.	0.5	13.3	26.6
Denmark	8.0	-2.3	-0.3	Haiti	0.5	-0.3	-0.6
Australia	7.8	7.6	1.0	Malawi	0.5	0	0.0
World	2.7	-0.6	-0.2	Latvia	3.5	3.5	1

Abbreviations: EF – Ecological Footprint; UAE – United Arab Emirates; USA – United States of America; DR – Democratic Republic; EFA<sub>K</sub> – Adequacy Coefficient of Ecological Footprint

Comparing the level of inhabitant's well-being in two countries with largest and smallest ecological footprint, we come to the conclusions that the size of ecological footprint of one inhabitant of USA is 19 times larger than the size of ecological footprint of inhabitant of Republic of Congo, but gross domestic product – 11.9 times. That means that USA uses larger amount of resources to produce each unit of gross domestic product than Republic of Congo. We will get similar result if we compare other countries with larger and smaller ecological footprint. Apparently it is not possible to solve the problem of sustainable development within one country or within group of countries. But that means that the goals of sustainable development is possible to reach taking in account ecological footprint of each country - available natural resources and necessity of those resources to produce amount of consumed products and services in a year.

Different approach to sustainable development model is proposed with a purpose to connect environment, ecological and social subsystems in united system, it is shown in Fig 3.

As it can be seen in the model included in Fig 3, in this case four elements are included in system of sustainable development – political, social, economical and environmental system. In this model the dominant element is political system, which coordinates interaction of the rest of the elements and makes necessary corrective actions in case they reached result does not match the aims and goals of sustainable development. As it can be seen all elements of the system of sustainable development are connected to each other and necessary exchange of information and feedback among elements included in system exists. Besides for each element of the system the development criteria are defined, the main conditions for defining these criteria are nature regeneration and amount of produced products and services, which makes the economical base for

reaching social goals and saving and increasing biocapacity of nature.

Economical criteria for development are nothing new. It is one of the ground rules of effective planning – defining the strategic plan in quantitative form and in fixed time limit. But this time it is important to note that economical politics which is oriented to improve well-being of the inhabitants of particular country by using the resources which belong to other countries and continuing the decrease of natural resources and debasement of regeneration should be limited or cut off.

Secondly, the necessity of global approach in state administration and international relation. One of the biggest challenges in the XXI century is economical and ecological globalization. Apparently it is time to realize that absolute advantages and free exchange of goods among countries defined by Adam Smith can promote wealth development in some countries on account of poverty increase in other countries.

It can be clearly seen from comparably high well-being level in USA and the large amount of external debt, crash world disafforesting, soil debasement in a lot of countries and rapid increase of ecological footprint. Exactly by the help of external trade and comparably low prices for resources, higher developed countries manage to attract resources from other countries for prices, which are much lower than regeneration expenses. It turns out that this is additional incompleteness of market economy, which causes global problems. The demand and supply of resources in long term is comparably inelastic and can't provide the price which is appropriate for sustainable development.

It is important to note that sustainable development consists of two dimensions – internal or national dimension and external or global dimension. External trade in circumstances of global economics gives an option for rich countries to disregard limitedness of resources for improvement of

well-being of inhabitants of particular country and limitation of needs of society. It is more gainfully for developed countries to buy the resources from other countries, then to limit the speed of development of their country and pay more attention to increase national biocapacity. Moreover free usage of resources still exists, you don't have to pay for some resources or you have to pay inadequately small amount – it is air, seas, oceans, glaciers in the earth poles and partly water as well. And this condition is much more favourable to economically richest countries. The global dimension of sustainable change should stimulate exchange of resources and finished products for the prices, which cover land regeneration expenses and stimulate faster improvement of inhabitant's well-being in poorest countries. The new approach to global dimension of sustainable change in long term is advantages for all countries. It will positively affect the opportunity to save and increase the world biocapacity. As the result the poverty level will decrease and the standard of living in less developed countries will increase, making the preconditions to reduce terrorism trends and to spend bigger part of armament budget for humane purposes.

The third aspect of sustainable development is connected with internal, national dimension. To this implies last global financial crises, the reason of which is material interests who dominate and make the backbone of economics. The last stage of these material interests is avidity, which makes profit addiction, when the increase of profit becomes and absolute goal. How to fight with that? To this question scientists and politicians have been trying to answer more than 2000 years, they have had some ideas, have tried to implement them, but the expected result haven't been reached. But scientists

have proposed some solutions to decrease incompleteness of market economy. That has stimulated comparably stable development of western countries during last 50 years and has helped to reach comparably high well-being and social protection level. But the last financial crises proves that steps which are taken by public institutions to stabilize economical development are not effective enough and the competence level of politicians is not high enough to evaluate by objective considerations the growing threats to economical stability.

Striking example to the previously mentioned cognition are indicators of development of Latvian national economy from year 2004 to 2007. At that time the amount of loans given to economical subjects increased 3.5 times and in the end of year 2007 it reached 13.1 thousand millions lats, but the amount of mortgage loans increased 9.5 times! As a result GDP and wages increased 1.9 times, but consumer prices almost 1.5 times. Such speed of economical development caused the most rapid recession in all European Union – the decrease of GDP in first 3 quarters of year 2009 reached 18.5 %, but number of people searching for job reached 18.4 % from all labour force (LR CSP 2009). Such development scenario doesn't correspond to internal dimension of sustainable development, but stimulates the polarization of society, increases inequality among distribution of national income and decreases effectiveness of resource utilization process. The internal dimension of sustainable development is directed to increase stability of economics in particular country, by decreasing range of development process variations to the utmost. To great extent this condition is connected with macro level preventive actions to reduce threats of economical crises and social insecurity.

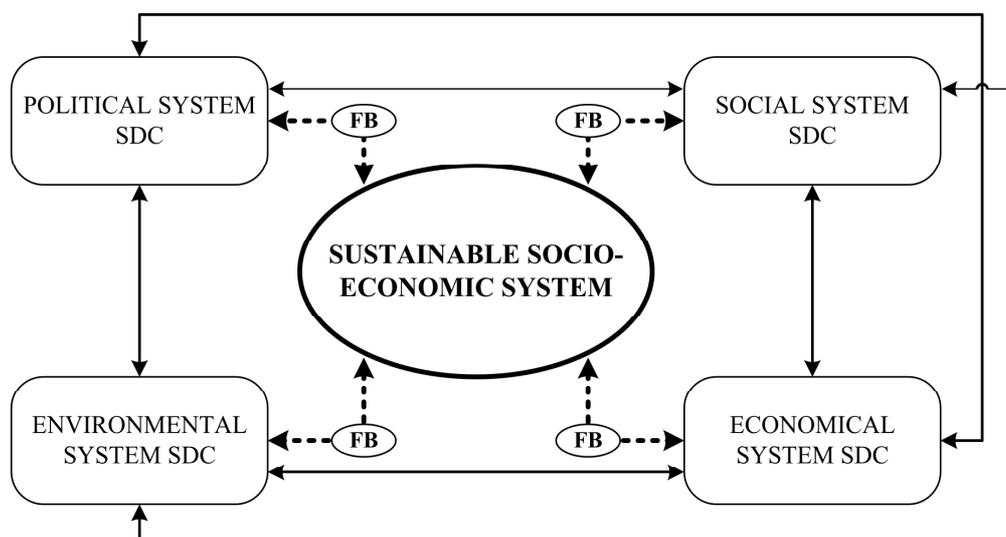


Fig. 3. The model of system of sustainable development Abbreviations: FB – feedback; SDC– sustainable development criterions

Accordingly to the new approach sustainable development can be defined following: “Sustainable development – stable way of development of socially economical system, which keeps the balance among consumed goods within the system and the increase of biological resources in corresponding period of time and when exchange between the end products and resources exists on ecologically appropriate prices.”

## 6. Conclusions

At the time of financial crises the question about sustainable development is active. Economical recession in a lot of countries all over the world enabled to implement wide environment saving and increase of biocapacity. From the other side global financial crises intensifies ecological and social crises all over the world. Enlargement of ecological footprint caused by global economics and distribution of it between well developed and underdeveloped countries clearly indicates that amount of products consumed in rich countries doesn't correspondent to biocapacity of these countries. Thereby develops paradoxical situation – a lot of countries included in the rich countries group raise their level of well-being by reducing the possibility of economically less developed countries to increase well-being level of their inhabitants by using their renewable and bioproduktive area. Established situation clearly shows that previous politics of sustainable development doesn't correspond to the real situation – the speed of environment debasement is not reducing and the number of poor people is increasing. Explanation of sustainable development concept included in Brundtland commission report reveals essence of sustainable change, but doesn't reveal completely socially economical and ecological aspects of it and content of it in national and global scale.

Up to now the carried out politics of sustainable development is missing systematic approach, it's more oriented to reduce sequences of land derogation and poverty, then to affect the factors which cause the reason of problems. It is impossible to provide sustainable development relying just on mechanically merge of economics, social questions and environment and their mechanical interaction to each other. In the publication the ecological footprint is evaluated in connection with biocapacity of particular country, showing the differences of ecological footprint in countries with high and low prosperity level.

The new approach to solving problems and reaching goals of sustainable change is connected with effectively implemented systematic approach,

which identifies the need to integrate political, economical, social and environmental system of the country in unified system of sustainable development. In the publication sustainable development model is worked out by finding out connection and interaction among elements of the system. To the developed up system and subsystems included in it middle-term development goals are defined, which mach the long term goals of sustainable development. It is important to realize the significance of external trade to reach the goals of sustainable development. Current resource, product and service exchange among the countries stimulate polarization of prosperity level, because the prices of acquired resources in less developed countries often are lower than necessary ecological expenses to save the regeneration ability of these resources. Reaching the goals of sustainable development is closely connected with political long-term goals, which should be defined taking in account not just resources available in particular country, but necessity to save and increase world biocapacity as well. This approach enables to coordinate better resources consumed by the existing generations without making worth chances of next generations to fulfil their needs.

## References

- Adams, W. M. 2006. *The Future of Sustainability: Rethinking Environment and Development in the Twenty-first Century* [online] [accessed 2 October 2009]. Available from Internet: <[http://cmsdata.iucn.org/downloads/iucn\\_future\\_of\\_sustainability.pdf](http://cmsdata.iucn.org/downloads/iucn_future_of_sustainability.pdf)>.
- Aguirre, M. S. 2002. Sustainable development: why the focus on population? *International Journal of Social Economics* 29(12): 923–945. doi:10.1108/03068290210447978
- Anderson, M. J. 2002. *Sustainable development* [online] [accessed 2 October 2009]. Available from Internet: <<http://www.wf-f.org/02-1-NSustainableDev.html>>.
- Baden, J. 2003. *L'économie politique du développement durable* [The Political Economy of Sustainable Development] [online] [accessed 2 October 2009]. Available from Internet: <<http://www.euro92.com/acrob/baden.pdf>>.
- Barry, D.; Bass, S. 2002. *Sustainable development strategies*. A resource book. London: Earthcan Publication Ltd.
- Dréo, J. 2007. *Sustainable Development* [online] [accessed 2 October 2009]. Available from Internet: <[http://commons.wikimedia.org/wiki/File:Sustainable\\_development.svg](http://commons.wikimedia.org/wiki/File:Sustainable_development.svg)>.
- Ferry, L. 2007. ENTRETEN Protéger l'espèce humaine contre elle-même [MAINTENANCE Protecting the human race against itself], *Revue des Deux Mondes*, Octobre-Novembre 2007: 75–79

- Food and Agriculture Organization of the United Nations. 2005. *Global Forest Resources Assessment 2005* [online] [accessed 2 October 2009]. Available from Internet: <[http://www.fao.org/forestry/static/data/fra2005/global\\_tables/FRA\\_2005\\_Global\\_Tables\\_EN.xls](http://www.fao.org/forestry/static/data/fra2005/global_tables/FRA_2005_Global_Tables_EN.xls)>
- European Commission. 2005. *General Report on the Activities of the European Union 2005* [online] [accessed 2 October 2009]. Available from Internet: <<http://europa.eu/generalreport/en/2005/index.htm>>.
- Global Footprint Network. 2008. *Ecological Footprint and the biocapacity results 2008* [online] [accessed 2 October 2009]. Available from Internet: <<http://www.footprintnetwork.org/download.php?id=509>>.
- IUCN. 1980. *The World Conservation Strategy: Living Resource Conservation for Sustainable Development* [online] [accessed 2 October 2009]. Available from Internet: <<http://data.iucn.org/dbtw-wpd/edocs/WCS-004.pdf>>.
- Jancovici, J. M. 2002. *À quoi sert le développement durable?* [What is sustainable development?] [online] [accessed 2 October 2009]. Available from Internet: <<http://www.manicore.com/documentation/dd.html>>.
- The Cabinet of Ministers of the Republic of Latvia. 2002. *Latvijas ilgtspējīgas attīstības pamatnostādnes* [Latvia's Sustainable Development Guidelines] [online] [accessed 2 October 2009]. Available from Internet: <<http://www.likumi.lv/doc.php?id=65563&from=off>>.
- LR CSP. 2009. Statistical database [online] [accessed 2 October 2009]. Available from Internet: <<http://www.csb.gov.lv/csp/content/?lng=en&cat=355>>.
- Mayers, J. 2006. *Poverty Reduction through Commercial Forestry What evidence? What prospects?* [online] [accessed 2 October 2009]. Available from Internet: <[http://environment.yale.edu/tfd/uploads/poverty\\_pub.pdf](http://environment.yale.edu/tfd/uploads/poverty_pub.pdf)>.
- McCormick, J. S. 1992. *The Global Environmental Movement: reclaiming Paradise*. London: Belhaven.
- Meadows, D.; Randers, J.; Behrens, W. W. 1972. *The Limits to Growth*. New York: Universe Books.
- msnbc.com news services. 2006. *Nearly 1 in 5 Chinese overweight or obese* [online] [accessed 2 October 2009]. Available from Internet: <<http://www.msnbc.msn.com/id/14407969>>.
- Muir, D. E. 1991. Using computers to explore ecological issues, *Population & Environmental* 13(2): 113–117. doi:10.1007/BF01255513
- RAPLM. 2007. *Latvijas ilgtspējīgas attīstības stratēģija līdz 2030.gadam. Pamatziņojums* [Strategy of Latvia's Sustainable Development until Year 2030. Basic Report] [online] [accessed 2 October 2009]. Available from Internet: <[http://www.latvija2030.lv/upload/lias\\_pamatziņojums\\_lat.pdf](http://www.latvija2030.lv/upload/lias_pamatziņojums_lat.pdf)>.
- Smith, K.; Edwards, R. 2008. *2008: The year of global food crisis* [online] [accessed 2 October 2009]. Available from Internet: <<http://www.heraldscotland.com/2008-the-year-of-global-food-crisis-1.828546>>.
- Stivers, R. 1976. *The Sustainable Society: Ethics and Economic Growth*. Philadelphia: Westminster Press.
- United Nations. 2005. *World Summit Outcome Document* [online] [accessed 2 October 2009]. Available from Internet: <<http://www.who.int/hiv/universalaccess2010/worldsummit.pdf>>.
- United Nations General Assembly. 1983. *Resolutions adopted by the General Assembly. 38/161. Process of preparation of the Environmental Perspective to the Year 2000 and Beyond* [online] [accessed 2 October 2009]. Available from Internet: <<http://www.un-documents.net/a38r161.htm>>.
- United Nations General Assembly. 1987. *Report of the World Commission on Environment and Development: Our Common Future* [online] [accessed 2 October 2009]. Available from Internet: <<http://www.un-documents.net/wced-ocf.htm>>.
- United Nations General Assembly. 2009. *Resolutions adopted by the General Assembly. 55/2. United Nations Millennium Declaration* [online] [accessed 2 October 2009]. Available from Internet: <<http://www.un.org/millennium/declaration/ares552e.htm>>.
- United Nations Population Division. 2009. *World Population Prospects: The 2008 Revision Population Database* [online] [accessed 2 October 2009]. Available from Internet: <[esa.un.org/unpp](http://esa.un.org/unpp)>.
- USAID. 2009. *Food Security* [online] [accessed 2 October 2009]. Available from Internet: <[http://www.usaid.gov/our\\_work/agriculture/food\\_security.htm](http://www.usaid.gov/our_work/agriculture/food_security.htm)>.
- Veon, J. 2004. *Sustainable development, Agenda 21 and Prince Charles* [online] [accessed 2 October 2009]. Available from Internet: <<http://www.newswithviews.com/Veon/joan19.htm>>.
- World Wide Fund for Nature. 2008. *Living Planet Report 2008* [online] [accessed 2 October 2009]. Available from Internet: <[http://assets.panda.org/downloads/living\\_planet\\_report\\_2008.pdf](http://assets.panda.org/downloads/living_planet_report_2008.pdf)>.