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## RESEARCH ARTICLE

### SUSTAINABLE DEVELOPMENT: AN EVALUATION ON THE EFFORTS AND RESULTS

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#### ABSTRACT

After the World War II, developed countries have been engaged in a race on economy, armory and superiority including testing new weapons without considering environment. On the other hand, undeveloped countries tried to catch up with developed countries as soon as possible in terms of economy and technology and they also kept ignoring the environment. During occurrence of environmental pollution, important international meetings were held on the subject. At the end, it was understood that the only solution was sustainable development after long discussion. In that model, meeting the needs of the present populations without compromising the ability of the future generations to fulfill their own needs is aimed. Of course, this is not easy but, it was unanimously accepted at the various meetings that humanity must succeed it. Thus, it is necessary to change our understanding on planning approach and consider sustainability in investment projects as a basic concept. In this article, conclusions of the meetings were evaluated and some proposals were made to contribute to the solution of the problem.

## INTRODUCTION

Natural resources which are used in feeding, clothing and sheltering are entrusted to us. They are also called as production factors in the economy. On the other hand, natural resources can be classified into two groups; renewable and non renewable. However, the amount of renewable or non-renewable resources are limited in nature. But, population is increasing continuously. There is an unbalanced situation. Therefore, natural resources must be used wisely, without deteriorating, wasting and polluting. In other words, sustainable development means planning infrastructure and superstructure such as housing, urbanization, agriculture, industry, energy and transportation in balance with ecology to meet the need of present generation but, also aiming to meet the needs of future generations. Before the industrial revolution, the population was not too high, there was no agricultural and industrial mechanization, and transportation was insufficient. Therefore, there was no environmental pollution and destruction. But, after the industrial revolution, sky-scrapers and other types of multi-storey buildings were built to meet the increasing labor demand, and fossil fuels were used to meet the increased energy requirement. More and more, natural resources have been used to meet the material demand for industrial production. Natural resources have been used to meet the material demand for industrial production.

After the Second World War, ignoring the environment, rapid economic development and the arms race and new weapons technologies were improved nuclear experiments started. Moreover, new weapons were tested by means of regional conflicts or wars. In this period, undeveloped countries tried to catch up with the developed countries in economy and technology as soon as possible. As a result of these negative developments, environmental pollution, degradation of the balance of ecosystems, rapid depletion of natural resources have been observed all over the world. That is how pollution and destruction have begun. But, when problems start to appear, some institutions and scientists started to seek solutions. The causes and results of these negative developments can be explained in Figure 1.

### History of International Studies

However, 1970's, when it was understood that environmental problems would threaten life on a global scale, then some initiatives were begun on searching for solutions to prevent problems. Indeed, in 1972 in Stockholm, Sweden, the UN 'Human and Environmental Conference " was convened and discussed the environmental problems on a global scale for the first time. Later, the report of the conference titled "Our Common Future" was published in 1987 at which sustainable development first entered to the public agenda.

Stockholm conference proved that environment was related with economy, technology and diplomacy and this accelerated the next processes in this regard. Therefore, the EU member states started to implement the environmental action program for the purpose of sustainability in 1973. The problems of human settlements and environmental issues were discussed at Habitat I Conference which was held in Vancouver, Canada in 1976. The manifesto of the conference was deeply supported to improve the quality of life by more equitably distribution from the national income and to make a plan for protecting environment in urban and rural areas. In 1983 Gro Harlem Brundtland who was President of the United Nations Commission on Environment and Development submitted "Our Common Future" report, published in 1987 to UN General Assembly. The most critical messages were given to the world public opinion with this report which can be summarized as follows:

- The present economic development approach cannot continue and must be changed
- Humanity has the ability, knowledge, and resources to achieve this. But, what we need is new values, concepts and global ethics.
- The basic concept will be the sustainable development for our common future

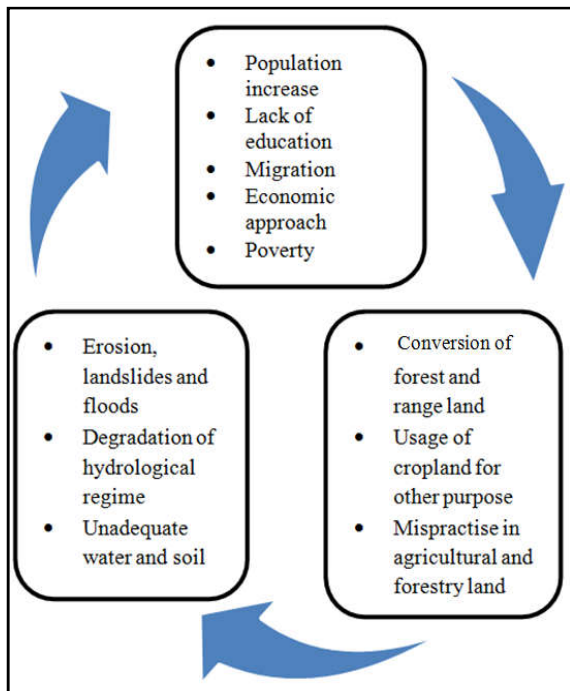


Figure 1. Cause and effects of degradation

According to the report, due to the unsuitable economic development programs only considering the economic benefit and the environment is sacrificed. The sustainability of development depends on adoption of the idea that the environment is supplied and limited of the economic development. It is generally agreed that the sustainability is environmentally sound management and social and economic concept for economic growth. The Maastricht Treaty established European Community which was put in to practice in 1993. According to the agreement, the member states must implement economic development programs which consider economy and environment at the same time. The Countries shall follow the policy considering preserving, protecting and improving the quality of the environment. Some important articles taken from the treaty are:

- Environmental quality should be protected and improved
- Human health should be protected
- Natural resources should be used rationally and wisely
- Protecting and improving measures should prevent environmental problems in the world.

In 1992 Rio Earth Summit "Sustainable Development", has been adopted as a common goal all of humanity in 21st century. Action Plan with the title of Agenda 21 containing action for the purpose of sustainable development and basic principles were approved at conference. Some other important principles adopted at conference are as follows:

- The countries participating to the conference should be respectful for protecting the integrity of the environment and development system in the world
- We must be respectful the human beings, because the sustainable development is for human beings
- Human beings have the rights for healthy and productive life compatible with the environment
- We should consider the elements of ecosystem of the Earth as interdependent and complementary
- Environment and development is a whole and cannot be considered separately. They are integral part of each other.
- Presently, Environmental Impact Assessment (EIA) is an essential tool for investment projects.
- Especially, the least developed countries have vulnerable and defenseless environmental conditions which must be given special priority.
- The EU member states must cooperate and collaborate in any areas in order to protect, and improve the environment in all countries

In June 1996, the heads of states or governments assembled at UN Conference on Human Settlements (Habitat II) in Istanbul and discussed the important subjects which are suitable housing and urban areas for sustainable human settlements in the world. Some important points from Istanbul declaration are as follows:

- Since human beings who are at the center of sustainable development, they naturally take place in the habitat agenda.
- Because, the development and environment are interdependent each other, adequate infrastructures, public services and employment possibilities in urban and rural areas must be supported.
- We approved the objects and principles of the program containing adequate shelter of sustainable human settlements development in urban and rural areas in the world.

The Millennium Summit was held in September 2000 in UN Headquarters in New York. World leaders unanimously adopted the Millennium Declaration. The summit identified the eight goals which would be realized until 2015. The goals are as follows;

- Eradication of extreme poverty and hunger
- Achieving primary and secondary education
- Promoting gender equality and empowering women

- Reducing child mortality
- Improving maternal health
- Combating HIV/AIDS, Malaria
- Ensuring sustainability
- Developing global partnership for development

The representatives of the world states assembled and they have strongly agreed the previous declarations, negotiated environmental problems and evaluated situations at the World Summit on Sustainable Development in Johannesburg in September 2002. Some important decisions from the conference on sustainability are as follows:

- We decided a declaration for the solutions of the urgent environmental deterioration problems in Stockholm in 1972.
- We have also agreed that the targets of sustainable development will be achieved by cooperation and constructive partnership.
- We have adopted that collective strength and constructive partnership will be essential for achieving the sustainability.
- We are aware of changing our consumption habit and production methods for protection of natural resources.
- Eradication of poverty is also important for achieving the sustainability.
- We accept that collective responsibility is essential for achieving the economic development, social development and environmental protection at the local, national, regional and global levels.
- The world environment suffers from problems such as, loss of biodiversity, desertification on fertile land, deforestation, flood, the adverse effects of climate change, natural disasters that have become more frequent and more devastating.

In June 2012 Rio+20 summit was held in Rio de Janeiro, Brazil. The conference agreed the outcome document entitled “The Future we want” which was a road map contained clear and practical measures for sustainable development. The leaders have reaffirmed the resolutions at previous meetings on sustainable development since 1972 Stockholm Conference. Some important Items were;

- Combating poverty
- Financing strategy for sustainable development
- Facilitation of technology transfer
- Green economy
- Partnership for sustainable development

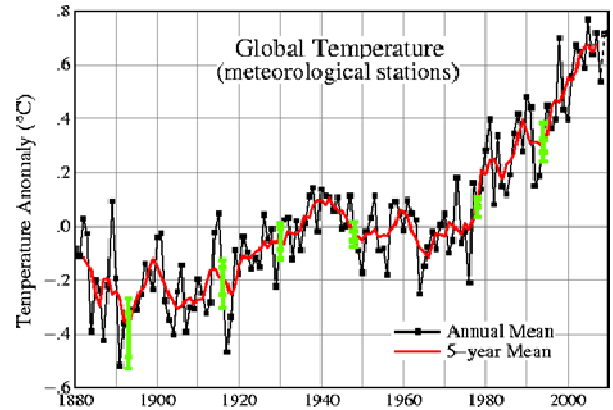
**RESULTS AND DISCUSSION**

According to the IPCC 5<sup>th</sup> report, emissions shows up word trend at which increased for CO<sub>2</sub> 46 %, CH<sub>4</sub> 160 % and NO<sub>2</sub> 22 %. Naturally, these increases will affect other parameter as well.

**Table 1.Green house gas emission (IPCC, 2015)**

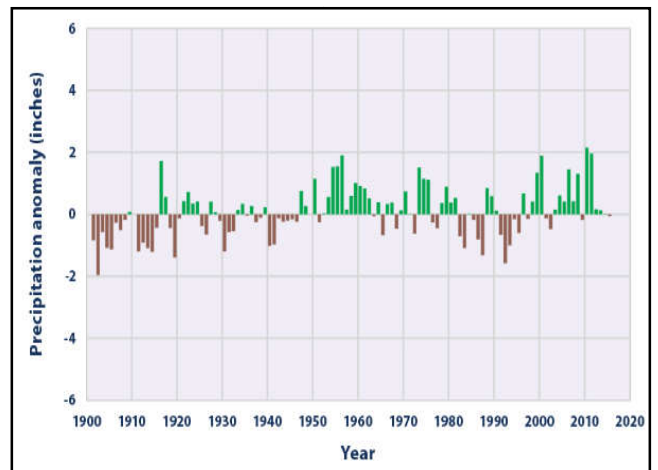
Parameter	Years	
	1750	2018
CO <sub>2</sub>	280	408
CH <sub>4</sub>	715	1859
N <sub>2</sub> O	270	330

World average temperature also shows an upward trend which increased about 1.5 F which is equal 0.7 C0 from the year 1800 to 2005. As a result of this, while polar glaciers and snow decreased, sea level rose Figure 2.



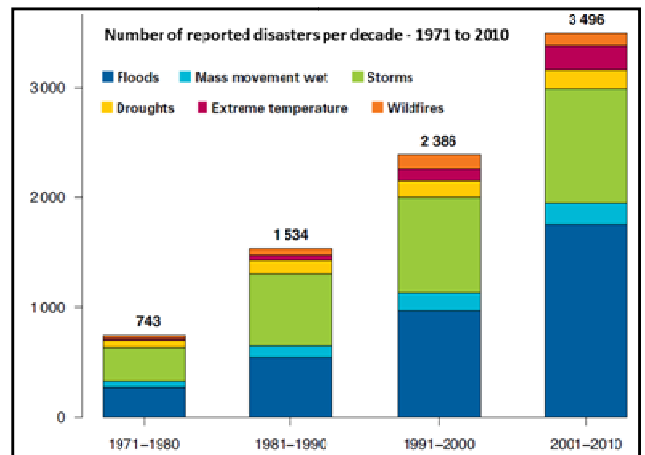
**Figure 2.Global temperature change, PNAS(2006)**

When we look at the precipitation distribution, it can be seen that there has been an irregularity. Although, between the years 1900 to 1950 precipitation anomaly had a decreasing trend. But after 1950, it had an increasing trend, Figure 3.



**Figure 3.Global precipitation anomaly (EPA, 2016)**

Undoubtedly, these negative developments have caused disasters such as flood, drought, storm, extreme temperature values in various regions Figure 4.



**Figure 4. Number of disasters (WMA, 2014)**

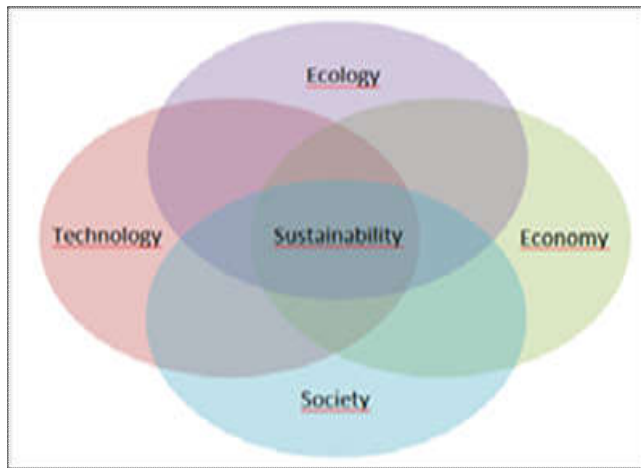


Figure 5. Sustainability: intersection area

### Components of sustainability

Economic development should not damage the environment. If it causes harm to environment, then the development model is wrong. Therefore, society must be transformed into an environmentally conscious one. Because, the presence of all living organisms including human depend on protecting the certain quality of natural resources in present and future. The only solution is to make environment compatible with economy and technology. Therefore, sustainability is the intersection point of ecology, technology and economy Figure 5. Integrated watershed management is very important concept in this regard. Because, all of natural resource such as water, soil, plant and animal are presented there and they are in interaction with each other. When any positive and negative changes occur on any resource, there can be a reciprocal effect on each other. This can be defined as ecological integrity. These issues were summarized at the following;

**Ecology:** The natural world is valuable, any vivid cannot be misused over the physical carrying capacity of nature, in order to meet the needs of themselves for their own use. Recycled or not, every natural resource should be used to provide continuation of them. Ecology or environment mainly consists of air, water and land. Let's examine them shortly;

**Air:** Each activity performed such as housing, transportation, industry emits pollutants into the atmosphere. Pollution in the air can also contaminate other sources by means of hydrologic circulation. But, it is possible to take these pollutants under control with a rational planning and by using latest modern technological methods.

**Water:** Since water resources are limited and determinant sources in nature, water pollution has multi- faceted effects. It should be main goal that waste water to be returned to nature in its original quality. Rain water was an important resource for using daily requirements as in the history and at present.

**Soil:** The soil is the last point where all other pollutants reach and accumulate. Pollutants are reacted in the soil which affects the chemical properties of soil. Integrated water watershed planning containing land use planning is essential for sustainable use of land at which the soil is used according to technical specifications.

**Economics:** According to the main idea of sustainable development, while meeting the needs of today, we should not forget that we must enable that future generations can meet their own needs. Therefore, natural resources must be shared fairly between today's societies and future generations. Basically, we should consume and produce as much as we need.

**Technology:** At the planning stage of any project or activities in nature, the environmental impact assessment (EIA) must be considered. New technologies of energy supply and production activities should not harm the environment, at regional or global level so that measures to be taken should be suitable to dimensions of the problems. Energy is the basic input for industrial production. But, it must be provided from renewable resources if possible.

**Society:** It should not be forgotten that human welfare depends on not only material but also social, cultural, moral and spiritual dimensions. Welfare, rights and possibilities, responsibilities should be distributed fairly among different social groups in the same country or among the countries. The poor and powerless people's rights must be protected and developed all over the world. Inequality, in all areas such as law, economy, education should be minimized for peace and sustainability in a society or in the world production and consumption pattern must be changed to achieve sustainable development.

### Conclusions and recommendations

Natural resources are entrusted to us, they should be used not only for the current generation of prosperity and wealth but also for future generations. The real problem can be expressed as a wrong perspective to the life. Therefore, the life style of the present society needs to be changed completely. Of course, this is not an easy task. But, we must work together in order to achieve that. Generally, when initiating an investment project, the dimensions such as economy, ecology, technology and society must be considered at the planning stage. Particularly, infrastructure and superstructure projects should not be implemented before making EIA. Some important proposals to achieve the goals of sustainable development are;

- People have the right to live in wellness and in a way compatible with nature
- Development and environmental protection cannot be considered separately.
- Civil education should be made to increase the environmental awareness and remind their duty.
- Citizens should be provided to achieve timely and accurate information about the environment of each country.
- It is necessary to take preventive measures before environmental degradation occurs.
- Environmental pollution and degradation is common, but there are different degrees of responsibility for countries.
- All countries, especially developing countries should keep the excessive population growth under control.
- The environment of least developed countries which is under pressure must be protected
- Countries are obliged to provide accurate information about environmental issues in advance and exceeding the country's borders.

- States must reform on the effective environmental legislation.
- States should promote sustainable development technology through scientific and technological cooperation.
- All countries should cooperate to protect the global ecosystem and integrity.
- Countries should resolve their disputes through peaceful means and other environmental issues.
- World peace, economic and technological development and environmental protection are inter dependent and indispensable.

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