Sustainability Method

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Thesis: The sustainability method used to create and maintain the balance in nature can be examined within the scope of three concepts: economic, environmental, social.

1. Economic concept of sustainability minimizes environmental damage while maintaining economic development.
2. Sustainable and Smart Economics
3. Green growth (Saufi, Daud & Hassan, 2016, pp. 374-378)
4. Ecological footprint (Cornelia, 2013, pp. 550-555 ; Alessandro Galli et all, 2016, pp. 383-391)
5. Sustainable Transport
6. Sustainable transport systems (Kelly, 2007, pp. 1-50)
7. Sustainable global automobile transport (Turton, 2006, pp. 607–629)
8. Environmental concept is one of the fundamental terms of sustainability that focuses on waste management and resources management.
9. Waste Management
10. The "3R" principle (Shuangguia, Baoguoa & Chunb, 2011, p.1190; Diaz, n.d., p.3)
11. Cradle to cradle approach (El-Haggar,2007, pp.16-18)
12. Resource Management
13. Renewable energy resources (Dincer, 2000, pp. 167-168)
14. Water management systems (Stec & Kordana, 2015, p.85; Muthukumarana, Baskarana & Sexton, 2011, Abstract section)
15. Social Concept
16. Social Cohesion in Communities
17. Place Identity (Manenti, 2011, p. 1105)
18. Social Equity (Eizenberg & Jabareen, 2017, pp. 6-8))
19. Social Dimensions of Sustainable Development
20. Health (Marimuthu & Paolose, 2016, pp. 556-559)
21. Education (Nasibulina, 2015, pp. 1078-1080; Gadotti, 2008, p. 11)

Up to the present time, nature has a structure that provides the balance within itself. However, the deterioration of this balance continues to increase constantly. Efforts to restore balance in nature motivated people to think of the sustainability concept. The concept of sustainability, which focuses on the balance of natural systems, can be defined as a fact that is shaped by taking future generations into consideration while focusing on efficient use of existing resources. The concepts of survival and welfare, which are related to the natural environment, form the basis of the phenomenon of sustainability (United States Environmental Protection Agency, n.d.). In the light of this information, sustainability becomes feasible with various methods. The sustainability method used to create and maintain the balance in nature can be examined within the scope of three concepts: economic, environmental, social.

Economic management systems have a share for the future of the world. Countries should adopt the concept of sustainability in order to prevent the negative effects on nature while developing their economy. Economic growth is one of the most important goals of governments. However, it is very important that they consider the side effects. Saufi, Daud and Hassan state that countries around the world are growing rapidly. They also added that this growth increases the living standards of the countries and reduces poverty in countries. However, this growth often brings about environmental damage. These depletions are mostly about water pollution, air, and other related problems. They also indicate that the acceleration speed of climate change has integrated another dimension of complexity into the relationship between economic growth and environmental regression. They also point out green growth has proposed a new model by different organizations that offer a variety of solutions to deal with existing environmental challenges such as energy saving and renewable energy generation, pollution and waste reduction, and more efficient use of resources (2016, para 1-6). Consequently, many countries are growing economically. As a result, we are faced with environmental problems. The green growth concept is able to make the growth eco-friendlier and more sustainable. Another point is unsystematic consumption and production can cause economic, social and environmental problems. As Galli stated in 2016, humanity faces economic, social and environmental crises because of current unsustainable patterns of consumption and production (2016, p. 383). Besides, in another study, as Cornelia stated in 2013, ecological footprint is the amount of soil required to absorb waste and provides the necessary resources and energy. He also indicates that an EF studies is close to assessing the person allowance of final primary production (or NPP). The main difference from other NPP studies is that the footprint states the results in volumetric measurement units instead of energy or mass equivalents. Cornelia points out there are three different methods to adjust the footprint of fossil fuel consumption. All of them are based on the idea that humankind must not sabotage the ecosystem's activities and biological diversity in order to be sustainable (2013, pp. 552-553). To summarize, the analysis of ecological footprint is very important for the environment. The manufacturing and consuming systems must adopt a sustainable and ecological consumption and production pattern. When all this information is considered, to provide a more livable world for the future, this process should be taken under control with a sustainable model.

Sustainable transport organization must provide flexibility and availability to all public residents in a safe and the eco-friendly type of transport. This system has a great impact on economy of the countries and also environment. The demands of people are changing day by day, and it is really hard to guess what humanity will face in the future. However, a body of research show us some predictions and analysis. Transport and economic growth topics are connected with each other, and transport has a vital role to play in supporting sustainable economic growth. Kelly states that transport is very crucial for a sustainable growth and developing quality of life. She added that quality of life affected by transport in both negative and positive way. She mentions that the negative effects are more obvious and very significant for the people’s life and environment. They include the noise and vibration of road, rail and air traffic, oil-spills on beaches and etc. She added that the transport also affects in positive way by supporting the economy growth and enabling them to visit friends and relatives and travel the world. She also refers what were the plans of the Britain Government for a sustainable future. She added that The Department was encouraging local authorities to adopt better techniques for managing corruptive incidents, and more predictable traffic flows. She also mentions that providing direct information to individuals has led to people deciding about greener and healthier travel options (2017, pp. 1-50). As a result, the transport is important to improve the life quality of people and grow the economy. The governments should consider this subject to minimize the negative effects and increase the positive effects for a sustainable future. Other point is shifting of transportation from air travel to car travel. This condition makes the importance of automobile technologies much more considerable than before. The development shows that these technologies can reduce the hazardous effects of transport. Various types of fuel supply started to be used and the engineers and the scientists want to figure out which one is more efficient and effective. Turton states that eventual transportation demand is not certain, but it is expected that as activity in developing countries increases, transport action will grow rapidly over the 21st century, with a concomitant expand in energy consumption. He also added that expanded energy amount diminishes the purchasing power of travel money budget, resulting in a shift away from air transit to automobile travel. New car technologies become even more important in this scenario and this technology have potential to reduce urban air pollution, greenhouse gas emission and the danger of energy procurement corruption. As Turton explained:

Deployment of new technologies plays an important role in realizing a sustainable transport system. In this scenario, in automobile transport there is initially an almost total transition from internal combustion engine vehicles to hybrid-electric vehicles, and eventually a shift towards hydrogen fuel cell vehicles. (p. 624)

Turton further noted that, the energy systems can change into more efficient and sustainable ones with technological improvements (2006, pp. 607–629). Consequently, cars are the most used transportation vehicles, and it is very crucial to improve car technologies for reducing CO2 emission and any other detrimental environmental impacts. Advancement on transport technologies and planning a well-designed, defined transport system are the crucial topics about sustainable transport system. These developments have the power to influence the country's economy, and it is also vital for the environment.

The second main concept of using the sustainability method is environmental concept. To begin with, waste management method is very important for environmental sustainability. One of the main ways of waste management is that 3R principle. Shuangguia, Baoguoa and Chunb maintain that 3R principle, is primarily recommended to solve solid waste management, which has the connection between the sustainable development and nature from production, improvement, and application (2011, para. 1-2). In another study Diaz explains the application of reducing, reusing, and recycling. Reducing method which is decline of the amount of waste production, is one of the most significant methods bring to successful conclusion in sustainable development. Reusing is the use of a product or material several times when reusing item in initial condition or new form. He concluded that the last method of the 3R is recycling which is the process of to bring new life for waste materials and these materials are recovered to transform into new products (n.d., p.3). In the light of these facts, the 3R principle has an important place in every aspect of our lives. Reducing, reusing, recycle should be taken into account for a sustainable life. In addition, another way of waste management is cradle to cradle approach. The cradle to cradle which can be defined as useful design framework for generating products and industrial systems in a beneficial relationship with environmental health and prosperity, and long-term economic growth. (Braungart, McDonough & Bollinger, 2007, Abstract section). As El-Haggar stated in 2007, the design of the product might be chosen in compliance with protected disposal. Although this action saves the habitat, it consumes natural resources. When cradle to cradle approach is used in design process, materials of product can be reused, recycled and there is no waste in production of this material. As a result of this approach, there are no damaging effects on environment. He also said that implementation of cradle to cradle approach and the completely change in related to manufacturing organization to a closed cycle method of supplies run out protect the surrounding from waste producing and its adverse impacts (pp.17-18). This clearly shows that the cradle to cradle approach which is very critical for sustainable development, tries to eliminate waste problems. As a result, waste management has a great importance for sustainability in the environmental concept.

In addition to waste management, the second main method that environmental sustainability is resource management. Primarily, an important way of resource management is renewable energy sources. Dincer states that renewable energy resources, which seem to remain one of the most adequate and persuasive clarifications, generate saleable energy by changing completely natural experiences into beneficial types of power (2000, Abstract section). The renewable energy mechanizations work with the natural power in solar light and its uninterrupted and interrupted effects on the Earth are photons, air current, dropping water, calefaction impacts, and greenery accretion, that geomagnetism forces as the tendency, and the high temperature of the core of Earth as geothermal sources for generating energy. He also said that renewable energy resources may have positive effects on the main topic such as major environmental problems, environmental degradation, exhaustion of the nonrenewable energy sources on the Earth, and rising energy use in developing countries. In addition, these renewable energy resources serve an enormous energy potential instead of fossil resources (2000, p.167). To conclude, renewable energy resources which should be preferred rather than fossil fuels for the environment and their use are closely have connection with sustainable advancement. In conjunction with this, resource management method comprises of not only for renewable energy resources but also water management systems. As Stec and Kordana maintain, some of the existing water management systems are sewage systems, treated sewage and rain water management. To increase the productivity of the existing water management systems which is possible by declines the request in tap water, use of equipment to decrease of water consuming, efficient consume of recycling of gray water and atmospheric water. They also say that rainwater which is used as different resource of water used since lots of years all over the world, preferred consumed both as potable water supply and undrinkable water. Gray water which as it might accept unusual water sources, is reusing as a source of liquid of lower condition, the improvement of technologies provide the utilization of the coordination of reusing gray water in wide area (2015, p.85). Muthukumarana, Baskarana, Sexton's 2011 study found the following:

The use of rainwater inside the home alone saved up to 40% of potable water use. In addition to the water savings, there is a significant waste water discharge saving achieved through the use of water conservation strategies and grey water reuse (Abstract section).

Considering the information above, water recycling in water management systems plays an important role day by day, owing to the availability of usable clean water resources which is significantly reduced. A great savings can be achieved by collecting and recycling rainwater plus gray water. It can be concluded that the resource management has significant benefits for environment. Renewable energy resources and water management systems which are part of resource management, help the environmental concept of sustainability.

The third and the last concept of sustainability is called social sustainability which is accepted as an approach for creating and maintaining livable communities through various systems and structures. The first of these structures concentrates on the social cohesion in communities and one of the most important elements discussed under this heading is termed as place identity. The place identity can be regarded as an element approaching from many different perspectives on how individuals make sense of their relationships with the space they are in. As Manenti stated, the concept of sustainability, which is mainly addressed through environmental sources, focuses on the constancy of life in the world, while at the same time centering on the interactions of people under the notion of culture. In addition to culture, it is said that human and communication are considered as intertwined approaches in the process of defining the basic identity of the individual in the world of elements related to the surroundings (2011, p. 1105). Consequently, with a reliable analysis on the combination of environment and cultural elements, it will be possible to obtain information about a person’s identity as well as the development process of it. In addition to the notion of place identity, another substantial factor to focus on is social equity. The concept of sustainability, which cannot be considered independently of the individuals as stated before, directs the approach of individuals to sustainability by centering upon the perception of equity. As it is pointed out in the "Social Sustainability: A New Conceptual Framework", the concept of equity examined within the scope of social sustainability aims at increasing interest in environmental concerns by focusing on providing individuals with better justice in social, environmental and economic areas. It is also stated that for all individuals and for all societies regardless of their characteristics, equity, which is a requested fact of social sustainability, can be inspected under two aspects: intergenerational equity concentrating on equitable distribution of resources between present and future generations and intergenerational equity focusing on impartialness in distribution of conflicting interests in today's conditions (Eizenberg & Jabareen, 2017, pp. 6, 8). By considering this data, societies that successfully address the equity concept develop a source of motivation for individuals. All in all, it can safely be said that concepts of place identity and social equity should be handled properly so that a social infrastructure can be created for a sustainable approach in communities.

Another important structure that social sustainability focuses on is called the social dimensions of sustainable development. If social dimensions are examined under subheadings, it is possible to say that one of the striking elements can be defined as health improvement. As it is stated in the article, although the concept of social sustainability, which cannot be thought independently from the wellbeing phenomenon, focuses on a repeated improvement of service, cost efficiency and the effective management of sources, the lack of a structure that will function in the desired performance can be seen in today's healthcare. In addition, health organizations can be divided into environment, customer, employee and community sub-headings and sustainability practices within the framework of these concepts can improve the quality, efficiency, and trust desired in the health sector (Marimuthu & Paulose, 2016, pp. 555-556). As a result, the health sector, which is developed within the framework of social sustainability concept, will improve social awareness as well as the structure providing efficiency and will continue its productive functioning with the perception of trust it creates while contributing to the quality of life of individuals. Besides health improvement, another important sub-topic that social dimension concentrates on is termed as education. As Nasibulina pointed out in the article, education for sustainable development is a concept that is first revealed by the United Nations and considered as one of the main factors for an improved, sustainable and secure future. Moreover, education for sustainable development can be defined as an element shaping social relations and society, aiming to increase the quality of life on the society basis by creating a new consciousness (pp. 1078-1079). She also explained:

At the moment the main objectives of ESD are the development of systemic worldview and critical thinking, acquisition of new knowledge and skills contributing to sustainable development of the society, teaching healthy lifestyle, nurturing of high moral values, teaching of sustainable consumption and nurturing of social activism (2015).

By considering this data, it can be said that the concept of education makes society a conscious structure under the theme of sustainability by applying envisioned practices. In addition, as Gadotti points out, creating a structure that varies at points where education levels differ by age and perceptions, while adding both people and systems to solution practices, can also be a fundamental step for a society to reach the requirements of sustainability (n.d., p. 11). From all these, while considering the social cohesion, at the same time it can be predicted that a sustainable society structure can be developed through practices that provide efficiency in health improvement and education.

In conclusion, economic, environmental and social aspects of sustainability are developed to protect the balance in nature. Sustainability combines these three concepts and evolves the society in many ways. The developing society also creates sensitive individuals within the framework of sustainability and forms the basis for a universal understanding of the countries and then the world. Consequently, more steps should be taken for a more livable world by diversification and development of the methods.

References

Braungart, M., McDonough, W., & Bollinger, A. (2007). Cradle-to-cradle design: creating healthy emissions e a strategy for eco-effective product and system design. *Journal of Cleaner Production, 15,* 1337–1348. doi:10.1016/j.jclepro.2006.08.003

Cornelia, P. G. (2013) True cost economics: ecological footprint. *Procedia Economics and Finance, 8*, 550-555. doi:10.1016/S2212-5671(14)00127-0

Diaz, L.F. (n.d.). The 3Rs as the Basis for Sustainable Waste Management: Moving Towards Zero Waste. Italy.

Dincer, I. (2000). Renewable energy and sustainable development: a crucial review. *Renewable and Sustainable Energy Reviews, 4,* 157–175. doi: 10.1016/S1364-0321(99)00011-8

Eizenberg, E., Jabareen, Y. (2017). Social sustainability: a new conceptual framework. *Sustainability, 9,* 68. doi:10.3390/su9010068

El-Haggar, S.M. (2007). *Sustainable Industrial Design and Waste Management: Cradle-to-Cradle for Sustainable Development.* Burlington, USA: Academic Press. doi.org/10.1016/B978-0-12-373623-9.X5000-X

Gadotti,M. (2008). Education for sustainability: a critical contribution to the decade of education for sustainable development.  *Green Theory & Praxis: The Journal of Ecopedagogy, 4*. doi:10.3903/gtp.2008.1.3.

Galli, A. Iha, K. Halle, M. Bilali, H. E. Grunewald, N. Eaton, D. Bottalico, F. (2017). Mediterranean countries' food consumption and sourcing patterns: An Ecological Footprint viewpoint. *Science of the Total Environment, 578,* 383-391. doi:10.1016/j.scitotenv.2016.10.191

Kelly, R. (2007). *Towards a Sustainable Transport System*. London: The Secretary of State for Transport.

Manenti, C. (2011). Sustainability and place identity. *Procedia Engineering, 21,* 1104–1109. doi:10.1016/j.proeng.2011.11.2117

Marimuthu, M., Paulose, H. (2016). Emergence of sustainability based approaches in healthcare: expanding research and practice.  *Procedia - Social and Behavioral Sciences, 224,* 554–561. doi:10.1016/j.sbspro.2016.05.437

Muthukumarana, S., Baskarana, K., & Sexton, N. (2011). Quantification of potable water savings by residential water conservation and reuse – A case study. *Resources, Conservation and Recycling, 55,* 945–952. doi:10.1016/j.resconrec.2011.04.013

Nasibulina, A. (2015). Education for sustainable development and environmental ethics. *Procedia - Social and Behavioral Sciences, 214,*  1077–1082. doi:10.1016/j.sbspro.2015.11.708

Saufi, N. A. A., Daud, S., & Hassan, H. (2016). Green Growth and Corporate Sustainability Performance. *Procedia Economics and Finance, 35,* 374-378. doi:10.1016/S2212-5671(16)00046-0

Shuangguia, Y., Baoguoa, J., & Chun, L. (2011). The Tentative Idea Of Energy Recovery Based On "3R" Principle. *Procedia Engineering, 21,* 1188–1192. doi:10.1016/j.proeng.2011.11.2129

Stec, A., Kordana, S. (2015). Analysis of profitability of rainwater harvesting, gray water recycling and drain water heat recovery systems. *Resources, Conservation and Recycling, 105,* 84–94. doi:10.1016/j.resconrec.2015.10.006

Turton, H. (2006). Sustainable global automobile transport in the 21st century: An integrated scenario analysis. *Technological Forecasting & Social Change, 73,* 607-629. doi:10.1016/j.techfore.2005.10.001