COMPARATIVE ANALYSIS OF ECONOMIC AND ENVIRONMENT SUSTAINABILITY

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Abstract

Sustainable development becomes a necessary practice in every country. Real estate has always been an essential need for humans to survive; almost all human activities are related to real estate. Due to that, as well as due to the growth of population, real estate has grown in numbers in the world for our basic need fulfillment. Major studies have shown that real estate objects are one of the major contributors negatively affecting our environment. Sustainable real estate development is a crucial practice implemented by successful countries and other countries are following them, adopting good practice in this field. Sustainable real estate development analysis not only helps to solve climate change issues, but also increases asset value. Many of the standard explanations, such as the income and wealth of the community, the liberalness of the city, and the growth pressures placed on the city, are found to exhibit no correlation with the seriousness of the sustainability effort. What does correlate with the Index is reliance on manufacturing, where having more residents employed in manufacturing industries is associated with less seriousness, and the age of the population, where cities with older populations take sustainability more seriously.

Keywords: Sustainable, economic, environment and Corporate Sustainability Assessment etc.

1. Introduction

Rachel Carson's book Silent Spring (1962), in which she describes the powerful—and often negative—effect humans have on the natural world, gave birth to the modern environmental movement. Initially, the environmental movement was mostly concerned about

toxics such as Dichlorodiphenyltrichloroethane (DDT) and other pesticides. Later, the focus shifted to air pollution, such as acid rain, and there is a current focus on the continued global warming and the accumulation of plastics in the oceans. Awareness of the damage being done to the planet has gradually pushed scientists and policy-makers to struggle with the problem of climate change (among other issues) because of anthropic activity. In this regard, the concepts of sustainable development [1] and sustainability, which are closely related to each other, were introduced into public discussion. However, the definition of sustainable development introduced by the Brundtland Report has been criticized for its focus on continued economic growth in a limited world [2, 3], in opposition to the theories on limits to growth [4, 5]. So far, economic growth has been almost directly correlated with the exergy from fossil fuel combustion [6]. Thus, continued industrialization and technological development, conceived as human triumph over nature [7], has led to a rapid overexploitation of natural resources without ensuring a maximum long-term use. Continued economic growth has led to an overuse of environmental resources. Global warming is an example of the overuse of waste sinks, as greenhouse gases are wastes (i.e., an unwanted product from the burning of fossil fuel) emitted into the atmosphere. In this context, it is of paramount importance that all economic sectors contribute to ensuring a long-term ecological balance that fosters an exploitation of the natural resources aligned with the restoring capacity of the planet. This is the foundation of sustainability that, in technical terms, is commonly examined

through three dimensions: the effect of a phenomenon or system on society (often referred to as social sustainability), its impact on the environment (often referred to as environmental sustainability), and its economic implications (often referred to as economic sustainability). This threefold depiction (Figure 1) is called the triple bottom line (TBL) of sustainability; it was first introduced by Elkington [8] in 1994 and is still used nowadays.

The aim of the TBL is to consider the impact of resource consumption and the value creation in terms of integration among the three dimensions, assuming that each of them is equally important. According to the Western Australia Council of Social Services [9], social sustainability is the capacity to provide a good quality of life by creating healthy and livable communities based on equity, diversity, connectivity, and democracy.

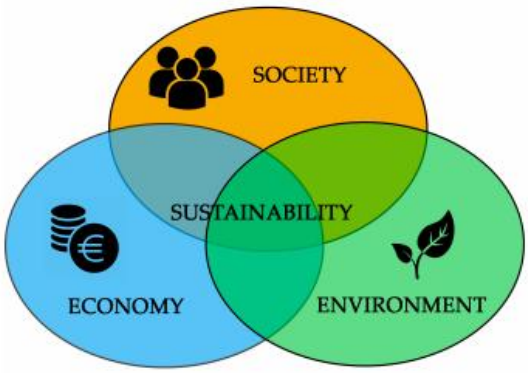

Figure 1: Triple bottom line of sustainability [8].

This moral capital requires the maintenance and the replenishment of shared values and equal rights. Human capital is accepted today as part of economic development [10]. In this regard, it is necessary to define economic sustainability as the optimal employment of existing resources, so that a responsible and beneficial balance can be achieved over the long-term to reach the preservation of the capital. Economic sustainability concerns the real economic impact that a society has on its economic environment. The final definition to complete the triad of the TBL is environmental sustainability. It is defined as the capacity to use natural resources without exceeding their regenerative capacity and protecting the "natural capital" to prevent harm to humans and the environment. This means constraining the scale of the human economic system within the biophysical limits of the overall ecosystem on which it depends; therefore, environmental sustainability is inherently linked with the concepts of sustainable consumption [9].

II. SUSTAINABILE DEVELOPMENT ISSUES, REGULATIONS AND TENDENCIES IN THE WORLD

Based on the Corporate Sustainability Assessment (CSA), an annual environmental, social and governance analysis was conducted by RobecoSAM (2016) organization. Sustainability profile of a country is analyzed considering three main factors: Environmental, Social and Governance (ESG). World Sustainability Ranking by country is shown in Figure 1. As Figure 2 shows, Sweden is on the top with Switzerland closely behind, and governance plays the key role in ensuring higher ranking in the evaluation of sustainability level. The Coordination Unit for Sustainable Development has been established in Sweden to coordinate the work on sustainable development.

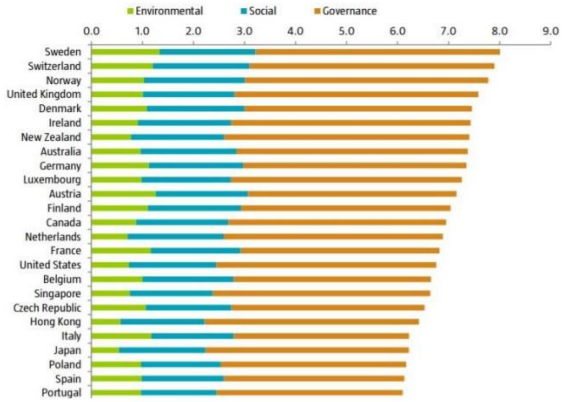

Fig. 2: World Sustainability Ranking, April 2016 (RobecoSam, 2016).

The task of this unit within the Ministry of Sustainable Development is to coordinate and lead the work to facilitate implementation of the national strategy. The Unit is also responsible for development of actions of Sweden in sustainability issues, both in the European Union and the UN Commission on Sustainable Development (CSD). According to the research article European Economic Sustainability Index, June 2010 from EPC (European Policy Centre, 2010), in 2007 Latvia was ranked 2nd among European countries in Sustainable Economic Index, which dropped to 23rd place in 2010, whereas, Sweden moved from the 8 th in 2007 to the 1st place in 2010.

Sweden along with Denmark and Germany had maintained a high sustainability level for many years.

As it was described in the Sustainable Development in the European Union, 2013 (Monitoring Report of

the EU sustainable development strategy) by Eurostat Statistical Books (2013), good governance plays a vital role. It includes greening taxation policies and that in turn means that the government can encourage buyers to pay lower taxes for lower energy consumption. This increase in government revenues can help to reduce government deficit or lead to reduction of other taxes and most importantly it will help in achieving Europe's environmental goals. The ten Sustainable Development Indicators developed by the report of 2013 Sustainable Development in the European Union are:

- Socioeconomic development;

- Sustainable consumption and production;

- Social inclusion;

- Demographic changes;

- Public health;

- Climate change;

- Sustainable transport;

- Natural resources;

- Global partnership;

- Good governance.

These indicators were developed to focus on the progress in reaching the objectives set by policies like Europe 2020 Strategy accounting for the recent changes in Europe. India aims to develop 20 percent of its new households to be green by 2020 according to an article named Sustainable Housing Leadership Consortium by European External Action Service (2017). These 20 percent of new houses will be able to save 198 million kWh per year, which will be enough to power 100,000 homes. It will also help in saving 108 billion liters of water and it will reduce India's carbon footprint, which means reduction of carbon-dioxide by 0.2 million metric tons. The plan released by the United Nations named "Transforming our World: The 2030 Agenda for Sustainable Development (September 2015)" highlights 17 goals, their sole purpose is to achieve sustainability in many areas in the world by 2030. These 17 global goals are:

- No poverty;

- Zero hunger;

- Good health and well-being;

- Quality education;

- Gender equality;

- Clean water and sanitation;

- Affordable and clean energy;

- Decent work and economic growth;

- Industry, innovation and infrastructure;

- Reduced inequality;

- Sustainable cities and communities;

- Responsible consumption and production;

- Climate action;

- Life below water;

- Life on land;

- Peace and justice strong institutions;

- Partnership to achieve the goals.

Sustainable real estate object analysis in Sweden is conducted in the next part.

III. The Concepts of Sustainability, Sustainable Development, and Sustainable Communities

The concepts of sustainable cities and sustainable communities have their genetic roots in the general concept of sustainability and its close cousin sustainable economic development, and in particular conceptions of what constitutes a "community." Ever since the term "sustainable communities" was first brought into the lexicon of environmentalism, scholars and practitioners have seized upon it to promote and facilitate various kinds of pro-environmental change. While the term obviously seems to convey great meaning to a wide array of people, the fact is that, as a matter of practice, it has come to mean so many different things to so many different people that it probably does as much to promote confusion and cynicism as positive environmental change. Sustainability is a concept that is fairly abstract and broad, subject to a variety of understandings and meanings. When the concept of sustainability is coupled with the idea of community, which is itself an abstract, and, some would say, almost meaningless concept, finding meaning in the idea of sustainable communities seems hopeless.

But as a matter of practice, the idea of sustainable communities has evolved in such a way as to provide greater meaning than would initially appear. As originally envisioned the concept of sustainable communities was derived in an attempt to account for a large number and variety of environmental and inter-personal impacts of economic growth, broadly defined, not comfortably accommodated by neo-classical economic theory or practice. In short, sustainable communities have been thought of as mechanisms that can be used to redress the often negative or deleterious environmental and social effects of adherence to mainstream approaches to economic development. In contemporary applications of the concept of sustainable communities, key elements of the original vision are frequently omitted, overlooked, or substantially modified. Before attempting to provide a specific definition of sustainable communities, it is necessary to explore the broader underlying concepts of sustainability.

Sustainability, and its close cousin sustainable development, is perhaps best thought of as general concepts whose precise definitions have yet to be fully explicated. Charles Kidd argues that there are at least six different historical intellectual strains of thought that underlie the contemporary concept of sustainability, each with its own "slant" or articulation of particularly important foundational issues. He discusses the "ecological/carrying capacity" root, the "natural resource/environment" root, the "biosphere" root, the "critique-of-technology" root, and the "eco development" root. (Kidd, 1992) Becky J. Brown and colleagues suggest that in contemporary usage, the term sustainability has some six different definitions that relate to "sustainable biological resource use," "sustainable agriculture," "carrying capacity," "sustainable energy," "sustainable society and economy," and "sustainable development." (Brown, Hanson, Liverman, and Meredith, 1987: 713-719). Each of these intellectual roots and definitions suggests its own set of yardsticks that could be used to measure how seriously a city takes sustainability, and to some degree each can be found in sustainability efforts across cities. Whether, and the extent to which, a particular city's initiatives are built on the base of any one set or combination of definitions is determined by a variety of local social and political factors.

IV. Economic and environmental sustainability in India

One of the key environmental problems facing India is that of particle pollution from the combustion of fossil fuels. This has serious health consequences and with the rapid growth in the economy these impacts are increasing. At the same time, economic growth is an imperative and policy makers are concerned about the possibility that pollution reduction measures could reduce growth significantly.

4.1. Sustainable Development in India: Perspectives

In 1972, the then Prime Minister of India, Mrs. Indira Gandhi emphasized, at the UN Conference on Human Environment at Stockholm, that the removal of poverty is an integral part of the goal of an environmental strategy for the world. The concepts of interrelatedness, of a shared planet, of global citizenship, and of 'spaceship earth' cannot be restricted to environmental issues alone. They apply equally to the shared and inter-linked responsibilities of environmental protection and human development. History has led to vast inequalities, leaving almost three-fourths of the world's people living in less-developed countries and one-fifth below the poverty line. The long-term impact of past industrialization, exploitation and environmental damage cannot be wished away. It is only right that development in this new century be even more conscious of its long-term impact. The problems are complex and the choices difficult. Our common future can only be achieved with a better understanding of our common concerns and shared responsibilities.

4.2 Poverty Eradication and Sustainable Livelihoods

Poverty and a degraded environment are closely inter-related, especially where people depend for their livelihoods primarily on the natural resource base of their immediate environment. Restoring natural systems and improving natural resource management practices at the grassroots level are central to a strategy to eliminate poverty. The survival needs of the poor force them to continue to degrade an already degraded environment. Removal of poverty is therefore a prerequisite for the protection of the environment. Poverty magnifies the problem of hunger and malnutrition. The problem is further compounded by the inequitable access of the poor to the food that is available. It is therefore necessary to strengthen the public distribution system to overcome this inequity. Diversion of common and marginal lands to 'economically useful purposes' deprives the poor of a resource base which has traditionally met many of their sustenance needs. Market forces also lead to the elimination of crops that have traditionally been integral to the diet of the

poor, thereby threatening food security and nutritional status.

While conventional economic development leads to the elimination of several traditional occupations, the process of sustainable development, guided by the need to protect and conserve the environment, leads to the creation of new jobs and of opportunities for the reorientation of traditional skills to new occupations.

Women, while continuing to perform their traditional domestic roles' are increasingly involved in earning livelihoods. In many poor households they are often the principal or the sole breadwinners. A major thrust at the policy level is necessary to ensure equity and justice for them. Literacy and a basic education are essential for enabling the poor to access the benefits offered by development initiatives and market opportunities. Basic education is therefore a precondition for sustainable development. A sizeable proportion (about 60 per cent according to some estimates) of the population is not integrated into the market economy. Ensuring the security of their livelihoods is an imperative for sustainable development.

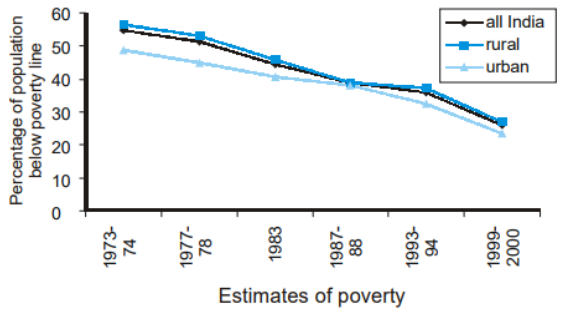

Fig 3: Comparison of rural, urban and all India

With increasing purchasing power, wasteful consumption linked to market driven consumerism is stressing the resource base of developing countries further. It is important to counter this through education and public awareness. In several areas, desirable limits and standards for consumption need to be established and applied through appropriate mechanisms including education, incentives and legislation. Several traditional practices that are sustainable and environment friendly continue to be a regular part of the lives of people in developing countries. These need to be encouraged rather than replaced by more 'modern' but unsustainable practices and technologies. Development decisions regarding technology and infrastructure are a major determinant of consumption patterns. It is therefore important to evaluate and make development decisions which structurally lead to a more sustainable society. Technologies exist through which substantial reduction in consumption of resources is possible. Efforts to identify, evaluate, introduce and use these technologies must be made.

Subsidies often lead to wasteful and unsustainable consumption by distorting the value of a resource. All pricing mechanisms must be evaluated from a sustainable development point of view.

4.3 Protecting and Managing the Natural Resource Base of Economic and Social Development

The integration of agriculture with land and water management, and with ecosystem conservation is essential for both environmental sustainability and agricultural production. An environmental perspective must guide the evaluation of all development projects, recognizing the role of natural resources in local livelihoods. This recognition must be informed by a comprehensive understanding of the perceptions and opinions of local people about their stakes in the resource base. To ensure the sustainability of the natural resource base, the recognition of all stakeholders in it and their roles in its protection and management is essential. There is need to establish well-defined and enforceable rights (including customary rights) and security of tenure, and to ensure equal access to land, water and other natural and biological resources. It should be ensured that this applies, in particular, to indigenous communities, women and other disadvantaged groups living in poverty. Water governance arrangements should protect ecosystems and preserve or restore the ecological integrity of all natural water bodies and their catchments. This will maintain the wide range of ecological services that healthy ecosystems provide and the livelihoods that depend upon them. Biomass is, and will continue for a long time to be, a major source of fuel and energy, especially for the rural poor.

Fig 4: Economic and Social Development

Recognizing this fact, appropriate mechanisms must be evolved to make such consumption of biomass sustainable, through both resource management and the promotion of efficient and minimally polluting technologies, and technologies which will progressively reduce the pressures on biomass, which cause environmental degradation. The traditional approaches to natural resource management such as sacred groves and ponds, water harvesting and management systems, etc., should be revived by creating institutional mechanisms which recapture the ecological wisdom and the spirit of community management inherent in those systems.

4.4. THREE PILLAR BASIC MODEL

This is one of the most well-known models created using the three dimensions -Economy, Environment and Society. The diagram shows three interlocking circles with environmental (conservation), economic (growth), and social (equity) dimensions. Sustainable Development is modeled on these three pillars. This model is called 'three pillars' or 'three circles model'. It is based considering the society, but does not explicitly take into account 'human quality of life'.

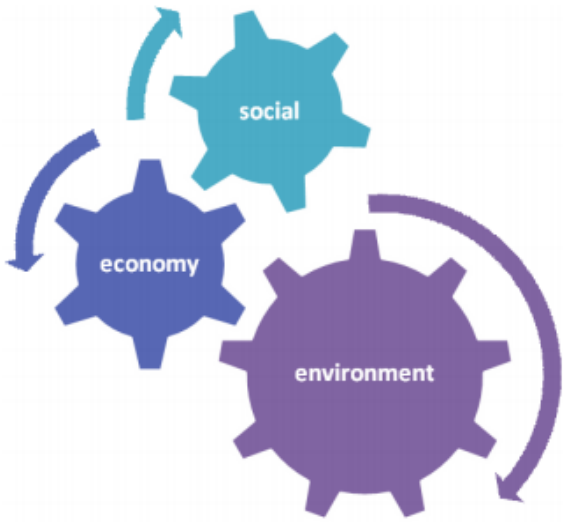

Fig 5: Dimension of Sustainability

However, improvements to this three circles model have been made and a dimension is being incorporated along with social, economy and environment. This fourth dimension is institutional dimension that is playing a crucial role in sustainable urban development, whether it is government institution or private institution or alliance of both.

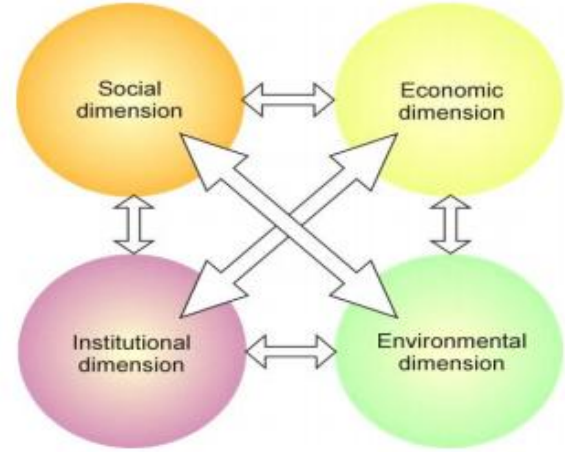

Fig 6: Institutional dimension

4.5 THE EGG OF SUSTAINABILITY

The 'Egg of Sustainability' model was designed in 1994 by the International Union for the Conservation of Nature, IUCN (cf. Guijt & Moiseev 2001). It illustrates the relationship between people and ecosystem as one circle inside another, like the yolk of an egg. This implies that people are within the

ecosystem, and that ultimately one is entirely dependent upon the other. Just as an egg is good only if both the white and yolk are good, so a society is well and sustainable only if both, people and the ecosystem, are well. Social and economic development can only take place if the environment offers the necessary resources: raw materials, space for new production sites and jobs, constitutional qualities (recreation, health etc.). Ecosystem is therefore to be regarded as a super coordinated system to the other dimensions of the triangle or prism models: social, economic, and institutional. These latter can only prosper if they adapt themselves to the limits of environmental carrying capacity. Thus according to this model: sustainable development = human well-being + ecosystem well-being

Fig 7: The Egg of Sustainability

IUCN is egg of sustainability (Source: IDRC 1997)

V. Conclusion

Sustainable development is a widely used term, which has been discussed thoroughly at environmental, economic and social levels. While prior researches were dominated initially by environmental issues and economic aspects, social dimension had less chance of study. Therefore, the goal of this study is to understand the physical and non-physical aspects of social sustainability and to assess its application in housing developments. In this research, a mixed method approach was used to assess social sustainability in different typologies of housing development. Two residential compounds and its surroundings were investigated. Morphological analysis for the research setting was conducted along with statistical analysis for the collected data from households. As a result, there was a salient difference between compound and its surroundings. This can be seen clearly in the case of serious trial to improve social sustainability represented by providing vital open spaces associated with a well-designed facility. This helps to create various forms of social interaction and boosts a sense of belonging which will affect positively on social sustainability. Meanwhile, poor design creates negative energy due to the absence of social sustainability parameters. So, there is a need to consider the role of social infrastructure in designing and planning residential development.

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